



11/15/12

Technical Report for

XTO Energy

PCU 296-6A

1211-02

Accutest Job Number: D40713

Sampling Date: 11/06/12

Report to:

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

Total number of pages in report: 148



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


Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

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

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

Table of Contents

-1-

Section 1: Sample Summary	4
Section 2: Case Narrative/Conformance Summary	5
Section 3: Summary of Hits	8
Section 4: Sample Results	9
4.1: D40713-1: CUT 3 SUBLINER COMP	10
4.2: D40713-1A: CUT 3 SUBLINER COMP	16
Section 5: Misc. Forms	18
5.1: Chain of Custody	19
Section 6: GC/MS Volatiles - QC Data Summaries	21
6.1: Method Blank Summary	22
6.2: Blank Spike Summary	23
6.3: Matrix Spike/Matrix Spike Duplicate Summary	24
Section 7: GC/MS Volatiles - Raw Data	25
7.1: Samples	26
7.2: Method Blanks	39
Section 8: GC/MS Semi-volatiles - QC Data Summaries	49
8.1: Method Blank Summary	50
8.2: Blank Spike Summary	51
8.3: Matrix Spike/Matrix Spike Duplicate Summary	52
Section 9: GC/MS Semi-volatiles - Raw Data	53
9.1: Samples	54
9.2: Method Blanks	71
Section 10: GC Volatiles - QC Data Summaries	88
10.1: Method Blank Summary	89
10.2: Blank Spike Summary	90
10.3: Matrix Spike/Matrix Spike Duplicate Summary	91
Section 11: GC Volatiles - Raw Data	92
11.1: Samples	93
11.2: Method Blanks	98
Section 12: GC Semi-volatiles - QC Data Summaries	103
12.1: Method Blank Summary	104
12.2: Blank Spike Summary	105
12.3: Matrix Spike/Matrix Spike Duplicate Summary	106
Section 13: GC Semi-volatiles - Raw Data	107
13.1: Samples	108
13.2: Method Blanks	111
Section 14: Metals Analysis - QC Data Summaries	114
14.1: Prep QC MP8856: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn	115
14.2: Prep QC MP8857: As	125
14.3: Prep QC MP8858: Ca,Mg,Na,Sodium Adsorption Ratio	130
14.4: Prep QC MP8871: Hg	140
Section 15: General Chemistry - QC Data Summaries	144

Table of Contents

Sections:

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

-2-	
15.1: Method Blank and Spike Results Summary	145
15.2: Duplicate Results Summary	146
15.3: Matrix Spike Results Summary	147
15.4: Matrix Spike Duplicate Results Summary	148



Sample Summary

XTO Energy

Job No: D40713

PCU 296-6A
Project No: 1211-02

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D40713-1	11/06/12	12:15	DS	11/08/12	SO	Soil	CUT 3 SUBLINER COMP
D40713-1A	11/06/12	12:15	DS	11/08/12	SO	Soil	CUT 3 SUBLINER COMP

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D40713

Site: PCU 296-6A

Report Date 11/15/2012 1:49:41 PM

On 11/08/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D40713 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: V5V1501

- All samples were analyzed within the recommended method holding time.
- Sample(s) D40713-1MS, D40713-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP6941

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D40713-1MS, D40713-1MSD 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: GGB1004

- All samples were analyzed within the recommended method holding time.
- Sample(s) D40718-1MS, D40718-1MSD 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: OP6942

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D40713-1MS, D40713-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP8858

- 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) D40714-1AMS, D40714-1AMSD, D40714-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Magnesium, Sodium are outside control limits for sample MP8858-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8858-SD1 for Sodium: Serial dilution indicates possible matrix interference.

Matrix SO

Batch ID: MP8856

- 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) D40712-1MS, D40712-1MSD, D40712-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Chromium, Zinc, Nickel are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Nickel are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Selenium, Barium, Chromium, Nickel, Zinc are outside control limits for sample MP8856-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8856-SD1 for Barium: Serial dilution indicates possible matrix interference.
- MP8856-S1 for Nickel: Spike recovery indicates possible matrix interference.
- MP8856-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP8856-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP8856-MB1 for Barium: All sample results >10x method blank concentration.
- MP8856-SD1 for Chromium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP8857

- 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) D40712-1MS, D40712-1SDL, D40712-1MSD were used as the QC samples for the metals analysis.
- The RPD(s) for the MS and MSD recoveries of Arsenic are outside control limits for sample MP8857-S2. High RPD due to possible sample matrix or nonhomogeneity.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP8871

- 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) D40797-1MS, D40797-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO	Batch ID: GN17603
------------------	--------------------------

- Sample(s) D40617-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN17606
------------------	--------------------------

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO	Batch ID: R15105
------------------	-------------------------

- The data for SW846 3060/7196A M meets quality control requirements.
- D40713-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: GP8655
------------------	-------------------------

- 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) D40715-1DUP, D40715-1MS, D40715-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 9045D

Matrix SO	Batch ID: GN17604
------------------	--------------------------

- The following samples were run outside of holding time for method SW846 9045D: D40713-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO	Batch ID: MP8858
------------------	-------------------------

- D40713-1A 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: D40713
Account: XTO Energy
Project: PCU 296-6A
Collected: 11/06/12



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

D40713-1 CUT 3 SUBLINER COMP

Arsenic	9.2	0.12	mg/kg	SW846 6020A
Barium	192	1.2	mg/kg	SW846 6010C
Chromium	38.9	1.2	mg/kg	SW846 6010C
Copper	10.5	1.2	mg/kg	SW846 6010C
Lead	8.9	5.9	mg/kg	SW846 6010C
Nickel	14.4	3.6	mg/kg	SW846 6010C
Zinc	37.9	3.6	mg/kg	SW846 6010C
Specific Conductivity	491	1.0	umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	38.9	2.2	mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	220		mv	ASTM D1498-76M
pH	10.05		su	SW846 9045D

D40713-1A CUT 3 SUBLINER COMP

Calcium	15.9	2.0	mg/l	SW846 6010C
Magnesium	3.48	1.0	mg/l	SW846 6010C
Sodium	92.0	2.0	mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	5.44		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:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	SW846 8260B		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V24599.D	1	11/14/12	BD	n/a	n/a	V5V1501
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.03 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.063	0.032	mg/kg	
108-88-3	Toluene	ND	0.13	0.063	mg/kg	
100-41-4	Ethylbenzene	ND	0.13	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	101%		64-130%
460-00-4	4-Bromofluorobenzene	99%		62-131%
17060-07-0	1,2-Dichloroethane-D4	99%		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:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G11999.D	1	11/09/12	DC	11/09/12	OP6941	E3G567
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0095	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0095	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0095	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0095	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0095	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0095	0.0049	mg/kg	
218-01-9	Chrysene	ND	0.0095	0.0049	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0095	0.0049	mg/kg	
206-44-0	Fluoranthene	ND	0.0095	0.0049	mg/kg	
86-73-7	Fluorene	ND	0.0095	0.0049	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0095	0.0049	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	ND	0.0095	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		10-159%
321-60-8	2-Fluorobiphenyl	68%		19-131%
1718-51-0	Terphenyl-d14	90%		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:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	SW846 8015B		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18389.D	1	11/08/12	SK	n/a	n/a	GGB1004
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	94%		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:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Method:	SW846-8015B SW846 3546		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD19393.D	1	11/12/12	AV	11/09/12	OP6942	GFD977
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	15	9.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	81%		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: CUT 3 SUBLINER COMP
 Lab Sample ID: D40713-1
 Matrix: SO - Soil
 Project: PCU 296-6A

Date Sampled: 11/06/12
 Date Received: 11/08/12
 Percent Solids: 87.9

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	9.2	0.12	mg/kg	5	11/09/12	11/14/12 JB	SW846 6020A ⁴	SW846 3050B ⁶
Barium	192	1.2	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Cadmium	< 1.2	1.2	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Chromium	38.9	1.2	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Copper	10.5	1.2	mg/kg	1	11/09/12	11/13/12 JM	SW846 6010C ³	SW846 3050B ⁵
Lead	8.9	5.9	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Mercury	< 0.089	0.089	mg/kg	1	11/13/12	11/13/12 JM	SW846 7471B ²	SW846 7471B ⁷
Nickel	14.4	3.6	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Selenium	< 5.9	5.9	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Silver	< 3.6	3.6	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵
Zinc	37.9	3.6	mg/kg	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3050B ⁵

(1) Instrument QC Batch: MA2986

(2) Instrument QC Batch: MA2991

(3) Instrument QC Batch: MA2995

(4) Instrument QC Batch: MA2996

(5) Prep QC Batch: MP8856

(6) Prep QC Batch: MP8857

(7) Prep QC Batch: MP8871

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Project:	PCU 296-6A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	491	1.0	umhos/cm	1	11/09/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	11/12/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	38.9	2.2	mg/kg	1	11/12/12	KB	SW846 3060/7196A M
Redox Potential Vs H2	220		mv	1	11/08/12	JD	ASTM D1498-76M
Solids, Percent	87.9		%	1	11/09/12	SWT	SM19 2540B M
pH	10.05		su	1	11/08/12 15:15	JK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1A	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Project:	PCU 296-6A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	15.9	2.0	mg/l	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	3.48	1.0	mg/l	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Sodium	92.0	2.0	mg/l	1	11/09/12	11/09/12 JM	SW846 6010C ¹	SW846 3010A/M ²

- (1) Instrument QC Batch: MA2986
(2) Prep QC Batch: MP8858

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID:	CUT 3 SUBLINER COMP	Date Sampled:	11/06/12
Lab Sample ID:	D40713-1A	Date Received:	11/08/12
Matrix:	SO - Soil	Percent Solids:	87.9
Project:	PCU 296-6A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	5.44		ratio	1	11/09/12 16:31	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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

[illegible]

D40713: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D40713

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 11/8/2012 12:30:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 296-6A

Airbill #'s: HDCO

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: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1501-MB	5V24597.D	1	11/14/12	BD	n/a	n/a	V5V1501

The QC reported here applies to the following samples:

Method: SW846 8260B

D40713-1

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	103% 64-130%
460-00-4	4-Bromofluorobenzene	92% 62-131%
17060-07-0	1,2-Dichloroethane-D4	96% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1501-BS	5V24598.D	1	11/14/12	BD	n/a	n/a	V5V1501

The QC reported here applies to the following samples:

Method: SW846 8260B

D40713-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	43.6	87	70-130
100-41-4	Ethylbenzene	50	45.0	90	70-130
108-88-3	Toluene	50	44.2	88	70-130
1330-20-7	Xylene (total)	150	138	92	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	103%	64-130%
460-00-4	4-Bromofluorobenzene	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	100%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D40713-1MS	5V24600.D	1	11/14/12	BD	n/a	n/a	V5V1501
D40713-1MSD	5V24601.D	1	11/14/12	BD	n/a	n/a	V5V1501
D40713-1	5V24599.D	1	11/14/12	BD	n/a	n/a	V5V1501

The QC reported here applies to the following samples:

Method: SW846 8260B

D40713-1

CAS No.	Compound	D40713-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3170	2820	89	2670	84	5	64-139/30
100-41-4	Ethylbenzene	ND		3170	2950	93	2740	86	7	68-136/30
108-88-3	Toluene	ND		3170	2870	91	2710	86	6	60-130/30
1330-20-7	Xylene (total)	ND		9510	9070	95	8450	89	7	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D40713-1	Limits
2037-26-5	Toluene-D8	103%	102%	101%	64-130%
460-00-4	4-Bromofluorobenzene	105%	104%	99%	62-131%
17060-07-0	1,2-Dichloroethane-D4	97%	97%	99%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5111312.S\
 Data File : 5V24599.D
 Acq On : 14 Nov 2012 4:10 am
 Operator : BRETD
 Sample : D40713-1
 Misc : MS4956,V5V1501,5.034,,100,5,1
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Nov 14 15:20:18 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
 Quant Title : 8260
 QLast Update : Wed Nov 14 09:56:27 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.625	168	374070	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.424	114	457968	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.072	117	421174	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	307199	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.024	102	31657	49.72	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.44%
61) Toluene-d8	13.817	98	502071	50.32	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.64%
69) 4-Bromofluorobenzene	16.020	95	213765	49.71	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.42%

Target Compounds

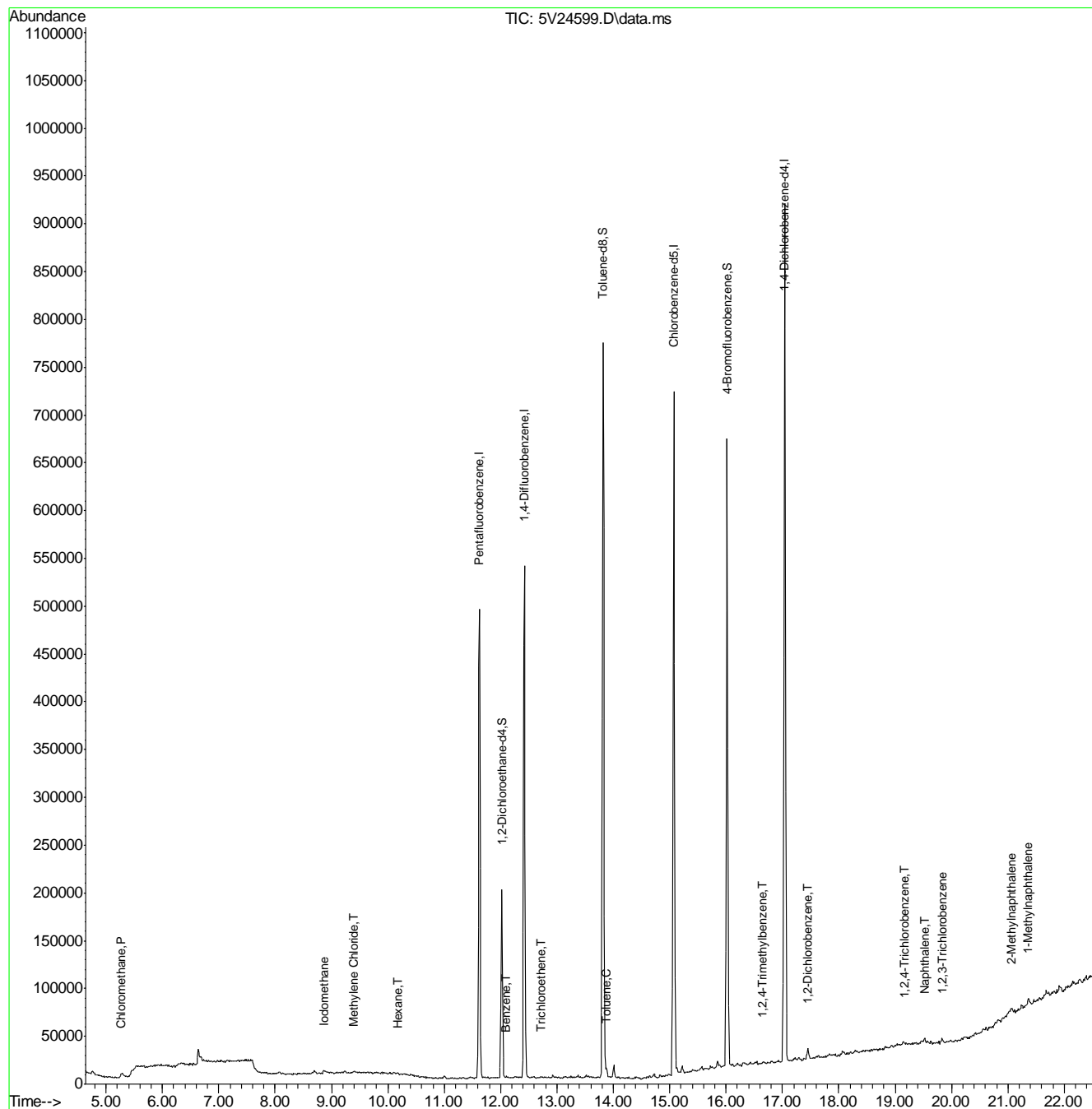
						Qvalue
4) Chloromethane	5.265	50	2884	0.69	ug/l	90
12) Iodomethane	8.862	142	5989	1.70	ug/l #	82
17) Methylene Chloride	9.398	84	472	0.14	ug/l	92
41) Hexane	10.175	57	414	0.10	ug/l	100
48) Trichloroethene	12.721	95	471	0.14	ug/l	92
50) Benzene	12.093	78	2371	0.19	ug/l	100
62) Toluene	13.874	92	2703	0.35	ug/l	99
82) 1,2,4-Trimethylbenzene	16.648	105	1563	0.11	ug/l #	81
87) 1,2-Dichlorobenzene	17.447	146	999	0.11	ug/l #	75
90) 1,2,4-Trichlorobenzene	19.160	180	1968	0.23	ug/l #	89
91) Naphthalene	19.525	128	6254	0.41	ug/l	100
93) 1,2,3-Trichlorobenzene	19.833	180	1980	0.25	ug/l #	94
94) 2-Methylnaphthalene	21.066	142	3666	5.40	ug/l #	92
95) 1-Methylnaphthalene	21.363	142	4509	1.53	ug/l #	92

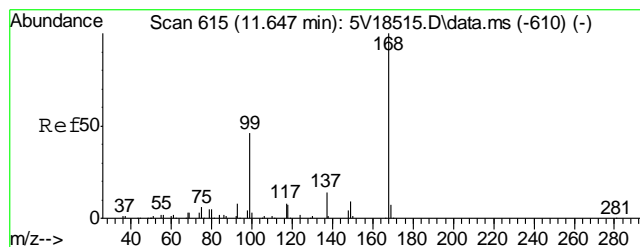
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5111312.S\
Data File : 5V24599.D
Acq On : 14 Nov 2012 4:10 am
Operator : BRETD
Sample : D40713-1
Misc : MS4956,V5V1501,5.034,,100,5,1
ALS Vial : 28 Sample Multiplier: 1

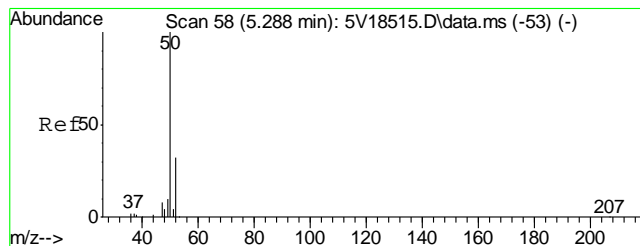
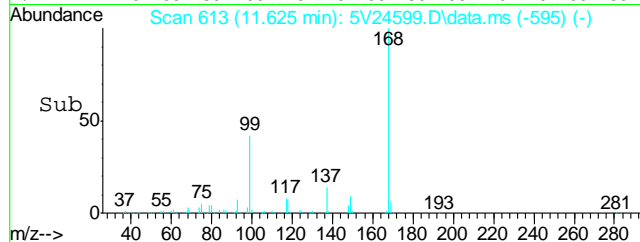
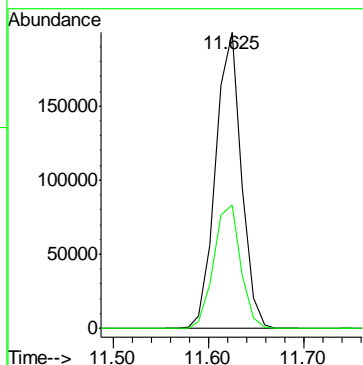
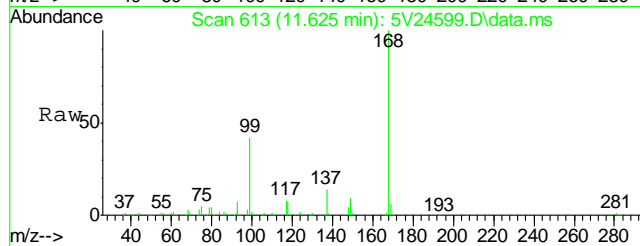
Quant Time: Nov 14 15:20:18 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:56:27 2012
Response via : Initial Calibration





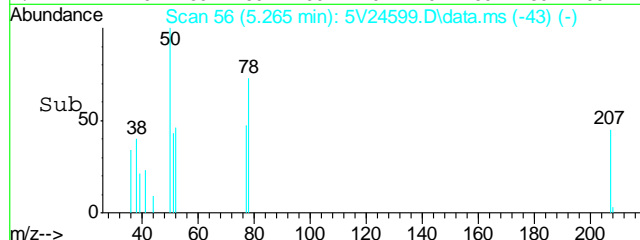
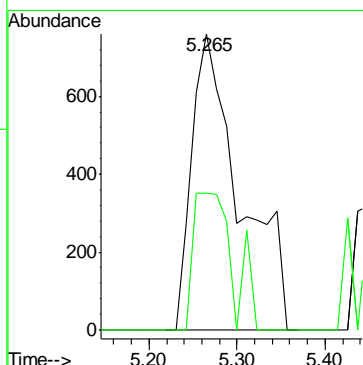
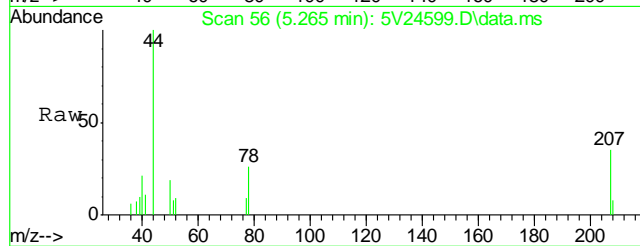
#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.625 min Scan# 613
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

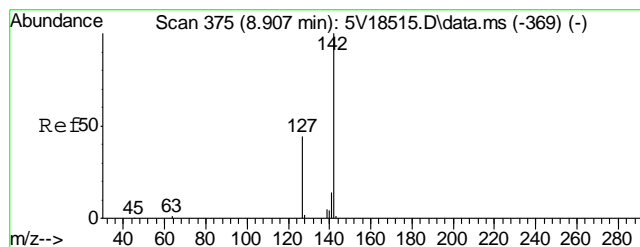
Tgt Ion: 168 Resp: 374070
Ion Ratio Lower Upper
168 100
99 43.7 37.4 56.2



#4
Chloromethane
Concen: 0.69 ug/l
RT: 5.265 min Scan# 56
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

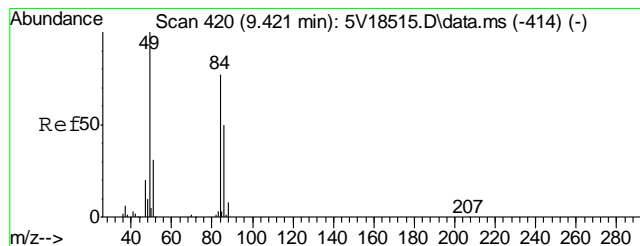
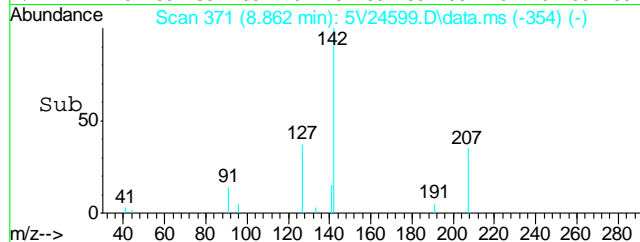
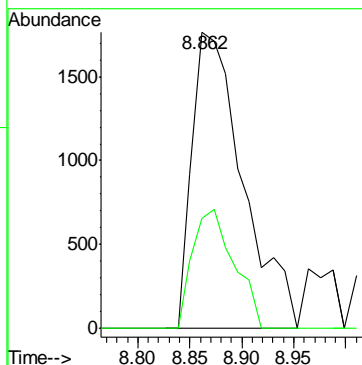
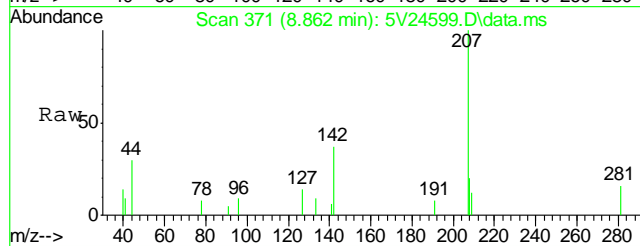
Tgt Ion: 50 Resp: 2884
Ion Ratio Lower Upper
50 100
52 37.7 12.1 52.1





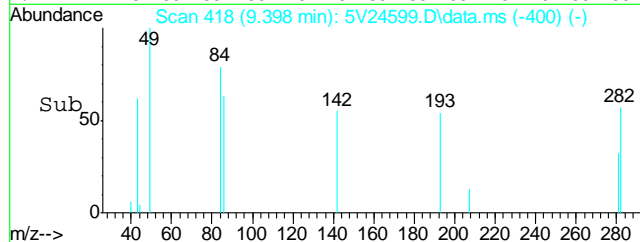
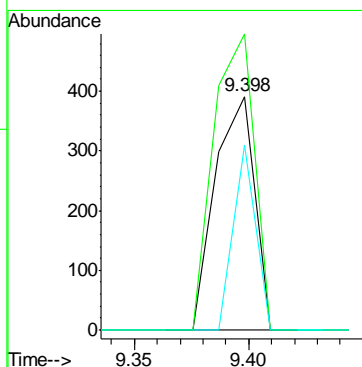
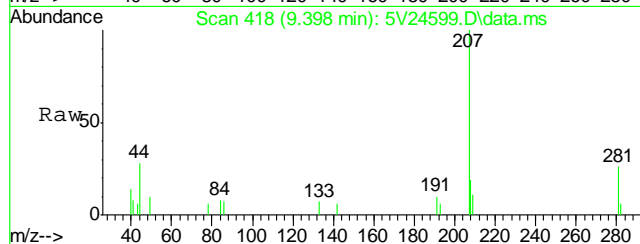
#12
Iodomethane
Concen: 1.70 ug/l
RT: 8.862 min Scan# 371
Delta R.T. -0.011 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

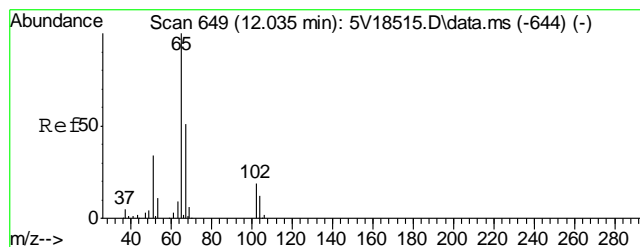
Tgt Ion: 142 Resp: 5989
Ion Ratio Lower Upper
142 100
127 32.8 35.4 53.0#



#17
Methylene Chloride
Concen: 0.14 ug/l
RT: 9.398 min Scan# 418
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

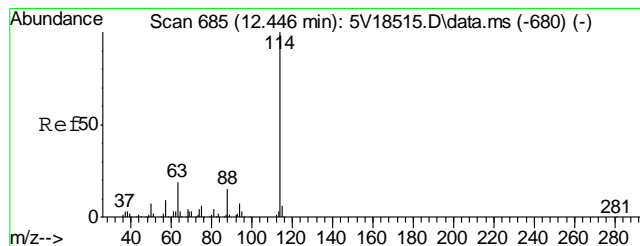
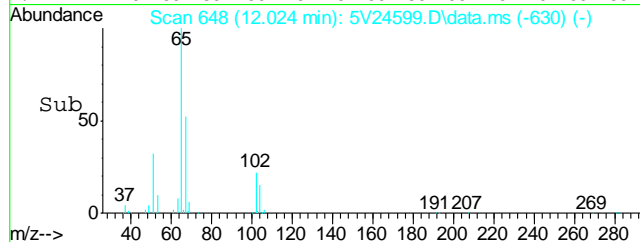
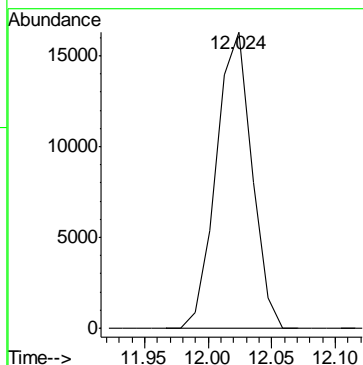
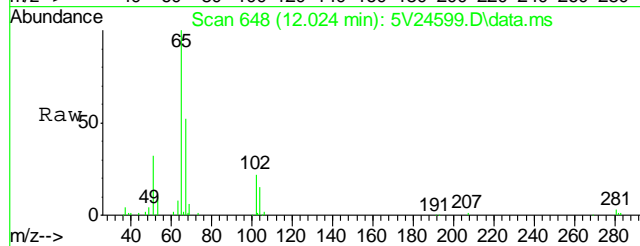
Tgt Ion: 84 Resp: 472
Ion Ratio Lower Upper
84 100
49 131.4 110.4 150.4
86 45.1 44.0 84.0





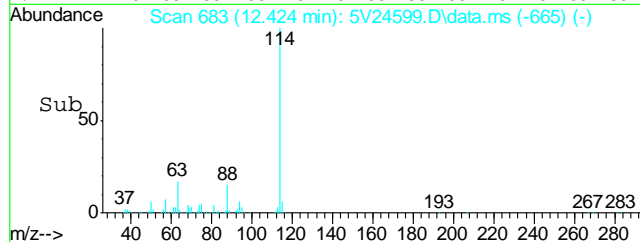
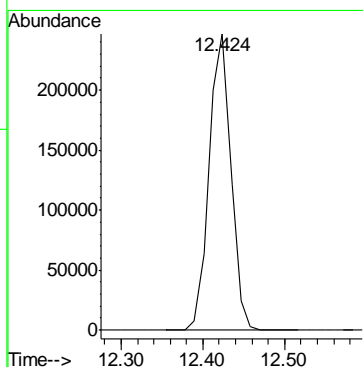
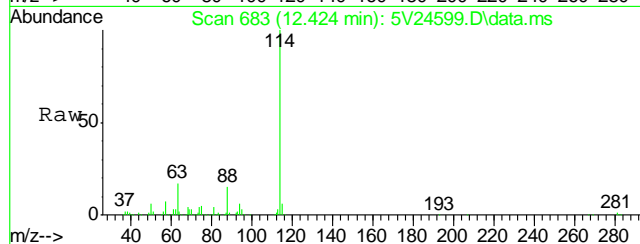
#33
1,2-Dichloroethane-d4
Concen: 49.72 ug/l
RT: 12.024 min Scan# 648
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

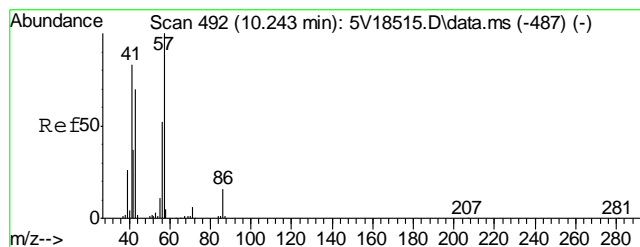
Tgt Ion:102 Resp: 31657



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.424 min Scan# 683
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

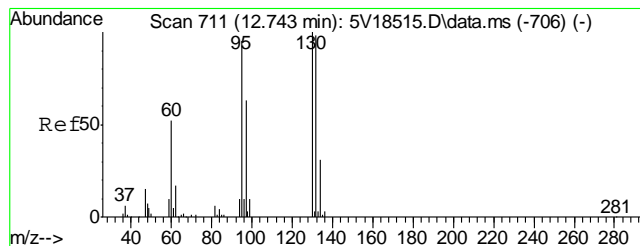
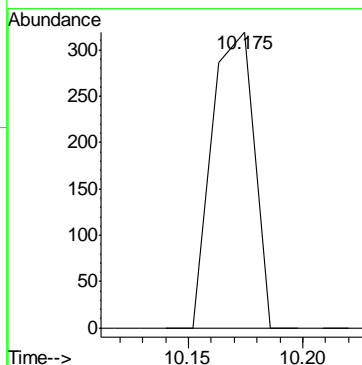
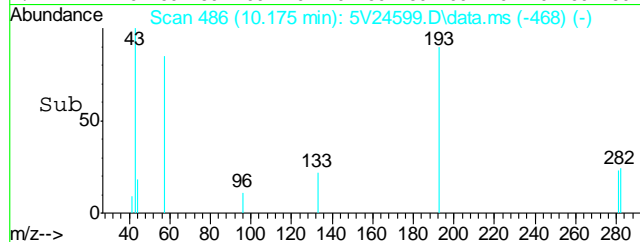
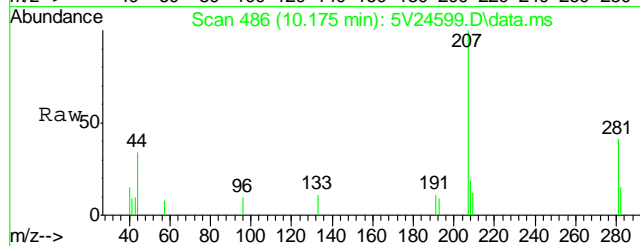
Tgt Ion:114 Resp: 457968





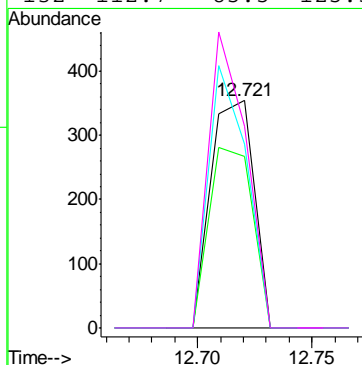
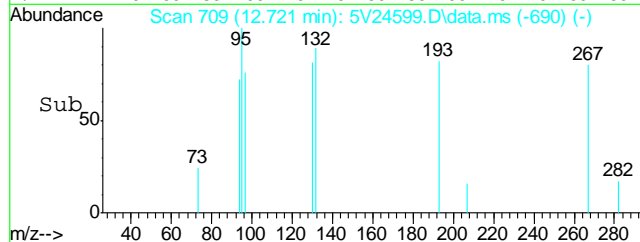
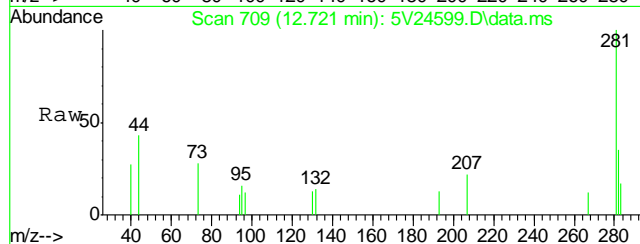
#41
Hexane
Concen: 0.10 ug/l
RT: 10.175 min Scan# 486
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

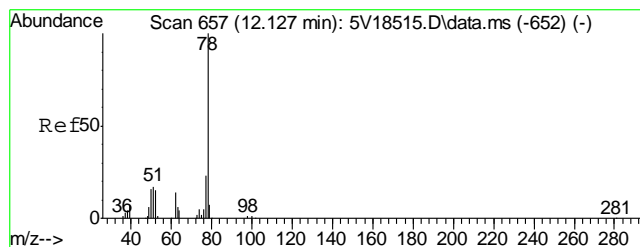
Tgt Ion: 57 Resp: 414



#48
Trichloroethene
Concen: 0.14 ug/l
RT: 12.721 min Scan# 709
Delta R.T. 0.011 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

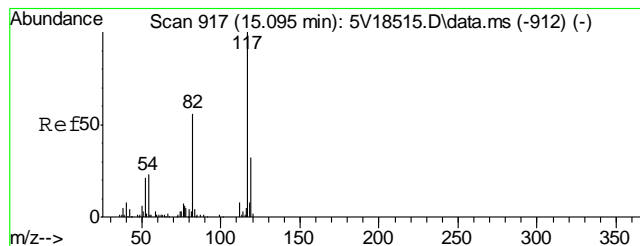
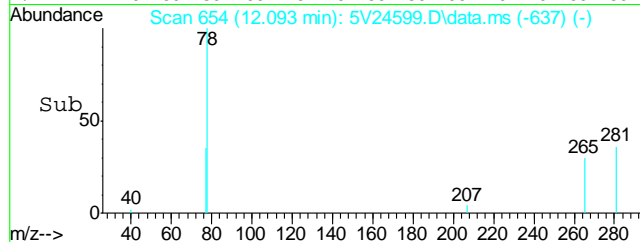
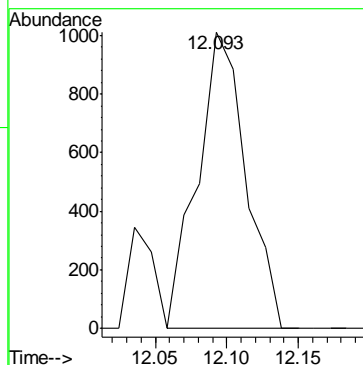
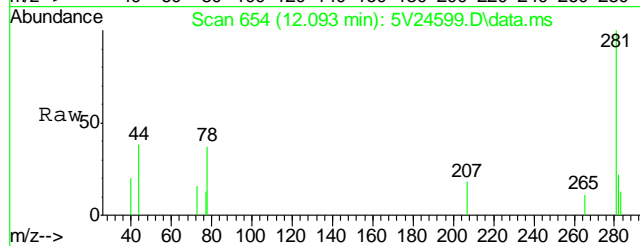
Tgt Ion: 95 Resp: 471
Ion Ratio Lower Upper
95 100
97 79.8 47.1 87.1
130 101.1 85.2 125.2
132 112.7 85.5 125.5





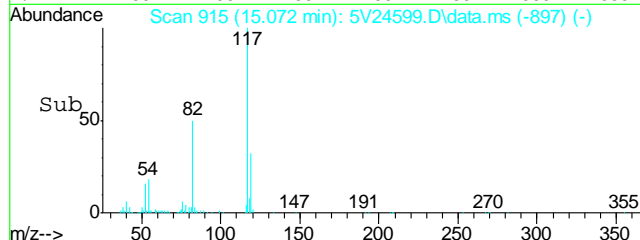
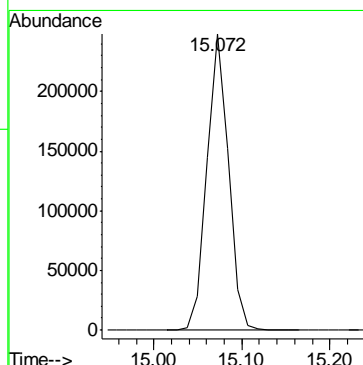
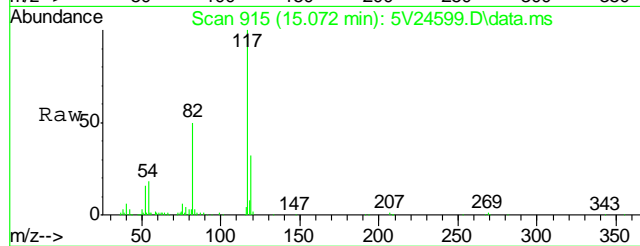
#50
Benzene
Concen: 0.19 ug/l
RT: 12.093 min Scan# 654
Delta R.T. -0.011 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

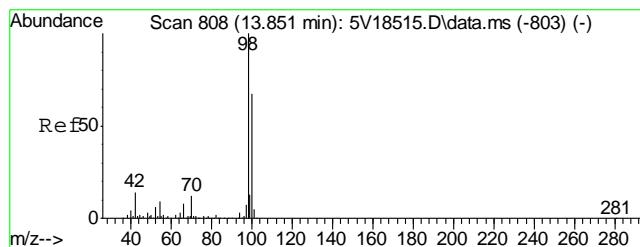
Tgt Ion: 78 Resp: 2371



#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.072 min Scan# 915
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

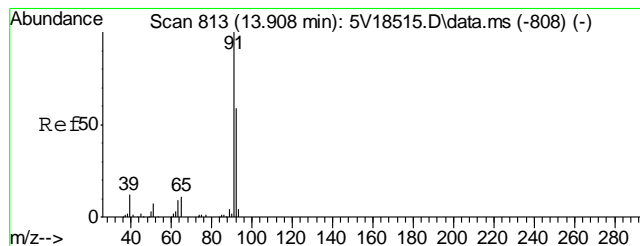
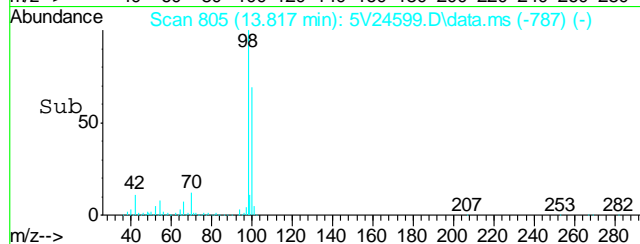
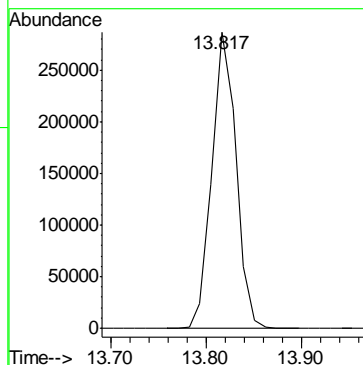
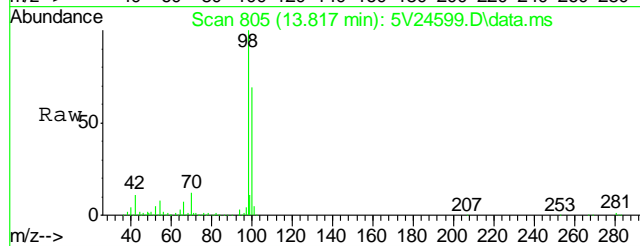
Tgt Ion: 117 Resp: 421174





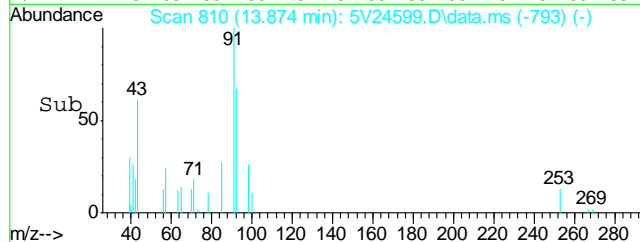
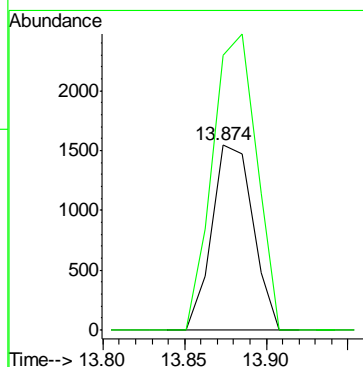
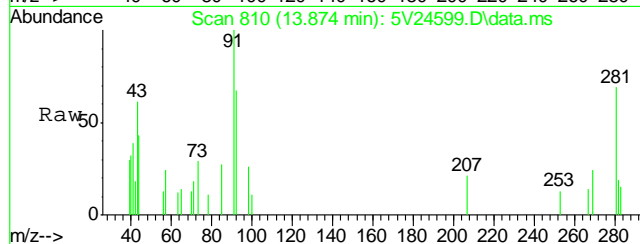
#61
Toluene-d8
Concen: 50.32 ug/l
RT: 13.817 min Scan# 805
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

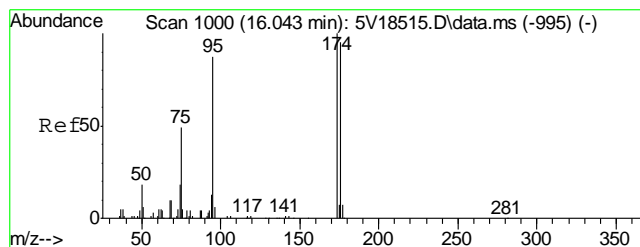
Tgt Ion: 98 Resp: 502071



#62
Toluene
Concen: 0.35 ug/l
RT: 13.874 min Scan# 810
Delta R.T. -0.011 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

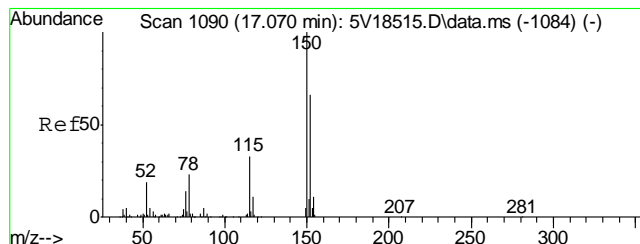
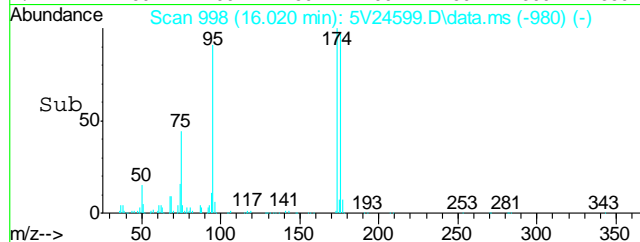
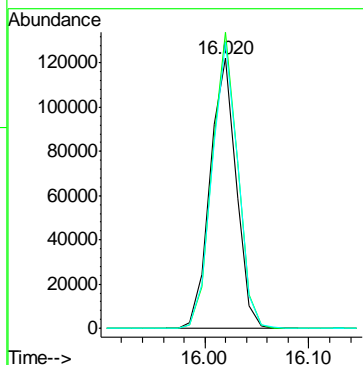
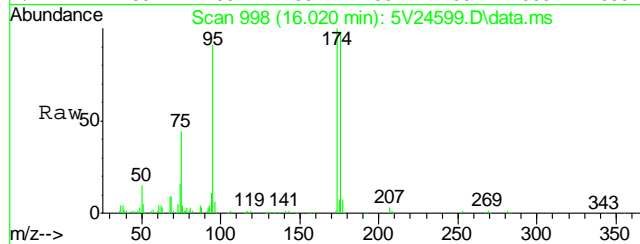
Tgt Ion: 92 Resp: 2703
Ion Ratio Lower Upper
92 100
91 171.5 149.8 189.8





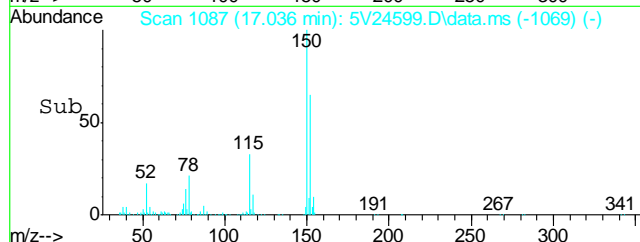
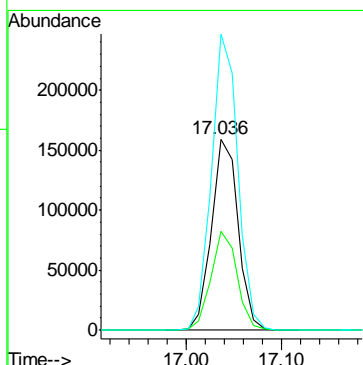
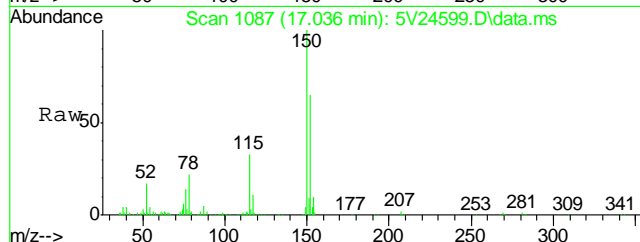
#69
4-Bromofluorobenzene
Concen: 49.71 ug/l
RT: 16.020 min Scan# 998
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

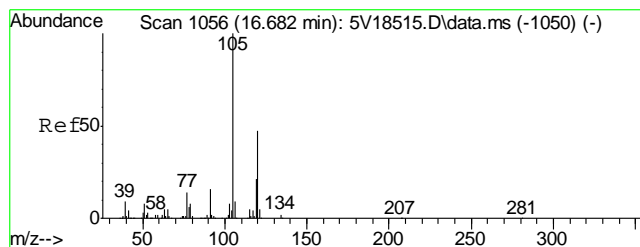
Tgt Ion	Resp	Lower	Upper
95	213765		
174	106.4	77.1	117.1
176	104.8	73.4	113.4



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

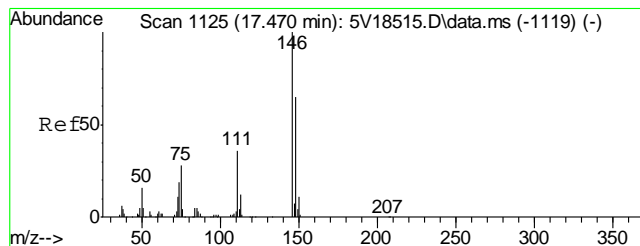
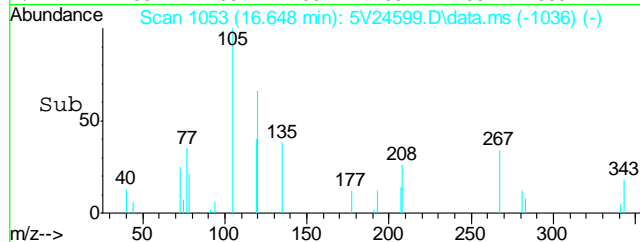
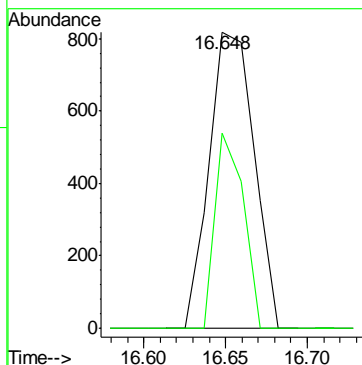
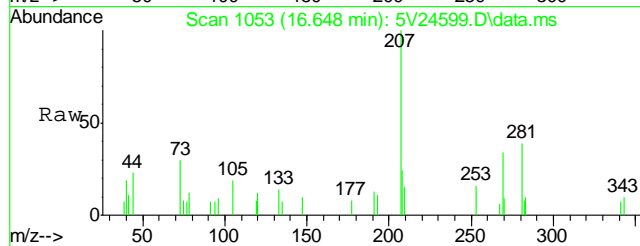
Tgt Ion	Resp	Lower	Upper
152	307199		
115	50.5	41.4	62.0
150	153.4	153.9	230.9#





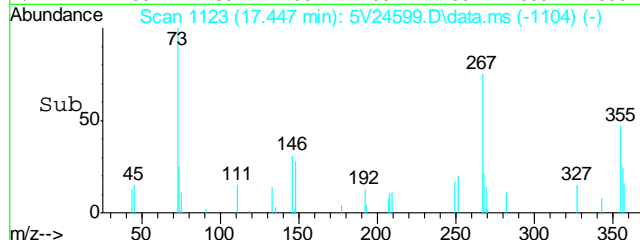
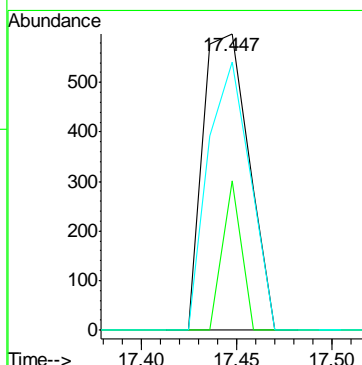
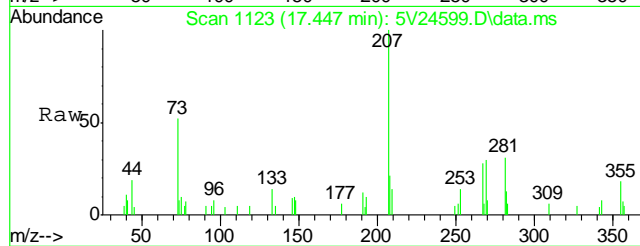
#82
1,2,4-Trimethylbenzene
Concen: 0.11 ug/l
RT: 16.648 min Scan# 1053
Delta R.T. -0.011 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

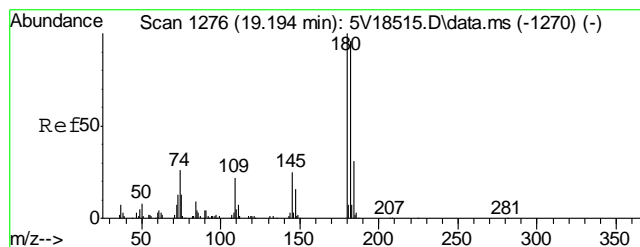
Tgt Ion:105 Resp: 1563
Ion Ratio Lower Upper
105 100
120 41.4 43.8 65.8#



#87
1,2-Dichlorobenzene
Concen: 0.11 ug/l
RT: 17.447 min Scan# 1123
Delta R.T. 0.011 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

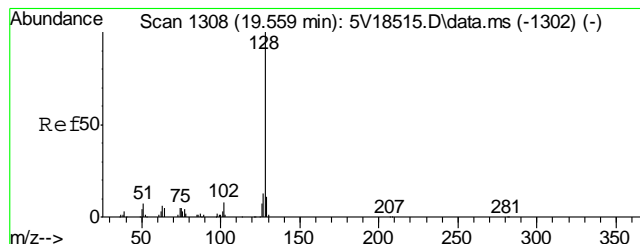
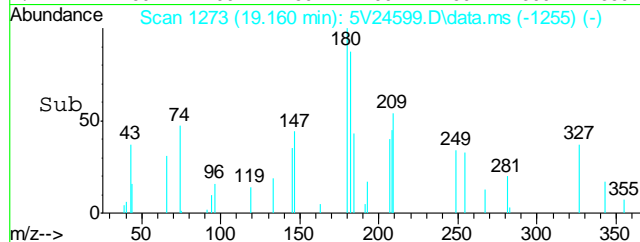
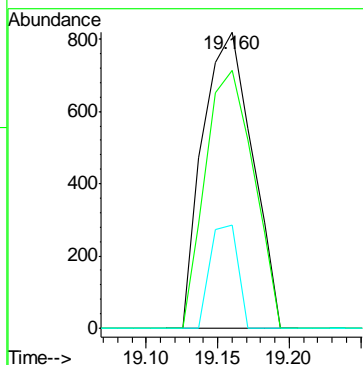
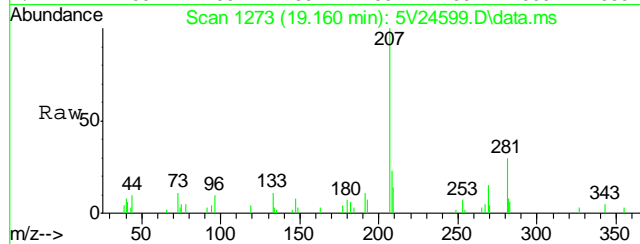
Tgt Ion:146 Resp: 999
Ion Ratio Lower Upper
146 100
111 20.6 29.9 44.9#
148 82.8 51.9 77.9#





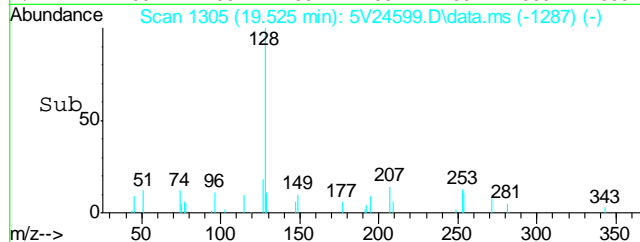
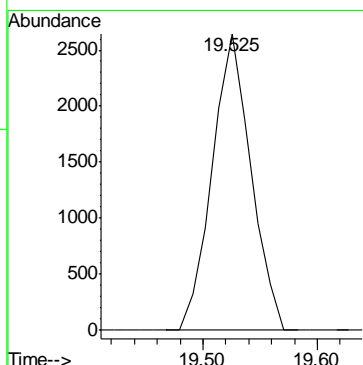
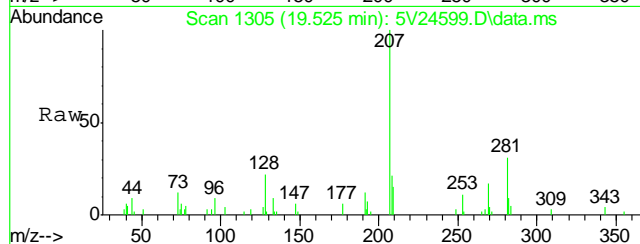
#90
1,2,4-Trichlorobenzene
Concen: 0.23 ug/l
RT: 19.160 min Scan# 1273
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

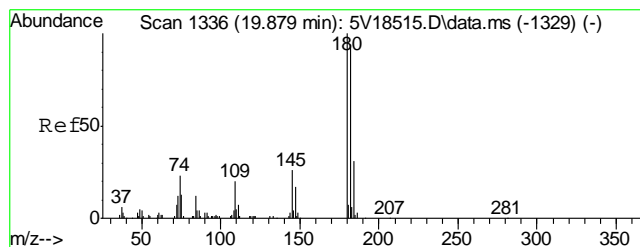
Tgt Ion	Ratio	Lower	Upper
180	100		
182	85.0	76.2	114.4
145	19.5	20.1	30.1#



#91
Naphthalene
Concen: 0.41 ug/l
RT: 19.525 min Scan# 1305
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

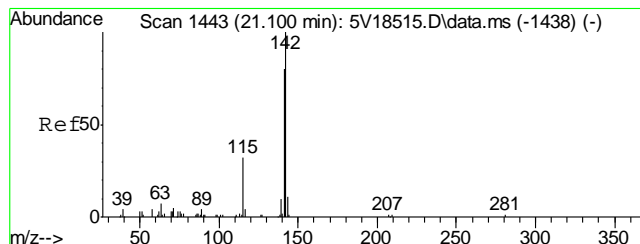
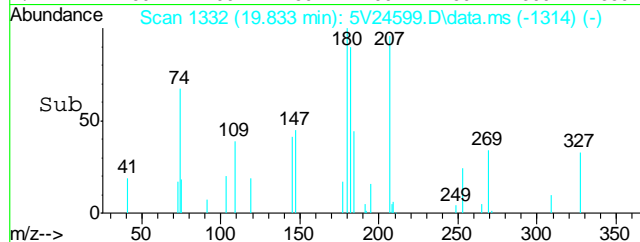
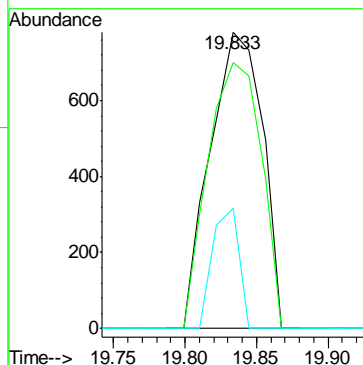
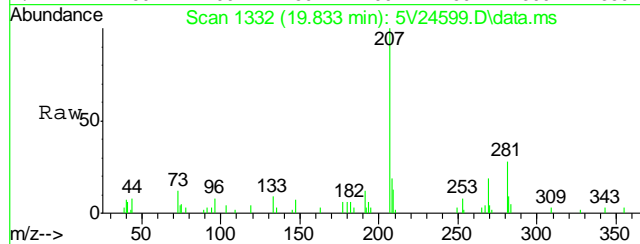
Tgt Ion	Ratio
128	6254





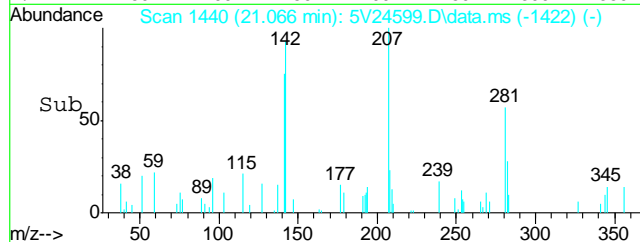
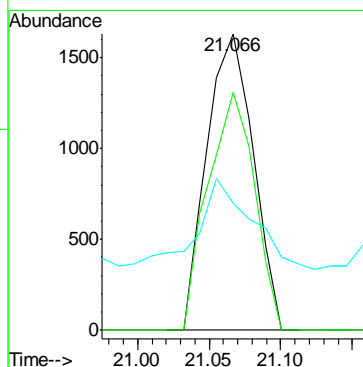
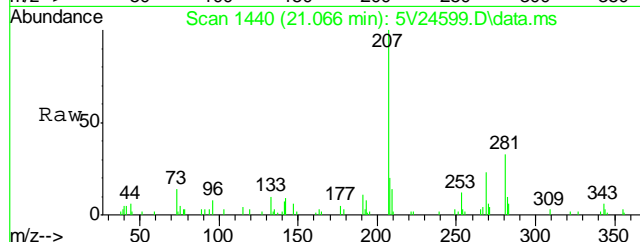
#93
1,2,3-Trichlorobenzene
Concen: 0.25 ug/l
RT: 19.833 min Scan# 1332
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

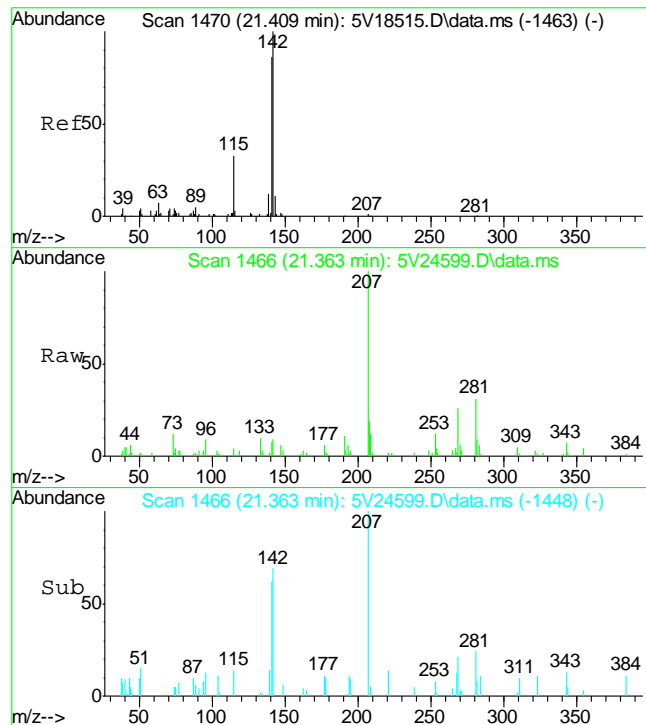
Tgt Ion	Ratio	Lower	Upper
180	100		
182	91.3	76.0	114.0
145	20.4	21.4	32.0#



#94
2-Methylnaphthalene
Concen: 5.40 ug/l
RT: 21.066 min Scan# 1440
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

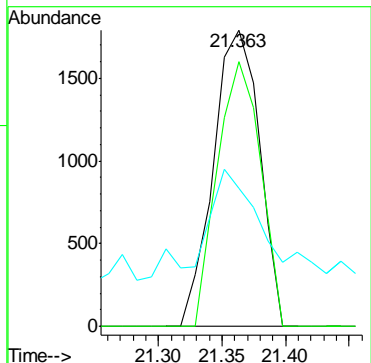
Tgt Ion	Ratio	Lower	Upper
142	100		
141	80.6	66.2	99.4
115	45.3	25.9	38.9#





#95
1-Methylnaphthalene
Concen: 1.53 ug/l
RT: 21.363 min Scan# 1466
Delta R.T. 0.000 min
Lab File: 5V24599.D
Acq: 14 Nov 2012 4:10 am

Tgt Ion:	142	Resp:	4509
Ion Ratio	Lower	Upper	
142	100		
141	83.5	68.9	103.3
115	46.7	27.3	40.9#



7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5111312.S\
 Data File : 5V24597.D
 Acq On : 14 Nov 2012 3:00 am
 Operator : BRETD
 Sample : MB
 Misc : MS4956,V5V1501,5.00,,100,5,1
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Nov 14 15:14:20 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
 Quant Title : 8260
 QLast Update : Wed Nov 14 09:56:27 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.625	168	466596	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.424	114	566385	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.072	117	516924	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	338090	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.024	102	38234	48.14	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.28%
61) Toluene-d8	13.817	98	630619	51.50	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	103.00%
69) 4-Bromofluorobenzene	16.020	95	243711	46.17	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	92.34%

Target Compounds

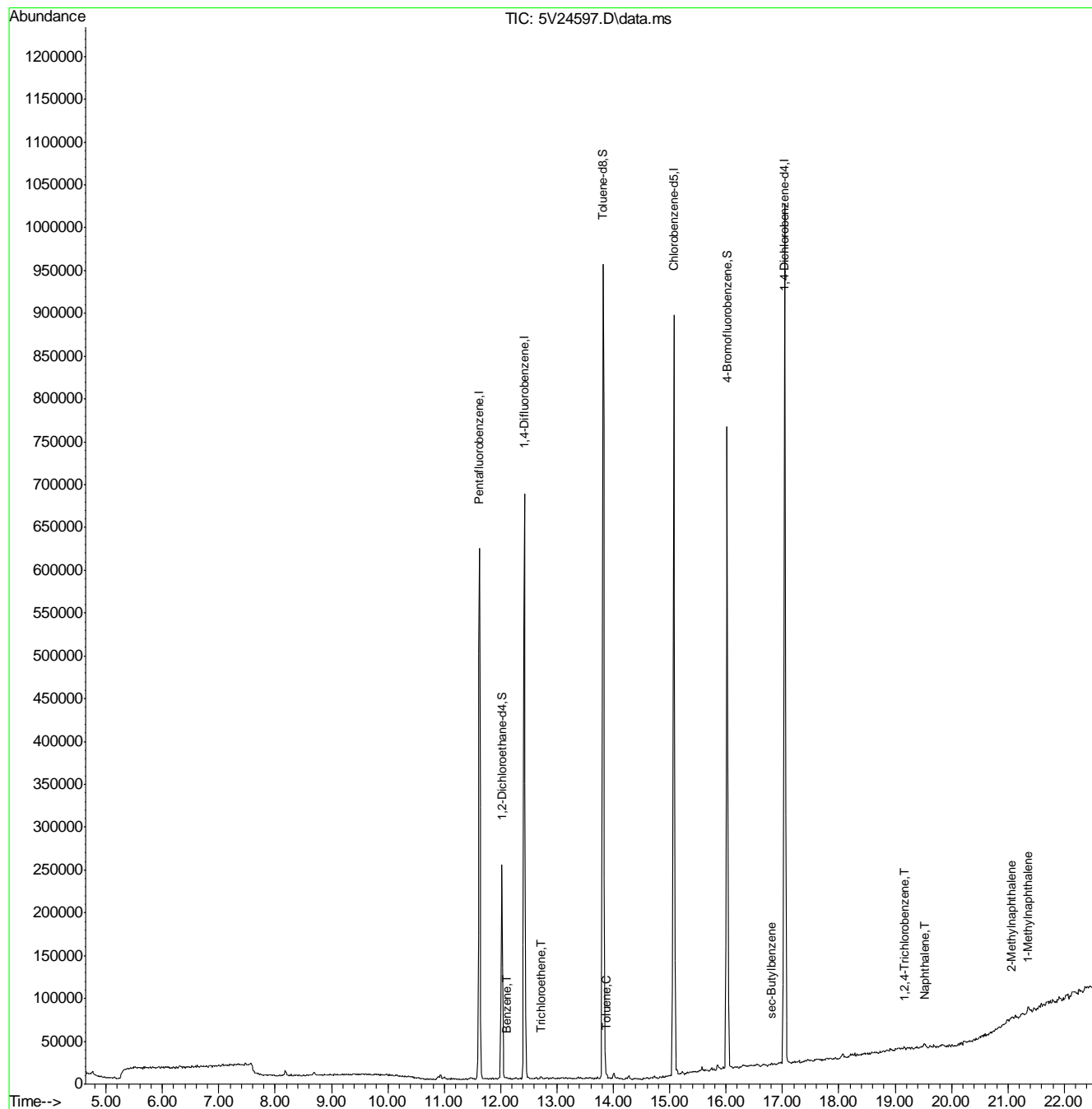
					Qvalue
1) TVH-Gasoline	13.102	TIC	141616m	Below Cal	
48) Trichloroethene	12.721	95	565	0.14 ug/l	88
50) Benzene	12.104	78	1340	0.09 ug/l	100
62) Toluene	13.874	92	854	0.09 ug/l #	63
83) sec-Butylbenzene	16.808	105	1026	0.05 ug/l	97
90) 1,2,4-Trichlorobenzene	19.160	180	1663	0.18 ug/l #	79
91) Naphthalene	19.525	128	5416	0.32 ug/l	100
94) 2-Methylnaphthalene	21.066	142	2952	5.30 ug/l #	67
95) 1-Methylnaphthalene	21.363	142	3770	1.39 ug/l #	94

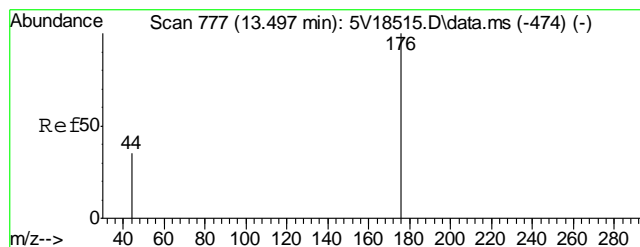
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5111312.S\
Data File : 5V24597.D
Acq On : 14 Nov 2012 3:00 am
Operator : BRETD
Sample : MB
Misc : MS4956,V5V1501,5.00,,100,5,1
ALS Vial : 26 Sample Multiplier: 1

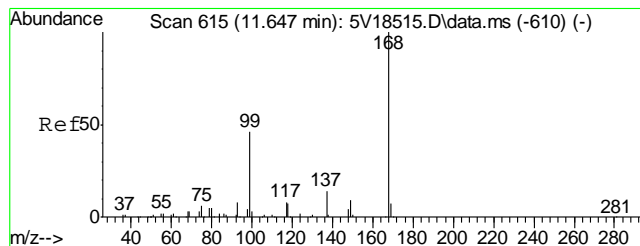
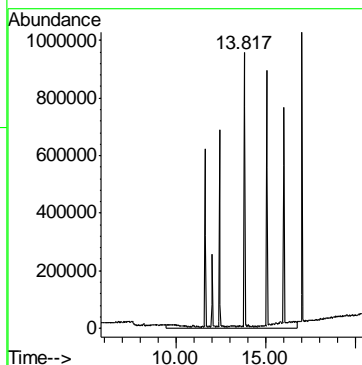
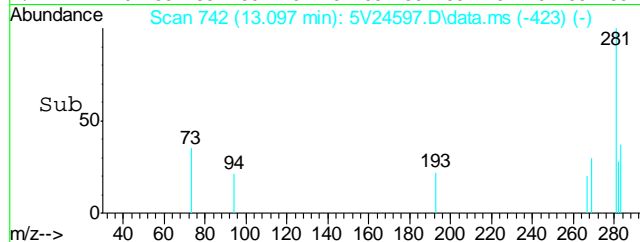
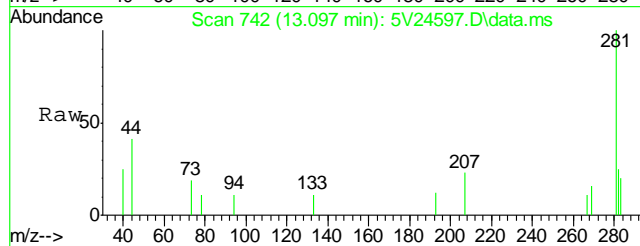
Quant Time: Nov 14 15:14:20 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:56:27 2012
Response via : Initial Calibration





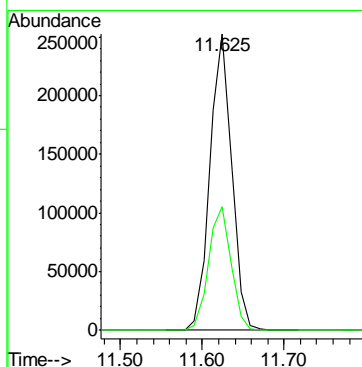
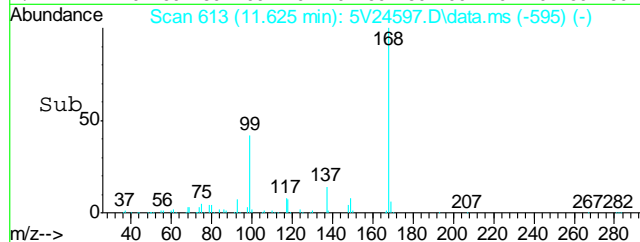
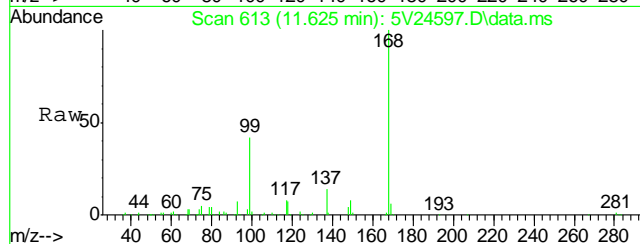
#1
TVH-Gasoline
Concen: Below Cal m
RT: 13.102 min Scan# 742
Delta R.T. 0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

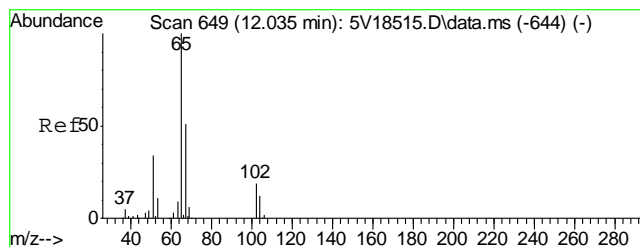
Tgt Ion:TIC Resp: 141616



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.625 min Scan# 613
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

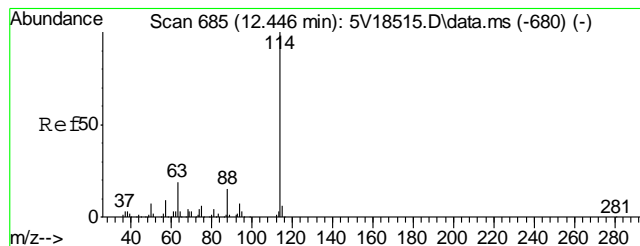
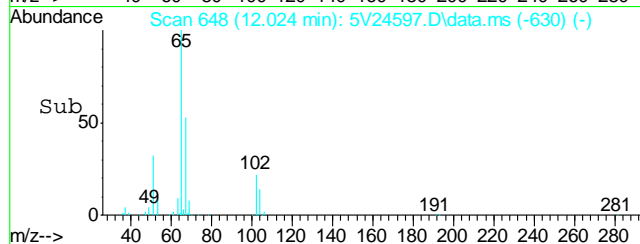
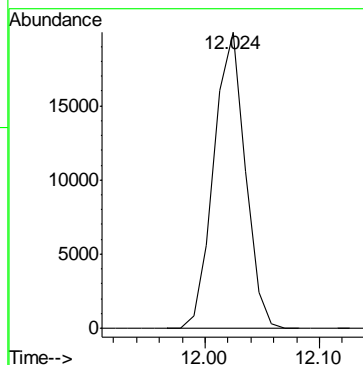
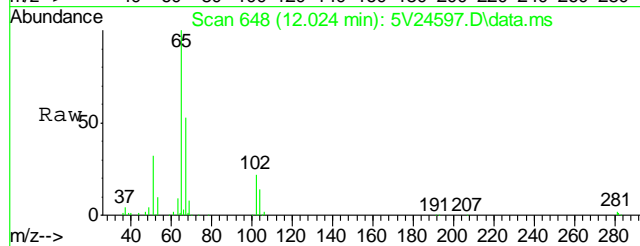
Tgt Ion:168 Resp: 466596
Ion Ratio Lower Upper
168 100
99 43.1 37.4 56.2





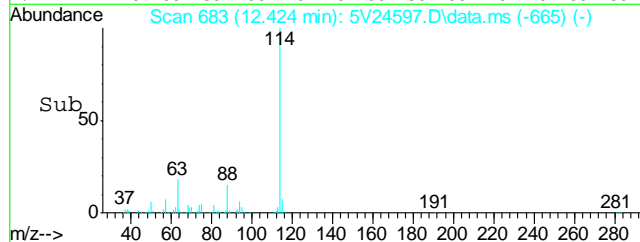
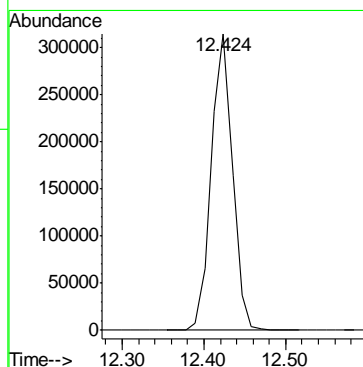
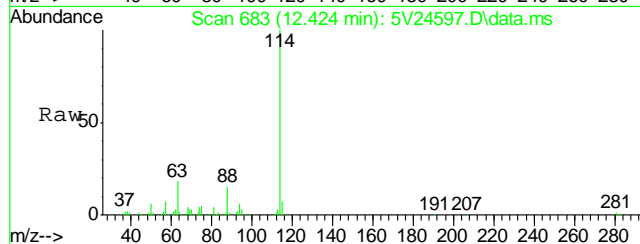
#33
1,2-Dichloroethane-d4
Concen: 48.14 ug/l
RT: 12.024 min Scan# 648
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

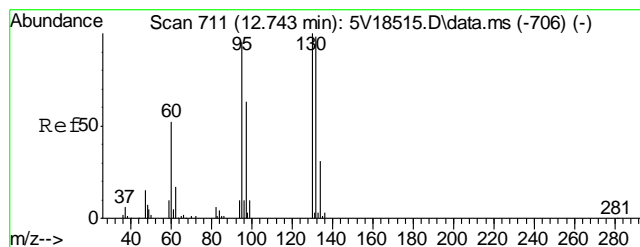
Tgt Ion:102 Resp: 38234



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.424 min Scan# 683
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

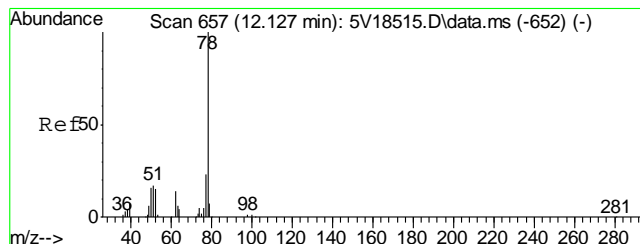
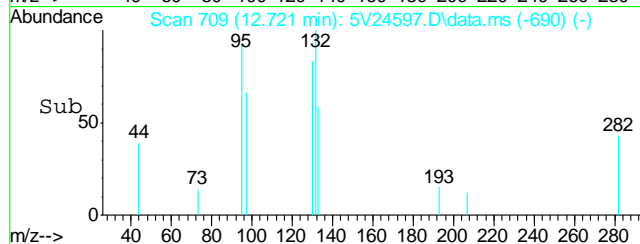
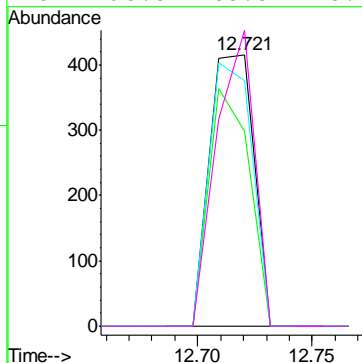
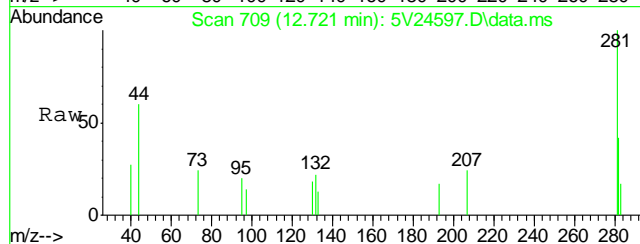
Tgt Ion:114 Resp: 566385





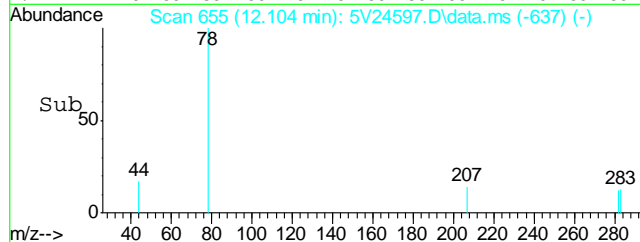
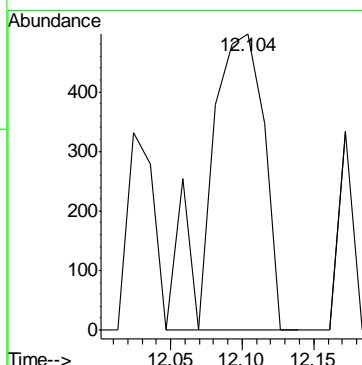
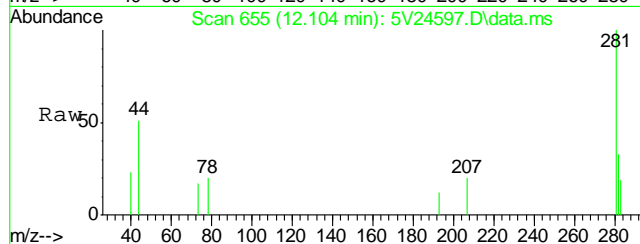
#48
Trichloroethene
Concen: 0.14 ug/l
RT: 12.721 min Scan# 709
Delta R.T. 0.011 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

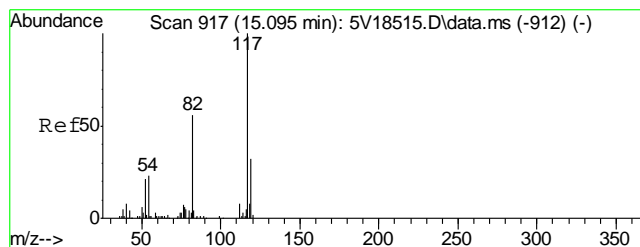
Tgt Ion	Resp	Lower	Upper
95	100		
97	80.2	47.1	87.1
130	94.3	85.2	125.2
132	93.5	85.5	125.5



#50
Benzene
Concen: 0.09 ug/l
RT: 12.104 min Scan# 655
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

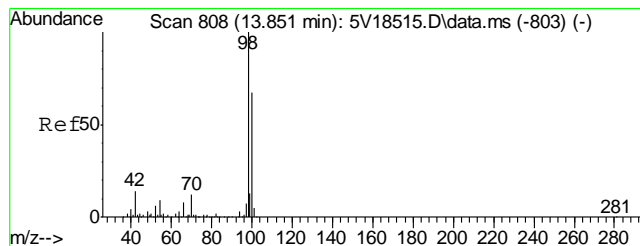
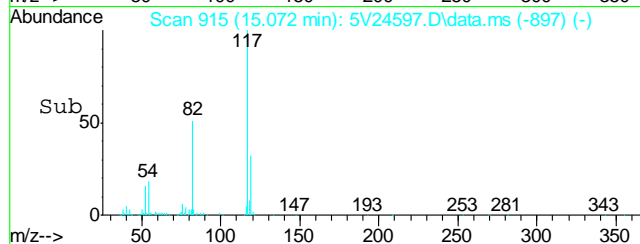
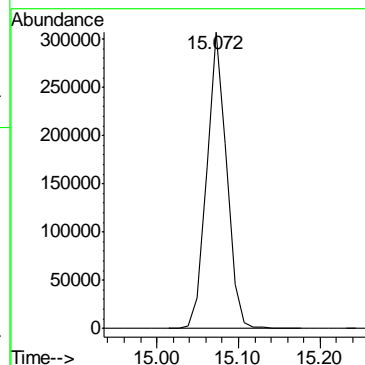
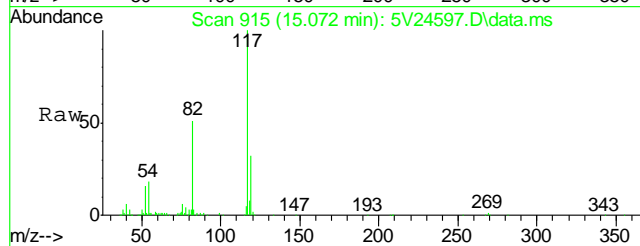
Tgt Ion: 78 Resp: 1340





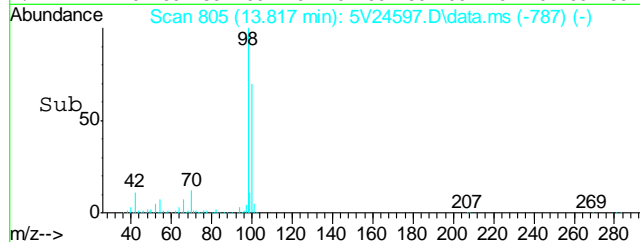
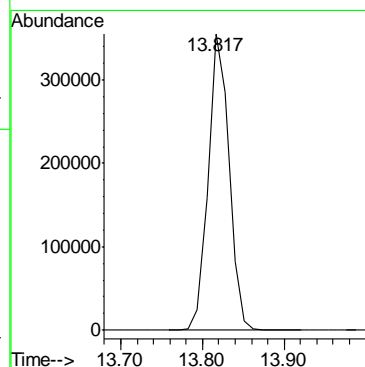
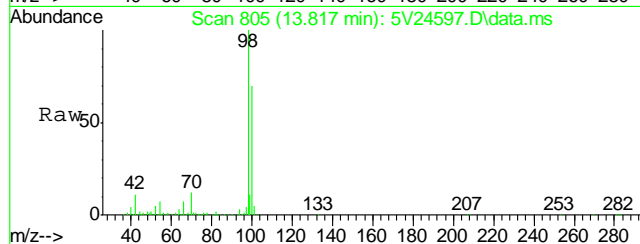
#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.072 min Scan# 915
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

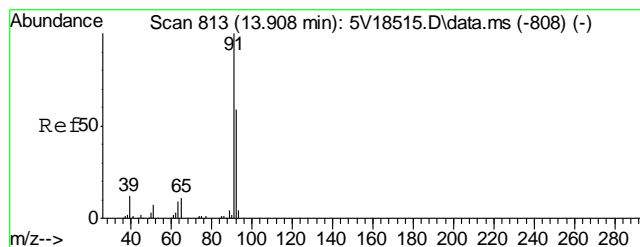
Tgt Ion:117 Resp: 516924



#61
Toluene-d8
Concen: 51.50 ug/l
RT: 13.817 min Scan# 805
Delta R.T. 0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

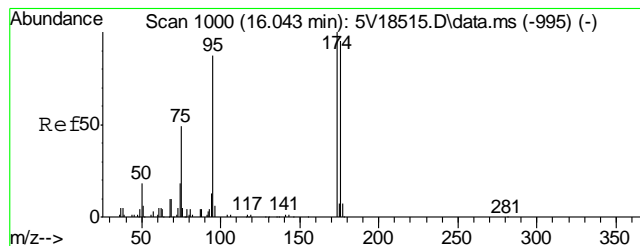
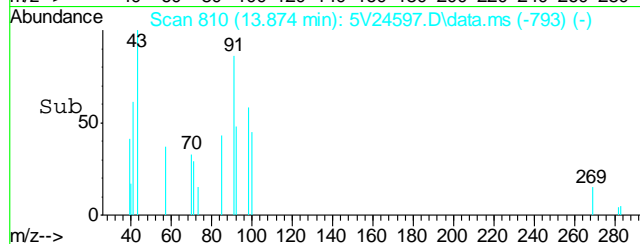
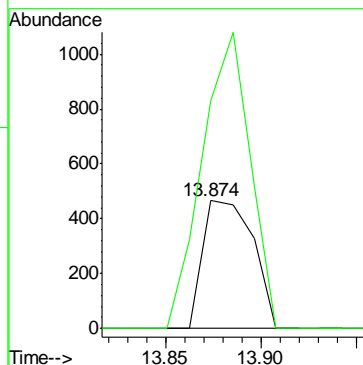
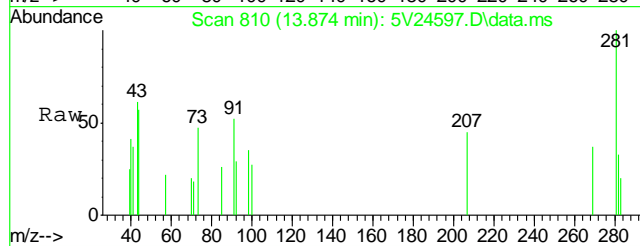
Tgt Ion: 98 Resp: 630619





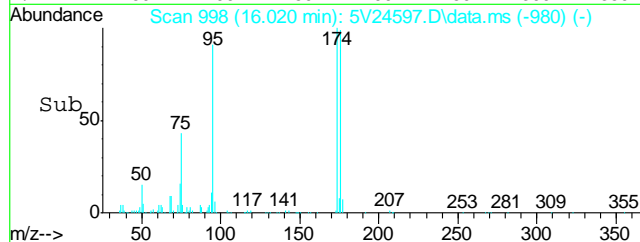
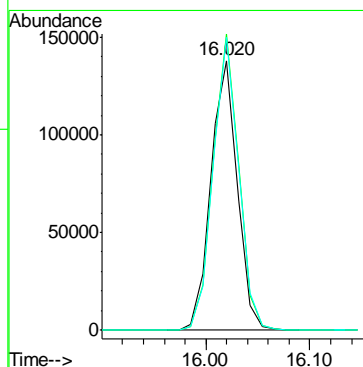
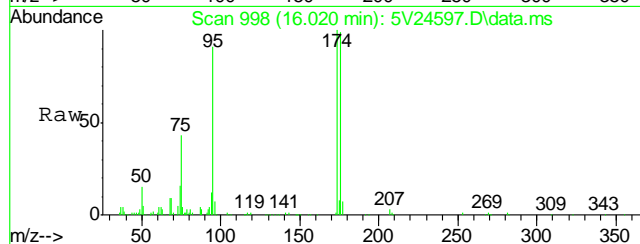
#62
Toluene
Concen: 0.09 ug/l
RT: 13.874 min Scan# 810
Delta R.T. -0.011 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

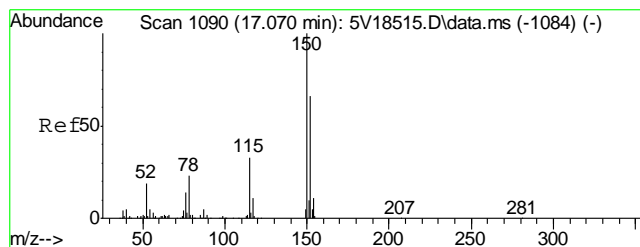
Tgt Ion: 92 Resp: 854
Ion Ratio Lower Upper
92 100
91 220.4 149.8 189.8#



#69
4-Bromofluorobenzene
Concen: 46.17 ug/l
RT: 16.020 min Scan# 998
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

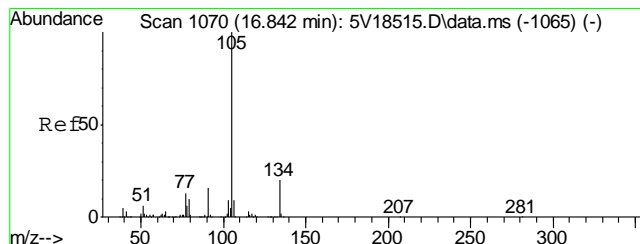
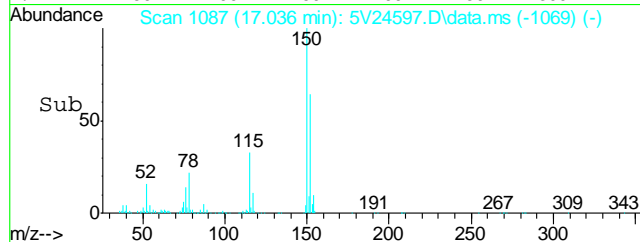
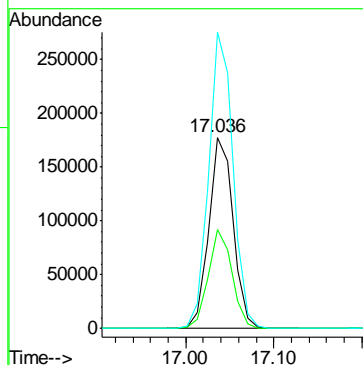
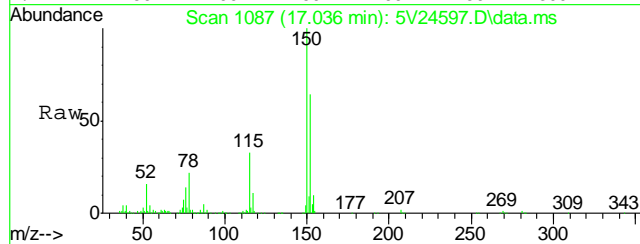
Tgt Ion: 95 Resp: 243711
Ion Ratio Lower Upper
95 100
174 106.8 77.1 117.1
176 105.9 73.4 113.4





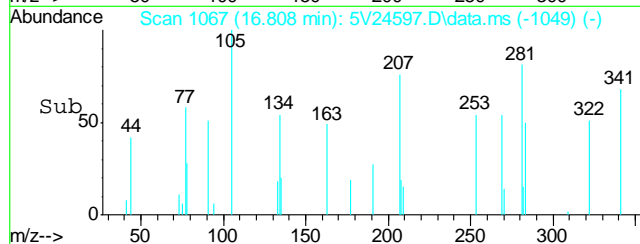
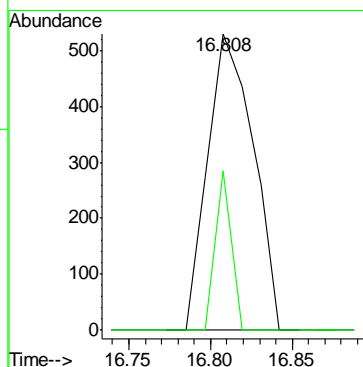
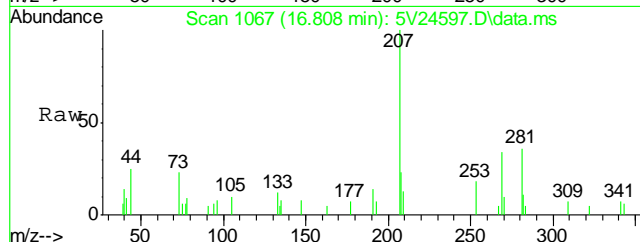
#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

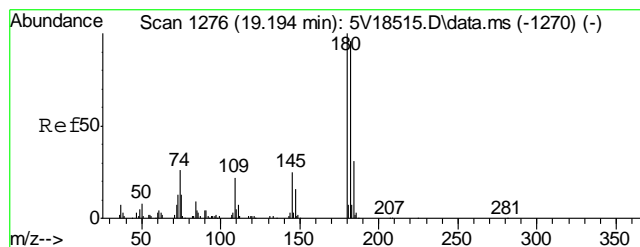
Tgt Ion:	152	Resp:	338090
Ion Ratio	Lower	Upper	
152	100		
115	50.8	41.4	62.0
150	154.6	153.9	230.9



#83
sec-Butylbenzene
Concen: 0.05 ug/l
RT: 16.808 min Scan# 1067
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

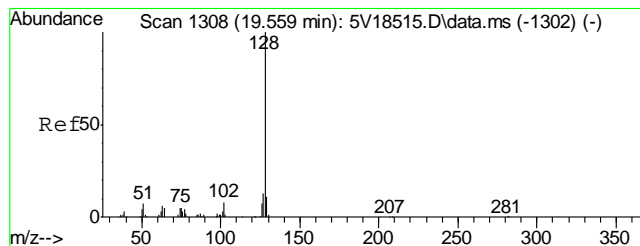
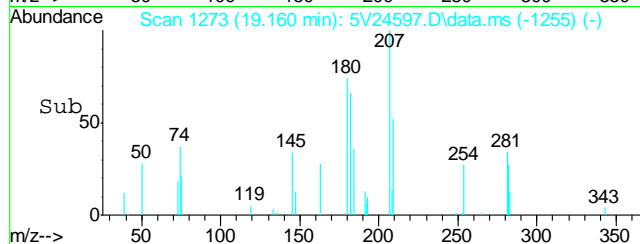
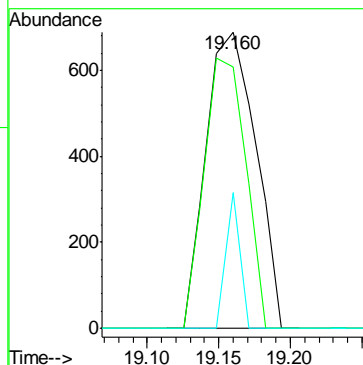
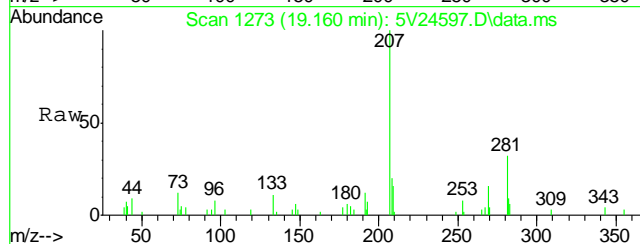
Tgt Ion:	105	Resp:	1026
Ion Ratio	Lower	Upper	
105	100		
134	19.1	16.5	24.7





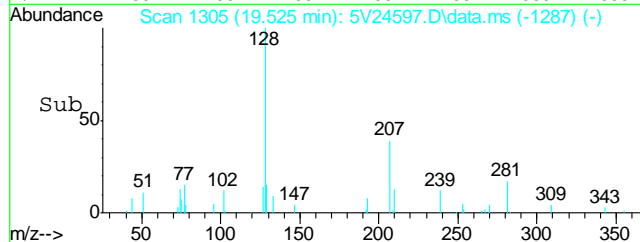
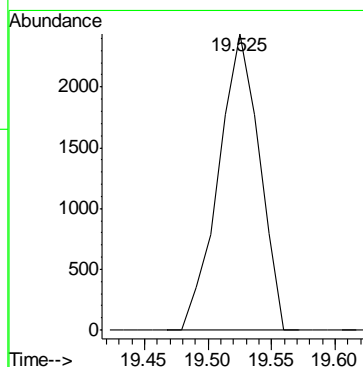
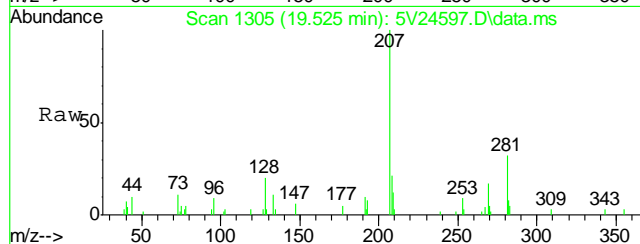
#90
1,2,4-Trichlorobenzene
Concen: 0.18 ug/l
RT: 19.160 min Scan# 1273
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

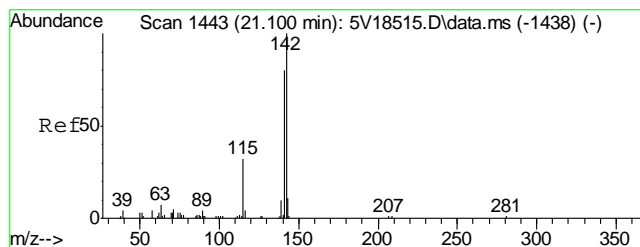
Tgt Ion	Ratio	Lower	Upper
180	100		
182	76.2	76.2	114.4#
145	13.0	20.1	30.1#



#91
Naphthalene
Concen: 0.32 ug/l
RT: 19.525 min Scan# 1305
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

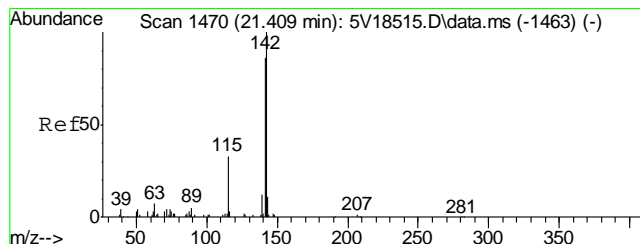
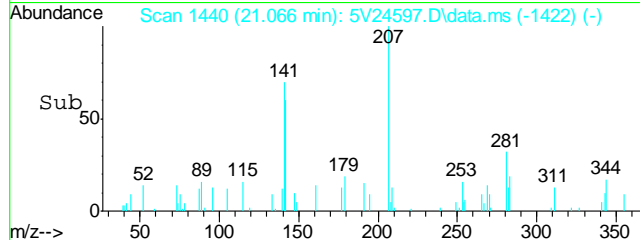
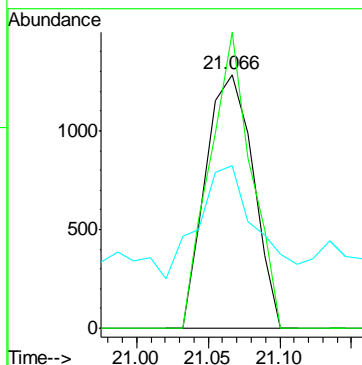
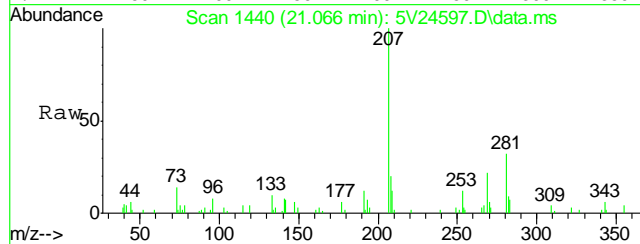
Tgt Ion	Ratio	Lower	Upper
128	100		
129	76.2	76.2	114.4#
145	13.0	20.1	30.1#





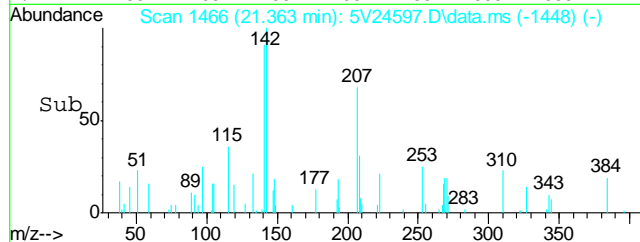
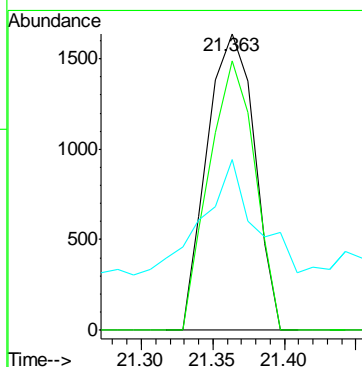
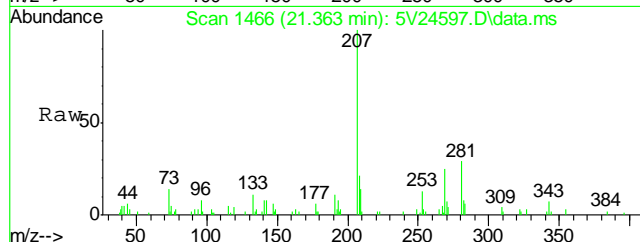
#94
2-Methylnaphthalene
Concen: 5.30 ug/l
RT: 21.066 min Scan# 1440
Delta R.T. 0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

Tgt Ion:	142	Resp:	2952
Ion Ratio	Lower	Upper	
142	100		
141	102.1	66.2	99.4#
115	66.7	25.9	38.9#



#95
1-Methylnaphthalene
Concen: 1.39 ug/l
RT: 21.363 min Scan# 1466
Delta R.T. 0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

Tgt Ion:	142	Resp:	3770
Ion Ratio	Lower	Upper	
142	100		
141	87.6	68.9	103.3
115	44.2	27.3	40.9#



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6941-MB	3G11997.D	1	11/09/12	DC	11/09/12	OP6941	E3G567

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40713-1

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	99% 10-159%
321-60-8	2-Fluorobiphenyl	100% 19-131%
1718-51-0	Terphenyl-d14	120% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6941-BS	3G11998.D	1	11/09/12	DC	11/09/12	OP6941	E3G567

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40713-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	79.2	95	68-130
120-12-7	Anthracene	83.3	76.5	92	67-130
56-55-3	Benzo(a)anthracene	83.3	74.8	90	65-130
205-99-2	Benzo(b)fluoranthene	83.3	79.3	95	44-130
207-08-9	Benzo(k)fluoranthene	83.3	103	124	56-131
50-32-8	Benzo(a)pyrene	83.3	101	121	62-130
218-01-9	Chrysene	83.3	89.0	107	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	79.5	95	55-130
206-44-0	Fluoranthene	83.3	71.6	86	70-130
86-73-7	Fluorene	83.3	78.6	94	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	83.5	100	56-130
91-20-3	Naphthalene	83.3	80.5	97	70-130
129-00-0	Pyrene	83.3	88.2	106	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	91%	10-159%
321-60-8	2-Fluorobiphenyl	85%	19-131%
1718-51-0	Terphenyl-d14	105%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6941-MS	3G12000.D	1	11/09/12	DC	11/09/12	OP6941	E3G567
OP6941-MSD	3G12001.D	1	11/09/12	DC	11/09/12	OP6941	E3G567
D40713-1	3G11999.D	1	11/09/12	DC	11/09/12	OP6941	E3G567

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40713-1

CAS No.	Compound	D40713-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		94.7	81.7	86	79.3	84	3	25-151/30
120-12-7	Anthracene	ND		94.7	82.1	87	86.9	92	6	39-159/30
56-55-3	Benzo(a)anthracene	ND		94.7	91.0	96	98.4	104	8	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		94.7	88.3	93	99.4	105	12	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		94.7	111	117	115	122	4	10-188/30
50-32-8	Benzo(a)pyrene	ND		94.7	105	111	116	123	10	32-144/30
218-01-9	Chrysene	ND		94.7	91.1	96	99.3	105	9	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		94.7	92.7	98	103	109	11	21-152/30
206-44-0	Fluoranthene	ND		94.7	81.6	86	88.0	93	8	36-157/30
86-73-7	Fluorene	ND		94.7	84.4	89	83.8	89	1	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		94.7	94.5	100	107	114	12	20-154/30
91-20-3	Naphthalene	ND		94.7	83.1	88	81.3	86	2	10-163/30
129-00-0	Pyrene	ND		94.7	94.3	100	98.1	104	4	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D40713-1	Limits
4165-60-0	Nitrobenzene-d5	80%	80%	74%	10-159%
321-60-8	2-Fluorobiphenyl	74%	76%	68%	19-131%
1718-51-0	Terphenyl-d14	86%	95%	90%	18-150%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110912\
 Data File : 3g11999.D
 Acq On : 9 Nov 2012 3:57 pm
 Operator : DONC
 Sample : D40713-1
 Misc : OP6941,E3G567,30.08,,,1,1
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 12 08:38:50 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G567.M
 Quant Title : PAHSIM BASE
 QLast Update : Fri Nov 09 15:41:30 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.789	136	208236	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.507	164	119560	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.988	188	177055	4.0000	ug/mL	0.00
19) Chrysene-d12	11.630	240	120047	4.0000	ug/mL	0.00
24) Perylene-d12	13.046	264	57835	4.0000	ug/mL	0.01

System Monitoring Compounds

2) Nitrobenzene-d5	5.103	82	672951	37.0982	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	74.20%		
7) 2-Fluorobiphenyl	6.846	172	1528398	33.9647	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	67.92%		
21) Terphenyl-d14	10.578	244	739486	44.8268	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	89.66%		

Target Compounds

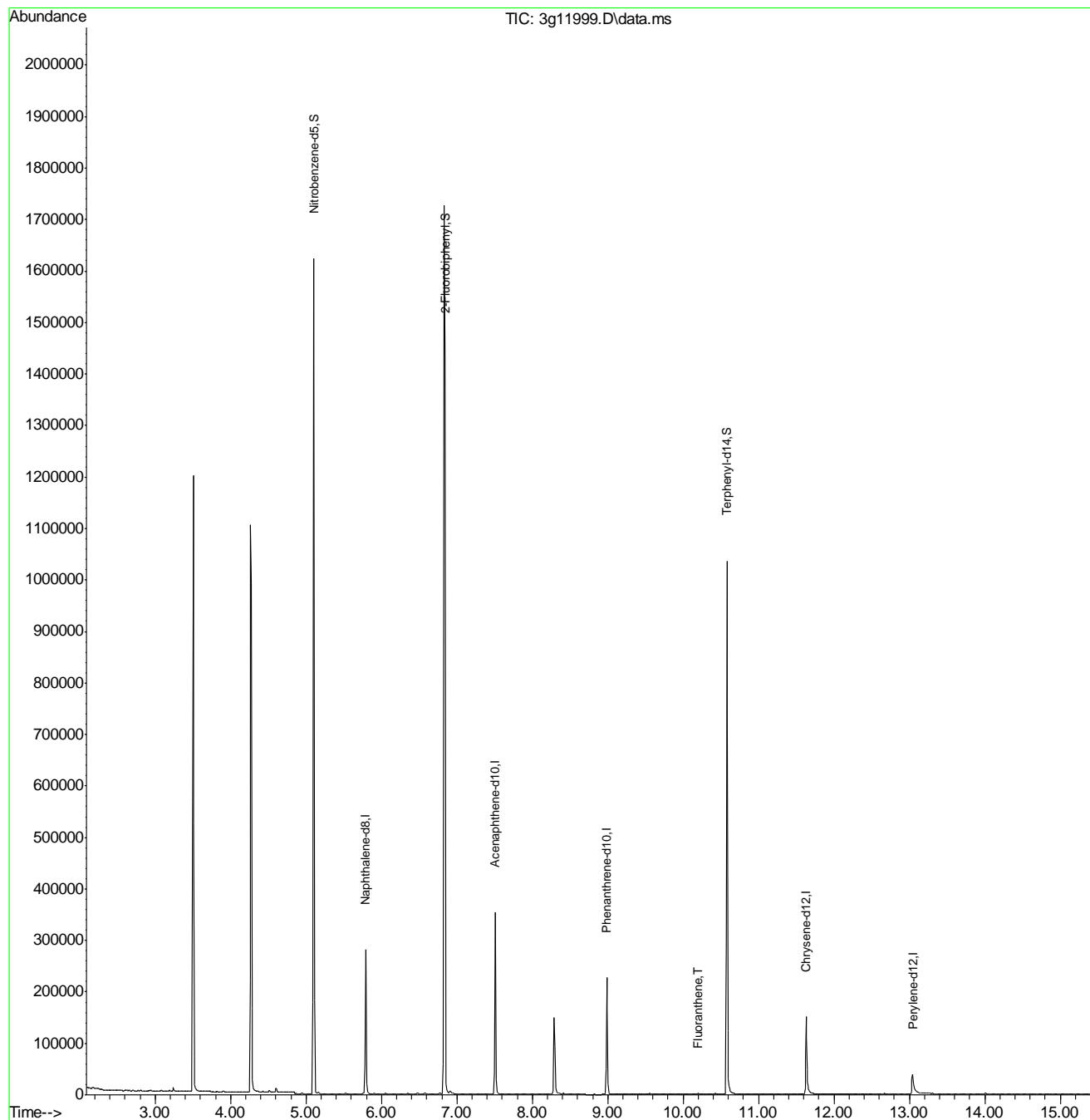
					Qvalue
3) N-Nitrosodimethylamine	2.516	74	21	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.814	128	1604	N.D.	
8) 2-Methylnaphthalene	6.487	142	1305	N.D.	
9) 1-Methylnaphthalene	6.574	142	586	N.D.	
10) Acenaphthylene	7.366	152	209	N.D.	
11) Acenaphthene	7.507	154	641	N.D.	
12) Dibenzofuran	7.496	168	214	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	8.169	169	510	N.D.	
16) Phenanthrene	9.011	178	1495	N.D.	
17) Anthracene	9.067	178	341	N.D.	
18) Fluoranthene	10.198	202	936m	0.0611	ug/mL
20) Pyrene	10.428	202	1065	N.D.	
22) Benzo(a)anthracene	11.630	228	1068	N.D.	
23) Chrysene	11.630	228	1068	N.D.	
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d
27) Benzo(a)pyrene	0.000	252	0	N.D.	d
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d
29) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d
30) Benzo(g,h,i)perylene	0.000	276	0	N.D.	d

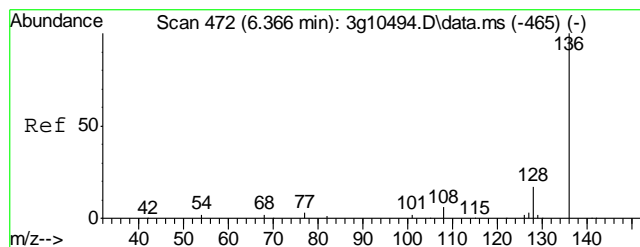
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110912\
Data File : 3g11999.D
Acq On : 9 Nov 2012 3:57 pm
Operator : DONC
Sample : D40713-1
Misc : OP6941,E3G567,30.08,,,1,1
ALS Vial : 14 Sample Multiplier: 1

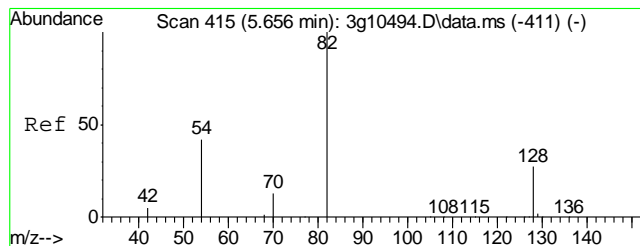
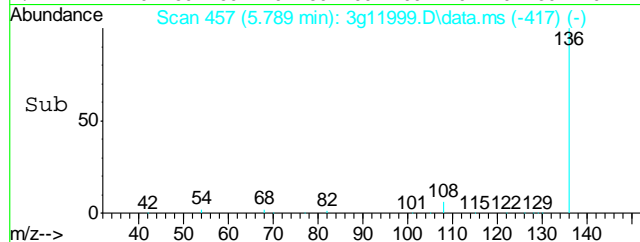
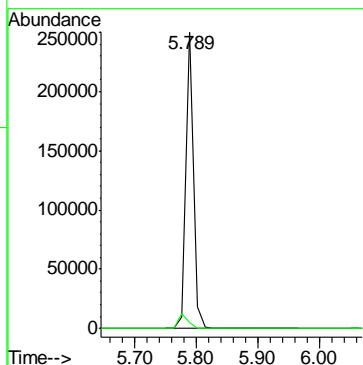
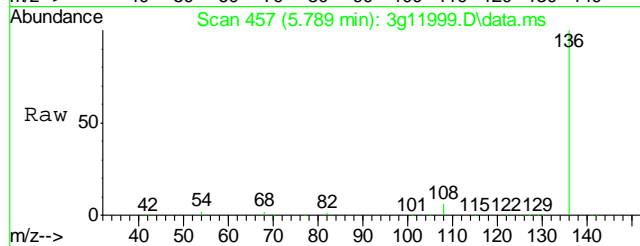
Quant Time: Nov 12 08:38:50 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G567.M
Quant Title : PAHSIM BASE
QLast Update : Fri Nov 09 15:41:30 2012
Response via : Initial Calibration





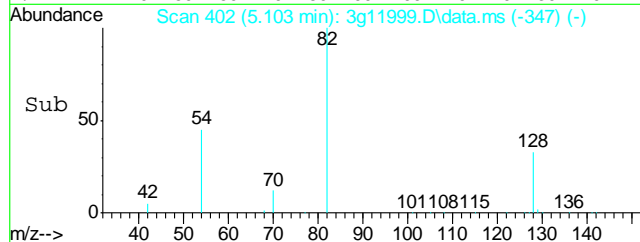
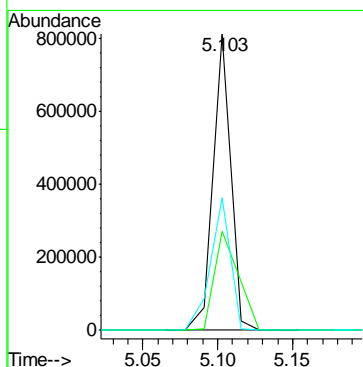
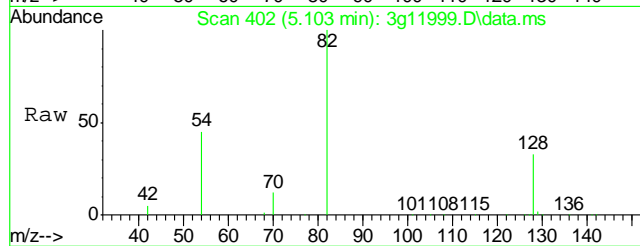
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.789 min Scan# 457
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

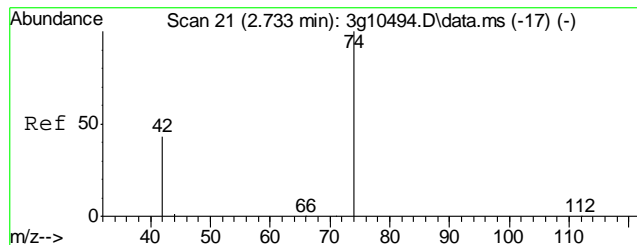
Tgt Ion	Ratio	Lower	Upper
136	100		
68	6.2	0.0	26.5



#2
Nitrobenzene-d5
Concen: 37.0982 ug/mL
RT: 5.103 min Scan# 402
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

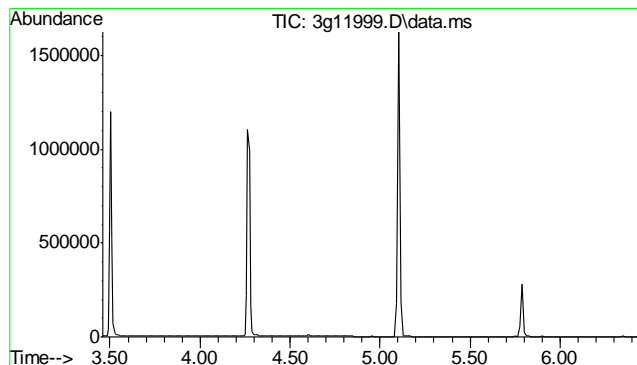
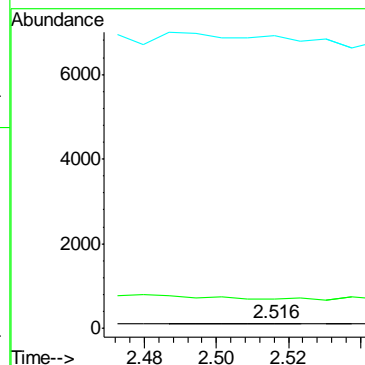
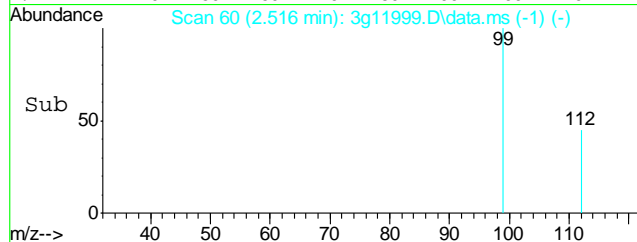
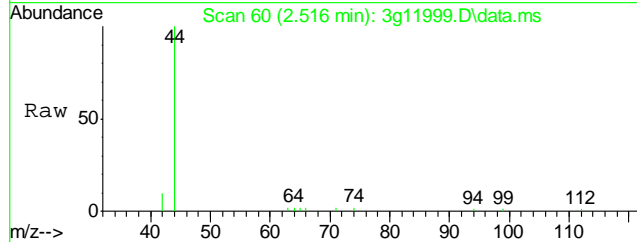
Tgt Ion	Ratio	Lower	Upper
82	100		
128	45.1	26.7	66.7
54	50.6	29.0	69.0





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.516 min Scan# 60
Delta R.T. 0.022 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

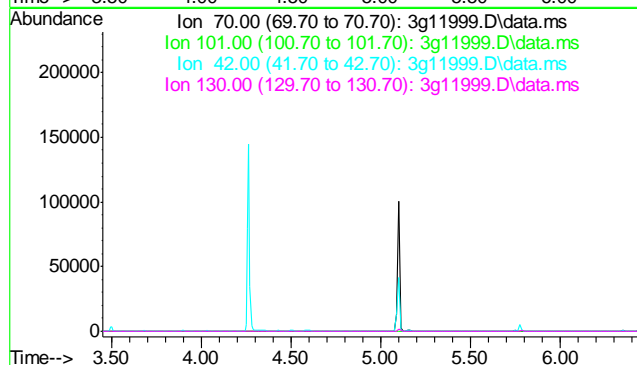
Tgt Ion: 74 Resp: 21
Ion Ratio Lower Upper
74 100
42 0.0 53.4 93.4#
44 0.0 0.0 23.7

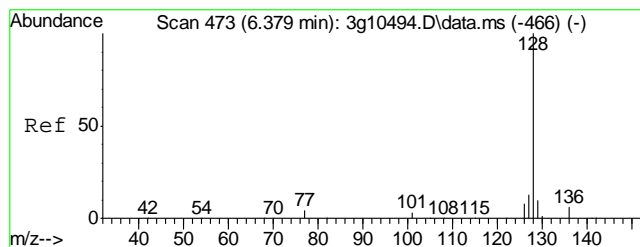


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.95 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

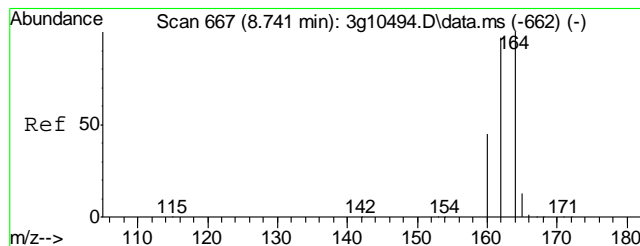
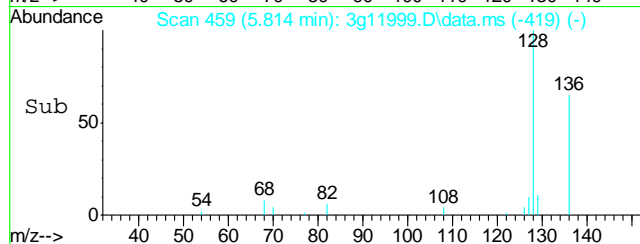
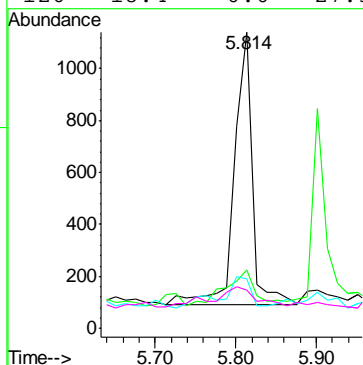
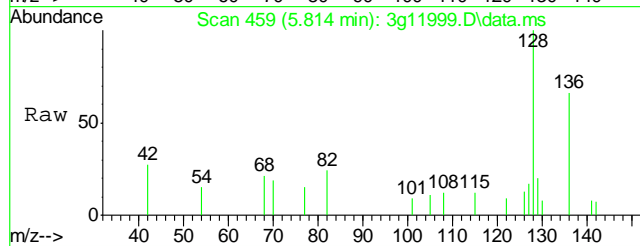
Tgt Ion: 70
Sig Exp Ratio
70 100
101 11.6
42 63.1
130 33.5





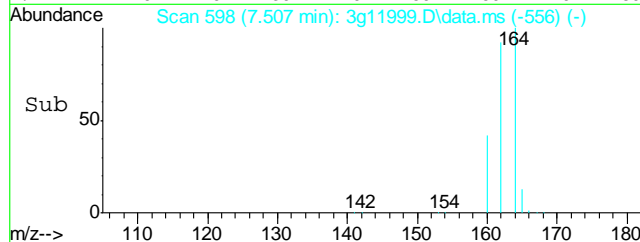
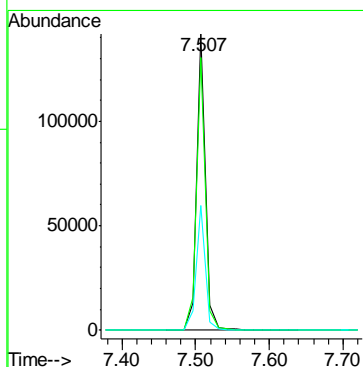
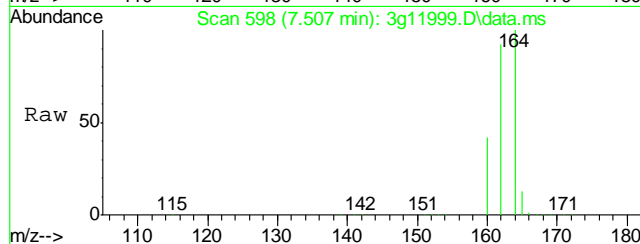
#5
Naphthalene
Concen: Below ug/mL
RT: 5.814 min Scan# 459
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

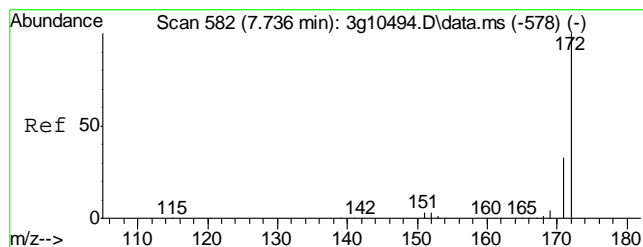
Tgt Ion:	128	Resp:	1604
Ion Ratio	Lower	Upper	
128	100		
129	23.8	0.0	31.0
127	19.7	0.0	32.5
126	18.4	0.0	27.3



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.507 min Scan# 598
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

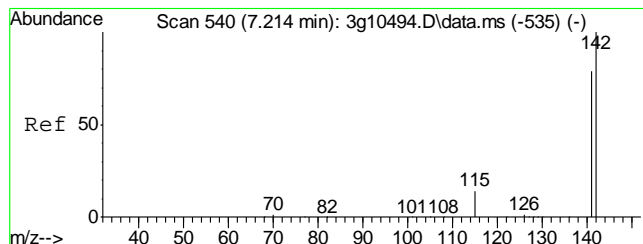
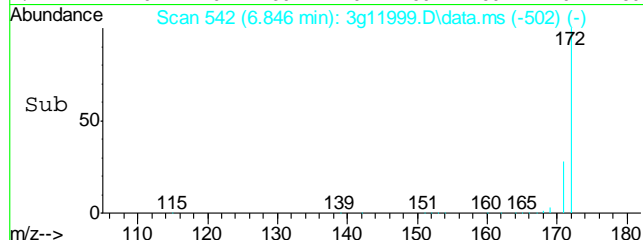
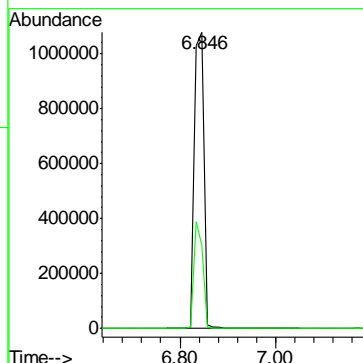
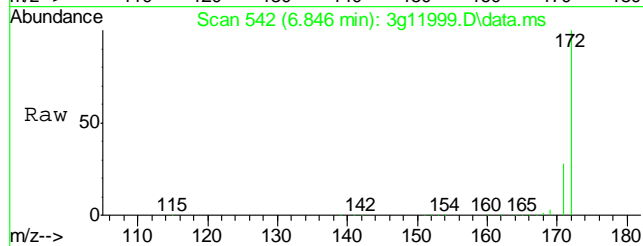
Tgt Ion:	164	Resp:	119560
Ion Ratio	Lower	Upper	
164	100		
162	93.5	74.5	114.5
160	43.7	24.7	64.7





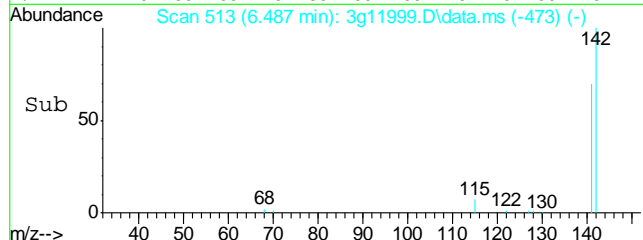
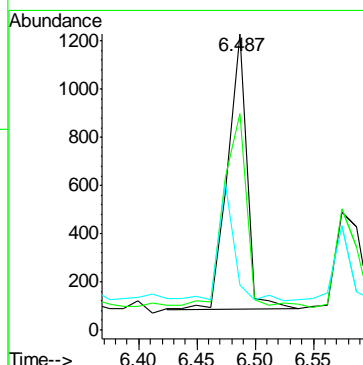
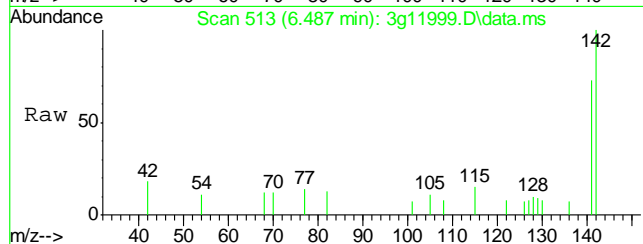
#7
2-Fluorobiphenyl
Concen: 33.9647 ug/mL
RT: 6.846 min Scan# 542
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

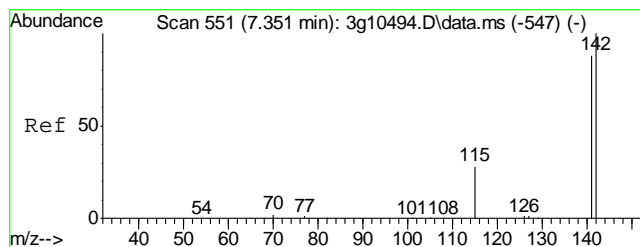
Tgt Ion	Ratio	Lower	Upper
172	100		
171	32.8	13.2	53.2



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.487 min Scan# 513
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

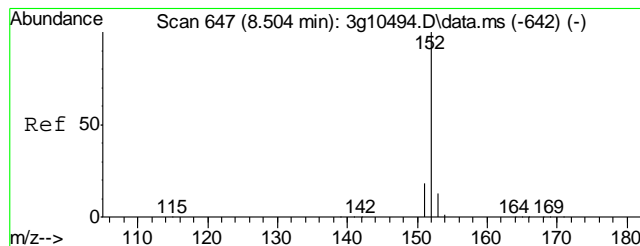
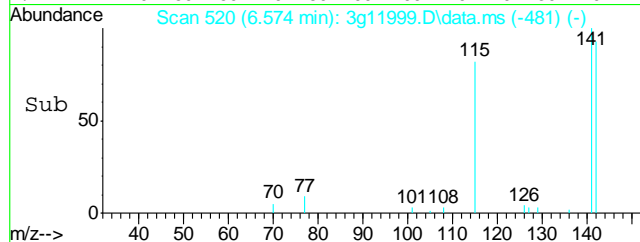
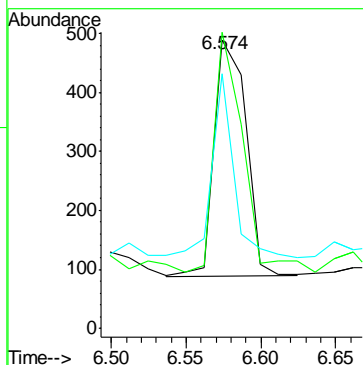
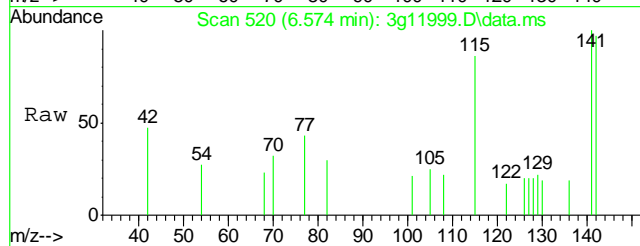
Tgt Ion	Ratio	Lower	Upper
142	100		
141	86.6	62.6	102.6
115	33.9	15.3	55.3





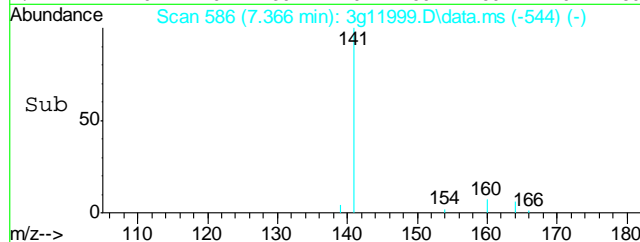
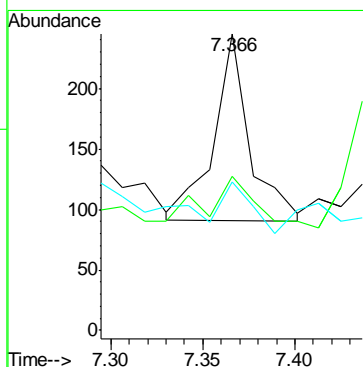
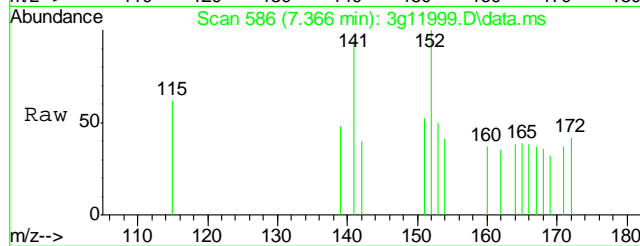
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.574 min Scan# 520
Delta R.T. -0.012 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

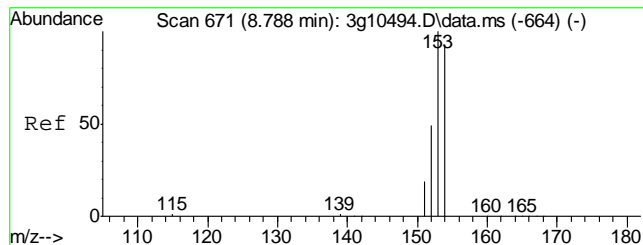
Tgt Ion:	142	Resp:	586
Ion Ratio	Lower	Upper	
142	100		
141	92.7	66.1	106.1
115	53.2	16.3	56.3



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.366 min Scan# 586
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

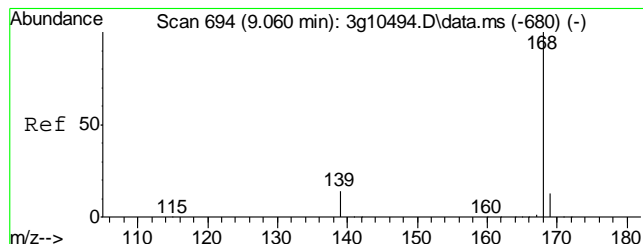
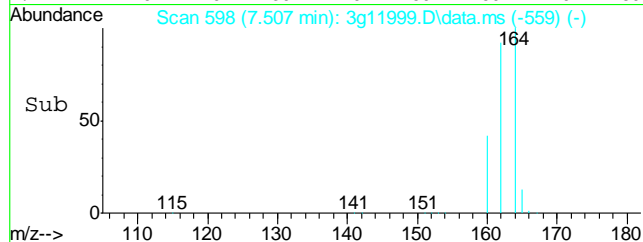
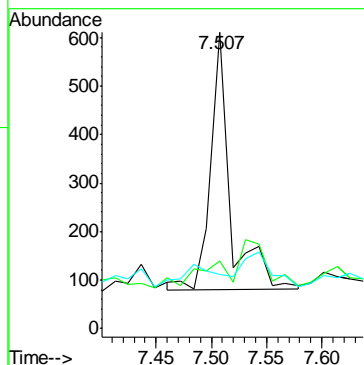
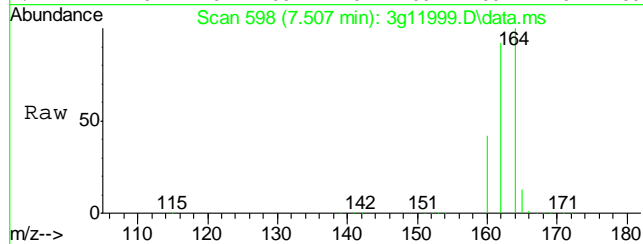
Tgt Ion:	152	Resp:	209
Ion Ratio	Lower	Upper	
152	100		
151	37.3	0.0	39.1
153	22.0	0.0	33.0





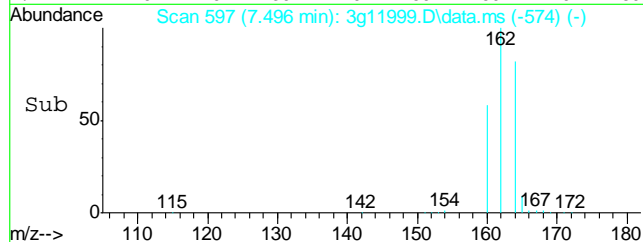
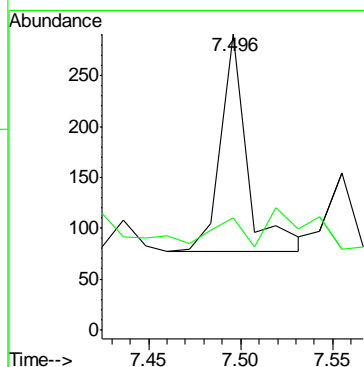
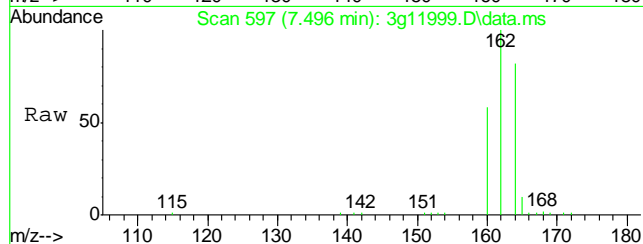
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.507 min Scan# 598
Delta R.T. -0.035 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

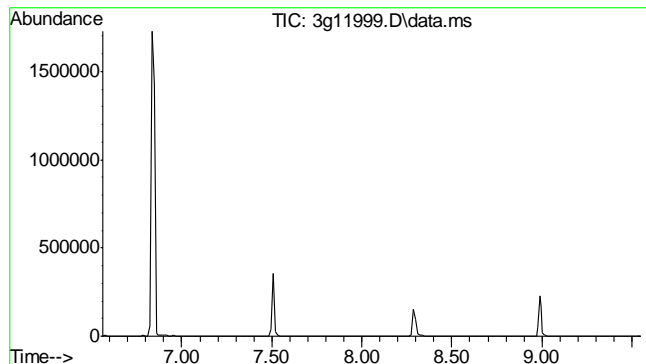
Tgt Ion	Ratio	Lower	Upper
154	100		
153	45.4	83.2	123.2#
152	19.2	29.5	69.5#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.496 min Scan# 597
Delta R.T. -0.224 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

Tgt Ion	Ratio	Lower	Upper
168	100		
139	15.4	13.9	53.9

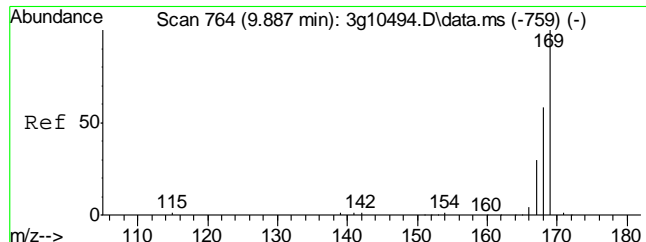
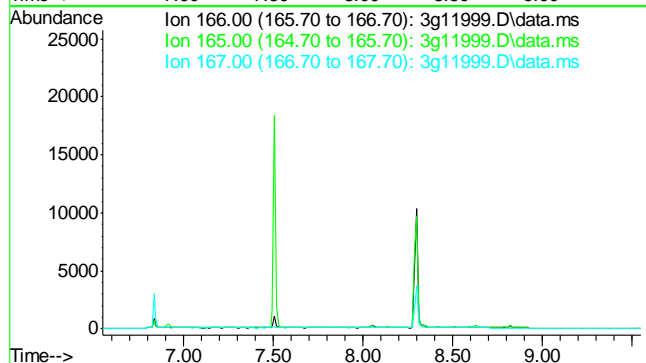




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 8.05 min

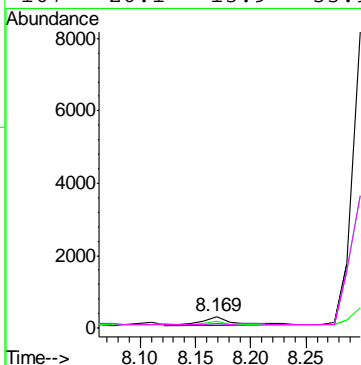
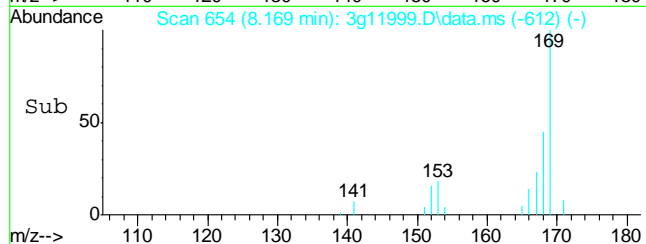
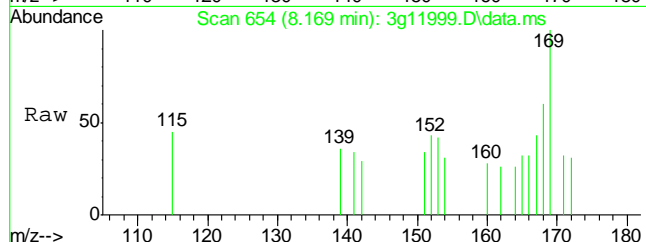
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

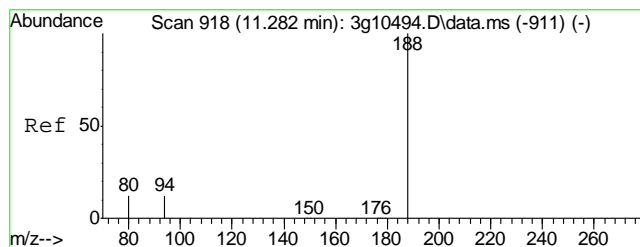
Tgt Ion: 166
Sig Exp Ratio
166 100
165 91.8
167 13.2



#14
Diphenylamine
Concen: Below ug/mL
RT: 8.169 min Scan# 654
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

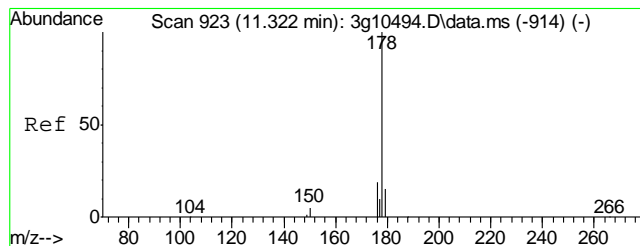
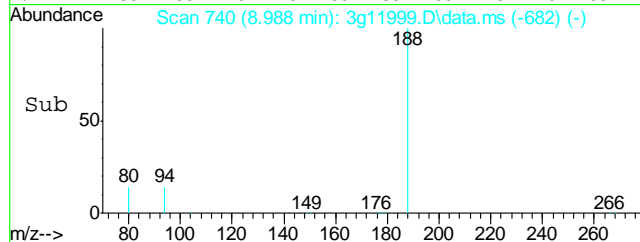
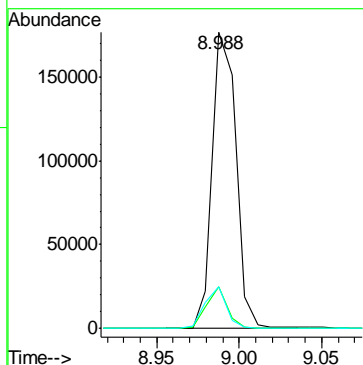
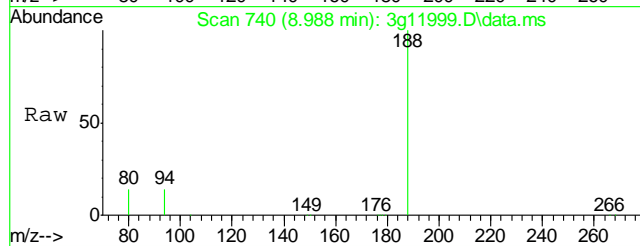
Tgt Ion: 169 Resp: 510
Ion Ratio Lower Upper
169 100
168 38.2 41.7 81.7#
167 26.1 13.9 53.9
167 26.1 13.9 53.9





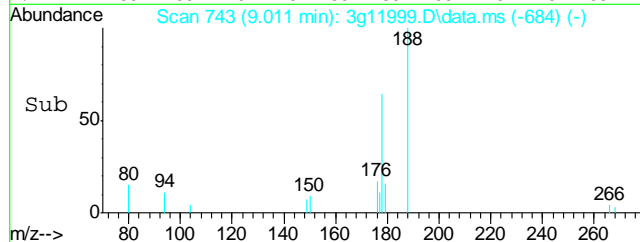
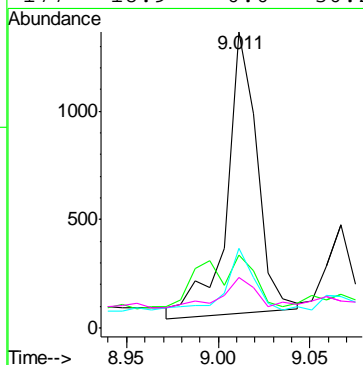
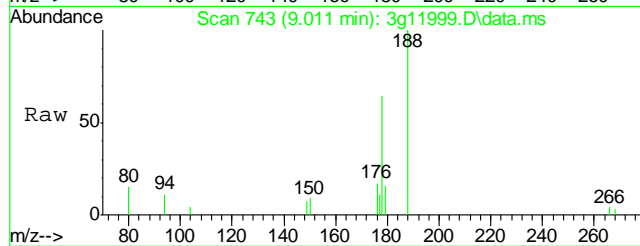
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.988 min Scan# 740
Delta R.T. -0.008 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

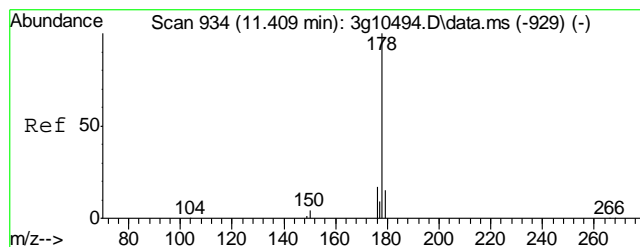
Tgt Ion:188	Resp: 177055
Ion Ratio	Lower Upper
188 100	
94 12.1	0.0 31.9
80 12.3	0.0 32.4



#16
Phenanthrene
Concen: Below ug/mL
RT: 9.011 min Scan# 743
Delta R.T. -0.008 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

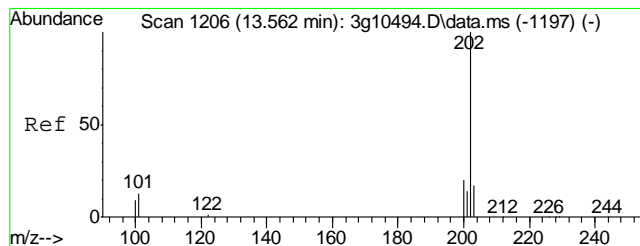
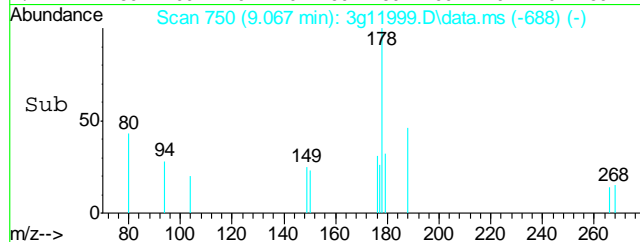
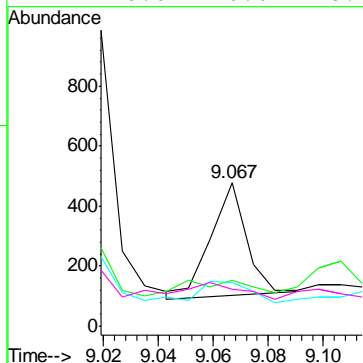
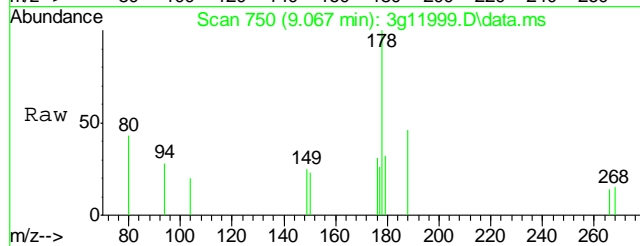
Tgt Ion:178	Resp: 1495
Ion Ratio	Lower Upper
178 100	
179 21.6	0.0 35.1
176 57.8	0.0 39.0#
177 18.9	0.0 30.2





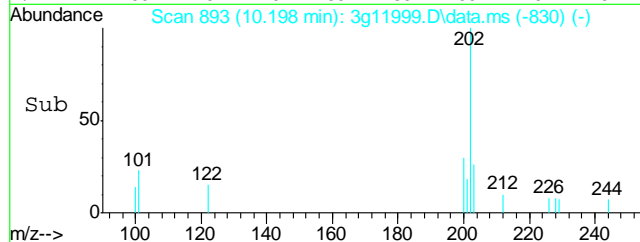
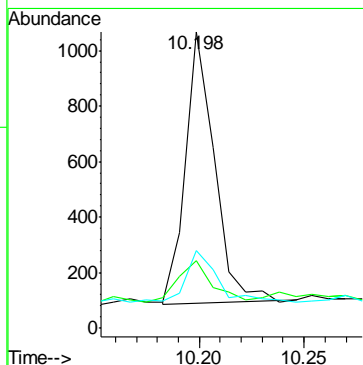
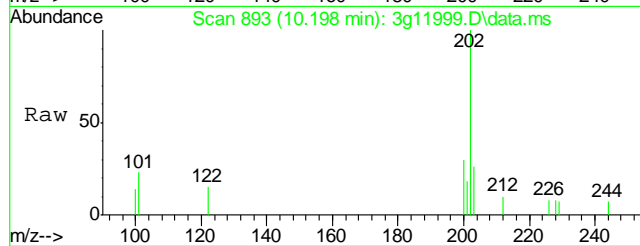
#17
 Anthracene
 Concen: Below ug/mL
 RT: 9.067 min Scan# 750
 Delta R.T. 0.001 min
 Lab File: 3g11999.D
 Acq: 9 Nov 12 3:57 pm

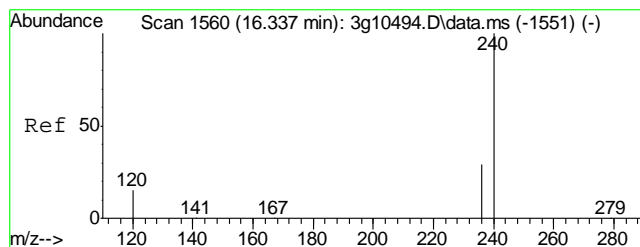
Tgt Ion:	178	Resp:	341
Ion Ratio	Lower	Upper	
178	100		
179	30.5	0.0	34.9
176	27.0	0.0	38.1
177	0.0	0.0	28.7



#18
 Fluoranthene
 Concen: 0.0611 ug/mL m
 RT: 10.198 min Scan# 893
 Delta R.T. 0.000 min
 Lab File: 3g11999.D
 Acq: 9 Nov 12 3:57 pm

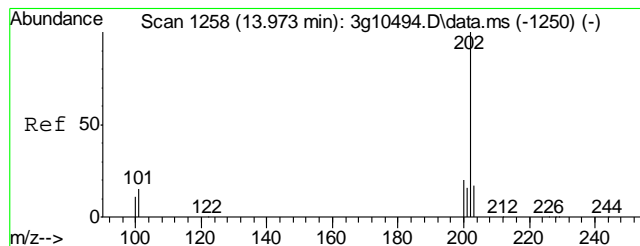
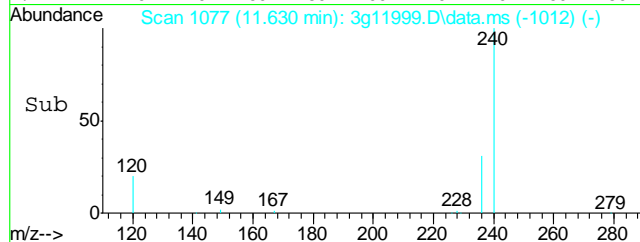
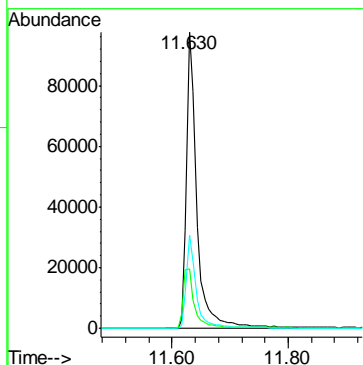
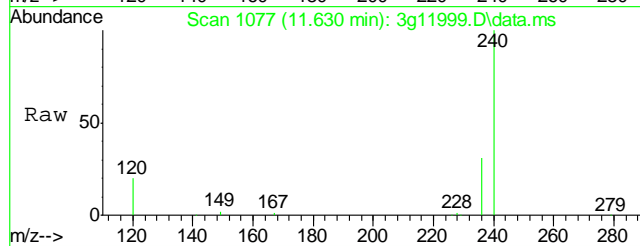
Tgt Ion:	202	Resp:	936
Ion Ratio	Lower	Upper	
202	100		
101	21.8	0.0	32.8
203	35.5	0.0	37.2





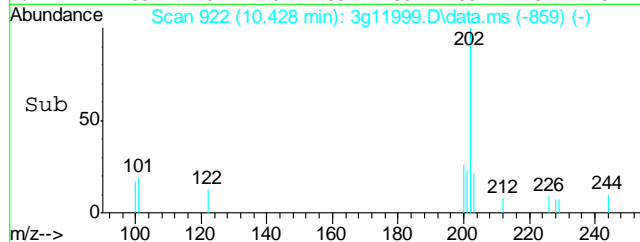
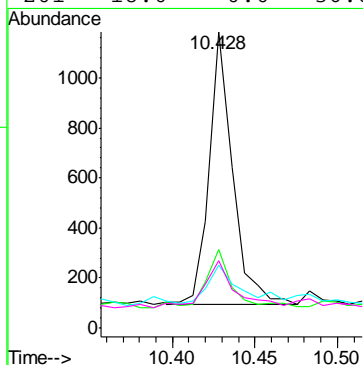
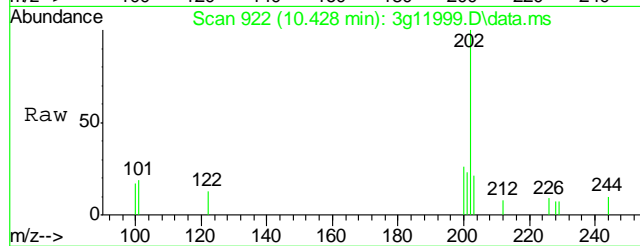
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. -0.006 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

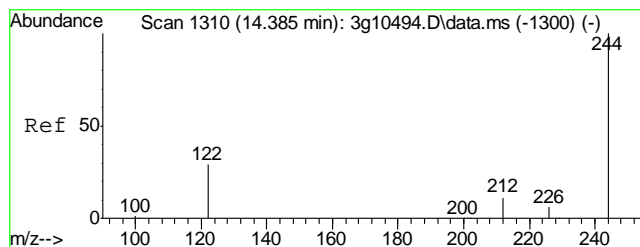
Tgt Ion:	240	Resp:	120047
Ion Ratio	Lower	Upper	
240	100		
120	21.9	1.2	41.2
236	30.6	10.2	50.2



#20
Pyrene
Concen: Below ug/mL
RT: 10.428 min Scan# 922
Delta R.T. 0.000 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

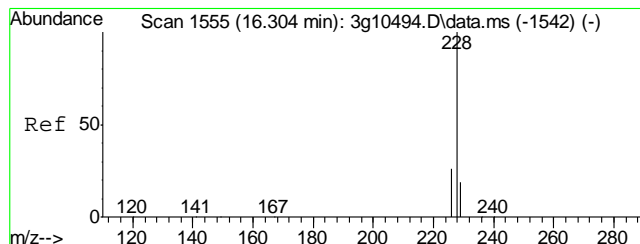
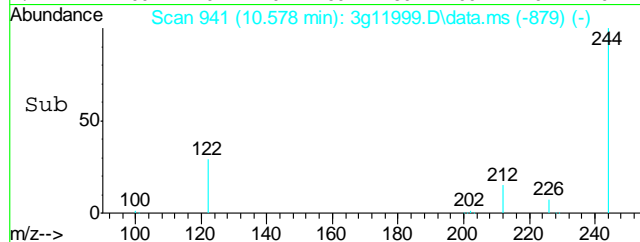
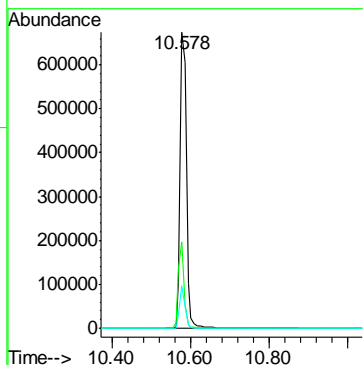
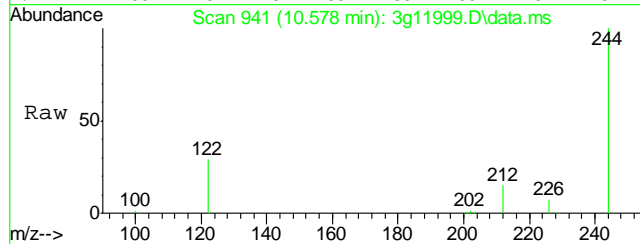
Tgt Ion:	202	Resp:	1065
Ion Ratio	Lower	Upper	
202	100		
200	21.2	0.3	40.3
203	19.2	0.0	37.8
201	18.0	0.0	36.8





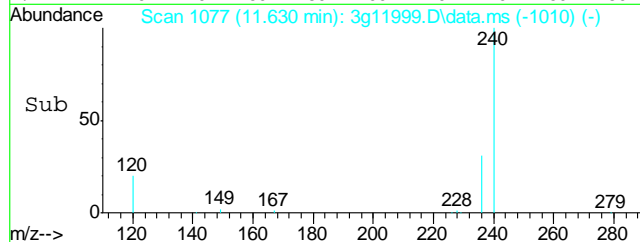
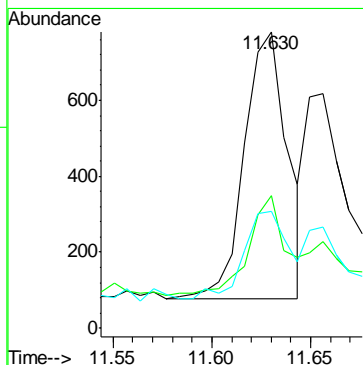
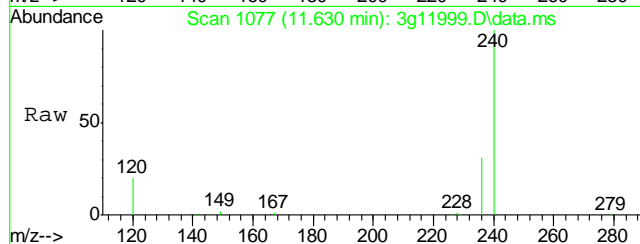
#21
Terphenyl-d14
Concen: 44.8268 ug/mL
RT: 10.578 min Scan# 941
Delta R.T. -0.008 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

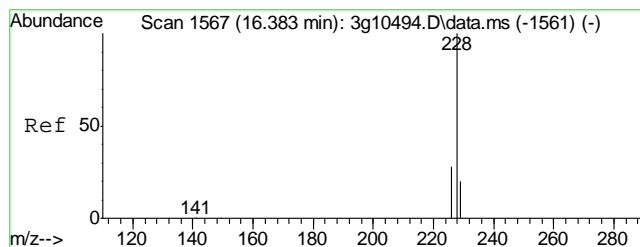
Tgt Ion:	244	Resp:	739486
Ion Ratio	Lower	Upper	
244	100		
122	26.9	7.3	47.3
212	12.3	0.0	32.5



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. 0.007 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

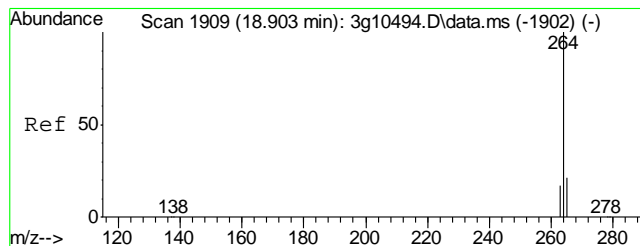
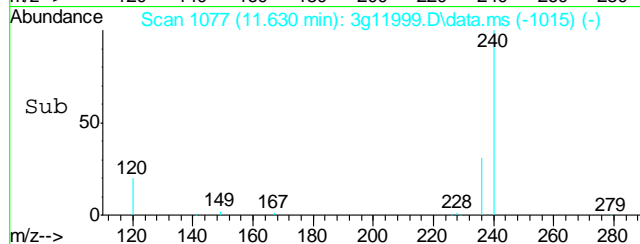
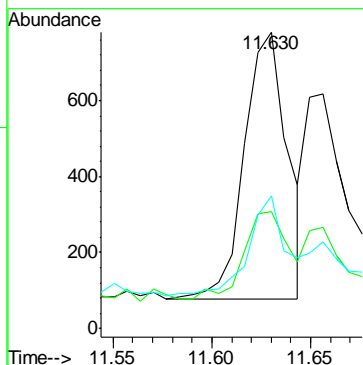
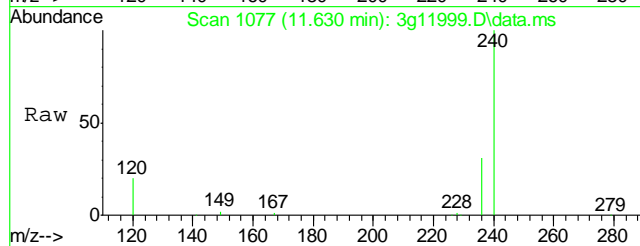
Tgt Ion:	228	Resp:	1068
Ion Ratio	Lower	Upper	
228	100		
229	32.2	0.0	39.3
226	34.4	6.7	46.7





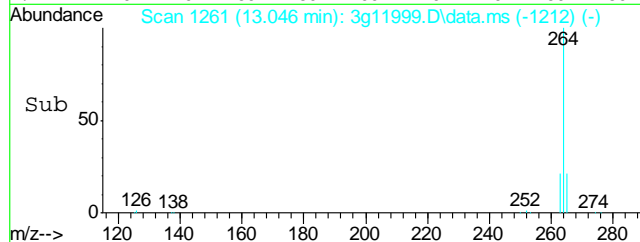
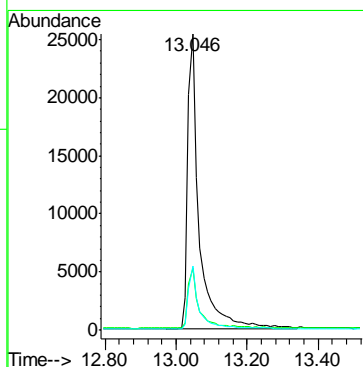
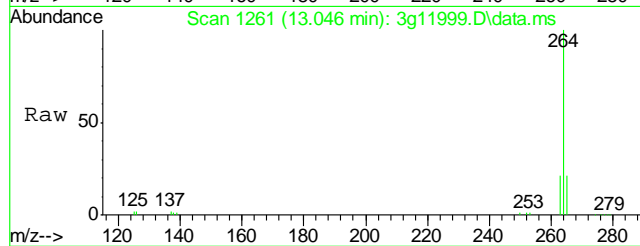
#23
Chrysene
Concen: Below ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. -0.033 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

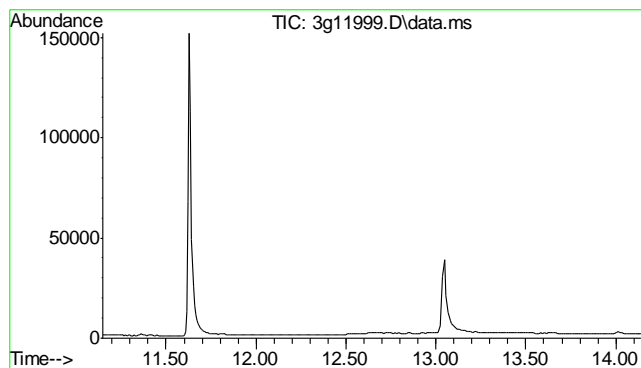
Tgt Ion	Ratio	Lower	Upper
228	100		
226	34.4	8.3	48.3
229	32.2	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.046 min Scan# 1261
Delta R.T. 0.011 min
Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

Tgt Ion	Ratio	Lower	Upper
264	100		
265	19.9	0.8	40.8
263	21.0	0.4	40.4

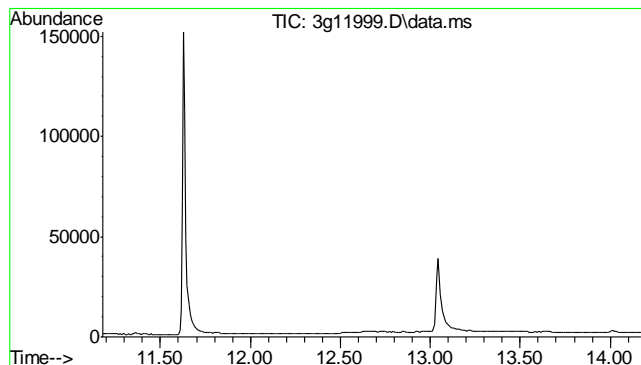
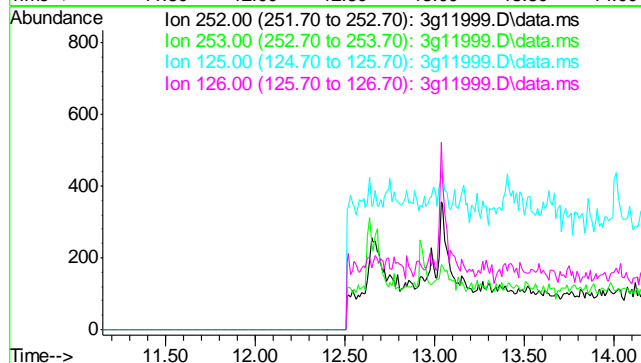




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.65 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

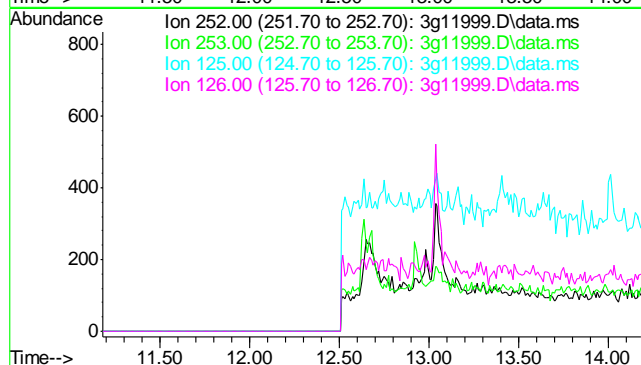
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	53.4
125	35.2
126	51.6

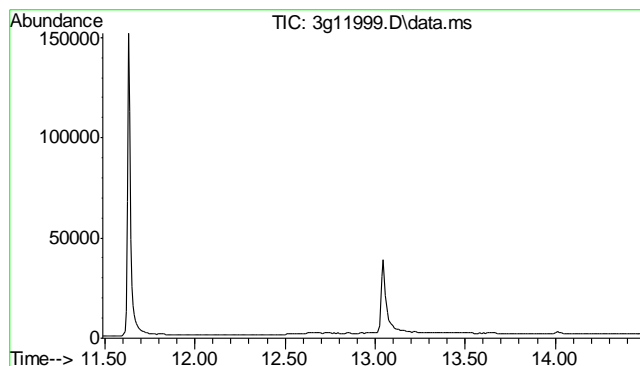


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.68 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	36.5
125	24.1
126	35.3

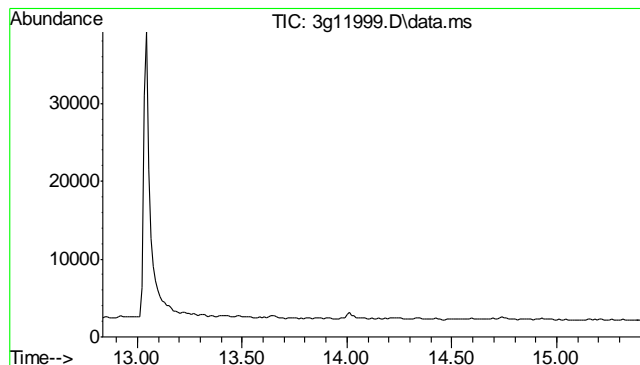
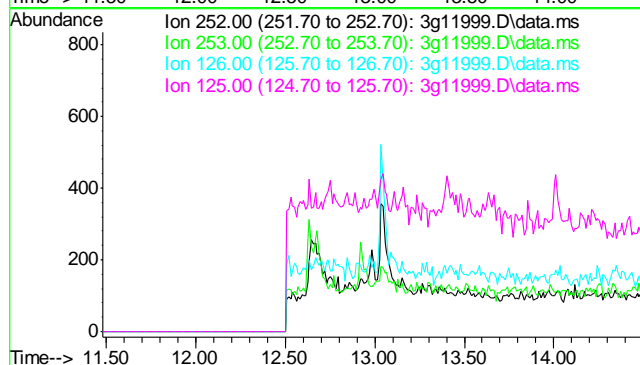




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.98 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

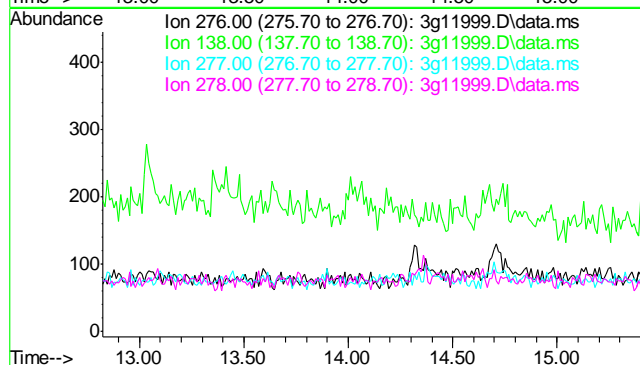
Tgt Ion	Sig	Exp Ratio
252	100	
253	21.3	
126	20.8	
125	15.4	

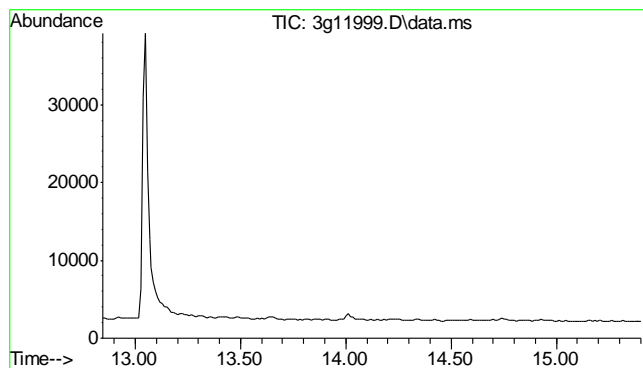


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.33 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

Tgt Ion	Sig	Exp Ratio
276	100	
138	44.3	
277	24.7	
278	71.8	

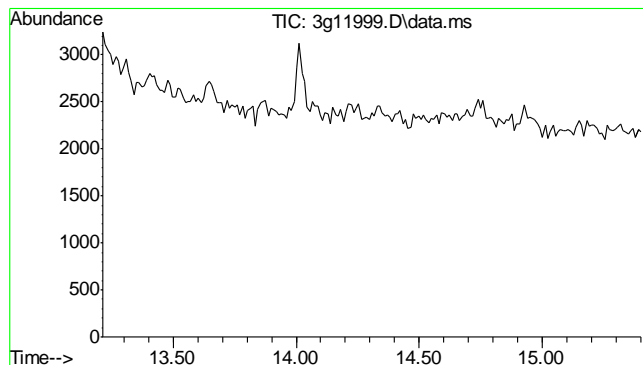
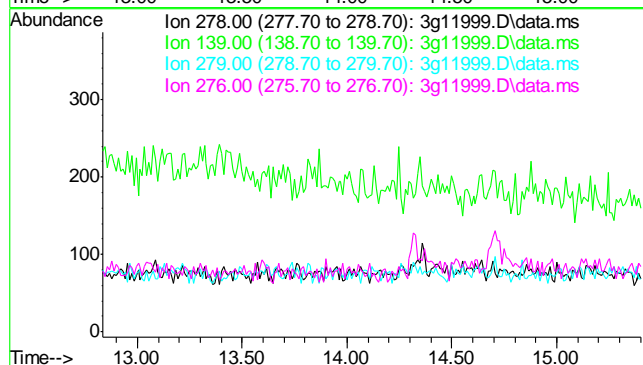




#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.34 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

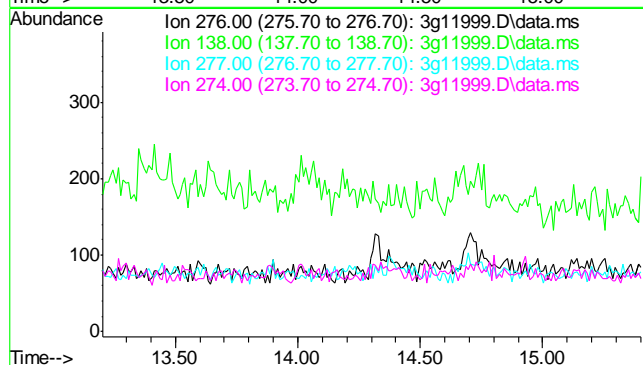
Tgt Ion	Exp Ratio
278	100
139	35.0
279	22.9
276	139.3



#30
Benzo(g,h,i)perylene
Concen: N.D. ug/mL
Expected RT: 14.71 min

Lab File: 3g11999.D
Acq: 9 Nov 12 3:57 pm

Tgt Ion	Exp Ratio
276	100
138	38.8
277	22.5
274	21.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110912\
 Data File : 3g11997.D
 Acq On : 9 Nov 2012 3:09 pm
 Operator : DONC
 Sample : OP6941-MB
 Misc : OP6941,E3G567,30.00,,,1,1
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 09 15:52:38 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G567.M
 Quant Title : PAHSIM BASE
 QLast Update : Fri Nov 09 15:41:30 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.789	136	160803	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.507	164	95095	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.995	188	145499	4.0000	ug/mL	0.00
19) Chrysene-d12	11.636	240	88767	4.0000	ug/mL	0.00
24) Perylene-d12	13.045	264	37259	4.0000	ug/mL	0.01

System Monitoring Compounds

2) Nitrobenzene-d5	5.103	82	695853	49.6762	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	99.36%
7) 2-Fluorobiphenyl	6.846	172	1787932	49.9540	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	99.90%
21) Terphenyl-d14	10.586	244	730357	59.8746	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	119.74%

Target Compounds

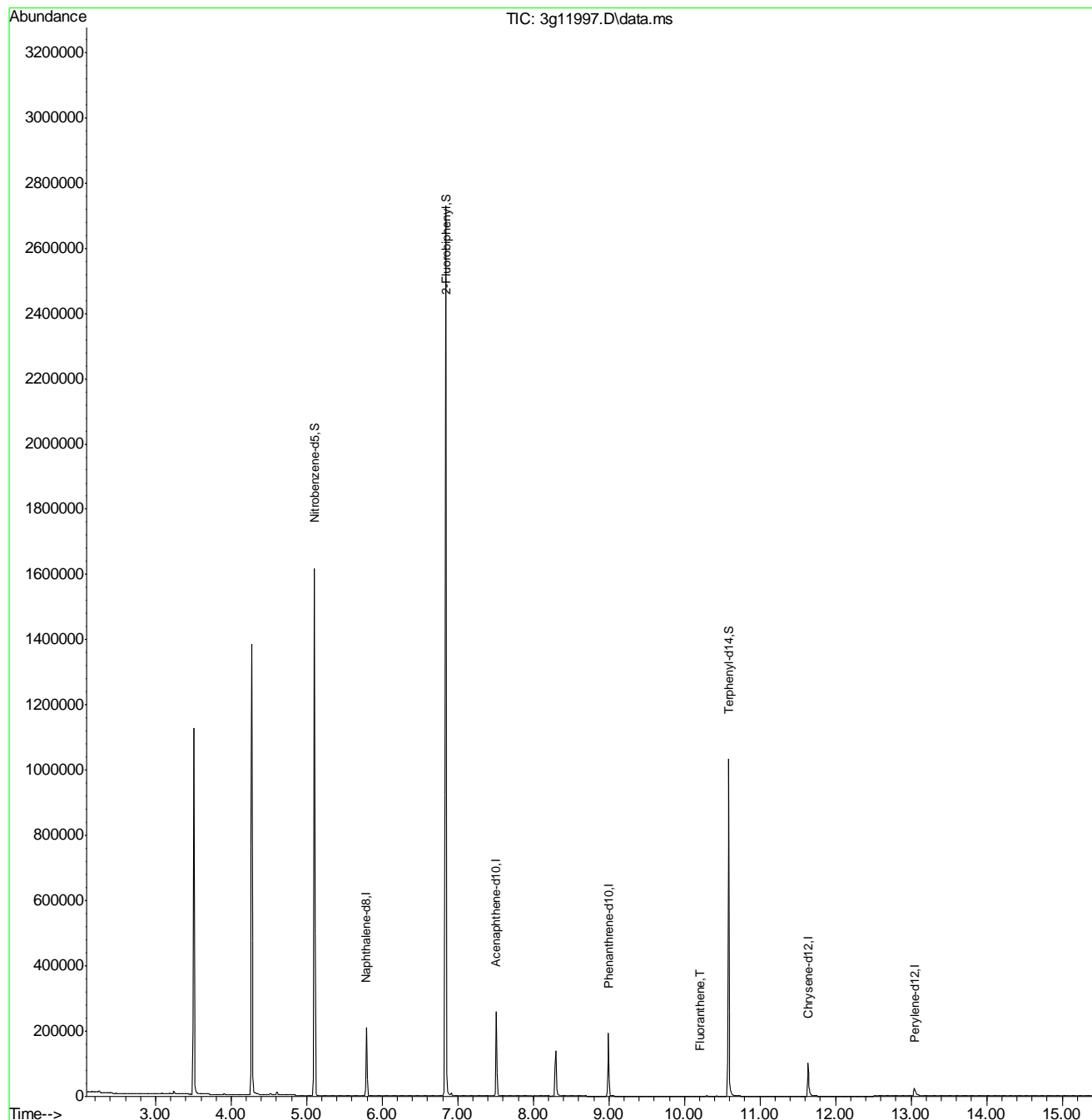
					Qvalue
3) N-Nitrosodimethylamine	2.501	74	17	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.814	128	663	N.D.	
8) 2-Methylnaphthalene	6.487	142	476	N.D.	
9) 1-Methylnaphthalene	6.586	142	255	N.D.	
10) Acenaphthylene	7.365	152	253	N.D.	
11) Acenaphthene	7.507	154	601	N.D.	
12) Dibenzofuran	7.720	168	394	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	9.019	178	709	N.D.	
17) Anthracene	9.066	178	335	N.D.	
18) Fluoranthene	10.206	202	332m	0.0534	ug/mL
20) Pyrene	10.428	202	354	N.D.	
22) Benzo(a)anthracene	11.550	228	53	N.D.	
23) Chrysene	11.550	228	53	N.D.	
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d
27) Benzo(a)pyrene	0.000	252	0	N.D.	d
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d
29) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d
30) Benzo(g,h,i)perylene	0.000	276	0	N.D.	d

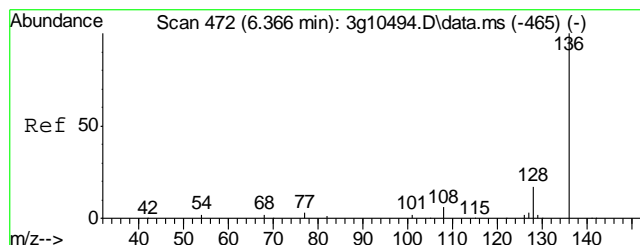
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110912\
Data File : 3g11997.D
Acq On : 9 Nov 2012 3:09 pm
Operator : DONC
Sample : OP6941-MB
Misc : OP6941,E3G567,30.00,,,1,1
ALS Vial : 12 Sample Multiplier: 1

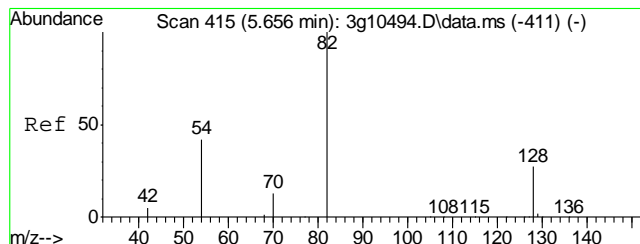
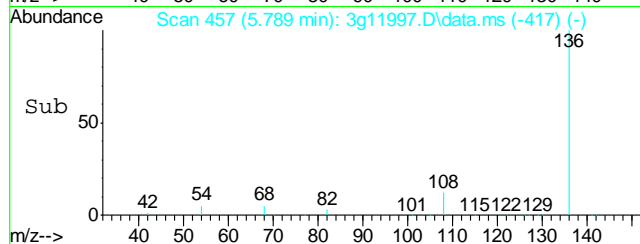
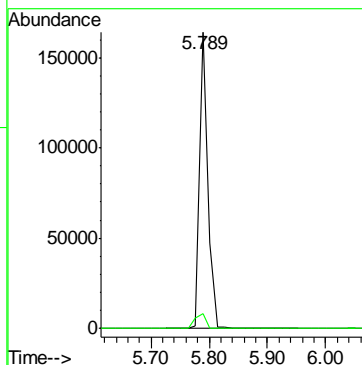
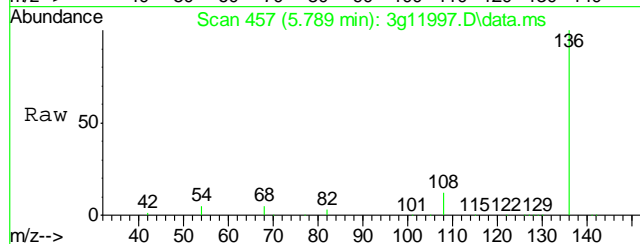
Quant Time: Nov 09 15:52:38 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G567.M
Quant Title : PAHSIM BASE
QLast Update : Fri Nov 09 15:41:30 2012
Response via : Initial Calibration





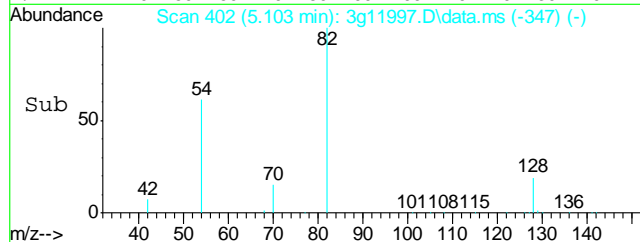
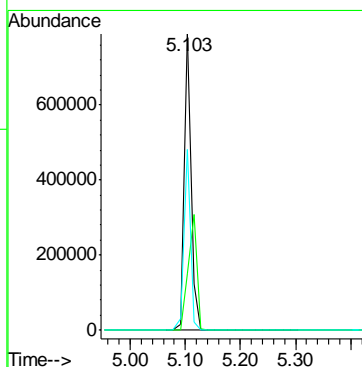
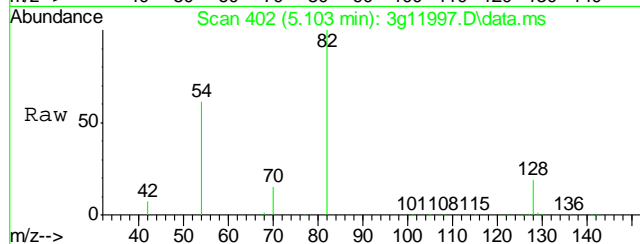
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.789 min Scan# 457
Delta R.T. 0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

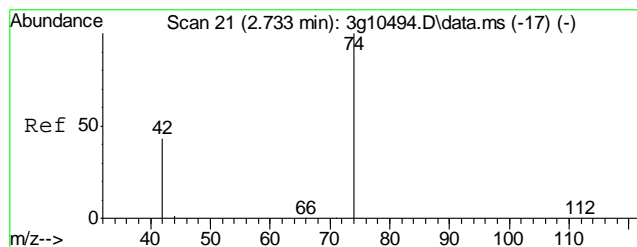
Tgt Ion:	136	Resp:	160803
Ion Ratio	Lower	Upper	
136	100		
68	6.6	0.0	26.5



#2
Nitrobenzene-d5
Concen: 49.6762 ug/mL
RT: 5.103 min Scan# 402
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

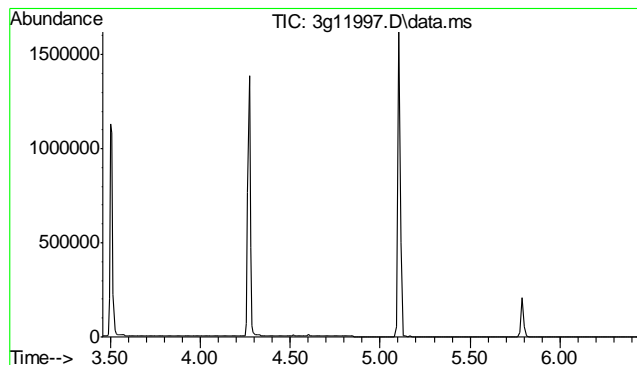
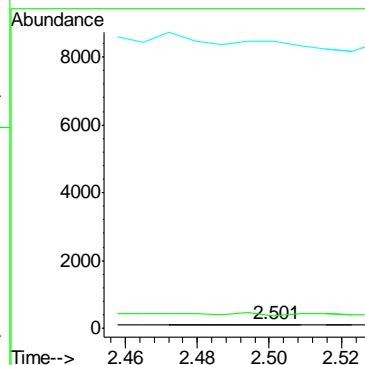
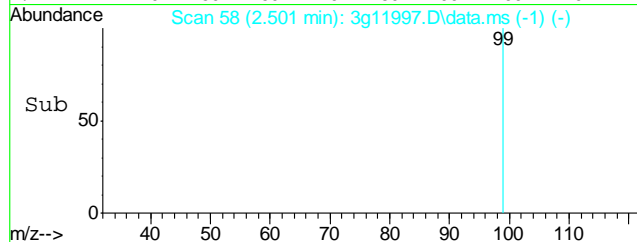
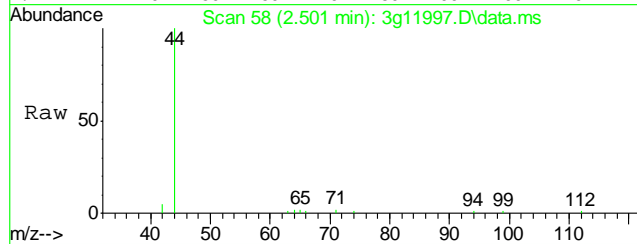
Tgt Ion:	82	Resp:	695853
Ion Ratio	Lower	Upper	
82	100		
128	49.6	26.7	66.7
54	57.1	29.0	69.0





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.501 min Scan# 58
Delta R.T. 0.007 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

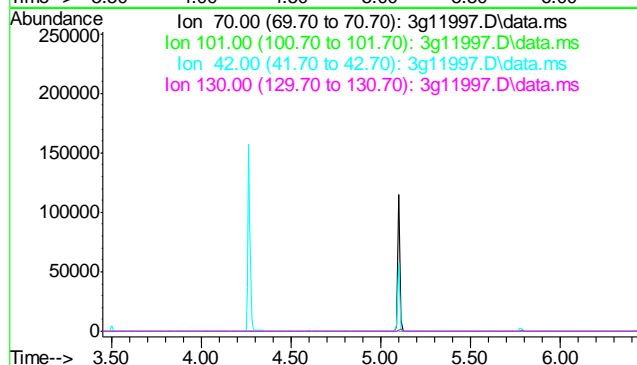
Tgt Ion: 74 Resp: 17
Ion Ratio Lower Upper
74 100
42 952.9 53.4 93.4#
44 0.0 0.0 23.7

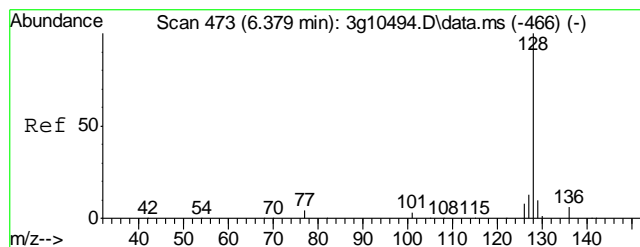


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.95 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

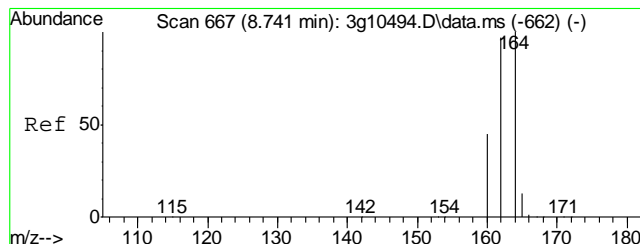
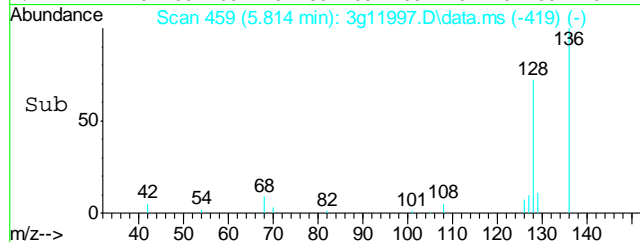
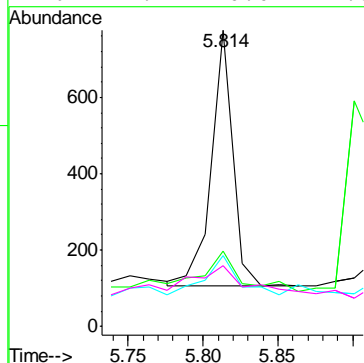
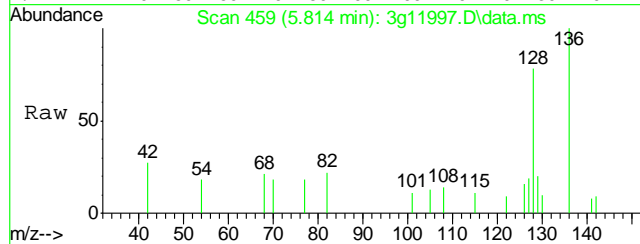
Tgt Ion: 70
Sig Exp Ratio
70 100
101 11.6
42 63.1
130 33.5





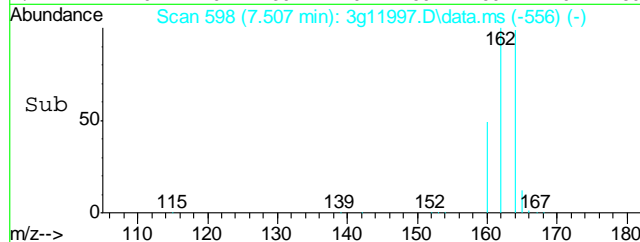
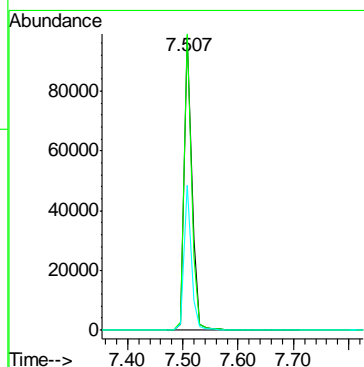
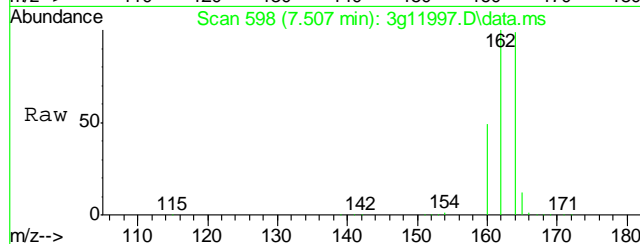
#5
Naphthalene
Concen: Below ug/mL
RT: 5.814 min Scan# 459
Delta R.T. 0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

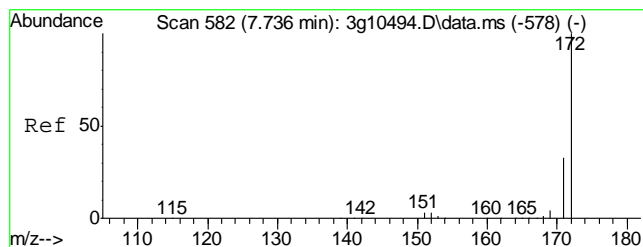
Tgt Ion	Ratio	Lower	Upper
128	100		
129	33.8	0.0	31.0#
127	30.2	0.0	32.5
126	42.4	0.0	27.3#



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.507 min Scan# 598
Delta R.T. 0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

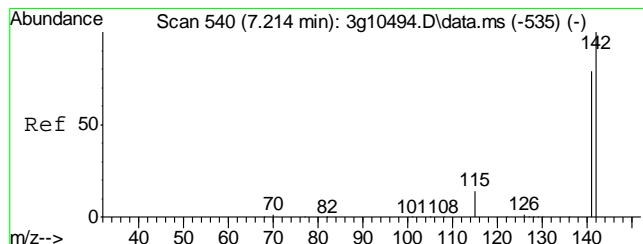
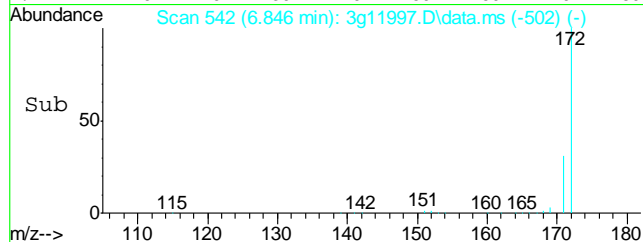
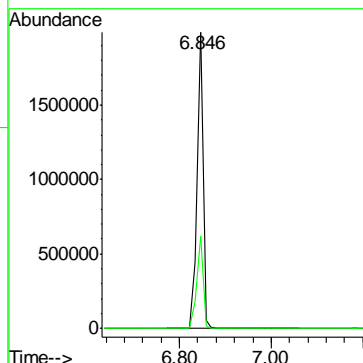
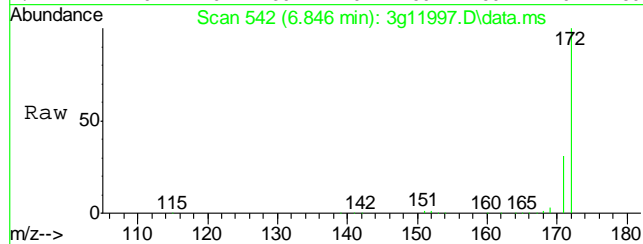
Tgt Ion	Ratio	Lower	Upper
164	100		
162	96.6	74.5	114.5
160	46.3	24.7	64.7





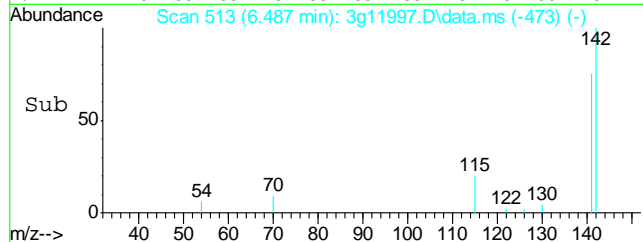
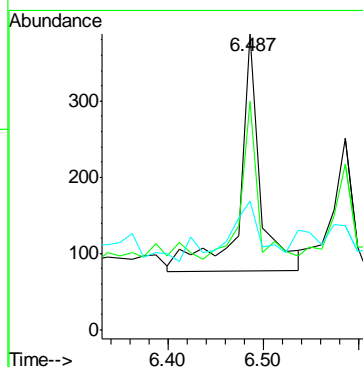
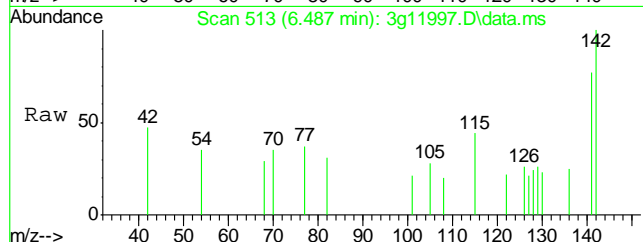
#7
2-Fluorobiphenyl
Concen: 49.9540 ug/mL
RT: 6.846 min Scan# 542
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

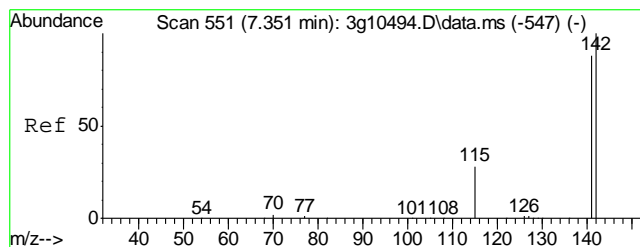
Tgt Ion:172 Resp: 1787932
Ion Ratio Lower Upper
172 100
171 32.8 13.2 53.2



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.487 min Scan# 513
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

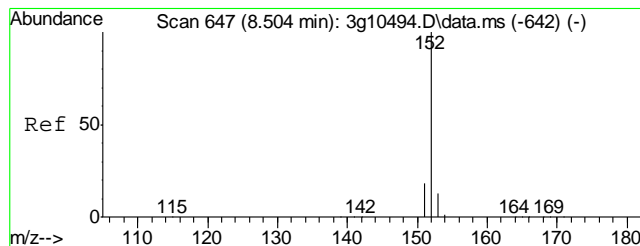
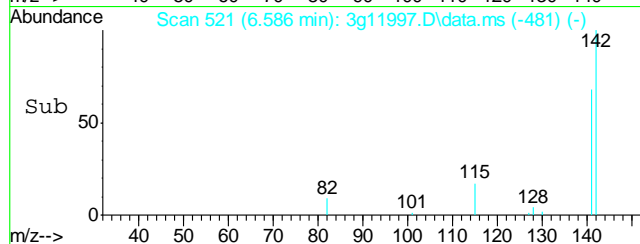
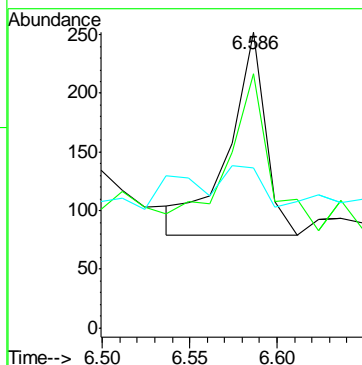
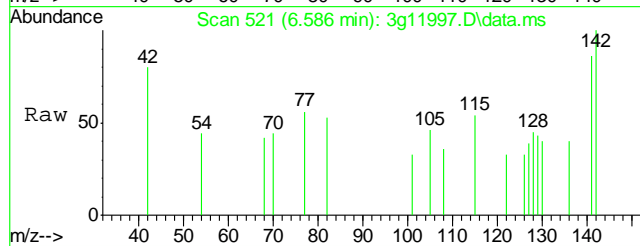
Tgt Ion:142 Resp: 476
Ion Ratio Lower Upper
142 100
141 67.4 62.6 102.6
115 0.0 15.3 55.3#





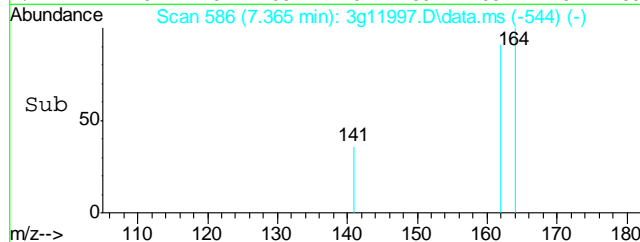
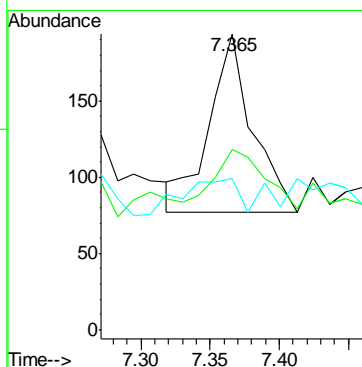
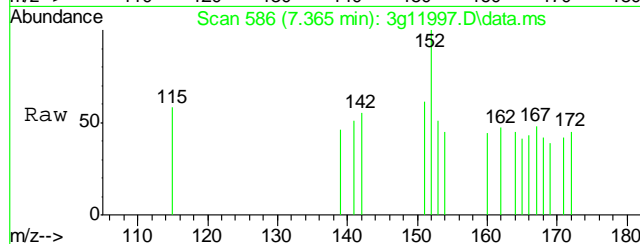
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.586 min Scan# 521
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

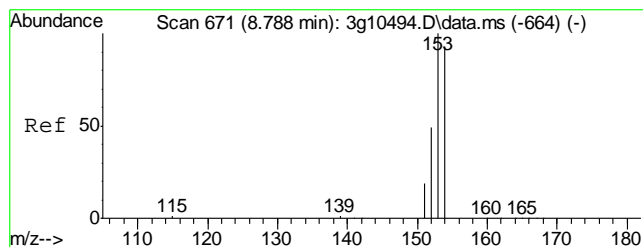
Tgt Ion:	142	Resp:	255
Ion Ratio	Lower	Upper	
142	100		
141	88.2	66.1	106.1
115	0.0	16.3	56.3



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.365 min Scan# 586
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

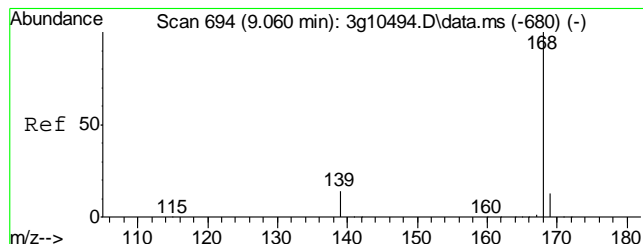
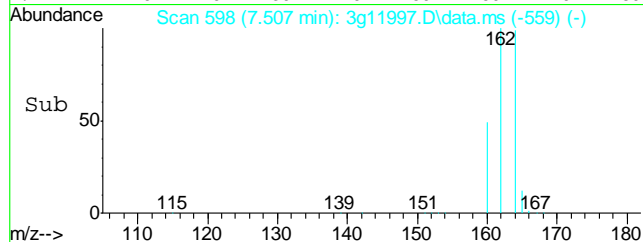
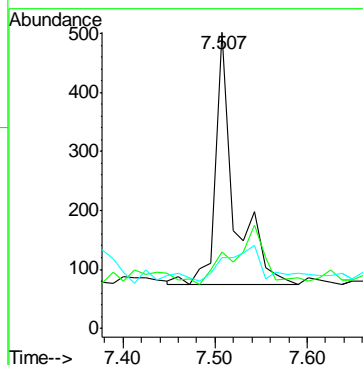
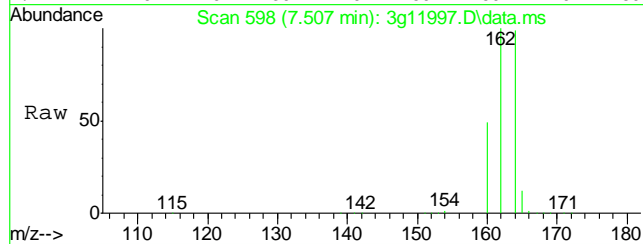
Tgt Ion:	152	Resp:	253
Ion Ratio	Lower	Upper	
152	100		
151	38.3	0.0	39.1
153	26.9	0.0	33.0





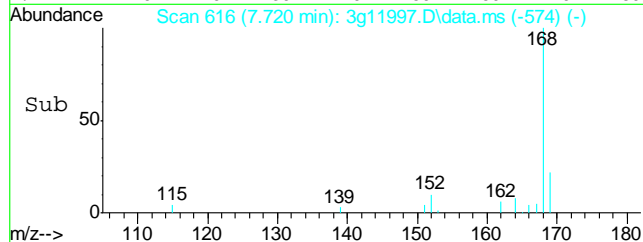
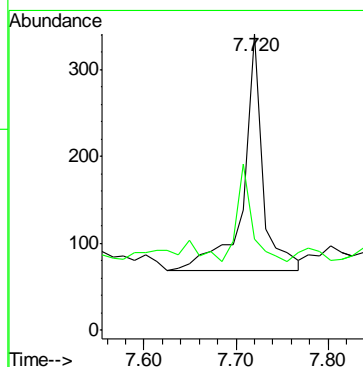
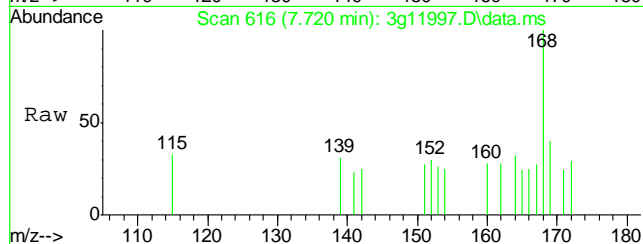
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.507 min Scan# 598
Delta R.T. -0.035 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

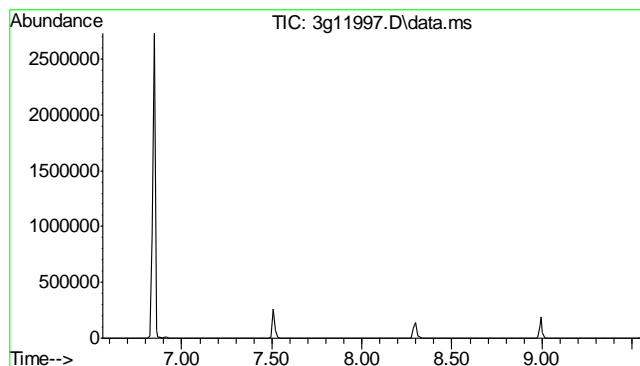
Tgt Ion:154	Resp:	601
Ion Ratio	Lower	Upper
154	100	
153	39.9	83.2 123.2#
152	26.5	29.5 69.5#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.720 min Scan# 616
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

Tgt Ion:168	Resp:	394
Ion Ratio	Lower	Upper
168	100	
139	32.2	13.9 53.9

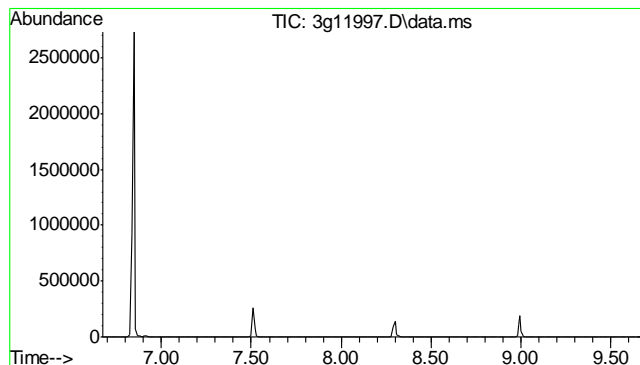
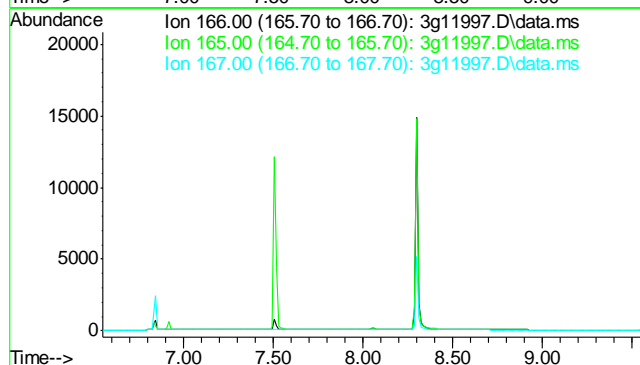




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 8.05 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

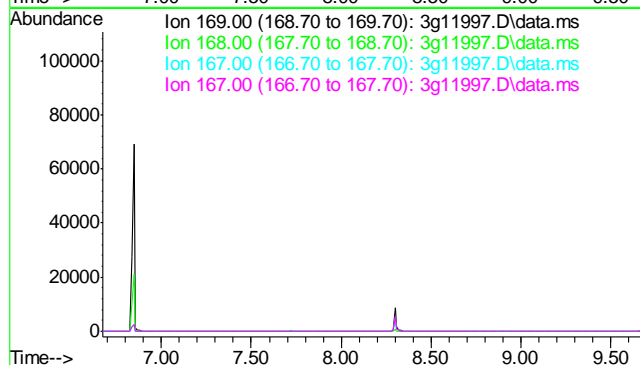
Tgt Ion	166
Sig	Exp Ratio
166	100
165	91.8
167	13.2

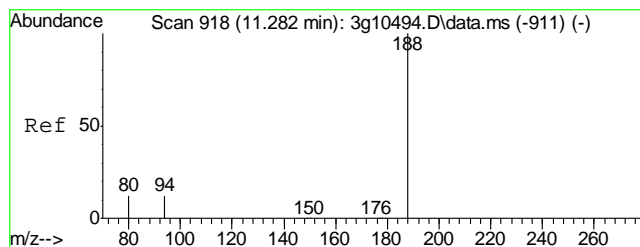


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.17 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

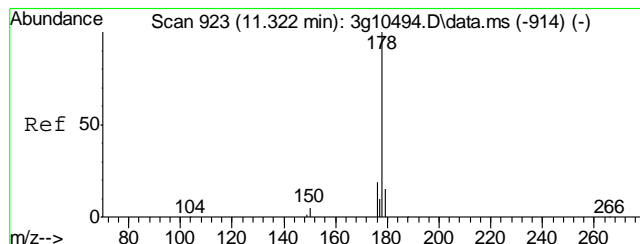
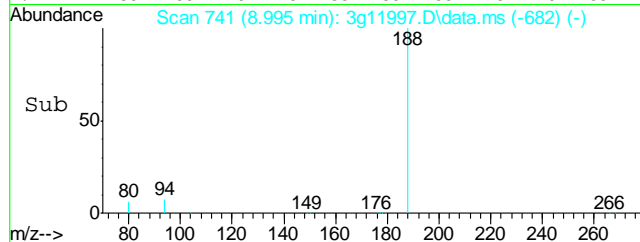
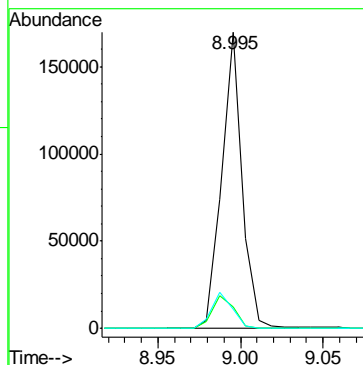
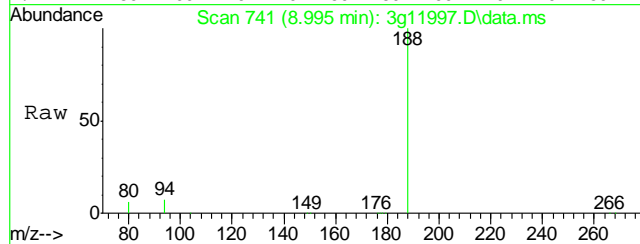
Tgt Ion	169
Sig	Exp Ratio
169	100
168	61.7
167	33.9
167	33.9





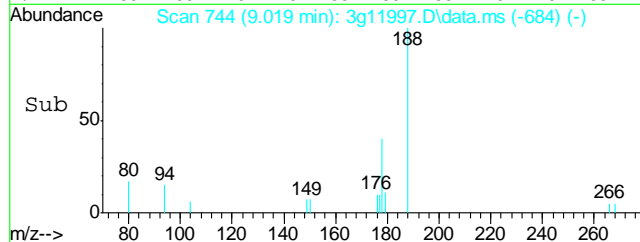
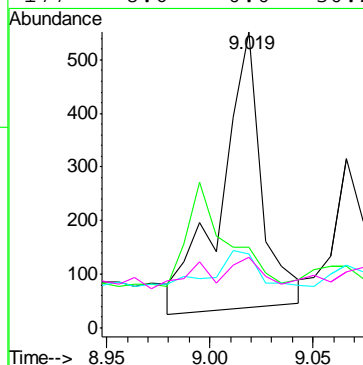
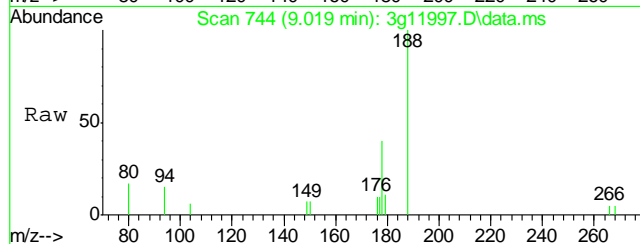
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.995 min Scan# 741
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

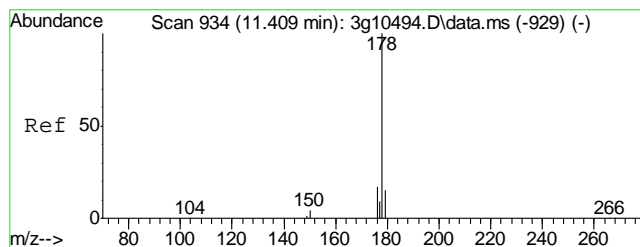
Tgt Ion:188	Resp:	145499
Ion Ratio	Lower	Upper
188	100	
94	12.0	0.0 31.9
80	12.4	0.0 32.4



#16
Phenanthrene
Concen: Below ug/mL
RT: 9.019 min Scan# 744
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

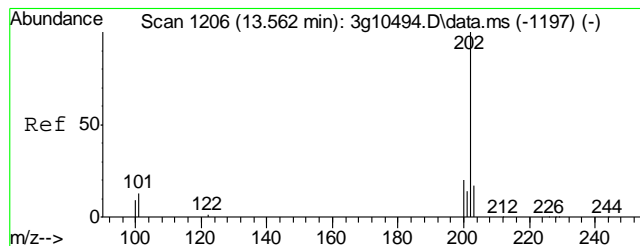
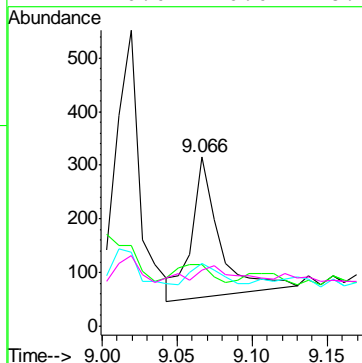
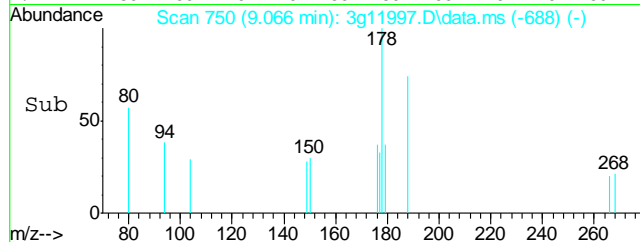
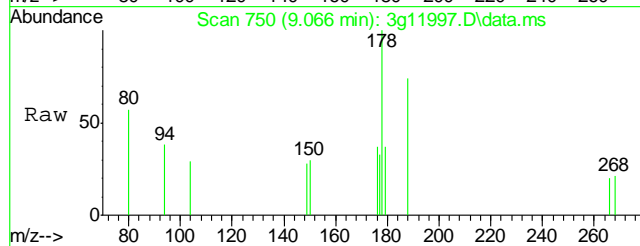
Tgt Ion:178	Resp:	709
Ion Ratio	Lower	Upper
178	100	
179	54.2	0.0 35.1#
176	22.8	0.0 39.0
177	8.6	0.0 30.2





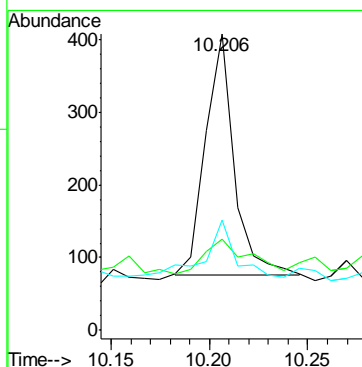
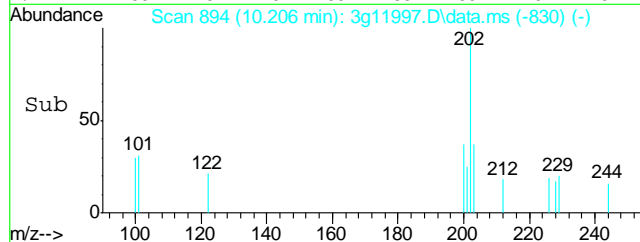
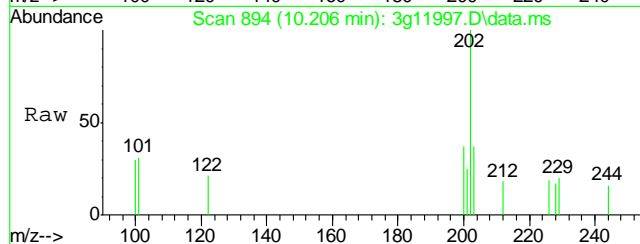
#17
Anthracene
Concen: Below ug/mL
RT: 9.066 min Scan# 750
Delta R.T. 0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

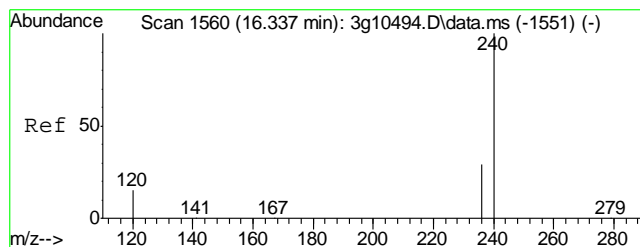
Tgt Ion	Ratio	Lower	Upper
178	100		
179	21.2	0.0	34.9
176	23.0	0.0	38.1
177	0.0	0.0	28.7



#18
Fluoranthene
Concen: 0.0534 ug/mL m
RT: 10.206 min Scan# 894
Delta R.T. 0.008 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

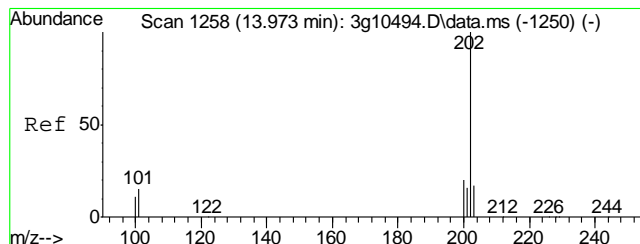
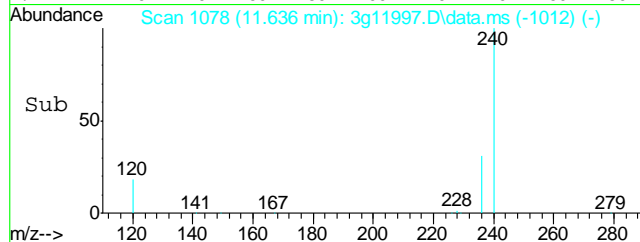
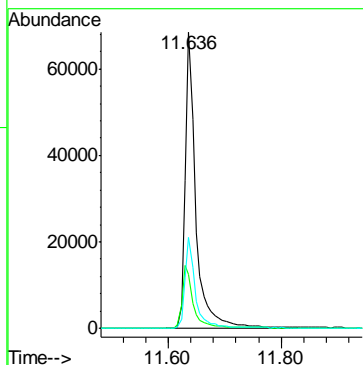
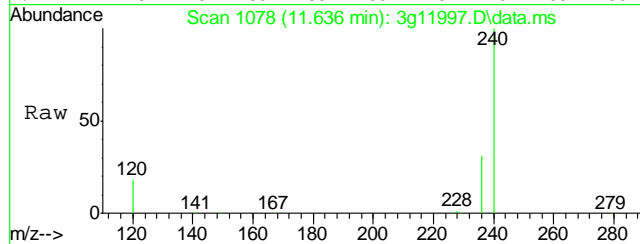
Tgt Ion	Ratio	Lower	Upper
202	100		
101	22.9	0.0	32.8
203	51.5	0.0	37.2#





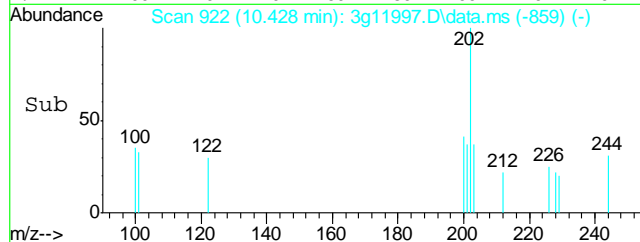
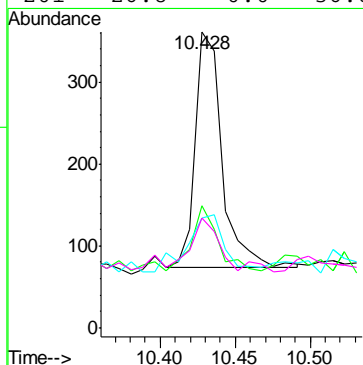
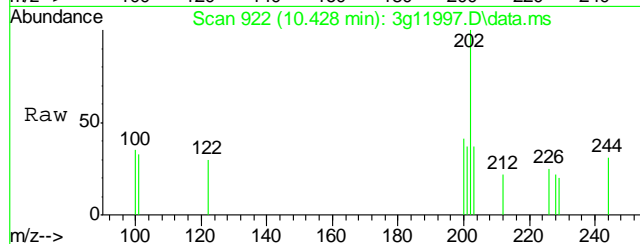
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.636 min Scan# 1078
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

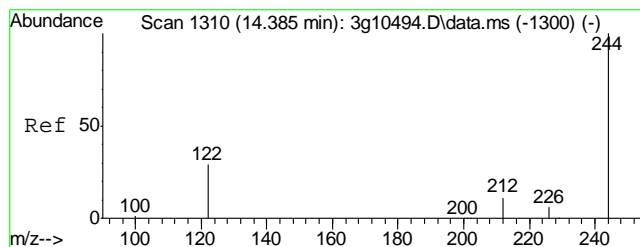
Tgt Ion:	240	Resp:	88767
Ion Ratio	Lower	Upper	
240	100		
120	22.1	1.2	41.2
236	30.3	10.2	50.2



#20
Pyrene
Concen: Below ug/mL
RT: 10.428 min Scan# 922
Delta R.T. -0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

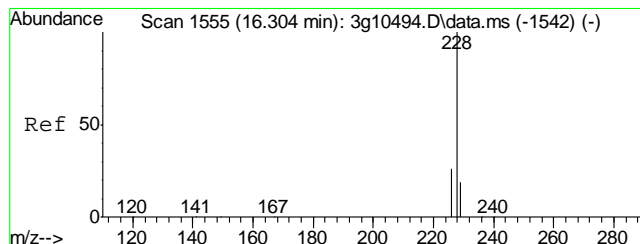
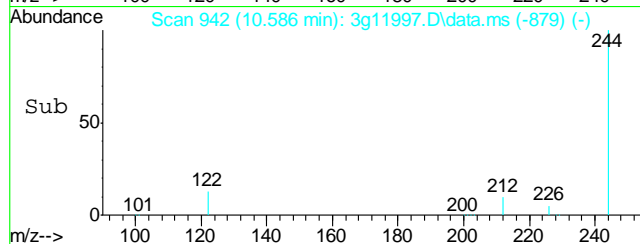
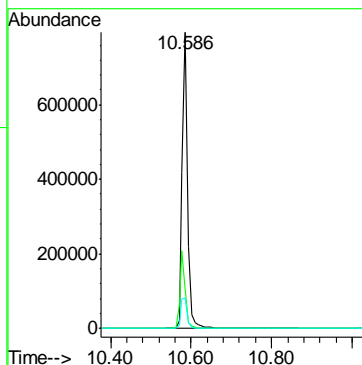
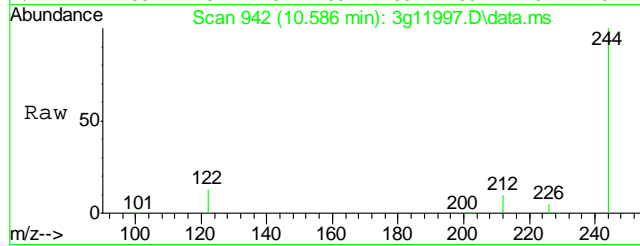
Tgt Ion:	202	Resp:	354
Ion Ratio	Lower	Upper	
202	100		
200	26.3	0.3	40.3
203	34.2	0.0	37.8
201	26.8	0.0	36.8





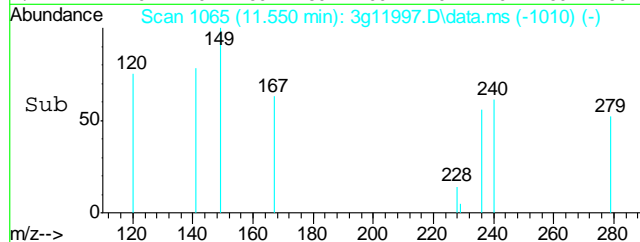
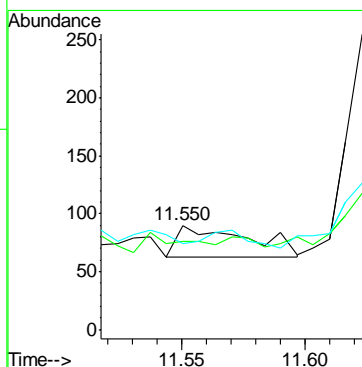
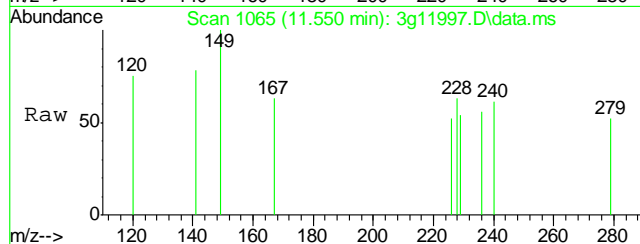
#21
Terphenyl-d14
Concen: 59.8746 ug/mL
RT: 10.586 min Scan# 942
Delta R.T. 0.000 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

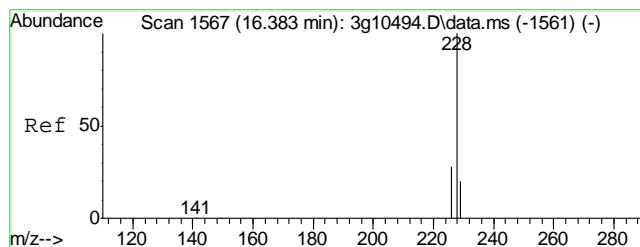
Tgt Ion:	244	Resp:	730357
Ion Ratio	Lower	Upper	
244	100		
122	26.8	7.3	47.3
212	12.4	0.0	32.5



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.550 min Scan# 1065
Delta R.T. -0.073 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

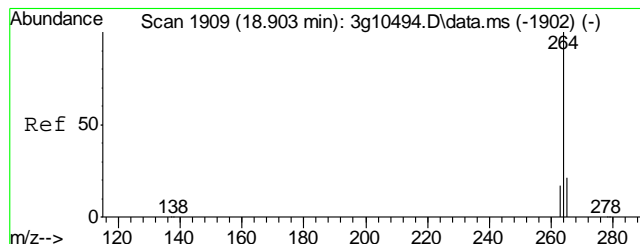
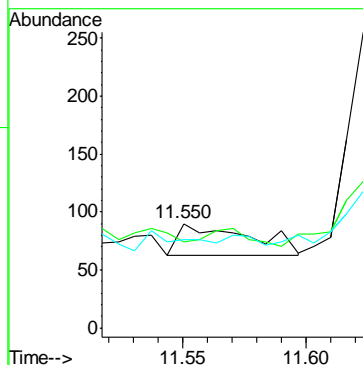
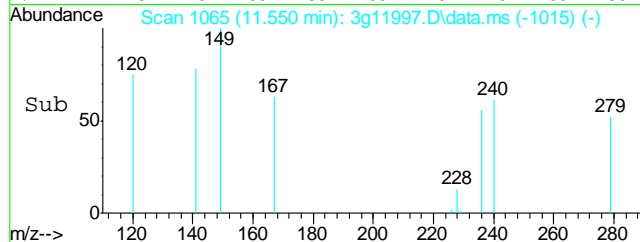
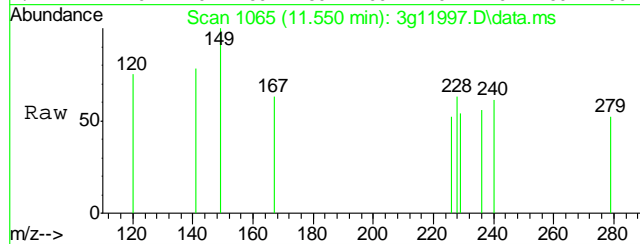
Tgt Ion:	228	Resp:	53
Ion Ratio	Lower	Upper	
228	100		
229	26.4	0.0	39.3
226	34.0	6.7	46.7





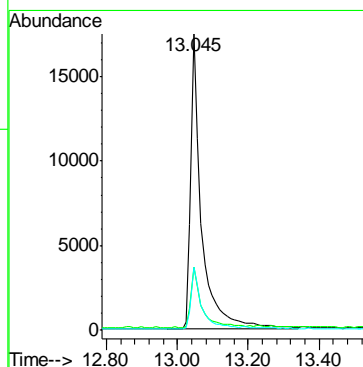
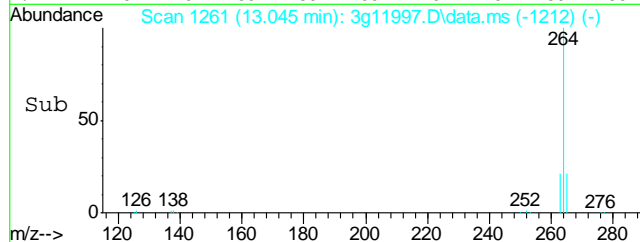
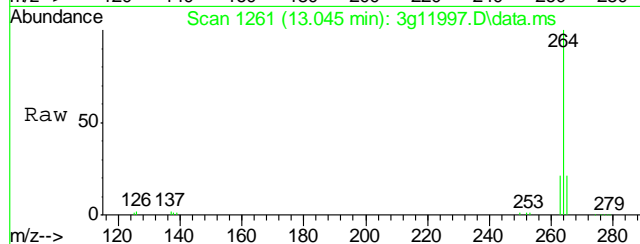
#23
Chrysene
Concen: Below ug/mL
RT: 11.550 min Scan# 1065
Delta R.T. -0.112 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

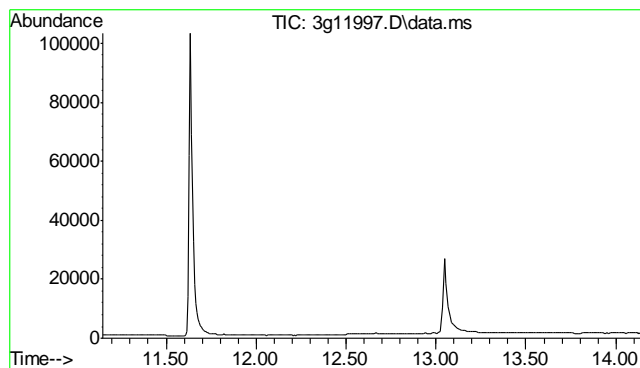
Tgt Ion:	228	Resp:	53
Ion Ratio	Lower	Upper	
228	100		
226	34.0	8.3	48.3
229	26.4	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.045 min Scan# 1261
Delta R.T. 0.010 min
Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

Tgt Ion:	264	Resp:	37259
Ion Ratio	Lower	Upper	
264	100		
265	20.2	0.8	40.8
263	21.3	0.4	40.4

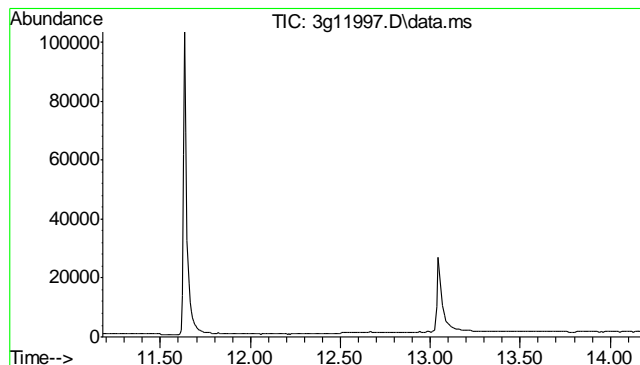
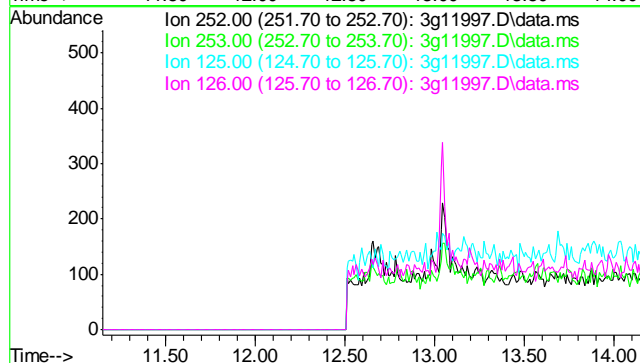




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.65 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

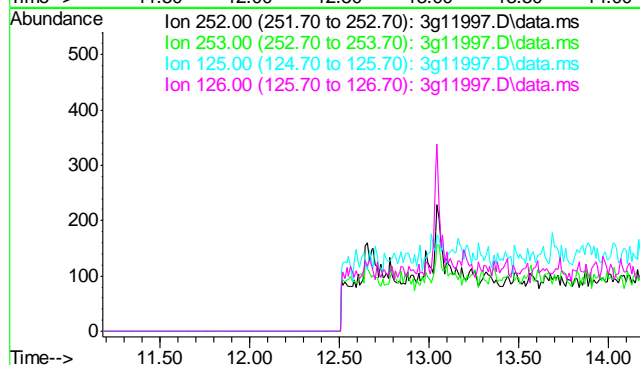
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	53.4
125	35.2
126	51.6

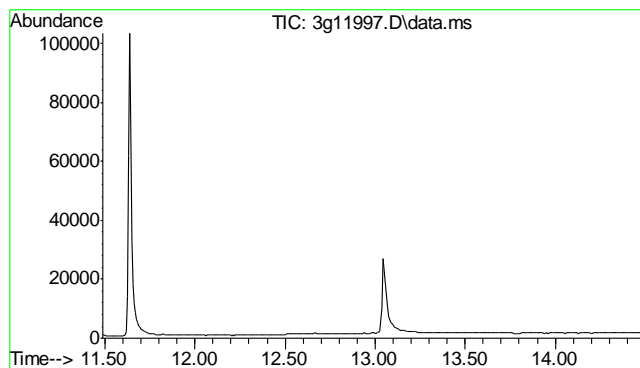


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.68 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	36.5
125	24.1
126	35.3

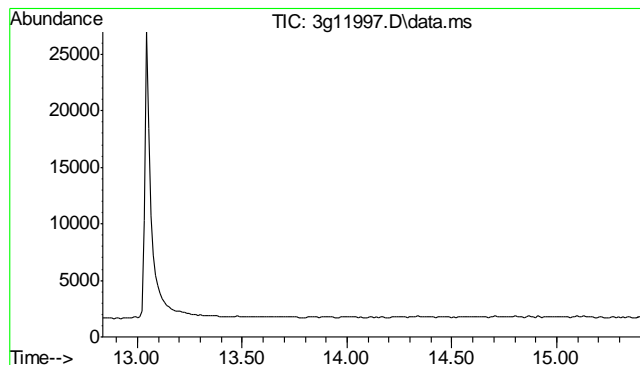
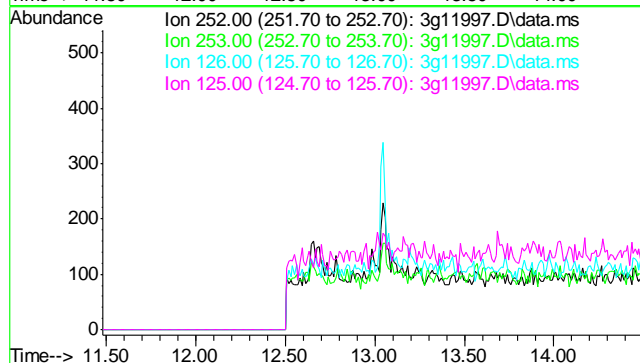




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.98 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

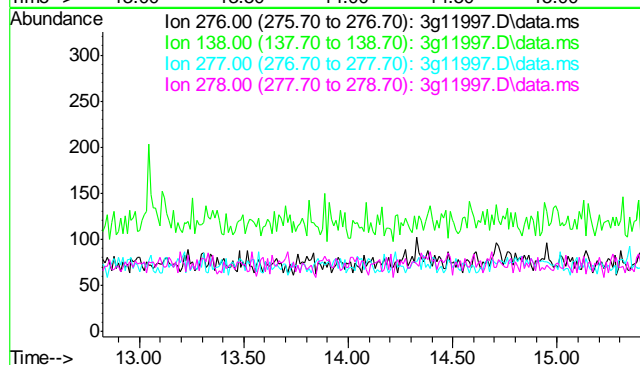
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.3
126	20.8
125	15.4

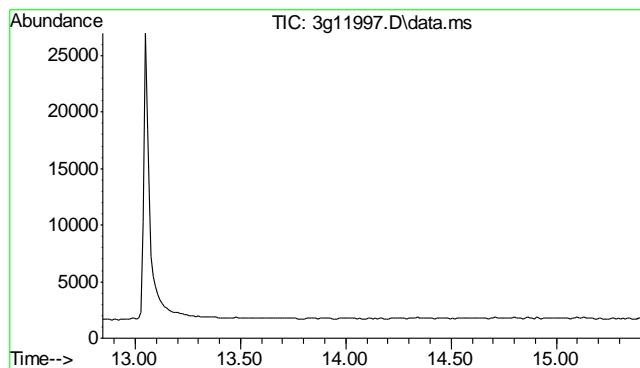


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.33 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

Tgt Ion:	276
Sig	Exp Ratio
276	100
138	44.3
277	24.7
278	71.8

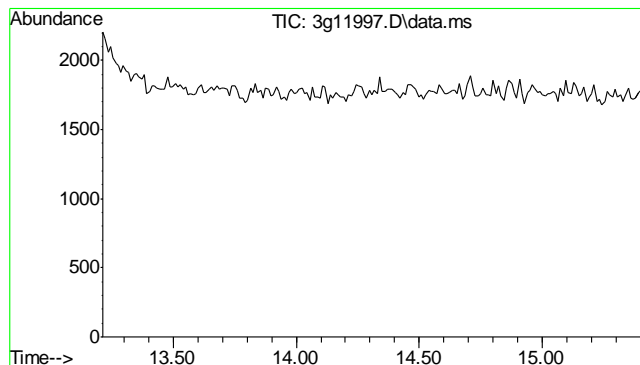
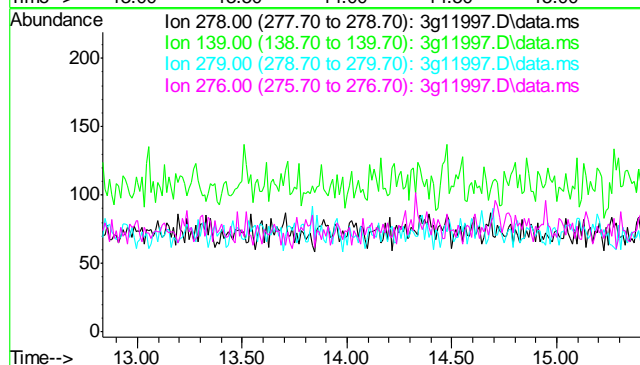




#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.34 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

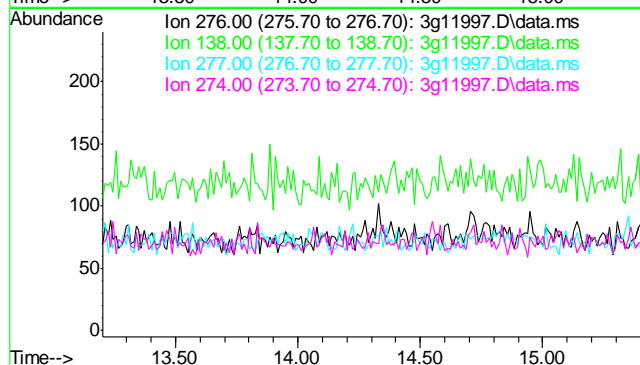
Tgt Ion:	278
Sig	Exp Ratio
278	100
139	35.0
279	22.9
276	139.3



#30
Benzo(g,h,i)perylene
Concen: N.D. ug/mL
Expected RT: 14.71 min

Lab File: 3g11997.D
Acq: 9 Nov 12 3:09 pm

Tgt Ion:	276
Sig	Exp Ratio
276	100
138	38.8
277	22.5
274	21.8



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1004-MB	GB18381.D	1	11/08/12	SK	n/a	n/a	GGB1004

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

D40713-1

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	88% 60-140%

10.1.1
10

Blank Spike Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1004-BS	GB18382.D	1	11/08/12	SK	n/a	n/a	GGB1004

The QC reported here applies to the following samples:

Method: SW846 8015B

D40713-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	122	111	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D40718-1MS	GB18384.D	1	11/08/12	SK	n/a	n/a	GGB1004
D40718-1MSD	GB18385.D	1	11/08/12	SK	n/a	n/a	GGB1004
D40718-1	GB18383.D	1	11/08/12	SK	n/a	n/a	GGB1004

The QC reported here applies to the following samples:

Method: SW846 8015B

D40713-1

CAS No.	Compound	D40718-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		134	143	107	143	107	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D40718-1	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	103%	92%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110812\GB18389.D\FID1A.CH Vial: 11
 Signal #2 : Y:\1\DATA\110812\GB18389.D\FID2B.CH
 Acq On : 8 Nov 2012 9:44 pm Operator: StephK
 Sample : D40713-1, 50X Inst : GC/MS Ins
 Misc : GC3228,GGB1004,5.034,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 09 08:26:58 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri Nov 09 08:26:05 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

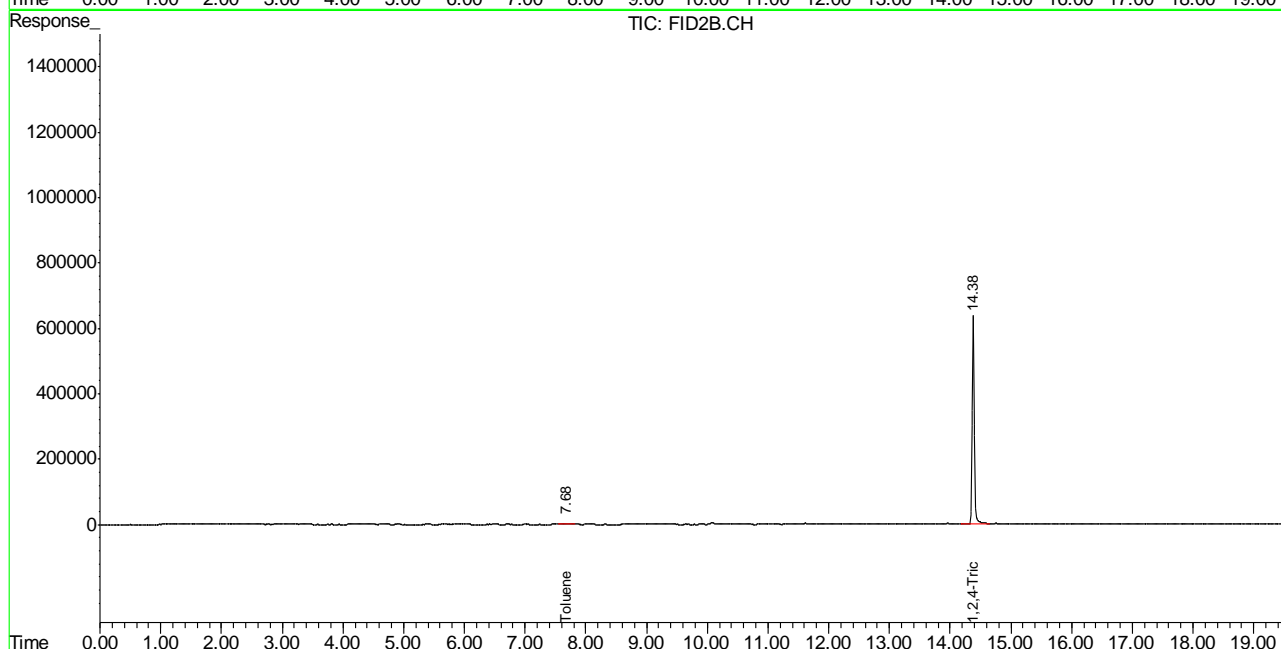
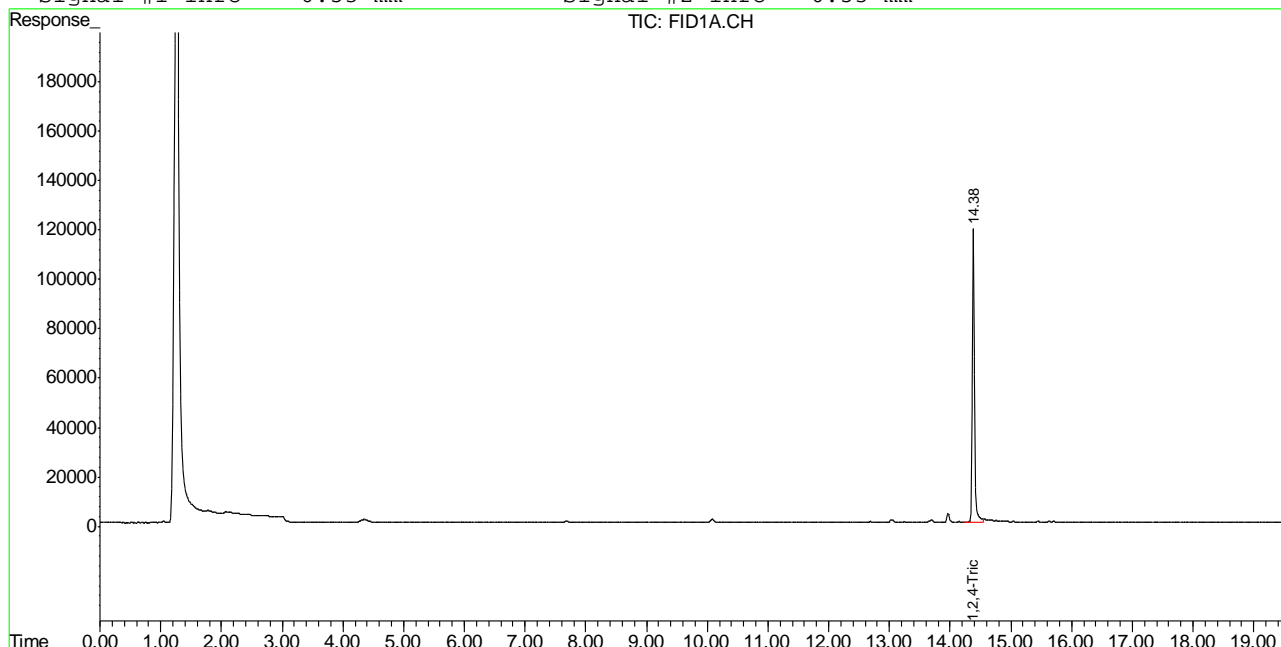
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.38	2935212	93.675	%
10) S	1,2,4-Trichlorobenzene (P)	14.38	15578183	95.850	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3149628	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.68	104912	0.265	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

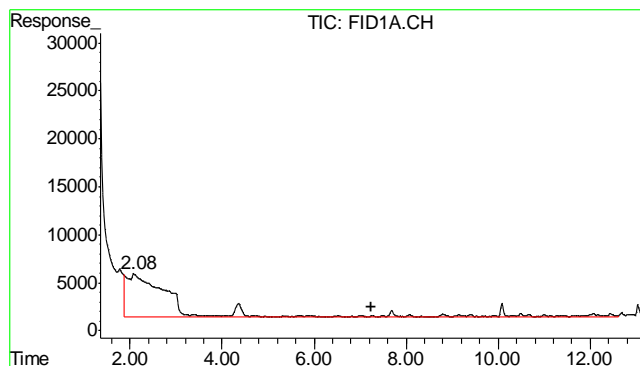
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110812\GB18389.D\FID1A.CH Vial: 11
 Signal #2 : Y:\1\DATA\110812\GB18389.D\FID2B.CH
 Acq On : 8 Nov 2012 9:44 pm Operator: StephK
 Sample : D40713-1, 50X Inst : GC/MS Ins
 Misc : GC3228,GGB1004,5.034,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 9 8:40 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri Nov 09 08:26:05 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

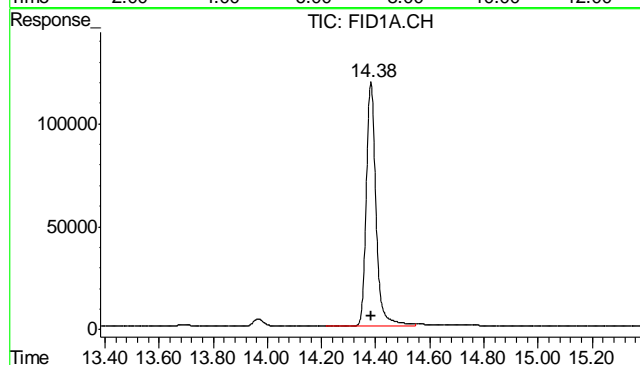
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





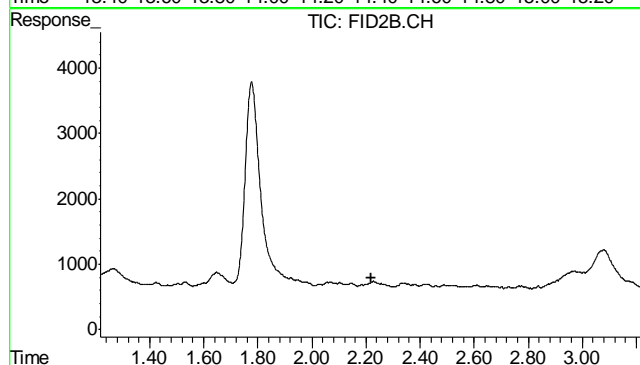
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3149628
Conc: N.D.



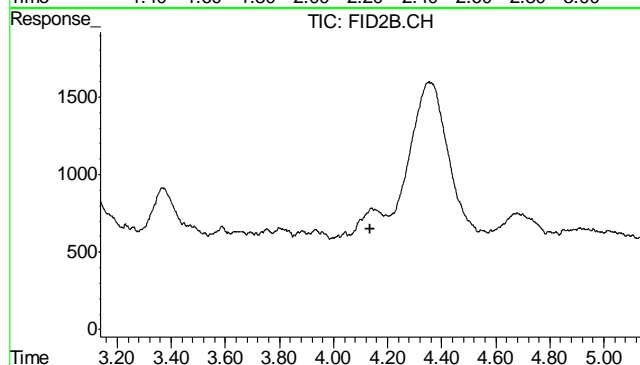
#2 1,2,4-Trichlorobenzene

R.T.: 14.383 min
Delta R.T.: -0.002 min
Response: 2935212
Conc: 93.67 %



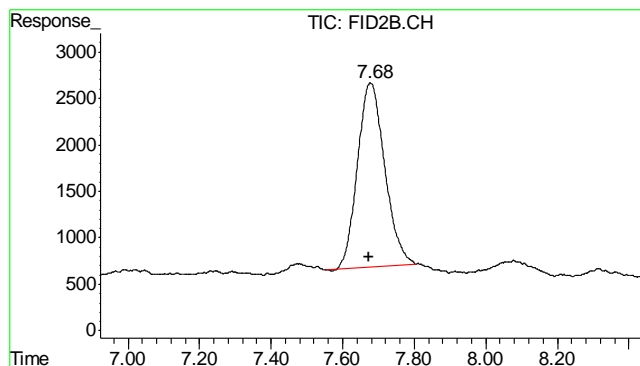
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.218 min
Response: 0
Conc: N.D.



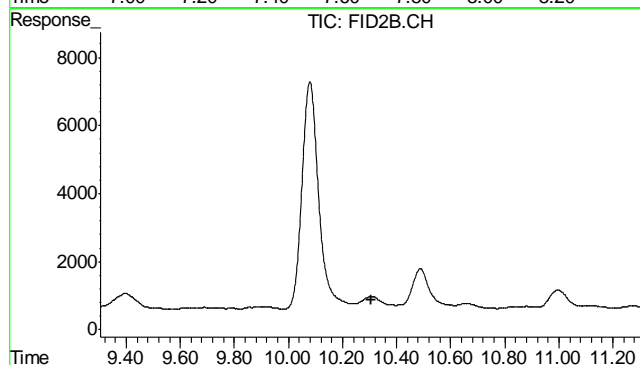
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.137 min
Response: 0
Conc: N.D.



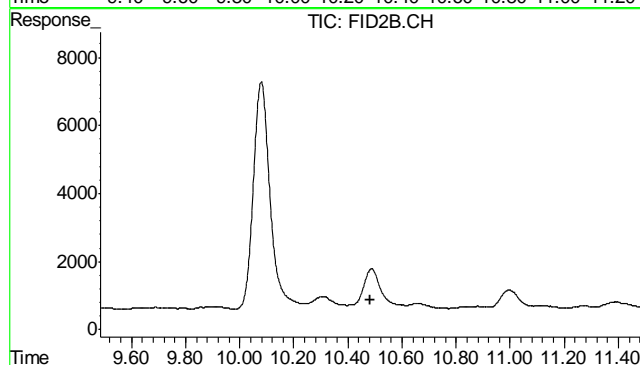
#6 Toluene

R.T.: 7.677 min
Delta R.T.: 0.004 min
Response: 104912
Conc: 0.26 ug/L



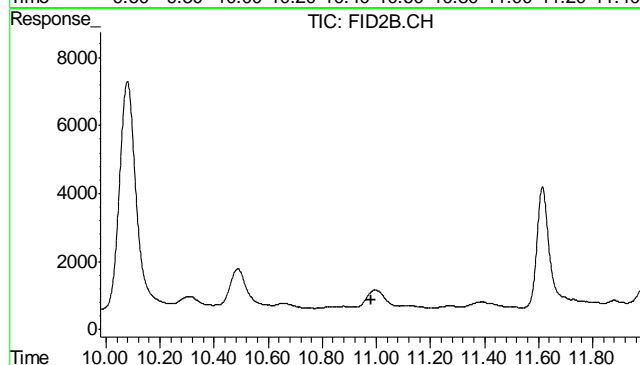
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.304 min
Response: 0
Conc: N.D.



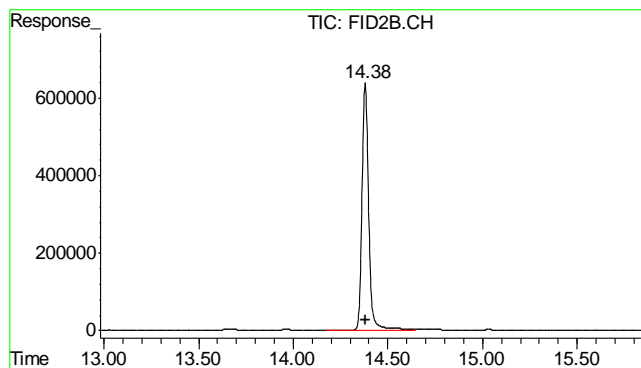
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T. : 10.484 min
Response: 0
Conc: N.D.



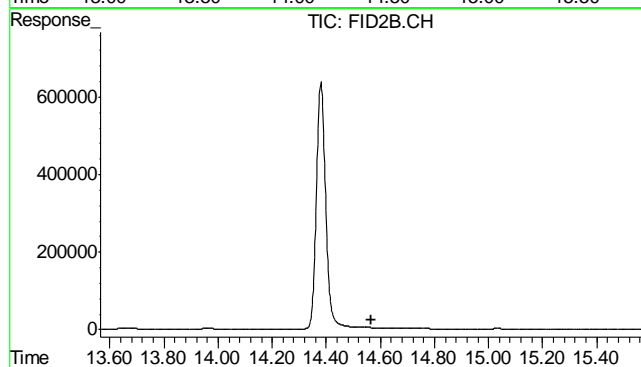
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.980 min
Response: 0
Conc: N.D.



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

R.T.: 14.380 min
Delta R.T.: -0.002 min
Response: 15578183
Conc: 95.85 %



#11 Naphthalene

R.T.: 0.000 min
Exp R.T. : 14.565 min
Response: 0
Conc: N.D.

11.1.1

Judy Melson
11/09/12 14:03

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110812\GB18381.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\110812\GB18381.D\FID2B.CH
Acq On : 8 Nov 2012 5:00 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3228,GGB1004,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 09 08:26:26 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri Nov 09 08:26:05 2012
Response via : Initial Calibration
DataAcq Meth : TVB4.M

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

Compound	R.T.	Response	Conc	Units

System Monitoring Compounds				
2) S 1,2,4-Trichlorobenzene	14.40	2753326	87.870 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.40	14864466	91.458 %	
Target Compounds				
1) H TVH-Gasoline	7.23	3530497	<MDL	mg/L
4) T Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T Benzene	0.00	0	N.D.	ug/L d
6) T Toluene	7.70	145391	0.367	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

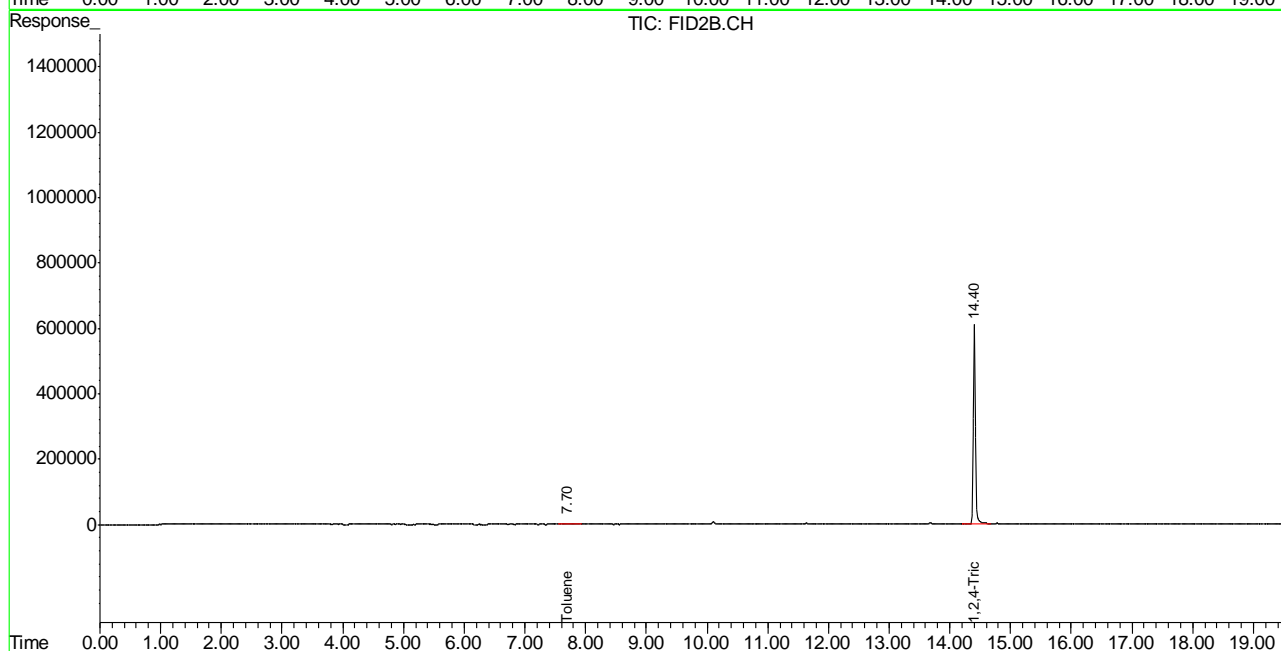
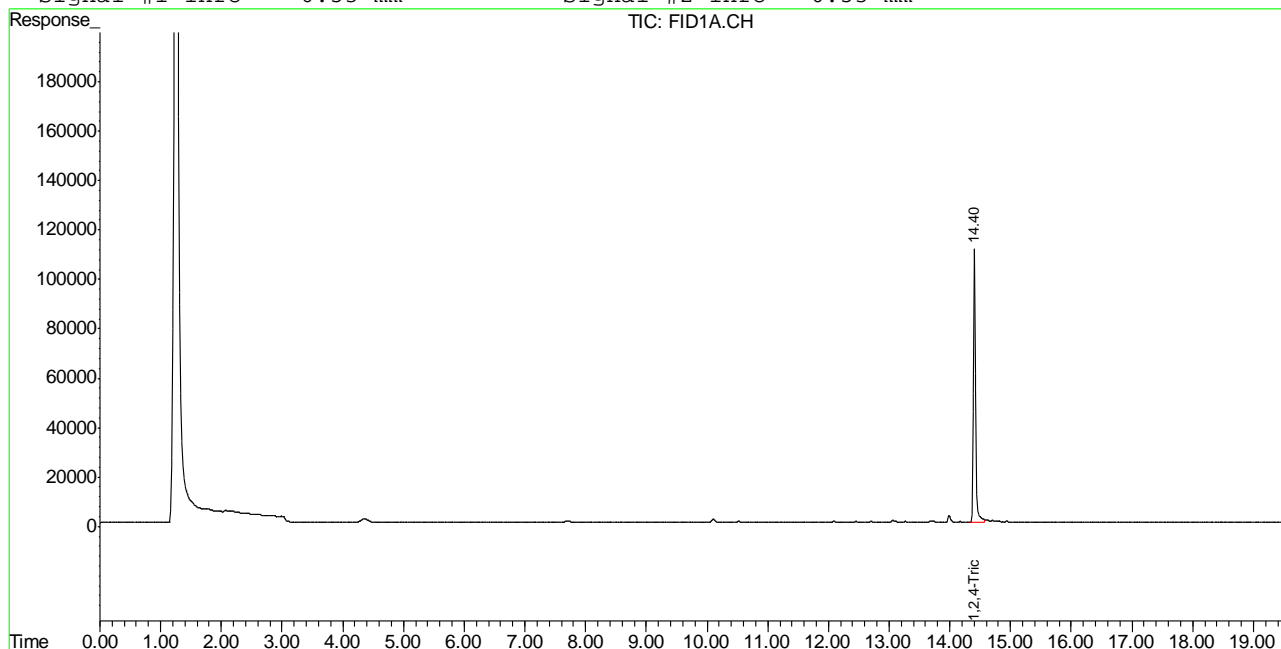
(f)=RT Delta > 1/2 Window (m)=manual int.
GB18381.D TB868GB868SOIL.M Fri Nov 09 08:42:36 2012 GC

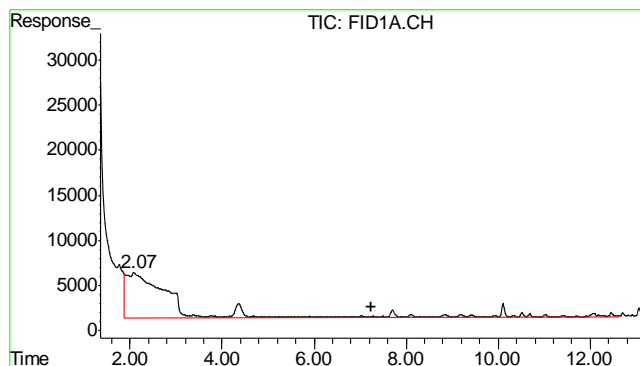
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110812\GB18381.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\110812\GB18381.D\FID2B.CH
Acq On : 8 Nov 2012 5:00 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3228,GGB1004,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 9 8:38 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri Nov 09 08:26:05 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

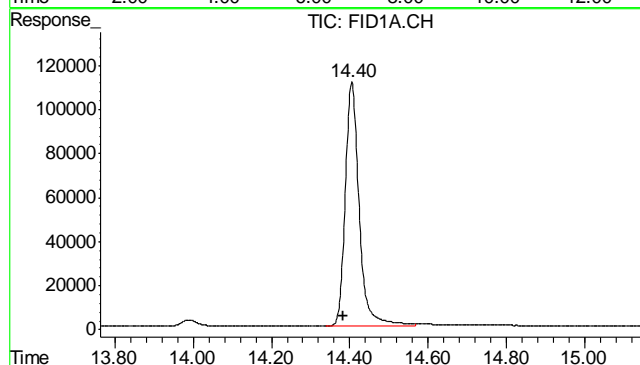
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





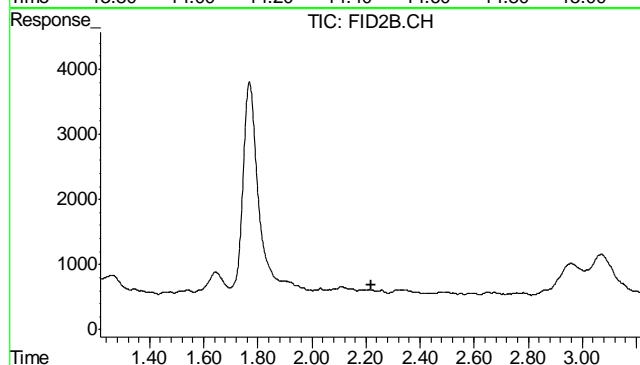
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3530497
Conc: N.D.



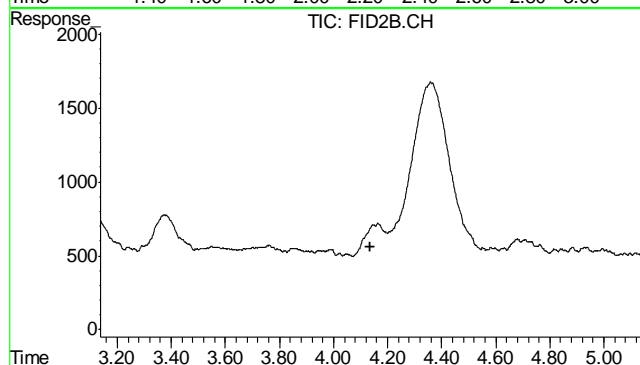
#2 1,2,4-Trichlorobenzene

R.T.: 14.405 min
Delta R.T.: 0.020 min
Response: 2753326
Conc: 87.87 % m



#4 Methyl-t-butyl-ether

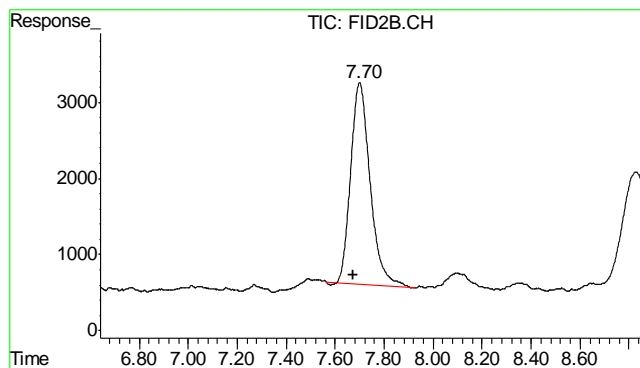
R.T.: 0.000 min
Exp R.T.: 2.218 min
Response: 0
Conc: N.D.



#5 Benzene

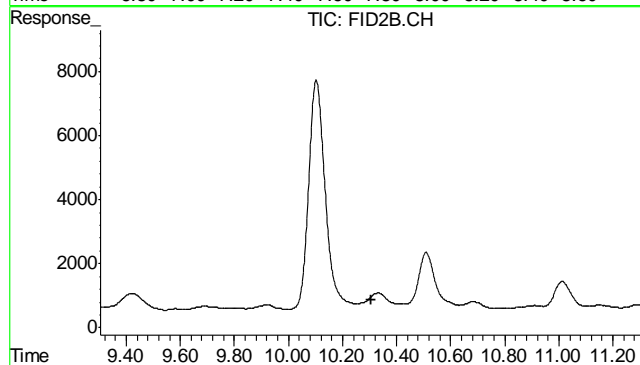
R.T.: 0.000 min
Exp R.T.: 4.137 min
Response: 0
Conc: N.D.

11.21
11



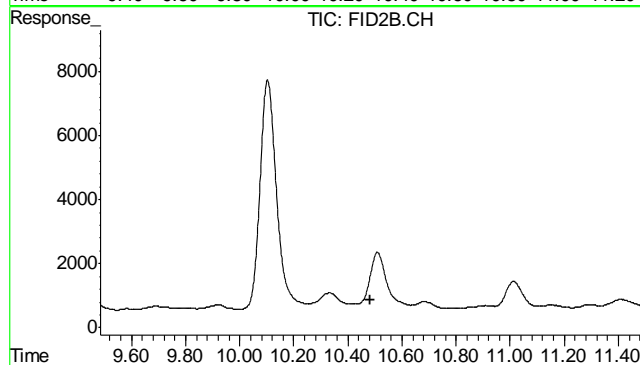
#6 Toluene

R.T.: 7.700 min
Delta R.T.: 0.027 min
Response: 145391
Conc: 0.37 ug/L



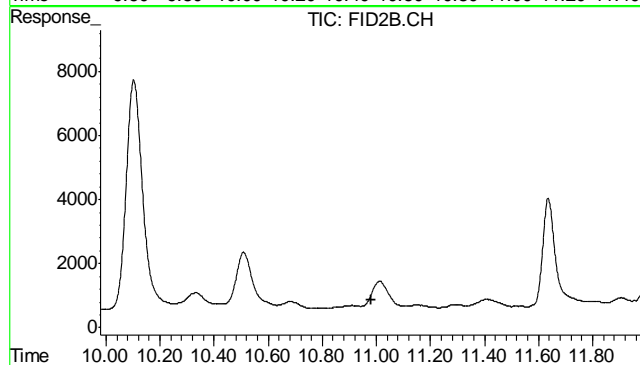
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.304 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

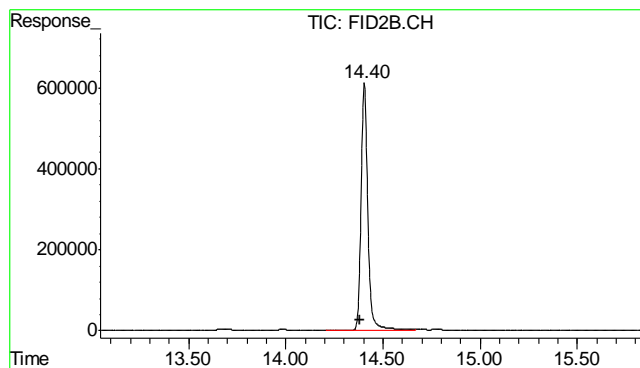
R.T.: 0.000 min
Exp R.T. : 10.484 min
Response: 0
Conc: N.D.



#9 o-Xylene

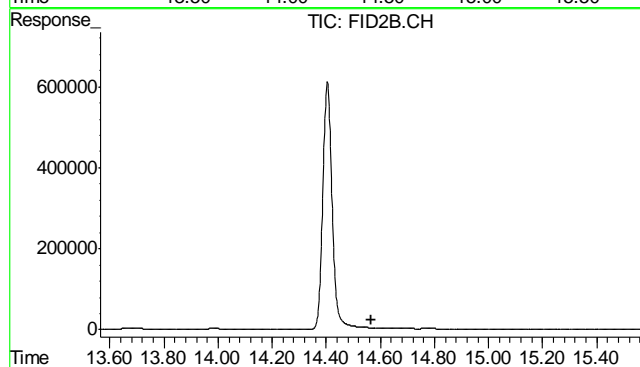
R.T.: 0.000 min
Exp R.T. : 10.980 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.404 min
Delta R.T.: 0.022 min
Response: 14864466
Conc: 91.46 %



#11 Naphthalene

R.T.: 0.000 min
Exp R.T. : 14.565 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: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6942-MB	FD19331.D	1	11/09/12	AV	11/09/12	OP6942	GFD975

The QC reported here applies to the following samples:

Method: SW846-8015B

D40713-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	96% 35-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6942-BS	FD19333.D	1	11/09/12	AV	11/09/12	OP6942	GFD975

The QC reported here applies to the following samples:

Method: SW846-8015B

D40713-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	600	90	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	106%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40713
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6942-MS	FD19334.D	1	11/09/12	AV	11/09/12	OP6942	GFD975
OP6942-MSD	FD19335.D	1	11/09/12	AV	11/09/12	OP6942	GFD975
D40713-1	FD19393.D	1	11/12/12	AV	11/09/12	OP6942	GFD977

The QC reported here applies to the following samples:

Method: SW846-8015B

D40713-1

CAS No.	Compound	D40713-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		756	682	88	556	72	20	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D40713-1	Limits
84-15-1	o-Terphenyl	87%	78%	81%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD111112\FD19393.D Vial: 3
Acq On : 12 Nov 2012 10:45 am Operator: ashleyv
Sample : D40713-1 Inst : FID5
Misc : OP6942,GFD977,30.04,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 12 11:51:42 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 01 16:47:14 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

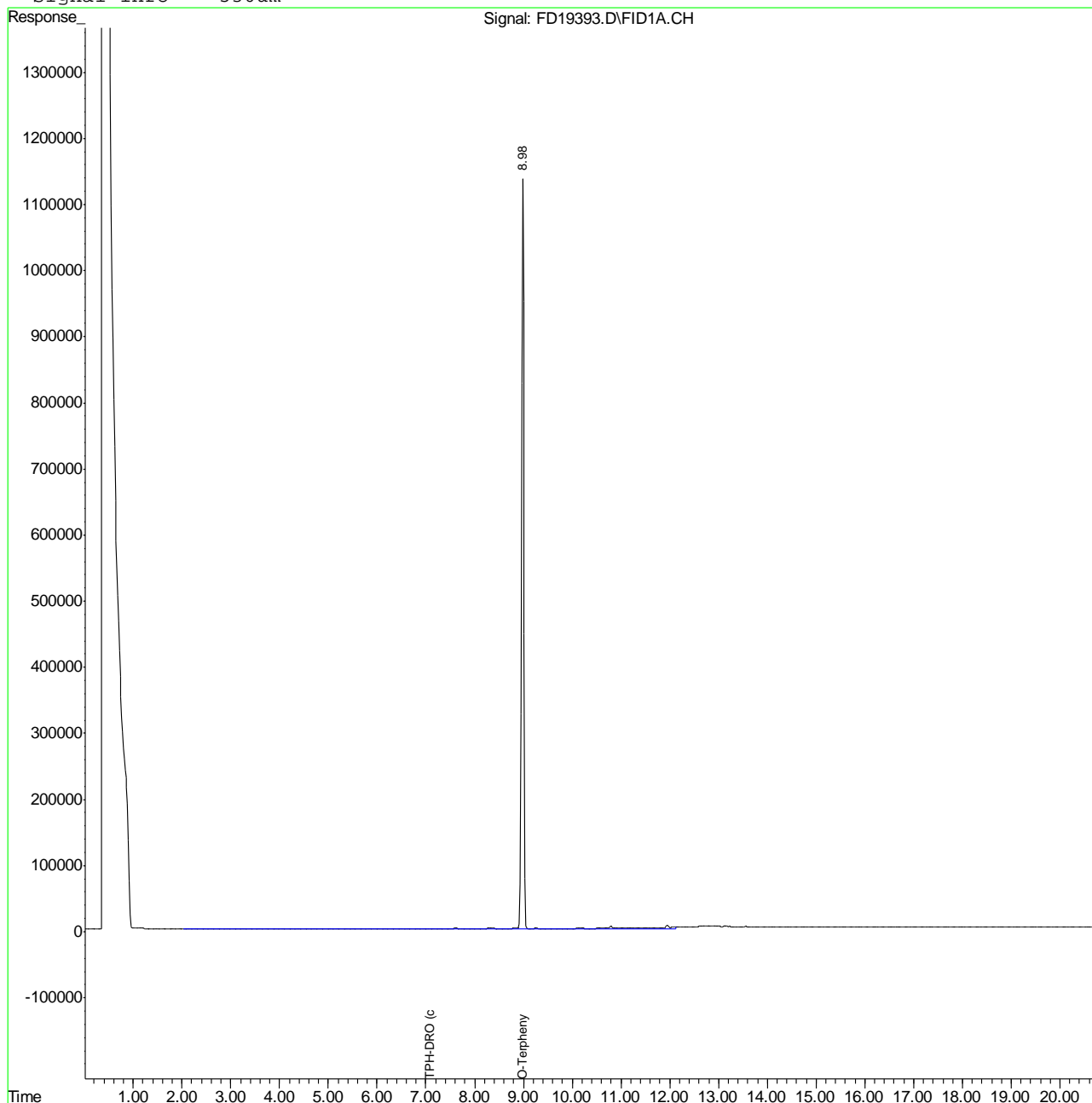
System Monitoring Compounds			
1) S O-Terphenyl	8.99	38279118	810.337 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	1844009	47.890 mg/L

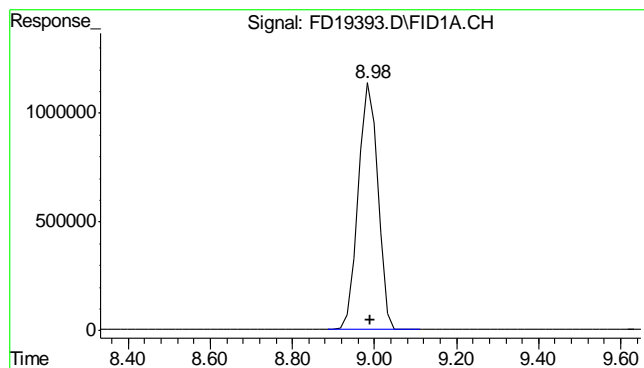
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD111112\FD19393.D Vial: 3
 Acq On : 12 Nov 2012 10:45 am Operator: ashleyv
 Sample : D40713-1 Inst : FID5
 Misc : OP6942,GFD977,30.04,,,2,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Nov 12 11:51 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
 Title : 8015B TEH
 Last Update : Thu Nov 01 16:47:14 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : DRODUAL.M

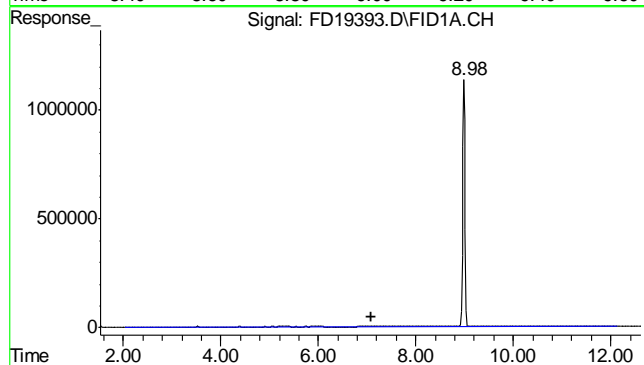
Volume Inj. : 1ul
 Signal Phase : RTX-5
 Signal Info : 530um





#1 O-Terphenyl

R.T.: 8.991 min
 Delta R.T.: 0.001 min
 Response: 38279118
 Conc: 810.34 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min
 Delta R.T.: 0.000 min
 Response: 1844009
 Conc: 47.89 mg/L m

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD110912\FD19331.D Vial: 3
Acq On : 09 Nov 2012 11:16 am Operator: ashleyv
Sample : OP6942-MB Inst : FID5
Misc : OP6942,GFD975,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 09 14:55:22 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 01 16:47:14 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.00	45116259	955.073 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	1254128	32.570 mg/L

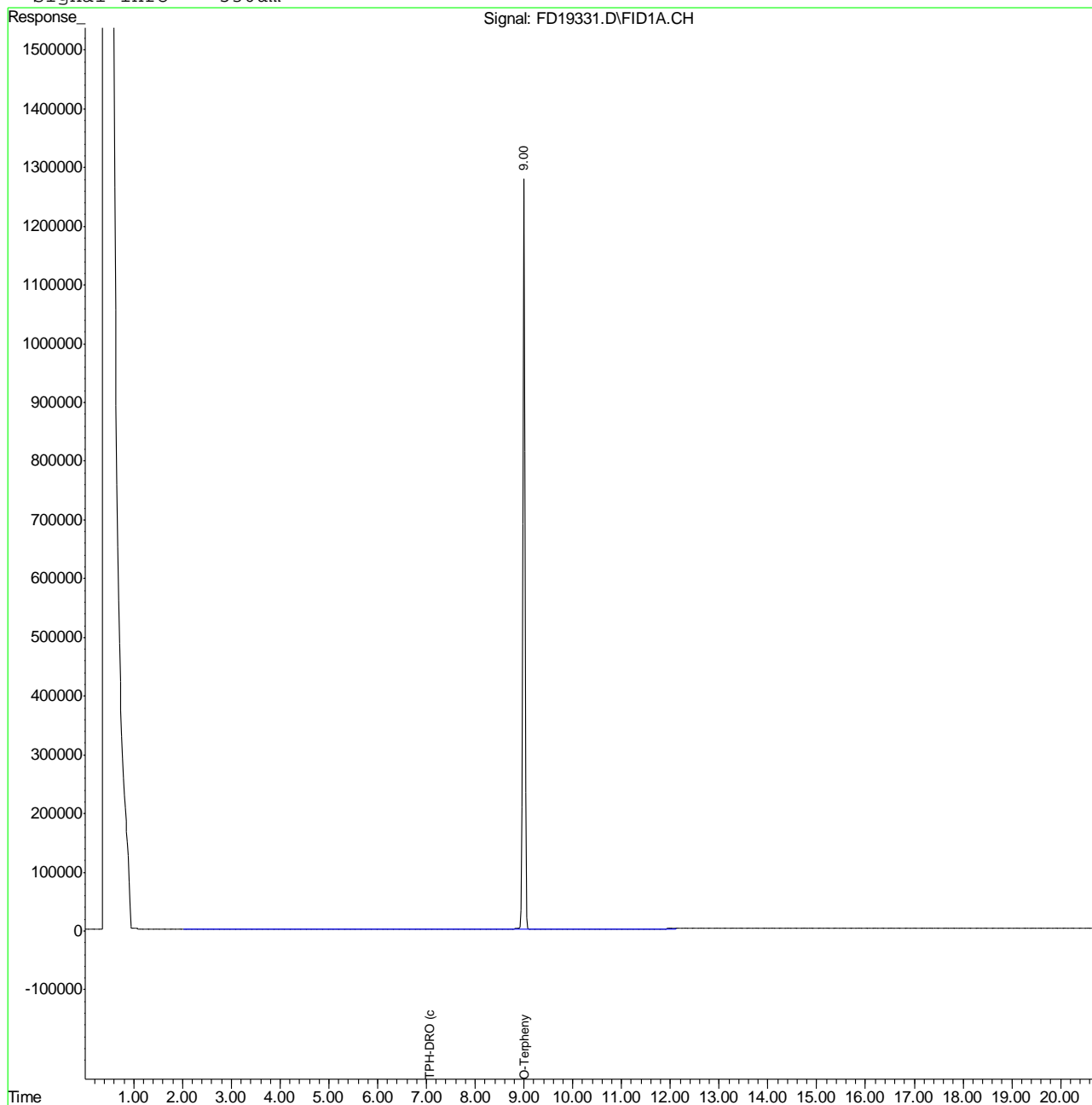
(f)=RT Delta > 1/2 Window (m)=manual int.
FD19331.D DRO-GFD823F.M Mon Nov 12 09:55:12 2012 GC

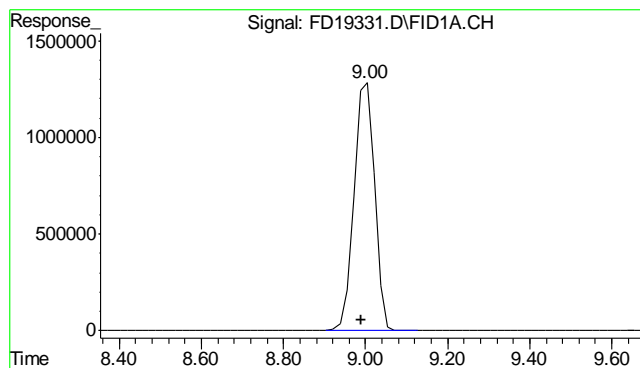
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD110912\FD19331.D Vial: 3
Acq On : 09 Nov 2012 11:16 am Operator: ashleyv
Sample : OP6942-MB Inst : FID5
Misc : OP6942,GFD975,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 9 14:55 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 01 16:47:14 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

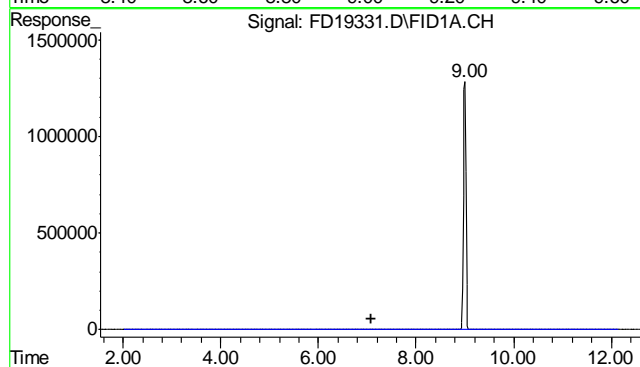
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.004 min
Delta R.T.: 0.014 min
Response: 45116259
Conc: 955.07 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min
Delta R.T.: 0.000 min
Response: 1254128
Conc: 32.57 mg/L m

13.2.1
13

Metals Analysis

QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/09/12

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	2.2	* (a)
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	-0.010	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.12	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.050	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	-0.19	<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	0.15	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	0.24	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	0.020	<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	0.20	<3.0

Associated samples MP8856: D40713-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/09/12

Metal	D40712-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	8010	9680	237	1213.0(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	47.5	59.4	80.0	75-125
Calcium					
Chromium	22.2	58.9	59.4	68.1N(b)	75-125
Cobalt					
Copper	28.0	81.4	59.4	90.0	75-125
Iron					
Lead	14.0	124	119	92.7	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	12.5	56.4	59.4	74.0N(c)	75-125
Phosphorus					
Potassium					
Selenium	1.3	99.1	119	82.4	75-125
Silicon					
Silver	0.0	20.5	23.7	86.3	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	51.3	83.4	59.4	61.0N(b)	75-125

Associated samples MP8856: D40713-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- (b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- (c) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/09/12

Metal	D40712-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	8010	9550	242	1135.3(a)	12.3	20
Beryllium						
Boron						
Cadmium	0.0	48.2	60.6	79.6	1.5	20
Calcium						
Chromium	22.2	64.8	60.6	76.5	9.5	20
Cobalt						
Copper	28.0	85.6	60.6	95.1	5.0	20
Iron						
Lead	14.0	111	121	80.1	11.1	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	12.5	57.2	60.6	73.8N(b)	1.4	20
Phosphorus						
Potassium						
Selenium	1.3	101	121	82.3	1.9	20
Silicon						
Silver	0.0	20.8	24.2	85.9	1.5	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	51.3	95.0	60.6	78.9	13.0	20

Associated samples MP8856: D40713-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40713
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8856
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 11/09/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	186	200	93.0	80-120
Beryllium				
Boron				
Cadmium	42.9	50	85.8	80-120
Calcium				
Chromium	45.5	50	91.0	80-120
Cobalt				
Copper	47.1	50	94.2	80-120
Iron				
Lead	88.6	100	88.6	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	43.4	50	86.8	80-120
Phosphorus				
Potassium				
Selenium	87.1	100	87.1	80-120
Silicon				
Silver	18.0	20	90.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	44.3	50	88.6	80-120

Associated samples MP8856: D40713-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/09/12

Metal	D40712-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	58400	66100	13.1*(a)	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	191	176	10.5*(a)	0-10
Cobalt				
Copper	241	238	1.1	0-10
Iron				
Lead	120	118	2.0	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	115	120	11.7*(a)	0-10
Phosphorus				
Potassium				
Selenium	11.0	0.00	100.0(b)	0-10
Silicon				
Silver	0.00	2.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	441	474	17.0*(a)	0-10

Associated samples MP8856: D40713-1

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8856
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8857
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/09/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0095	<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 MP8857: D40713-1

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: D40713
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8857
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 11/09/12

Metal	D40712-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	9.6	111	119	85.4 75-125
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8857: D40713-1

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

14.2.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8857
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/09/12

Metal	D40712-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	9.6	137	121	105.2	21.0 (a)	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 MP8857: D40713-1

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
(a) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8857
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/09/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	103	100	103.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8857: D40713-1

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

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40713
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8857
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 11/09/12

Metal	D40712-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	82.6	82.5	0.1	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 MP8857: D40713-1

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

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date: 11/09/12

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	28.5	<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	-17	<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	349	<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 MP8858: D40713-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
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: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date: 11/09/12

Metal	D40714-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	15500	149000	125000	106.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	432	127000	125000	101.3	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	258000	390000	125000	105.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8858: D40713-1A

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

14.3.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
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: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date: 11/09/12

Metal	D40714-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	15500	146000	125000	104.4	2.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	432	124000	125000	98.9	2.4	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	258000	385000	125000	101.6	1.3	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8858: D40713-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date: 11/09/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	130000	125000	104.0	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	120000	125000	96.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	122000	125000	97.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8858: D40713-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
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: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date: 11/09/12

Metal	D40714-1A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	3090	3090	0.1	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	86.3	68.0	21.2 (a)	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	51600	58700	13.6*(b)	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8858: D40713-1A

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

14.3.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8858
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8871
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 11/13/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.083	.00088	.00075	-0.00024	<0.083

Associated samples MP8871: D40713-1

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: D40713
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8871
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/13/12

Metal	D40797-1		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits

Mercury	0.080	0.43	0.377	92.9	75-125
---------	-------	------	-------	------	--------

Associated samples MP8871: D40713-1

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: D40713
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8871
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/13/12

Metal	D40797-1		Spikelot		MSD	QC
	Original	MSD	HGWSR1	% Rec		
Mercury	0.080	0.40	0.371	86.3	7.2	20

Associated samples MP8871: D40713-1

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: D40713
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8871
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/13/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.33	0.333	99.0	80-120

Associated samples MP8871: D40713-1

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

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8655/GN17636	1.0	0.0	mg/kg	176	161	91.5	80-120%
Specific Conductivity	GP8649/GN17613			umhos/cm	9992	9800	98.1	90-110%
pH	GN17604			su	8.00	8.04	100.5	99.3-100.7%

Associated Samples:
Batch GP8649: D40713-1
Batch GP8655: D40713-1
Batch GN17604: D40713-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8655/GN17636	D40715-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN17603	D40617-1	mv	242	250	3.2	0-20%

Associated Samples:
Batch GP8655: D40713-1
Batch GN17603: D40713-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8655/GN17636	D40715-1	mg/kg	0.0	40	33.0	82.0	75-125%

Associated Samples:
Batch GP8655: D40713-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40713
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8655/GN17636	D40715-1	mg/kg	0.0	40	33.7	2.2	20%

Associated Samples:
Batch GP8655: D40713-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits