



01/17/13

Technical Report for

XTO Energy

PCU 296-5A

1210-04

Accutest Job Number: D42511

Sampling Date: 01/07/13

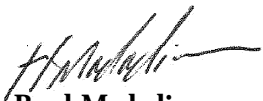
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Total number of pages in report: 150



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.


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

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Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary	4
Section 2: Case Narrative/Conformance Summary	5
Section 3: Summary of Hits	8
Section 4: Sample Results	9
4.1: D42511-1: CUT 1 SUBLINER COMP	10
4.2: D42511-1A: CUT 1 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	51
8.1: Method Blank Summary	52
8.2: Blank Spike Summary	53
8.3: Matrix Spike/Matrix Spike Duplicate Summary	54
Section 9: GC/MS Semi-volatiles - Raw Data	55
9.1: Samples	56
9.2: Method Blanks	73
Section 10: GC Volatiles - QC Data Summaries	90
10.1: Method Blank Summary	91
10.2: Blank Spike Summary	92
10.3: Matrix Spike/Matrix Spike Duplicate Summary	93
Section 11: GC Volatiles - Raw Data	94
11.1: Samples	95
11.2: Method Blanks	100
Section 12: GC Semi-volatiles - QC Data Summaries	105
12.1: Method Blank Summary	106
12.2: Blank Spike Summary	107
12.3: Matrix Spike/Matrix Spike Duplicate Summary	108
Section 13: GC Semi-volatiles - Raw Data	109
13.1: Samples	110
13.2: Method Blanks	113
Section 14: Metals Analysis - QC Data Summaries	116
14.1: Prep QC MP9237: Ca,Mg,Na,Sodium Adsorption Ratio	117
14.2: Prep QC MP9242: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn	127
14.3: Prep QC MP9243: As	137
14.4: Prep QC MP9244: Hg	142
Section 15: General Chemistry - QC Data Summaries	146

Table of Contents

Sections:

-2-

15.1:	Method Blank and Spike Results Summary	147
15.2:	Duplicate Results Summary	148
15.3:	Matrix Spike Results Summary	149
15.4:	Matrix Spike Duplicate Results Summary	150

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



Sample Summary

XTO Energy

Job No: D42511

PCU 296-5A
Project No: 1210-04

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D42511-1	01/07/13	13:20 DS	01/10/13	SO	Soil	CUT 1 SUBLINER COMP
D42511-1A	01/07/13	13:20 DS	01/10/13	SO	Soil	CUT 1 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 D42511

Site: PCU 296-5A

Report Date 1/17/2013 1:09:39 PM

On 01/10/2013, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.1 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D42511 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: V3V1327

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42512-1MS, D42512-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP7223

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42510-1MS, D42510-1MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery(s) of Naphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- The RPD(s) for the MS and MSD recoveries of Naphthalene are outside control limits for sample OP7223-MSD. Variability of recovery may be due to sample matrix/homogeneity.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB1044

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42435-1MS, D42435-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP7222

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D42509-2MS, D42509-2MSD 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: MP9237

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42427-2MS, D42427-2MSD, D42427-2SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Calcium, Sodium are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Calcium, Sodium are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Magnesium, Calcium, Sodium are outside control limits for sample MP9237-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP9237-SD1 for Calcium: Serial dilution indicates possible matrix interference.
- MP9237-SD1 for Sodium: Serial dilution indicates possible matrix interference.

Matrix SO

Batch ID: MP9242

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42510-1MS, D42510-1MSD, D42510-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Chromium, Lead, Zinc are outside control limits for sample MP9242-SD1. Probable cause due to sample homogeneity.
- MP9242-SD1 for Zinc, Chromium, Lead: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP9243

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42510-1MS, D42510-1SDL, D42510-1MSD were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP9244

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42445-1MS, D42445-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN18410

- Sample(s) D42511-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM 2510B-2011 MOD

Matrix SO

Batch ID: GP9098

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN18390
------------------	--------------------------

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: GP9086
------------------	-------------------------

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42556-1DUP, D42556-1MS, D42556-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix SO	Batch ID: R15683
------------------	-------------------------

- The data for SW846 3060A/7196A M meets quality control requirements.
- D42511-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix SO	Batch ID: GN18407
------------------	--------------------------

- The following samples were run outside of holding time for method SW846 9045D: D42511-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO	Batch ID: MP9237
------------------	-------------------------

- D42511-1A 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: D42511
Account: XTO Energy
Project: PCU 296-5A
Collected: 01/07/13



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

D42511-1 CUT 1 SUBLINER COMP

Ethylbenzene	0.0319 J	0.15	0.028	mg/kg	SW846 8260B
Naphthalene	0.0222	0.014	0.013	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)	66.6	8.2	4.9	mg/kg	SW846-8015B
Arsenic	8.1	0.12		mg/kg	SW846 6020A
Barium	358	1.2		mg/kg	SW846 6010C
Chromium	56.8	1.2		mg/kg	SW846 6010C
Copper	10.4	1.2		mg/kg	SW846 6010C
Lead	9.6	6.2		mg/kg	SW846 6010C
Nickel	19.7	3.7		mg/kg	SW846 6010C
Zinc	40.0	3.7		mg/kg	SW846 6010C
Specific Conductivity	1560	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent ^a	56.8	2.2		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	137			mv	ASTM D1498-76M
pH	11.08			su	SW846 9045D

D42511-1A CUT 1 SUBLINER COMP

Calcium	23.4	2.0		mg/l	SW846 6010C
Magnesium	3.13	1.0		mg/l	SW846 6010C
Sodium	275	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	14.2			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 1 SUBLINER COMP	Date Sampled:	01/07/13
Lab Sample ID:	D42511-1	Date Received:	01/10/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8260B		
Project:	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V22567.D	1	01/12/13	BD	n/a	n/a	V3V1327
Run #2							

	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	0.073	0.037	mg/kg	
108-88-3	Toluene	ND	0.15	0.073	mg/kg	
100-41-4	Ethylbenzene	0.0319	0.15	0.028	mg/kg	J
1330-20-7	Xylene (total)	ND	0.29	0.15	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	86%		64-130%
460-00-4	4-Bromofluorobenzene	105%		62-131%
17060-07-0	1,2-Dichloroethane-D4	87%		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 1 SUBLINER COMP	Date Sampled:	01/07/13
Lab Sample ID:	D42511-1	Date Received:	01/10/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12978.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.010	0.0053	mg/kg	
120-12-7	Anthracene	ND	0.010	0.0053	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.010	0.0053	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.010	0.0053	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.010	0.0053	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.010	0.0053	mg/kg	
218-01-9	Chrysene	ND	0.010	0.0053	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.010	0.0053	mg/kg	
206-44-0	Fluoranthene	ND	0.010	0.0053	mg/kg	
86-73-7	Fluorene	ND	0.010	0.0053	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.010	0.0053	mg/kg	
91-20-3	Naphthalene	0.0222	0.014	0.013	mg/kg	
129-00-0	Pyrene	ND	0.010	0.0053	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		10-159%
321-60-8	2-Fluorobiphenyl	78%		19-131%
1718-51-0	Terphenyl-d14	96%		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 1 SUBLINER COMP	Date Sampled:	01/07/13
Lab Sample ID:	D42511-1	Date Received:	01/10/13
Matrix:	SO - Soil	Percent Solids:	81.0
Method:	SW846 8015B		
Project:	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB19112.D	1	01/11/13	SK	n/a	n/a	GGB1044
Run #2							

	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	15	7.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	90%		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

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Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 1 SUBLINER COMP			Date Sampled:	01/07/13
Lab Sample ID:	D42511-1			Date Received:	01/10/13
Matrix:	SO - Soil			Percent Solids:	81.0
Method:	SW846-8015B SW846 3546				
Project:	PCU 296-5A				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH008578.D	1	01/15/13	AV	01/14/13	OP7222	GFH472
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	66.6	8.2	4.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	67%		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 1 SUBLINER COMP	Date Sampled:	01/07/13
Lab Sample ID:	D42511-1	Date Received:	01/10/13
Matrix:	SO - Soil	Percent Solids:	81.0
Project:	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	8.1	0.12	mg/kg	5	01/14/13	01/16/13 JB	SW846 6020A ³	SW846 3050B ⁵
Barium	358	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.2	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Chromium	56.8	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Copper	10.4	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Lead	9.6	6.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.10	0.10	mg/kg	1	01/15/13	01/15/13 JB	SW846 7471B ²	SW846 7471B ⁶
Nickel	19.7	3.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 6.2	6.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.7	3.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴
Zinc	40.0	3.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA3169

(2) Instrument QC Batch: MA3177

(3) Instrument QC Batch: MA3182

(4) Prep QC Batch: MP9242

(5) Prep QC Batch: MP9243

(6) Prep QC Batch: MP9244

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	01/07/13
Lab Sample ID:	D42511-1	Date Received:	01/10/13
Matrix:	SO - Soil	Percent Solids:	81.0
Project:	PCU 296-5A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1560	1.0	umhos/cm	1	01/15/13	KB	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	01/14/13	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	56.8	2.2	mg/kg	1	01/14/13 17:18	JB	SW846 3060A/7196A M
Redox Potential Vs H2	137		mv	1	01/11/13	CT	ASTM D1498-76M
Solids, Percent	81		%	1	01/11/13	SWT	SM19 2540B M
pH	11.08		su	1	01/11/13 13:30	CT	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: CUT 1 SUBLINER COMP
Lab Sample ID: D42511-1A
Matrix: SO - Soil
Project: PCU 296-5A

Date Sampled: 01/07/13
Date Received: 01/10/13
Percent Solids: 81.0

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	23.4	2.0	mg/l	1	01/11/13	01/11/13 JB	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	3.13	1.0	mg/l	1	01/11/13	01/11/13 JB	SW846 6010C ¹	SW846 3010A/M ²
Sodium	275	2.0	mg/l	1	01/11/13	01/11/13 JB	SW846 6010C ¹	SW846 3010A/M ²

(1) Instrument QC Batch: MA3166
(2) Prep QC Batch: MP9237

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	01/07/13
Lab Sample ID:	D42511-1A	Date Received:	01/10/13
Matrix:	SO - Soil	Percent Solids:	81.0
Project:	PCU 296-5A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	14.2		ratio	1	01/11/13 17:52	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D42511

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 1/10/2013 1:00:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 296-5A

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: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1327-MB	3V22560.D	1	01/12/13	BD	n/a	n/a	V3V1327

The QC reported here applies to the following samples:

Method: SW846 8260B

D42511-1

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	89% 64-130%
460-00-4	4-Bromofluorobenzene	97% 62-131%
17060-07-0	1,2-Dichloroethane-D4	98% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1327-BS	3V22561.D	1	01/12/13	BD	n/a	n/a	V3V1327

The QC reported here applies to the following samples:

Method: SW846 8260B

D42511-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.4	95	70-130
100-41-4	Ethylbenzene	50	48.7	97	70-130
108-88-3	Toluene	50	47.3	95	70-130
1330-20-7	Xylene (total)	150	149	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	91%	64-130%
460-00-4	4-Bromofluorobenzene	109%	62-131%
17060-07-0	1,2-Dichloroethane-D4	88%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D42512-1MS	3V22564.D	1	01/12/13	BD	n/a	n/a	V3V1327
D42512-1MSD	3V22565.D	1	01/12/13	BD	n/a	n/a	V3V1327
D42512-1	3V22563.D	1	01/12/13	BD	n/a	n/a	V3V1327

The QC reported here applies to the following samples:

Method: SW846 8260B

D42511-1

CAS No.	Compound	D42512-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	72.3		3580	3400	93	3340	91	2	64-139/30
100-41-4	Ethylbenzene	35.0	J	3580	3530	98	3500	97	1	68-136/30
108-88-3	Toluene	138	J	3580	3330	89	3300	88	1	60-130/30
1330-20-7	Xylene (total)	212	J	10700	10800	99	10800	99	0	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D42512-1	Limits
2037-26-5	Toluene-D8	86%	87%	84%	64-130%
460-00-4	4-Bromofluorobenzene	113%	112%	104%	62-131%
17060-07-0	1,2-Dichloroethane-D4	90%	86%	90%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\
 Data File : 3V22567.D
 Acq On : 12 Jan 2013 5:39 am
 Operator : BRETD
 Sample : D42511-1
 Misc : MS5218,V3V1327,5.034,,100,5,1
 ALS Vial : 34 Sample Multiplier: 1

Quant Time: Jan 15 08:23:28 2013
 Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M
 Quant Title : 8260
 QLast Update : Thu Jan 03 11:40:16 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.861	168	354648	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.656	114	545471	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	612959	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.288	152	363792	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.252	102	34366	43.30	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	86.60%
61) Toluene-d8	14.052	98	632427	42.85	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	85.70%
69) 4-Bromofluorobenzene	16.246	95	332232	52.26	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	104.52%

Target Compounds

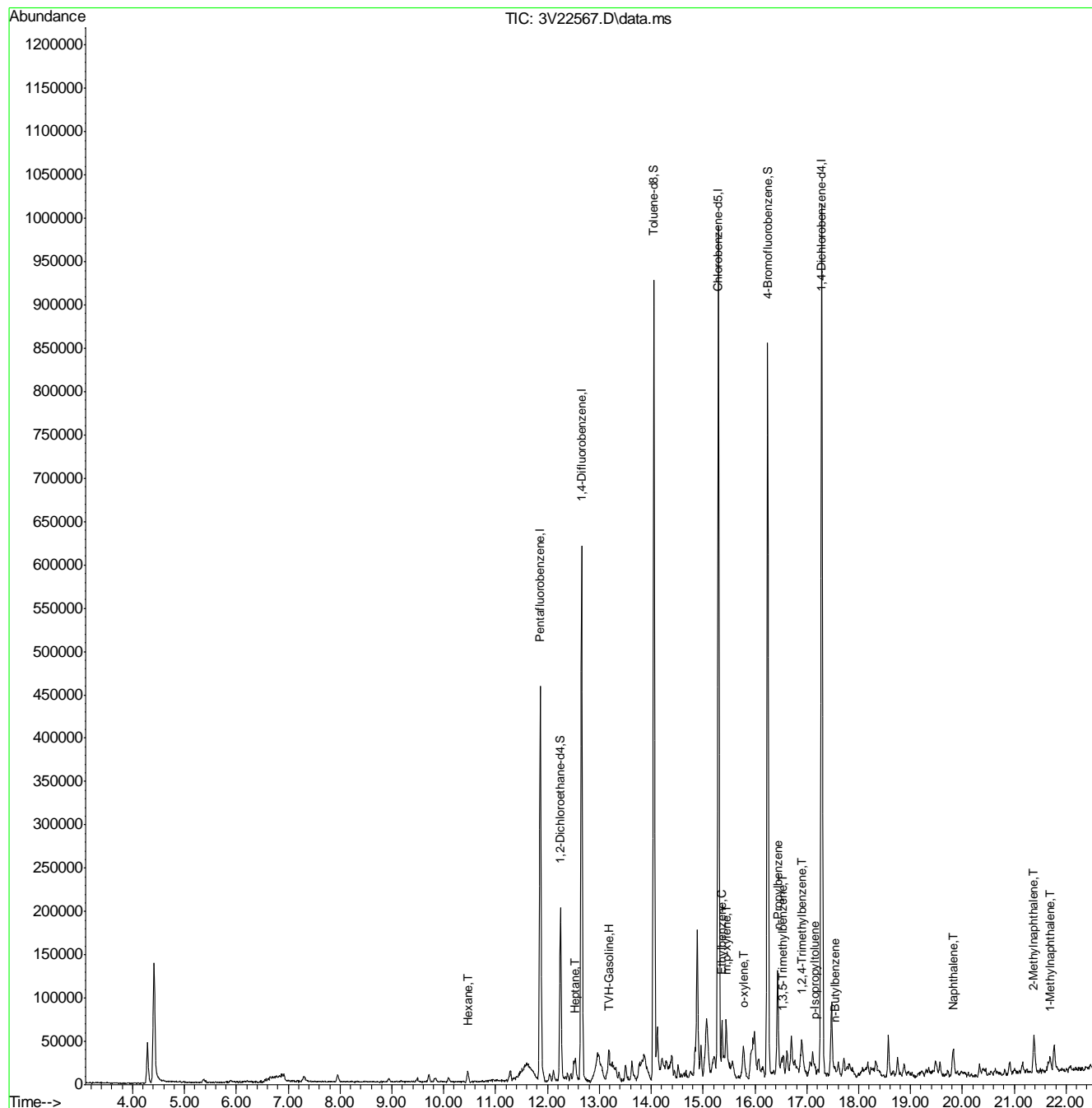
					Qvalue
1) TVH-Gasoline	13.200	TIC	3686969m	125.64	ug/l
41) Hexane	10.462	57	6287	0.98	ug/l
43) Heptane	12.535	43	11700	1.60	ug/l
66) Ethylbenzene	15.367	91	9736	0.44	ug/l
72) m,p-xylene	15.447	106	15298	1.63	ug/l
73) o-xylene	15.797	106	2967	0.32	ug/l
77) n-Propylbenzene	16.426	91	6382	0.25	ug/l
80) 1,3,5-Trimethylbenzene	16.544	105	3948m	0.21	ug/l
82) 1,2,4-Trimethylbenzene	16.894	105	8722	0.46	ug/l
86) p-Isopropyltoluene	17.157	119	7236	0.34	ug/l
88) n-Butylbenzene	17.545	91	4046	0.23	ug/l
91) Naphthalene	19.842	128	16004	1.84	ug/l
94) 2-Methylnaphthalene	21.378	142	32084	3.80	ug/l
95) 1-Methylnaphthalene	21.689	142	12578	1.57	ug/l

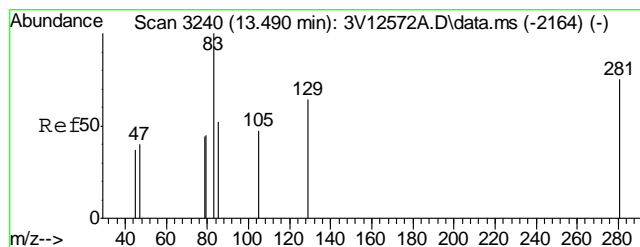
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\
Data File : 3V22567.D
Acq On : 12 Jan 2013 5:39 am
Operator : BRETD
Sample : D42511-1
Misc : MS5218,V3V1327,5.034,,100,5,1
ALS Vial : 34 Sample Multiplier: 1

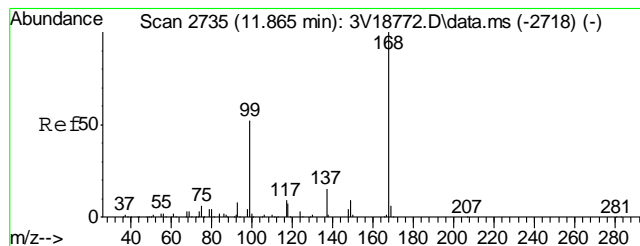
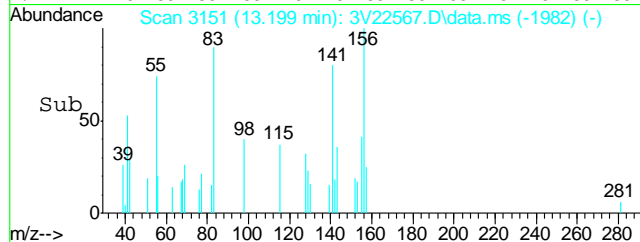
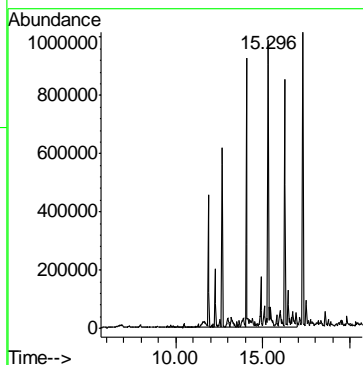
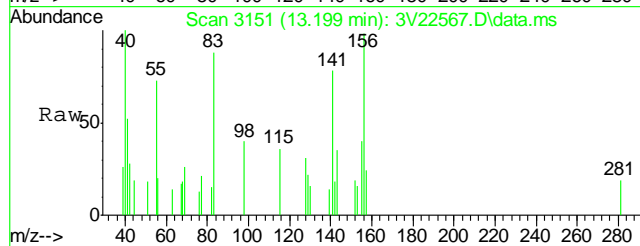
Quant Time: Jan 15 08:23:28 2013
Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M
Quant Title : 8260
QLast Update : Thu Jan 03 11:40:16 2013
Response via : Initial Calibration





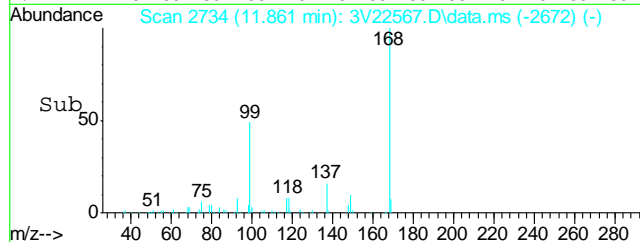
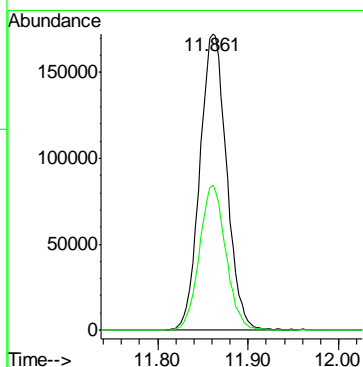
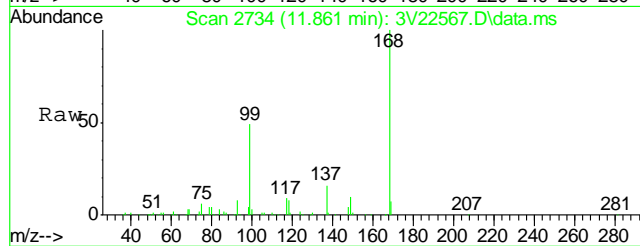
#1
TVH-Gasoline
Concen: 125.64 ug/l m
RT: 13.200 min Scan# 3151
Delta R.T. 0.000 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

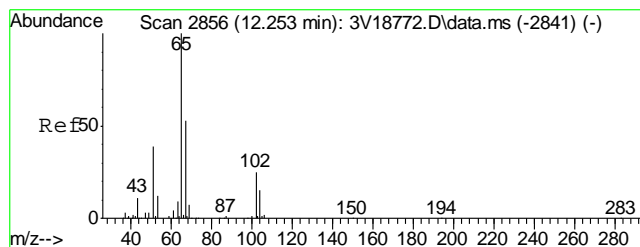
Tgt Ion:TIC Resp: 3686969



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.861 min Scan# 2734
Delta R.T. -0.002 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

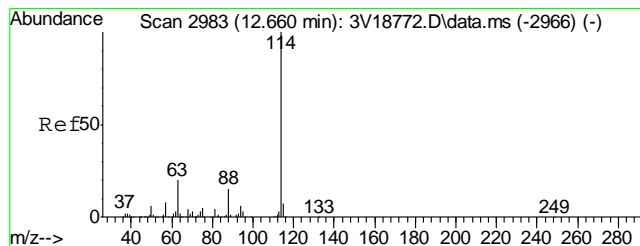
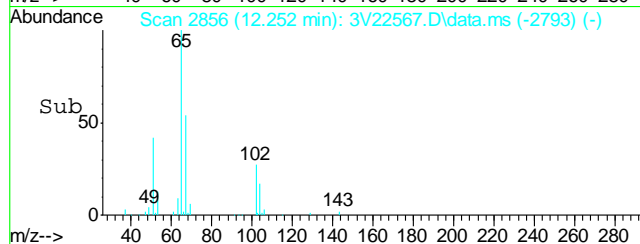
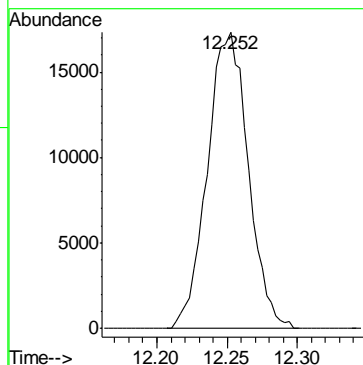
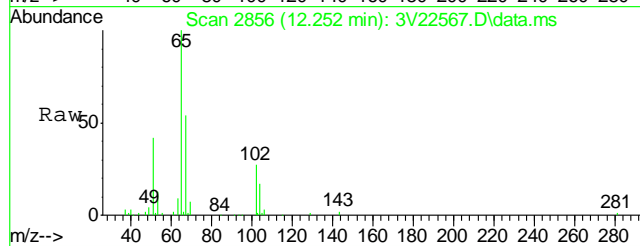
Tgt Ion:168 Resp: 354648
Ion Ratio Lower Upper
168 100
99 48.1 29.0 69.0





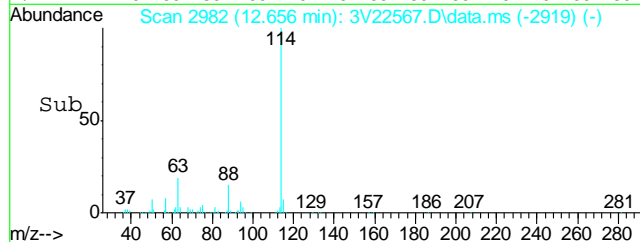
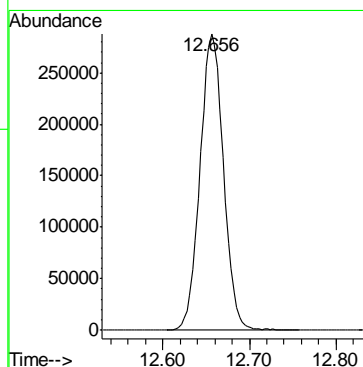
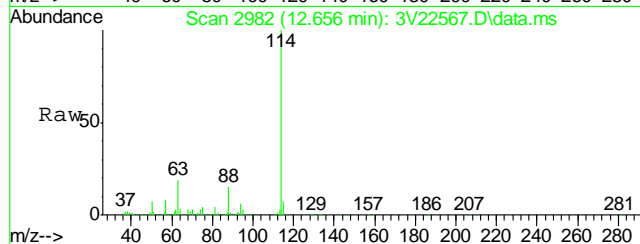
#33
1,2-Dichloroethane-d4
Concen: 43.30 ug/l
RT: 12.252 min Scan# 2856
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

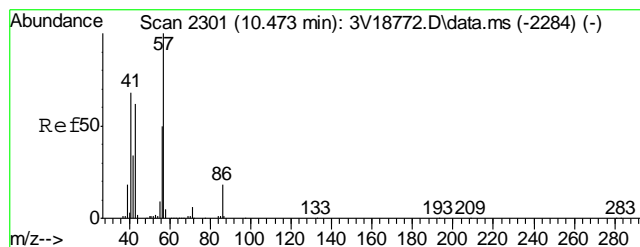
Tgt Ion:102 Resp: 34366



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.656 min Scan# 2982
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

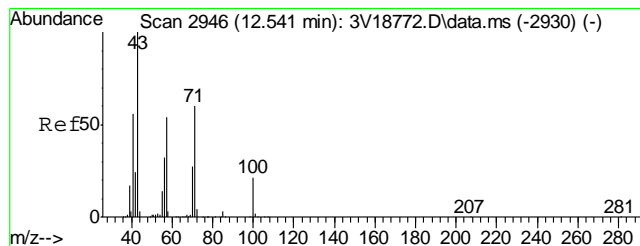
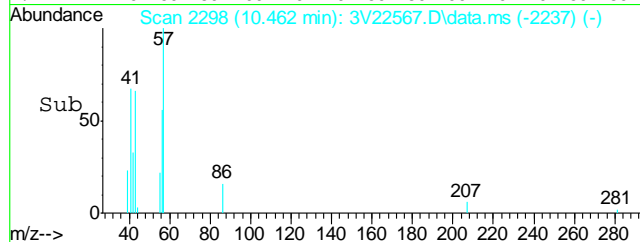
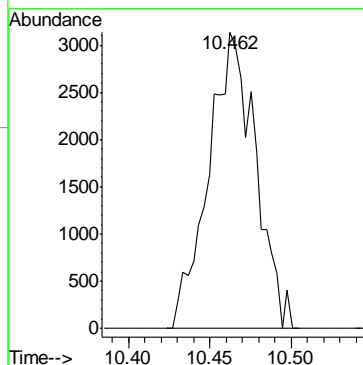
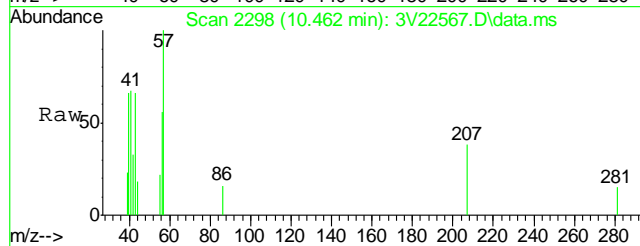
Tgt Ion:114 Resp: 545471





#41
Hexane
Concen: 0.98 ug/l
RT: 10.462 min Scan# 2298
Delta R.T. -0.005 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

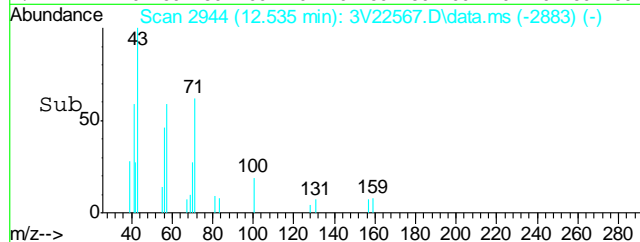
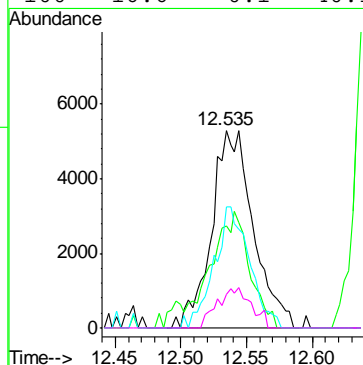
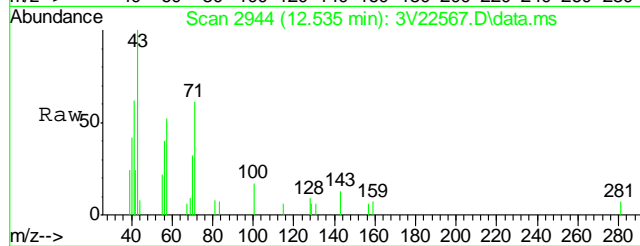
Tgt Ion: 57 Resp: 6287

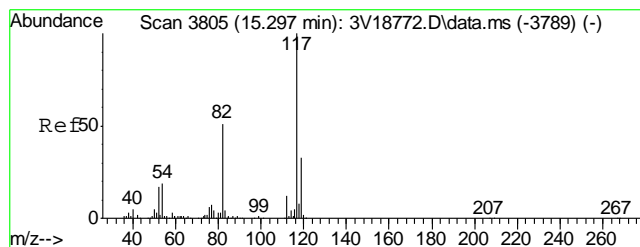


#43
Heptane
Concen: 1.60 ug/l
RT: 12.535 min Scan# 2944
Delta R.T. -0.005 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

Tgt Ion: 43 Resp: 11700

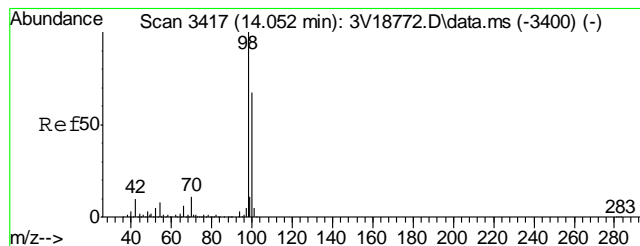
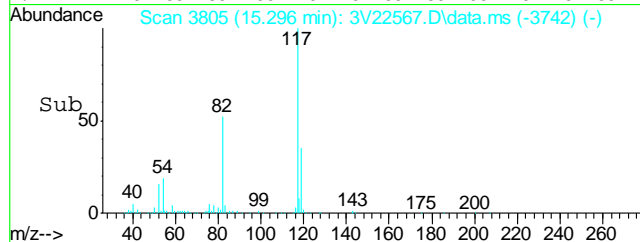
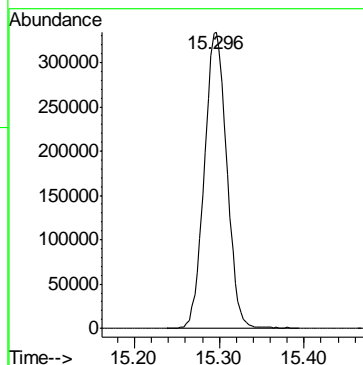
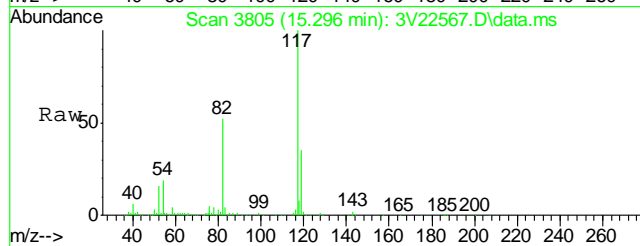
Ion	Ratio	Lower	Upper
43	100		
57	54.2	32.1	72.1
71	51.9	39.6	79.6
100	16.6	0.1	40.1





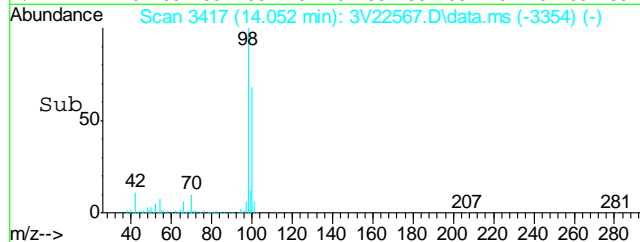
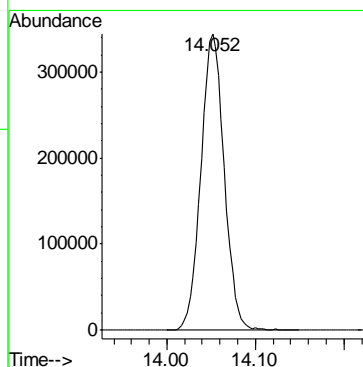
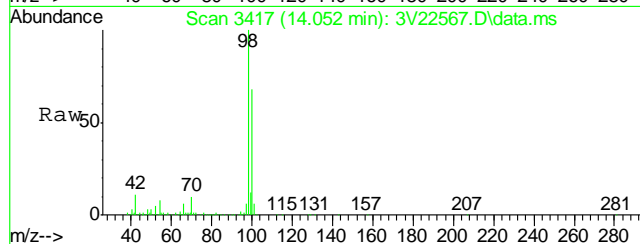
#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.296 min Scan# 3805
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

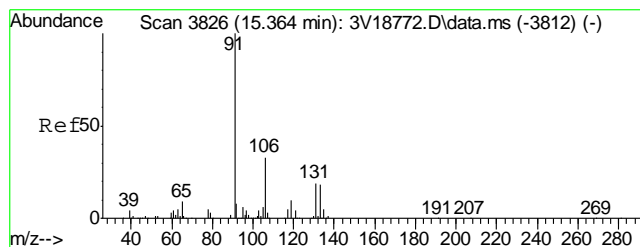
Tgt Ion:117 Resp: 612959



#61
Toluene-d8
Concen: 42.85 ug/l
RT: 14.052 min Scan# 3417
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

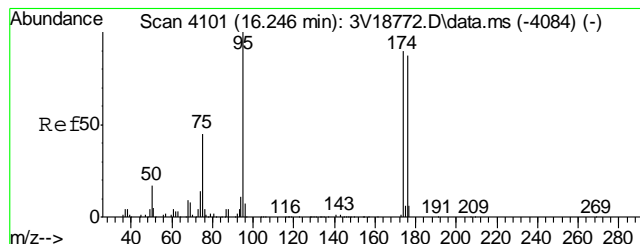
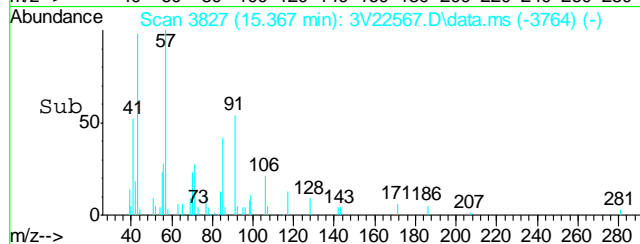
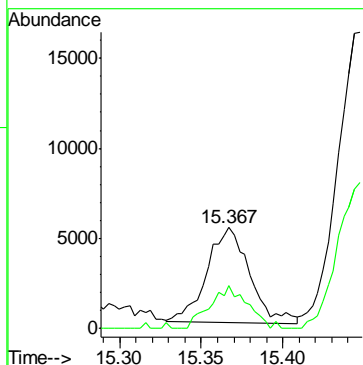
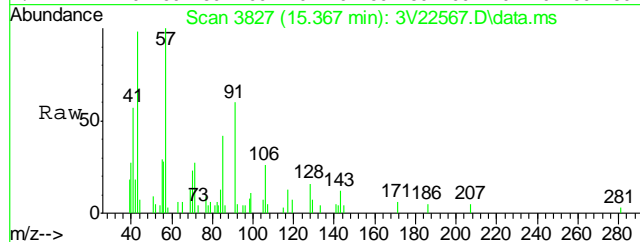
Tgt Ion: 98 Resp: 632427





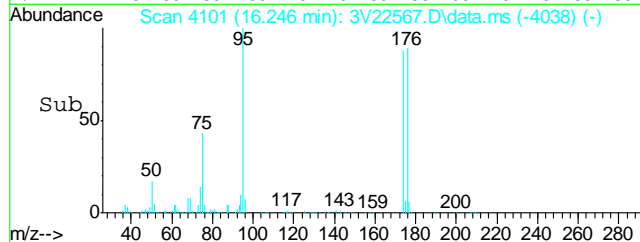
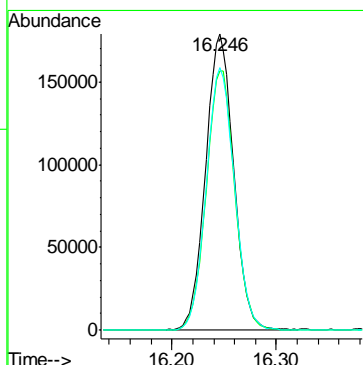
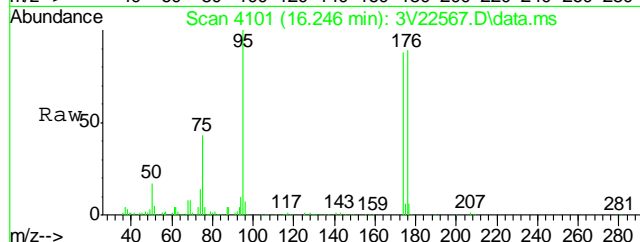
#66
Ethylbenzene
Concen: 0.44 ug/l
RT: 15.367 min Scan# 3827
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

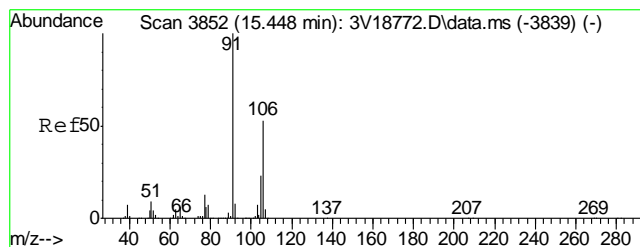
Tgt Ion: 91 Resp: 9736
Ion Ratio Lower Upper
91 100
106 39.5 13.2 53.2



#69
4-Bromofluorobenzene
Concen: 52.26 ug/l
RT: 16.246 min Scan# 4101
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

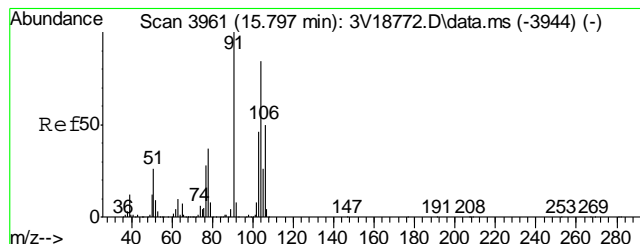
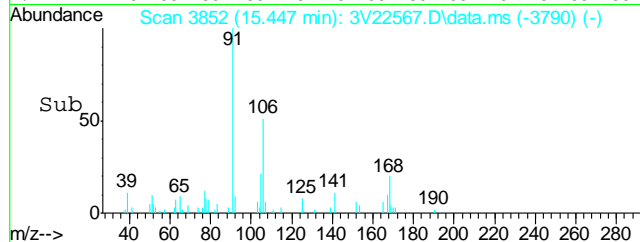
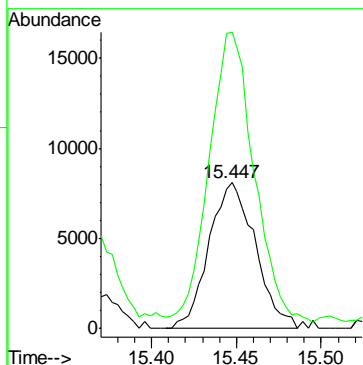
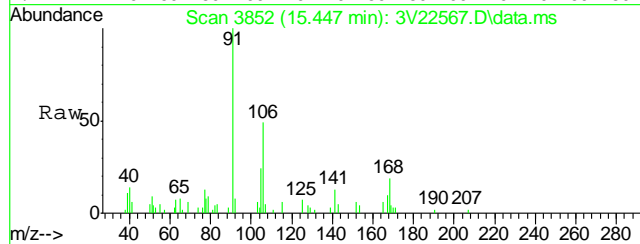
Tgt Ion: 95 Resp: 332232
Ion Ratio Lower Upper
95 100
174 88.7 0.0 20.0#
176 89.2 0.0 20.0#





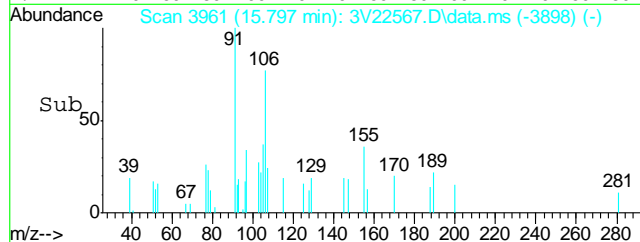
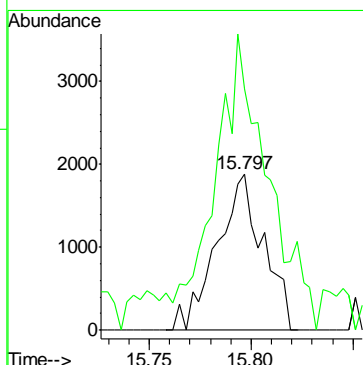
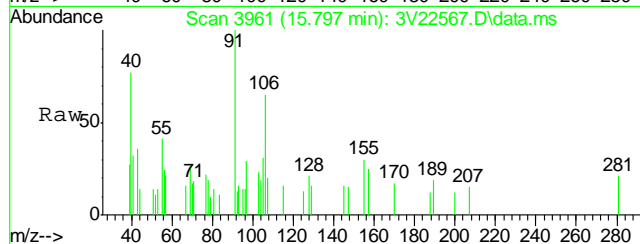
#72
m,p-xylene
Concen: 1.63 ug/l
RT: 15.447 min Scan# 3852
Delta R.T. -0.002 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

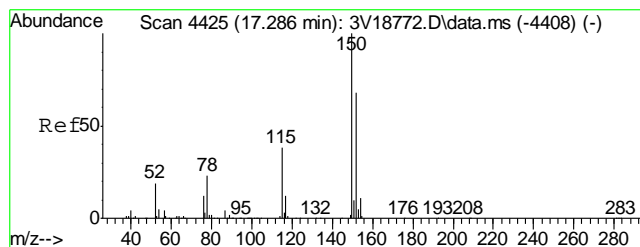
Tgt Ion:106 Resp: 15298
Ion Ratio Lower Upper
106 100
91 200.7 168.1 208.1



#73
o-xylene
Concen: 0.32 ug/l
RT: 15.797 min Scan# 3961
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

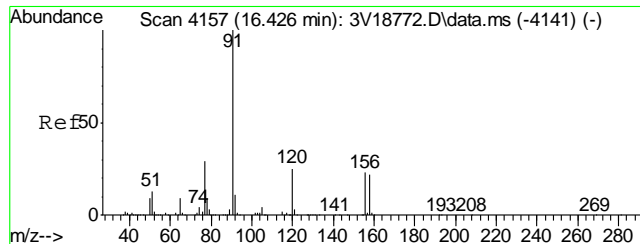
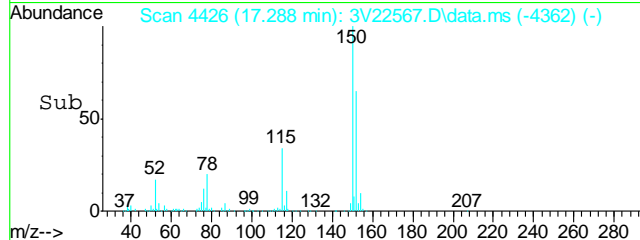
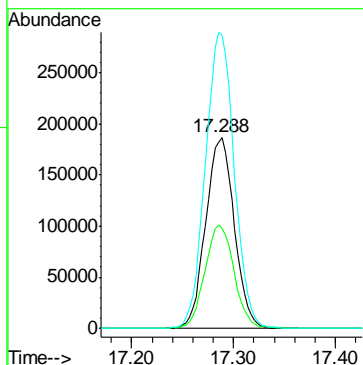
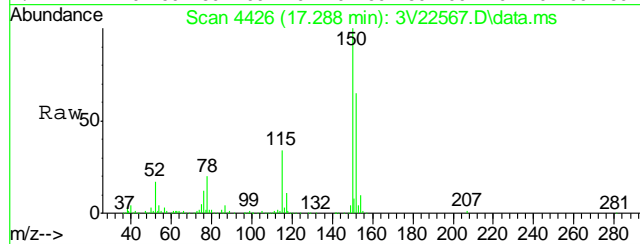
Tgt Ion:106 Resp: 2967
Ion Ratio Lower Upper
106 100
91 216.7 180.3 220.3





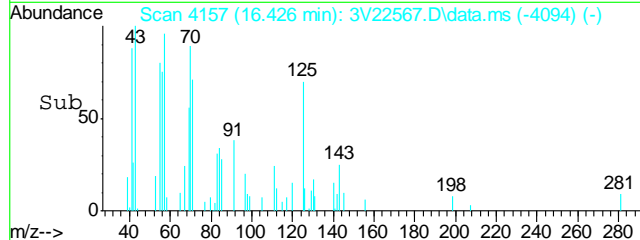
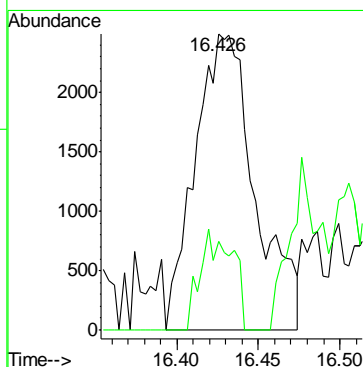
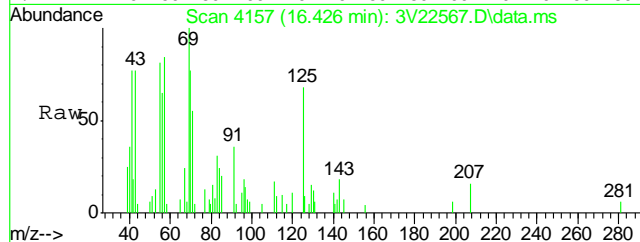
#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.288 min Scan# 4426
Delta R.T. 0.004 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

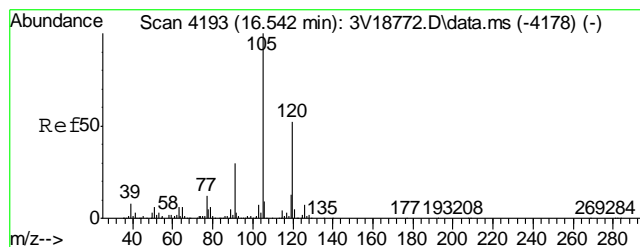
Tgt Ion	Ratio	Lower	Upper
152	100		
115	55.2	34.6	74.6
150	156.2	152.1	192.1



#77
n-Propylbenzene
Concen: 0.25 ug/l
RT: 16.426 min Scan# 4157
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

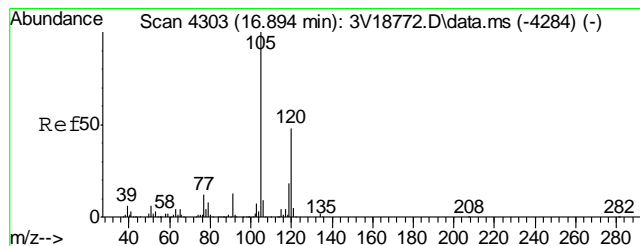
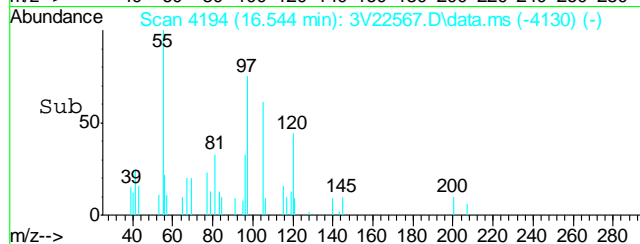
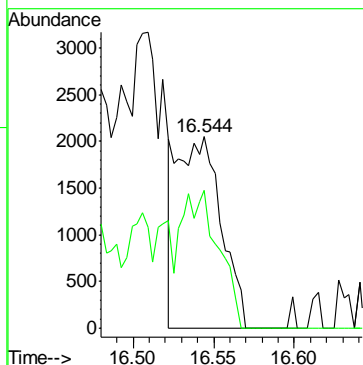
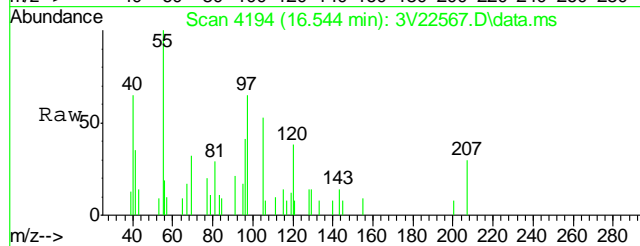
Tgt Ion	Ratio	Lower	Upper
91	100		
120	18.3	4.9	44.9





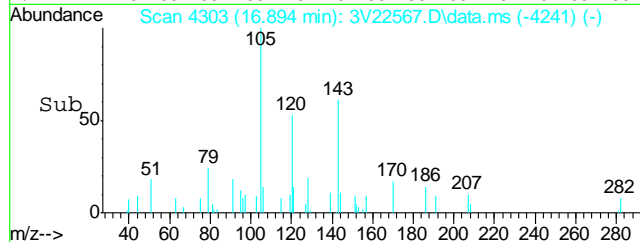
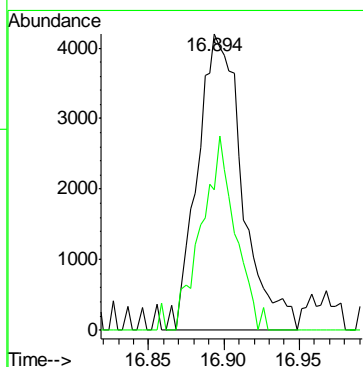
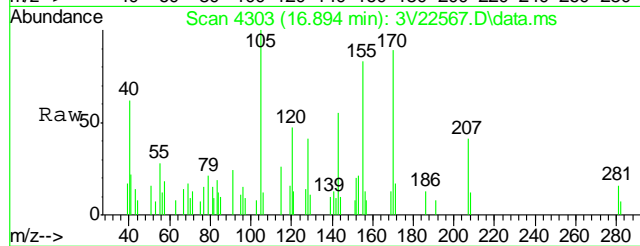
#80
1,3,5-Trimethylbenzene
Concen: 0.21 ug/l m
RT: 16.544 min Scan# 4194
Delta R.T. 0.004 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

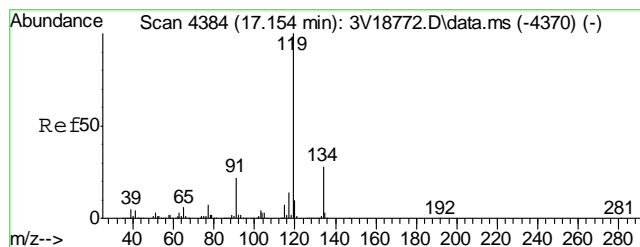
Tgt Ion:105 Resp: 3948
Ion Ratio Lower Upper
105 100
120 47.8 31.8 71.8



#82
1,2,4-Trimethylbenzene
Concen: 0.46 ug/l
RT: 16.894 min Scan# 4303
Delta R.T. -0.002 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

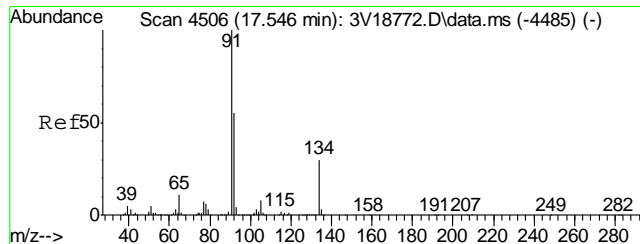
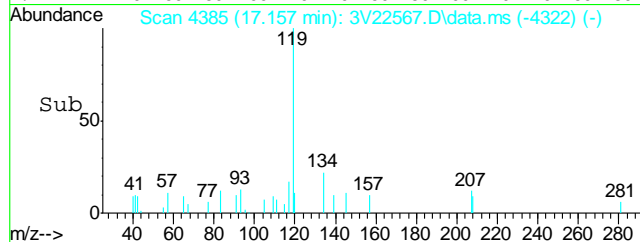
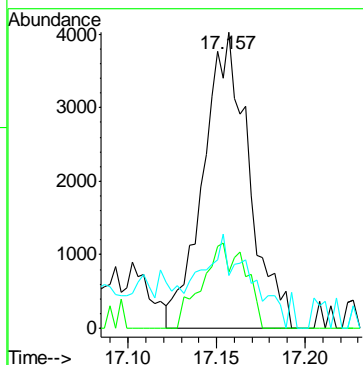
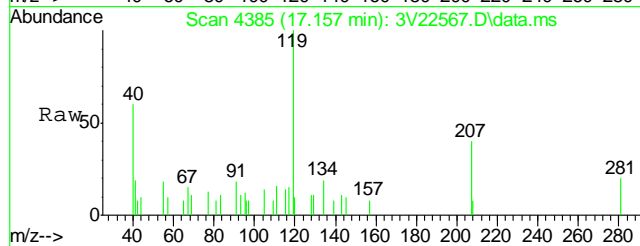
Tgt Ion:105 Resp: 8722
Ion Ratio Lower Upper
105 100
120 48.6 36.4 76.4





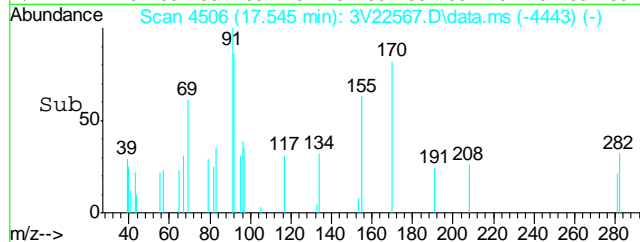
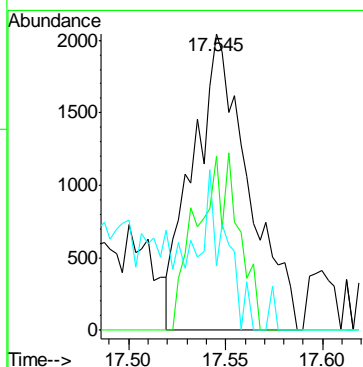
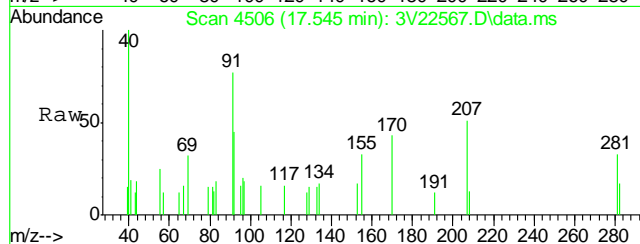
#86
p-Isopropyltoluene
Concen: 0.34 ug/l
RT: 17.157 min Scan# 4385
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

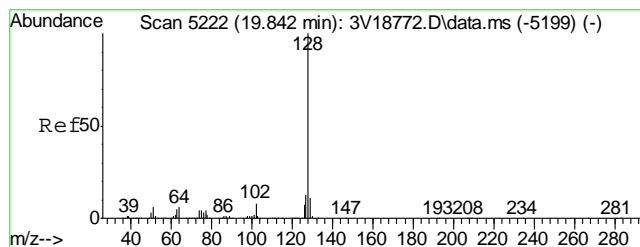
Tgt Ion	Ratio	Lower	Upper
119	100		
134	27.2	7.9	47.9
91	32.9	1.8	41.8



#88
n-Butylbenzene
Concen: 0.23 ug/l
RT: 17.545 min Scan# 4506
Delta R.T. 0.001 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

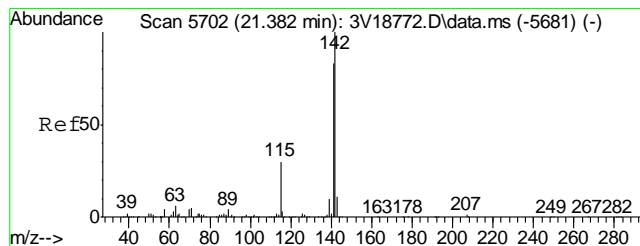
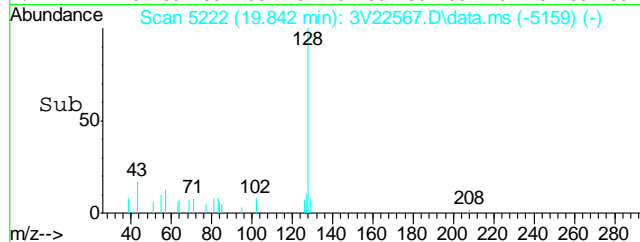
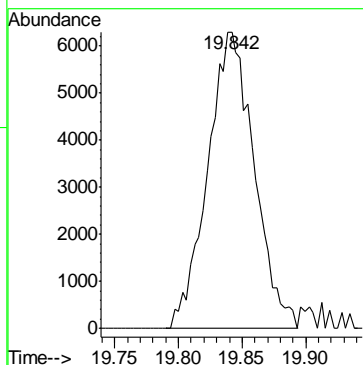
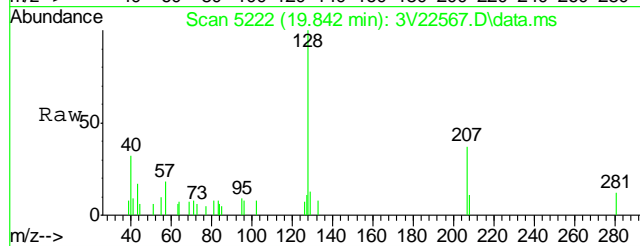
Tgt Ion	Ratio	Lower	Upper
91	100		
92	44.8	34.8	74.8
134	20.4	8.9	48.9





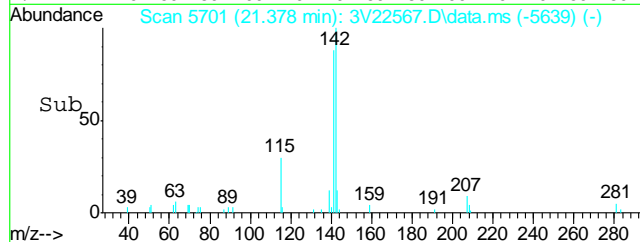
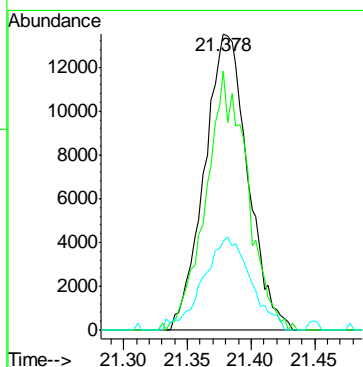
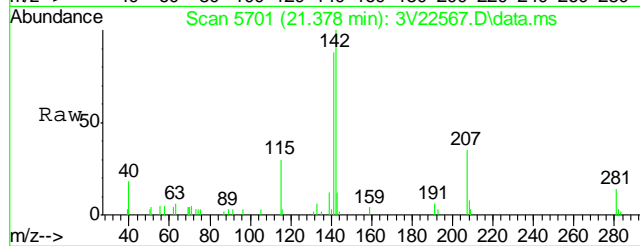
#91
Naphthalene
Concen: 1.84 ug/l
RT: 19.842 min Scan# 5222
Delta R.T. 0.002 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

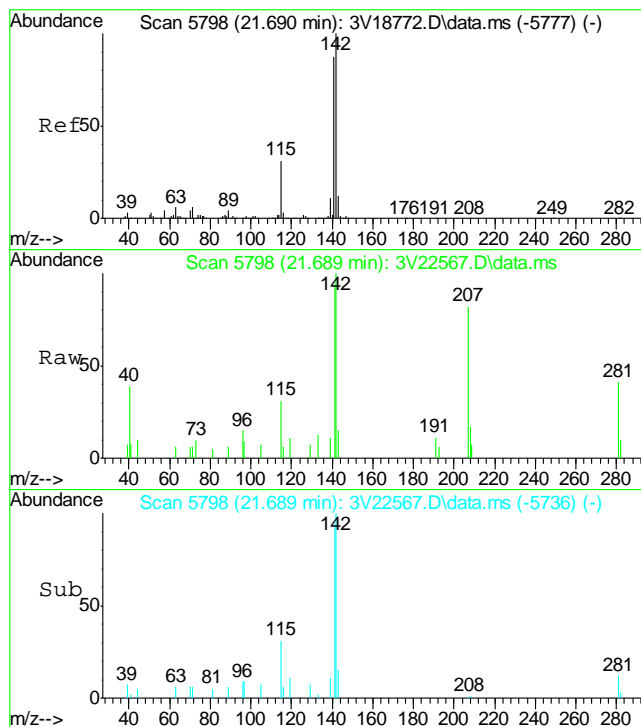
Tgt Ion:128 Resp: 16004



#94
2-Methylnaphthalene
Concen: 3.80 ug/l
RT: 21.378 min Scan# 5701
Delta R.T. -0.002 min
Lab File: 3V22567.D
Acq: 12 Jan 2013 5:39 am

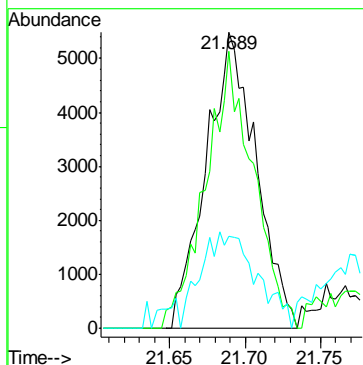
Tgt Ion:142 Resp: 32084
Ion Ratio Lower Upper
142 100
141 83.4 65.8 105.8
115 34.2 9.7 49.7





#95
 1-Methylnaphthalene
 Concen: 1.57 ug/l
 RT: 21.689 min Scan# 5798
 Delta R.T. -0.002 min
 Lab File: 3V22567.D
 Acq: 12 Jan 2013 5:39 am

Tgt Ion:	142	Resp:	12578
Ion Ratio	Lower	Upper	
142	100		
141	89.3	68.3	108.3
115	36.3	11.8	51.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\
 Data File : 3V22560.D
 Acq On : 12 Jan 2013 2:00 am
 Operator : BRETD
 Sample : MB
 Misc : MS5218,V3V1327,5.00,,100,5,1
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Jan 15 08:11:29 2013
 Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M
 Quant Title : 8260
 QLast Update : Thu Jan 03 11:40:16 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.863	168	308471	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.659	114	500082	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.295	117	525362	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.287	152	304372	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.251	102	33686	48.79	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.58%
61) Toluene-d8	14.054	98	562082	44.44	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	88.88%
69) 4-Bromofluorobenzene	16.245	95	265181	48.67	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.34%

Target Compounds

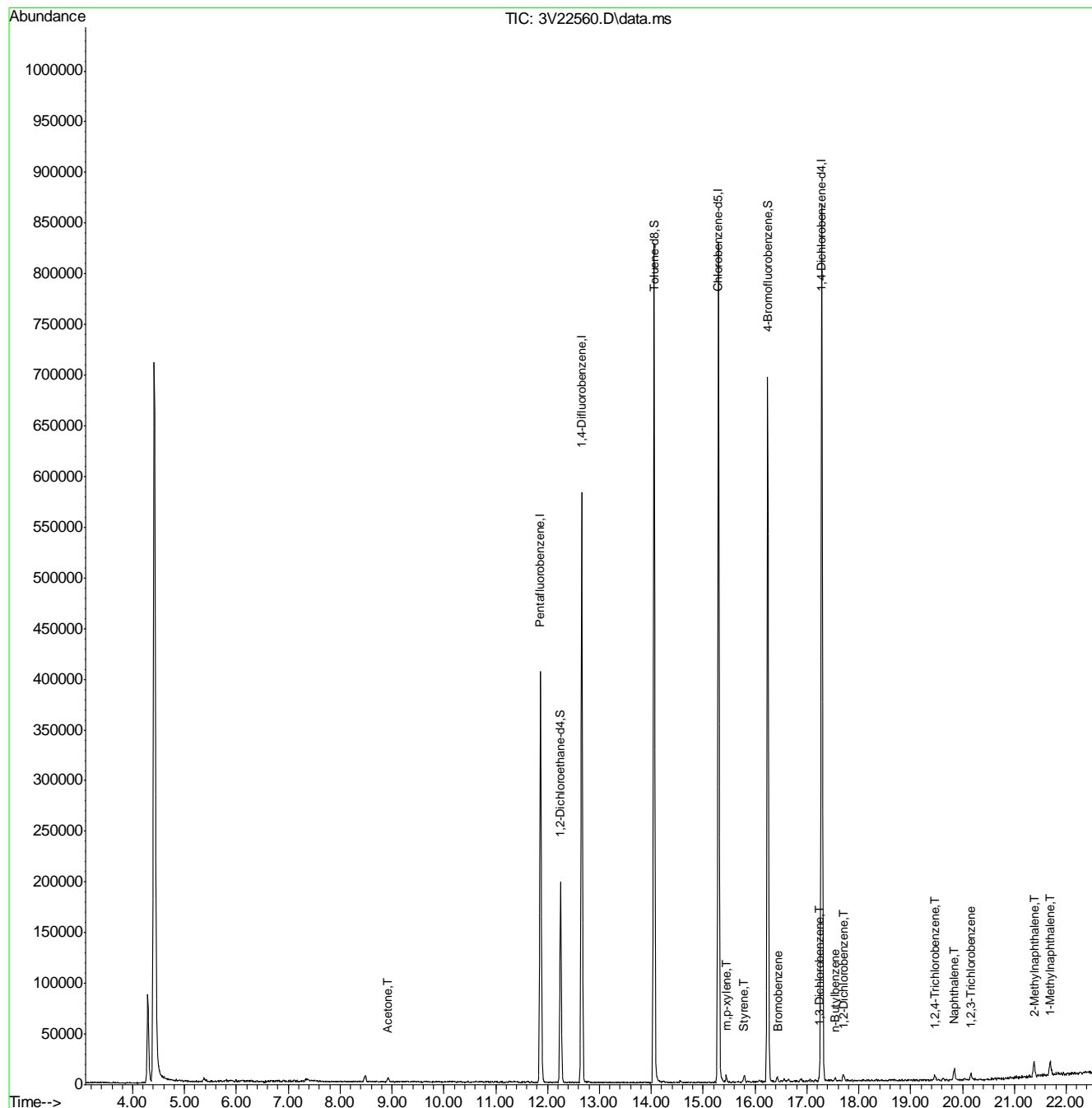
						Qvalue
15) Acetone	8.925	43	6973	0.73	ug/l	100
70) Bromobenzene	16.441	156	1174	0.21	ug/l	90
71) Styrene	15.796	104	1960	0.56	ug/l	86
72) m,p-xylene	15.453	106	2503	0.31	ug/l	90
84) 1,3-Dichlorobenzene	17.239	146	3019	0.28	ug/l	96
87) 1,2-Dichlorobenzene	17.704	146	3319	0.32	ug/l	96
88) n-Butylbenzene	17.541	91	3129	0.22	ug/l	88
90) 1,2,4-Trichlorobenzene	19.462	180	3118	0.48	ug/l	92
91) Naphthalene	19.838	128	16063	2.00	ug/l	100
93) 1,2,3-Trichlorobenzene	20.168	180	3642	0.57	ug/l	94
94) 2-Methylnaphthalene	21.384	142	13326	1.89	ug/l	97
95) 1-Methylnaphthalene	21.692	142	11465	1.71	ug/l	98

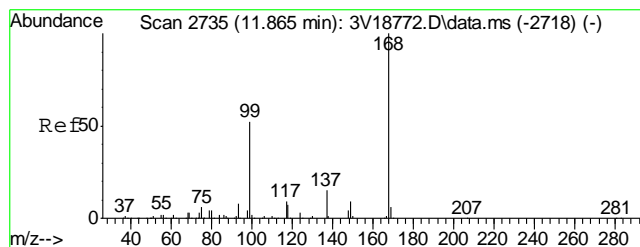
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\
Data File : 3V22560.D
Acq On : 12 Jan 2013 2:00 am
Operator : BRETD
Sample : MB
Misc : MS5218,V3V1327,5.00,,100,5,1
ALS Vial : 27 Sample Multiplier: 1

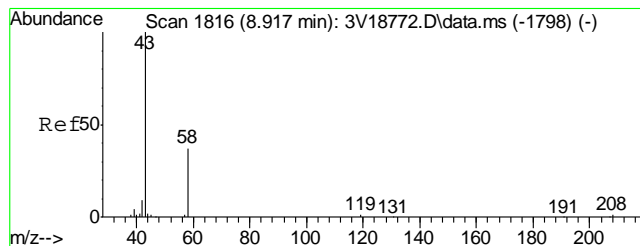
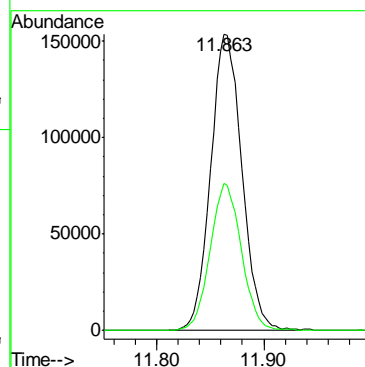
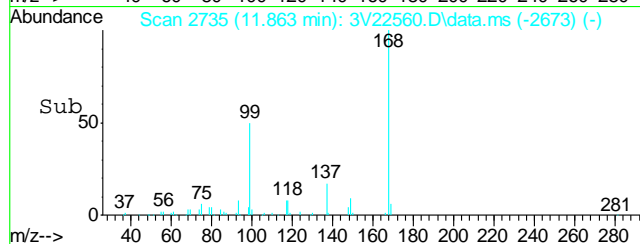
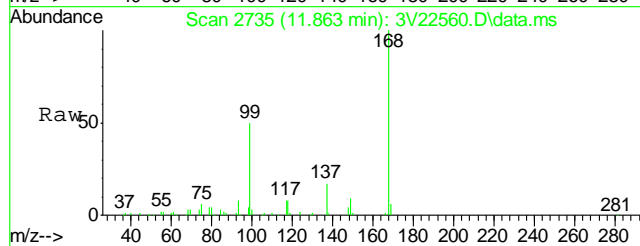
Quant Time: Jan 15 08:11:29 2013
Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M
Quant Title : 8260
QLast Update : Thu Jan 03 11:40:16 2013
Response via : Initial Calibration





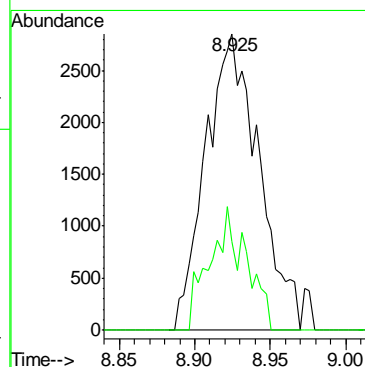
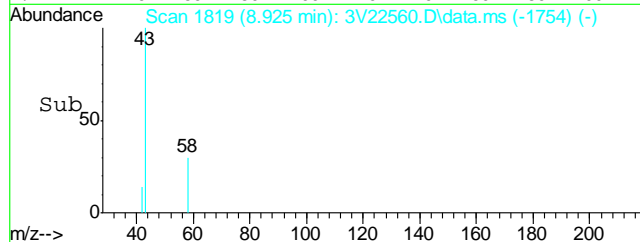
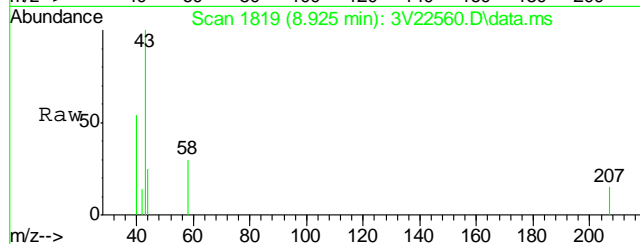
#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.863 min Scan# 2735
Delta R.T. 0.000 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

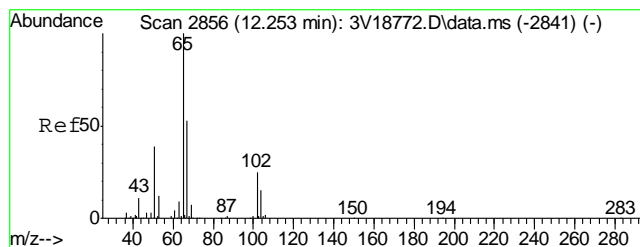
Tgt Ion: 168 Resp: 308471
Ion Ratio Lower Upper
168 100
99 49.5 29.0 69.0



#15
Acetone
Concen: 0.73 ug/l
RT: 8.925 min Scan# 1819
Delta R.T. 0.010 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

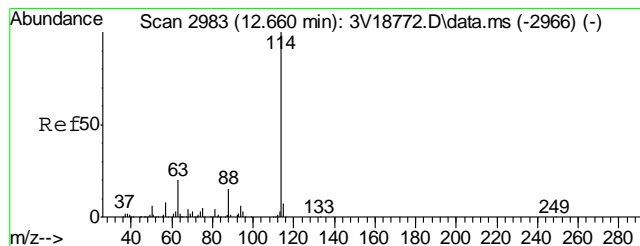
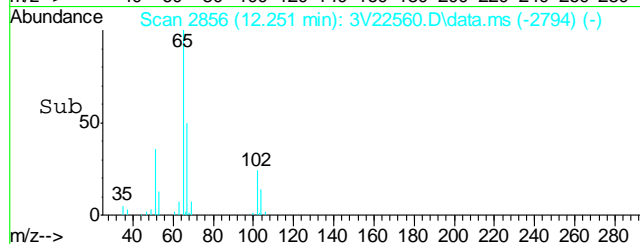
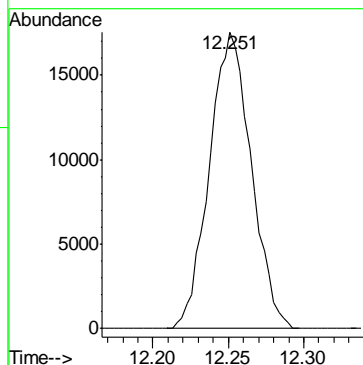
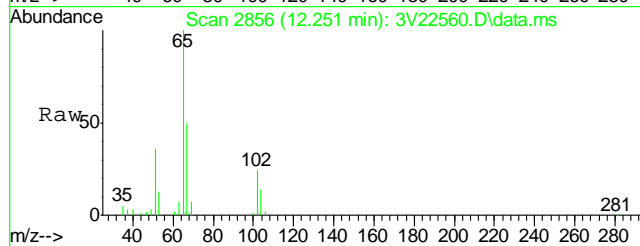
Tgt Ion: 43 Resp: 6973
Ion Ratio Lower Upper
43 100
58 29.0 8.7 48.7





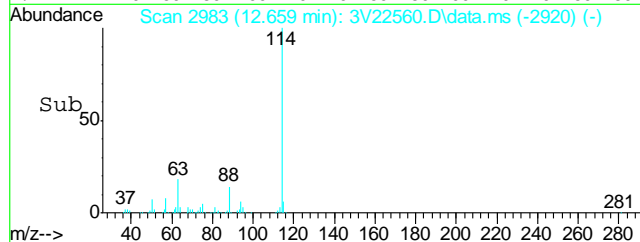
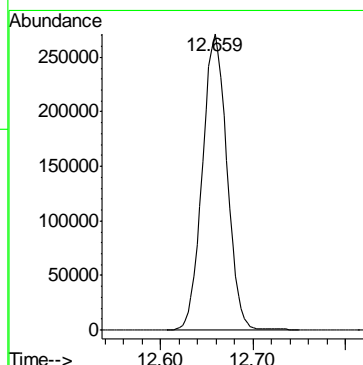
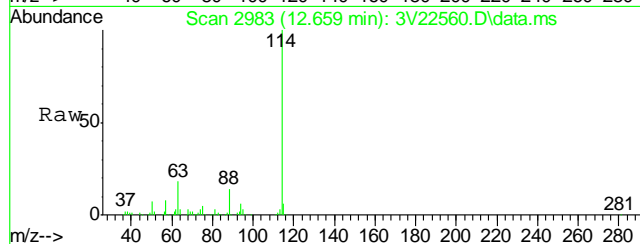
#33
1,2-Dichloroethane-d4
Concen: 48.79 ug/l
RT: 12.251 min Scan# 2856
Delta R.T. 0.000 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

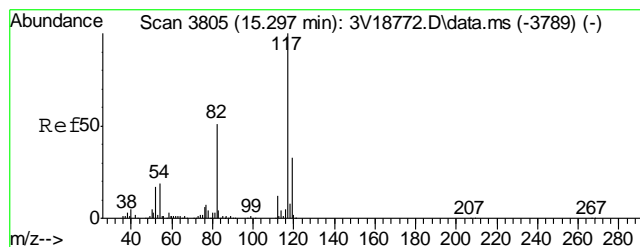
Tgt Ion:102 Resp: 33686



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.659 min Scan# 2983
Delta R.T. 0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

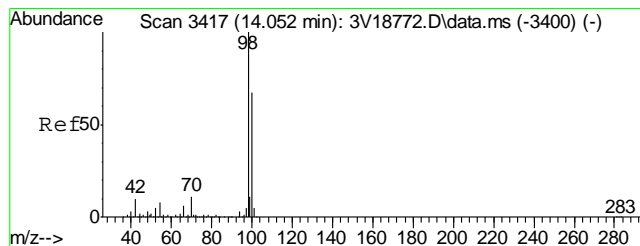
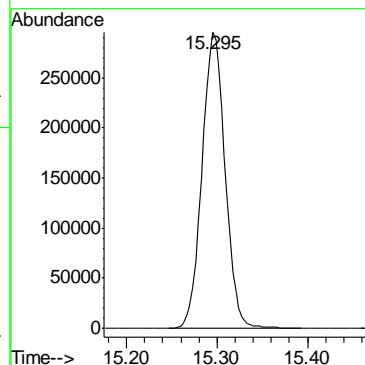
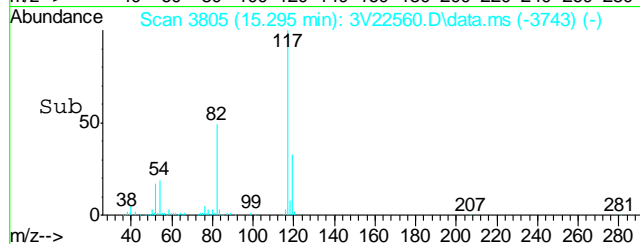
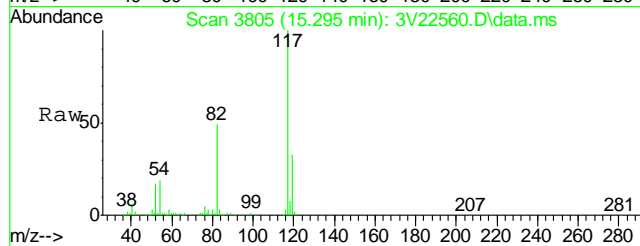
Tgt Ion:114 Resp: 500082





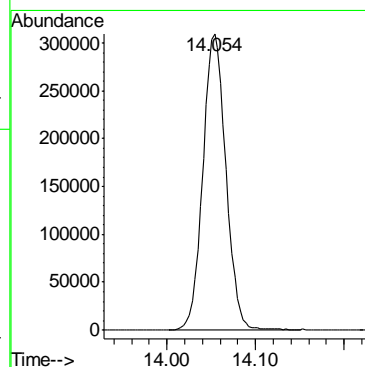
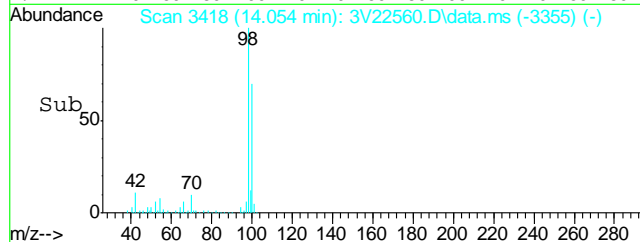
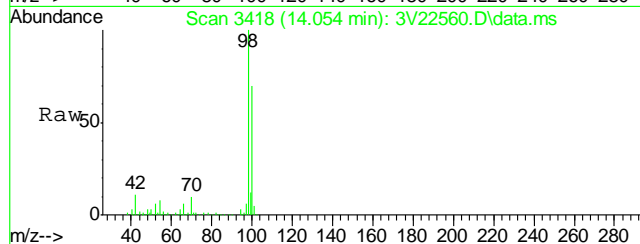
#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.295 min Scan# 3805
Delta R.T. 0.000 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

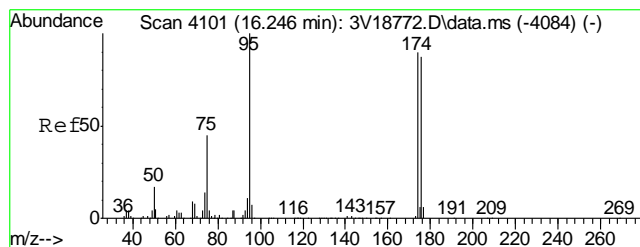
Tgt Ion: 117 Resp: 525362



#61
Toluene-d8
Concen: 44.44 ug/l
RT: 14.054 min Scan# 3418
Delta R.T. 0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

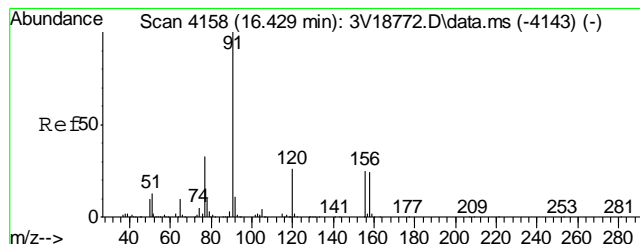
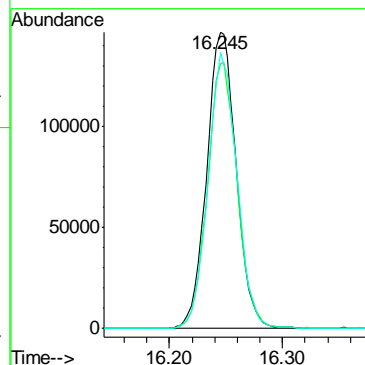
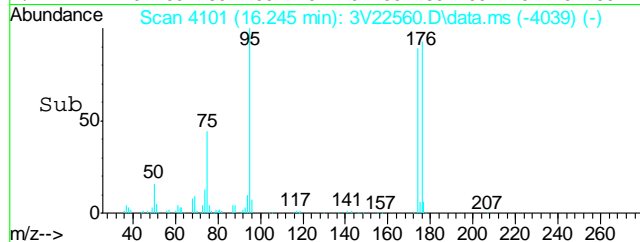
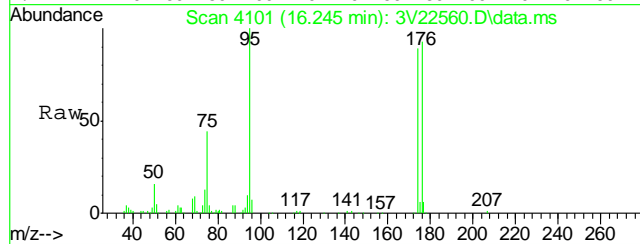
Tgt Ion: 98 Resp: 562082





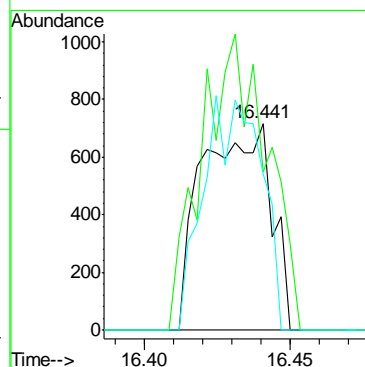
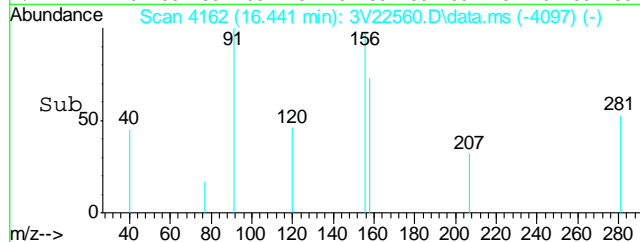
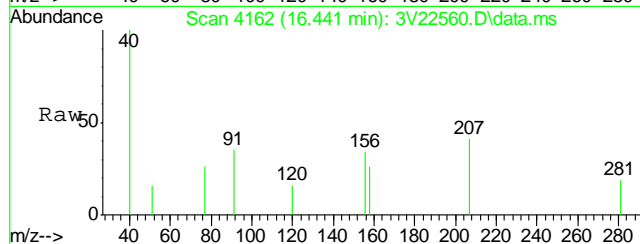
#69
4-Bromofluorobenzene
Concen: 48.67 ug/l
RT: 16.245 min Scan# 4101
Delta R.T. 0.000 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

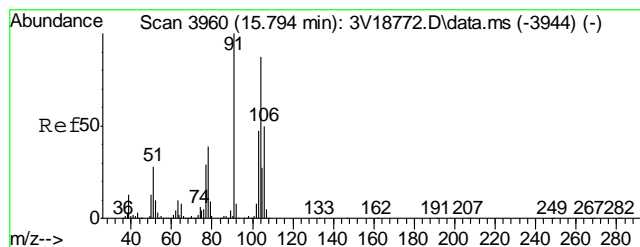
Tgt Ion	Ratio	Lower	Upper
95	100		
174	89.9	0.0	20.0#
176	91.3	0.0	20.0#



#70
Bromobenzene
Concen: 0.21 ug/l
RT: 16.441 min Scan# 4162
Delta R.T. 0.010 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

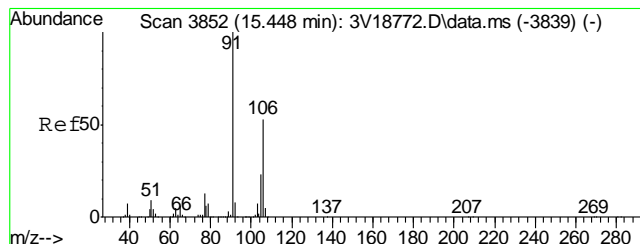
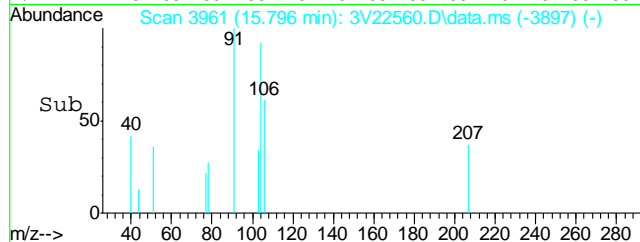
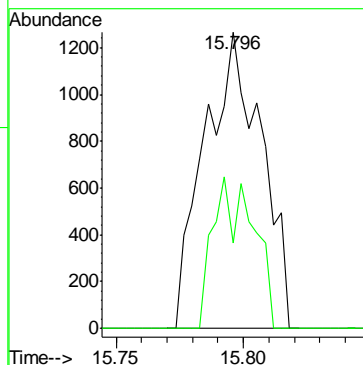
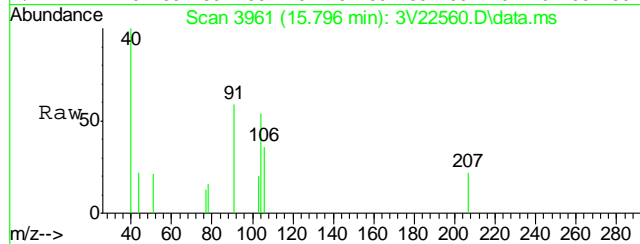
Tgt Ion	Ratio	Lower	Upper
156	100		
77	136.3	135.4	175.4
158	95.1	77.3	117.3





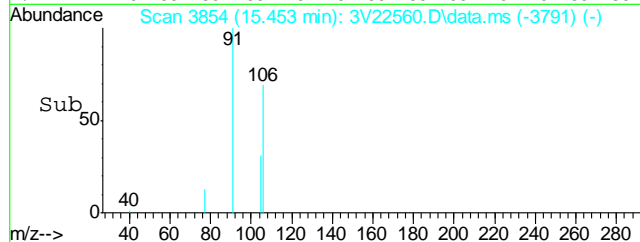
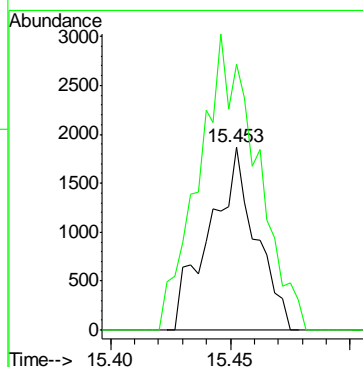
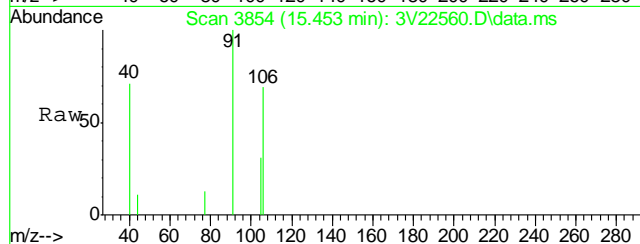
#71
Styrene
Concen: 0.56 ug/l
RT: 15.796 min Scan# 3961
Delta R.T. 0.004 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

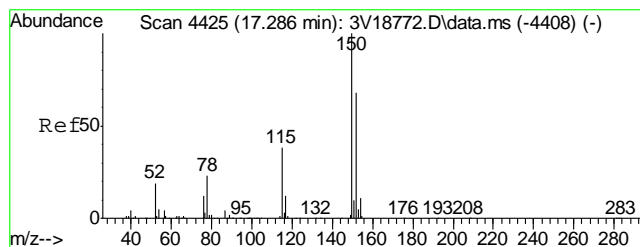
Tgt Ion:104 Resp: 1960
Ion Ratio Lower Upper
104 100
78 36.5 25.4 65.4



#72
m,p-xylene
Concen: 0.31 ug/l
RT: 15.453 min Scan# 3854
Delta R.T. 0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

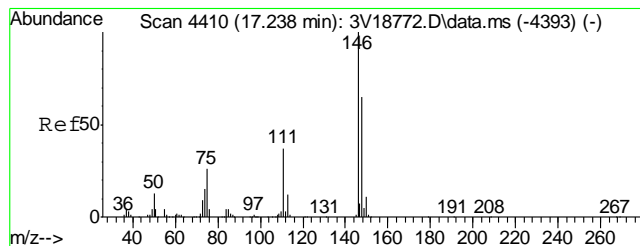
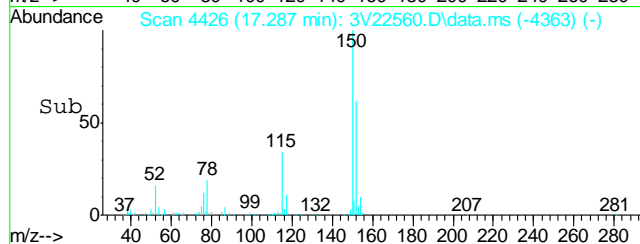
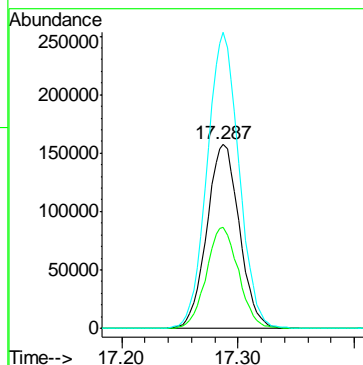
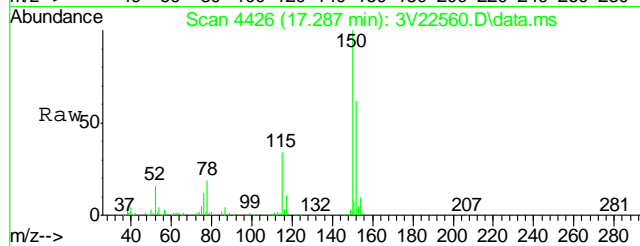
Tgt Ion:106 Resp: 2503
Ion Ratio Lower Upper
106 100
91 202.3 168.1 208.1





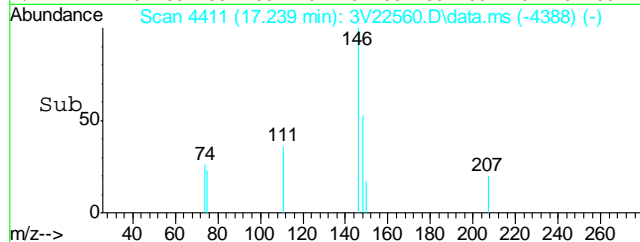
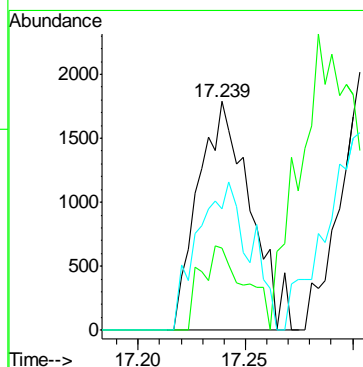
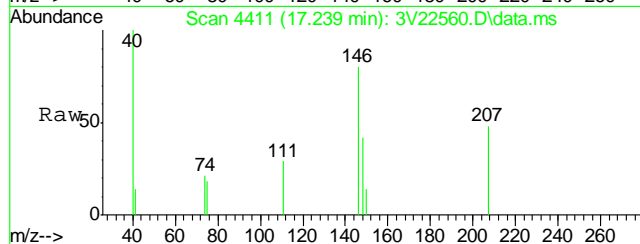
#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.287 min Scan# 4426
Delta R.T. 0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

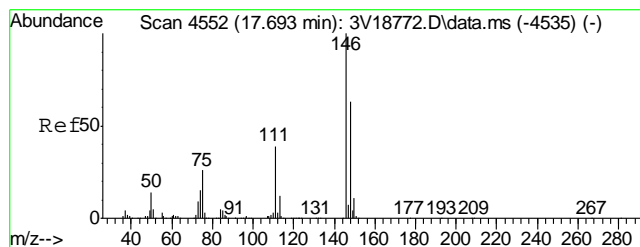
Tgt Ion	Ratio	Lower	Upper
152	100		
115	54.2	34.6	74.6
150	158.2	152.1	192.1



#84
1,3-Dichlorobenzene
Concen: 0.28 ug/l
RT: 17.239 min Scan# 4411
Delta R.T. 0.004 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

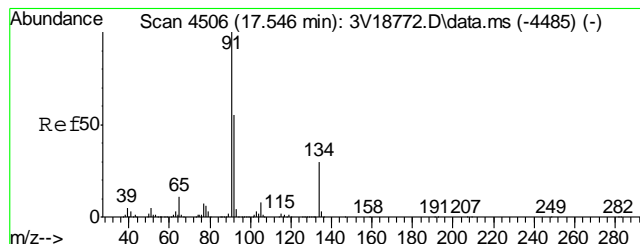
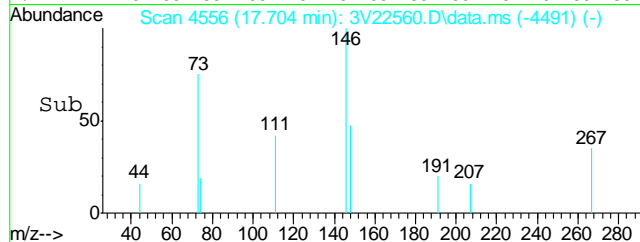
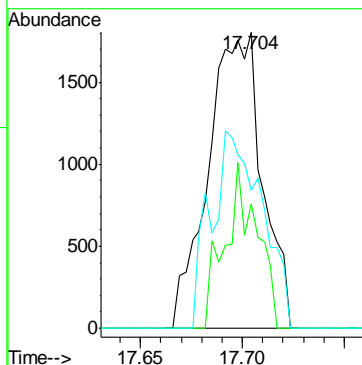
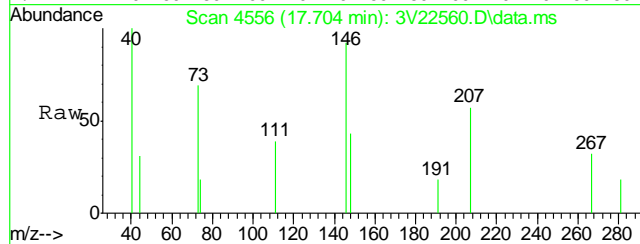
Tgt Ion	Ratio	Lower	Upper
146	100		
111	31.2	17.1	57.1
148	64.9	44.2	84.2





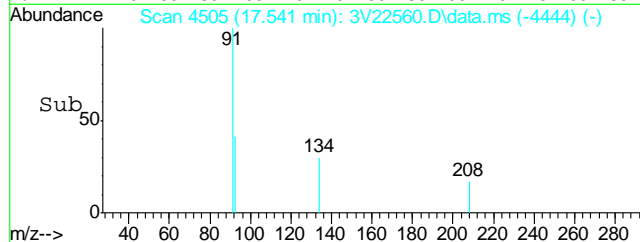
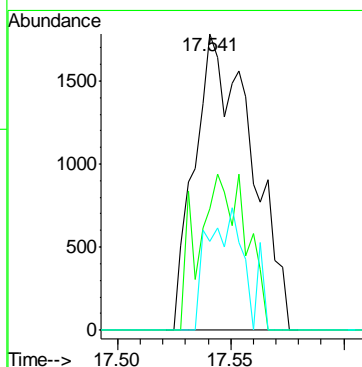
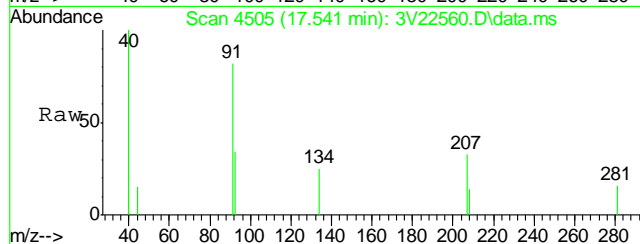
#87
1,2-Dichlorobenzene
Concen: 0.32 ug/l
RT: 17.704 min Scan# 4556
Delta R.T. 0.010 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

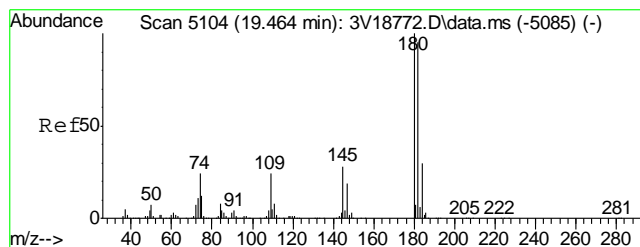
Tgt Ion	Ratio	Lower	Upper
146	100		
111	33.4	18.8	58.8
148	63.2	44.3	84.3



#88
n-Butylbenzene
Concen: 0.22 ug/l
RT: 17.541 min Scan# 4505
Delta R.T. -0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

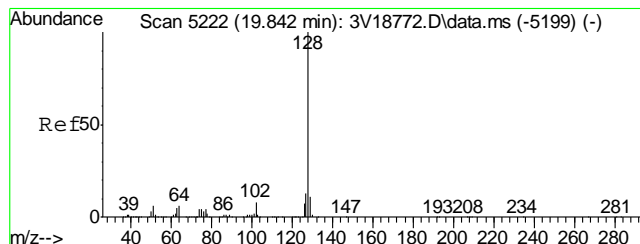
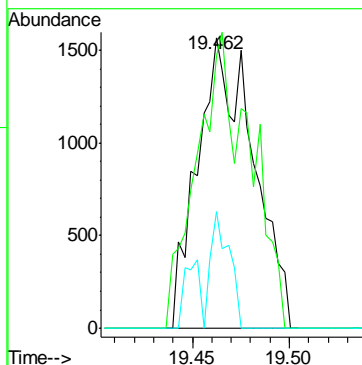
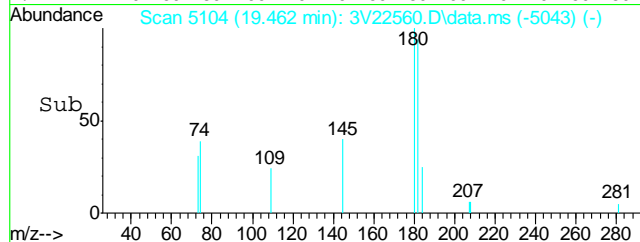
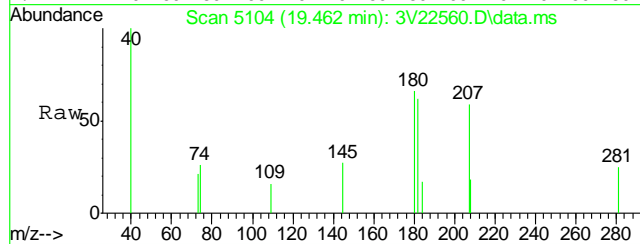
Tgt Ion	Ratio	Lower	Upper
91	100		
92	44.4	34.8	74.8
134	24.3	8.9	48.9





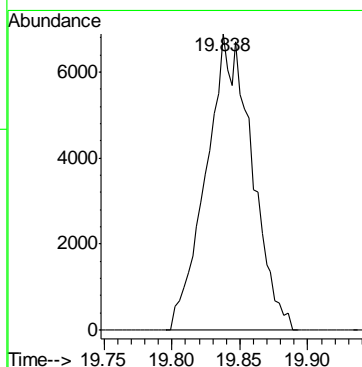
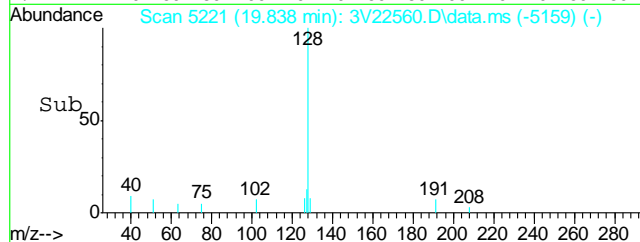
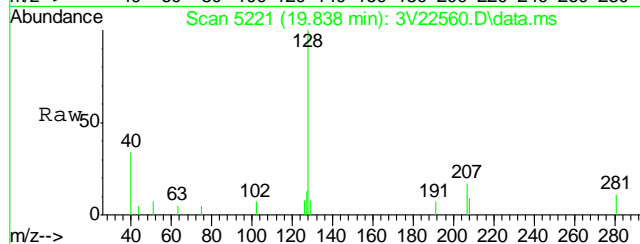
#90
1,2,4-Trichlorobenzene
Concen: 0.48 ug/l
RT: 19.462 min Scan# 5104
Delta R.T. -0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

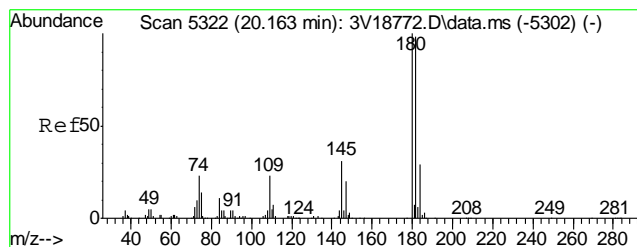
Tgt Ion:	180	Resp:	3118
Ion Ratio	Lower	Upper	
180	100		
182	98.0	75.5	115.5
145	13.6	8.6	48.6



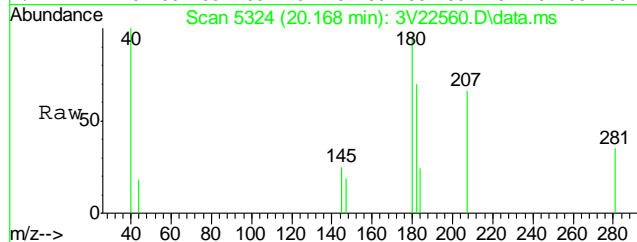
#91
Naphthalene
Concen: 2.00 ug/l
RT: 19.838 min Scan# 5221
Delta R.T. -0.002 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

Tgt Ion:128 Resp: 16063

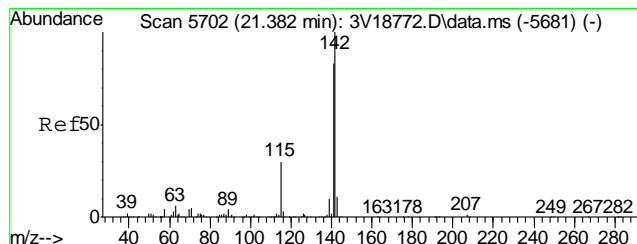
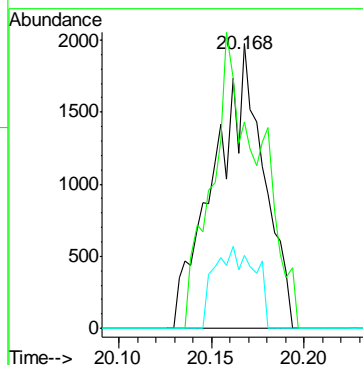
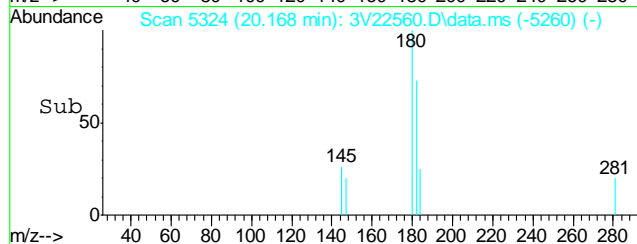




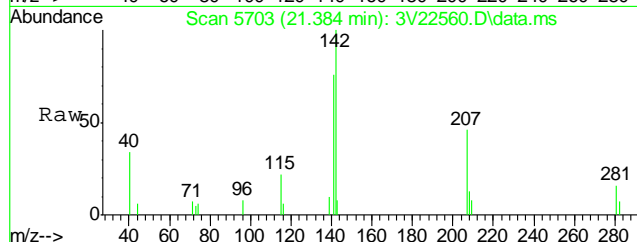
#93
1,2,3-Trichlorobenzene
Concen: 0.57 ug/l
RT: 20.168 min Scan# 5324
Delta R.T. 0.006 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am



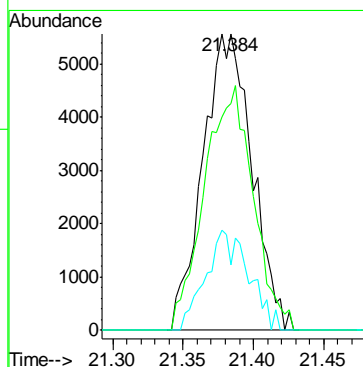
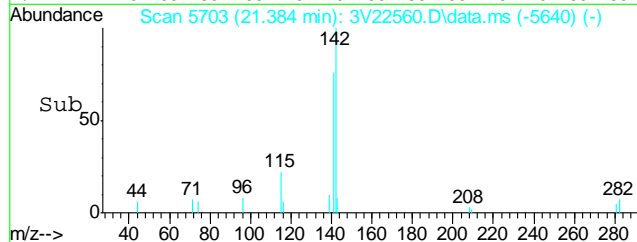
Tgt Ion	Ratio	Lower	Upper
180	100		
182	99.5	75.6	115.6
145	23.7	10.3	50.3

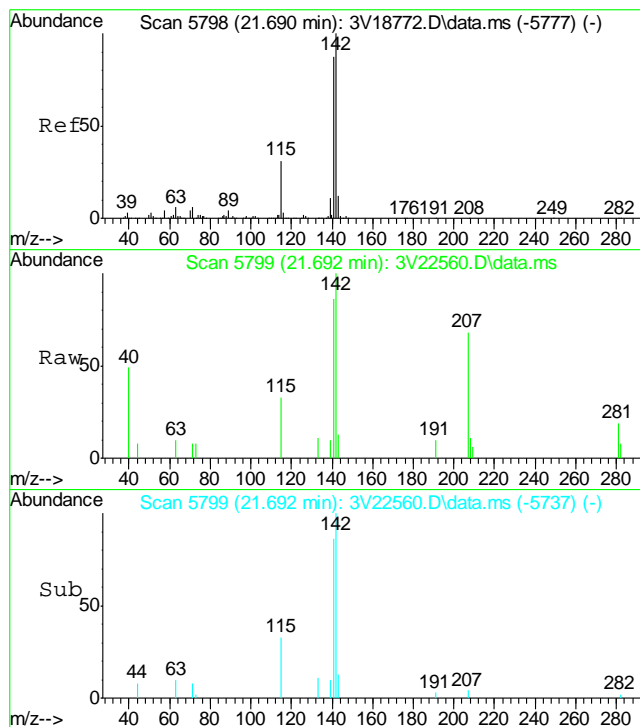


#94
2-Methylnaphthalene
Concen: 1.89 ug/l
RT: 21.384 min Scan# 5703
Delta R.T. 0.003 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am



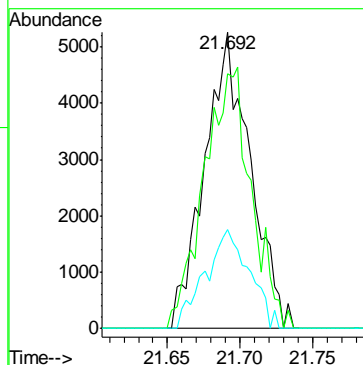
Tgt Ion	Ratio	Lower	Upper
142	100		
141	82.0	65.8	105.8
115	29.4	9.7	49.7





#95
1-Methylnaphthalene
Concen: 1.71 ug/l
RT: 21.692 min Scan# 5799
Delta R.T. 0.000 min
Lab File: 3V22560.D
Acq: 12 Jan 2013 2:00 am

Tgt Ion:	142	Resp:	11465
Ion Ratio	Lower	Upper	
142	100		
141	90.8	68.3	108.3
115	32.2	11.8	51.8



7.2.1

7

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7223-MB	3G12973.D	1	01/15/13	DC	01/14/13	OP7223	E3G621

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D42511-1

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	81% 10-159%
321-60-8	2-Fluorobiphenyl	85% 19-131%
1718-51-0	Terphenyl-d14	105% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7223-BS	3G12974.D	1	01/15/13	DC	01/14/13	OP7223	E3G621

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D42511-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	87.0	104	68-130
120-12-7	Anthracene	83.3	75.1	90	67-130
56-55-3	Benzo(a)anthracene	83.3	79.3	95	65-130
205-99-2	Benzo(b)fluoranthene	83.3	79.2	95	44-130
207-08-9	Benzo(k)fluoranthene	83.3	65.4	78	56-131
50-32-8	Benzo(a)pyrene	83.3	70.8	85	62-130
218-01-9	Chrysene	83.3	70.3	84	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	79.8	96	55-130
206-44-0	Fluoranthene	83.3	76.4	92	70-130
86-73-7	Fluorene	83.3	80.9	97	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	77.2	93	56-130
91-20-3	Naphthalene	83.3	71.1	85	70-130
129-00-0	Pyrene	83.3	74.5	89	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	103%	10-159%
321-60-8	2-Fluorobiphenyl	97%	19-131%
1718-51-0	Terphenyl-d14	107%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7223-MS	3G12984.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
OP7223-MSD	3G12985.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
D42510-1	3G12983.D	1	01/15/13	DC	01/14/13	OP7223	E3G621

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D42511-1

CAS No.	Compound	D42510-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		98.3	76.7	78	76.8	78	0	25-151/30
120-12-7	Anthracene	ND		98.3	93.2	95	95.1	97	2	39-159/30
56-55-3	Benzo(a)anthracene	ND		98.3	107	109	109	111	2	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		98.3	109	111	110	112	1	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		98.3	70.7	72	74.9	76	6	10-188/30
50-32-8	Benzo(a)pyrene	ND		98.3	77.1	78	79.0	80	2	32-144/30
218-01-9	Chrysene	25.4		98.3	97.1	73	101	77	4	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		98.3	76.5	78	79.8	81	4	21-152/30
206-44-0	Fluoranthene	ND		98.3	101	103	102	104	1	36-157/30
86-73-7	Fluorene	198		98.3	260	63	249	52	4	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		98.3	73.2	74	76.2	77	4	20-154/30
91-20-3	Naphthalene	1070		98.3	1400	336* a	909	-164* a	43* b	10-163/30
129-00-0	Pyrene	31.3		98.3	126	96	127	97	1	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D42510-1	Limits
4165-60-0	Nitrobenzene-d5	141%	110%	141%	10-159%
321-60-8	2-Fluorobiphenyl	63%	56%	61%	19-131%
1718-51-0	Terphenyl-d14	98%	96%	91%	18-150%

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

(b) Variability of recovery may be due to sample matrix/homogeneity.

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\
 Data File : 3g12978.D
 Acq On : 15 Jan 2013 12:18 pm
 Operator : DONC
 Sample : D42511-1
 Misc : OP7223,E3G621,30.01,,,1,1
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Jan 15 13:56:31 2013
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M
 Quant Title : PAHSIM BASE
 QLast Update : Thu Jan 10 14:18:35 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.621	136	148616	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.326	164	84132	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.812	188	143655	4.0000	ug/mL	0.00
19) Chrysene-d12	11.443	240	104141	4.0000	ug/mL	0.00
24) Perylene-d12	12.810	264	86662	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.935	82	523310	39.1476	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	78.30%		
7) 2-Fluorobiphenyl	6.664	172	1261991	38.8263	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	77.66%		
21) Terphenyl-d14	10.402	244	682147	48.1388	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	96.28%		

Target Compounds

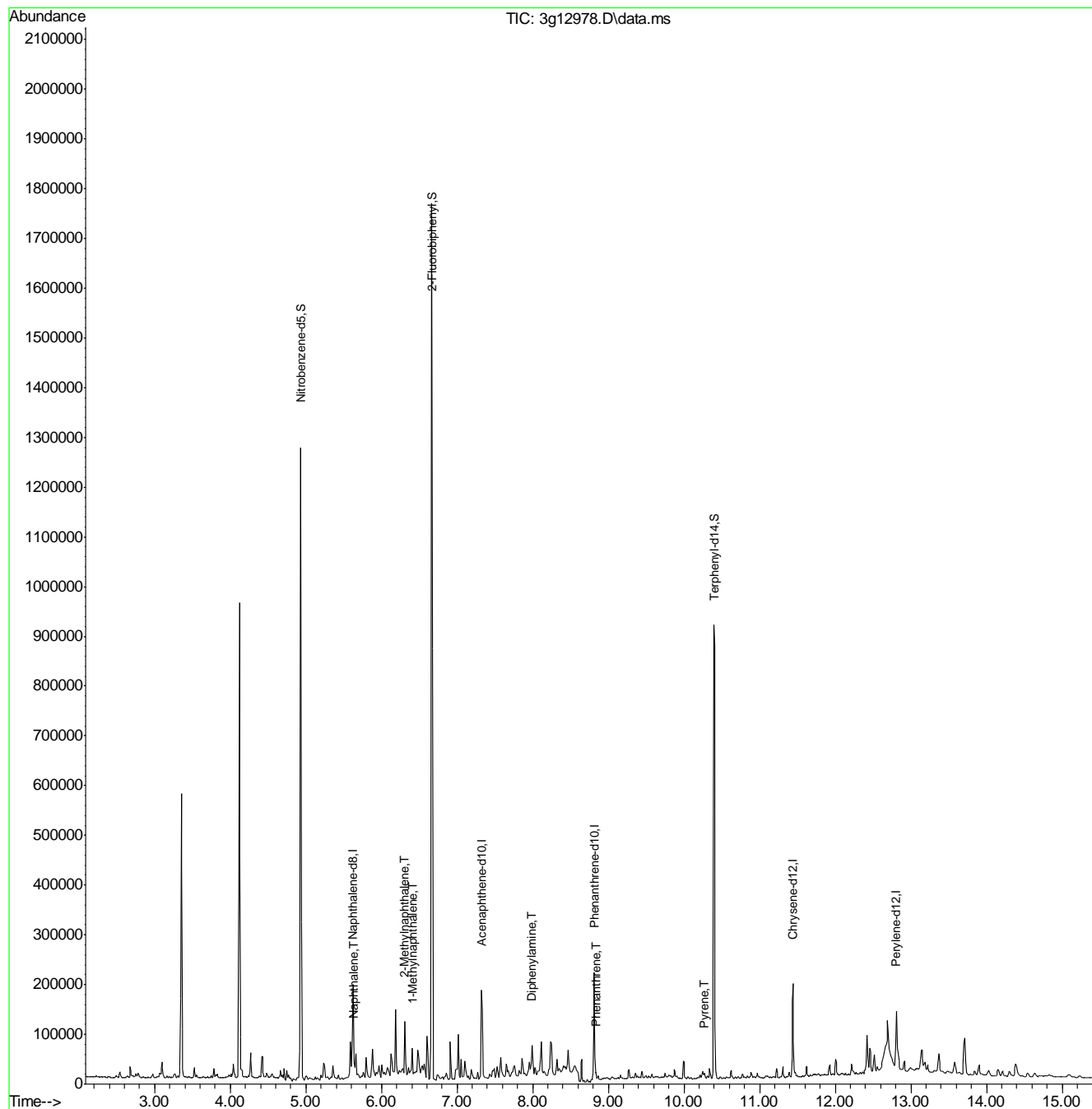
						Qvalue
3) N-Nitrosodimethylamine	2.342	74	74	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d		
5) Naphthalene	5.633	128	23611	0.5400	ug/mL	76
8) 2-Methylnaphthalene	6.306	142	43243	1.5995	ug/mL	92
9) 1-Methylnaphthalene	6.406	142	19288	0.8157	ug/mL	88
10) Acenaphthylene	7.184	152	1403	N.D.		
11) Acenaphthene	0.000	154	0	N.D. d		
12) Dibenzofuran	0.000	168	0	N.D. d		
13) Fluorene	0.000	166	0	N.D. d		
14) Diphenylamine	7.987	169	31626m	1.1980	ug/mL	
16) Phenanthrene	8.835	178	14221	0.2562	ug/mL#	61
17) Anthracene	8.915	178	1398	N.D.		
18) Fluoranthene	10.015	202	1072	N.D.		
20) Pyrene	10.268	202	6185	0.1112	ug/mL#	59
22) Benzo(a)anthracene	11.463	228	2101	N.D.		
23) Chrysene	11.463	228	2129	N.D.		
25) Benzo(b)fluoranthene	0.000	252	0	N.D. d		
26) Benzo(k)fluoranthene	12.452	252	2364	N.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	14.408	276	378	N.D.		

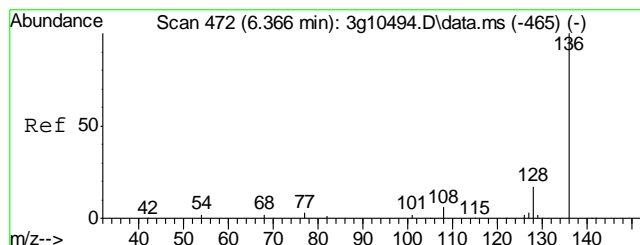
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\
Data File : 3g12978.D
Acq On : 15 Jan 2013 12:18 pm
Operator : DONC
Sample : D42511-1
Misc : OP7223,E3G621,30.01,,,1,1
ALS Vial : 9 Sample Multiplier: 1

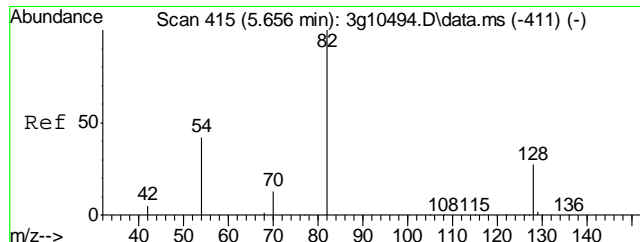
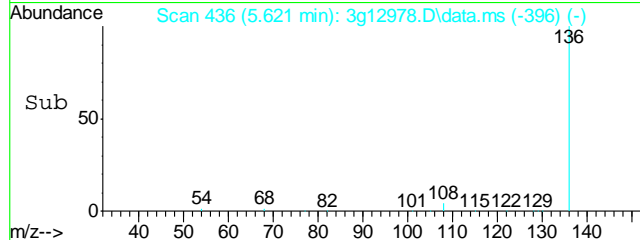
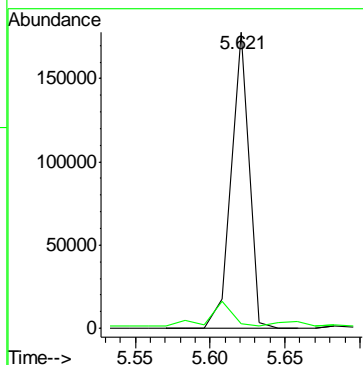
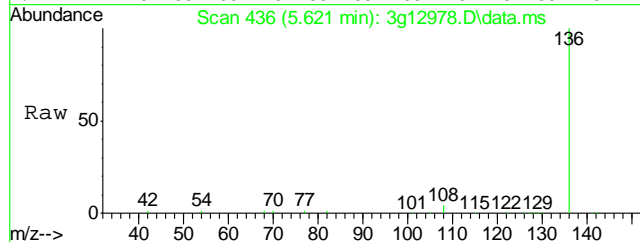
Quant Time: Jan 15 13:56:31 2013
Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M
Quant Title : PAHSIM BASE
QLast Update : Thu Jan 10 14:18:35 2013
Response via : Initial Calibration





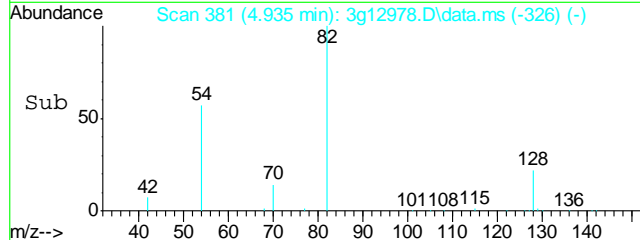
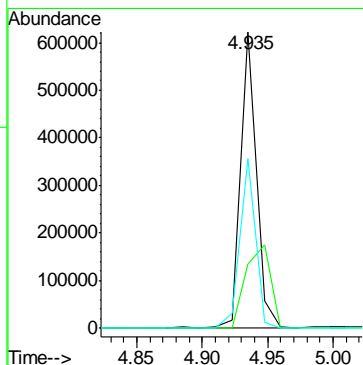
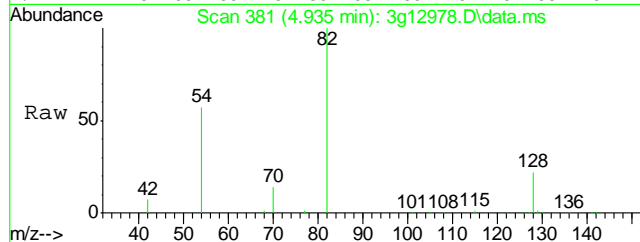
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.621 min Scan# 436
Delta R.T. 0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

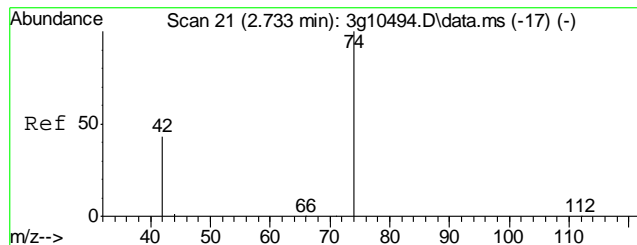
Tgt Ion	Ratio	Lower	Upper
136	100		
68	11.3	0.0	20.8



#2
Nitrobenzene-d5
Concen: 39.1476 ug/mL
RT: 4.935 min Scan# 381
Delta R.T. -0.014 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

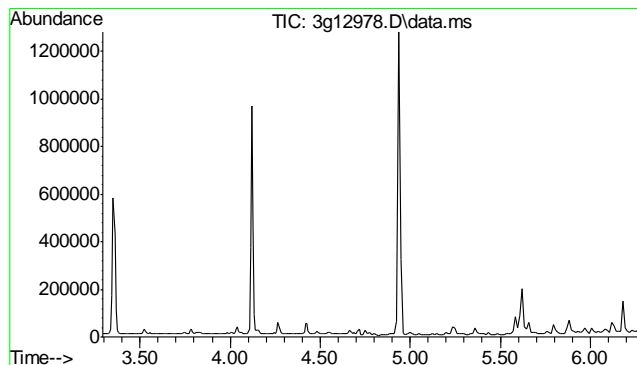
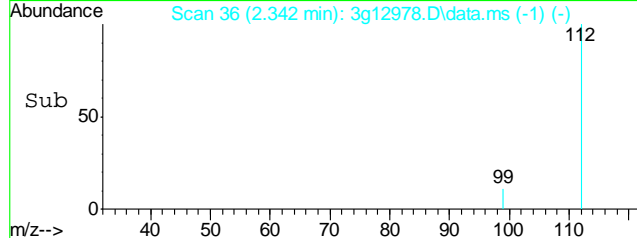
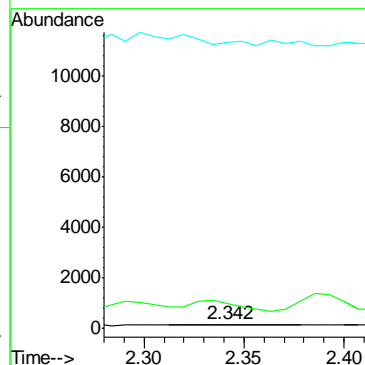
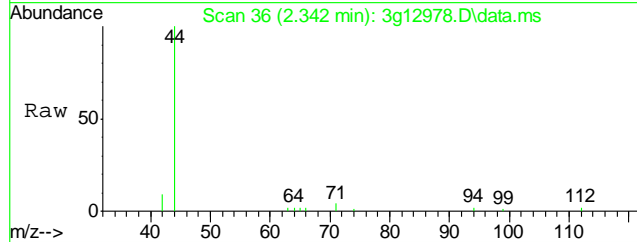
Tgt Ion	Ratio	Lower	Upper
82	100		
128	44.6	36.8	76.8
54	57.2	40.5	80.5





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.342 min Scan# 36
Delta R.T. 0.005 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

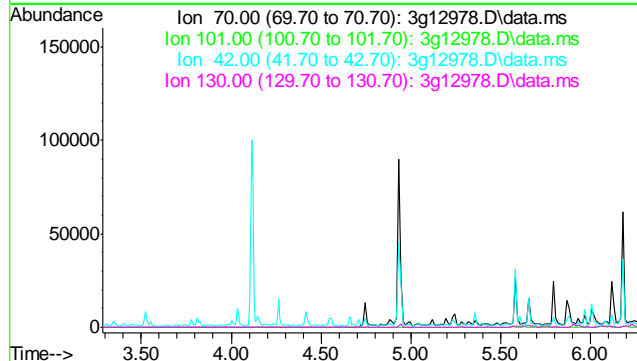
Tgt Ion:	74	Resp:	74
Ion	Ratio	Lower	Upper
74	100		
42	989.2	58.5	98.5#
44	0.0	0.0	24.0

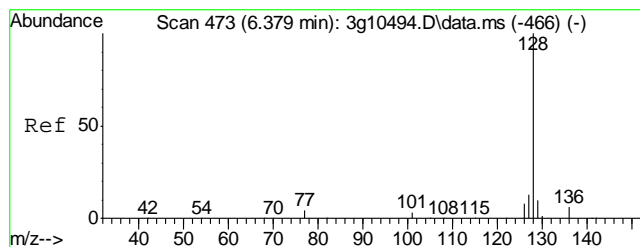


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.79 min

Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

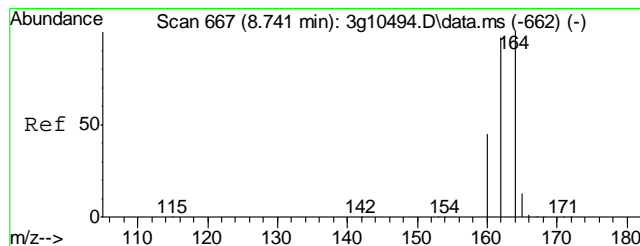
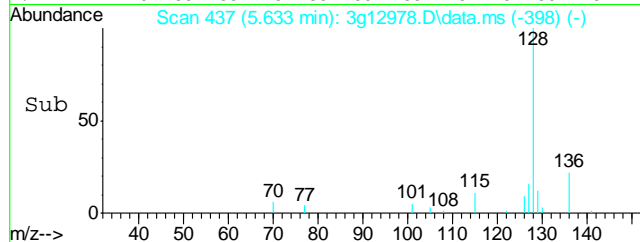
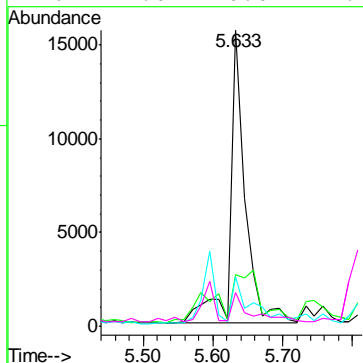
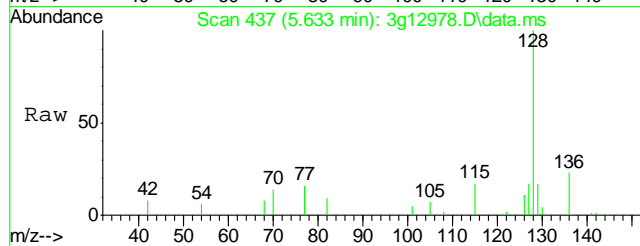
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7





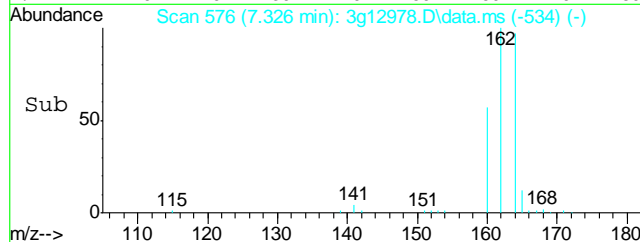
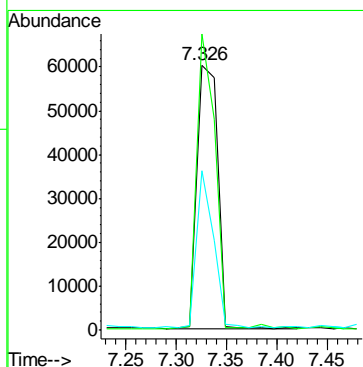
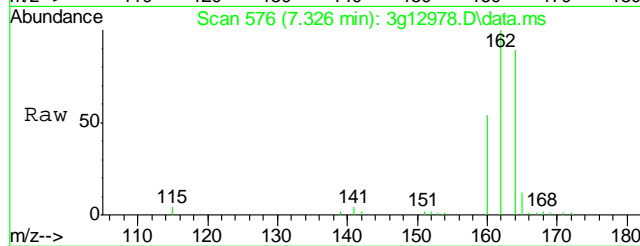
#5
Naphthalene
Concen: 0.5400 ug/mL
RT: 5.633 min Scan# 437
Delta R.T. -0.011 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

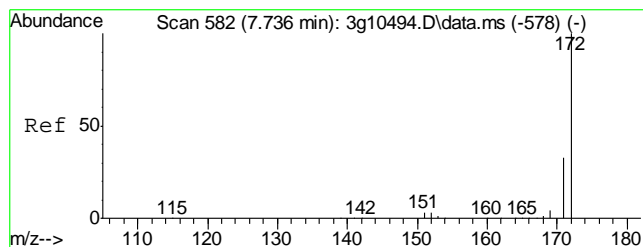
Tgt Ion	Ratio	Lower	Upper
128	100		
129	27.7	0.0	31.2
127	17.8	0.0	32.4
126	11.0	0.0	27.2



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.326 min Scan# 576
Delta R.T. 0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

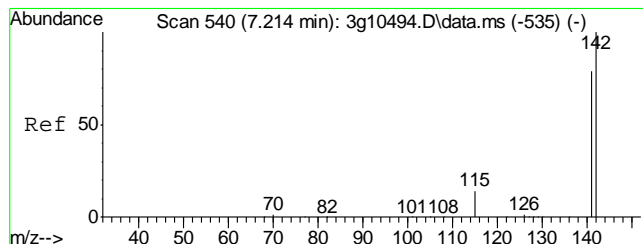
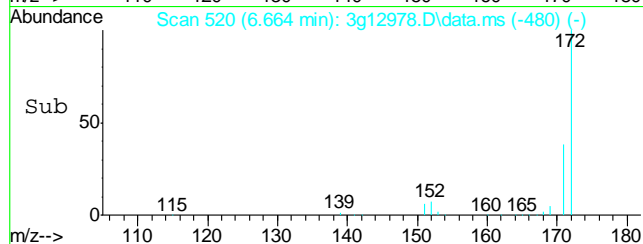
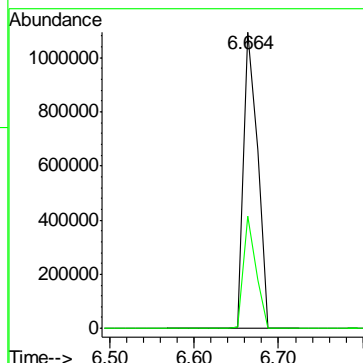
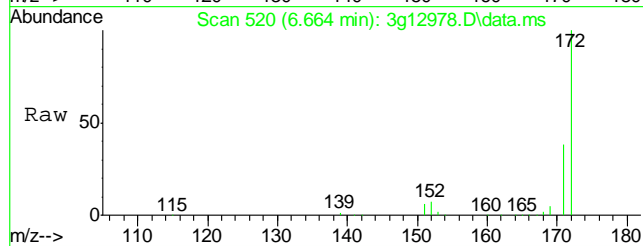
Tgt Ion	Ratio	Lower	Upper
164	100		
162	98.4	88.1	128.1
160	49.8	38.8	78.8





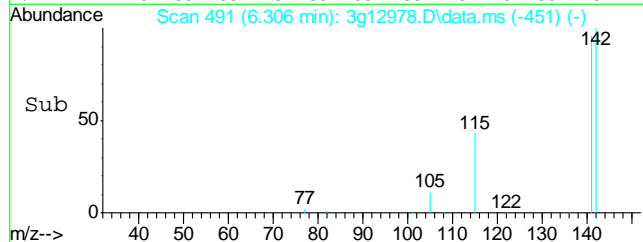
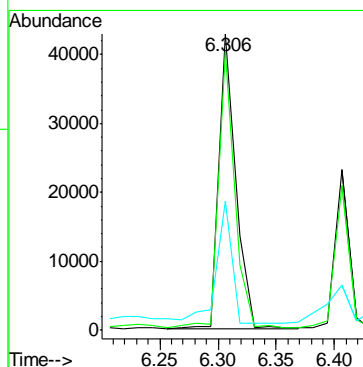
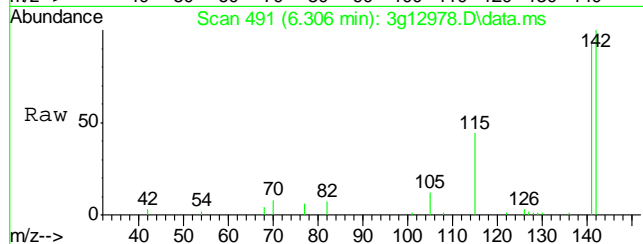
#7
2-Fluorobiphenyl
Concen: 38.8263 ug/mL
RT: 6.664 min Scan# 520
Delta R.T. -0.002 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

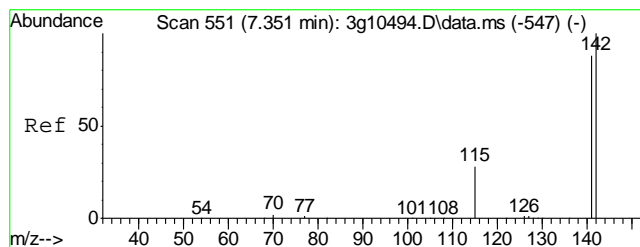
Tgt Ion	Ratio	Lower	Upper
172	100		
171	34.0	12.2	52.2



#8
2-Methylnaphthalene
Concen: 1.5995 ug/mL
RT: 6.306 min Scan# 491
Delta R.T. -0.005 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

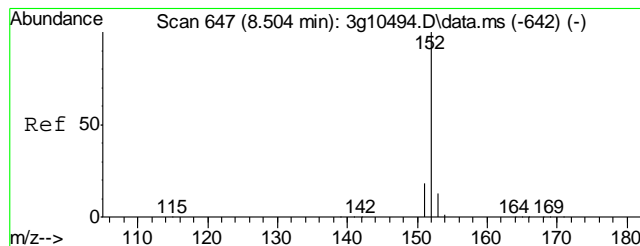
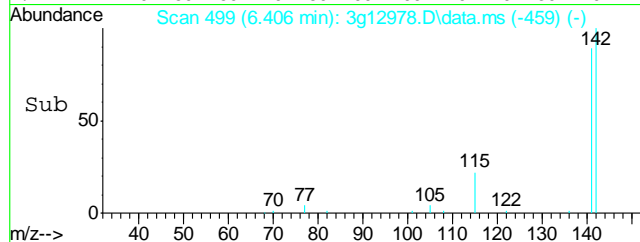
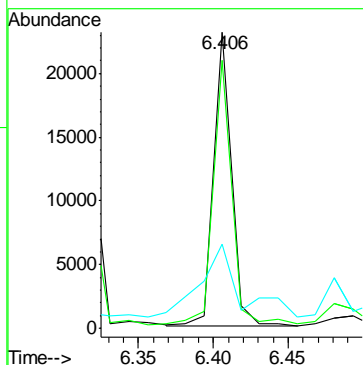
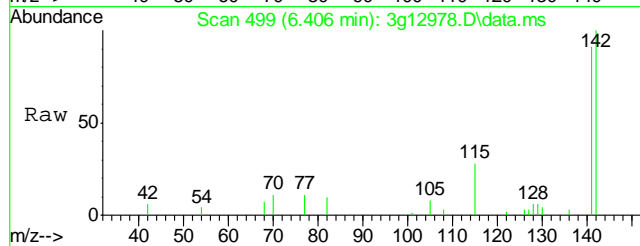
Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.8	62.0	102.0
115	37.1	11.3	51.3





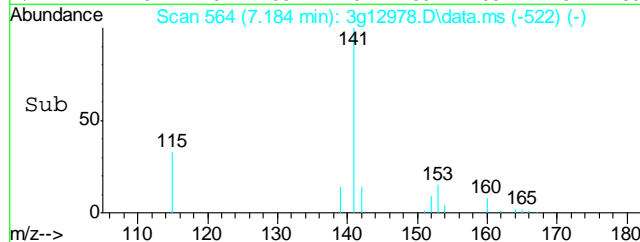
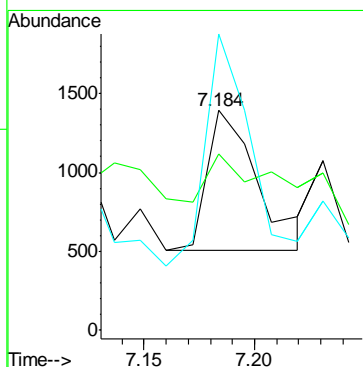
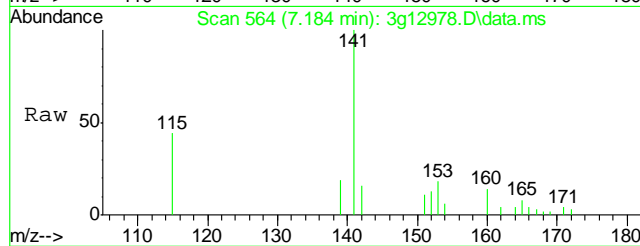
#9
1-Methylnaphthalene
Concen: 0.8157 ug/mL
RT: 6.406 min Scan# 499
Delta R.T. -0.004 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

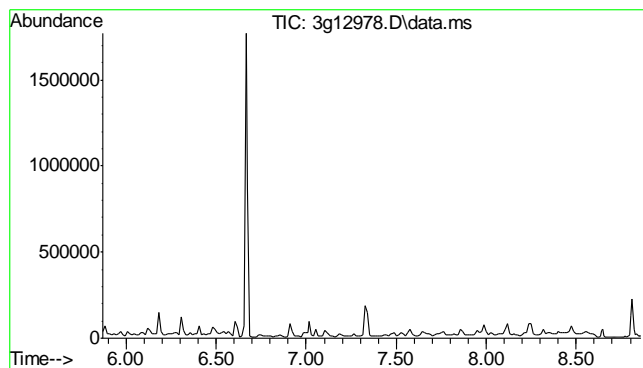
Tgt Ion	Ratio	Lower	Upper
142	100		
141	93.8	67.5	107.5
115	53.0	19.4	59.4



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.184 min Scan# 564
Delta R.T. -0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

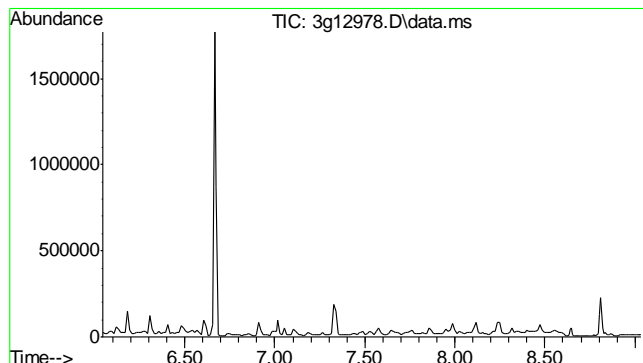
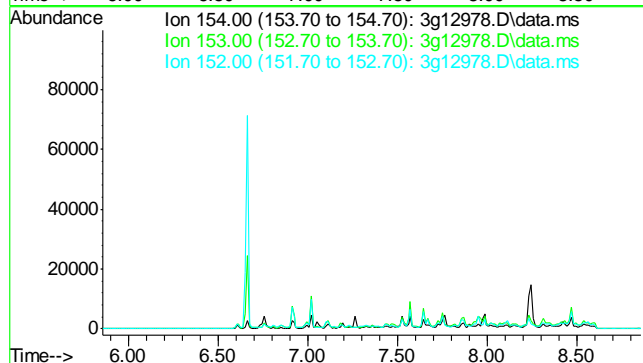
Tgt Ion	Ratio	Lower	Upper
152	100		
151	82.0	0.0	39.2#
153	150.7	0.0	32.9#





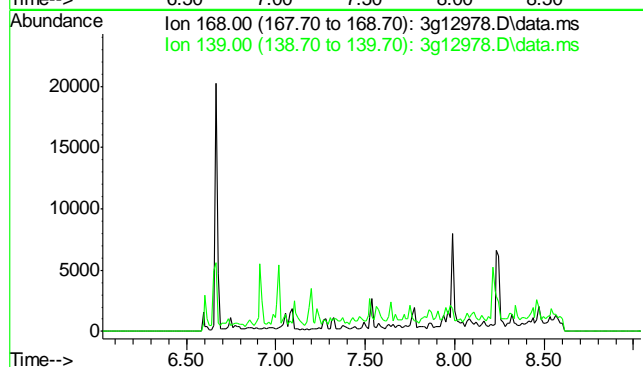
#11
 Acenaphthene
 Concen: N.D. ug/mL
 Expected RT: 7.36 min
 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm

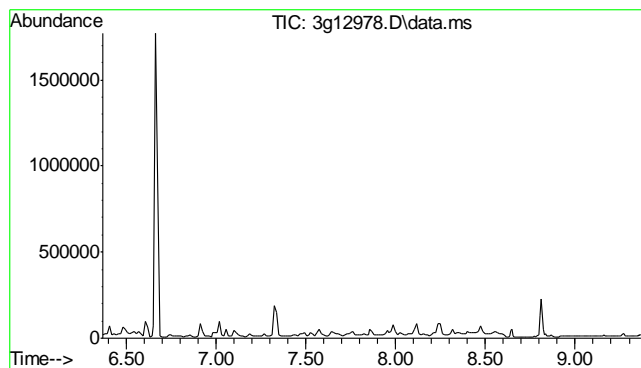
Tgt Ion	Exp Ratio
154	100
153	102.4
152	50.0



#12
 Dibenzofuran
 Concen: N.D. ug/mL
 Expected RT: 7.54 min
 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm

Tgt Ion	Exp Ratio
168	100
139	33.4

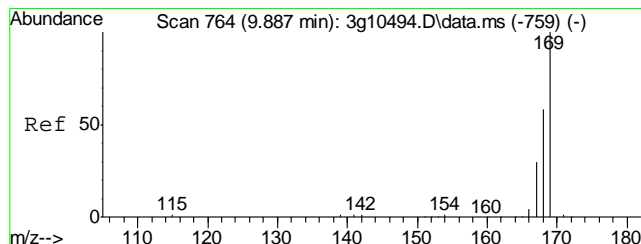
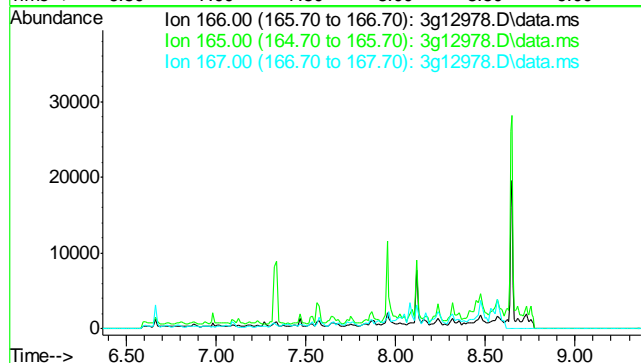




#13
 Fluorene
 Concen: N.D. ug/mL
 Expected RT: 7.87 min

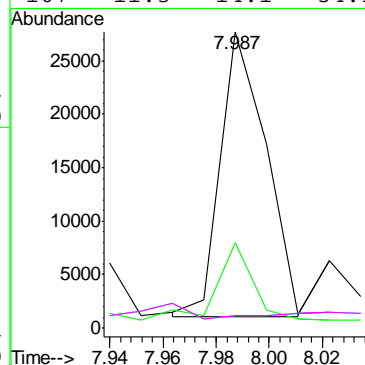
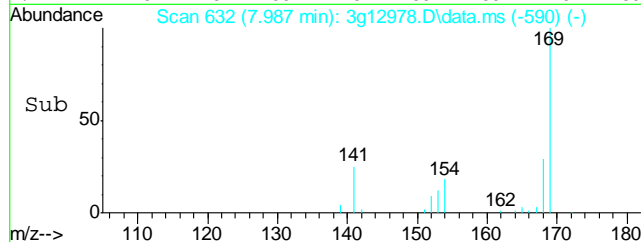
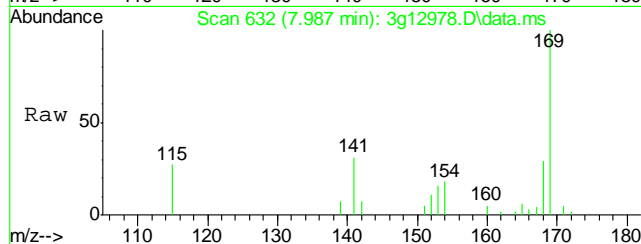
 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm

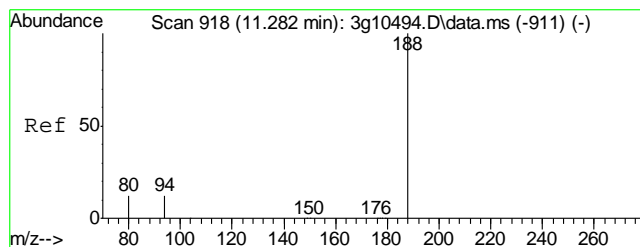
Tgt Ion: 166
 Sig Exp Ratio
 166 100
 165 92.0
 167 13.1



#14
 Diphenylamine
 Concen: 1.1980 ug/mL m
 RT: 7.987 min Scan# 632
 Delta R.T. -0.010 min
 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm

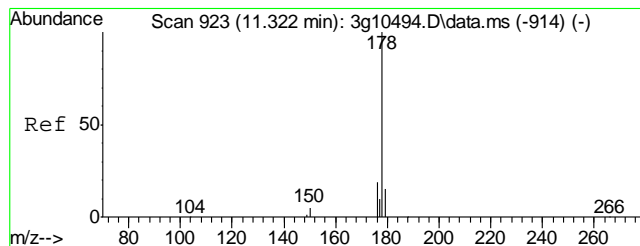
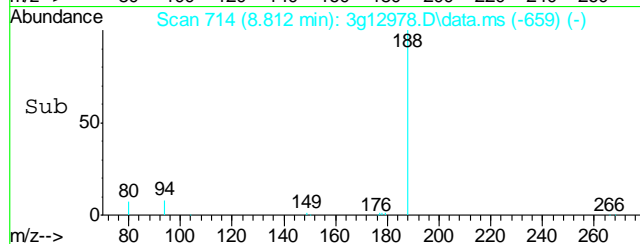
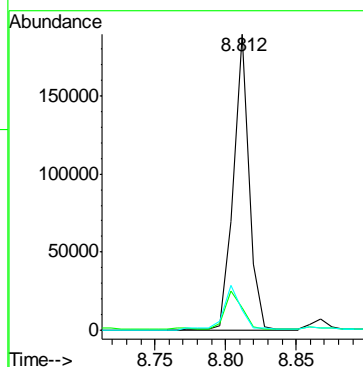
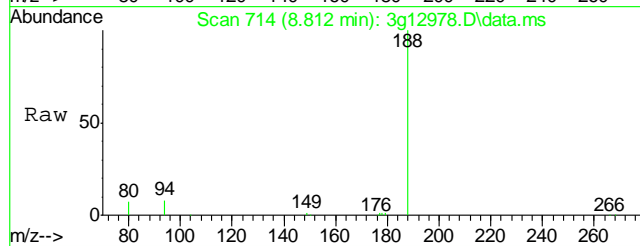
Tgt Ion: 169 Resp: 31626
 Ion Ratio Lower Upper
 169 100
 168 30.5 41.7 81.7#
 167 11.3 14.1 54.1#
 167 11.3 14.1 54.1#





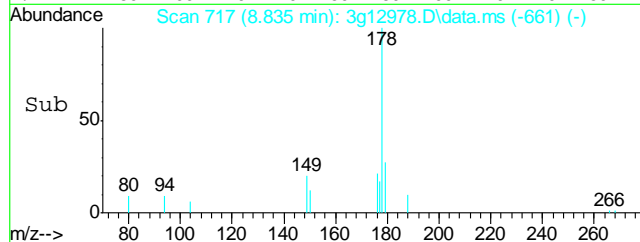
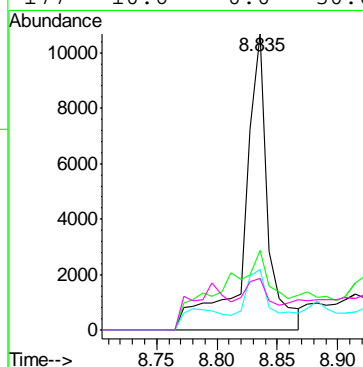
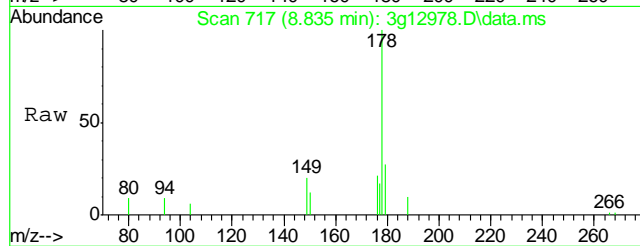
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.812 min Scan# 714
Delta R.T. 0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

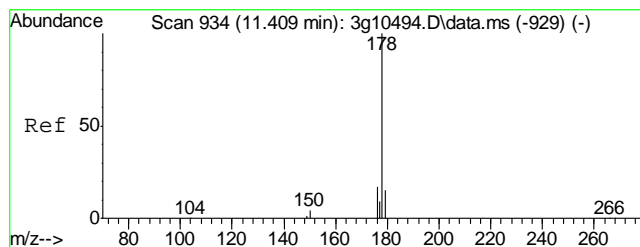
Tgt Ion:188	Resp:	143655
Ion Ratio	Lower	Upper
188	100	
94	14.2	0.0 26.9
80	18.1	0.0 26.3



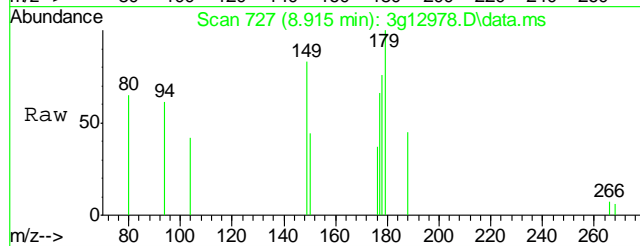
#16
Phenanthrene
Concen: 0.2562 ug/mL
RT: 8.835 min Scan# 717
Delta R.T. 0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

Tgt Ion:178	Resp:	14221
Ion Ratio	Lower	Upper
178	100	
179	61.5	0.0 35.2#
176	19.2	0.0 38.6
177	10.6	0.0 30.0

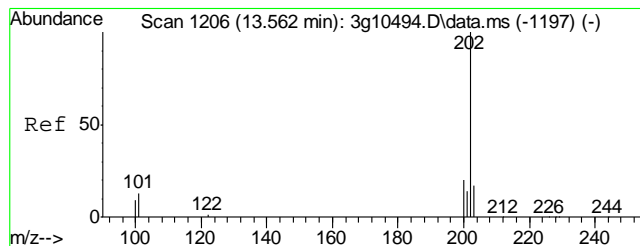
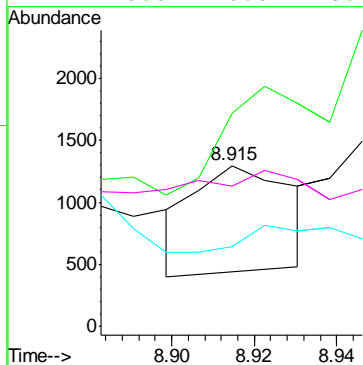
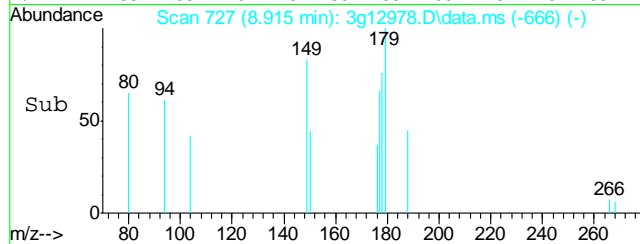




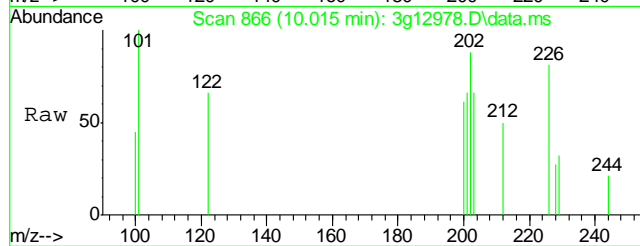
#17
 Anthracene
 Concen: Below ug/mL
 RT: 8.915 min Scan# 727
 Delta R.T. 0.024 min
 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm



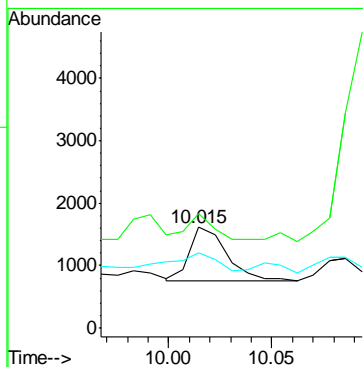
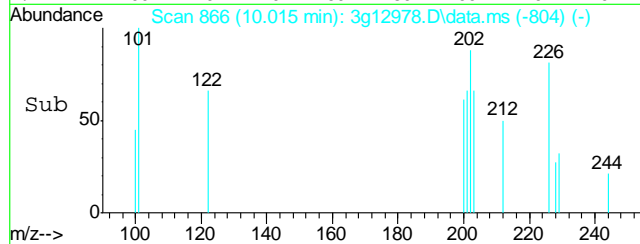
Tgt Ion:	178	Resp:	1398
Ion Ratio	Lower	Upper	
178	100		
179	0.0	0.0	35.1
176	39.3	0.0	38.2#
177	0.0	0.0	28.7

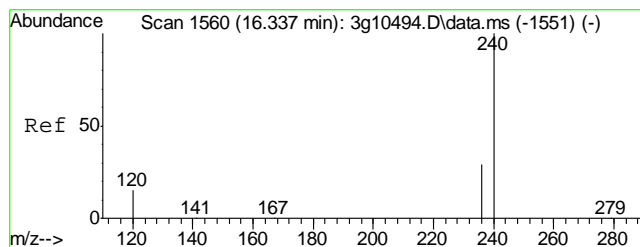


#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 10.015 min Scan# 866
 Delta R.T. -0.006 min
 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm



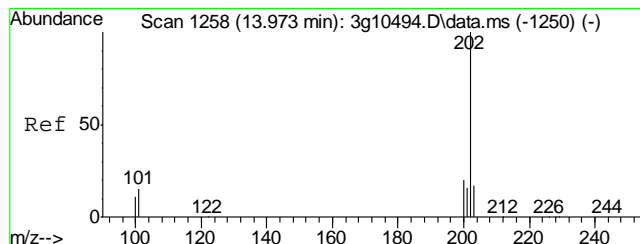
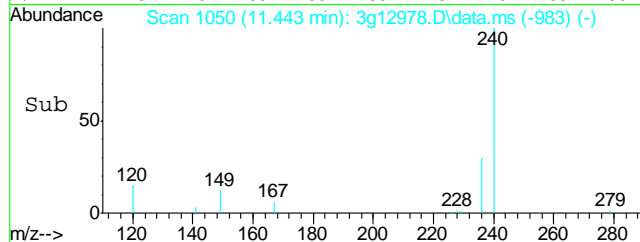
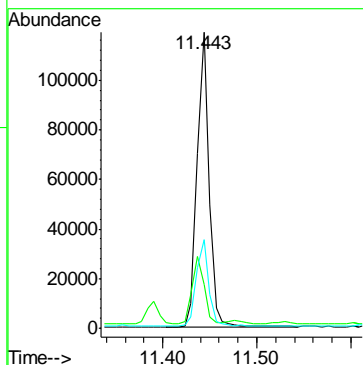
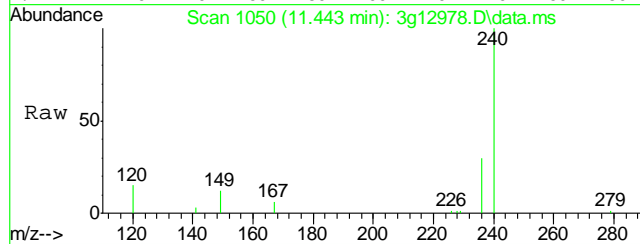
Tgt Ion:	202	Resp:	1072
Ion Ratio	Lower	Upper	
202	100		
101	0.0	0.0	32.6
203	100.9	0.0	37.4#





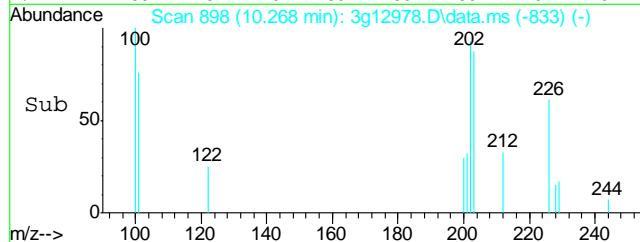
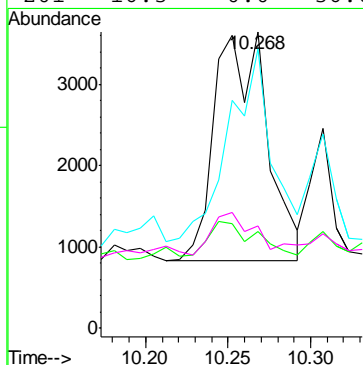
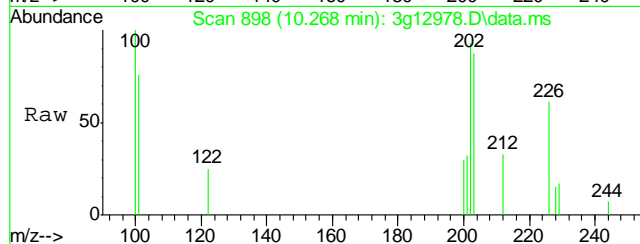
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.443 min Scan# 1050
Delta R.T. 0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

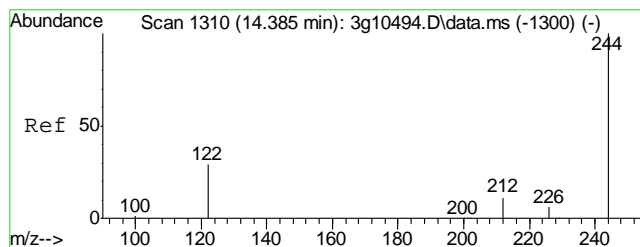
Tgt Ion	Ratio	Lower	Upper
240	100		
120	24.5	0.0	37.3
236	31.1	11.2	51.2



#20
Pyrene
Concen: 0.1112 ug/mL
RT: 10.268 min Scan# 898
Delta R.T. 0.018 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

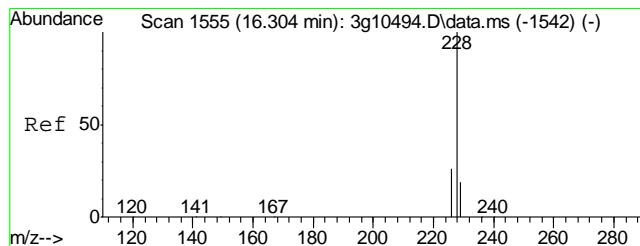
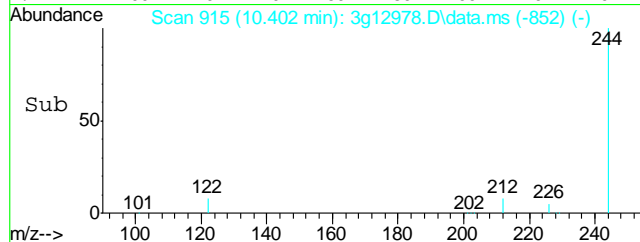
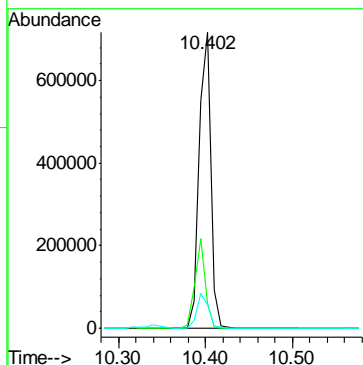
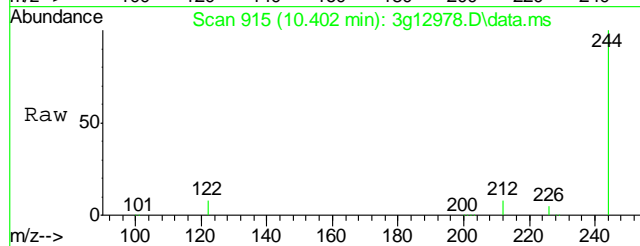
Tgt Ion	Ratio	Lower	Upper
202	100		
200	13.7	0.2	40.2
203	66.2	0.0	37.8
201	16.3	0.0	36.6





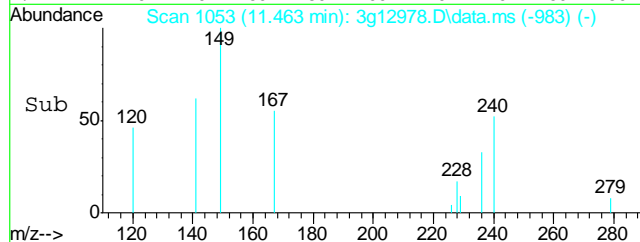
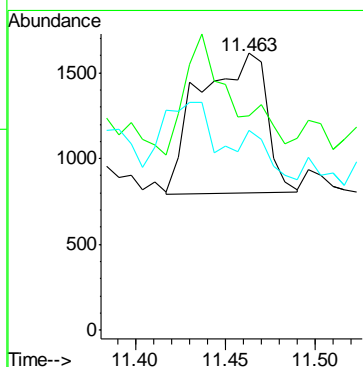
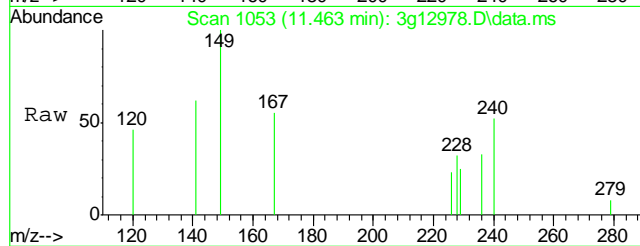
#21
Terphenyl-d14
Concen: 48.1388 ug/mL
RT: 10.402 min Scan# 915
Delta R.T. 0.002 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

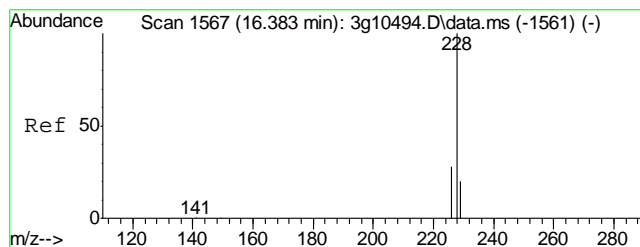
Tgt Ion	Ratio	Lower	Upper
244	100		
122	26.7	7.8	47.8
212	11.6	0.0	32.8



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.463 min Scan# 1053
Delta R.T. 0.026 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

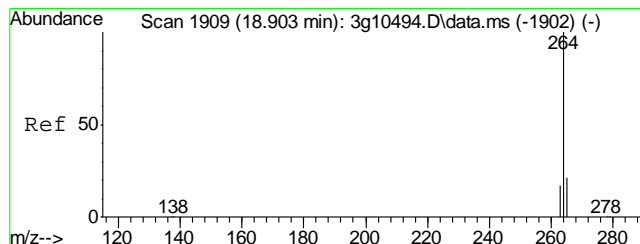
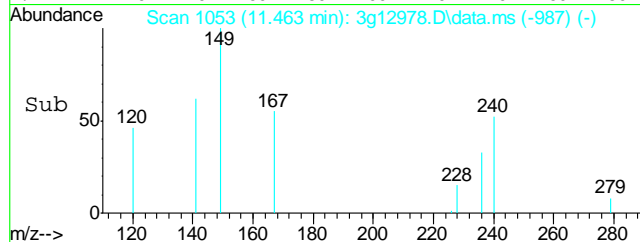
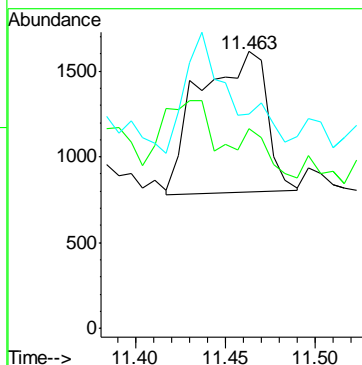
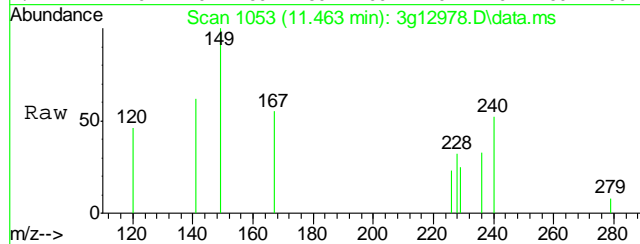
Tgt Ion	Ratio	Lower	Upper
228	100		
229	62.9	0.0	39.4#
226	34.3	6.6	46.6





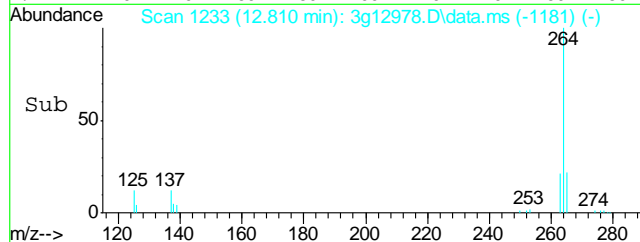
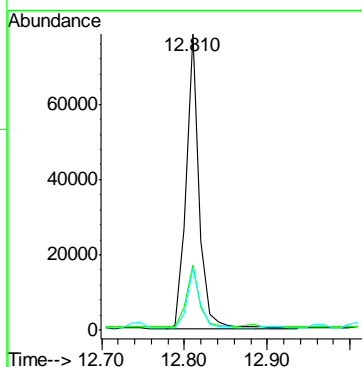
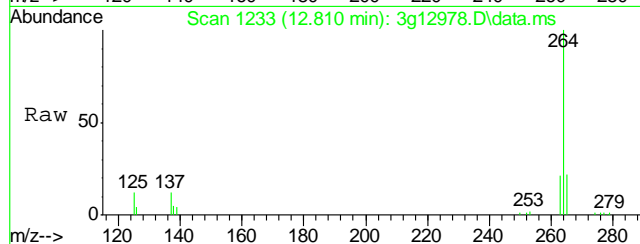
#23
Chrysene
Concen: Below ug/mL
RT: 11.463 min Scan# 1053
Delta R.T. -0.006 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

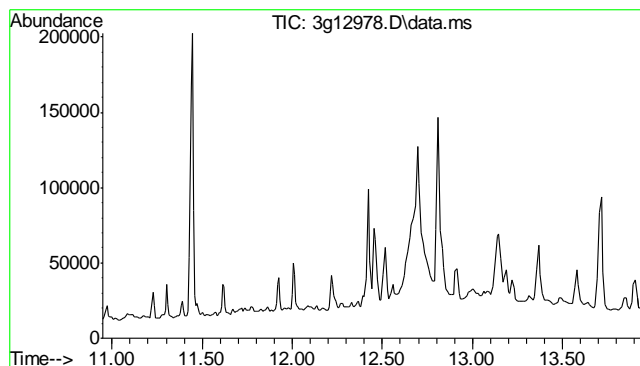
Tgt Ion:	228	Resp:	2129
Ion Ratio	100	Lower	Upper
228	100		
226	33.9	8.6	48.6
229	62.1	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.810 min Scan# 1233
Delta R.T. 0.000 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

Tgt Ion:	264	Resp:	86662
Ion Ratio	100	Lower	Upper
264	100		
265	21.0	0.6	40.6
263	20.5	0.0	38.8

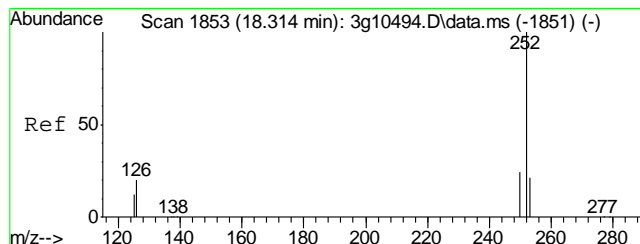
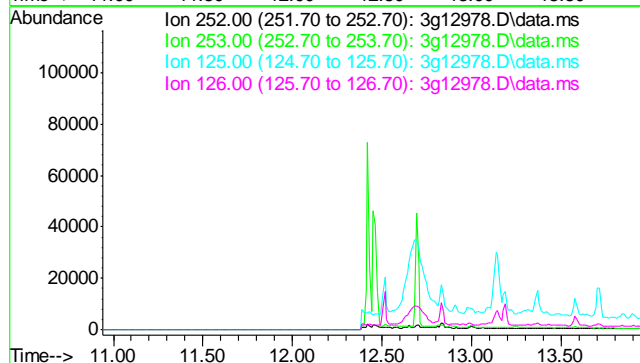




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.44 min

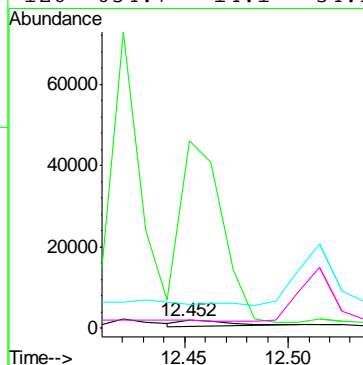
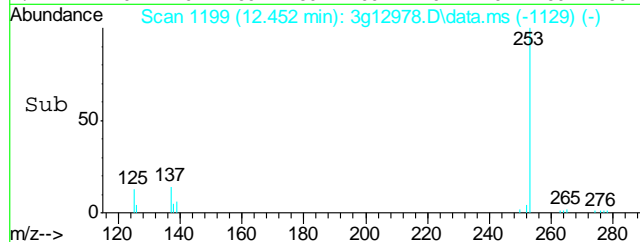
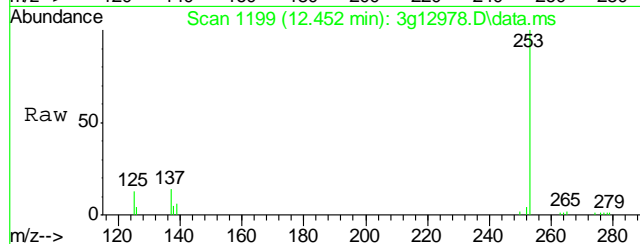
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

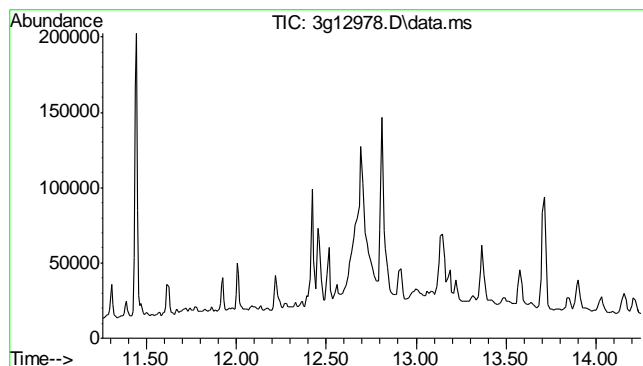
Tgt Ion: 252
Sig Exp Ratio
252 100
253 51.5
125 13.2
126 46.9



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.452 min Scan# 1199
Delta R.T. -0.011 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

Tgt Ion: 252 Resp: 2364
Ion Ratio Lower Upper
252 100
253 2673.6 17.3 57.3#
125 815.6 0.0 29.6#
126 654.7 14.1 54.1#

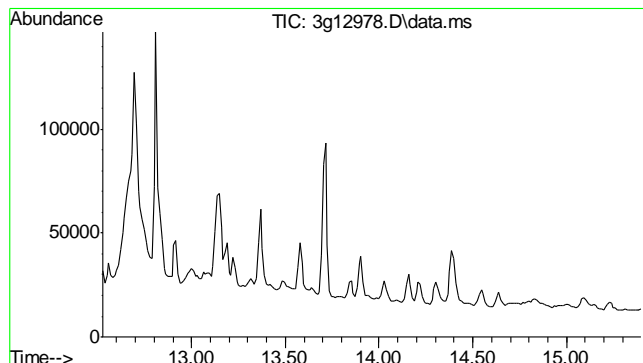
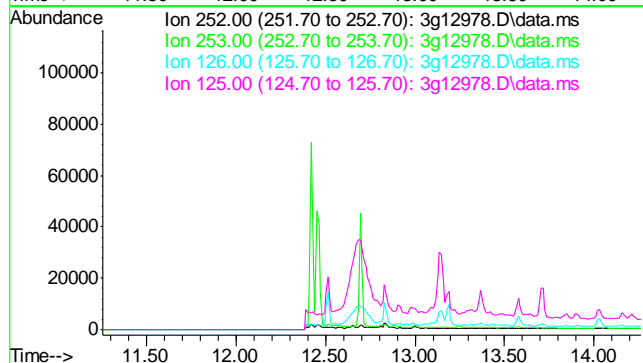




#27
 Benzo(a)pyrene
 Concen: N.D. ug/mL
 Expected RT: 12.76 min

 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm

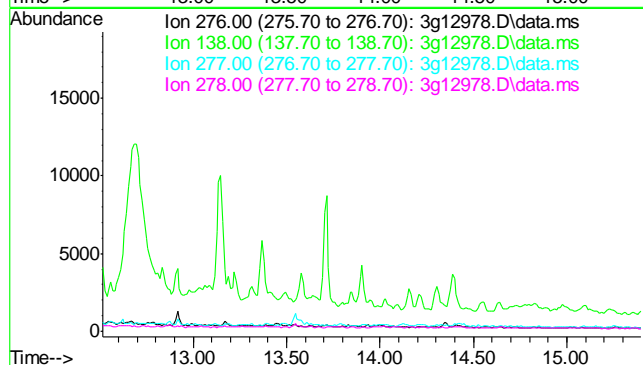
Tgt Ion	Sig	Exp Ratio
252	100	
253	21.5	
126	20.4	
125	14.5	

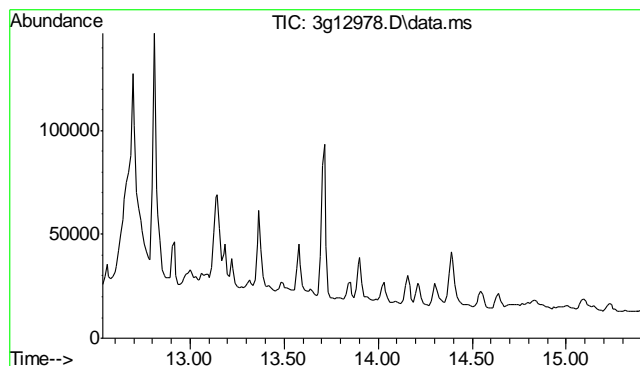


#28
 Indeno(1,2,3-cd)pyrene
 Concen: N.D. ug/mL
 Expected RT: 14.02 min

 Lab File: 3g12978.D
 Acq: 15 Jan 13 12:18 pm

Tgt Ion	Sig	Exp Ratio
276	100	
138	40.0	
277	24.8	
278	76.2	

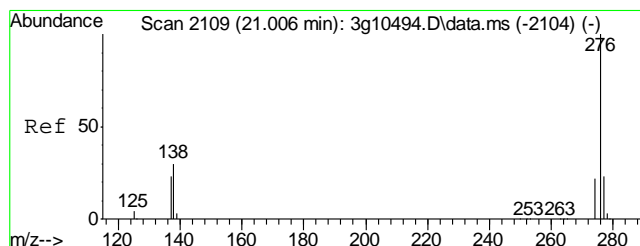
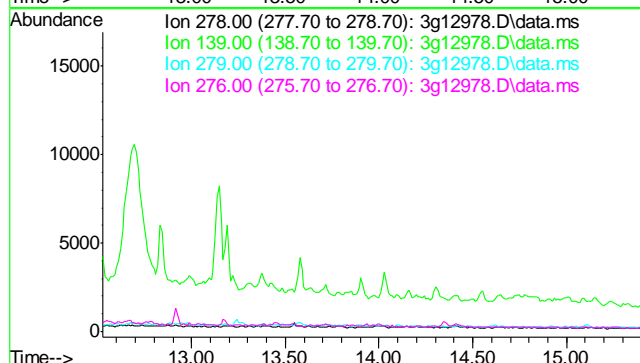




#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.03 min

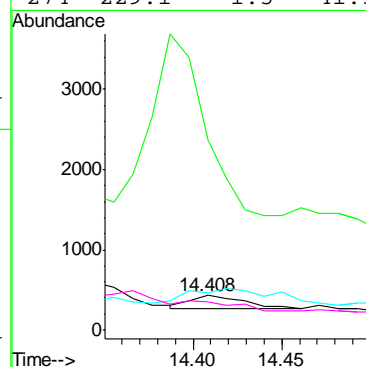
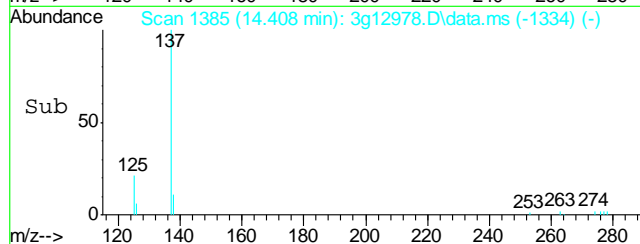
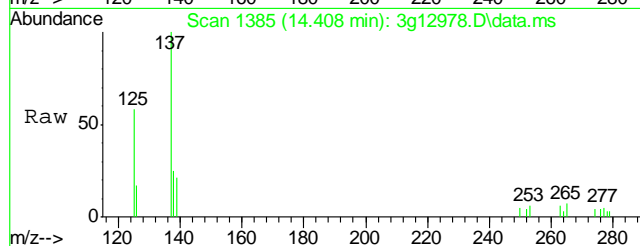
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

Tgt Ion: 278
Sig Exp Ratio
278 100
139 30.8
279 22.9
276 131.2



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.408 min Scan# 1385
Delta R.T. 0.034 min
Lab File: 3g12978.D
Acq: 15 Jan 13 12:18 pm

Tgt Ion: 276 Resp: 378
Ion Ratio Lower Upper
276 100
138 1253.7 15.1 55.1#
277 179.9 3.3 43.3#
274 229.1 1.5 41.5#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\
Data File : 3g12973.D
Acq On : 15 Jan 2013 10:14 am
Operator : DONC
Sample : OP7223-MB
Misc : OP7223,E3G621,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 15 13:46:44 2013
Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M
Quant Title : PAHSIM BASE
QLast Update : Thu Jan 10 14:18:35 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.621	136	122903	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.337	164	71901	4.0000	ug/mL	0.01
15) Phenanthrene-d10	8.812	188	128999	4.0000	ug/mL	0.00
19) Chrysene-d12	11.443	240	101544	4.0000	ug/mL	0.00
24) Perylene-d12	12.810	264	84293	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.935	82	445750	40.3218	ug/mL	-0.01
Spiked Amount	50.000	Range	25 - 135	Recovery	=	80.64%
7) 2-Fluorobiphenyl	6.676	172	1170373	42.6075	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	85.22%
21) Terphenyl-d14	10.402	244	725496	52.5073	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	105.02%

Target Compounds

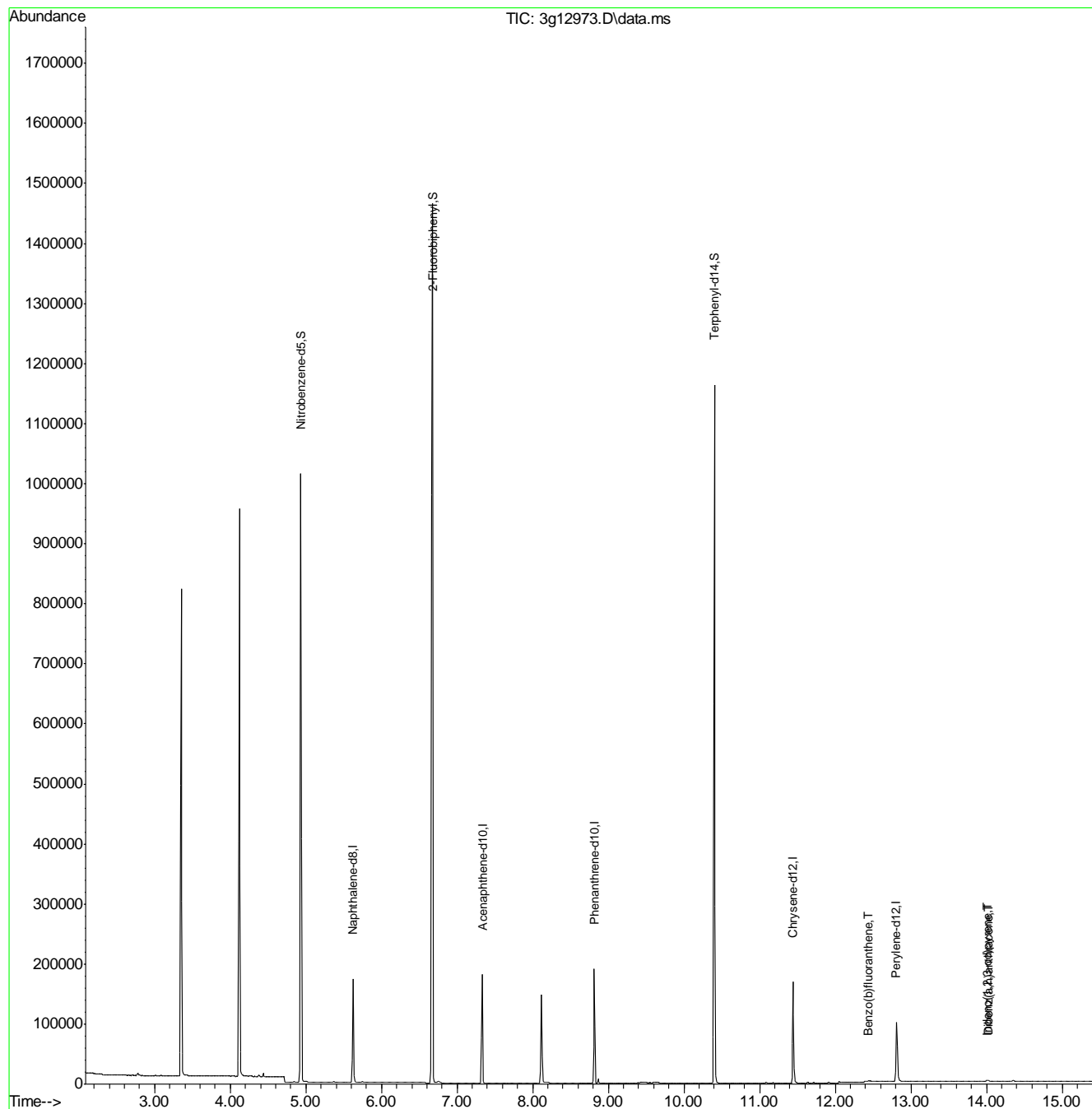
					Qvalue	
3) N-Nitrosodimethylamine	2.356	74	24	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.646	128	183	Below	Cal #	48
8) 2-Methylnaphthalene	6.319	142	186	N.D.		
9) 1-Methylnaphthalene	6.394	142	78	N.D.		
10) Acenaphthylene	7.396	152	202	N.D.		
11) Acenaphthene	7.385	154	61	N.D.		
12) Dibenzofuran	7.857	168	73	N.D.		
13) Fluorene	0.000	166	0	N.D.	d	
14) Diphenylamine	0.000	169	0	N.D.	d	
16) Phenanthrene	8.812	178	152	N.D.		
17) Anthracene	8.891	178	39	N.D.		
18) Fluoranthene	10.015	202	205	N.D.		
20) Pyrene	10.244	202	152	N.D.		
22) Benzo(a)anthracene	11.437	228	1041	N.D.		
23) Chrysene	11.470	228	877	N.D.		
25) Benzo(b)fluoranthene	12.442	252	1135m	0.0649	ug/mL	
26) Benzo(k)fluoranthene	12.463	252	1206	N.D.		
27) Benzo(a)pyrene	0.000	252	0	N.D.	d	
28) Indeno(1,2,3-cd)pyrene	14.009	276	1461	0.0777	ug/mL	89
29) Dibenz(a,h)anthracene	14.019	278	1174	0.0897	ug/mL	92
30) Benzo(g,h,i)perylene	14.356	276	1418	N.D.		

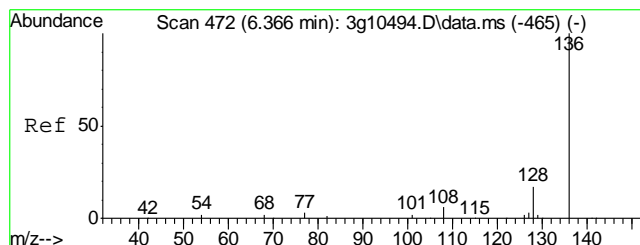
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\
Data File : 3g12973.D
Acq On : 15 Jan 2013 10:14 am
Operator : DONC
Sample : OP7223-MB
Misc : OP7223,E3G621,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

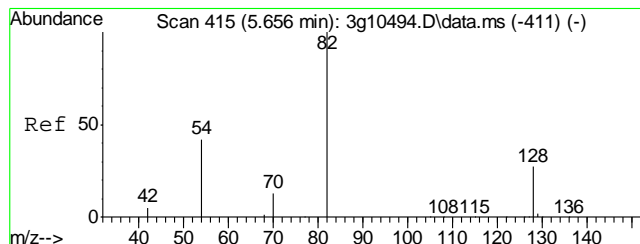
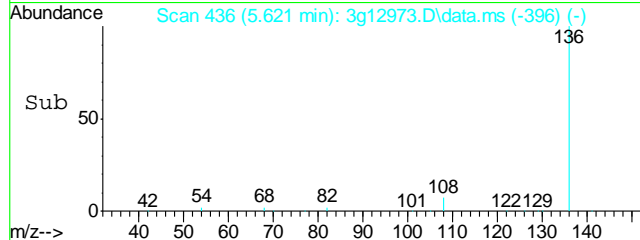
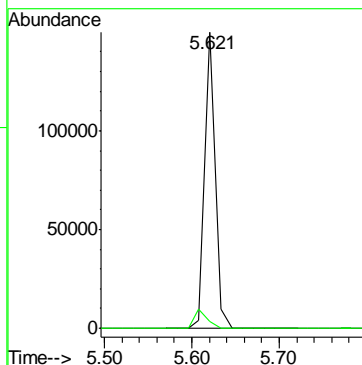
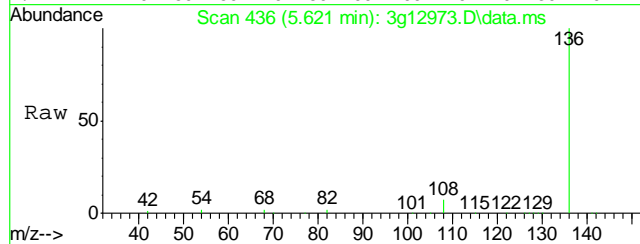
Quant Time: Jan 15 13:46:44 2013
Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M
Quant Title : PAHSIM BASE
QLast Update : Thu Jan 10 14:18:35 2013
Response via : Initial Calibration





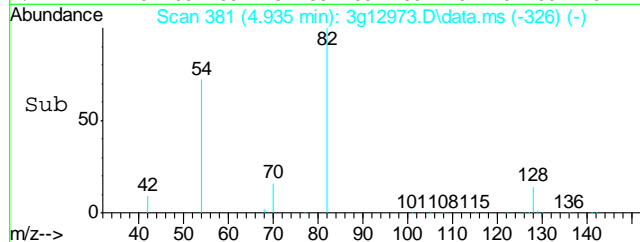
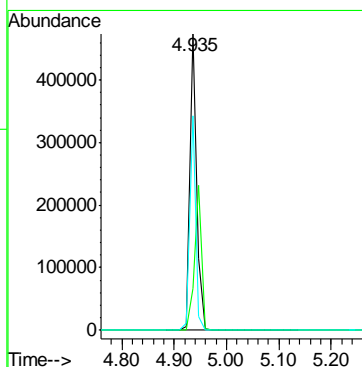
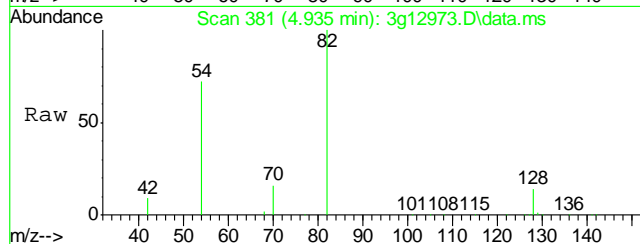
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.621 min Scan# 436
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

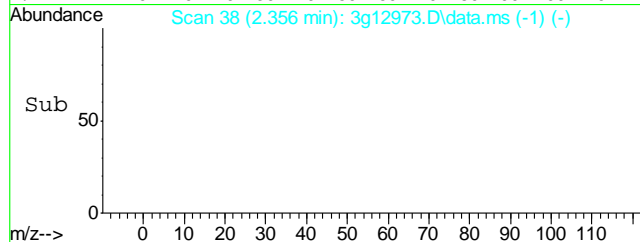
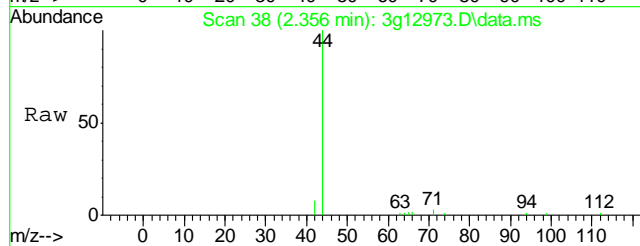
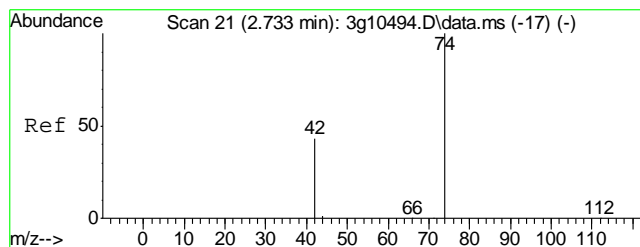
Tgt Ion:	136	Resp:	122903
Ion Ratio	Lower	Upper	
136	100		
68	7.9	0.0	20.8



#2
Nitrobenzene-d5
Concen: 40.3218 ug/mL
RT: 4.935 min Scan# 381
Delta R.T. -0.014 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

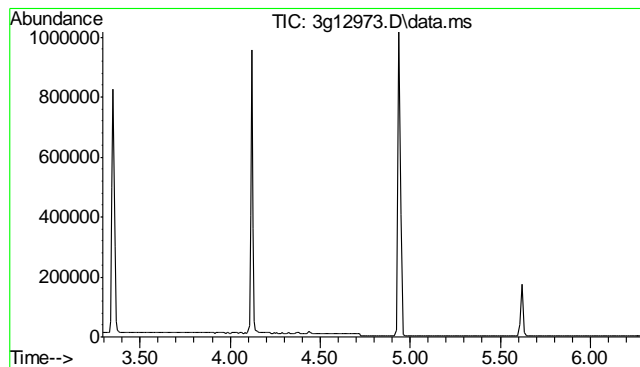
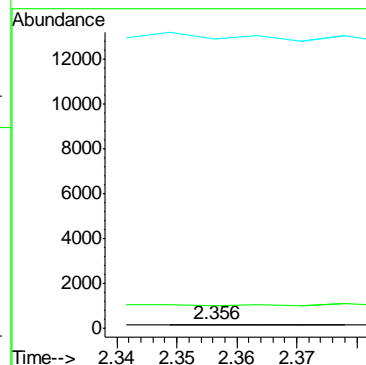
Tgt Ion:	82	Resp:	445750
Ion Ratio	Lower	Upper	
82	100		
128	50.4	36.8	76.8
54	62.9	40.5	80.5





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.356 min Scan# 38
Delta R.T. 0.020 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

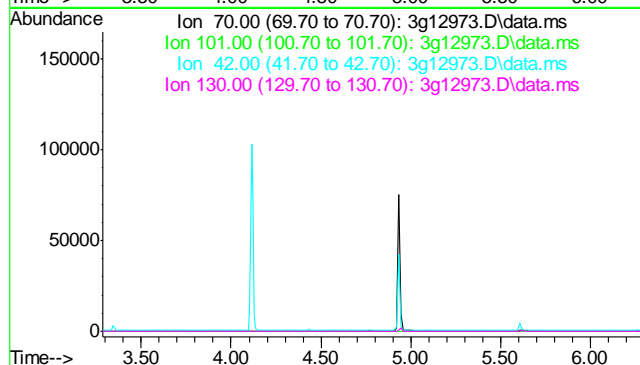
Tgt Ion: 74	Resp: 24
Ion Ratio	Lower Upper
74	100
42	0.0 58.5 98.5#
44	0.0 0.0 24.0

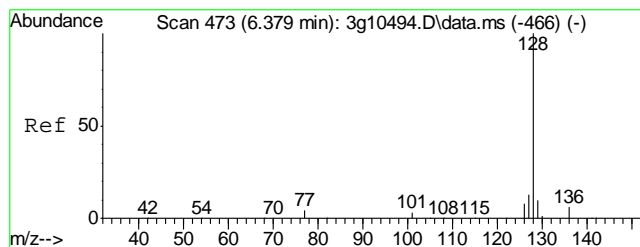


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.79 min

Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion: 70
Sig Exp Ratio
70 100
101 11.9
42 57.4
130 21.7

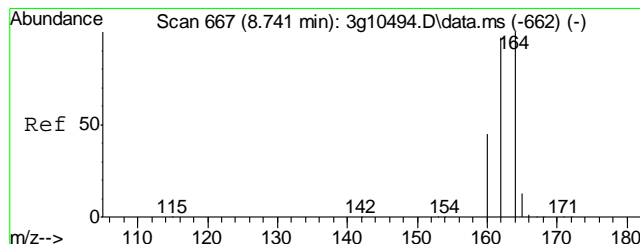
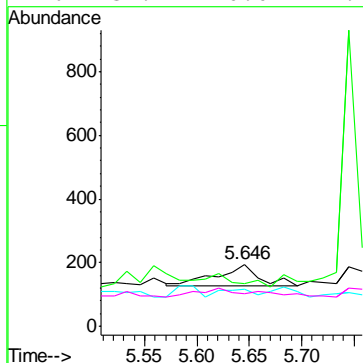
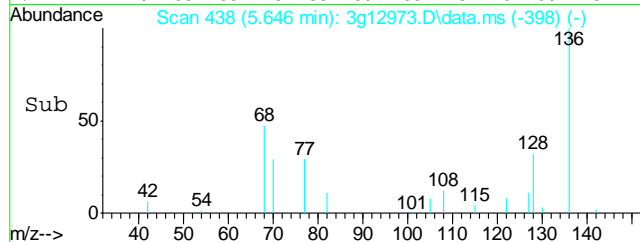
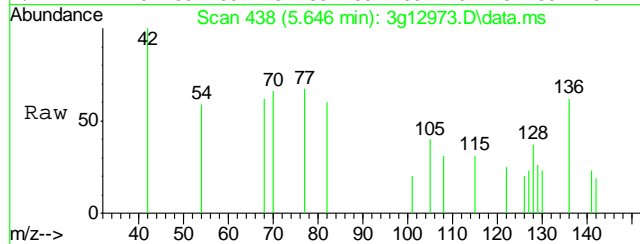




#5
Naphthalene
Concen: Below ug/mL
RT: 5.646 min Scan# 438
Delta R.T. 0.001 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion	128	Resp	183
Ion Ratio	100		
Lower	0.0		31.2
Upper	32.4#		

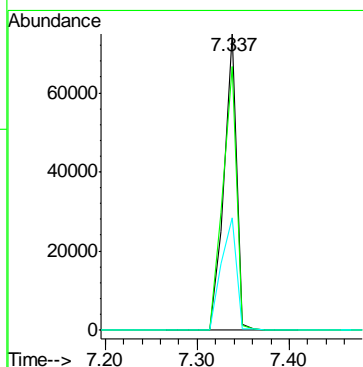
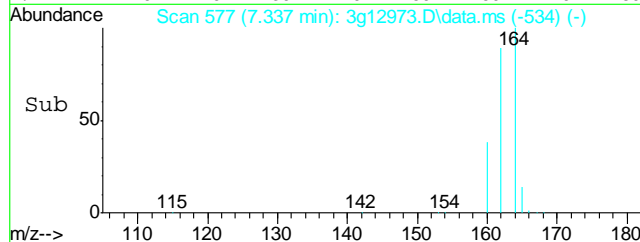
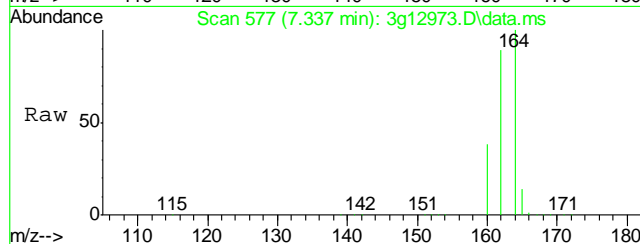
Ion	129	127	126
Ratio	21.3	33.9	37.2
Lower	0.0	0.0	0.0
Upper	31.2	32.4#	27.2#

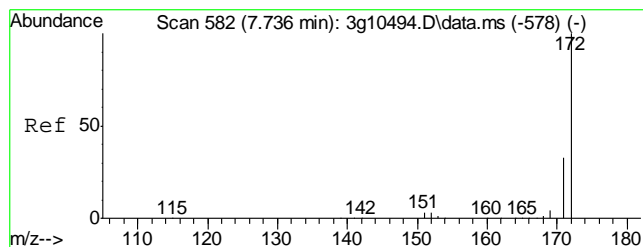


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.337 min Scan# 577
Delta R.T. 0.012 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion	164	Resp	71901
Ion Ratio <td>100</td> <td></td> <td></td>	100		
Lower <td>88.1</td> <td></td> <td>128.1</td>	88.1		128.1
Upper <td>78.8</td> <td></td> <td></td>	78.8		

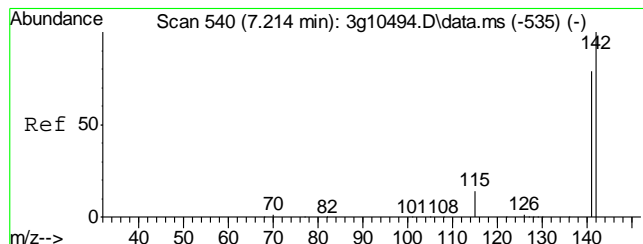
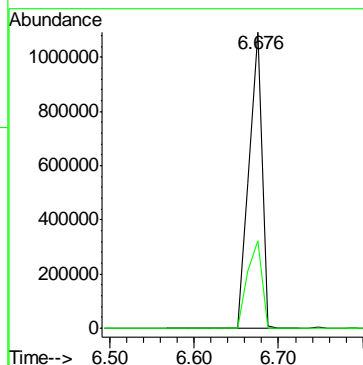
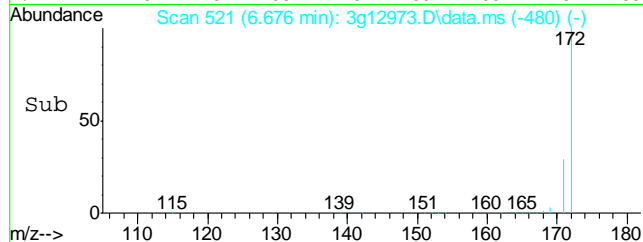
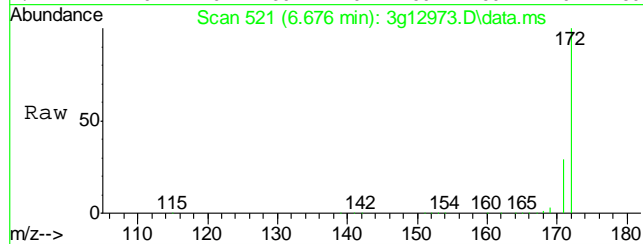
Ion	162	160
Ratio <td>96.1</td> <td>45.1</td>	96.1	45.1
Lower <td>88.1</td> <td>38.8</td>	88.1	38.8
Upper <td>128.1</td> <td>78.8</td>	128.1	78.8





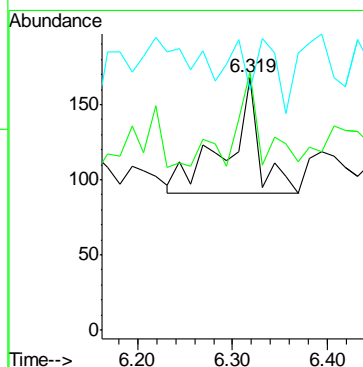
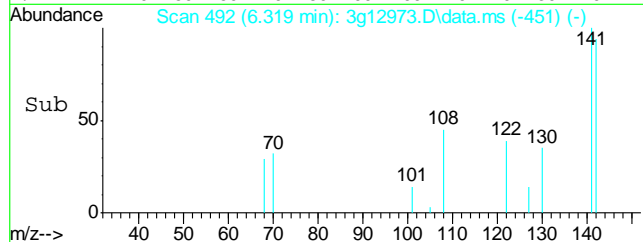
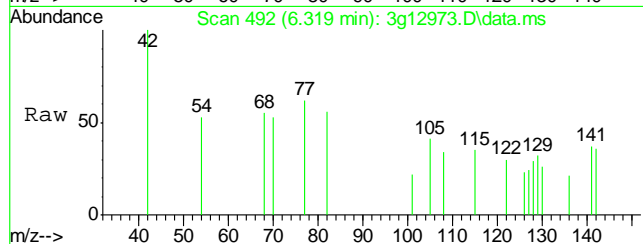
#7
2-Fluorobiphenyl
Concen: 42.6075 ug/mL
RT: 6.676 min Scan# 521
Delta R.T. 0.010 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

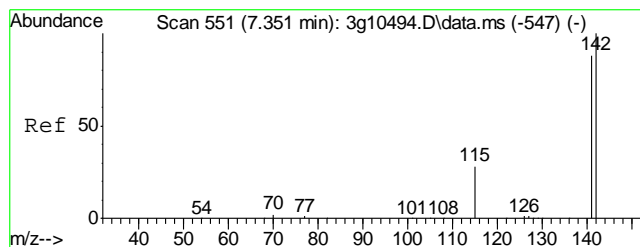
Tgt Ion:172 Resp: 1170373
Ion Ratio Lower Upper
172 100
171 32.8 12.2 52.2



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.319 min Scan# 492
Delta R.T. 0.008 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

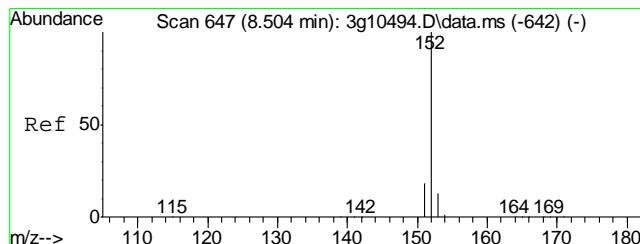
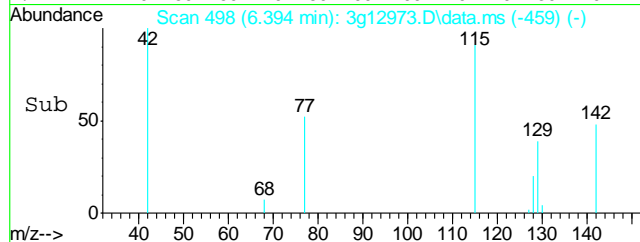
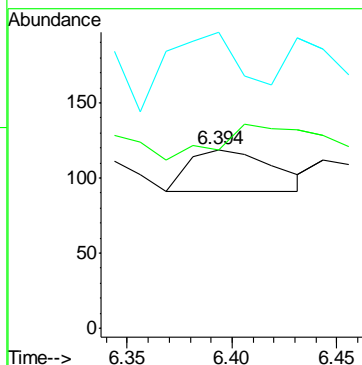
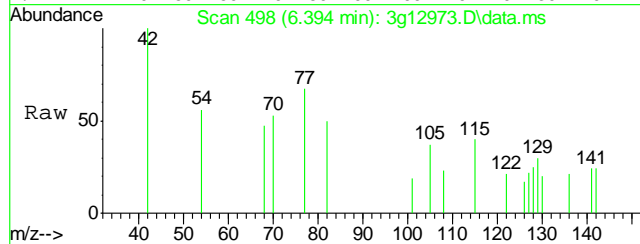
Tgt Ion:142 Resp: 186
Ion Ratio Lower Upper
142 100
141 66.1 62.0 102.0
115 0.0 11.3 51.3#





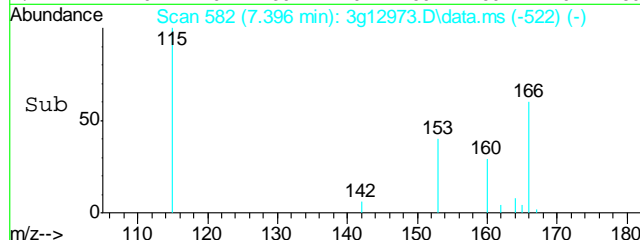
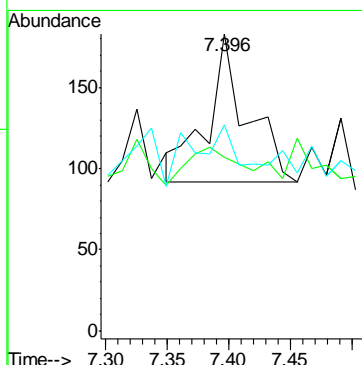
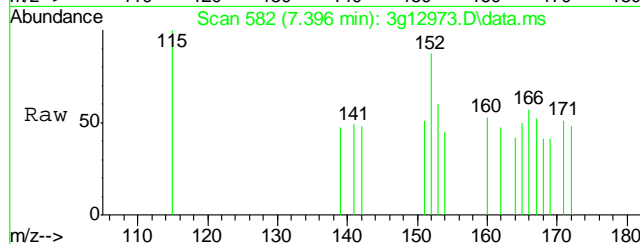
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.394 min Scan# 498
Delta R.T. -0.017 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

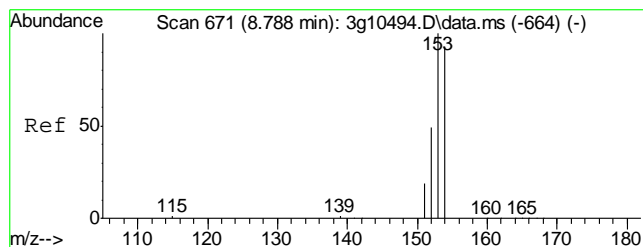
Tgt Ion:142	Resp:	78
Ion Ratio	Lower	Upper
142	100	
141	223.1	67.5 107.5#
115	0.0	19.4 59.4#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.396 min Scan# 582
Delta R.T. 0.212 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

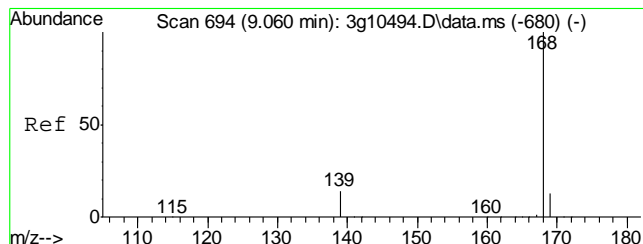
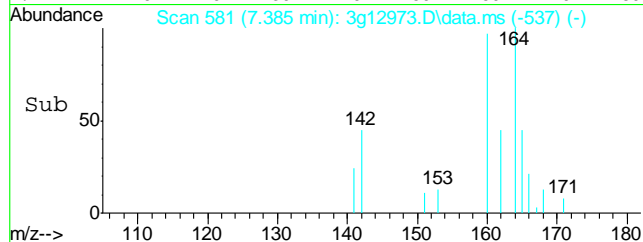
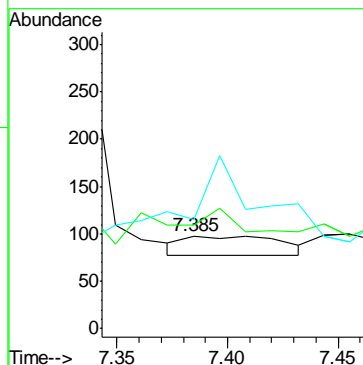
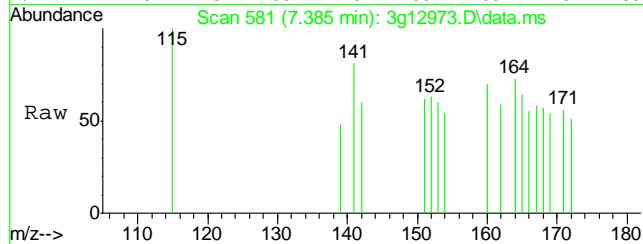
Tgt Ion:152	Resp:	202
Ion Ratio	Lower	Upper
152	100	
151	32.2	0.0 39.2
153	25.7	0.0 32.9





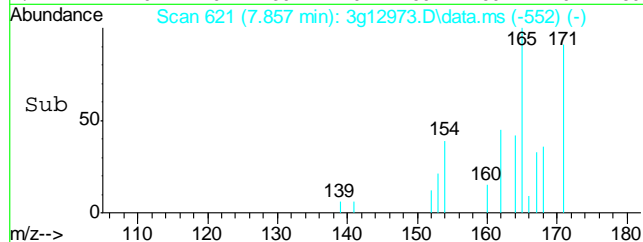
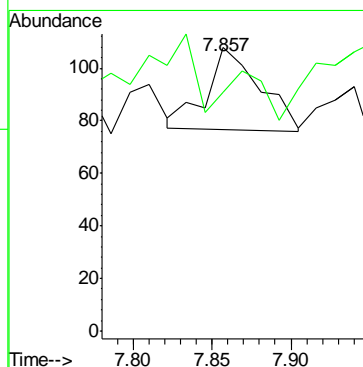
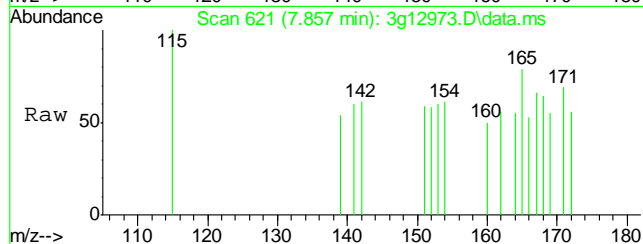
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.385 min Scan# 581
Delta R.T. 0.024 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

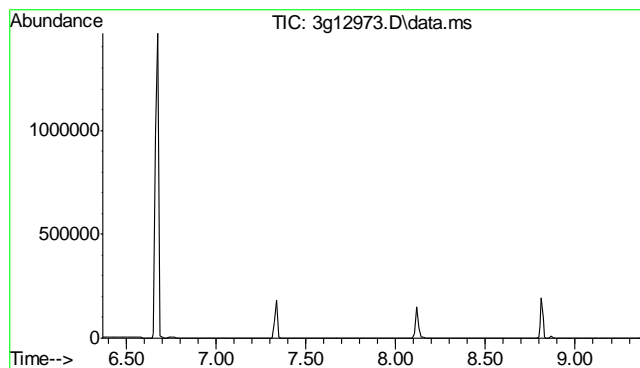
Tgt Ion:	154	Resp:	61
Ion Ratio	Lower	Upper	
154	100		
153	85.2	82.4	122.4
152	331.1	30.0	70.0#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.857 min Scan# 621
Delta R.T. 0.320 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion:	168	Resp:	73
Ion Ratio	Lower	Upper	
168	100		
139	32.9	13.4	53.4

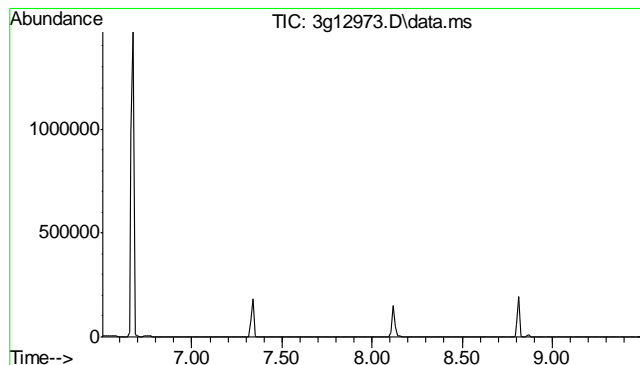
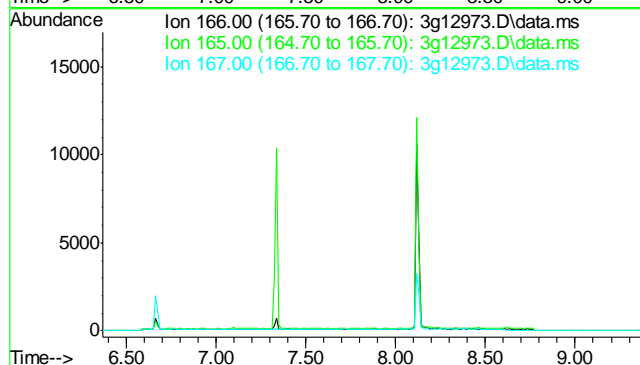




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.87 min

Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

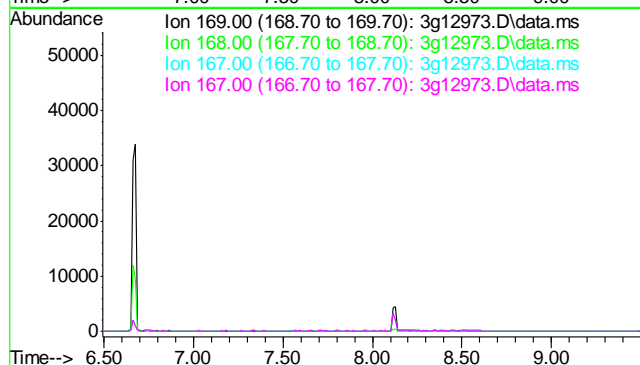
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	92.0
167	13.1

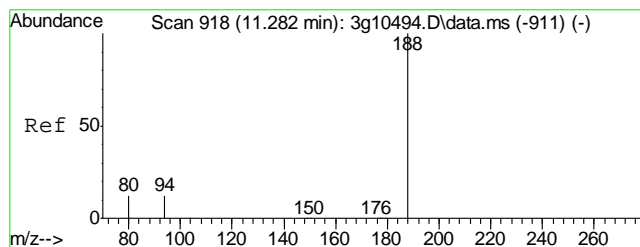


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.00 min

Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

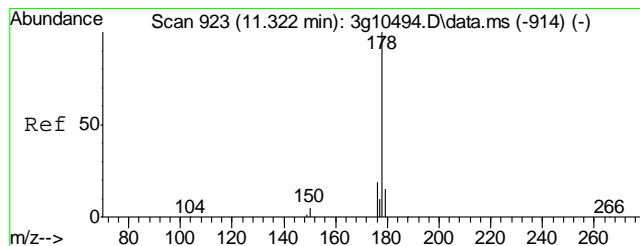
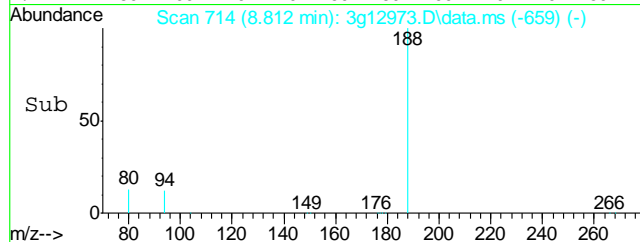
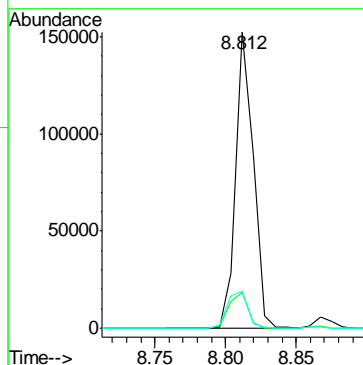
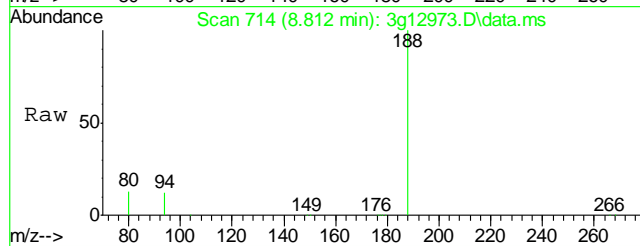
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1





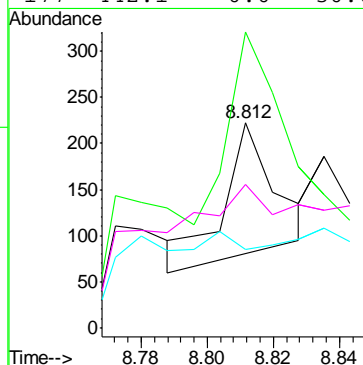
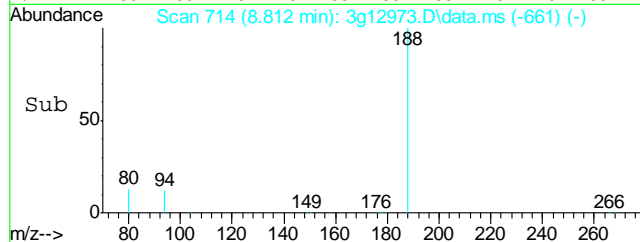
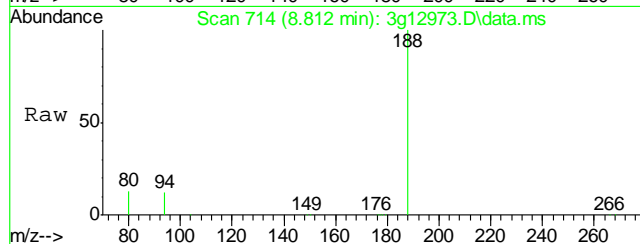
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.812 min Scan# 714
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

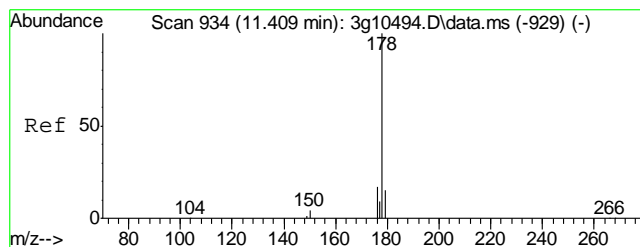
Tgt Ion:188	Resp:	128999
Ion Ratio	Lower	Upper
188	100	
94	13.6	0.0 26.9
80	14.9	0.0 26.3



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.812 min Scan# 714
Delta R.T. -0.024 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

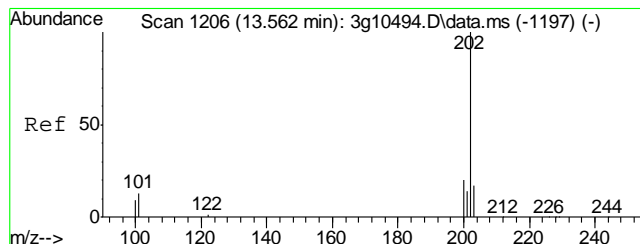
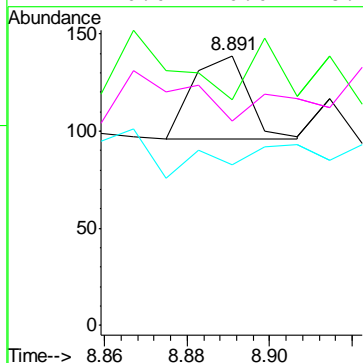
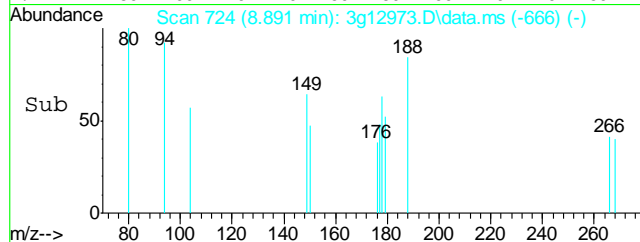
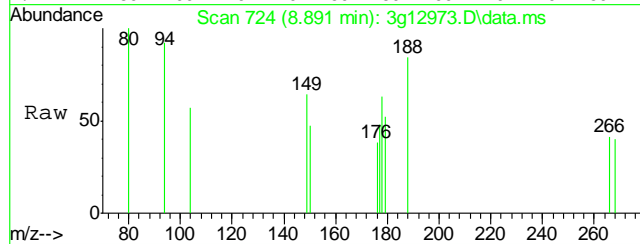
Tgt Ion:178	Resp:	152
Ion Ratio	Lower	Upper
178	100	
179	213.8	0.0 35.2#
176	159.2	0.0 38.6#
177	442.1	0.0 30.0#





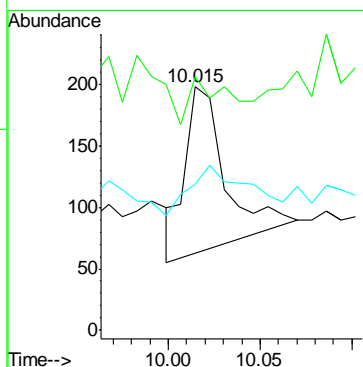
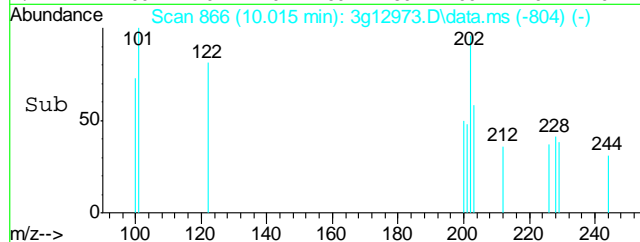
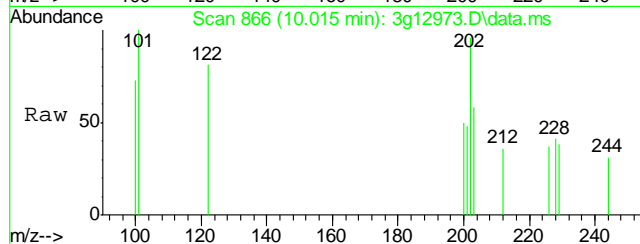
#17
Anthracene
Concen: Below ug/mL
RT: 8.891 min Scan# 724
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

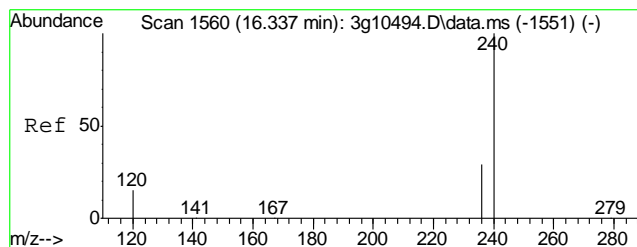
Tgt Ion: 178 Resp: 39
Ion Ratio Lower Upper
178 100
179 0.0 0.0 35.1
176 0.0 0.0 38.2
177 0.0 0.0 28.7



#18
Fluoranthene
Concen: Below ug/mL
RT: 10.015 min Scan# 866
Delta R.T. -0.006 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

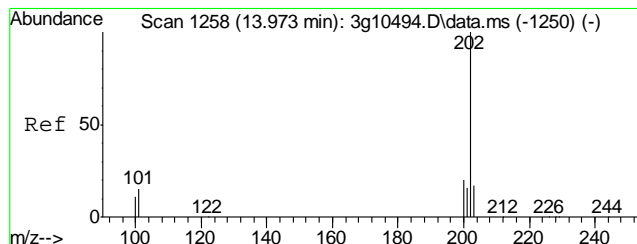
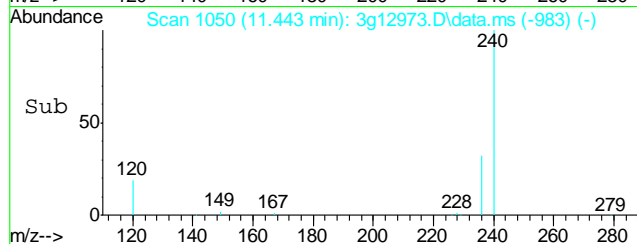
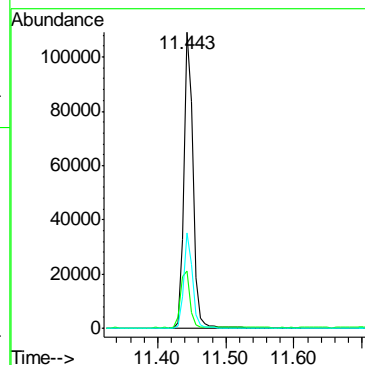
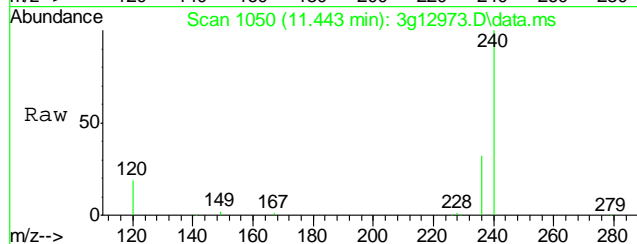
Tgt Ion: 202 Resp: 205
Ion Ratio Lower Upper
202 100
101 0.0 0.0 32.6
203 44.9 0.0 37.4#





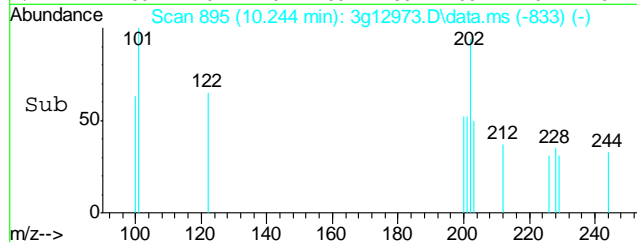
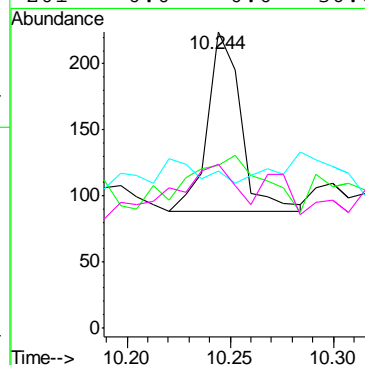
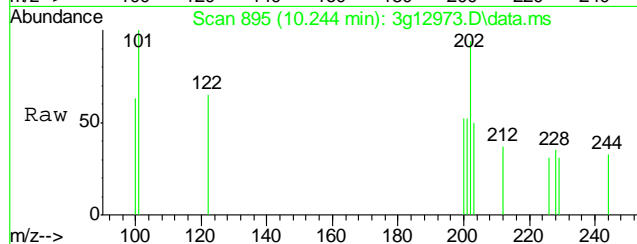
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.443 min Scan# 1050
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

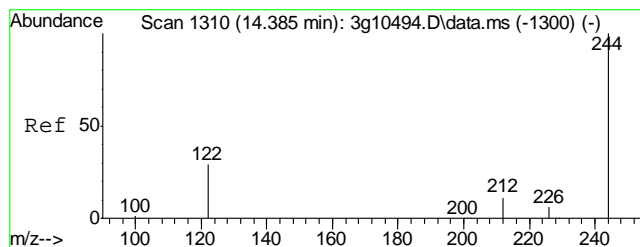
Tgt Ion:	240	Resp:	101544
Ion Ratio	Lower	Upper	
240	100		
120	20.4	0.0	37.3
236	30.7	11.2	51.2



#20
Pyrene
Concen: Below ug/mL
RT: 10.244 min Scan# 895
Delta R.T. -0.006 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

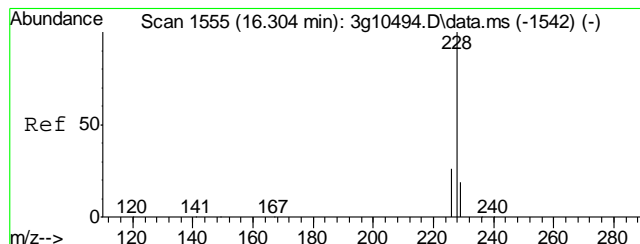
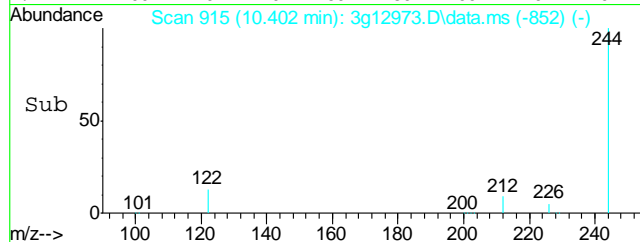
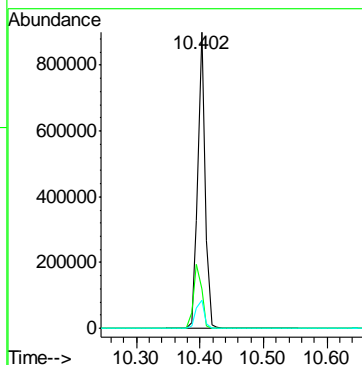
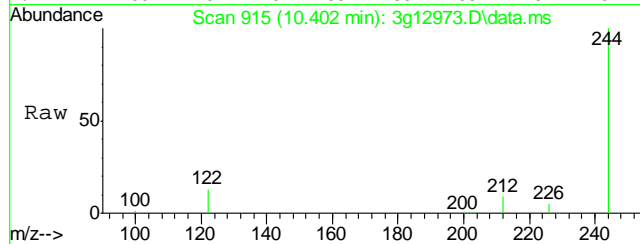
Tgt Ion:	202	Resp:	152
Ion Ratio	Lower	Upper	
202	100		
200	0.0	0.2	40.2#
203	0.0	0.0	37.8
201	0.0	0.0	36.6





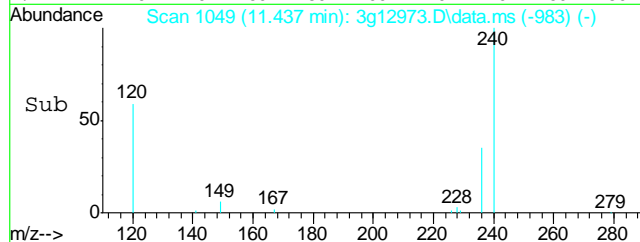
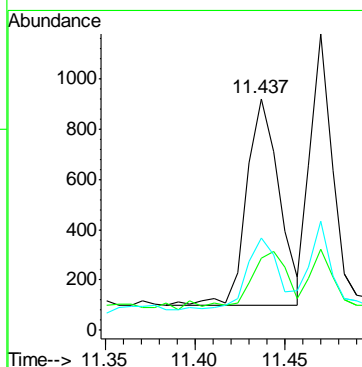
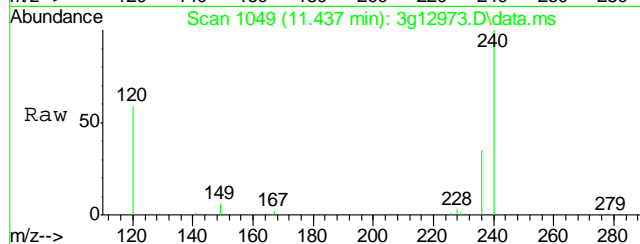
#21
Terphenyl-d14
Concen: 52.5073 ug/mL
RT: 10.402 min Scan# 915
Delta R.T. 0.002 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

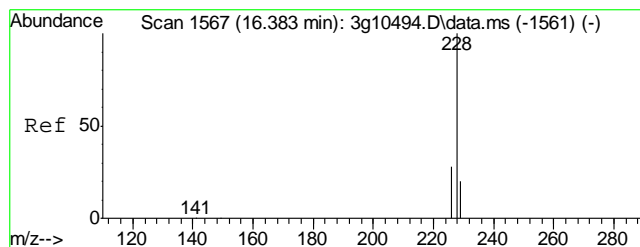
Tgt Ion:	244	Resp:	725496
Ion Ratio	Lower	Upper	
244	100		
122	24.3	7.8	47.8
212	11.0	0.0	32.8



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.437 min Scan# 1049
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

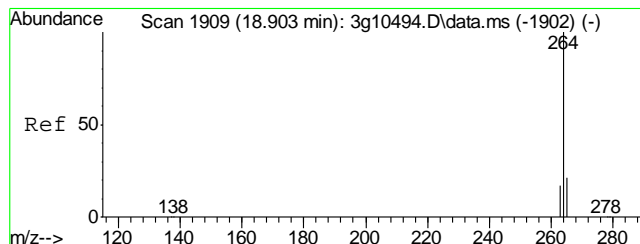
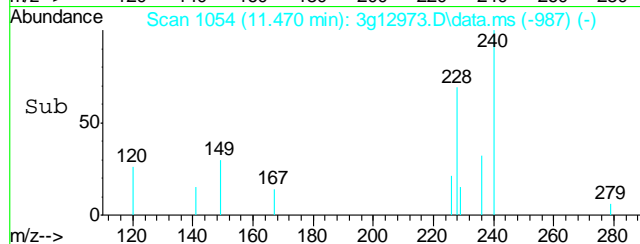
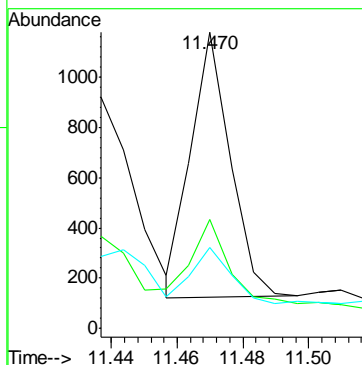
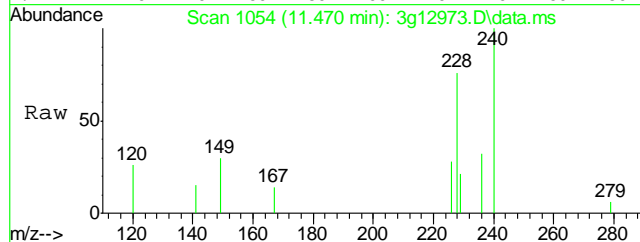
Tgt Ion:	228	Resp:	1041
Ion Ratio	Lower	Upper	
228	100		
229	28.4	0.0	39.4
226	34.7	6.6	46.6





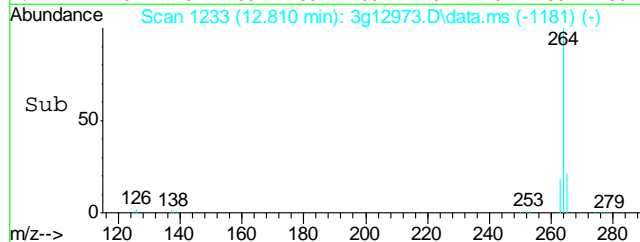
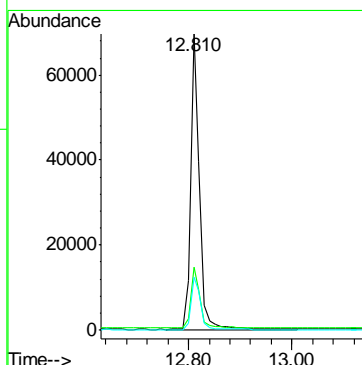
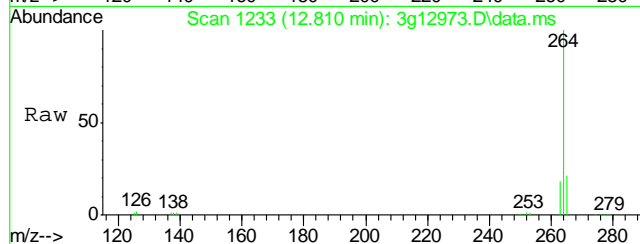
#23
Chrysene
Concen: Below ug/mL
RT: 11.470 min Scan# 1054
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

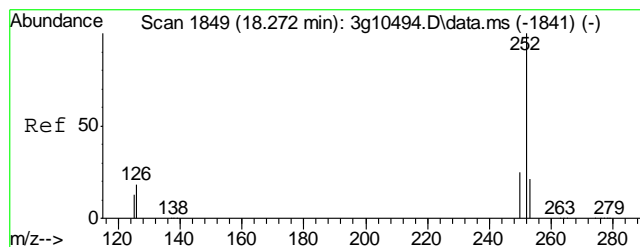
Tgt Ion: 228	Resp: 877
Ion Ratio	Lower Upper
228	100
226	40.8 8.6 48.6
229	27.1 0.0 39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.810 min Scan# 1233
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

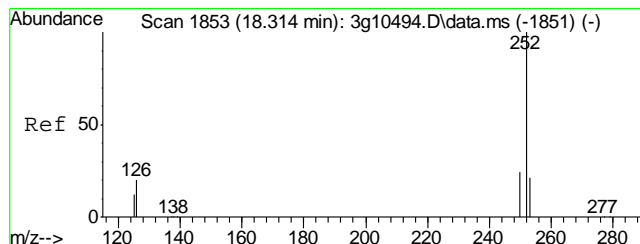
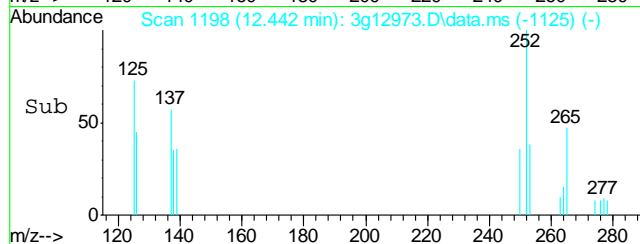
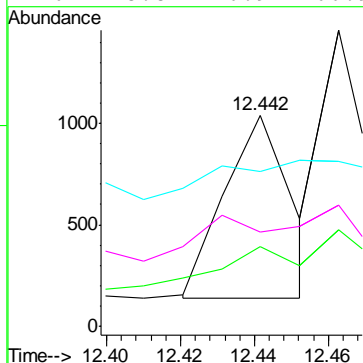
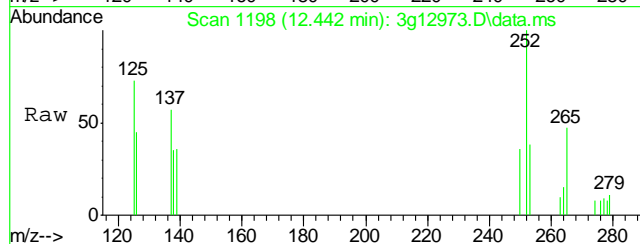
Tgt Ion: 264	Resp: 84293
Ion Ratio	Lower Upper
264	100
265	20.8 0.6 40.6
263	19.5 0.0 38.8





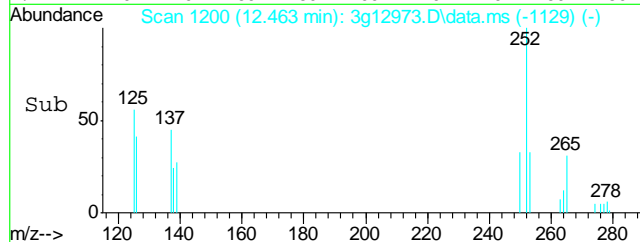
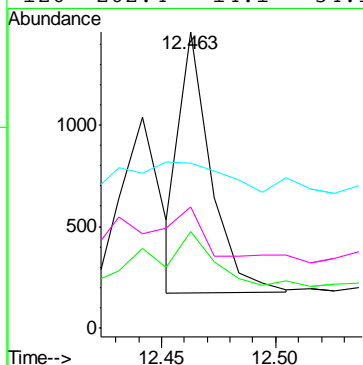
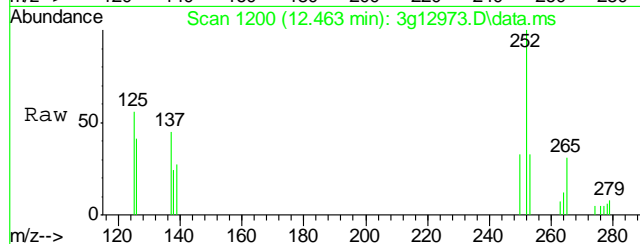
#25
Benzo(b)fluoranthene
Concen: 0.0649 ug/mL m
RT: 12.442 min Scan# 1198
Delta R.T. 0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

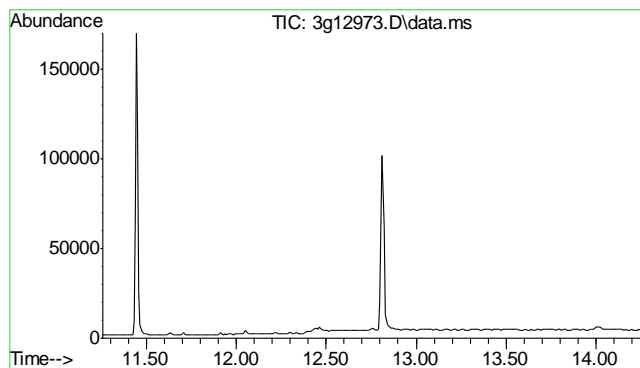
Tgt Ion	252	Resp	1135
Ion Ratio	100	Lower	Upper
252	100		
253	182.7	31.5	71.5#
125	91.1	0.0	33.2#
126	278.8	26.9	66.9#



#26
Benzo(k)fluoranthene
Concen: Below ug/mL m
RT: 12.463 min Scan# 1200
Delta R.T. -0.000 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion	252	Resp	1206
Ion Ratio	100	Lower	Upper
252	100		
253	172.0	17.3	57.3#
125	85.7	0.0	29.6#
126	262.4	14.1	54.1#

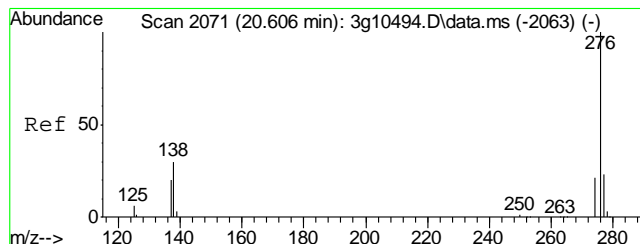
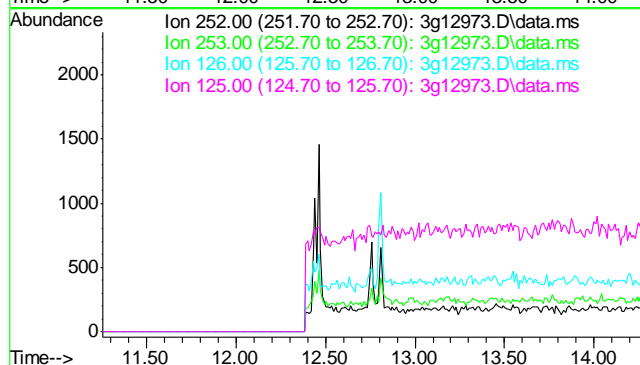




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.76 min

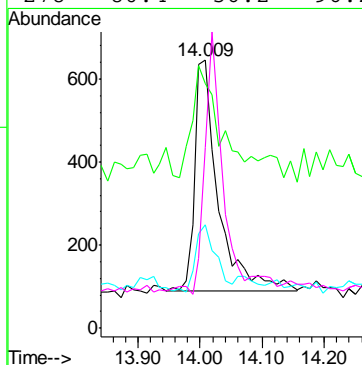
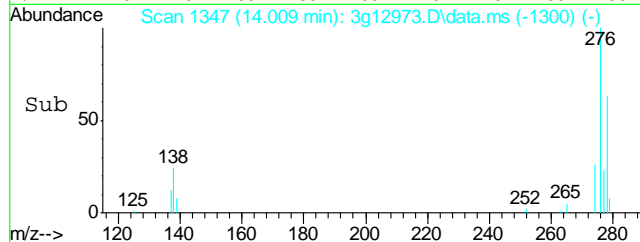
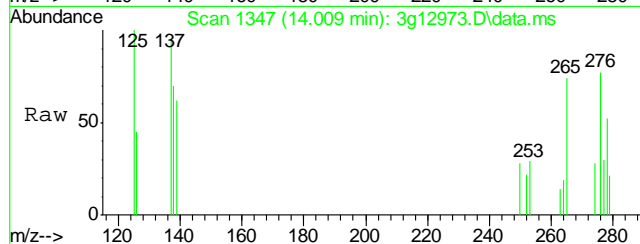
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

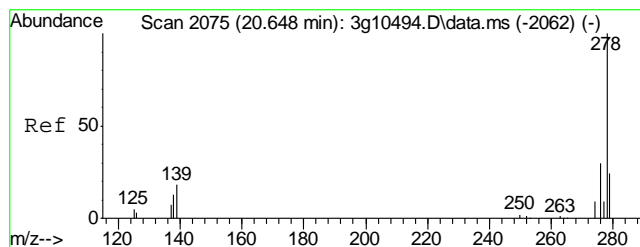
Tgt Ion: 252
Sig Exp Ratio
252 100
253 21.5
126 20.4
125 14.5



#28
Indeno(1,2,3-cd)pyrene
Concen: 0.0777 ug/mL
RT: 14.009 min Scan# 1347
Delta R.T. -0.008 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

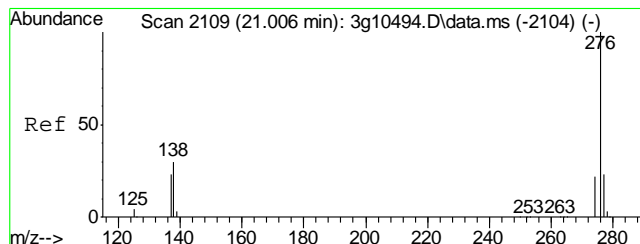
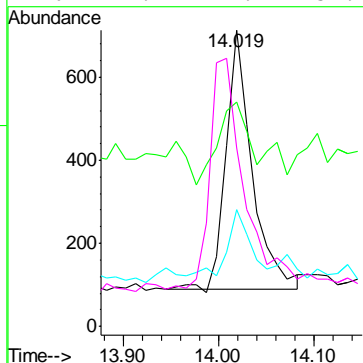
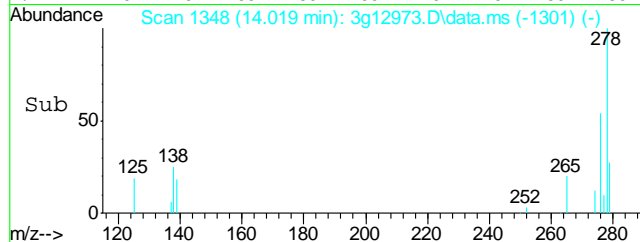
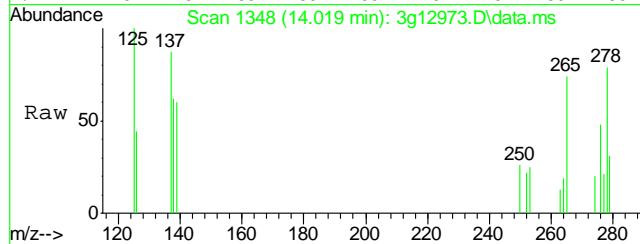
Tgt Ion: 276 Resp: 1461
Ion Ratio Lower Upper
276 100
138 57.9 20.0 60.0
277 24.3 4.8 44.8
278 80.4 56.2 96.2





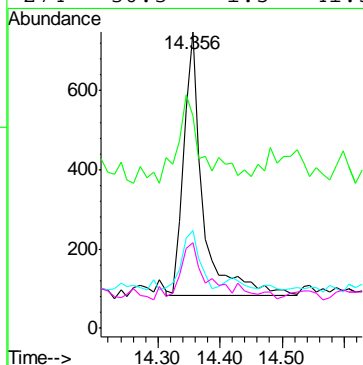
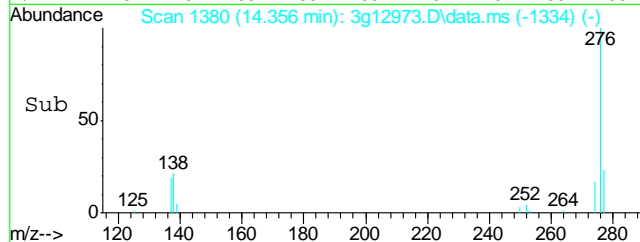
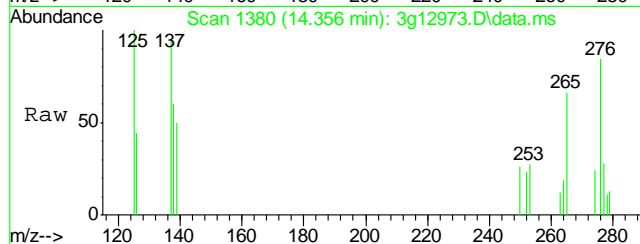
#29
Dibenzo(a,h)anthracene
Concen: 0.0897 ug/mL
RT: 14.019 min Scan# 1348
Delta R.T. -0.008 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion: 278 Resp: 1174
Ion Ratio Lower Upper
278 100
139 48.2 10.8 50.8
279 20.9 2.9 42.9
276 127.2 111.2 151.2



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.356 min Scan# 1380
Delta R.T. -0.018 min
Lab File: 3g12973.D
Acq: 15 Jan 13 10:14 am

Tgt Ion: 276 Resp: 1418
Ion Ratio Lower Upper
276 100
138 34.2 15.1 55.1
277 24.0 3.3 43.3
274 30.3 1.5 41.5



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: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1044-MB	GB19088.D	1	01/10/13	SK	n/a	n/a	GGB1044

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

D42511-1

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	87% 60-140%

10.1.1
10

Blank Spike Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1044-BS	GB19089.D	1	01/10/13	SK	n/a	n/a	GGB1044

The QC reported here applies to the following samples:

Method: SW846 8015B

D42511-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	123	112	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D42435-1MS	GB19091.D	1	01/10/13	SK	n/a	n/a	GGB1044
D42435-1MSD	GB19092.D	1	01/10/13	SK	n/a	n/a	GGB1044
D42435-1	GB19090.D	1	01/10/13	SK	n/a	n/a	GGB1044

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

D42511-1

CAS No.	Compound	D42435-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	127	140	111	140	111	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D42435-1	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	95%	93%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011013\GB19112.D\FID1A.CH Vial: 27
 Signal #2 : Y:\1\DATA\011013\GB19112.D\FID2B.CH
 Acq On : 11 Jan 2013 6:12 am Operator: StephK
 Sample : D42511-1, 50X Inst : GC/MS Ins
 Misc : GC3347,GGB1044,5.034,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Jan 11 08:57:32 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Jan 10 16:31:50 2013
 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	

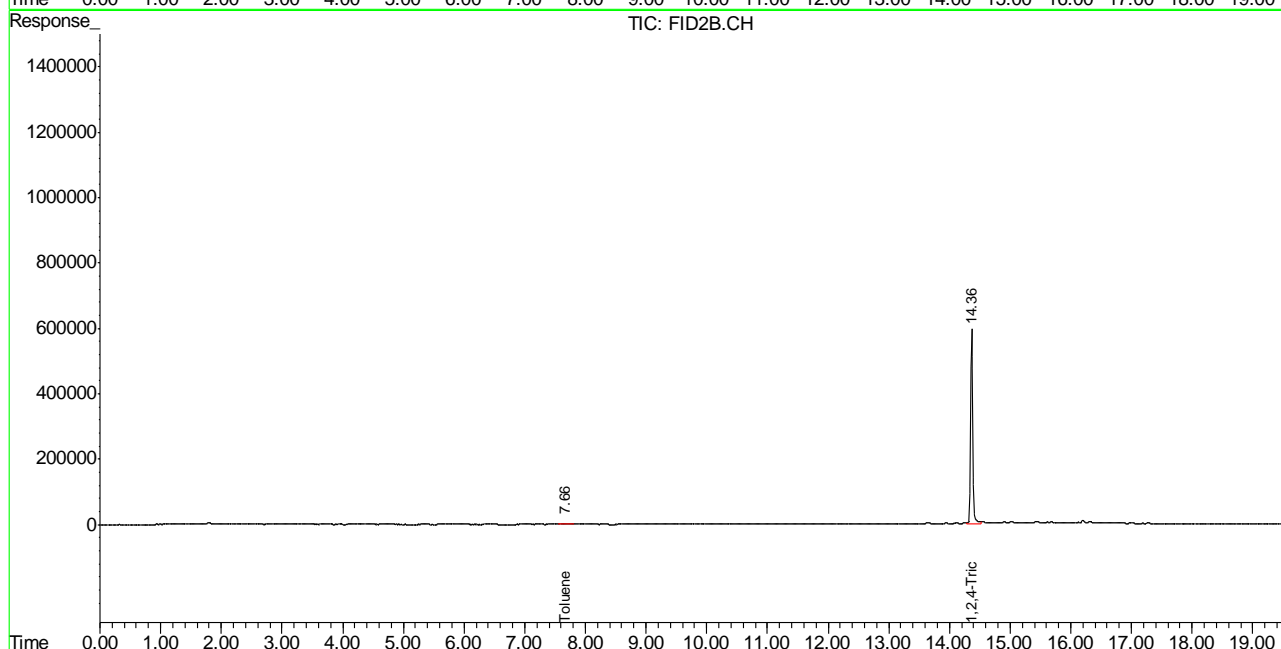
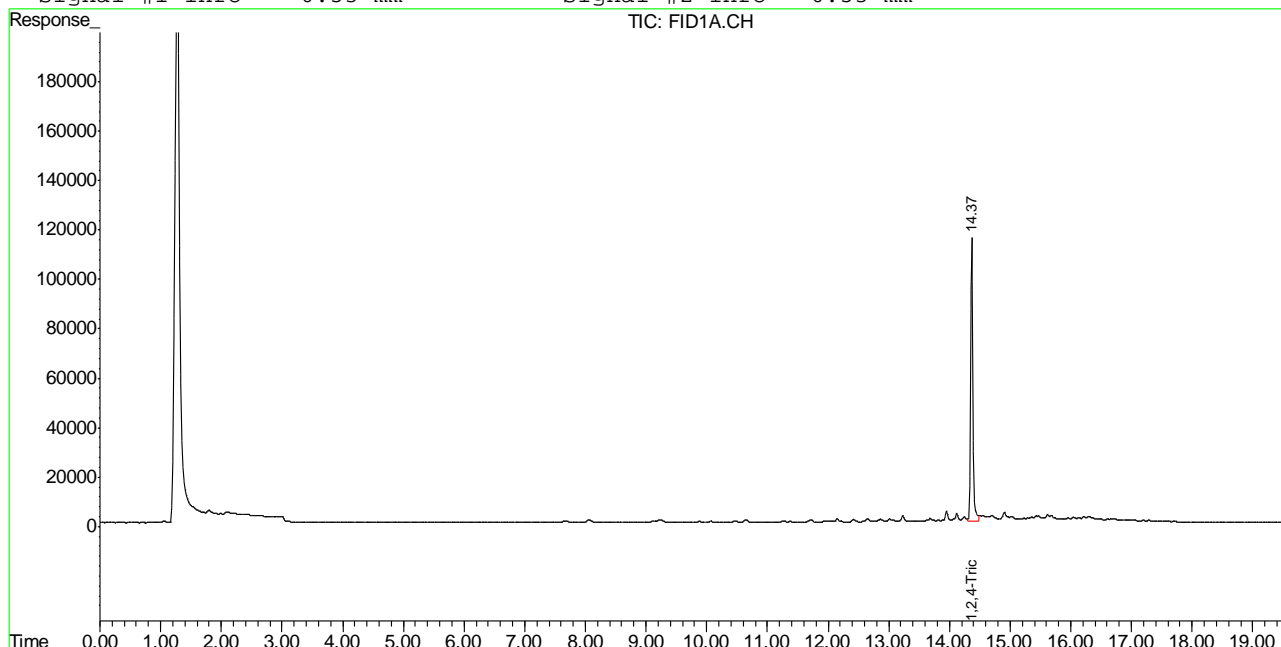
System Monitoring Compounds						
2) S	1,2,4-Trichlorobenzene	14.37	2835281	90.486 %	m	
10) S	1,2,4-Trichlorobenzene (P)	14.37	14291134	87.931 %		
Target Compounds						
1) H	TVH-Gasoline	7.23	3605558	<MDL	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d	
5) T	Benzene	0.00	0	N.D.	ug/L d	
6) T	Toluene	7.66	124969	0.315	ug/L	
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d	
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d	
9) T	o-Xylene	0.00	0	N.D.	ug/L d	
11) T	Naphthalene	14.55	15343	<MDL	ug/L m	

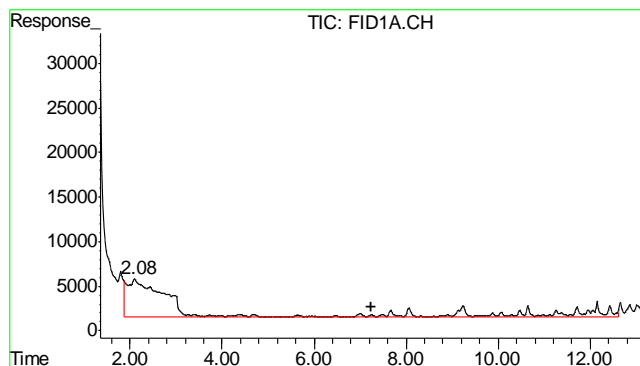
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011013\GB19112.D\FID1A.CH Vial: 27
 Signal #2 : Y:\1\DATA\011013\GB19112.D\FID2B.CH
 Acq On : 11 Jan 2013 6:12 am Operator: StephK
 Sample : D42511-1, 50X Inst : GC/MS Ins
 Misc : GC3347,GGB1044,5.034,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Jan 11 9:06 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Jan 10 16:31:50 2013
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

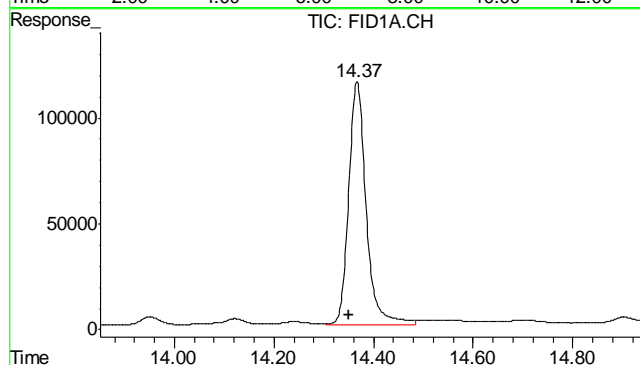
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





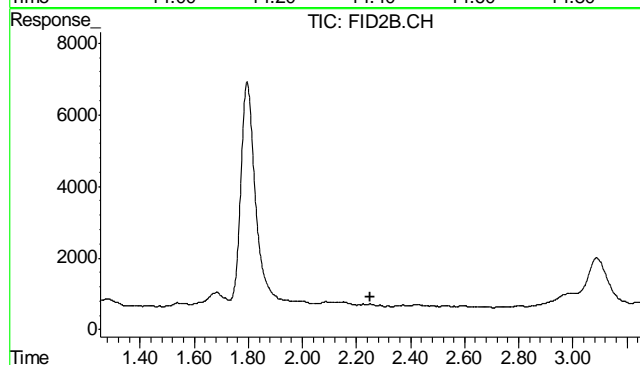
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3605558
Conc: N.D.



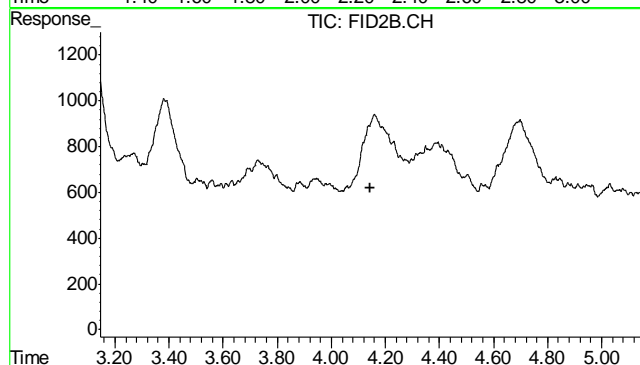
#2 1,2,4-Trichlorobenzene

R.T.: 14.366 min
Delta R.T.: 0.016 min
Response: 2835281
Conc: 90.49 % m



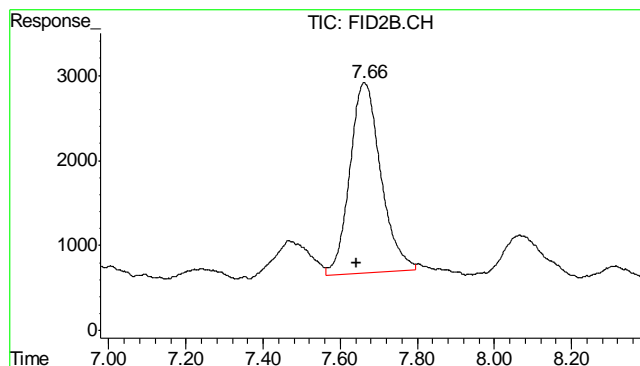
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.252 min
Response: 0
Conc: N.D.



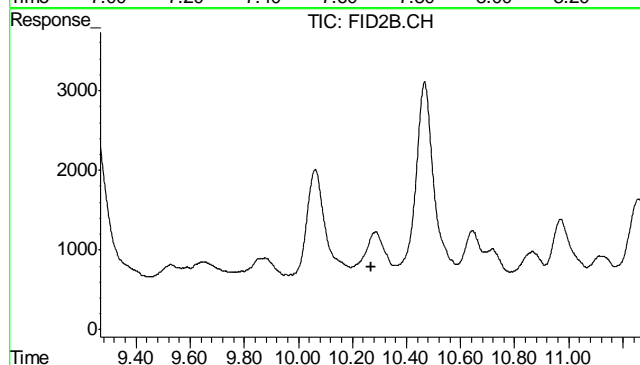
#5 Benzene

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



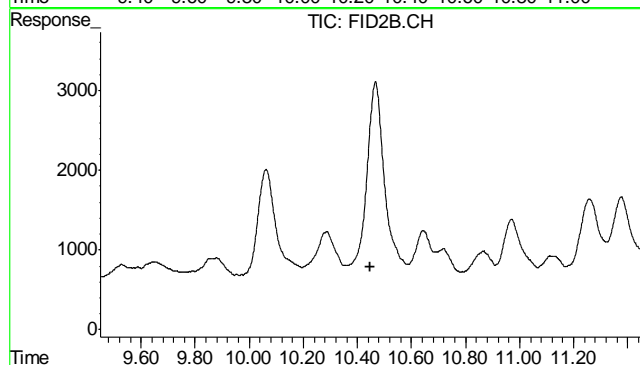
#6 Toluene

R.T.: 7.663 min
Delta R.T.: 0.019 min
Response: 124969
Conc: 0.32 ug/L



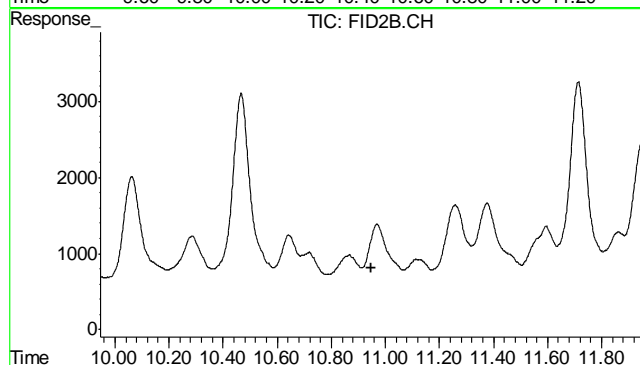
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.268 min
Response: 0
Conc: N.D.



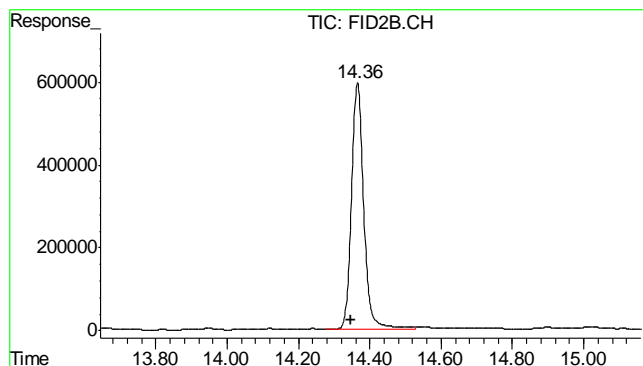
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T.: 10.449 min
Response: 0
Conc: N.D.



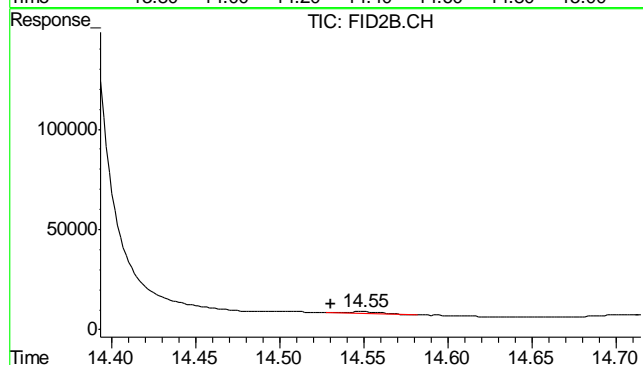
#9 o-Xylene

R.T.: 0.000 min
Exp R.T.: 10.946 min
Response: 0
Conc: N.D.



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

R.T.: 14.366 min
 Delta R.T.: 0.017 min
 Response: 14291134
 Conc: 87.93 %



#11 Naphthalene

R.T.: 14.550 min
 Delta R.T.: 0.020 min
 Response: 15343
 Conc: N.D.

11.1.1

Judy Melson
01/11/13 11:38

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011013\GB19088.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\011013\GB19088.D\FID2B.CH
Acq On : 10 Jan 2013 4:00 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3347,GGB1044,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Jan 10 16:32:09 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Jan 10 16:31:50 2013
Response via : Initial Calibration
DataAcq Meth : TVB4.M

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

Compound		R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.35	2717831	86.737 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.35	13731194	84.485 %	
Target Compounds					
1) H	TVH-Gasoline	7.23	3461894	<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	7.64	126661	0.320	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.54	24002	0.122	ug/L m

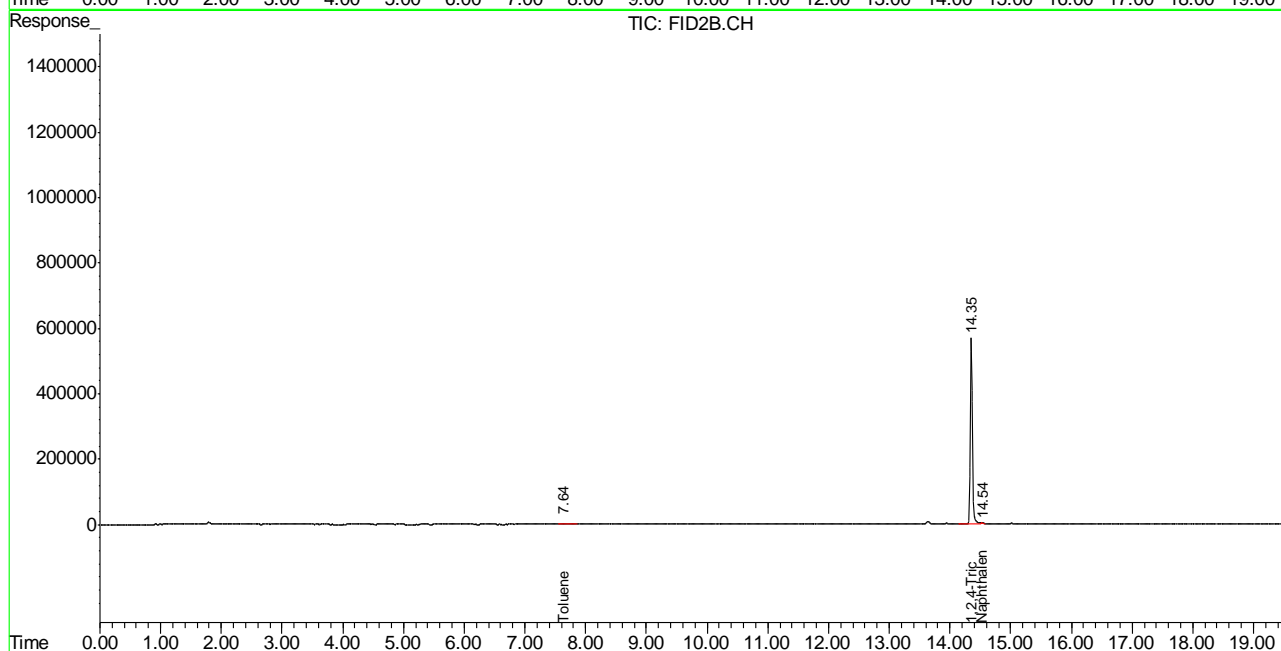
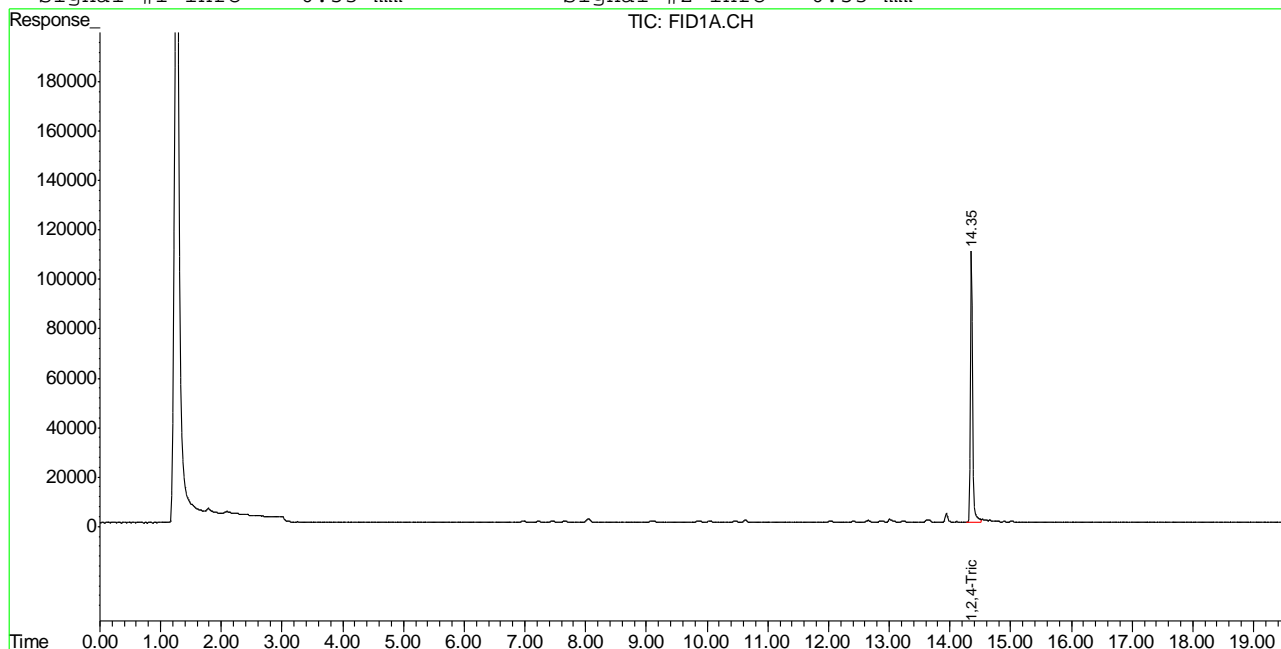
(f)=RT Delta > 1/2 Window (m)=manual int.
GB19088.D TB868GB868SOIL.M Fri Jan 11 09:07:47 2013 GC

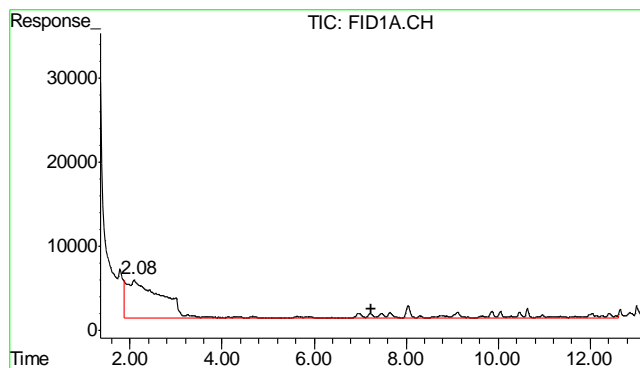
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011013\GB19088.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\011013\GB19088.D\FID2B.CH
Acq On : 10 Jan 2013 4:00 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3347,GGB1044,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Jan 10 16:31 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Jan 10 16:31:50 2013
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

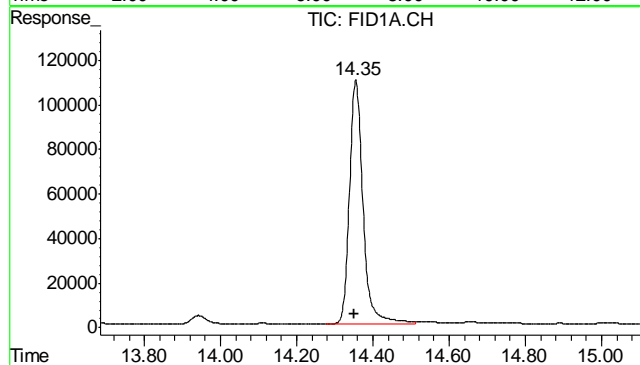
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





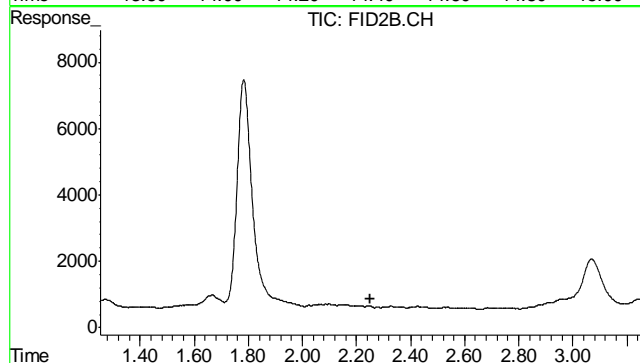
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3461894
Conc: N.D.



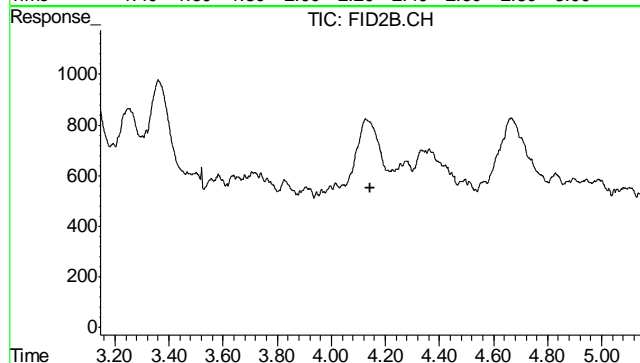
#2 1,2,4-Trichlorobenzene

R.T.: 14.355 min
Delta R.T.: 0.004 min
Response: 2717831
Conc: 86.74 % m



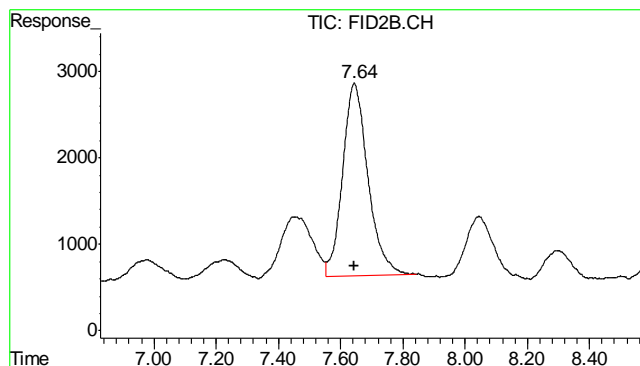
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.252 min
Response: 0
Conc: N.D.



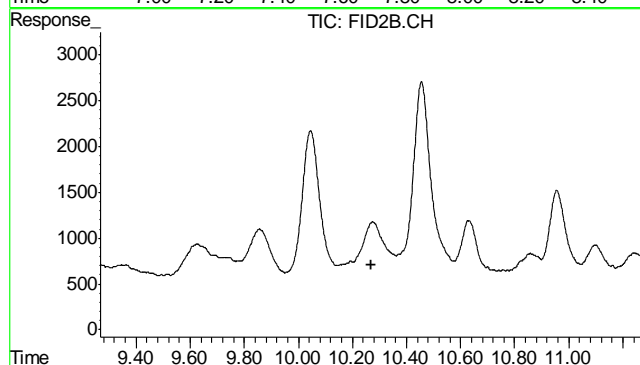
#5 Benzene

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



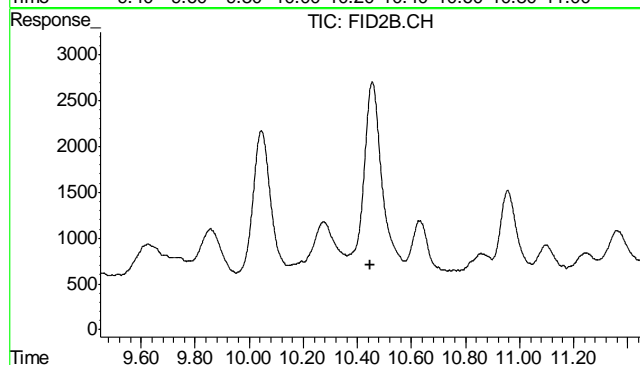
#6 Toluene

R.T.: 7.644 min
Delta R.T.: 0.000 min
Response: 126661
Conc: 0.32 ug/L



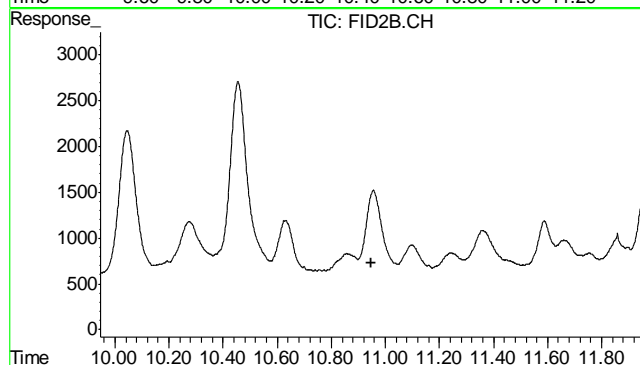
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.268 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

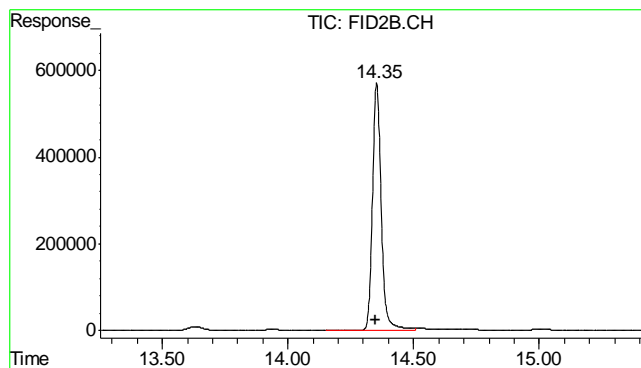
R.T.: 0.000 min
Exp R.T.: 10.449 min
Response: 0
Conc: N.D.



#9 o-Xylene

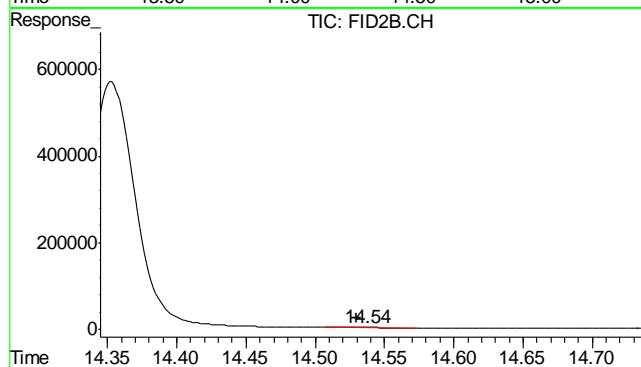
R.T.: 0.000 min
Exp R.T.: 10.946 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.353 min
Delta R.T.: 0.005 min
Response: 13731194
Conc: 84.49 %



#11 Naphthalene

R.T.: 14.537 min
Delta R.T.: 0.006 min
Response: 24002
Conc: 0.12 ug/L m

11.2.1
11

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7222-MB	FH008528.D	1	01/14/13	AV	01/14/13	OP7222	GFH472

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

D42511-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	91% 35-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7222-BS	FH008532.D	1	01/14/13	AV	01/14/13	OP7222	GFH472

The QC reported here applies to the following samples:

Method: SW846-8015B

D42511-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	534	80	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	88%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D42511
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7222-MS	FH008534.D	1	01/14/13	AV	01/14/13	OP7222	GFH472
OP7222-MSD	FH008536.D	1	01/14/13	AV	01/14/13	OP7222	GFH472
D42509-2	FH008572.D	1	01/15/13	AV	01/14/13	OP7222	GFH472

The QC reported here applies to the following samples:

Method: SW846-8015B

D42511-1

CAS No.	Compound	D42509-2 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	46.1	736	647	82	493	61	27	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D42509-2	Limits
84-15-1	o-Terphenyl	79%	62%	74%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH011413.SEC\
 Data File : FH008578.D
 Signal(s) : FID2B.ch
 Acq On : 15 Jan 2013 6:01 am
 Operator : ashleyv
 Sample : D42511-1
 Misc : OP7222,GFH472,30.02,,,1,1
 ALS Vial : 77 Sample Multiplier: 1

Integration File: events.e
 Quant Time: Jan 15 11:54:29 2013
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH464R.M
 Quant Title : DRO-ORO REAR
 QLast Update : Mon Jan 07 08:59:40 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
3) s o-Terphenyl	12.543	1853045135	1347.455 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	10.243	1912608191	1620.074 ug/ml
2) H TPH-DRO (C8-C20)	7.898	936279254	842.351 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

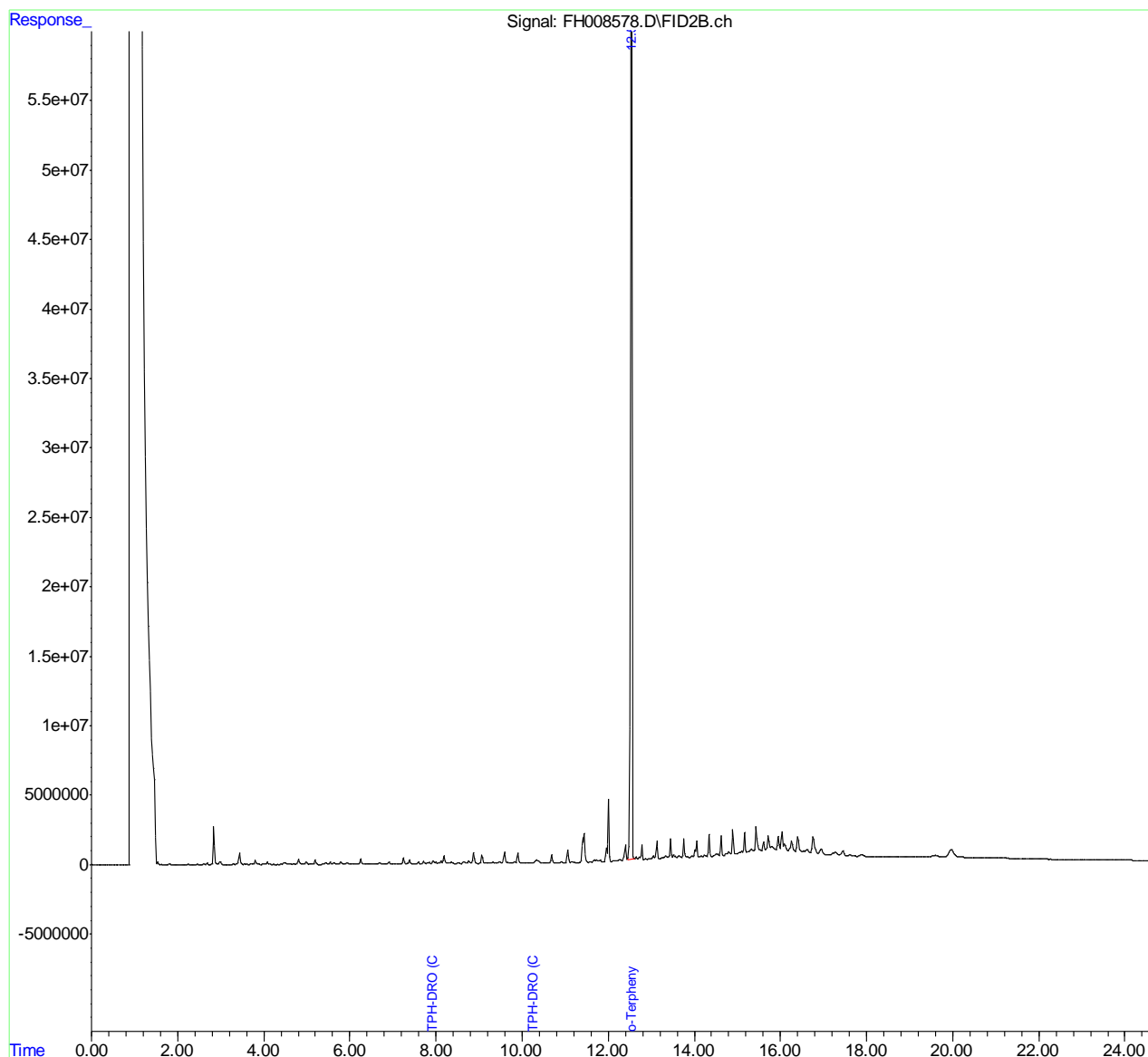
13.1.1
13

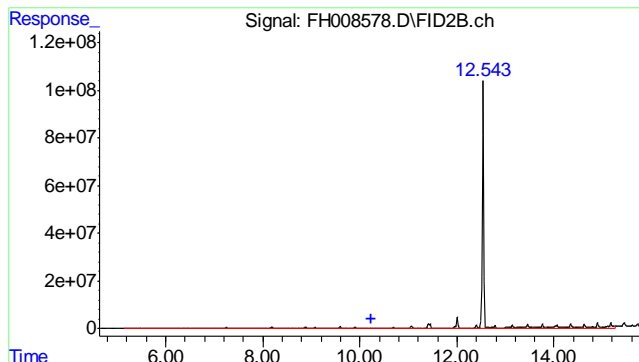
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH011413.SEC\
 Data File : FH008578.D
 Signal(s) : FID2B.ch
 Acq On : 15 Jan 2013 6:01 am
 Operator : ashleyv
 Sample : D42511-1
 Misc : OP7222,GFH472,30.02,,,1,1
 ALS Vial : 77 Sample Multiplier: 1

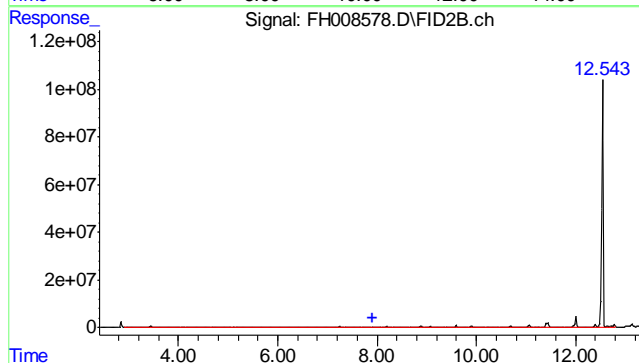
Integration File: events.e
 Quant Time: Jan 15 11:54:29 2013
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH464R.M
 Quant Title : DRO-ORO REAR
 QLast Update : Mon Jan 07 08:59:40 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :

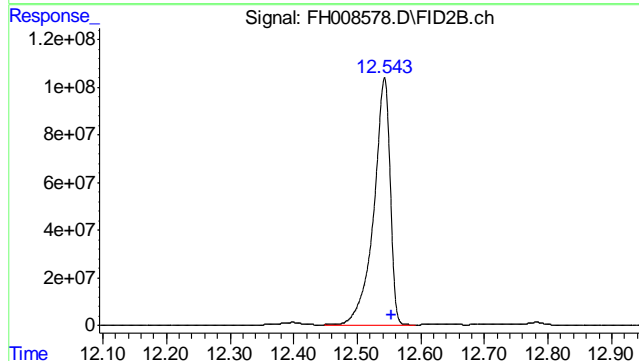




#1 TPH-DRO (C10-C28)
 R.T.: 10.243 min
 Delta R.T.: 0.000 min
 Response: 1912608191
 Conc: 1620.07 ug/ml m



#2 TPH-DRO (C8-C20)
 R.T.: 7.898 min
 Delta R.T.: 0.000 min
 Response: 936279254
 Conc: 842.35 ug/ml m



#3 o-Terphenyl
 R.T.: 12.543 min
 Delta R.T.: -0.010 min
 Response: 1853045135
 Conc: 1347.46 ug/ml

13.1.1
 13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH011413.SEC\
Data File : FH008528.D
Signal(s) : FID2B.ch
Acq On : 14 Jan 2013 3:50 pm
Operator : ashleyv
Sample : OP7222-MB
Misc : OP7222,GFH472,30.00,,,1,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e
Quant Time: Jan 15 08:27:53 2013
Quant Method : C:\msdchem\1\METHODS\DRO-GFH464R.M
Quant Title : DRO-ORO REAR
QLast Update : Mon Jan 07 08:59:40 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
3) s o-Terphenyl	12.557	2504718000	1821.324 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	10.243	70088032	59.368 ug/ml
2) H TPH-DRO (C8-C20)	7.898	20531892	18.472 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

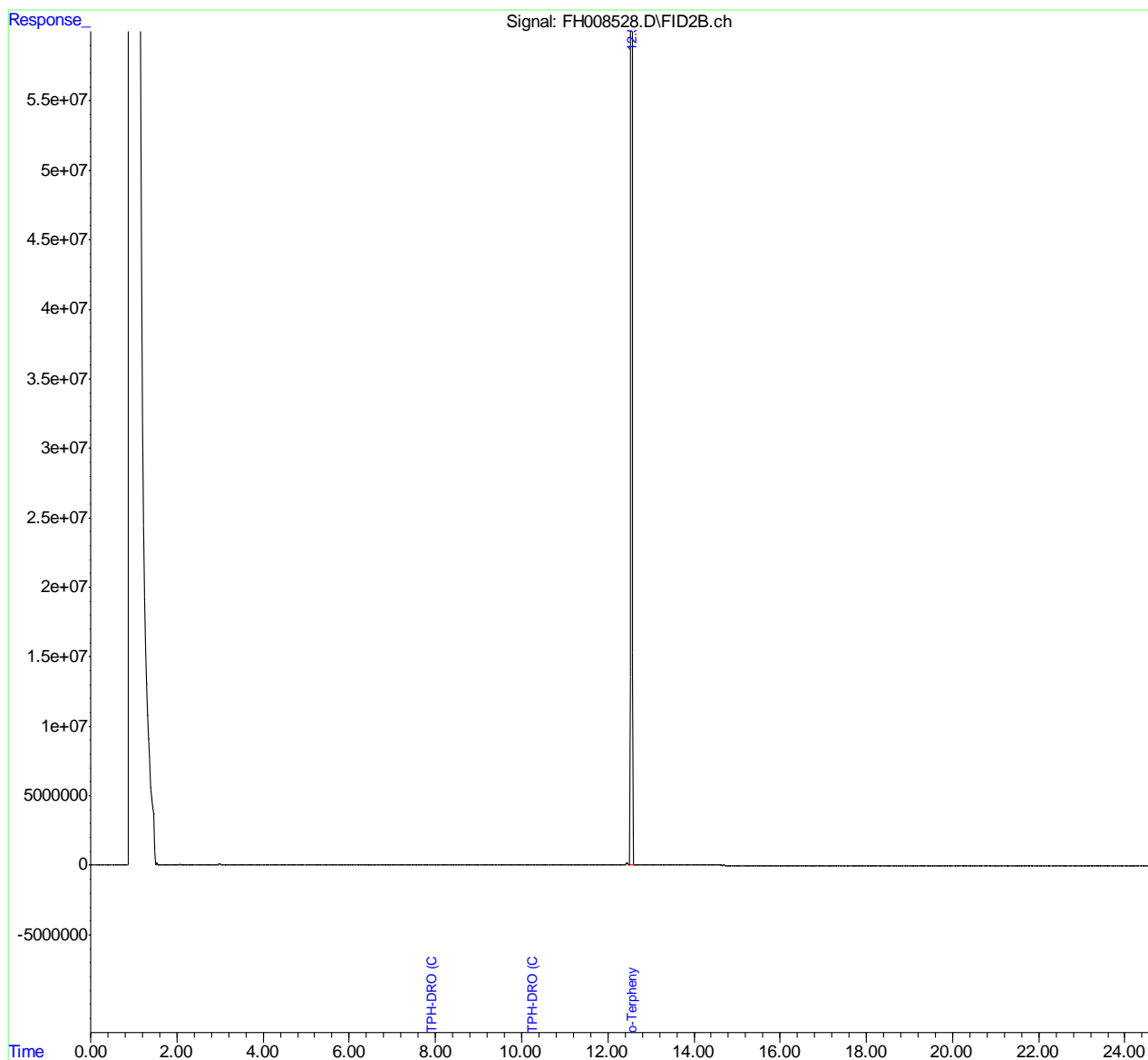
13.2.1
13

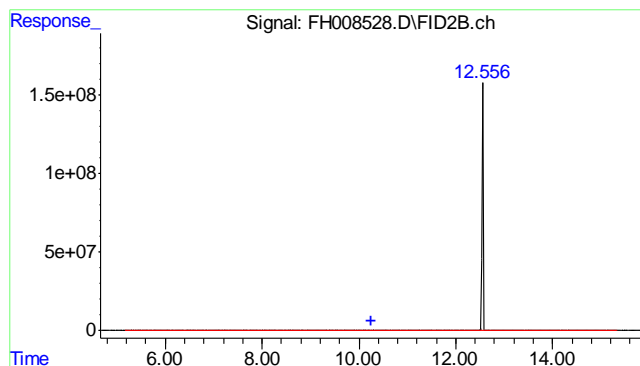
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH011413.SEC\
Data File : FH008528.D
Signal(s) : FID2B.ch
Acq On : 14 Jan 2013 3:50 pm
Operator : ashleyv
Sample : OP7222-MB
Misc : OP7222,GFH472,30.00,,,1,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e
Quant Time: Jan 15 08:27:53 2013
Quant Method : C:\msdchem\1\METHODS\DRO-GFH464R.M
Quant Title : DRO-ORO REAR
QLast Update : Mon Jan 07 08:59:40 2013
Response via : Initial Calibration
Integrator: ChemStation

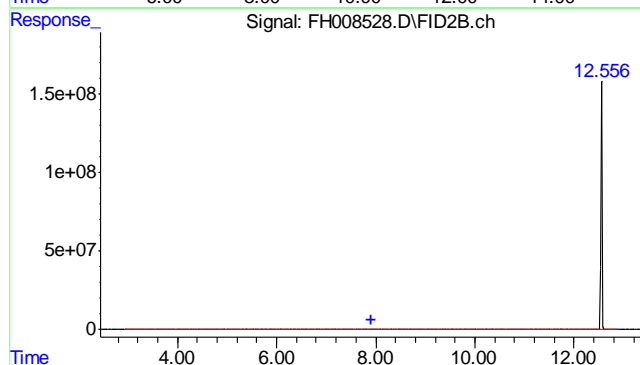
Volume Inj. :
Signal Phase :
Signal Info :





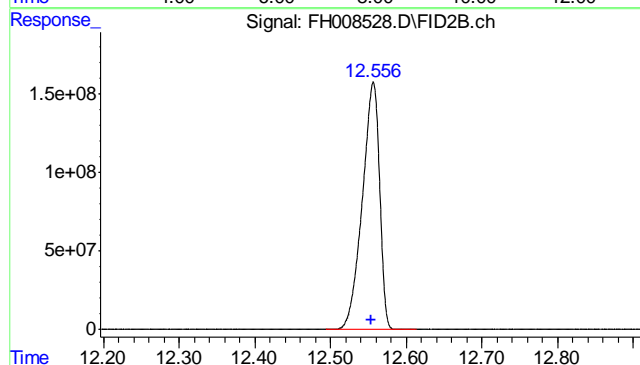
#1 TPH-DRO (C10-C28)

R.T.: 10.243 min
Delta R.T.: 0.000 min
Response: 70088032
Conc: 59.37 ug/ml m



#2 TPH-DRO (C8-C20)

R.T.: 7.898 min
Delta R.T.: 0.000 min
Response: 20531892
Conc: 18.47 ug/ml m



#3 o-Terphenyl

R.T.: 12.557 min
Delta R.T.: 0.004 min
Response: 2504718000
Conc: 1821.32 ug/ml

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: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date: 01/11/13

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	-27	<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	-38	<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	-180	<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 MP9237: D42511-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
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: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date: 01/11/13

Metal	D42427-2 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	241000	164000	125000	-61.6N(a)	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	1310	130000	125000	103.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	266000	295000	125000	23.2N(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9237: D42511-1A

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date: 01/11/13

Metal	D42427-2 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	241000	166000	125000	-60.0N(a)	1.2	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	1310	129000	125000	102.2	0.8	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	266000	292000	125000	20.8N(a)	1.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9237: D42511-1A

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date: 01/11/13

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	122000	125000	97.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	126000	125000	100.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9237: D42511-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
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: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

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

Prep Date: 01/11/13

D42427-2		QC	
Metal	Original	SDL 1:5	%DIF Limits
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Boron			
Cadmium			
Calcium	48100	6440	86.6*(a) 0-10
Chromium			
Cobalt			
Copper			
Iron			
Lead			
Lithium			
Magnesium	262	1240	375.2(b) 0-10
Manganese			
Molybdenum			
Nickel			
Phosphorus			
Potassium			
Selenium			
Silicon			
Silver			
Sodium	53100	34700	34.7*(a) 0-10
Strontium			
Thallium			
Tin			
Titanium			
Uranium			
Vanadium			
Zinc			

Associated samples MP9237: D42511-1A

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9237
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
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).

14.1.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 01/14/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.25	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.020	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.040	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.13	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.020	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	-0.020	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.46	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	0.030	<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	0.090	<3.0

Associated samples MP9242: D42511-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	4420	4470	235	21.3 (a)	75-125
Beryllium					
Boron					
Cadmium	0.0	49.1	58.7	83.7	75-125
Calcium					
Chromium	28.6	73.0	58.7	83.2	75-125
Cobalt					
Copper	15.4	67.2	58.7	88.3	75-125
Iron					
Lead	12.0	107	117	81.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	19.2	77.2	58.7	98.9	75-125
Phosphorus					
Potassium					
Selenium	0.0	105	117	89.5	75-125
Silicon					
Silver	0.0	21.0	23.5	89.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	37.6	82.7	58.7	76.9	75-125

Associated samples MP9242: D42511-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
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.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	4420	4930	232	219.5(a)	9.8	20
Beryllium						
Boron						
Cadmium	0.0	48.6	58.1	83.7	1.0	20
Calcium						
Chromium	28.6	74.5	58.1	86.6	2.0	20
Cobalt						
Copper	15.4	67.2	58.1	89.2	0.0	20
Iron						
Lead	12.0	105	116	80.1	1.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	19.2	77.0	58.1	99.5	0.3	20
Phosphorus						
Potassium						
Selenium	0.0	104	116	89.5	1.0	20
Silicon						
Silver	0.0	20.8	23.2	89.5	1.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	37.6	81.9	58.1	76.3	1.0	20

Associated samples MP9242: D42511-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
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.

14.2.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 01/14/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	198	200	99.0	80-120
Beryllium				
Boron				
Cadmium	46.5	50	93.0	80-120
Calcium				
Chromium	49.9	50	99.8	80-120
Cobalt				
Copper	47.4	50	94.8	80-120
Iron				
Lead	96.0	100	96.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.5	50	95.0	80-120
Phosphorus				
Potassium				
Selenium	97.5	100	97.5	80-120
Silicon				
Silver	19.8	20	99.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	49.2	50	98.4	80-120

Associated samples MP9242: D42511-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 01/14/13

Metal	D42510-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	32800	36700	2.5	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	206	243	17.8*(a)	0-10
Cobalt				
Copper	121	142	8.3	0-10
Iron				
Lead	119	122	19.0*(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	135	155	5.2	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	320	412	28.5*(a)	0-10

Associated samples MP9242: D42511-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9242
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9243
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 01/14/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.013	<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 MP9243: D42511-1

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: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9243
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	11.1	116	117	89.4
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9243: D42511-1

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

14.3.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9243
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	11.1	123	116	96.3	5.9	20
Barium						
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper						
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9243: D42511-1

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

14.3.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9243
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 01/14/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	101	100	101.0	80-120
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9243: D42511-1

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

14.3.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9243
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 01/14/13

Metal	D42510-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	94.9	94.9	0.0	0-10	
Barium	anr				
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper					
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9243: D42511-1

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

14.3.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9244
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 01/15/13

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	0.0018	<0.10

Associated samples MP9244: D42511-1

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: D42511
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9244
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 01/15/13

Metal	D42445-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
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Mercury	0.054	0.45	0.393	100.7	75-125
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Associated samples MP9244: D42511-1

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: D42511
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9244
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 01/15/13

Metal	D42445-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.054	0.45	0.393	100.7	0.0	20

Associated samples MP9244: D42511-1

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: D42511
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9244
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 01/15/13

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

Associated samples MP9244: D42511-1

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: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP9086/GN18425	1.0	0.0	mg/kg	92.9	91.5	98.5	80-120%
Specific Conductivity	GP9098/GN18435	1.0	<1.0	umhos/cm	9992	10500	105.2	90-110%
pH	GN18407			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:
Batch GP9086: D42511-1
Batch GP9098: D42511-1
Batch GN18407: D42511-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP9086/GN18425	D42556-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN18410	D42511-1	mv	137	137	0.0	0-20%

Associated Samples:
Batch GP9086: D42511-1
Batch GN18410: D42511-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP9086/GN18425	D42556-1	mg/kg	0.0	40.0	35.0	87.5	75-125%

Associated Samples:

Batch GP9086: D42511-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D42511
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP9086/GN18425	D42556-1	mg/kg	0.0	40.0	33.9	3.1	20%

Associated Samples:
Batch GP9086: D42511-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits