



11/15/12

Technical Report for

XTO Energy

PCU 296-6A

1211-02

Accutest Job Number: D40798

Sampling Date: 11/08/12

Report to:

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Total number of pages in report: 143



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


Brad Madadian
Laboratory Director

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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.

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Sample Summary

XTO Energy

Job No: D40798

PCU 296-6A
Project No: 1211-02

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D40798-1	11/08/12	11:50	DS	11/10/12	SO	Soil	CUT 2 SUBLINER (COMP)
D40798-1A	11/08/12	11:50	DS	11/10/12	SO	Soil	CUT 2 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 D40798

Site: PCU 296-6A

Report Date 11/15/2012 1:48:00 PM

On 11/10/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.5 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D40798 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO

Batch ID: V5V1501

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

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP6947

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40799-1MS, D40799-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB1006

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40795-1MS, D40795-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP6948

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D40799-1MS, D40799-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP8877

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40797-1AMS, D40797-1AMSD, D40797-1ASDL were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP8869

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40778-1MS, D40778-1MSD, D40778-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Selenium, Silver, Barium, Chromium, Nickel, Zinc are outside control limits for sample MP8869-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8869-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP8869-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP8869-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP8869-SD1 for Barium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP8870

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40778-1MS, D40778-1MSD, D40778-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP8871

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40797-1MS, D40797-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN17680

- Sample(s) D40797-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN17634

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R15135

- The data for SW846 3060/7196A M meets quality control requirements.
- D40798-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP8655

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40715-1DUP, D40715-1MS, D40715-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN17678

- The following samples were run outside of holding time for method SW846 9045D: D40798-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP8877

- D40798-1A 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: D40798
Account: XTO Energy
Project: PCU 296-6A
Collected: 11/08/12



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

D40798-1 CUT 2 SUBLINER (COMP)

Arsenic	6.4	0.11		mg/kg	SW846 6020A
Barium	438	1.1		mg/kg	SW846 6010C
Chromium	41.8	1.1		mg/kg	SW846 6010C
Copper	7.3	1.1		mg/kg	SW846 6010C
Lead	7.7	5.5		mg/kg	SW846 6010C
Nickel	13.9	3.3		mg/kg	SW846 6010C
Zinc	40.0	3.3		mg/kg	SW846 6010C
Specific Conductivity	377	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	41.8	2.1		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	141			mv	ASTM D1498-76M
pH	9.75			su	SW846 9045D

D40798-1A CUT 2 SUBLINER (COMP)

Calcium	15.3	2.0		mg/l	SW846 6010C
Magnesium	4.56	1.0		mg/l	SW846 6010C
Sodium	59.2	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	3.41			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 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Method:	SW846 8260B		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V24609.D	1	11/14/12	BD	n/a	n/a	V5V1501
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.02 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.061	0.031	mg/kg	
108-88-3	Toluene	ND	0.12	0.061	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.023	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%		64-130%
460-00-4	4-Bromofluorobenzene	101%		62-131%
17060-07-0	1,2-Dichloroethane-D4	90%		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 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12033.D	1	11/12/12	DC	11/12/12	OP6947	E3G568
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0093	0.0048	mg/kg	
120-12-7	Anthracene	ND	0.0093	0.0048	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0093	0.0048	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0093	0.0048	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0093	0.0048	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0093	0.0048	mg/kg	
218-01-9	Chrysene	ND	0.0093	0.0048	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0093	0.0048	mg/kg	
206-44-0	Fluoranthene	ND	0.0093	0.0048	mg/kg	
86-73-7	Fluorene	ND	0.0093	0.0048	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0093	0.0048	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.011	mg/kg	
129-00-0	Pyrene	ND	0.0093	0.0048	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		10-159%
321-60-8	2-Fluorobiphenyl	65%		19-131%
1718-51-0	Terphenyl-d14	79%		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 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Method:	SW846 8015B		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18417.D	1	11/12/12	SK	n/a	n/a	GGB1006
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.1	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	99%		60-140%		

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

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

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Method:	SW846-8015B SW846 3546		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD19426.D	1	11/12/12	AV	11/12/12	OP6948	GFD976
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	15	9.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	91%		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 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Project:	PCU 296-6A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.4	0.11	mg/kg	5	11/12/12	11/15/12 JB	SW846 6020A ³	SW846 3050B ⁵
Barium	438	1.1	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Chromium	41.8	1.1	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Copper	7.3	1.1	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Lead	7.7	5.5	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Mercury	< 0.091	0.091	mg/kg	1	11/13/12	11/13/12 JM	SW846 7471B ¹	SW846 7471B ⁶
Nickel	13.9	3.3	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Selenium	< 5.5	5.5	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Silver	< 3.3	3.3	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴
Zinc	40.0	3.3	mg/kg	1	11/12/12	11/13/12 JM	SW846 6010C ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA2991

(2) Instrument QC Batch: MA2995

(3) Instrument QC Batch: MA3000

(4) Prep QC Batch: MP8869

(5) Prep QC Batch: MP8870

(6) Prep QC Batch: MP8871

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Project:	PCU 296-6A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	377	1.0	umhos/cm	1	11/14/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	11/12/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	41.8	2.1	mg/kg	1	11/13/12 16:30	JM	SW846 3060/7196A M
Redox Potential Vs H2	141		mv	1	11/14/12	CT	ASTM D1498-76M
Solids, Percent	89.6		%	1	11/12/12	SWT	SM19 2540B M
pH	9.75		su	1	11/14/12 12:45	CT	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1A	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Project:	PCU 296-6A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	15.3	2.0	mg/l	1	11/13/12	11/13/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	4.56	1.0	mg/l	1	11/13/12	11/13/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Sodium	59.2	2.0	mg/l	1	11/13/12	11/13/12 JM	SW846 6010C ¹	SW846 3010A/M ²

- (1) Instrument QC Batch: MA2995
(2) Prep QC Batch: MP8877

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID:	CUT 2 SUBLINER (COMP)	Date Sampled:	11/08/12
Lab Sample ID:	D40798-1A	Date Received:	11/10/12
Matrix:	SO - Soil	Percent Solids:	89.6
Project:	PCU 296-6A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	3.41		ratio	1	11/13/12 18:37	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D40798

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 11/10/2012 10:15:00 A

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 296-6A

Airbill #'s: FX

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

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

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

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

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

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

Comments

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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: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

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

The QC reported here applies to the following samples:

Method: SW846 8260B

D40798-1

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

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	103% 64-130%
460-00-4	4-Bromofluorobenzene	92% 62-131%
17060-07-0	1,2-Dichloroethane-D4	96% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

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

The QC reported here applies to the following samples:

Method: SW846 8260B

D40798-1

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

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

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

The QC reported here applies to the following samples:

Method: SW846 8260B

D40798-1

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

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

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5111312.S\
 Data File : 5V24609.D
 Acq On : 14 Nov 2012 9:48 am
 Operator : BRETD
 Sample : D40798-1
 Misc : MS4956,V5V1501,5.019,,100,5,1
 ALS Vial : 38 Sample Multiplier: 1

Quant Time: Nov 14 16:50:58 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
 Quant Title : 8260
 QLast Update : Wed Nov 14 09:56:27 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	423379	50.00	ug/l	-0.01
35) 1,4-Difluorobenzene	12.412	114	512936	50.00	ug/l	-0.01
53) Chlorobenzene-d5	15.072	117	463620	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	347427	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.012	102	32533	45.15	ug/l	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.30%
61) Toluene-d8	13.816	98	563347	51.29	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	102.58%
69) 4-Bromofluorobenzene	16.008	95	238114	50.30	ug/l	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.60%

Target Compounds

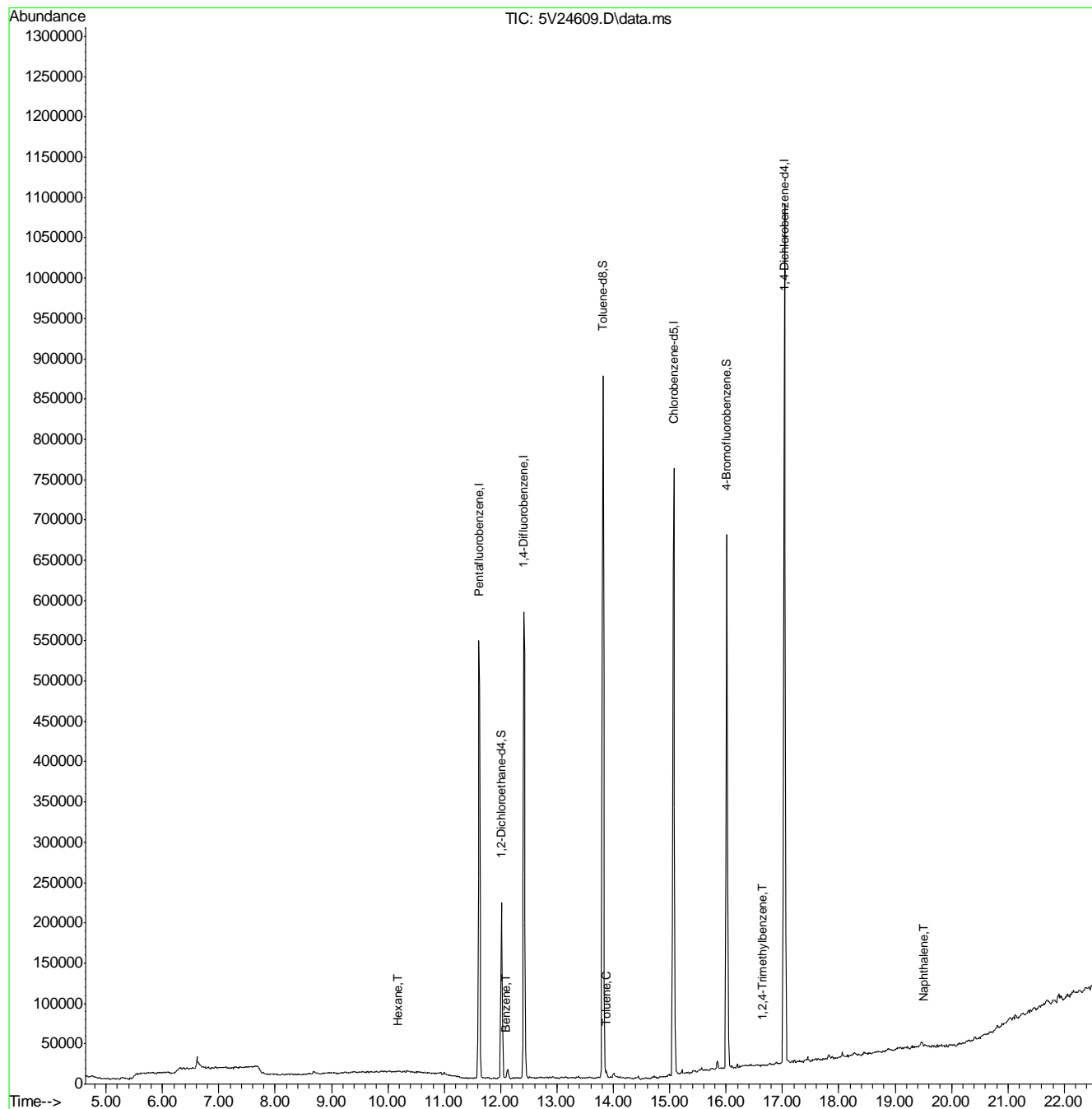
					Qvalue
41) Hexane	10.174	57	193	0.04 ug/l	100
50) Benzene	12.092	78	1830	0.13 ug/l	100
62) Toluene	13.873	92	2715	0.32 ug/l #	85
82) 1,2,4-Trimethylbenzene	16.648	105	949	0.06 ug/l #	83
91) Naphthalene	19.513	128	1034	0.06 ug/l	100

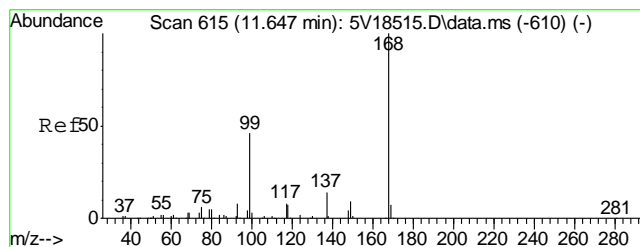
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5111312.S\
Data File : 5V24609.D
Acq On : 14 Nov 2012 9:48 am
Operator : BRETD
Sample : D40798-1
Misc : MS4956,V5V1501,5.019,,100,5,1
ALS Vial : 38 Sample Multiplier: 1

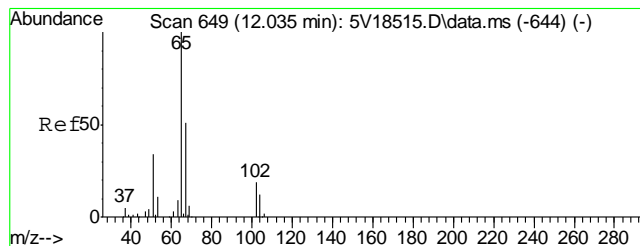
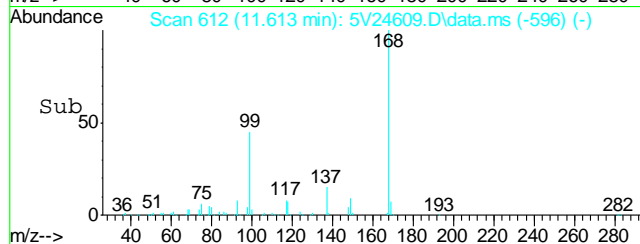
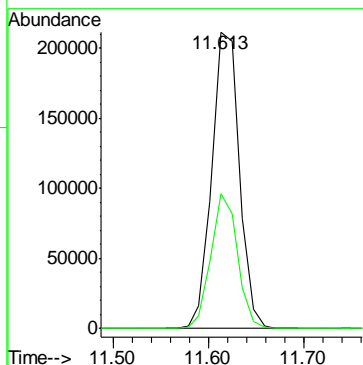
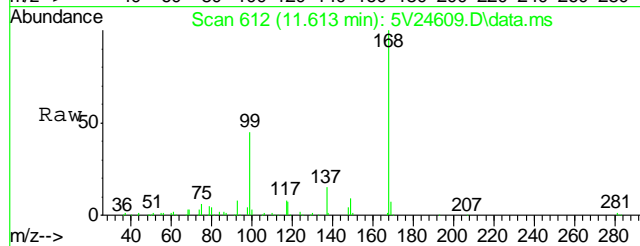
Quant Time: Nov 14 16:50:58 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:56:27 2012
Response via : Initial Calibration





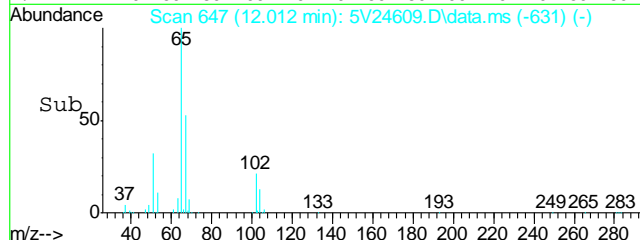
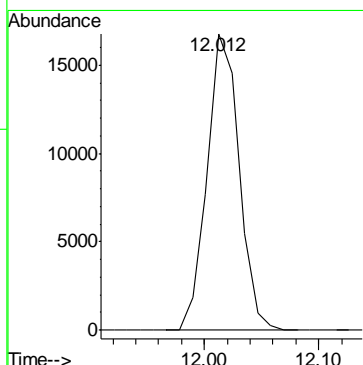
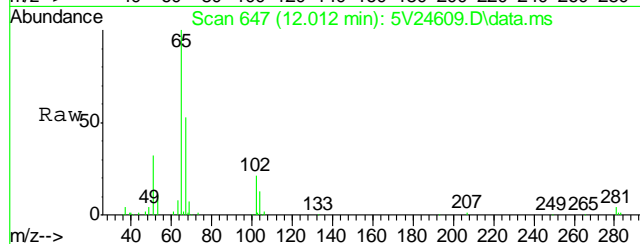
#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

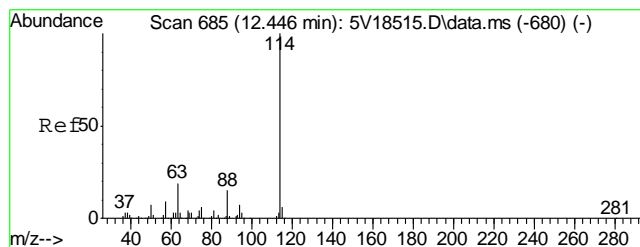
Tgt Ion:168 Resp: 423379
Ion Ratio Lower Upper
168 100
99 43.6 37.4 56.2



#33
1,2-Dichloroethane-d4
Concen: 45.15 ug/l
RT: 12.012 min Scan# 647
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

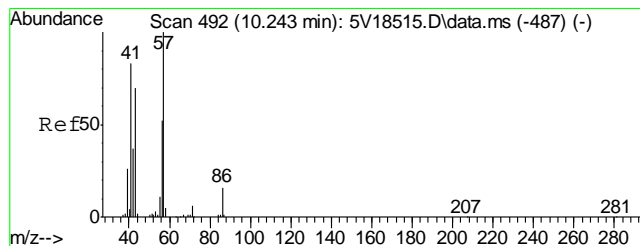
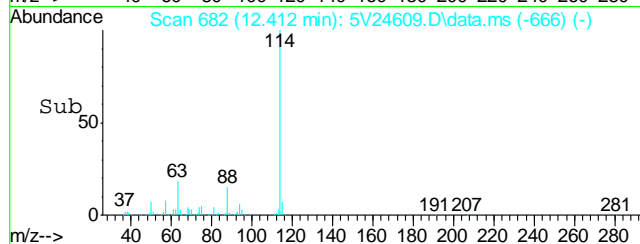
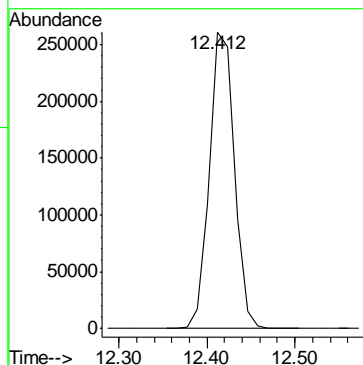
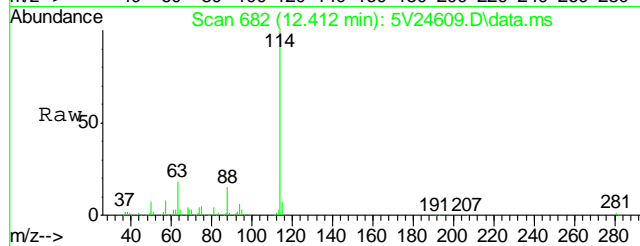
Tgt Ion:102 Resp: 32533





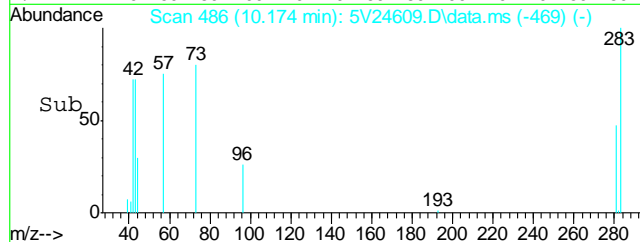
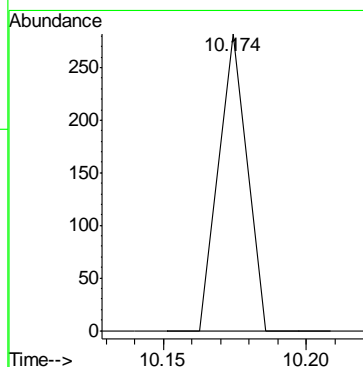
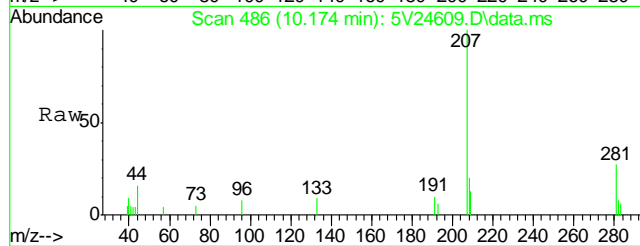
#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

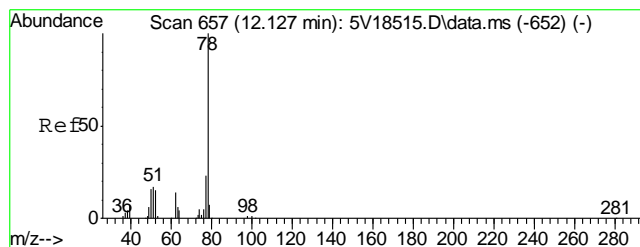
Tgt Ion:114 Resp: 512936



#41
Hexane
Concen: 0.04 ug/l
RT: 10.174 min Scan# 486
Delta R.T. -0.000 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

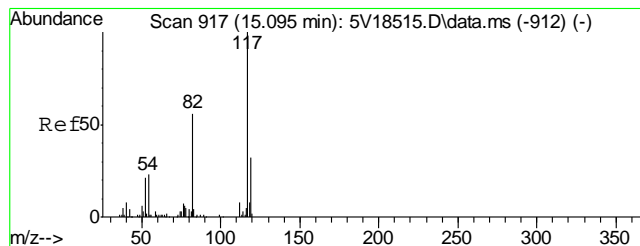
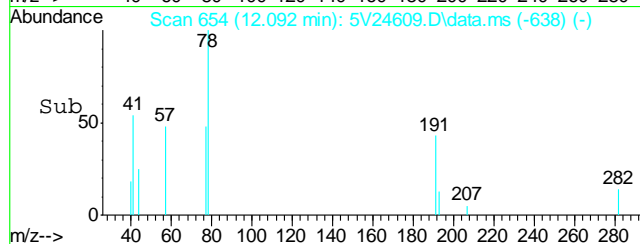
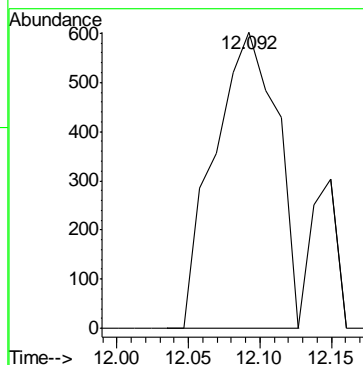
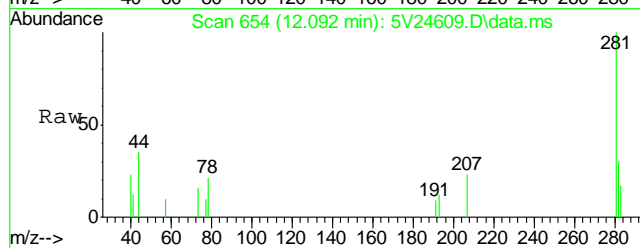
Tgt Ion: 57 Resp: 193





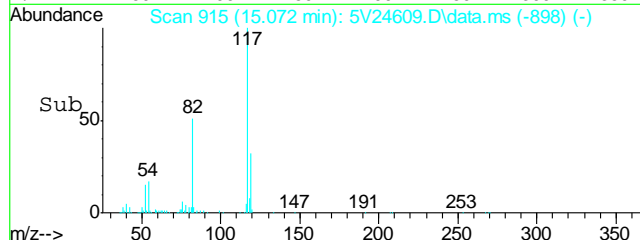
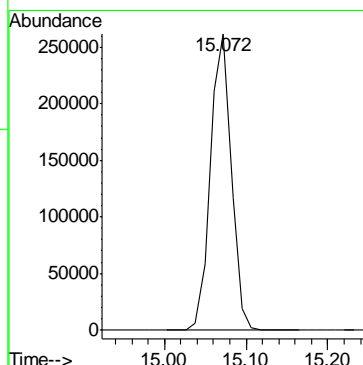
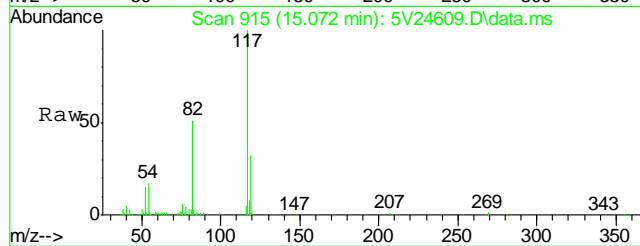
#50
Benzene
Concen: 0.13 ug/l
RT: 12.092 min Scan# 654
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

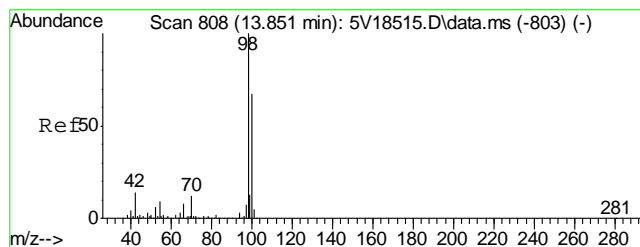
Tgt Ion: 78 Resp: 1830



#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.072 min Scan# 915
Delta R.T. -0.000 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

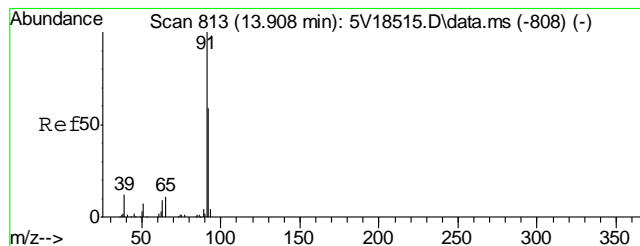
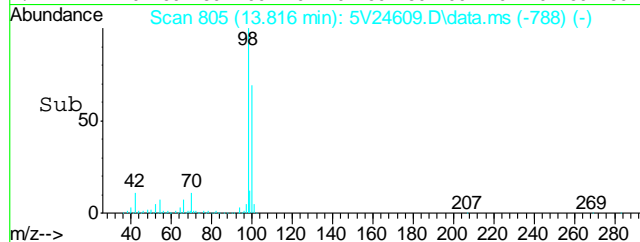
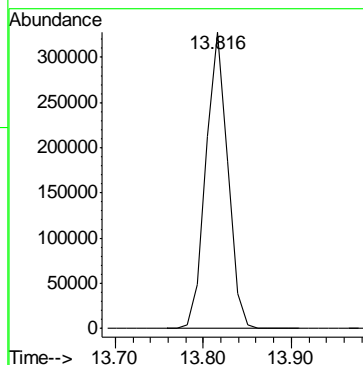
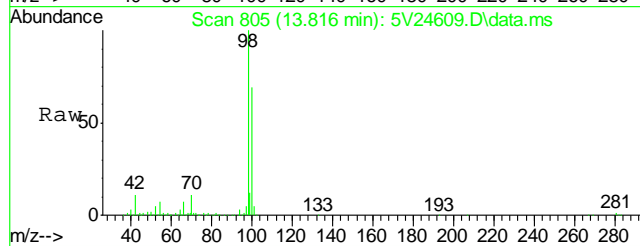
Tgt Ion: 117 Resp: 463620





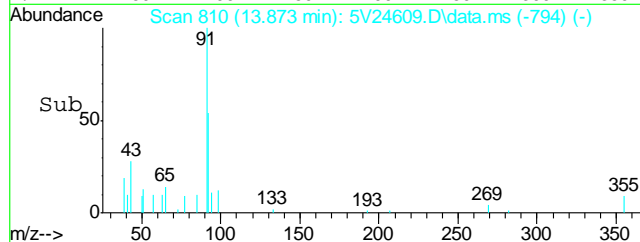
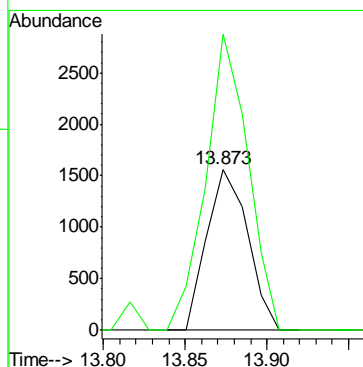
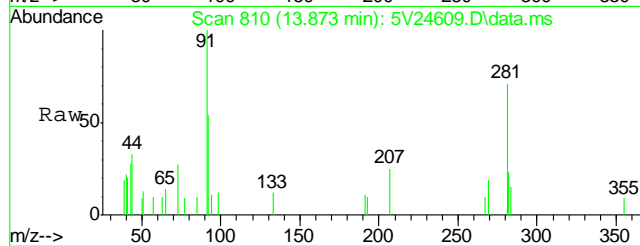
#61
Toluene-d8
Concen: 51.29 ug/l
RT: 13.816 min Scan# 805
Delta R.T. -0.000 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

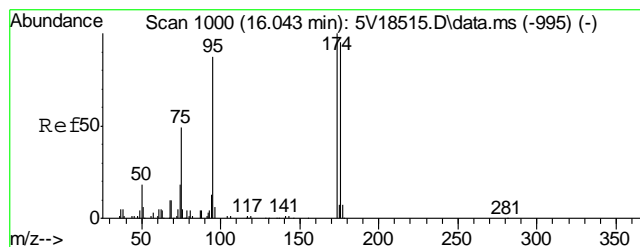
Tgt Ion: 98 Resp: 563347



#62
Toluene
Concen: 0.32 ug/l
RT: 13.873 min Scan# 810
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

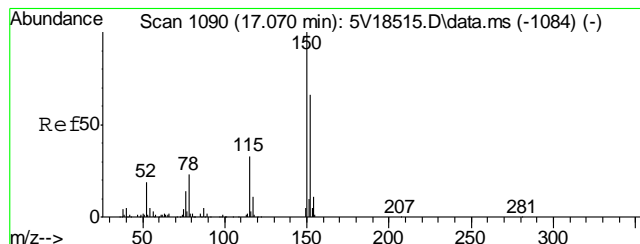
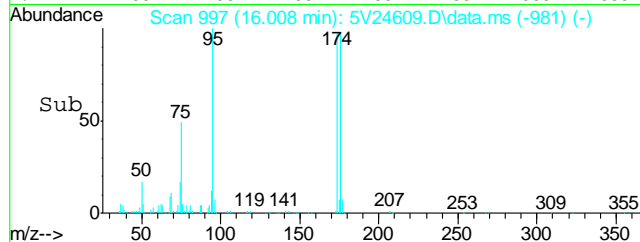
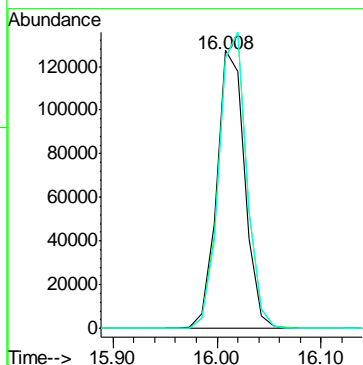
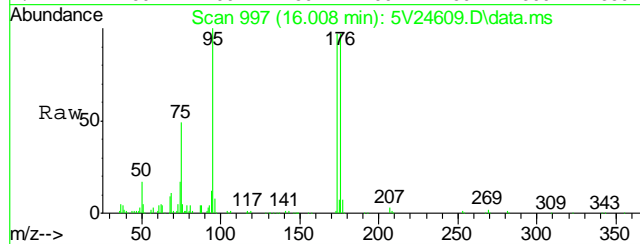
Tgt Ion: 92 Resp: 2715
Ion Ratio Lower Upper
92 100
91 190.2 149.8 189.8#





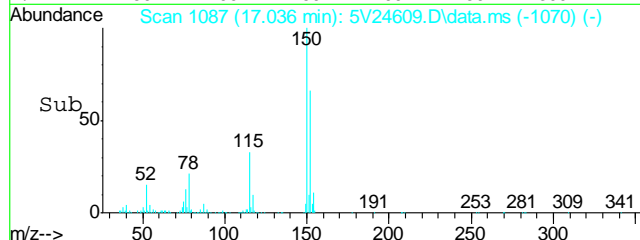
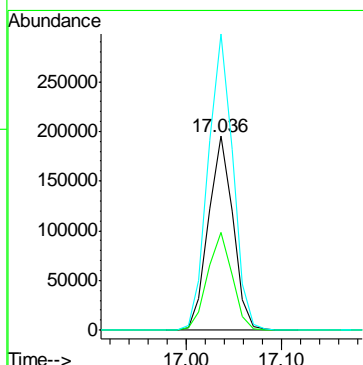
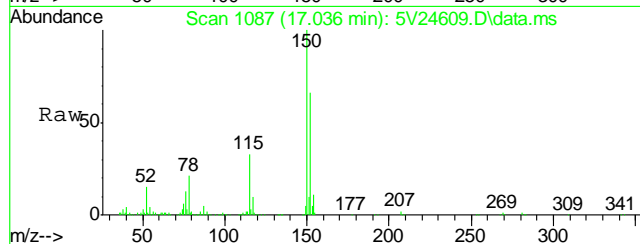
#69
4-Bromofluorobenzene
Concen: 50.30 ug/l
RT: 16.008 min Scan# 997
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

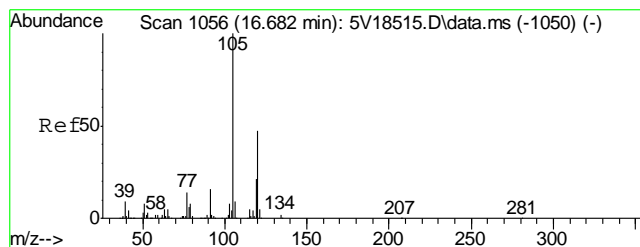
Tgt Ion	Ratio	Lower	Upper
95	100		
174	106.5	77.1	117.1
176	106.1	73.4	113.4



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. -0.000 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

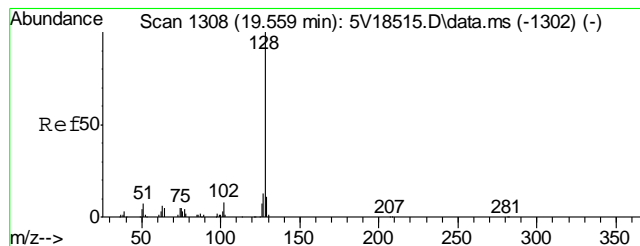
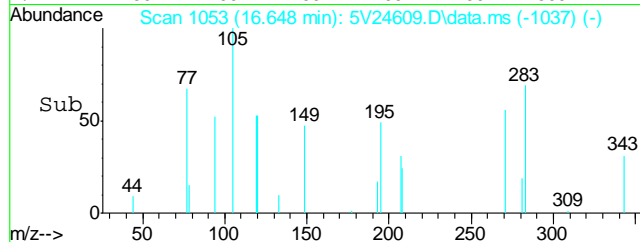
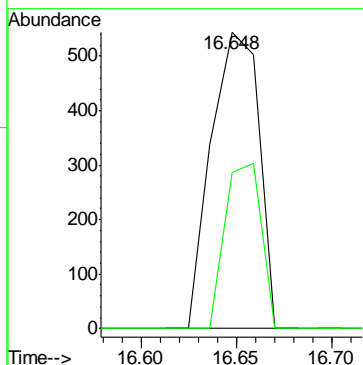
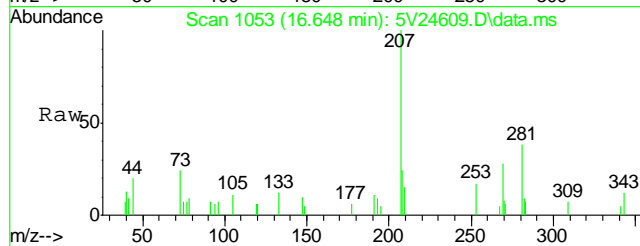
Tgt Ion	Ratio	Lower	Upper
152	100		
115	50.6	41.4	62.0
150	153.9	153.9	230.9#





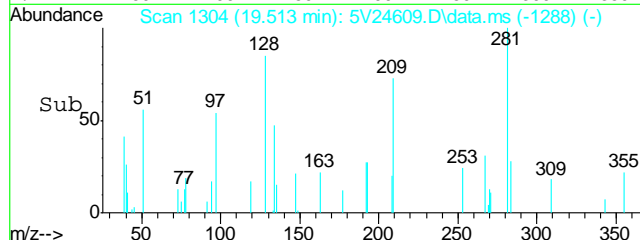
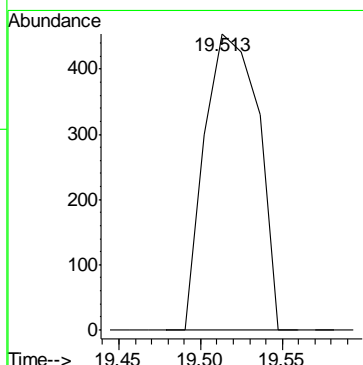
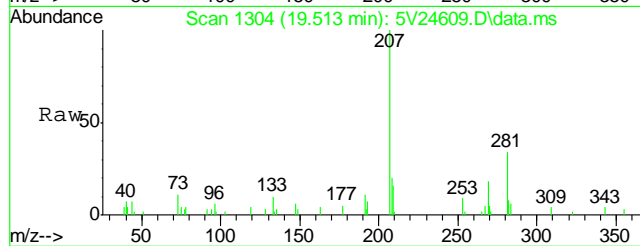
#82
1,2,4-Trimethylbenzene
Concen: 0.06 ug/l
RT: 16.648 min Scan# 1053
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

Tgt Ion:105 Resp: 949
Ion Ratio Lower Upper
105 100
120 42.5 43.8 65.8#



#91
Naphthalene
Concen: 0.06 ug/l
RT: 19.513 min Scan# 1304
Delta R.T. -0.012 min
Lab File: 5V24609.D
Acq: 14 Nov 2012 9:48 am

Tgt Ion:128 Resp: 1034



Quantitation Report (QT Reviewed)

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

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

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

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

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

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

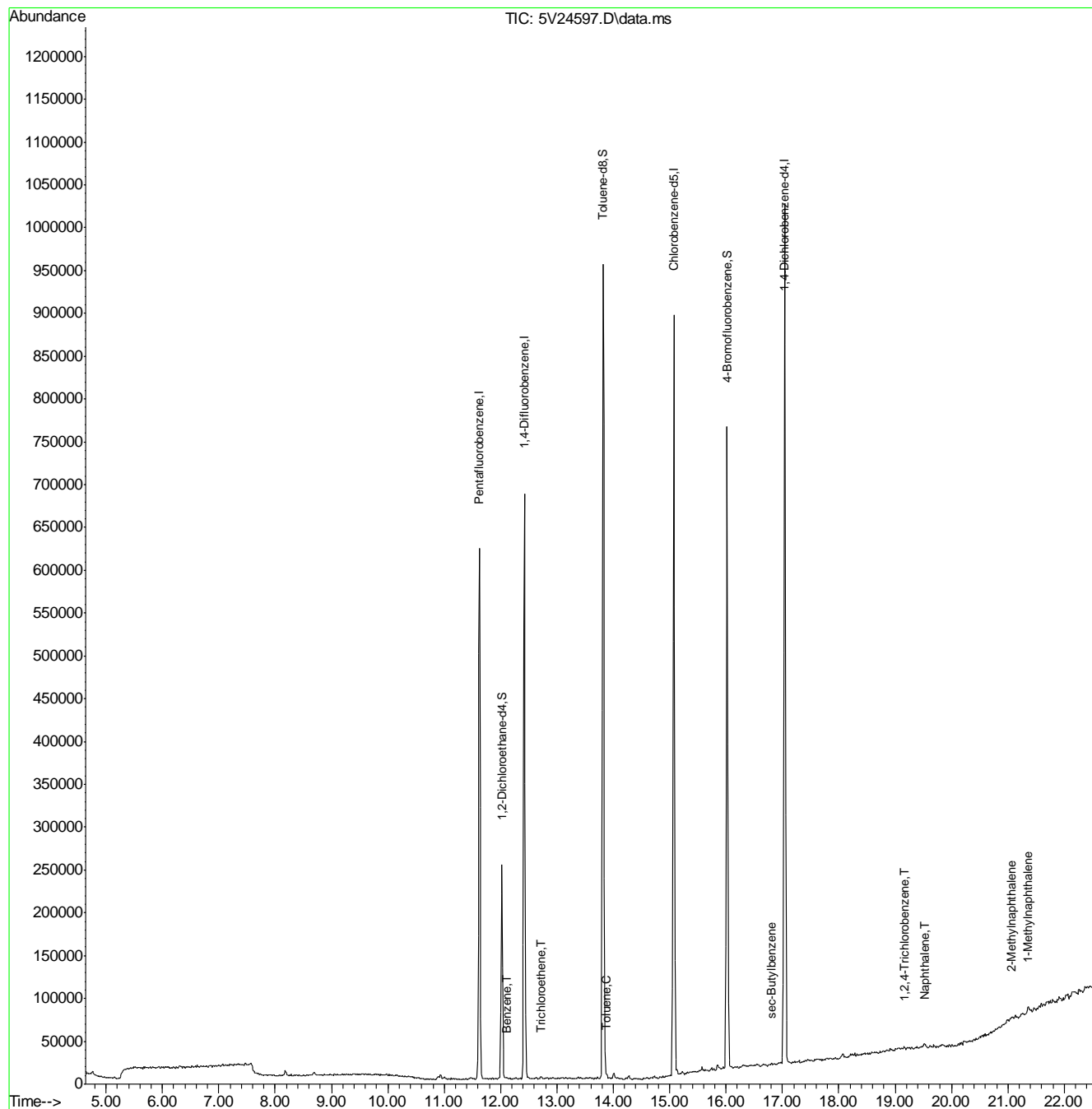
7.2.1

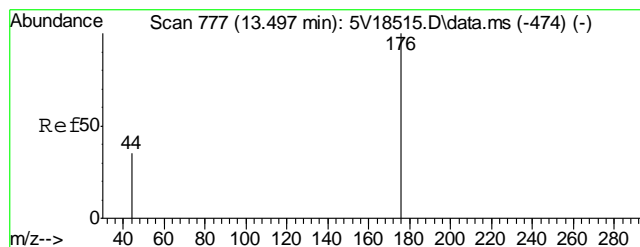
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Quantitation Report (QT Reviewed)

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

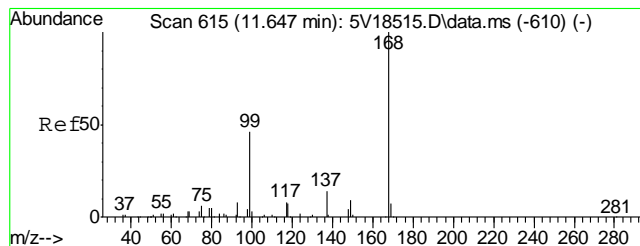
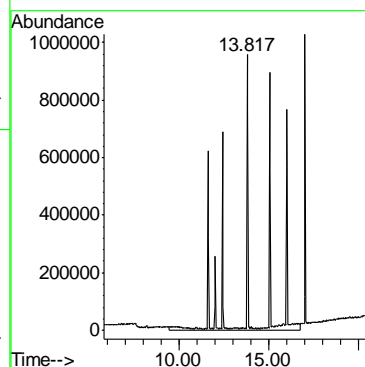
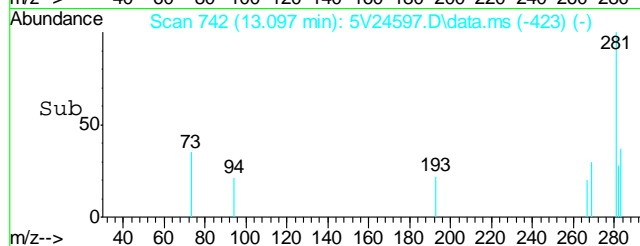
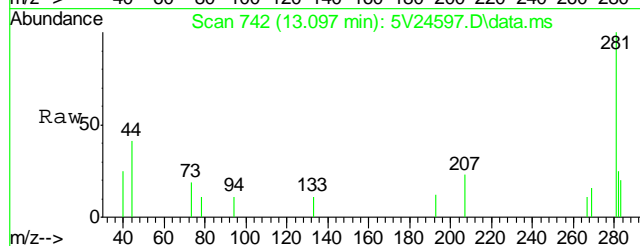
Quant Time: Nov 14 15:14:20 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:56:27 2012
Response via : Initial Calibration





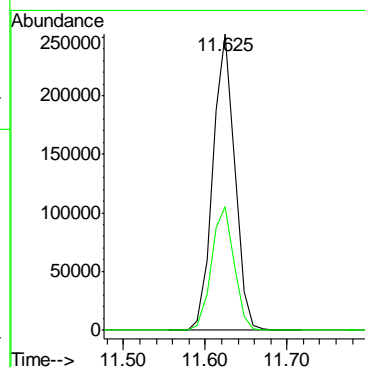
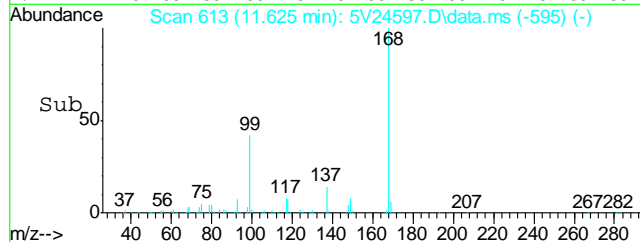
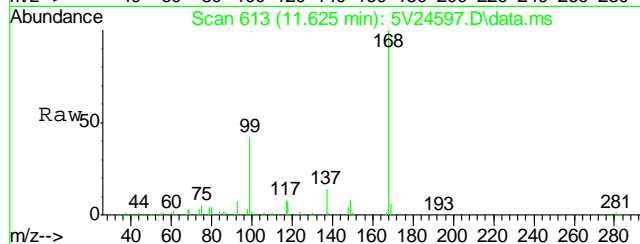
#1
TVH-Gasoline
Concen: Below Cal m
RT: 13.102 min Scan# 742
Delta R.T. 0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

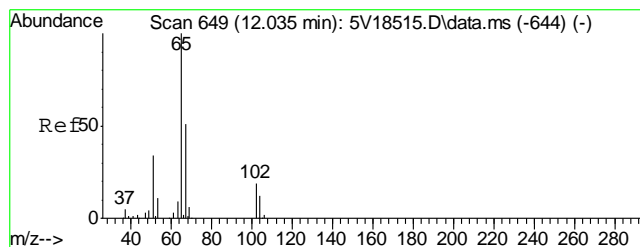
Tgt Ion:TIC Resp: 141616



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

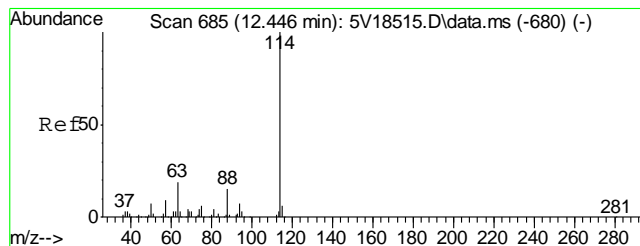
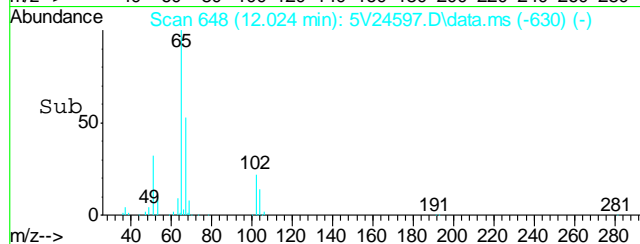
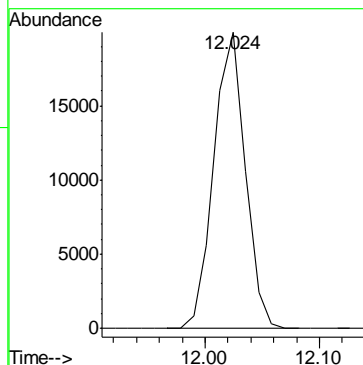
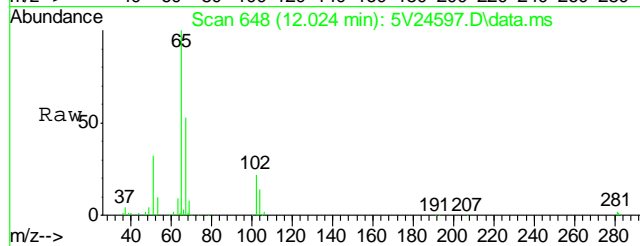
Tgt Ion:168 Resp: 466596
Ion Ratio Lower Upper
168 100
99 43.1 37.4 56.2





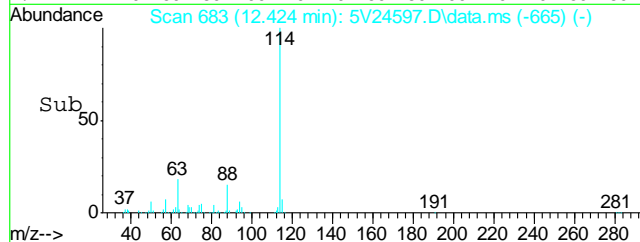
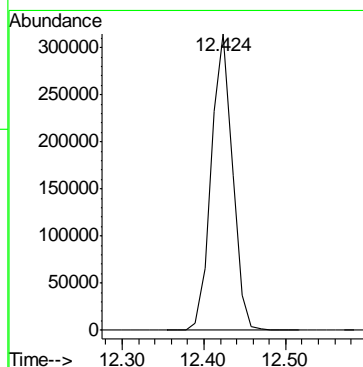
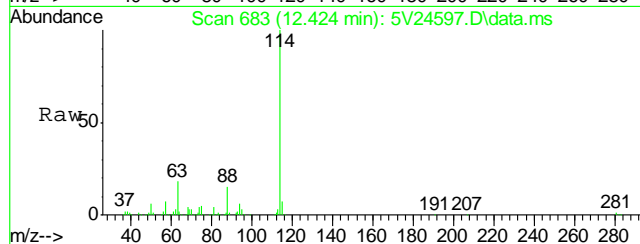
#33
1,2-Dichloroethane-d4
Concen: 48.14 ug/l
RT: 12.024 min Scan# 648
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

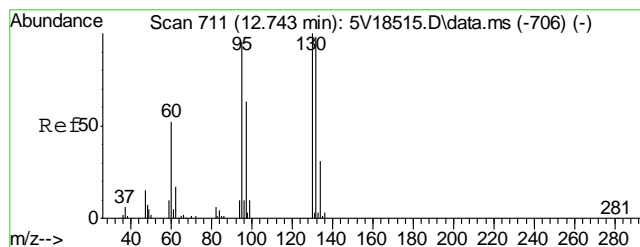
Tgt Ion:102 Resp: 38234



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

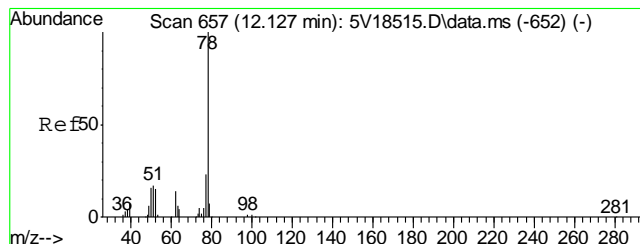
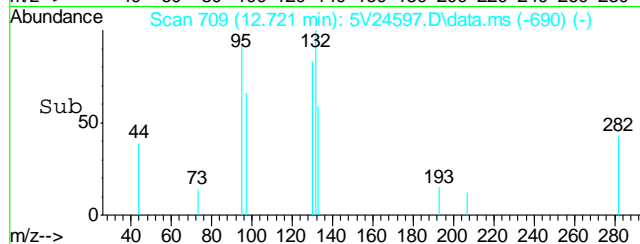
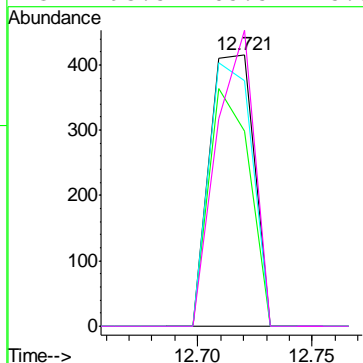
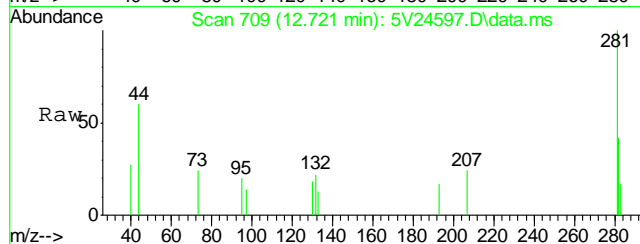
Tgt Ion:114 Resp: 566385





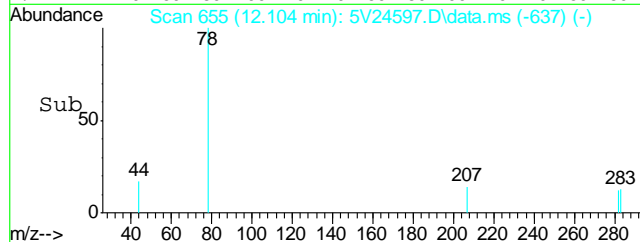
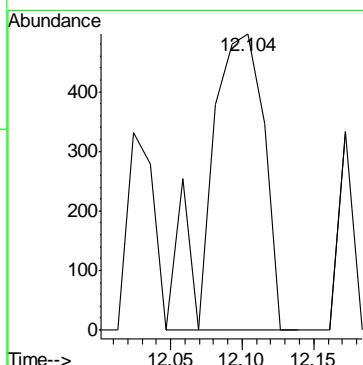
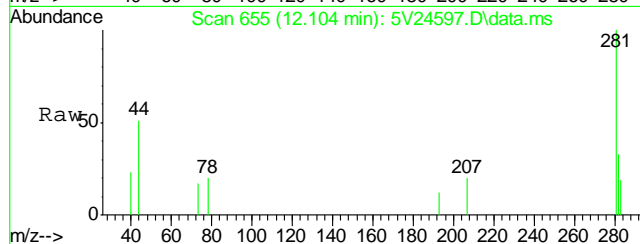
#48
Trichloroethene
Concen: 0.14 ug/l
RT: 12.721 min Scan# 709
Delta R.T. 0.011 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

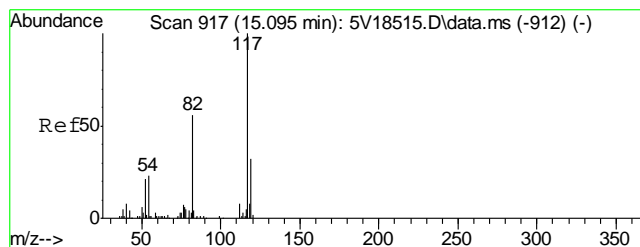
Tgt Ion:	95	Resp:	565
Ion Ratio	Lower	Upper	
95	100		
97	80.2	47.1	87.1
130	94.3	85.2	125.2
132	93.5	85.5	125.5



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

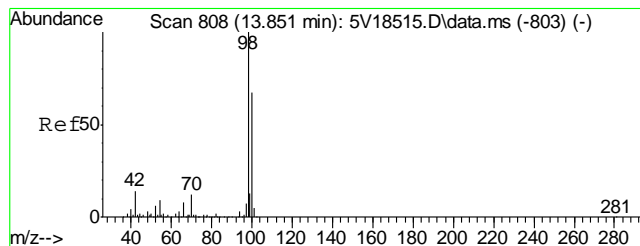
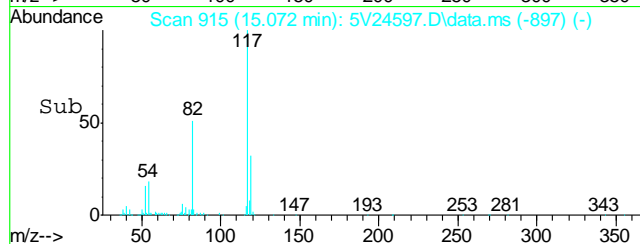
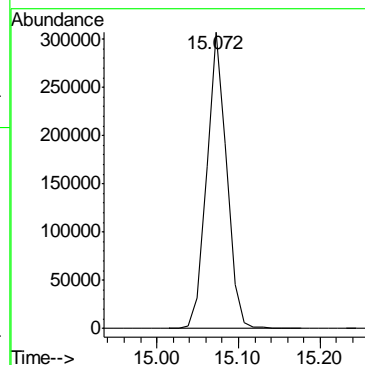
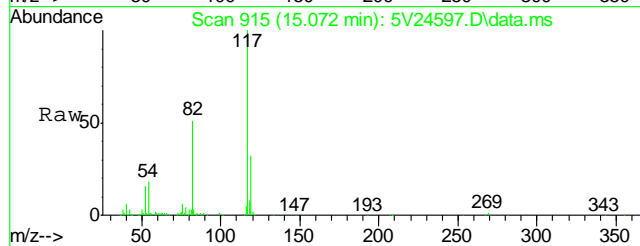
Tgt Ion: 78 Resp: 1340





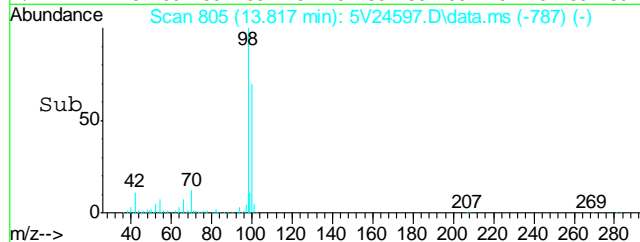
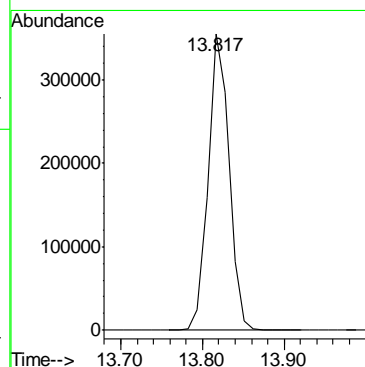
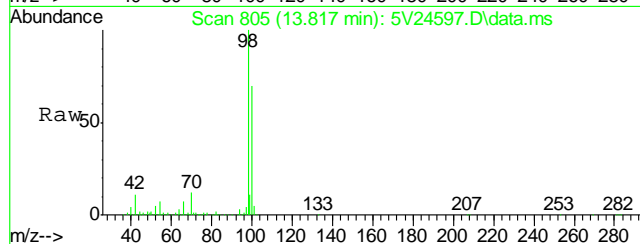
#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.072 min Scan# 915
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

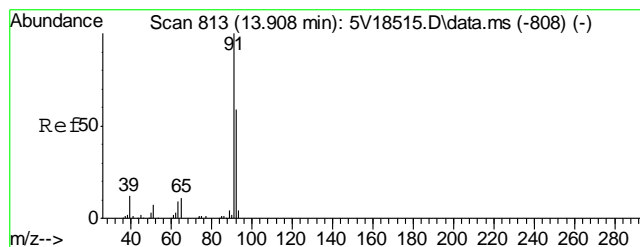
Tgt Ion:117 Resp: 516924



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

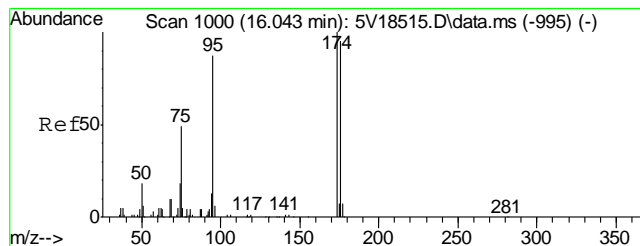
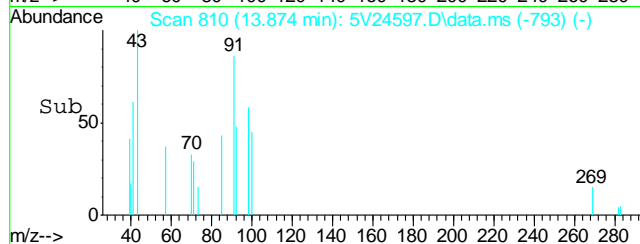
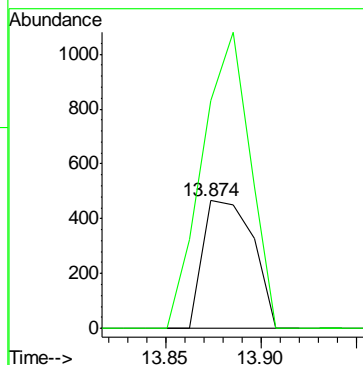
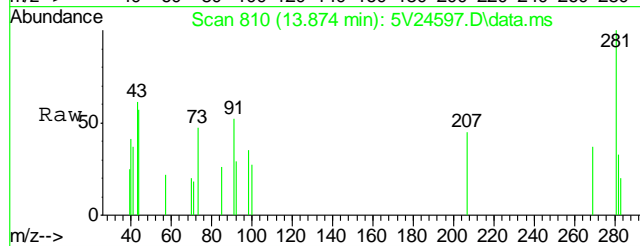
Tgt Ion: 98 Resp: 630619





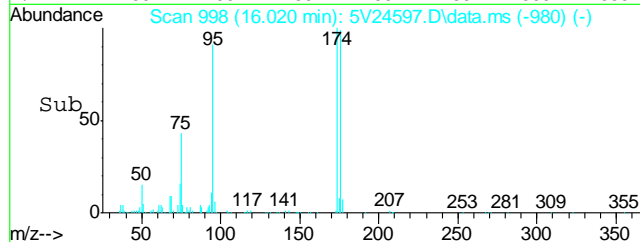
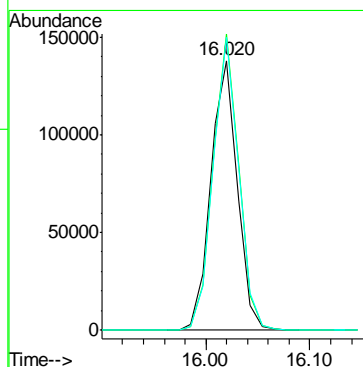
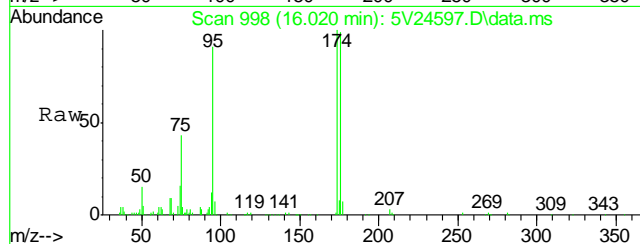
#62
Toluene
Concen: 0.09 ug/l
RT: 13.874 min Scan# 810
Delta R.T. -0.011 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

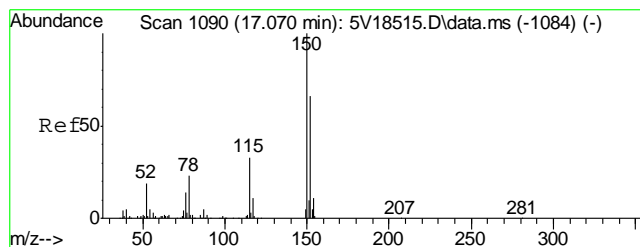
Tgt Ion: 92 Resp: 854
Ion Ratio Lower Upper
92 100
91 220.4 149.8 189.8#



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

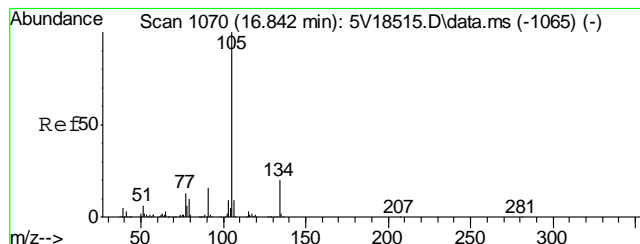
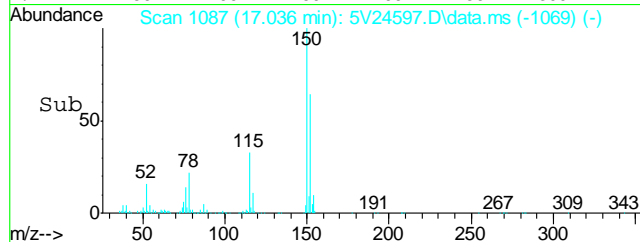
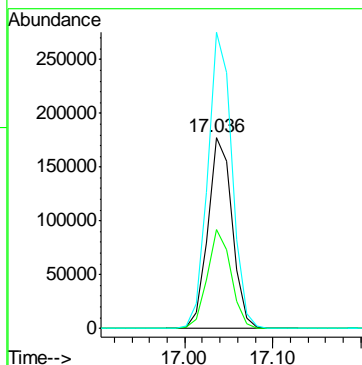
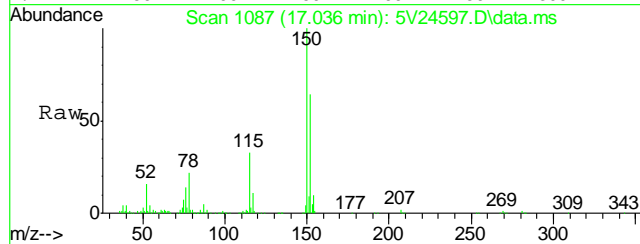
Tgt Ion: 95 Resp: 243711
Ion Ratio Lower Upper
95 100
174 106.8 77.1 117.1
176 105.9 73.4 113.4





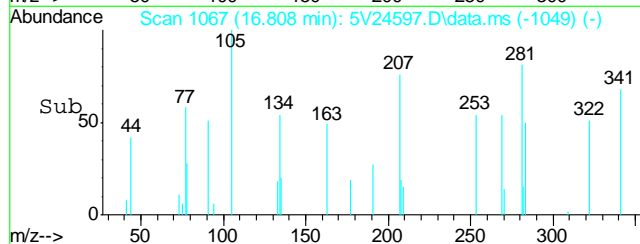
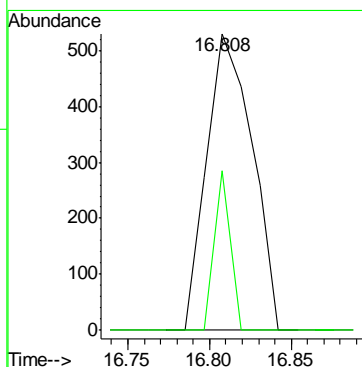
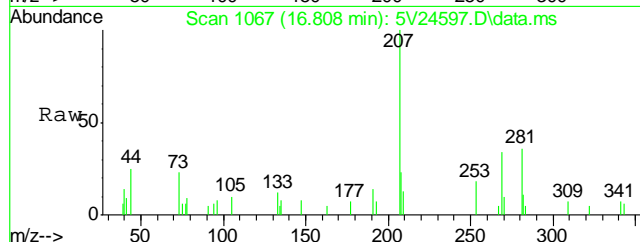
#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

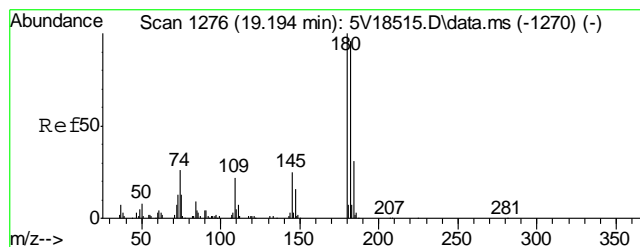
Tgt Ion:	152	Resp:	338090
Ion Ratio	Lower	Upper	
152	100		
115	50.8	41.4	62.0
150	154.6	153.9	230.9



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

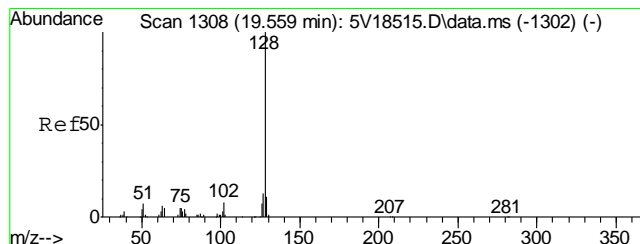
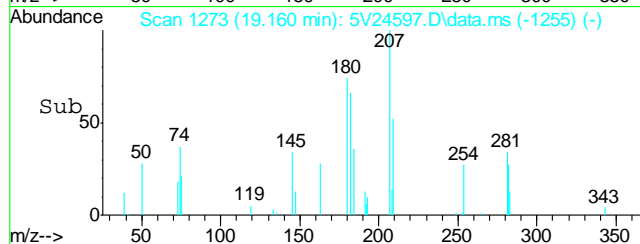
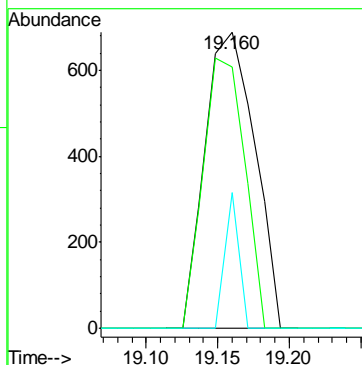
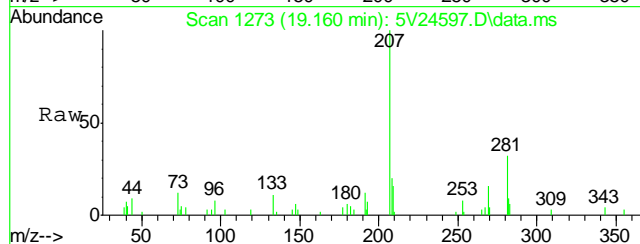
Tgt Ion:	105	Resp:	1026
Ion Ratio	Lower	Upper	
105	100		
134	19.1	16.5	24.7





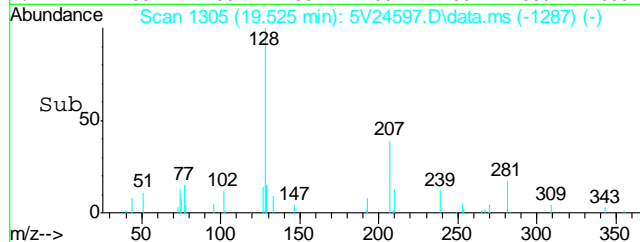
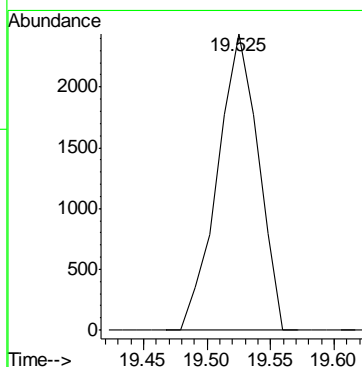
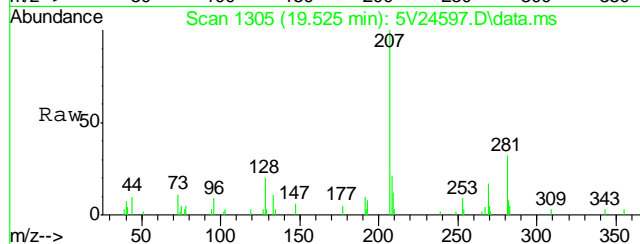
#90
1,2,4-Trichlorobenzene
Concen: 0.18 ug/l
RT: 19.160 min Scan# 1273
Delta R.T. -0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

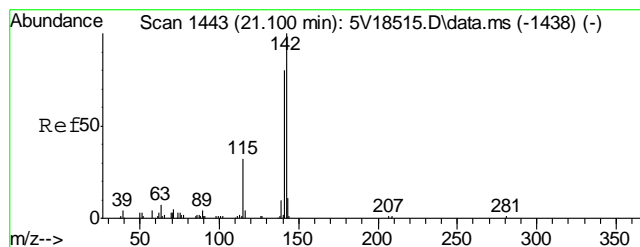
Tgt Ion:180	Resp:	1663
Ion Ratio	Lower	Upper
180	100	
182	76.2	76.2 114.4#
145	13.0	20.1 30.1#



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

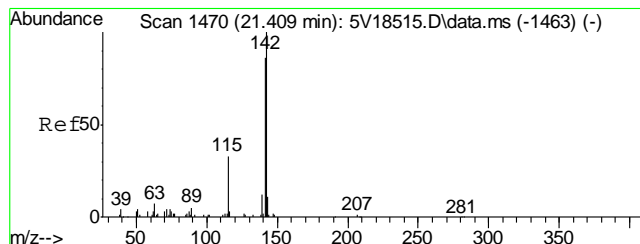
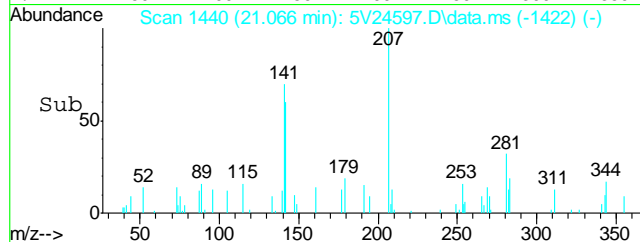
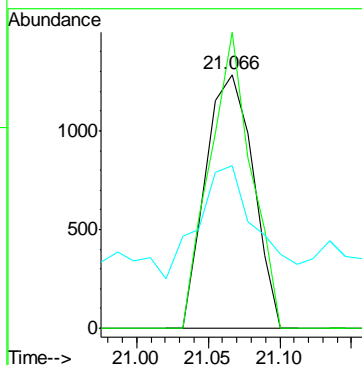
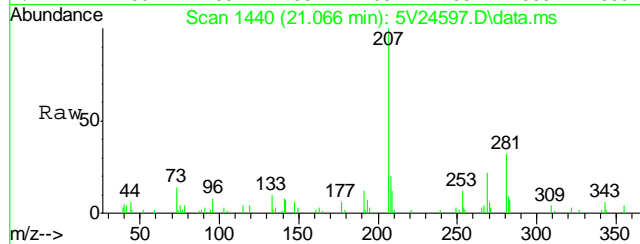
Tgt Ion:128	Resp:	5416
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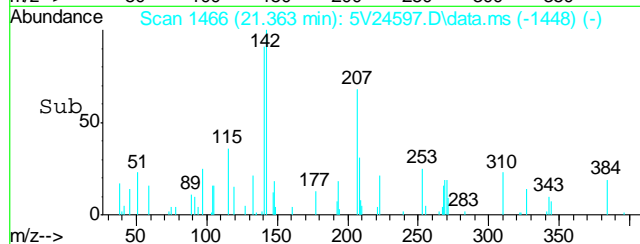
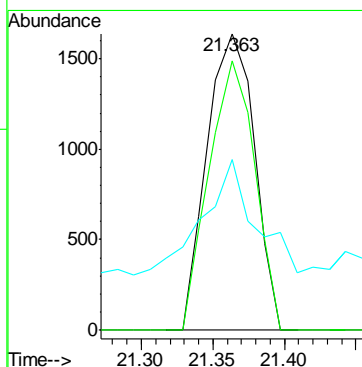
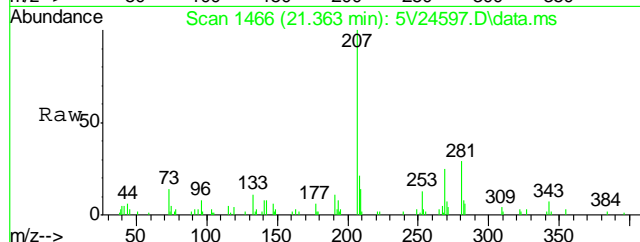
#94
2-Methylnaphthalene
Concen: 5.30 ug/l
RT: 21.066 min Scan# 1440
Delta R.T. 0.000 min
Lab File: 5V24597.D
Acq: 14 Nov 2012 3:00 am

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



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

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



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6947-MB	3G12026.D	1	11/12/12	DC	11/12/12	OP6947	E3G568

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40798-1

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	84% 10-159%
321-60-8	2-Fluorobiphenyl	80% 19-131%
1718-51-0	Terphenyl-d14	94% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6947-BS	3G12027.D	1	11/12/12	DC	11/12/12	OP6947	E3G568

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40798-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	79.5	95	68-130
120-12-7	Anthracene	83.3	80.2	96	67-130
56-55-3	Benzo(a)anthracene	83.3	79.0	95	65-130
205-99-2	Benzo(b)fluoranthene	83.3	84.4	101	44-130
207-08-9	Benzo(k)fluoranthene	83.3	80.5	97	56-131
50-32-8	Benzo(a)pyrene	83.3	82.1	99	62-130
218-01-9	Chrysene	83.3	81.6	98	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	81.5	98	55-130
206-44-0	Fluoranthene	83.3	76.5	92	70-130
86-73-7	Fluorene	83.3	75.7	91	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	82.6	99	56-130
91-20-3	Naphthalene	83.3	78.0	94	70-130
129-00-0	Pyrene	83.3	84.5	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	81%	10-159%
321-60-8	2-Fluorobiphenyl	80%	19-131%
1718-51-0	Terphenyl-d14	89%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6947-MS	3G12030.D	1	11/12/12	DC	11/12/12	OP6947	E3G568
OP6947-MSD	3G12031.D	1	11/12/12	DC	11/12/12	OP6947	E3G568
D40799-1	3G12029.D	1	11/12/12	DC	11/12/12	OP6947	E3G568

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40798-1

CAS No.	Compound	D40799-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		90.3	81.0	90	78.4	87	3	25-151/30
120-12-7	Anthracene	ND		90.3	89.0	99	89.4	99	0	39-159/30
56-55-3	Benzo(a)anthracene	ND		90.3	88.4	98	88.1	98	0	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		90.3	97.5	108	94.3	104	3	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		90.3	82.9	92	80.0	89	4	10-188/30
50-32-8	Benzo(a)pyrene	ND		90.3	84.6	94	84.3	93	0	32-144/30
218-01-9	Chrysene	ND		90.3	89.9	100	89.8	99	0	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		90.3	86.8	96	86.4	96	0	21-152/30
206-44-0	Fluoranthene	ND		90.3	87.3	97	87.5	97	0	36-157/30
86-73-7	Fluorene	ND		90.3	83.3	92	79.9	88	4	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		90.3	87.8	97	87.1	96	1	20-154/30
91-20-3	Naphthalene	ND		90.3	82.9	92	78.8	87	5	10-163/30
129-00-0	Pyrene	ND		90.3	97.0	107	95.9	106	1	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D40799-1	Limits
4165-60-0	Nitrobenzene-d5	71%	69%	73%	10-159%
321-60-8	2-Fluorobiphenyl	65%	64%	65%	19-131%
1718-51-0	Terphenyl-d14	79%	79%	75%	18-150%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\111212\
 Data File : 3g12033.D
 Acq On : 12 Nov 2012 7:00 pm
 Operator : DONC
 Sample : D40798-1
 Misc : OP6947,E3G568,30.09,,,1,1
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 13 09:53:39 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G568.M
 Quant Title : PAHSIM BASE
 QLast Update : Mon Nov 12 15:44:05 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.789	136	146515	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.507	164	96104	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.995	188	154063	4.0000	ug/mL	0.00
19) Chrysene-d12	11.630	240	114035	4.0000	ug/mL	0.00
24) Perylene-d12	13.035	264	64180	4.0000	ug/mL	-0.01

System Monitoring Compounds

2) Nitrobenzene-d5	5.103	82	539258	36.9495	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	73.90%		
7) 2-Fluorobiphenyl	6.846	172	1483834	32.6327	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	65.26%		
21) Terphenyl-d14	10.586	244	624848	39.4652	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	78.94%		

Target Compounds

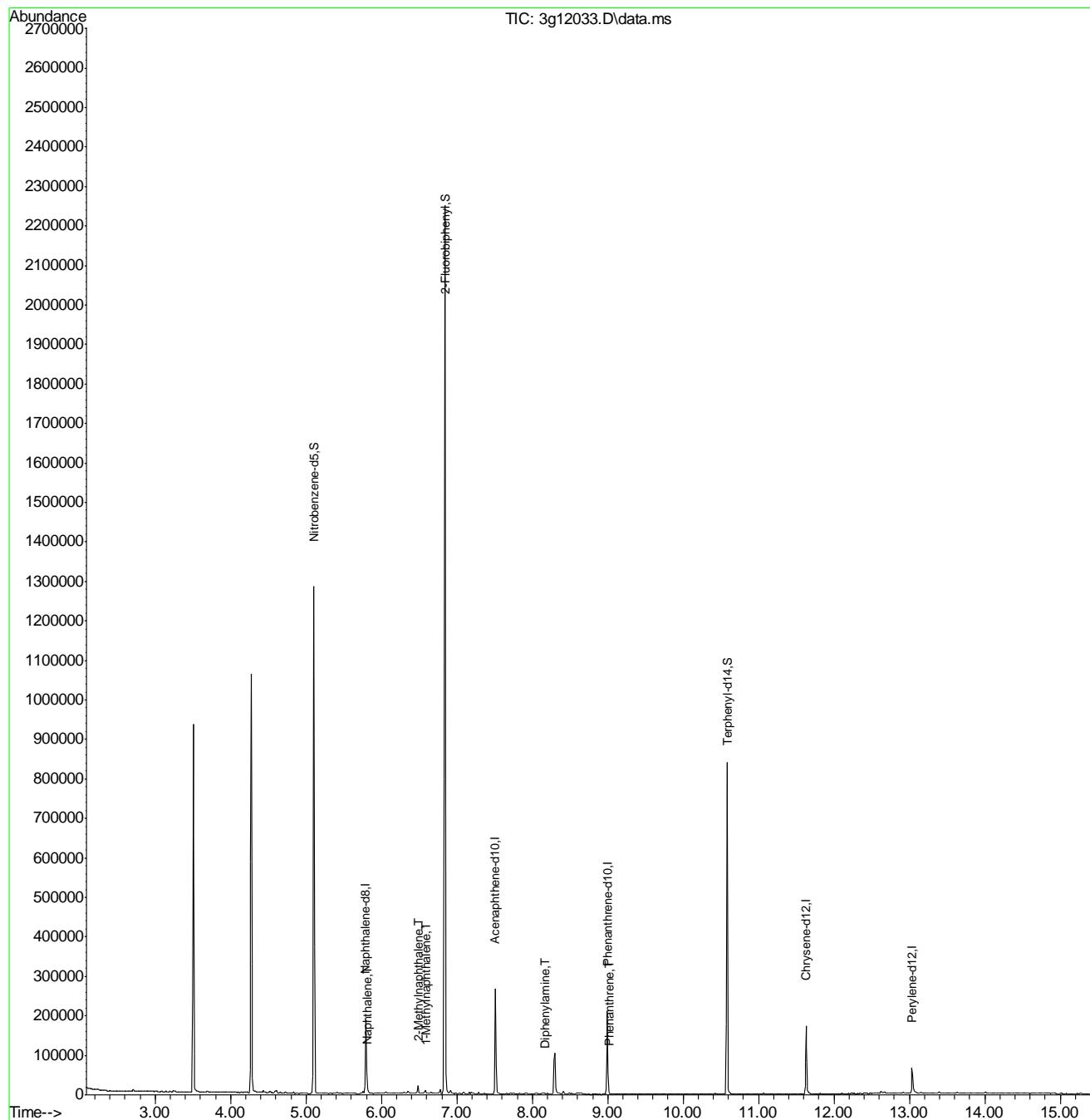
					Qvalue	
3) N-Nitrosodimethylamine	2.487	74	11	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.814	128	6077	0.1230	ug/mL	94
8) 2-Methylnaphthalene	6.487	142	8225	0.2324	ug/mL	98
9) 1-Methylnaphthalene	6.587	142	3672	0.1118	ug/mL	92
10) Acenaphthylene	7.366	152	530	N.D.		
11) Acenaphthene	7.507	154	469	Below	Cal #	59
12) Dibenzofuran	7.720	168	1046	N.D.		
13) Fluorene	8.063	166	1185	N.D.		
14) Diphenylamine	8.169	169	2186	0.0611	ug/mL	72
16) Phenanthrene	9.019	178	3844	0.0670	ug/mL#	62
17) Anthracene	9.067	178	444	N.D.		
18) Fluoranthene	10.198	202	1098	N.D.		
20) Pyrene	10.428	202	1403	N.D.		
22) Benzo(a)anthracene	11.623	228	1258	N.D.		
23) Chrysene	11.623	228	1258	N.D.		
25) Benzo(b)fluoranthene	12.646	252	1670	N.D.		
26) Benzo(k)fluoranthene	12.646	252	1670	N.D.		
27) Benzo(a)pyrene	12.982	252	454	N.D.		
28) Indeno(1,2,3-cd)pyrene	14.318	276	560	N.D.		
29) Dibenz(a,h)anthracene	14.329	278	247	N.D.		
30) Benzo(g,h,i)perylene	14.318	276	586	N.D.		

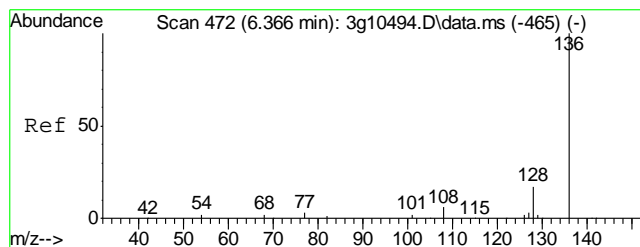
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\111212\
Data File : 3g12033.D
Acq On : 12 Nov 2012 7:00 pm
Operator : DONC
Sample : D40798-1
Misc : OP6947,E3G568,30.09,,,1,1
ALS Vial : 19 Sample Multiplier: 1

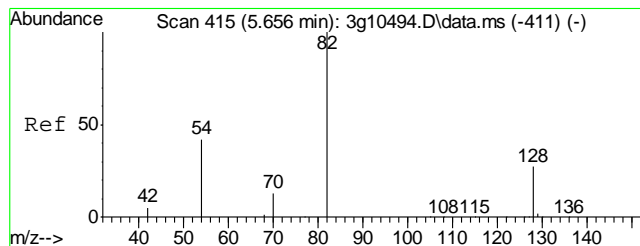
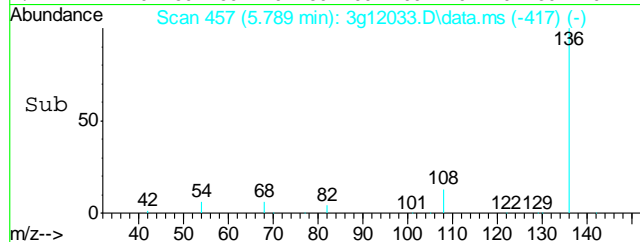
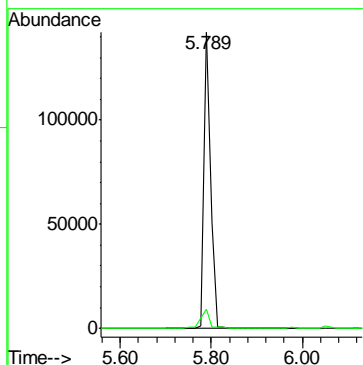
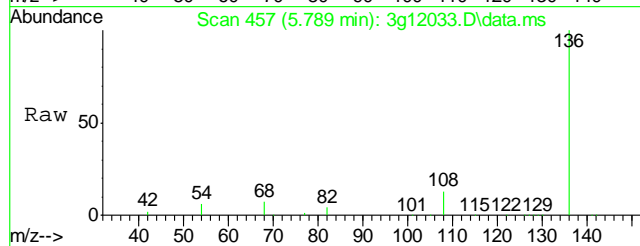
Quant Time: Nov 13 09:53:39 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G568.M
Quant Title : PAHSIM BASE
QLast Update : Mon Nov 12 15:44:05 2012
Response via : Initial Calibration





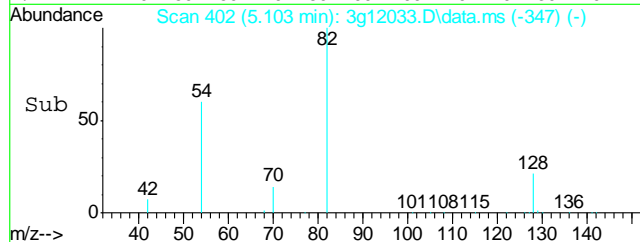
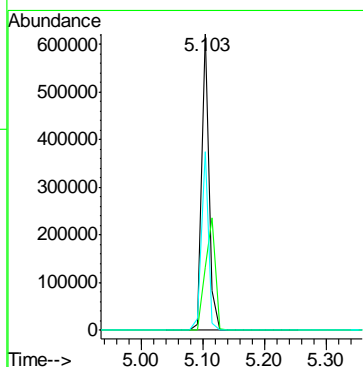
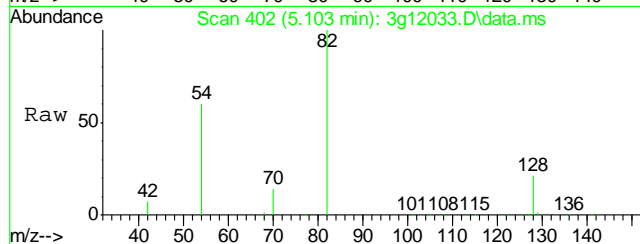
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.789 min Scan# 457
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

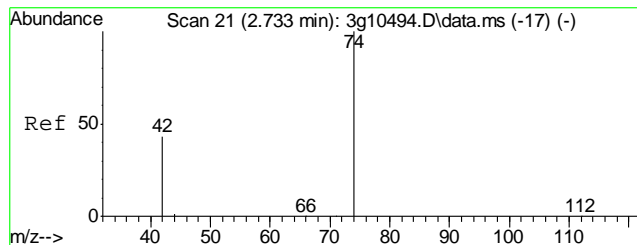
Tgt Ion	Ratio	Lower	Upper
136	100		
68	7.7	0.0	27.8



#2
Nitrobenzene-d5
Concen: 36.9495 ug/mL
RT: 5.103 min Scan# 402
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

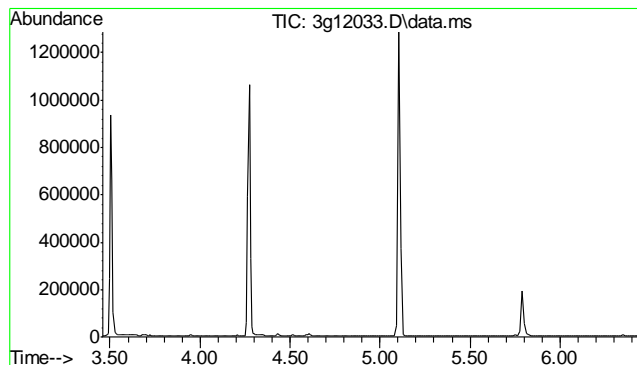
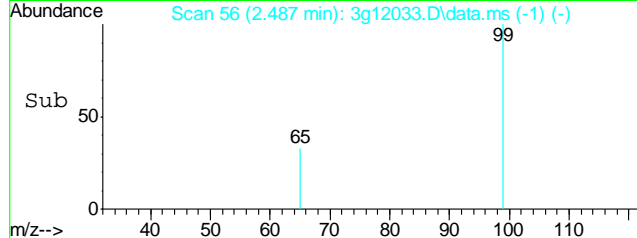
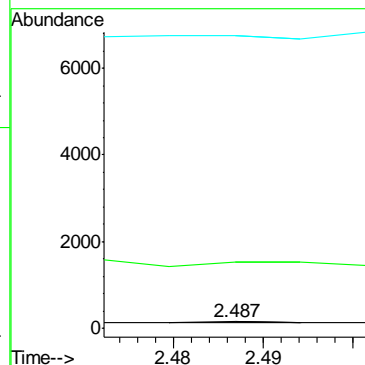
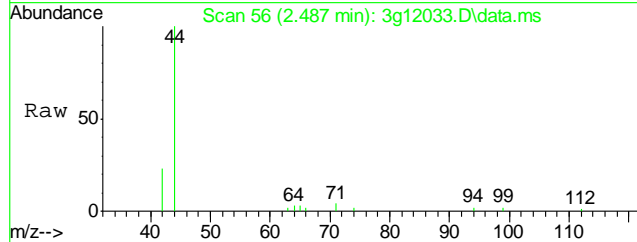
Tgt Ion	Ratio	Lower	Upper
82	100		
128	51.5	30.7	70.7
54	57.4	36.8	76.8





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.487 min Scan# 56
Delta R.T. 0.001 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

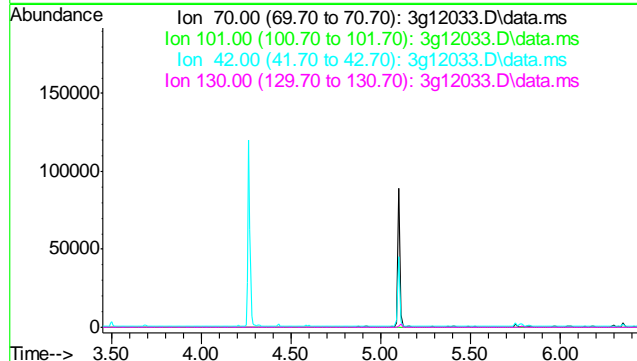
Tgt Ion	Ratio	Lower	Upper
74	100		
42	0.0	53.9	93.9#
44	0.0	0.0	24.2

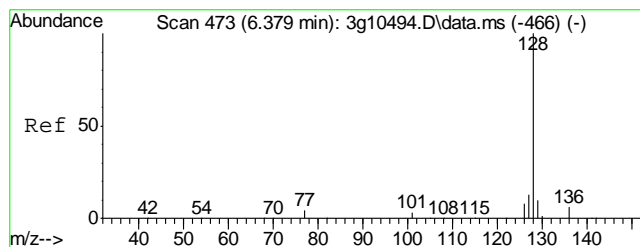


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.95 min

Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

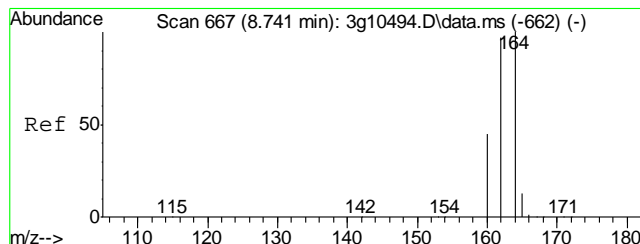
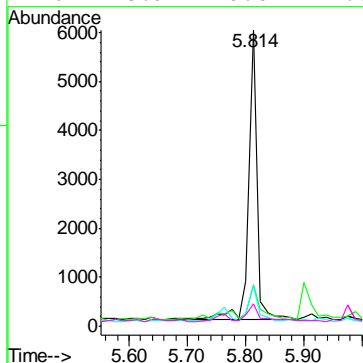
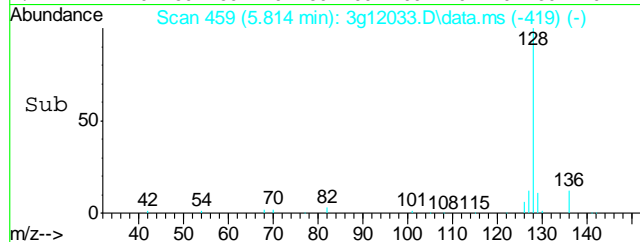
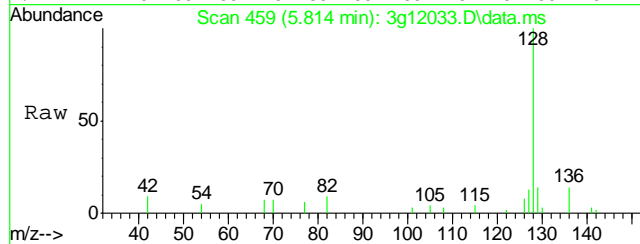
Tgt Ion	Exp Ratio
70	100
101	13.9
42	52.4
130	27.1





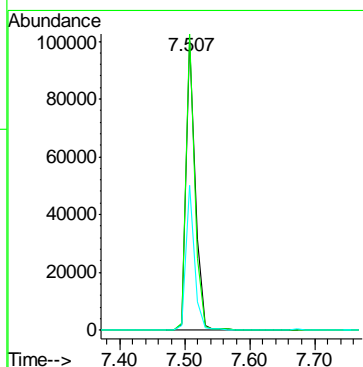
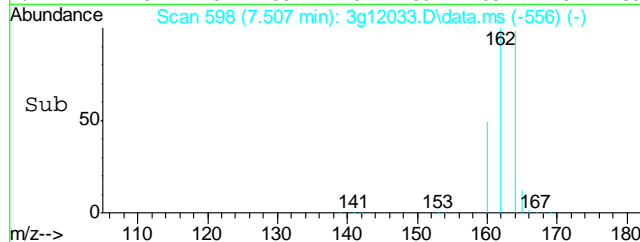
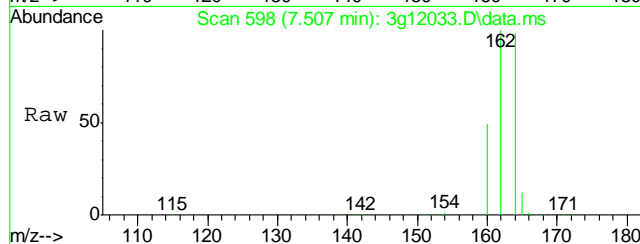
#5
Naphthalene
Concen: 0.1230 ug/mL
RT: 5.814 min Scan# 459
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

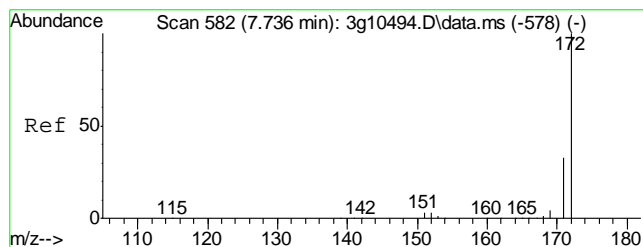
Tgt Ion	128	129	127	126
Resp	6077	15.7	12.5	8.9
Ratio	100			
Lower		0.0	0.0	0.0
Upper		31.0	32.8	27.5



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.507 min Scan# 598
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

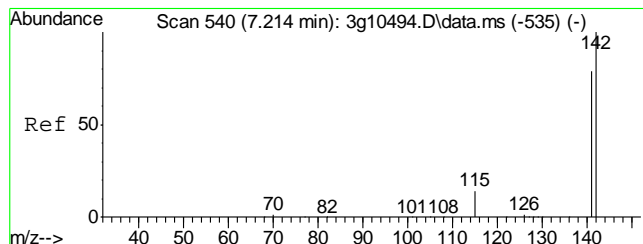
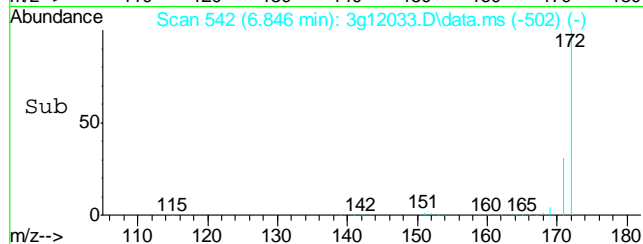
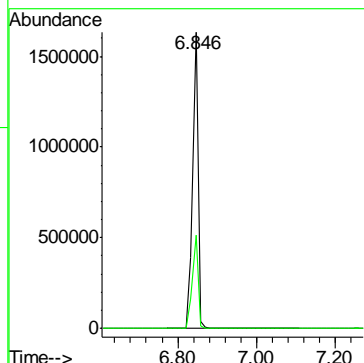
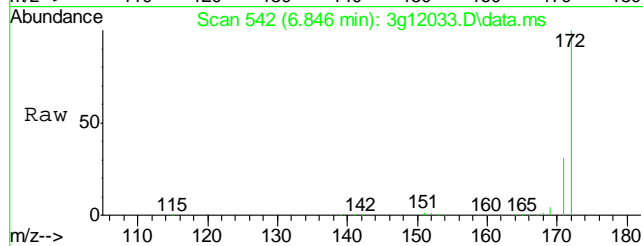
Tgt Ion	164	162	160
Resp	96104	97.6	46.3
Ratio	100		
Lower		78.1	28.0
Upper		118.1	68.0





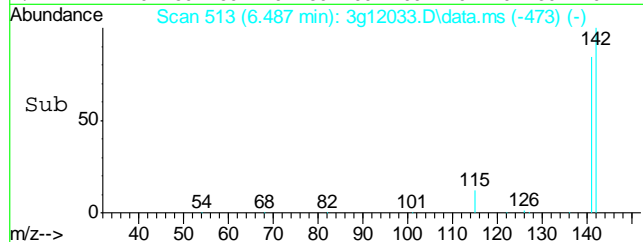
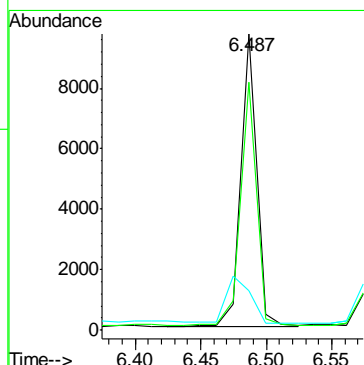
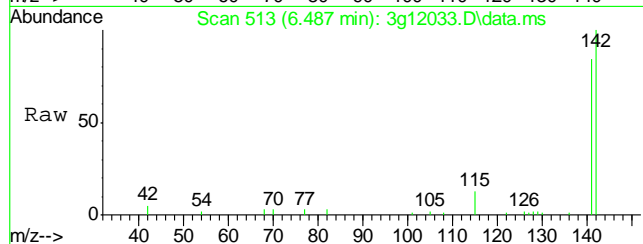
#7
2-Fluorobiphenyl
Concen: 32.6327 ug/mL
RT: 6.846 min Scan# 542
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

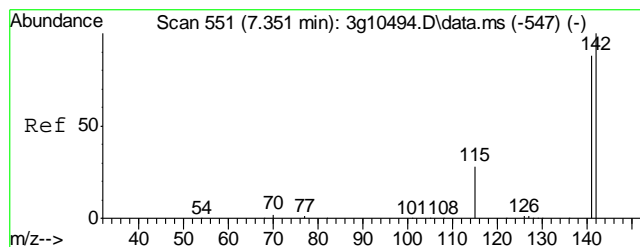
Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.1	12.6	52.6



#8
2-Methylnaphthalene
Concen: 0.2324 ug/mL
RT: 6.487 min Scan# 513
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

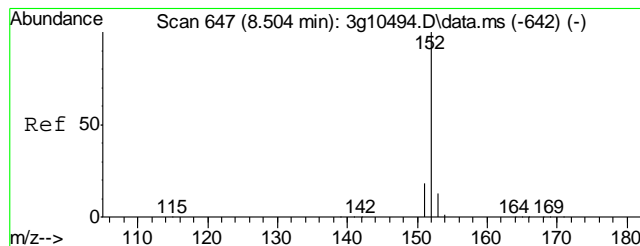
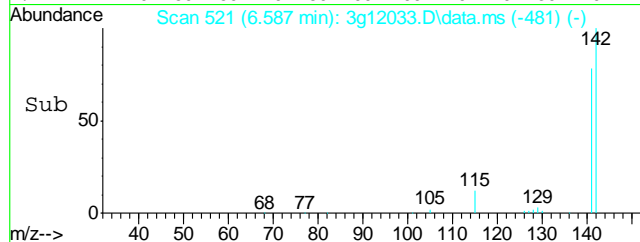
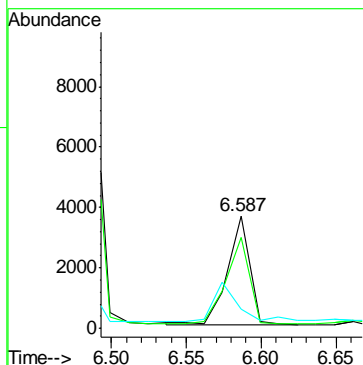
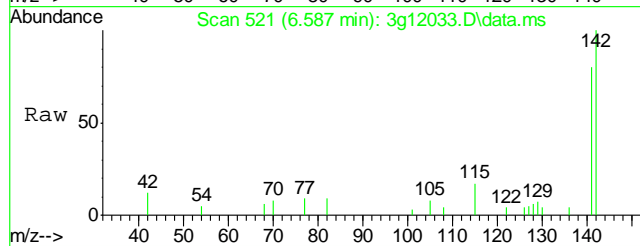
Tgt Ion	Ratio	Lower	Upper
142	100		
141	84.9	64.0	104.0
115	24.9	7.1	47.1





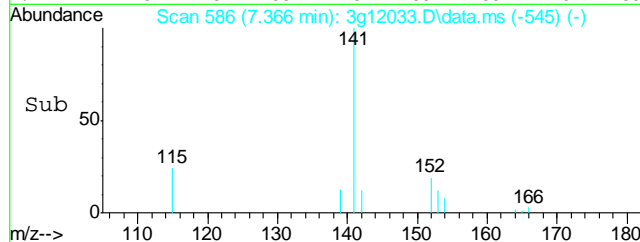
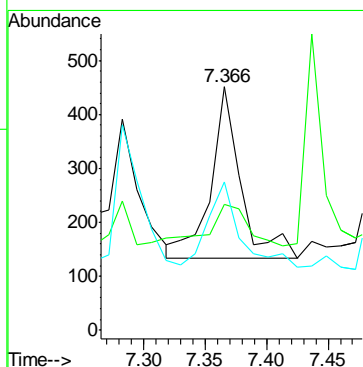
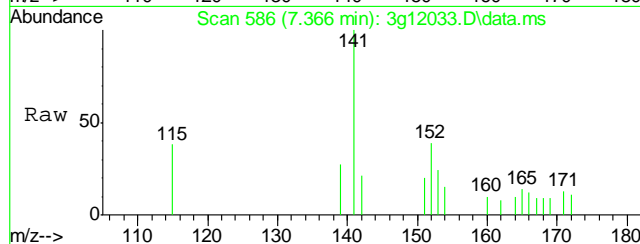
#9
1-Methylnaphthalene
Concen: 0.1118 ug/mL
RT: 6.587 min Scan# 521
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

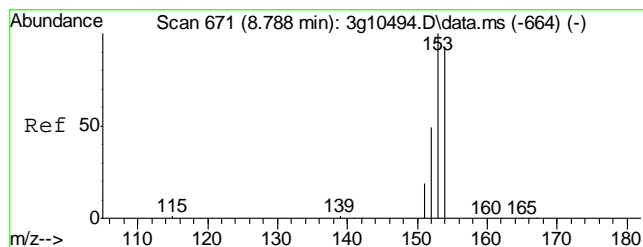
Tgt Ion:142 Resp: 3672
Ion Ratio Lower Upper
142 100
141 84.0 65.4 105.4
115 43.7 9.7 49.7



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.366 min Scan# 586
Delta R.T. -0.012 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

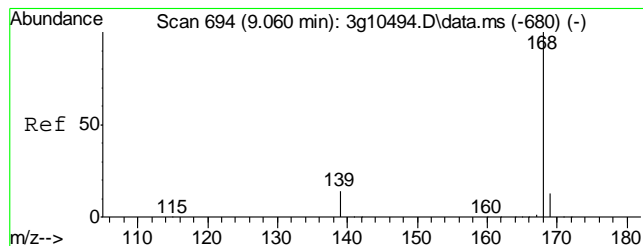
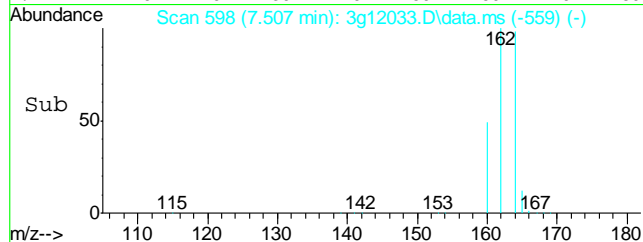
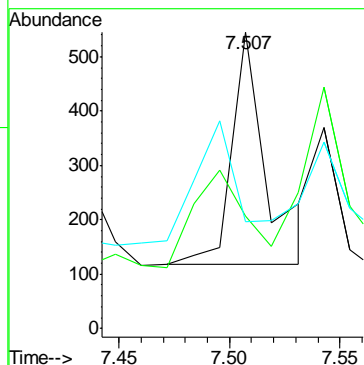
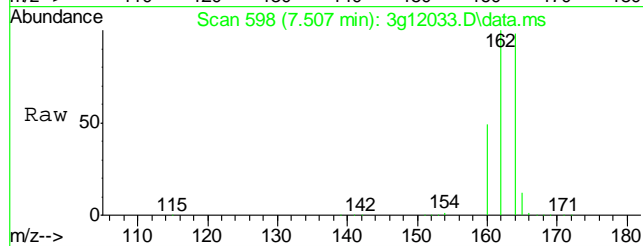
Tgt Ion:152 Resp: 530
Ion Ratio Lower Upper
152 100
151 43.6 0.0 39.3#
153 50.4 0.0 32.8#





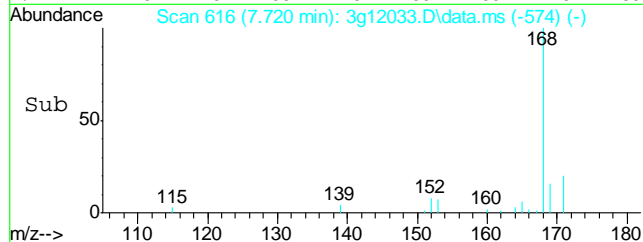
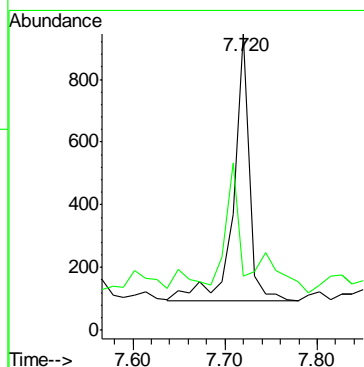
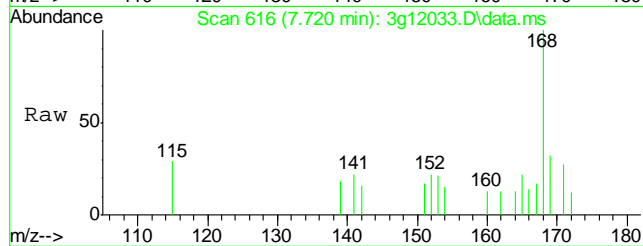
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.507 min Scan# 598
Delta R.T. -0.035 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

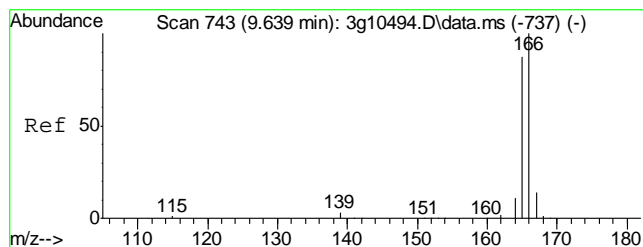
Tgt Ion	Ratio	Lower	Upper
154	100		
153	62.0	84.1	124.1#
152	78.5	30.2	70.2#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.720 min Scan# 616
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

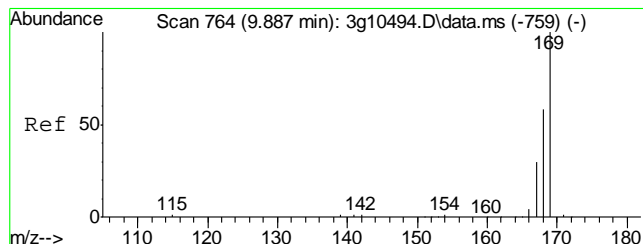
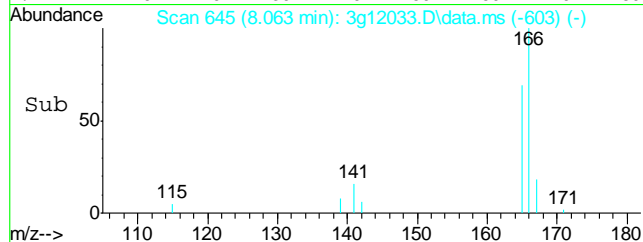
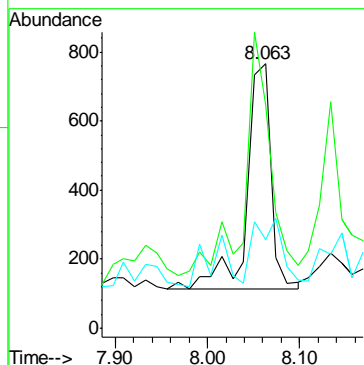
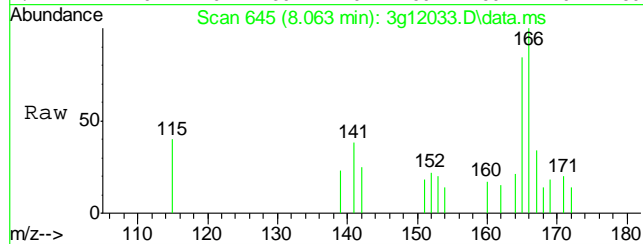
Tgt Ion	Ratio	Lower	Upper
168	100		
139	40.0	10.9	50.9





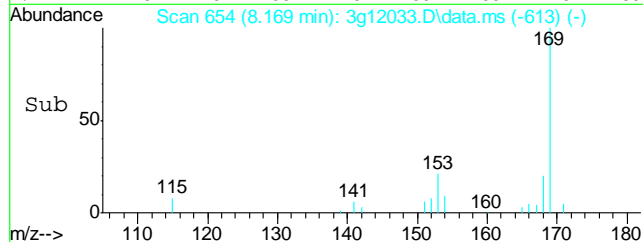
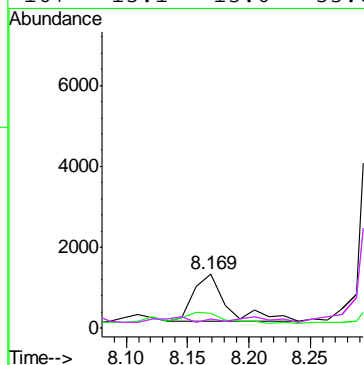
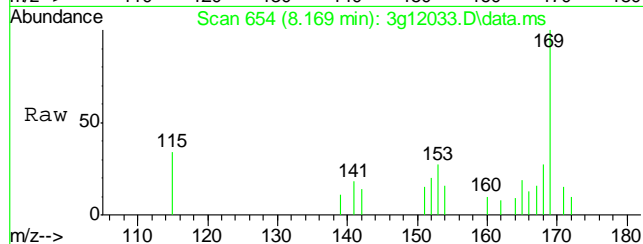
#13
Fluorene
Concen: Below ug/mL
RT: 8.063 min Scan# 645
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

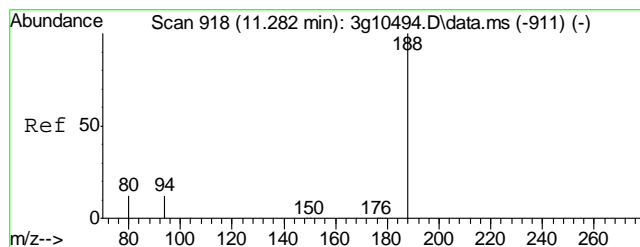
Tgt Ion:	166	Resp:	1185
Ion Ratio	Lower	Upper	
166	100		
165	116.2	69.6	109.6#
167	33.5	0.0	33.5#



#14
Diphenylamine
Concen: 0.0611 ug/mL
RT: 8.169 min Scan# 654
Delta R.T. -0.012 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

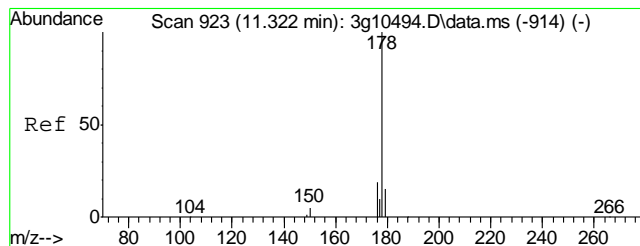
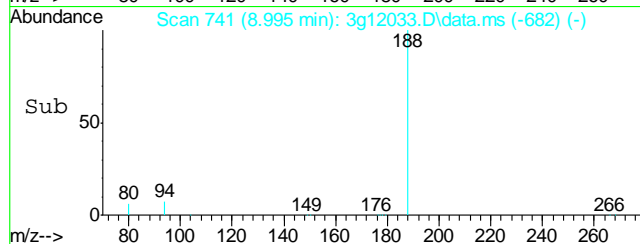
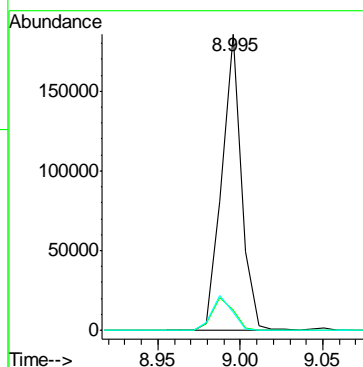
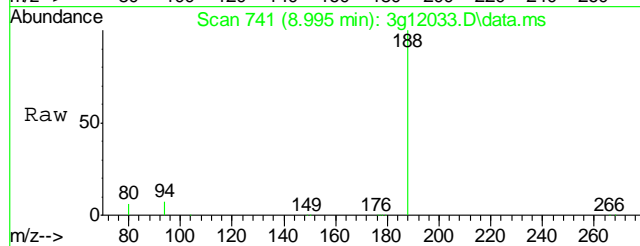
Tgt Ion:	169	Resp:	2186
Ion Ratio	Lower	Upper	
169	100		
168	43.8	40.9	80.9
167	15.1	13.6	53.6
167	15.1	13.6	53.6





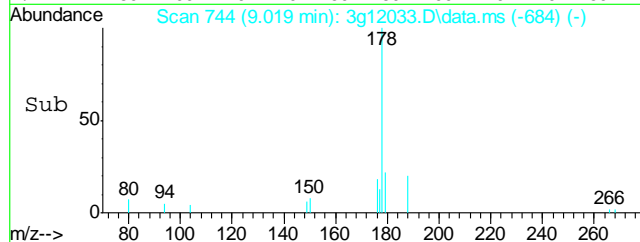
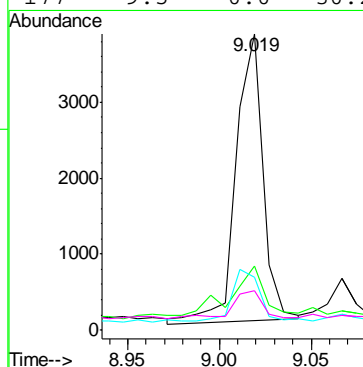
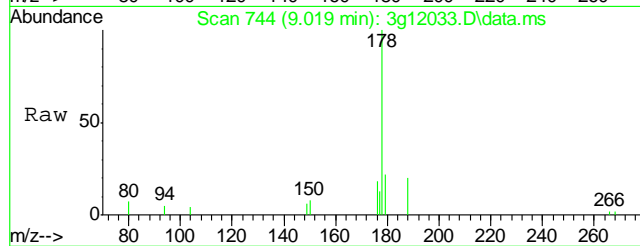
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.995 min Scan# 741
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

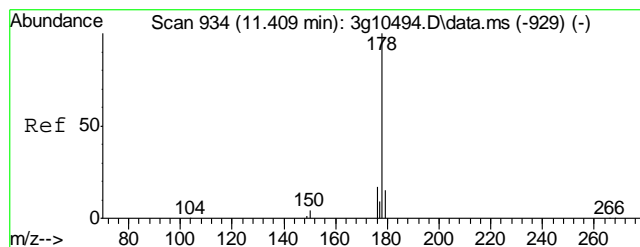
Tgt Ion:188	Resp:	154063
Ion Ratio	Lower	Upper
188 100		
94 11.7	0.0	31.6
80 12.2	0.0	32.0



#16
Phenanthrene
Concen: 0.0670 ug/mL
RT: 9.019 min Scan# 744
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

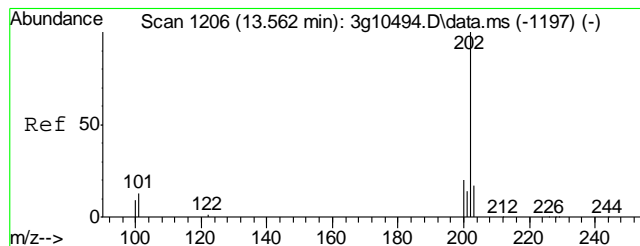
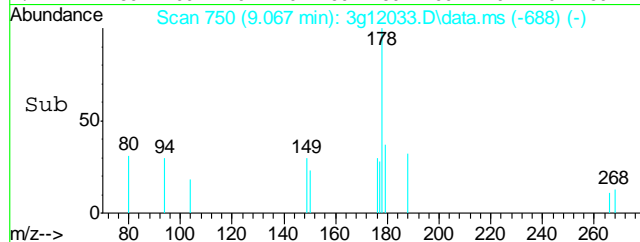
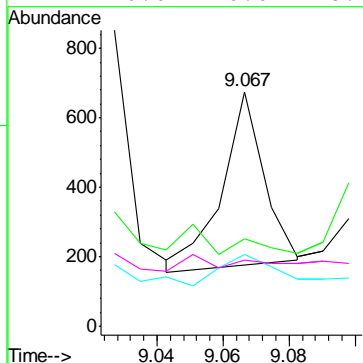
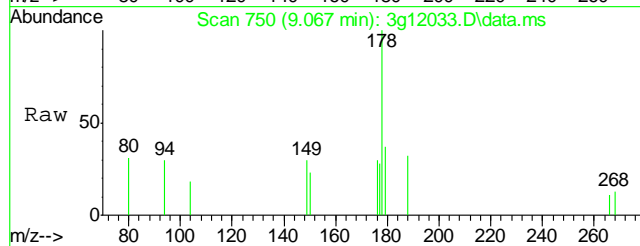
Tgt Ion:178	Resp:	3844
Ion Ratio	Lower	Upper
178 100		
179 56.2	0.0	35.2#
176 22.9	0.0	38.7
177 9.5	0.0	30.2





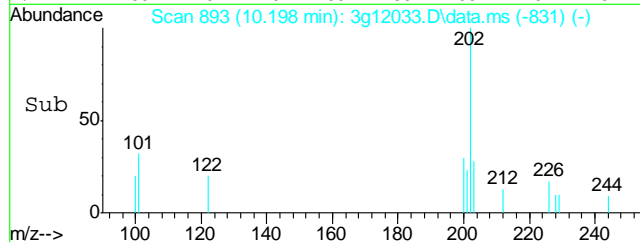
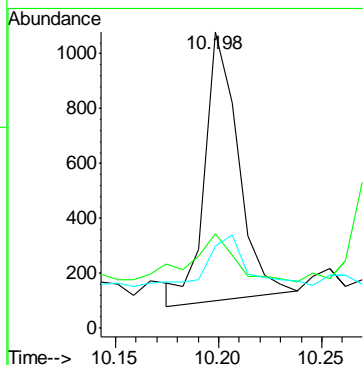
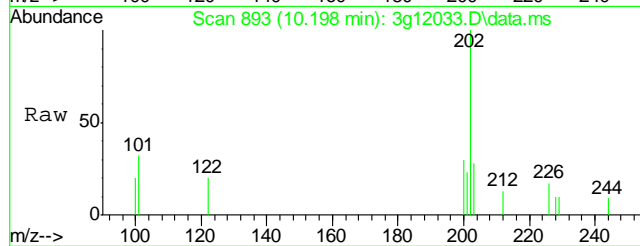
#17
 Anthracene
 Concen: Below ug/mL
 RT: 9.067 min Scan# 750
 Delta R.T. -0.007 min
 Lab File: 3g12033.D
 Acq: 12 Nov 12 7:00 pm

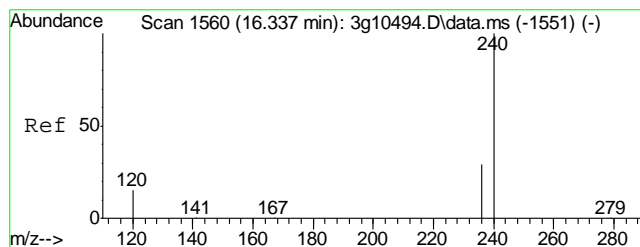
Tgt Ion:	178	Resp:	444
Ion Ratio	Lower	Upper	
178	100		
179	149.8	0.0	35.3#
176	43.2	0.0	38.0#
177	0.0	0.0	28.7



#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 10.198 min Scan# 893
 Delta R.T. -0.008 min
 Lab File: 3g12033.D
 Acq: 12 Nov 12 7:00 pm

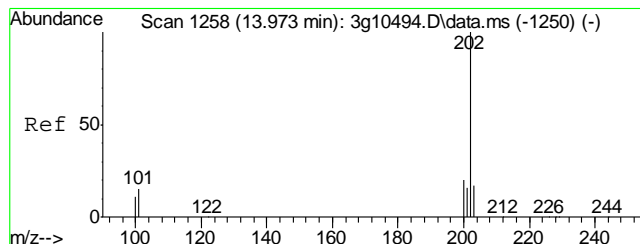
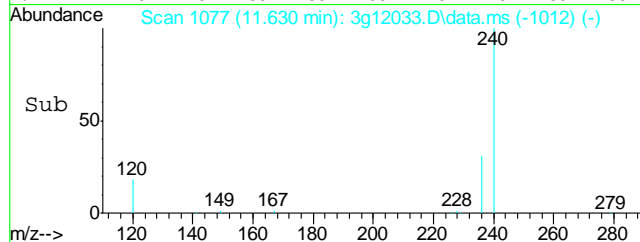
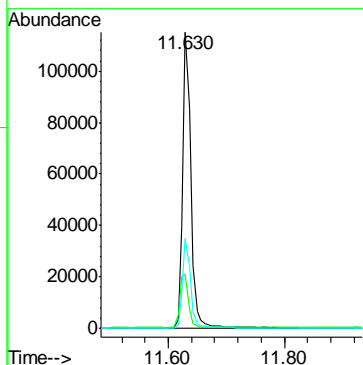
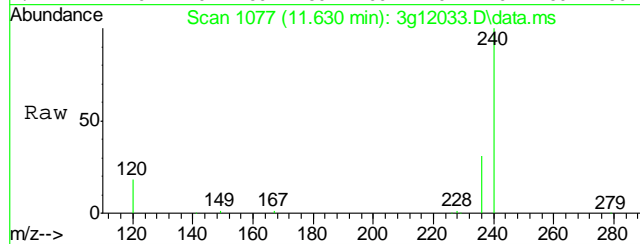
Tgt Ion:	202	Resp:	1098
Ion Ratio	Lower	Upper	
202	100		
101	77.8	0.0	31.8#
203	46.4	0.0	37.3#





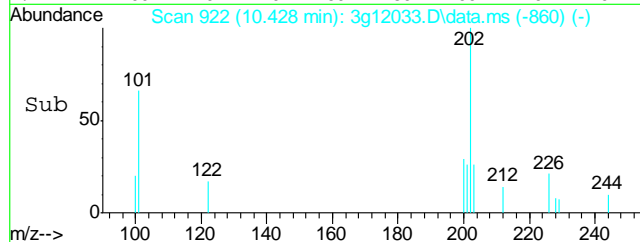
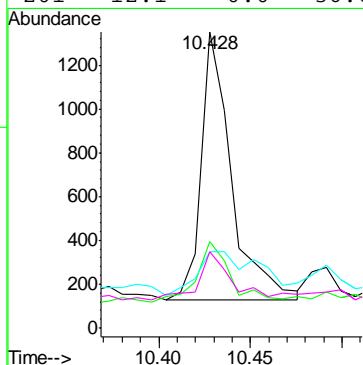
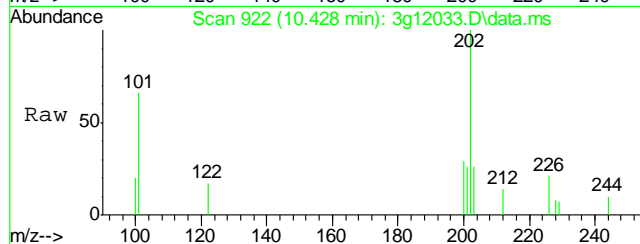
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. -0.007 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

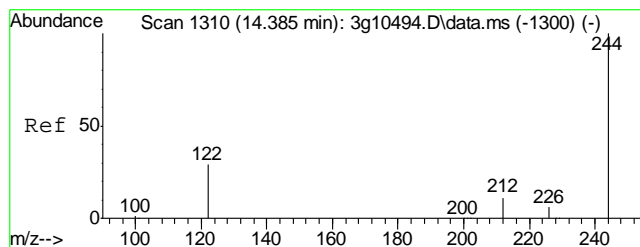
Tgt Ion	Ratio	Lower	Upper
240	100		
120	20.1	0.0	38.3
236	29.8	10.7	50.7



#20
Pyrene
Concen: Below ug/mL
RT: 10.428 min Scan# 922
Delta R.T. -0.008 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

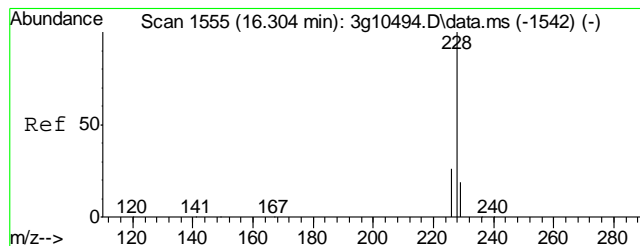
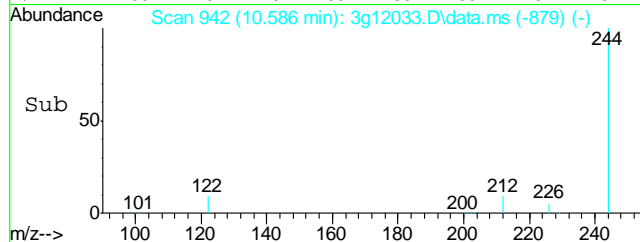
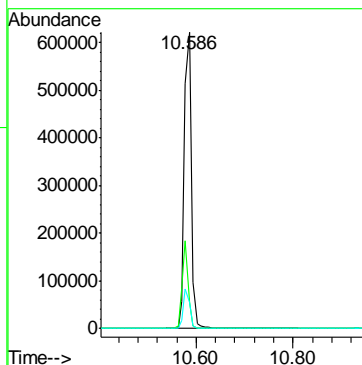
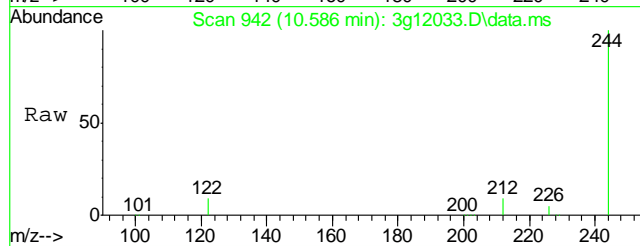
Tgt Ion	Ratio	Lower	Upper
202	100		
200	24.4	0.3	40.3
203	32.5	0.0	37.8
201	12.1	0.0	36.6





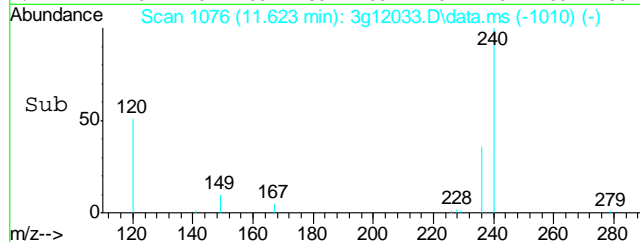
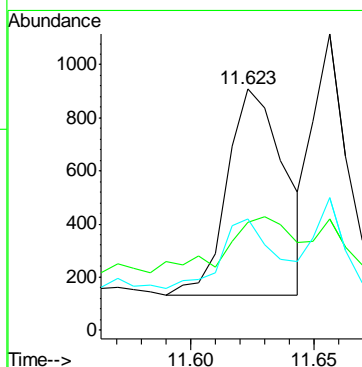
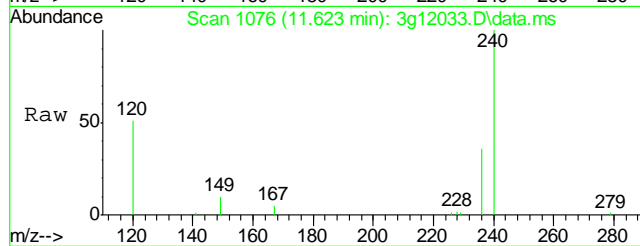
#21
Terphenyl-d14
Concen: 39.4652 ug/mL
RT: 10.586 min Scan# 942
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

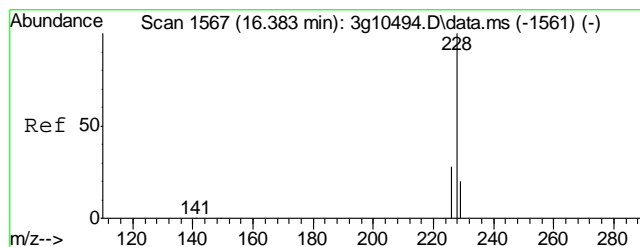
Tgt Ion	Ratio	Lower	Upper
244	100		
122	25.7	4.9	44.9
212	12.3	0.0	32.5



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.623 min Scan# 1076
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

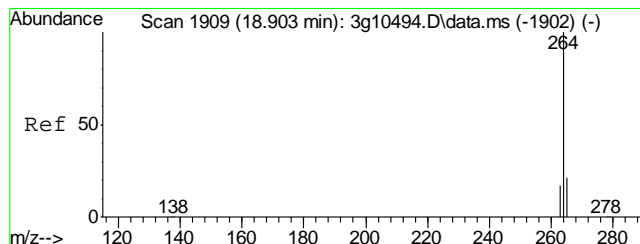
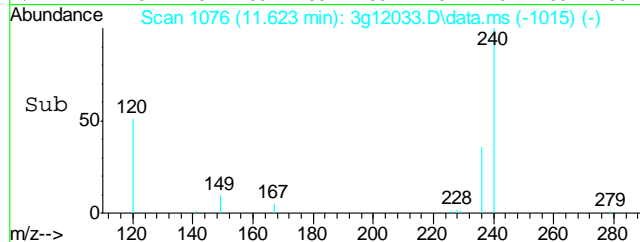
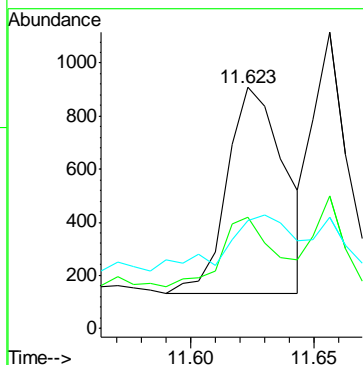
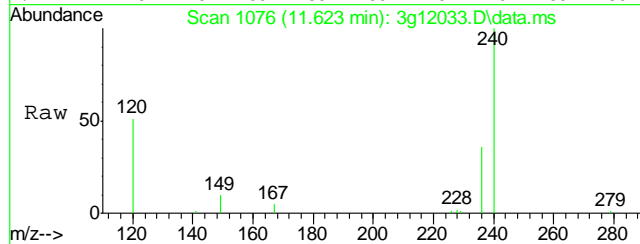
Tgt Ion	Ratio	Lower	Upper
228	100		
229	31.1	0.0	39.5
226	32.0	6.8	46.8





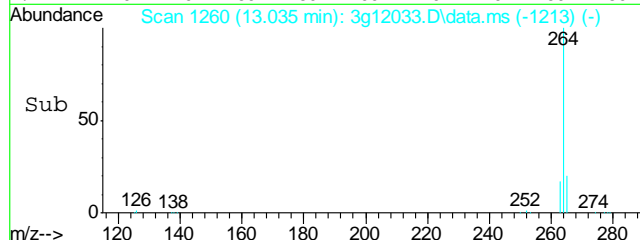
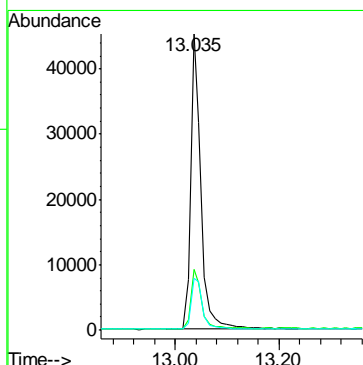
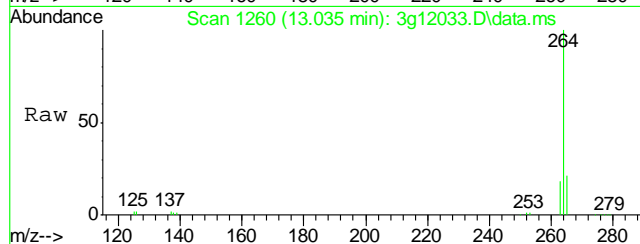
#23
Chrysene
Concen: Below ug/mL
RT: 11.623 min Scan# 1076
Delta R.T. -0.040 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

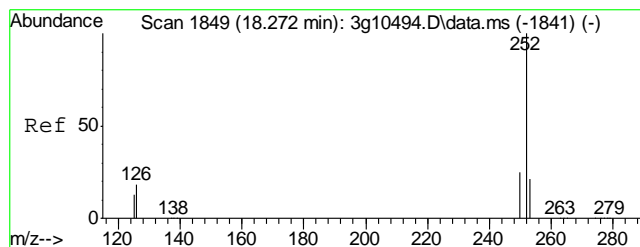
Tgt Ion	Ratio	Lower	Upper
228	100		
226	32.0	8.9	48.9
229	31.1	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.035 min Scan# 1260
Delta R.T. -0.010 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

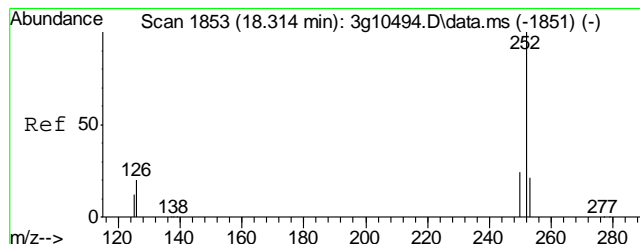
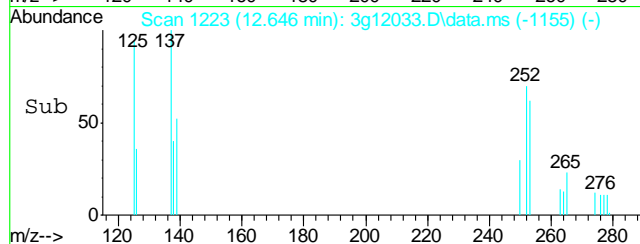
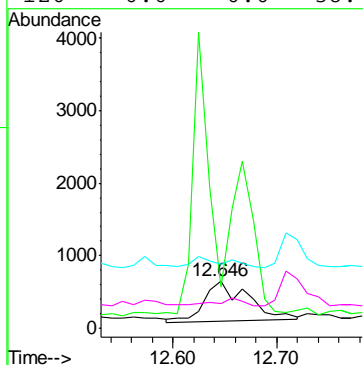
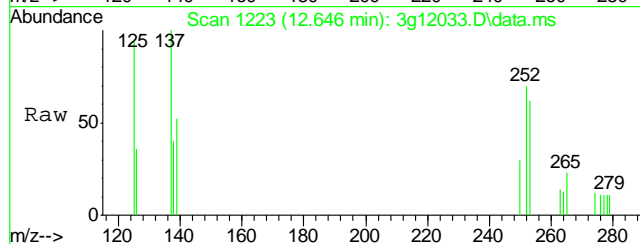
Tgt Ion	Ratio	Lower	Upper
264	100		
265	20.9	1.5	41.5
263	19.8	0.0	39.4





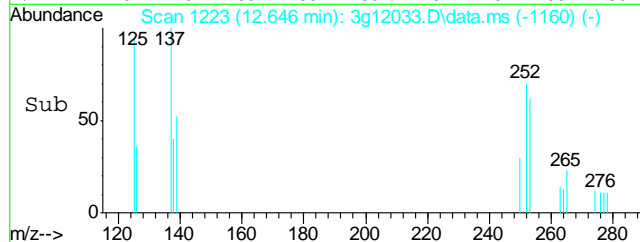
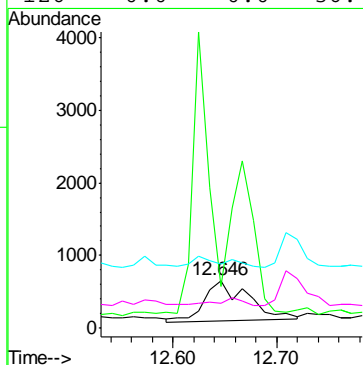
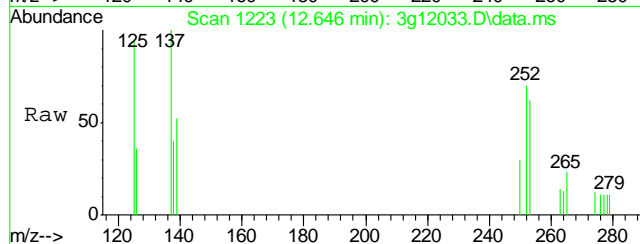
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. 0.001 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

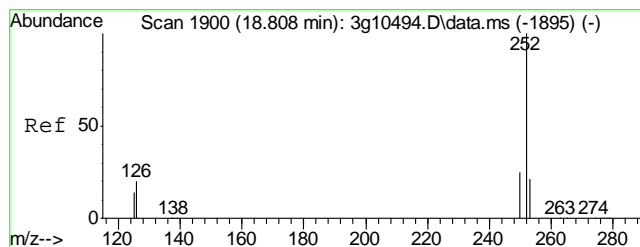
Tgt Ion	Ratio	Lower	Upper
252	100		
253	269.9	26.7	66.7#
125	0.0	0.0	33.5
126	0.0	0.0	38.7



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. -0.032 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

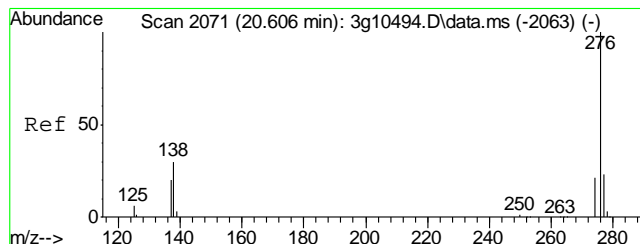
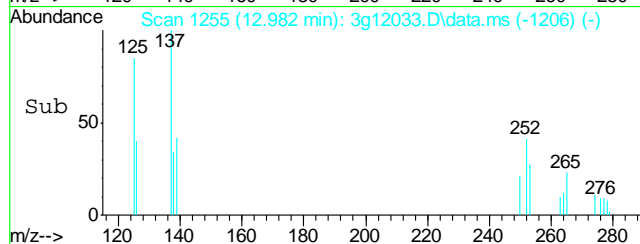
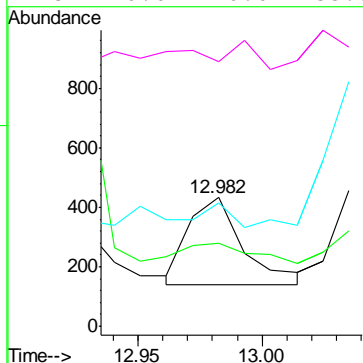
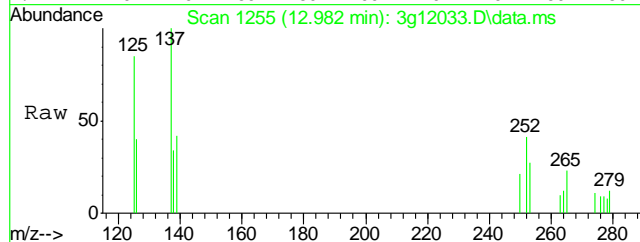
Tgt Ion	Ratio	Lower	Upper
252	100		
253	269.9	20.8	60.8#
125	0.0	0.0	31.8
126	0.0	0.0	36.4





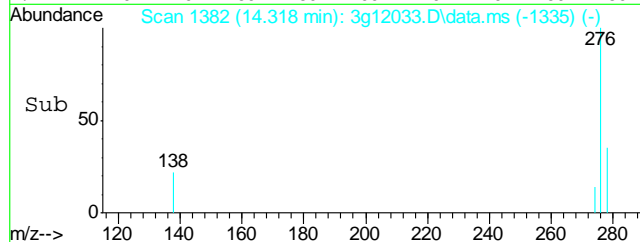
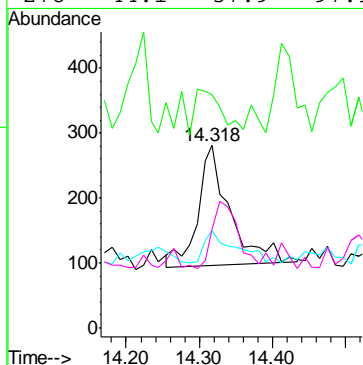
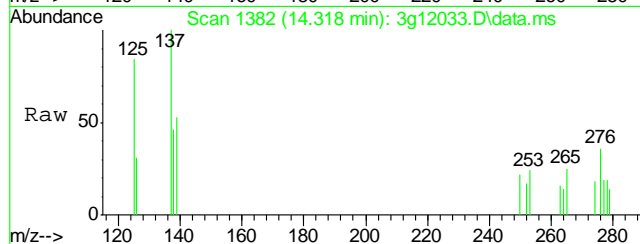
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.982 min Scan# 1255
Delta R.T. 0.000 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

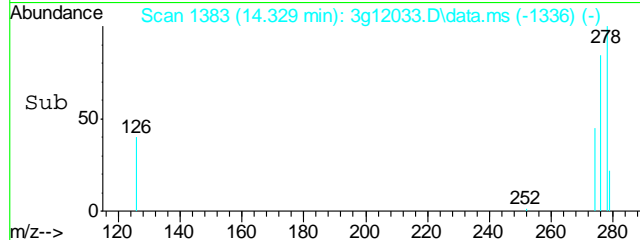
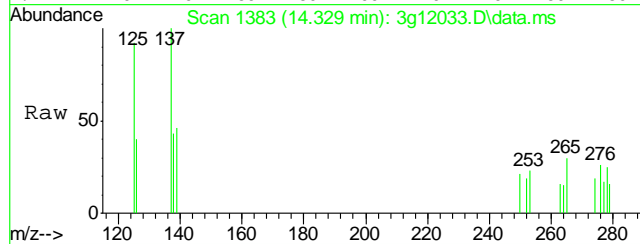
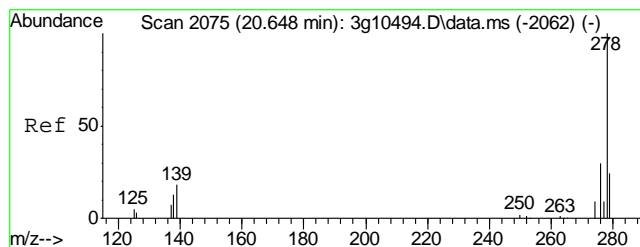
Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	1.8	41.8#
126	0.0	0.0	38.6
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.318 min Scan# 1382
Delta R.T. -0.010 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

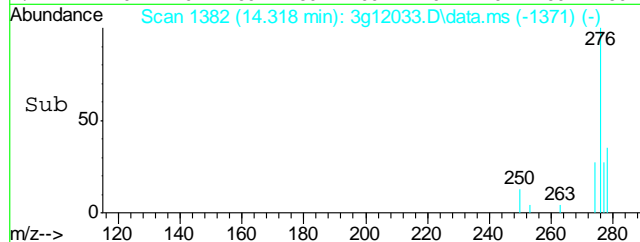
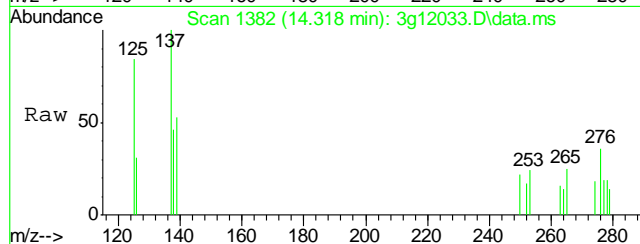
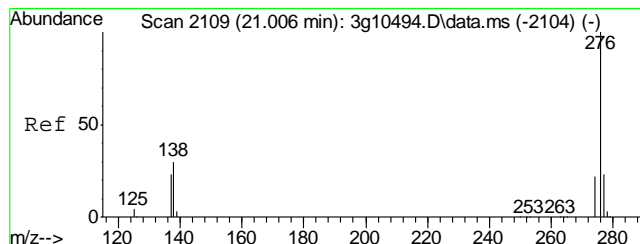
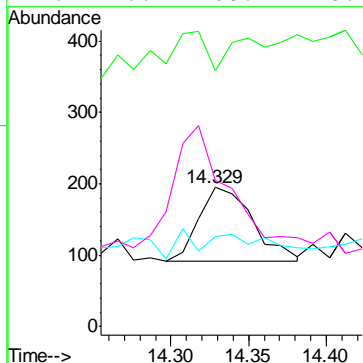
Tgt Ion	Ratio	Lower	Upper
276	100		
138	32.9	16.6	56.6
277	27.9	4.7	44.7
278	44.1	57.9	97.9#





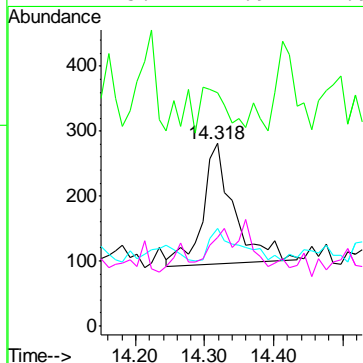
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.329 min Scan# 1383
Delta R.T. -0.010 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

Tgt Ion	Ratio	Lower	Upper
278	100		
139	63.2	7.8	47.8#
279	55.1	2.3	42.3#
276	226.7	108.4	148.4#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.318 min Scan# 1382
Delta R.T. -0.389 min
Lab File: 3g12033.D
Acq: 12 Nov 12 7:00 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	31.4	11.5	51.5
277	25.4	2.9	42.9
274	15.2	1.9	41.9



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\111212\
 Data File : 3g12026.D
 Acq On : 12 Nov 2012 4:00 pm
 Operator : DONC
 Sample : OP6947-MB
 Misc : OP6947,E3G568,30.00,,,1,1
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 12 16:40:27 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G568.M
 Quant Title : PAHSIM BASE
 QLast Update : Mon Nov 12 15:44:05 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.789	136	144918	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.507	164	90962	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.995	188	157997	4.0000	ug/mL	0.00
19) Chrysene-d12	11.636	240	113918	4.0000	ug/mL	0.00
24) Perylene-d12	13.046	264	63583	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	5.103	82	608123	42.1273	ug/mL	0.00
Spiked Amount 50.000	Range	25 - 135	Recovery	=	84.26%	
7) 2-Fluorobiphenyl	6.846	172	1730035	40.1979	ug/mL	0.00
Spiked Amount 50.000	Range	25 - 135	Recovery	=	80.40%	
21) Terphenyl-d14	10.586	244	741133	46.8578	ug/mL	0.00
Spiked Amount 50.000	Range	25 - 135	Recovery	=	93.72%	

Target Compounds

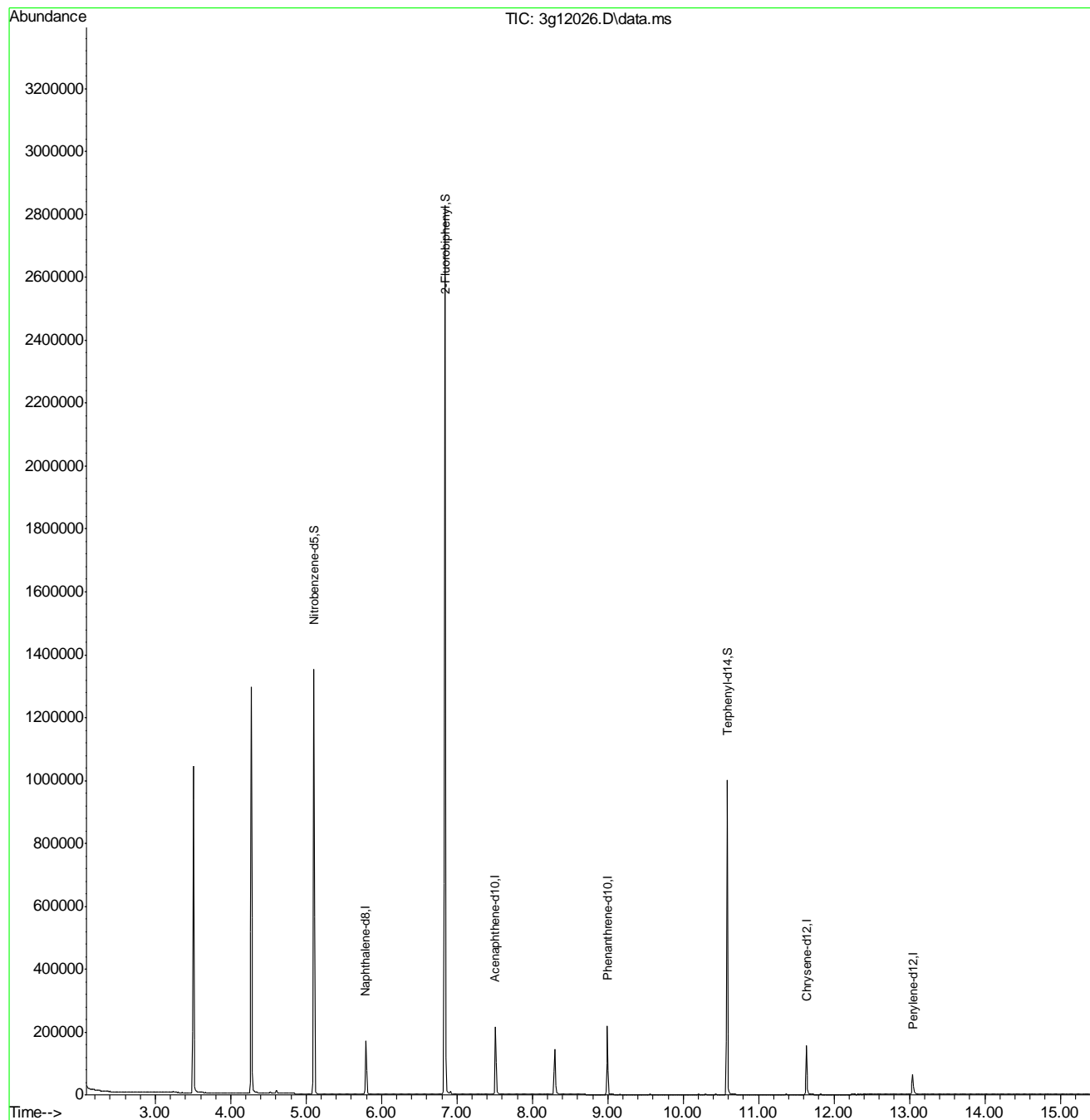
					Qvalue
3) N-Nitrosodimethylamine	2.501	74	25	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.814	128	847	N.D.	
8) 2-Methylnaphthalene	6.487	142	836	N.D.	
9) 1-Methylnaphthalene	6.487	142	807	N.D.	
10) Acenaphthylene	7.377	152	1014	N.D.	
11) Acenaphthene	7.507	154	537	Below	Cal # 89
12) Dibenzofuran	7.720	168	739	N.D.	
13) Fluorene	8.063	166	526	N.D.	
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	9.067	178	476	N.D.	
17) Anthracene	9.067	178	476	N.D.	
18) Fluoranthene	10.206	202	568	N.D.	
20) Pyrene	10.436	202	566	N.D.	
22) Benzo(a)anthracene	11.630	228	1000	N.D.	
23) Chrysene	11.630	228	1000	N.D.	
25) Benzo(b)fluoranthene	12.646	252	794	N.D.	
26) Benzo(k)fluoranthene	12.646	252	794	N.D.	
27) Benzo(a)pyrene	12.646	252	794	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.339	276	501	N.D.	
29) Dibenz(a,h)anthracene	14.339	278	252	N.D.	
30) Benzo(g,h,i)perylene	14.697	276	361	N.D.	

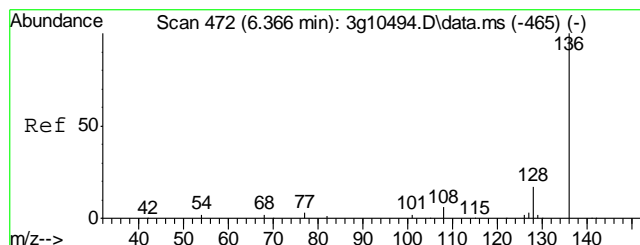
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\111212\
Data File : 3g12026.D
Acq On : 12 Nov 2012 4:00 pm
Operator : DONC
Sample : OP6947-MB
Misc : OP6947,E3G568,30.00,,,1,1
ALS Vial : 12 Sample Multiplier: 1

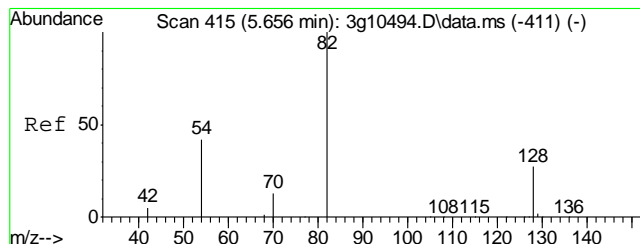
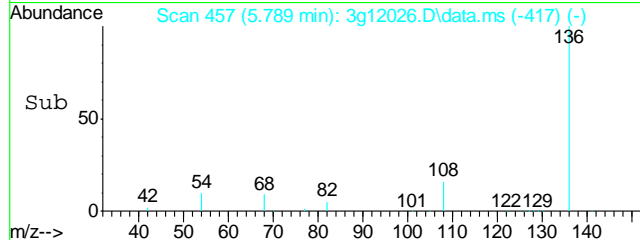
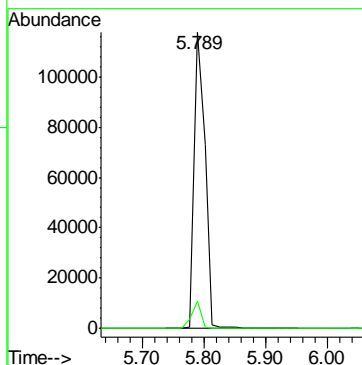
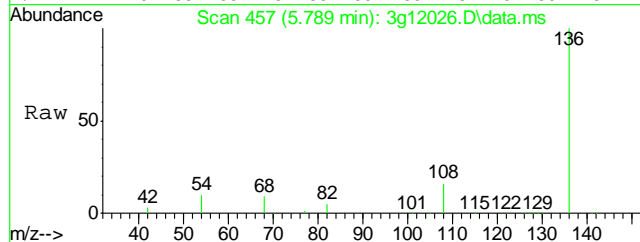
Quant Time: Nov 12 16:40:27 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G568.M
Quant Title : PAHSIM BASE
QLast Update : Mon Nov 12 15:44:05 2012
Response via : Initial Calibration





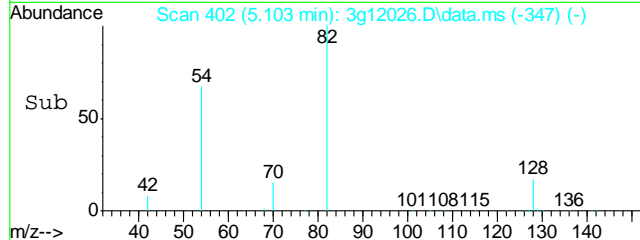
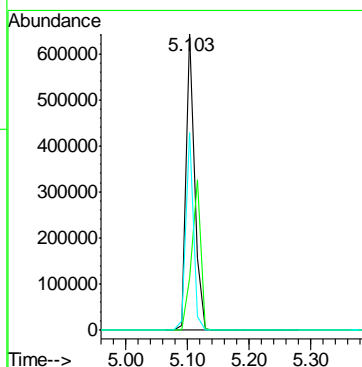
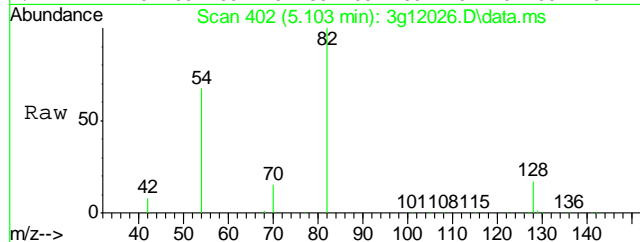
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.789 min Scan# 457
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

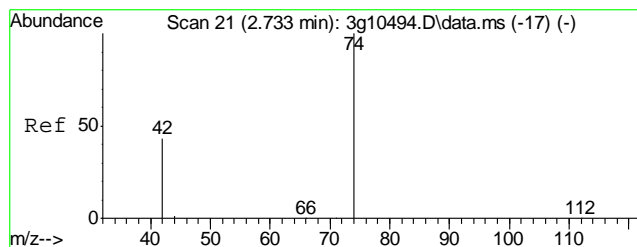
Tgt Ion: 136 Resp: 144918
Ion Ratio Lower Upper
136 100
68 7.6 0.0 27.8



#2
Nitrobenzene-d5
Concen: 42.1273 ug/mL
RT: 5.103 min Scan# 402
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

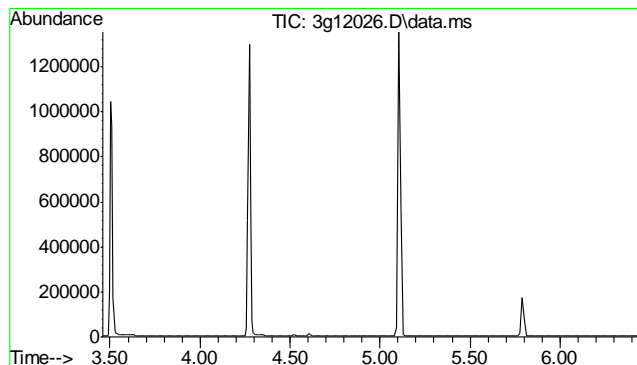
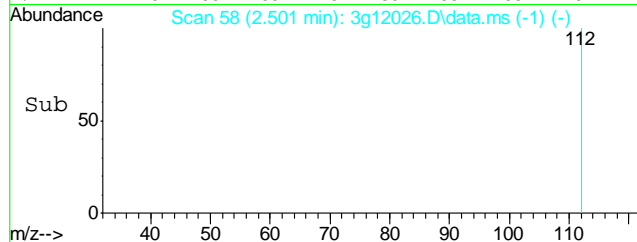
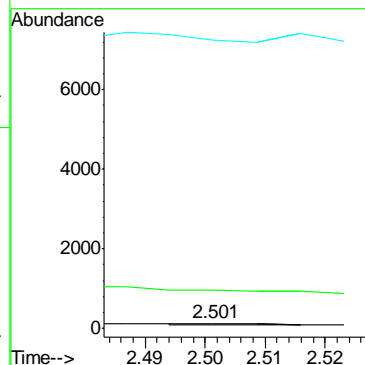
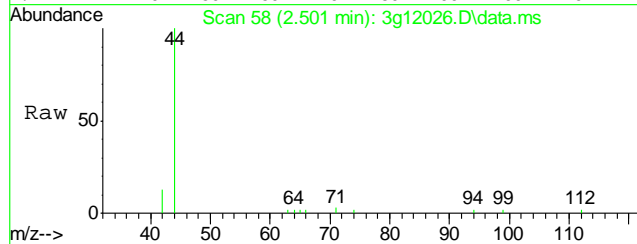
Tgt Ion: 82 Resp: 608123
Ion Ratio Lower Upper
82 100
128 54.5 30.7 70.7
54 58.8 36.8 76.8





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.501 min Scan# 58
Delta R.T. 0.015 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

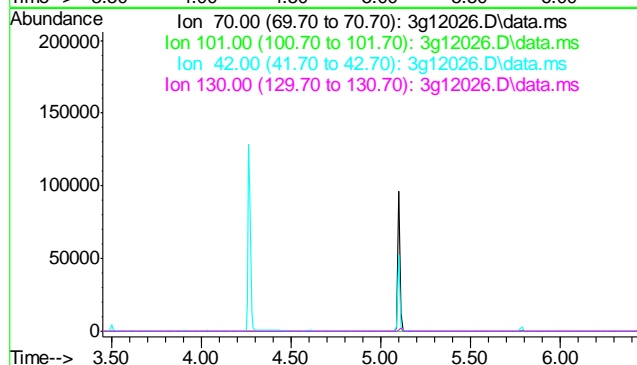
Tgt Ion: 74 Resp: 25
Ion Ratio Lower Upper
74 100
42 0.0 53.9 93.9#
44 0.0 0.0 24.2

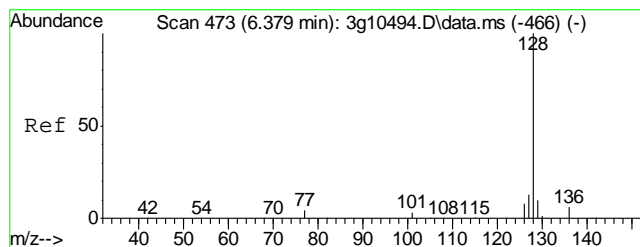


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.95 min

Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

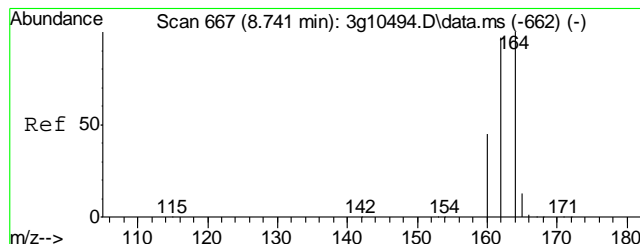
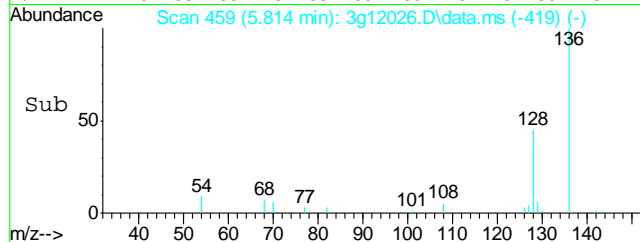
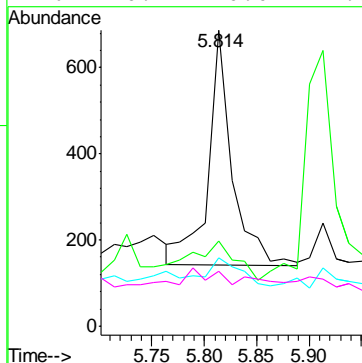
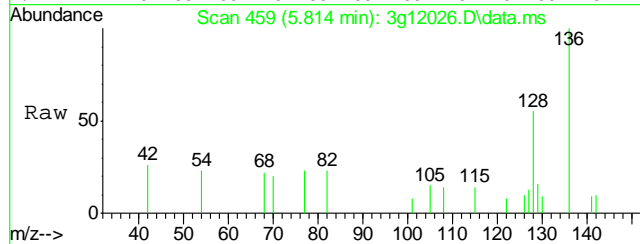
Tgt Ion: 70
Sig Exp Ratio
70 100
101 13.9
42 52.4
130 27.1





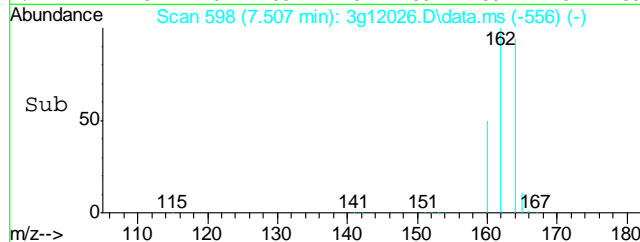
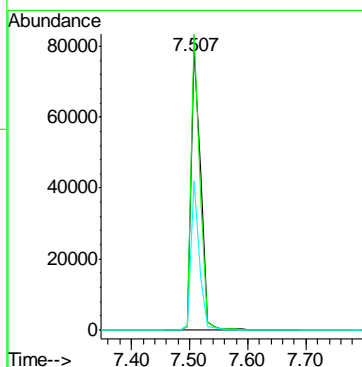
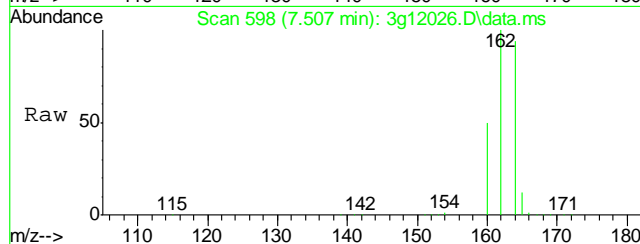
#5
Naphthalene
Concen: Below ug/mL
RT: 5.814 min Scan# 459
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

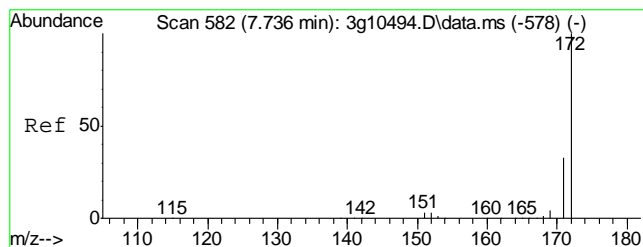
Tgt Ion:	128	Resp:	847
Ion Ratio	Lower	Upper	
128	100		
129	33.8	0.0	31.0#
127	17.2	0.0	32.8
126	10.4	0.0	27.5



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.507 min Scan# 598
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

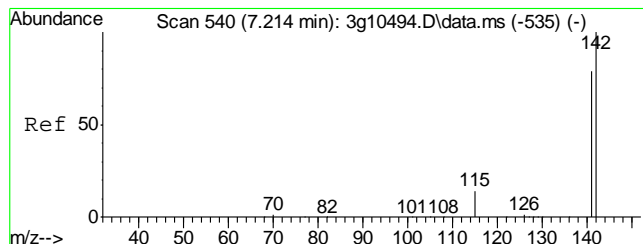
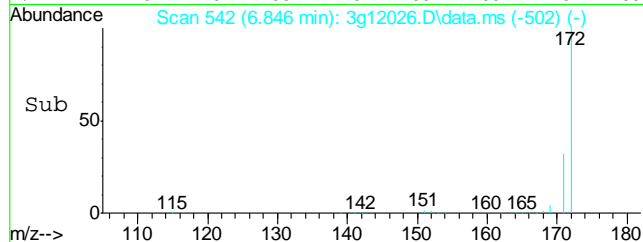
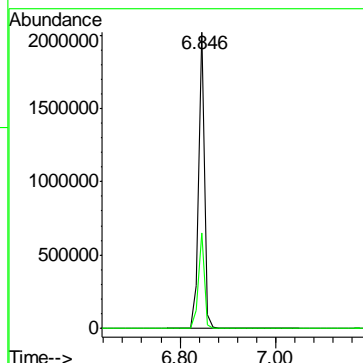
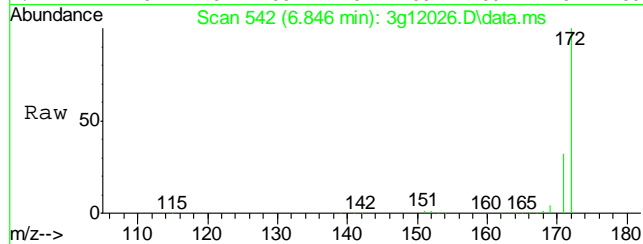
Tgt Ion:	164	Resp:	90962
Ion Ratio	Lower	Upper	
164	100		
162	97.9	78.1	118.1
160	46.1	28.0	68.0





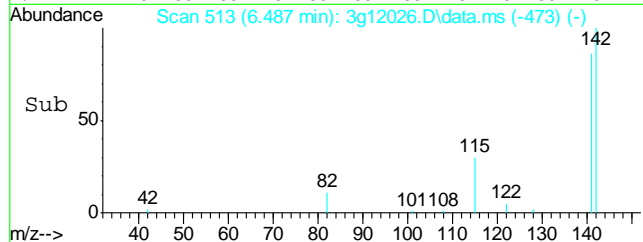
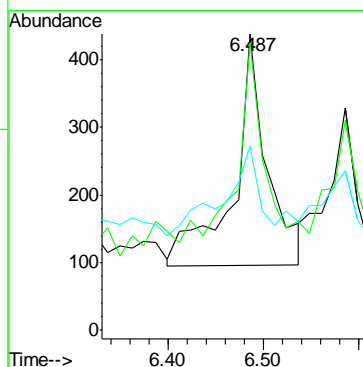
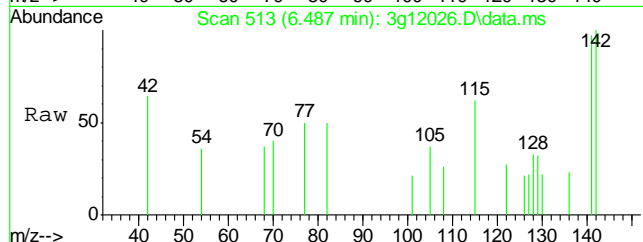
#7
2-Fluorobiphenyl
Concen: 40.1979 ug/mL
RT: 6.846 min Scan# 542
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

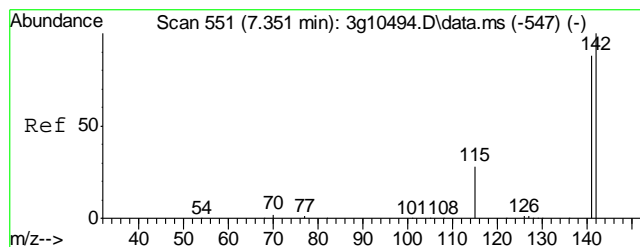
Tgt Ion:172 Resp: 1730035
Ion Ratio Lower Upper
172 100
171 33.2 12.6 52.6



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.487 min Scan# 513
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

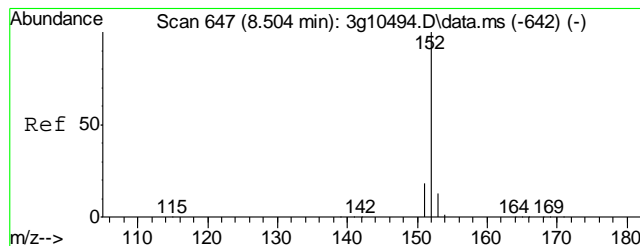
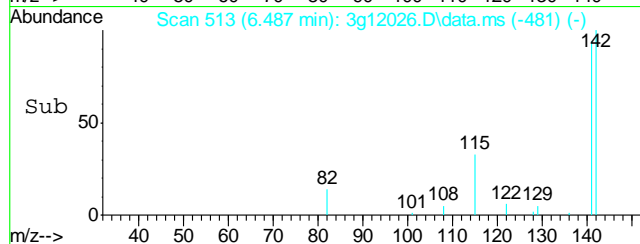
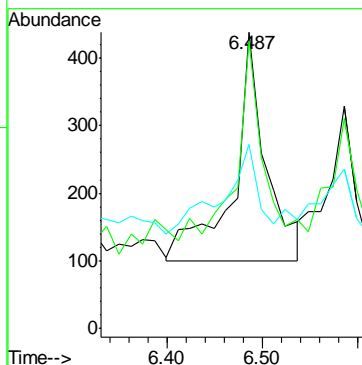
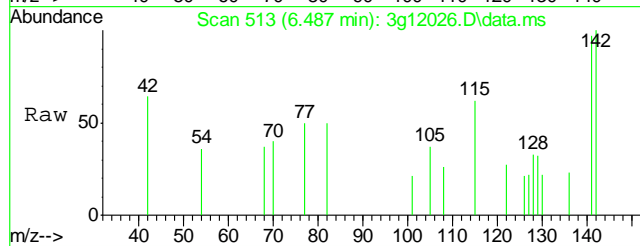
Tgt Ion:142 Resp: 836
Ion Ratio Lower Upper
142 100
141 81.6 64.0 104.0
115 41.1 7.1 47.1





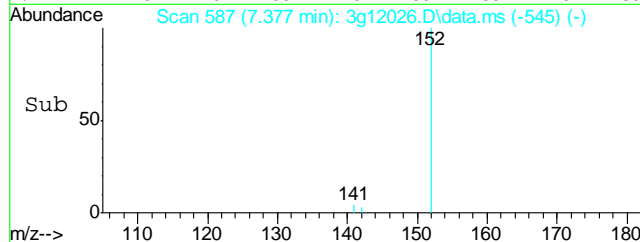
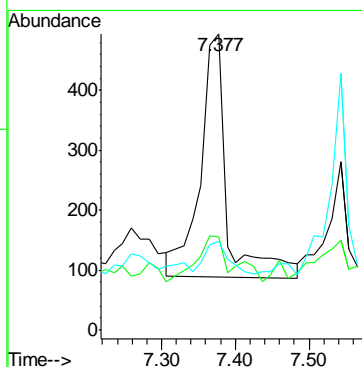
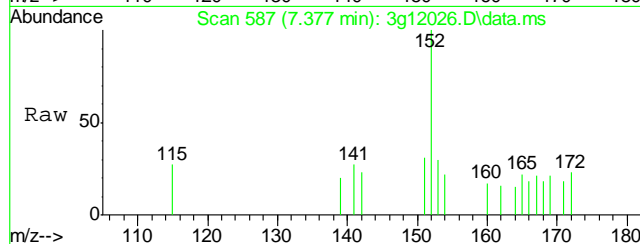
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.487 min Scan# 513
Delta R.T. -0.100 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

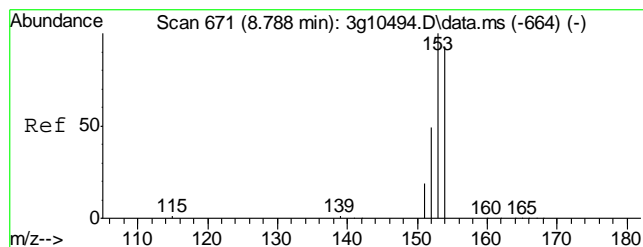
Tgt Ion:142	Resp:	807
Ion Ratio	Lower	Upper
142	100	
141	83.0	65.4 105.4
115	42.6	9.7 49.7



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.377 min Scan# 587
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

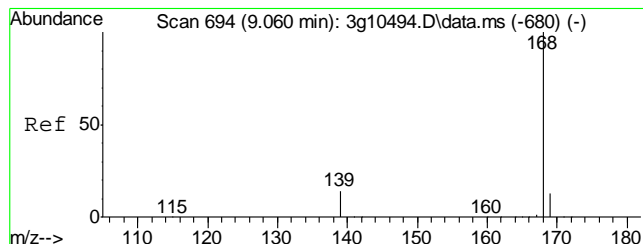
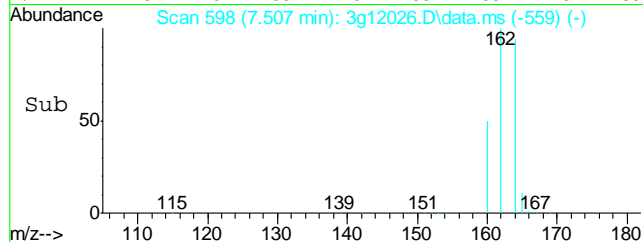
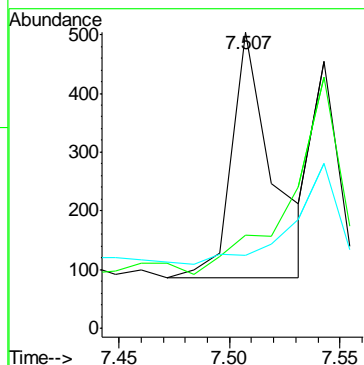
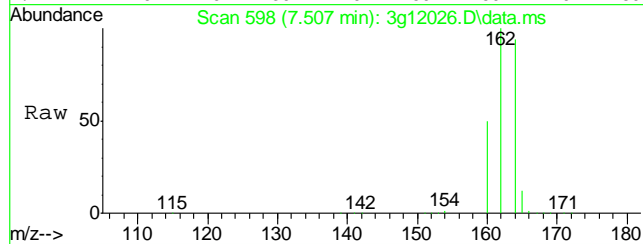
Tgt Ion:152	Resp:	1014
Ion Ratio	Lower	Upper
152	100	
151	22.3	0.0 39.3
153	11.7	0.0 32.8





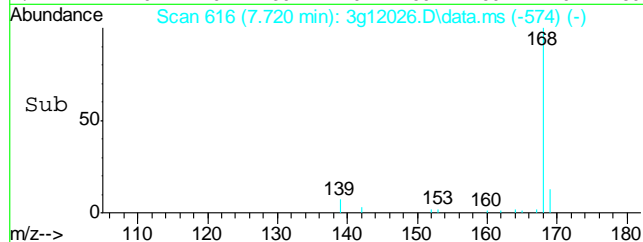
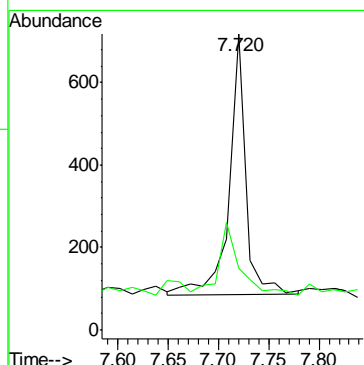
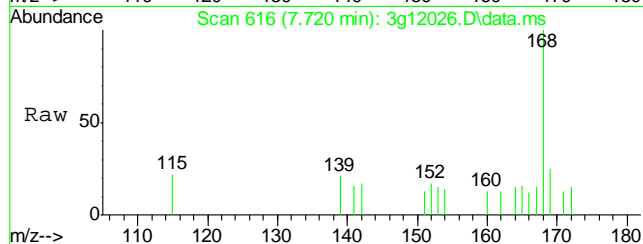
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.507 min Scan# 598
Delta R.T. -0.035 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

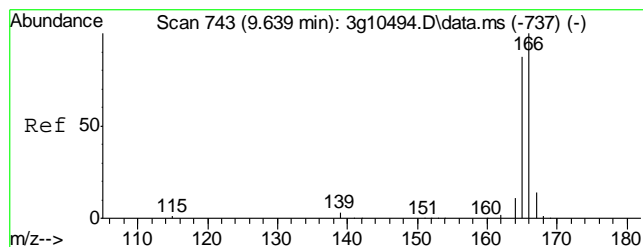
Tgt Ion:154	Resp:	537
Ion Ratio	Lower	Upper
154	100	
153	104.8	84.1 124.1
152	71.7	30.2 70.2#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.720 min Scan# 616
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

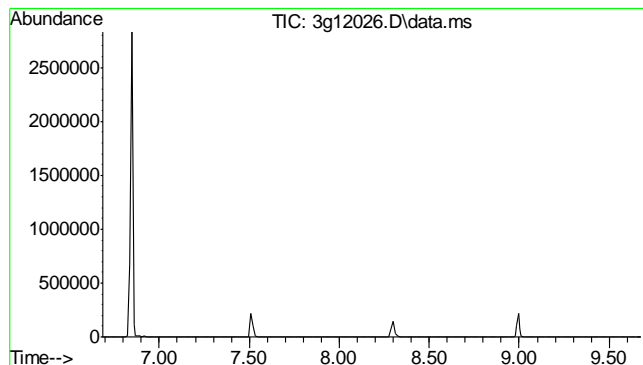
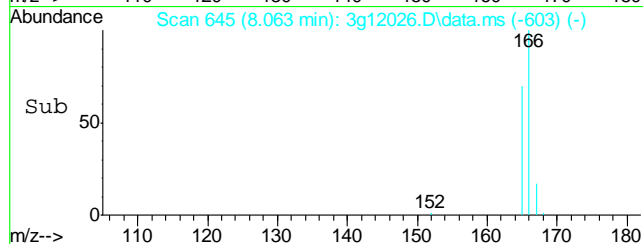
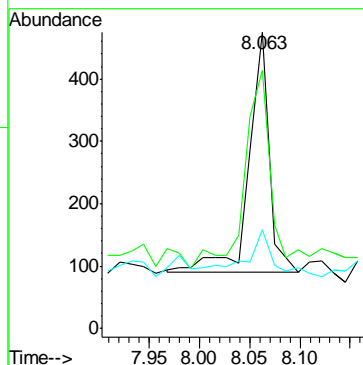
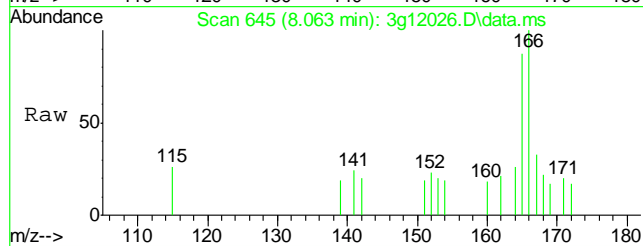
Tgt Ion:168	Resp:	739
Ion Ratio	Lower	Upper
168	100	
139	36.1	10.9 50.9





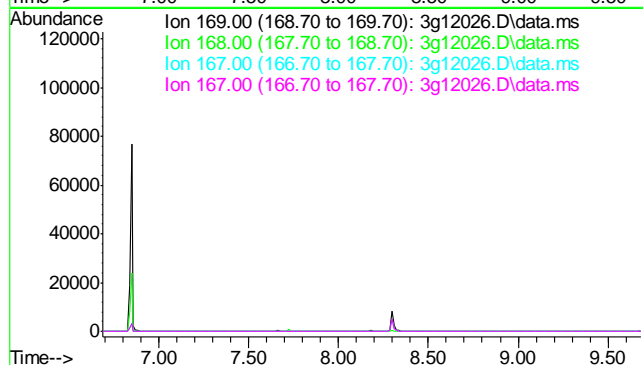
#13
Fluorene
Concen: Below ug/mL
RT: 8.063 min Scan# 645
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

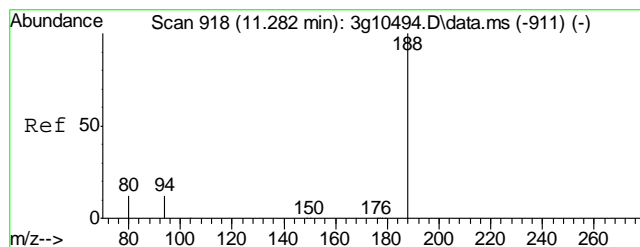
Tgt Ion:	166	Resp:	526
Ion Ratio	Lower	Upper	
166	100		
165	111.4	69.6	109.6#
167	0.0	0.0	33.5



#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.18 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

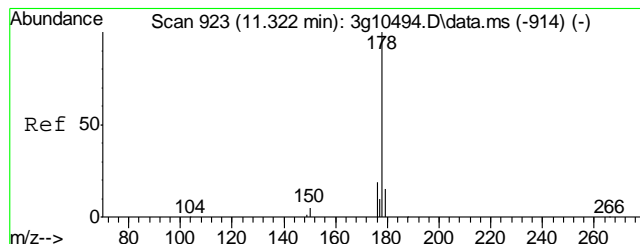
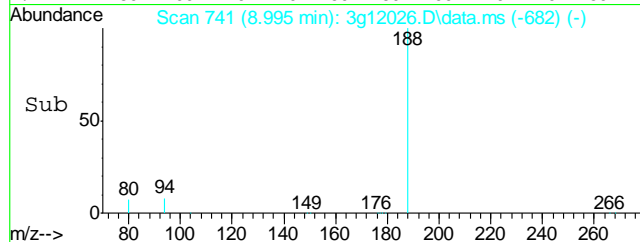
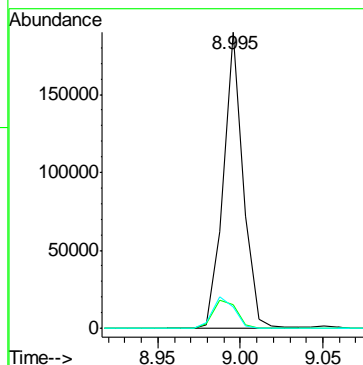
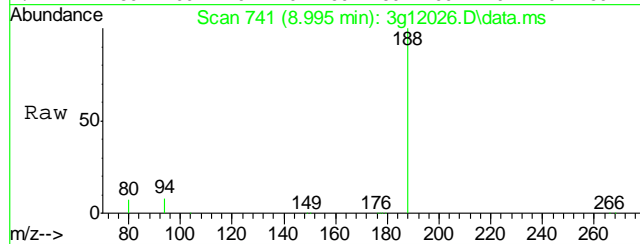
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	60.9
167	33.6
167	33.6





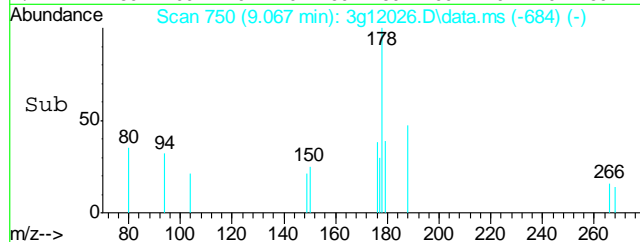
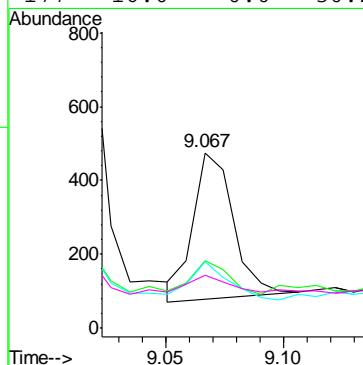
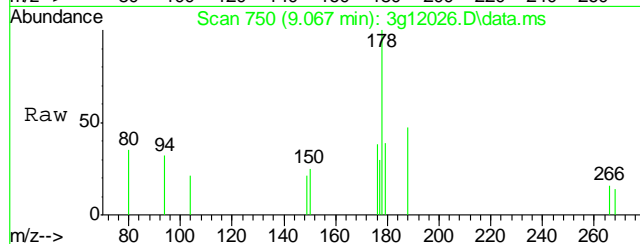
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.995 min Scan# 741
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

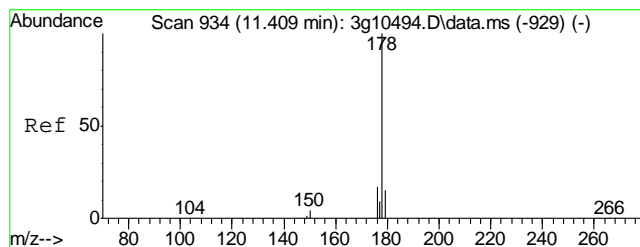
Tgt Ion	Ratio	Lower	Upper
188	100		
94	11.5	0.0	31.6
80	11.5	0.0	32.0



#16
Phenanthrene
Concen: Below ug/mL
RT: 9.067 min Scan# 750
Delta R.T. 0.047 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

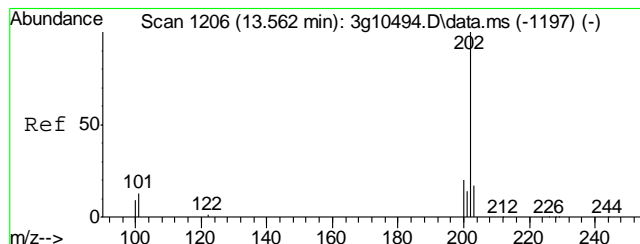
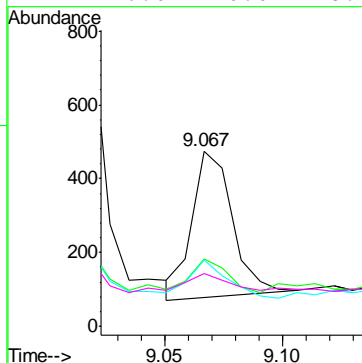
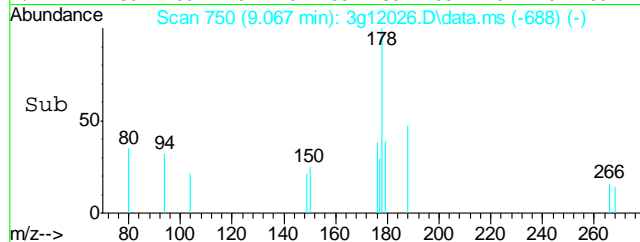
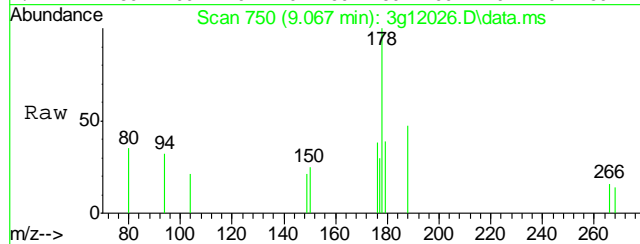
Tgt Ion	Ratio	Lower	Upper
178	100		
179	25.8	0.0	35.2
176	29.8	0.0	38.7
177	16.0	0.0	30.2





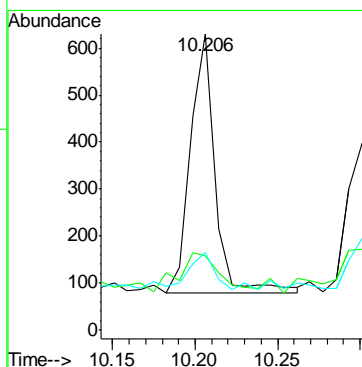
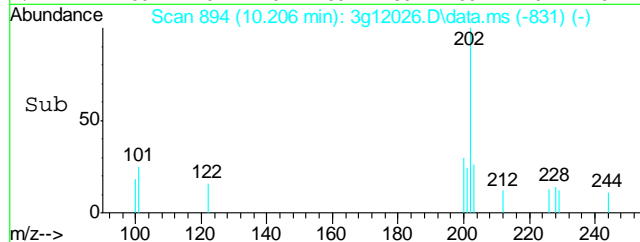
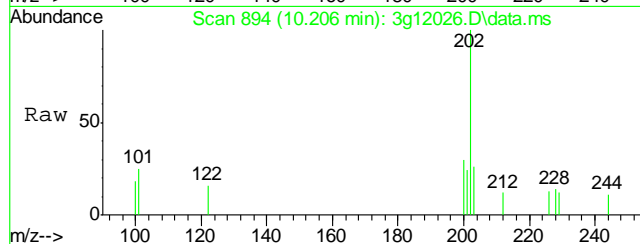
#17
Anthracene
Concen: Below ug/mL
RT: 9.067 min Scan# 750
Delta R.T. -0.007 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

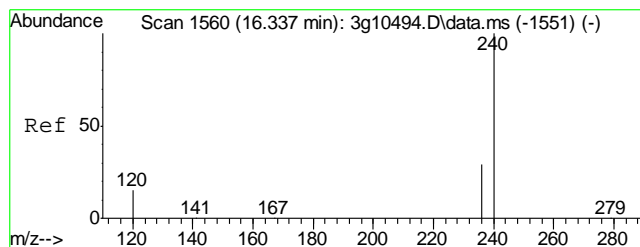
Tgt Ion: 178	Resp: 476
Ion Ratio	Lower Upper
178 100	
179 25.8	0.0 35.3
176 29.8	0.0 38.0
177 16.0	0.0 28.7



#18
Fluoranthene
Concen: Below ug/mL
RT: 10.206 min Scan# 894
Delta R.T. 0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

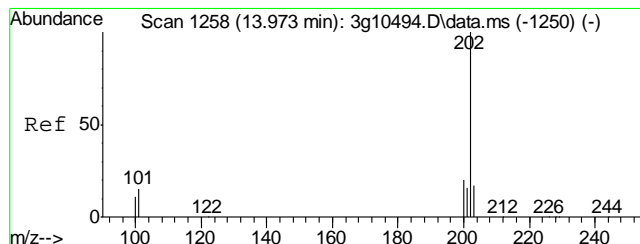
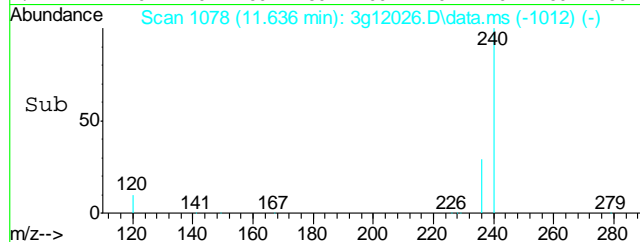
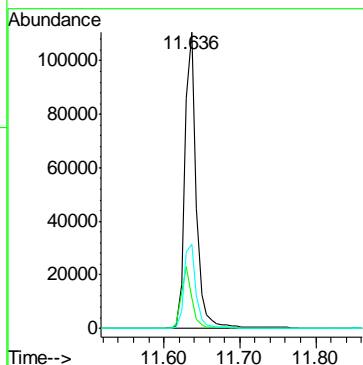
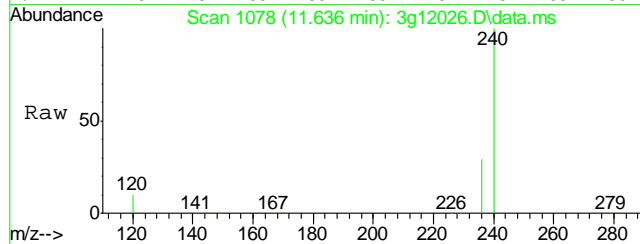
Tgt Ion: 202	Resp: 568
Ion Ratio	Lower Upper
202 100	
101 24.5	0.0 31.8
203 14.6	0.0 37.3





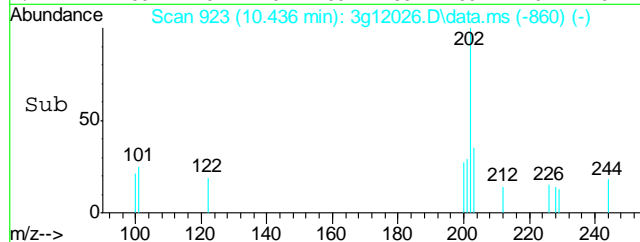
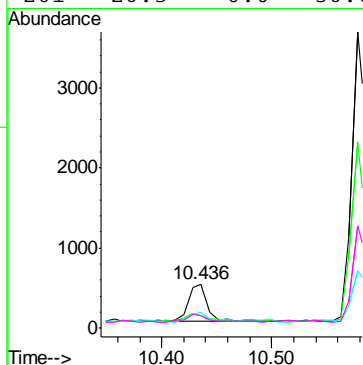
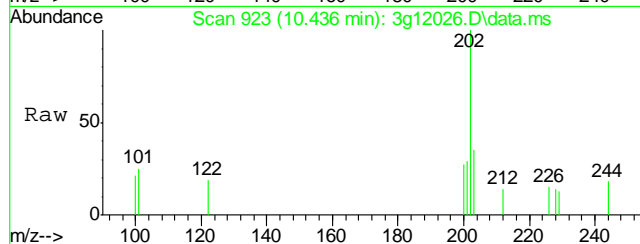
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.636 min Scan# 1078
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

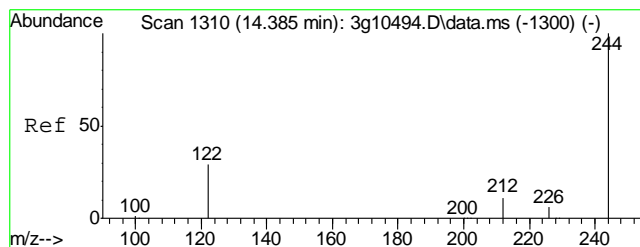
Tgt Ion:	240	Resp:	113918
Ion Ratio	Lower	Upper	
240	100		
120	19.3	0.0	38.3
236	30.2	10.7	50.7



#20
Pyrene
Concen: Below ug/mL
RT: 10.436 min Scan# 923
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

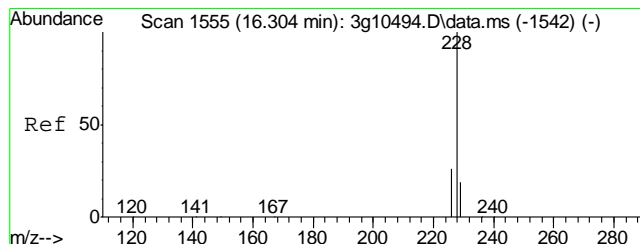
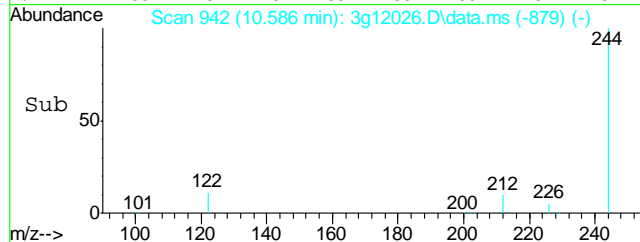
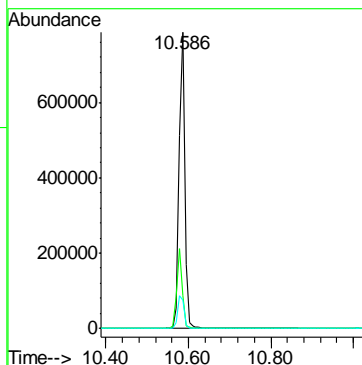
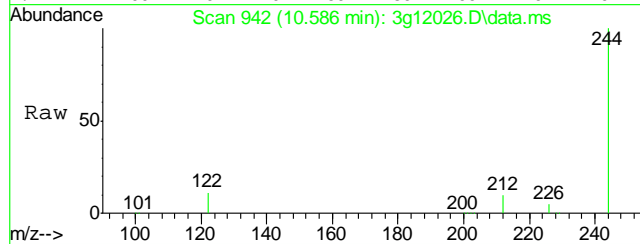
Tgt Ion:	202	Resp:	566
Ion Ratio	Lower	Upper	
202	100		
200	22.8	0.3	40.3
203	28.6	0.0	37.8
201	26.3	0.0	36.6





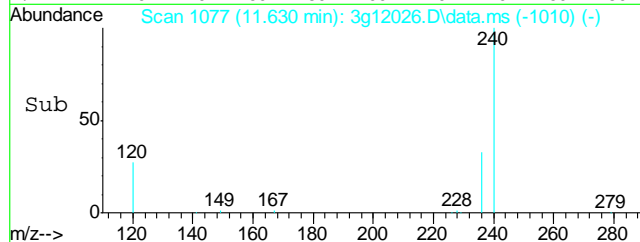
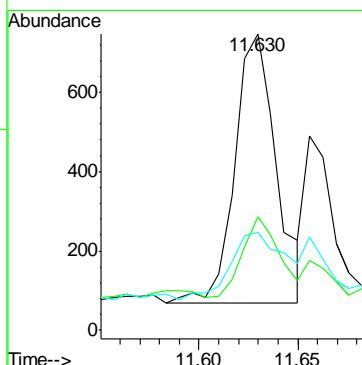
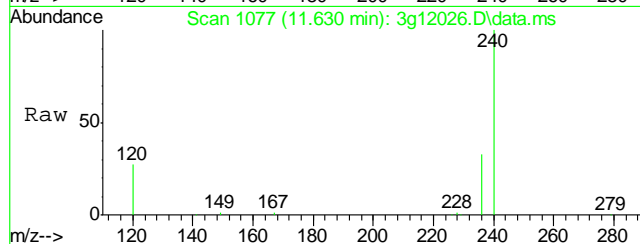
#21
Terphenyl-d14
Concen: 46.8578 ug/mL
RT: 10.586 min Scan# 942
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

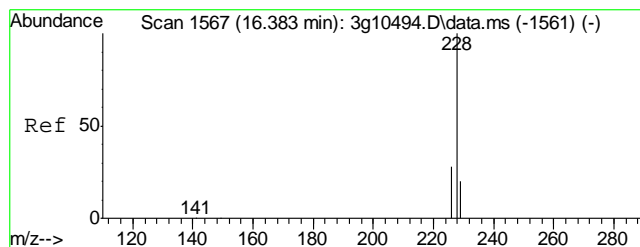
Tgt Ion:	244	Resp:	741133
Ion Ratio	Lower	Upper	
244	100		
122	25.5	4.9	44.9
212	12.2	0.0	32.5



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. 0.007 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

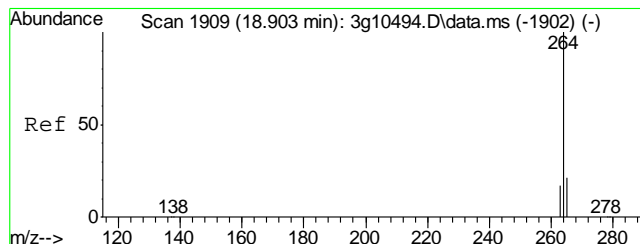
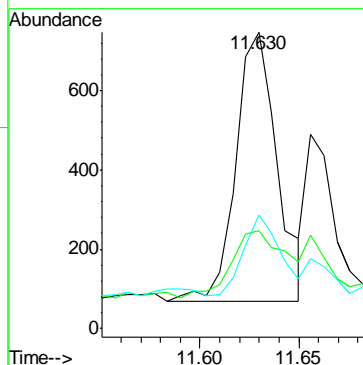
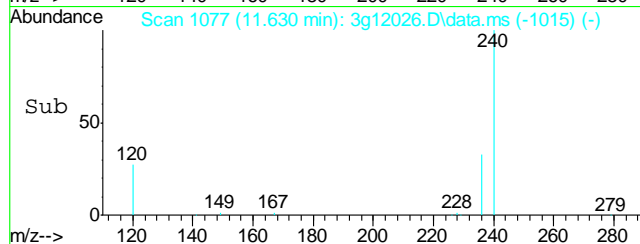
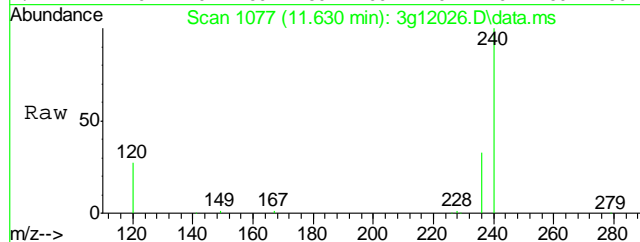
Tgt Ion:	228	Resp:	1000
Ion Ratio	Lower	Upper	
228	100		
229	26.6	0.0	39.5
226	32.6	6.8	46.8





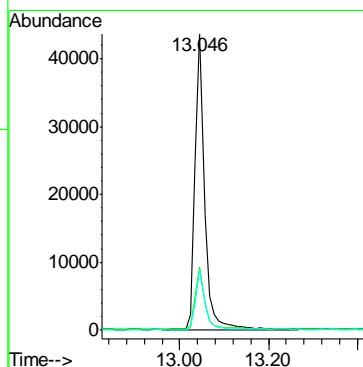
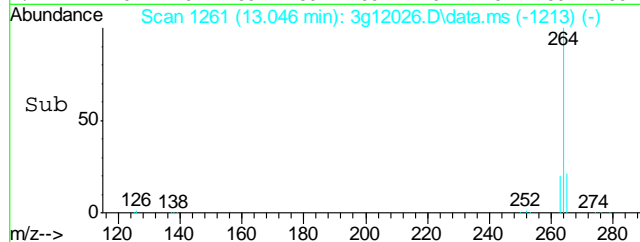
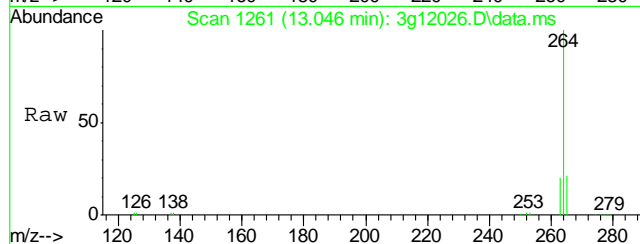
#23
Chrysene
Concen: Below ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. -0.033 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

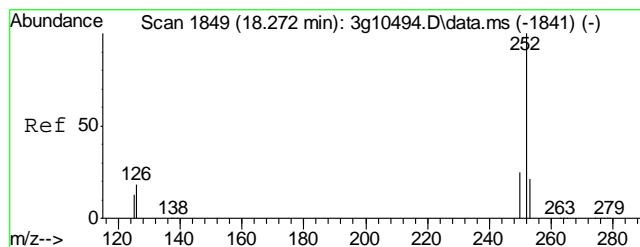
Tgt Ion: 228	Resp: 1000
Ion Ratio	Lower Upper
228	100
226	32.6 8.9 48.9
229	26.6 0.0 39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.046 min Scan# 1261
Delta R.T. -0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

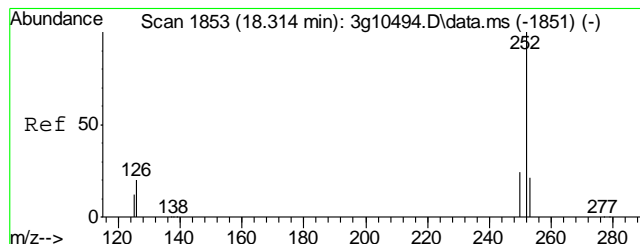
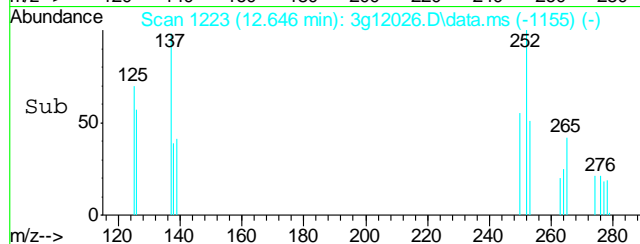
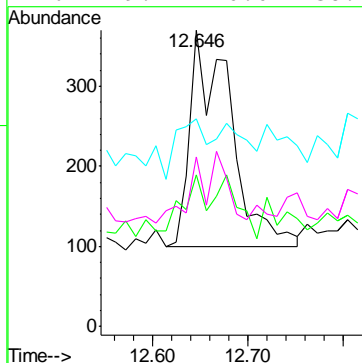
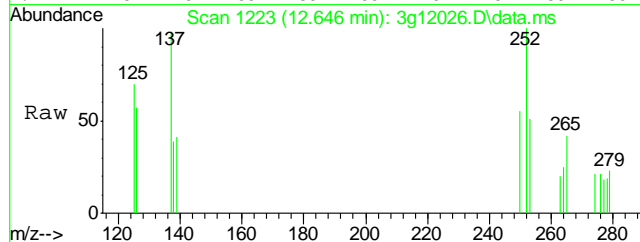
Tgt Ion: 264	Resp: 63583
Ion Ratio	Lower Upper
264	100
265	20.5 1.5 41.5
263	20.0 0.0 39.4





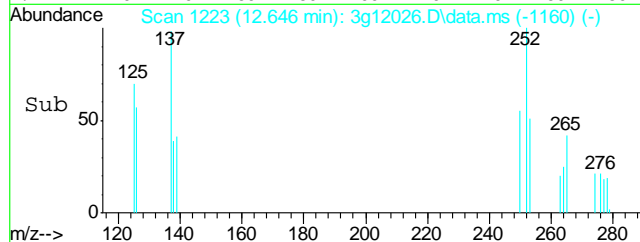
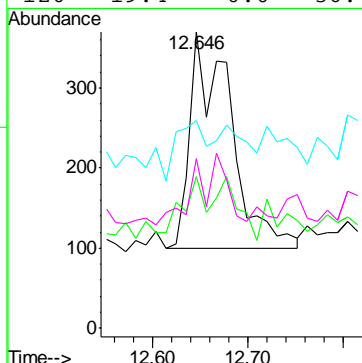
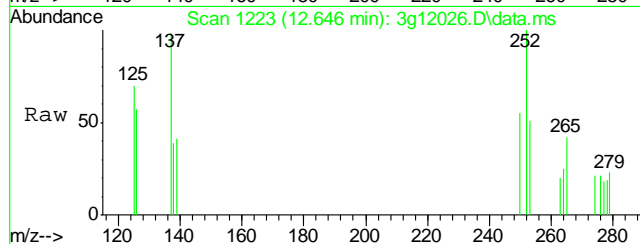
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. 0.001 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

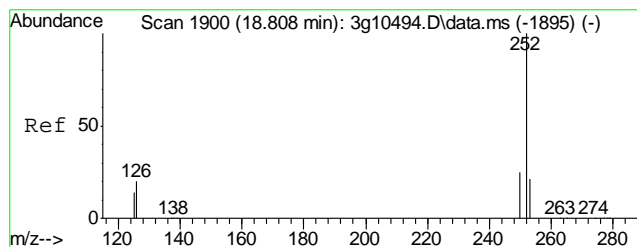
Tgt Ion	252	Resp	794
Ion Ratio	100		
253	12.6	26.7	66.7#
125	21.7	0.0	33.5
126	19.4	0.0	38.7



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. -0.032 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

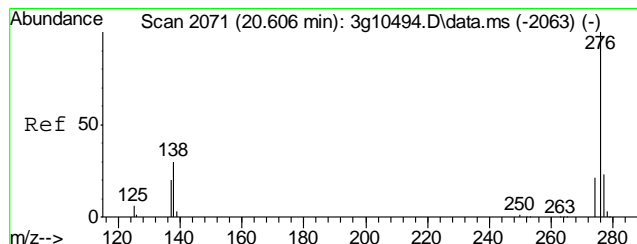
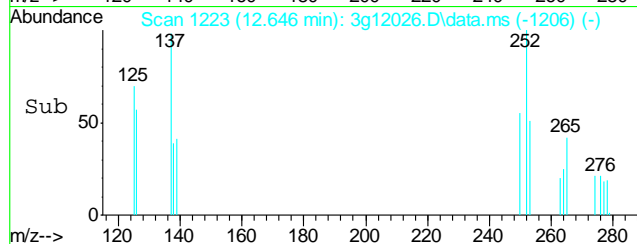
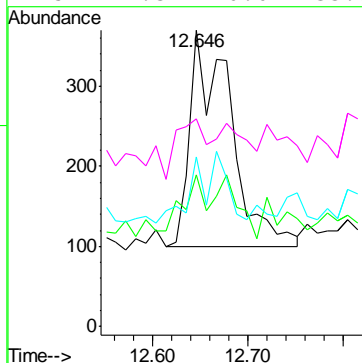
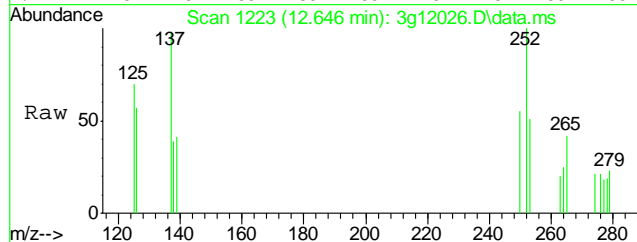
Tgt Ion	252	Resp	794
Ion Ratio	100		
253	12.6	20.8	60.8#
125	21.7	0.0	31.8
126	19.4	0.0	36.4





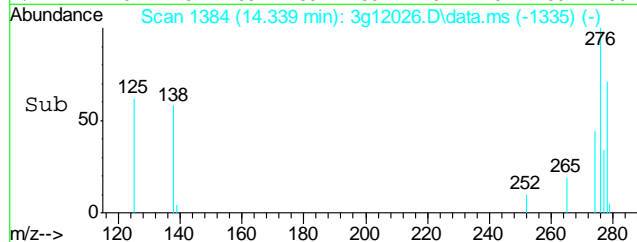
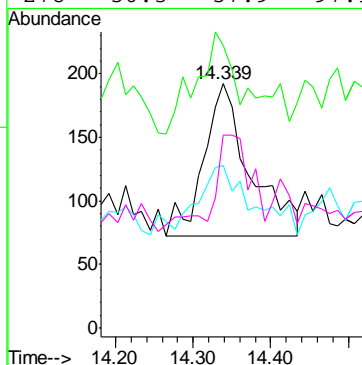
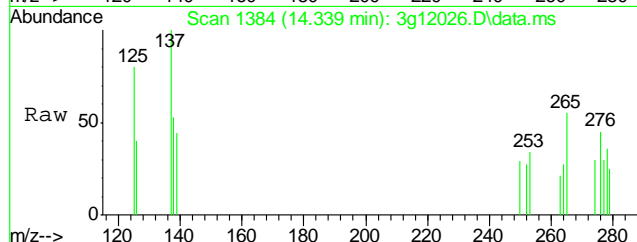
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. -0.336 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

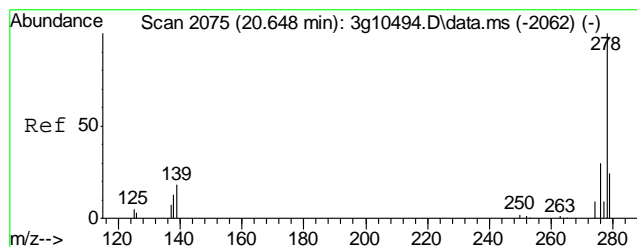
Tgt Ion	Ratio	Lower	Upper
252	100		
253	12.6	1.8	41.8
126	19.4	0.0	38.6
125	22.3	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.339 min Scan# 1384
Delta R.T. 0.011 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

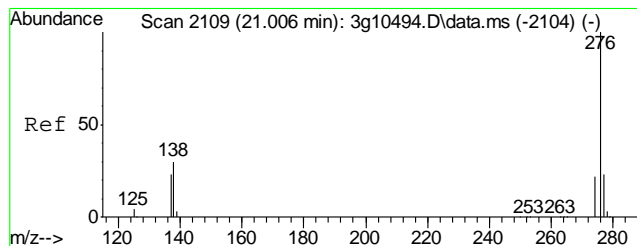
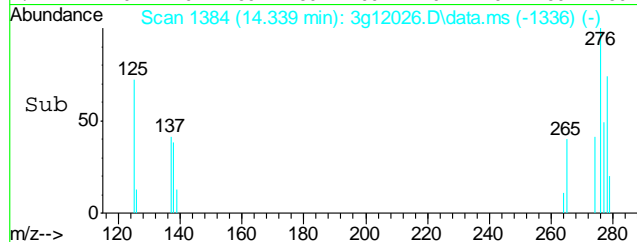
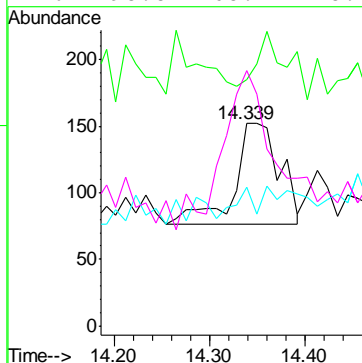
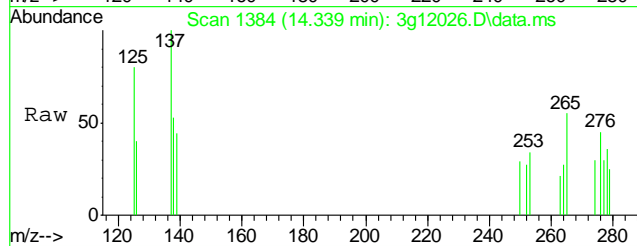
Tgt Ion	Ratio	Lower	Upper
276	100		
138	58.9	16.6	56.6#
277	56.3	4.7	44.7#
278	50.3	57.9	97.9#





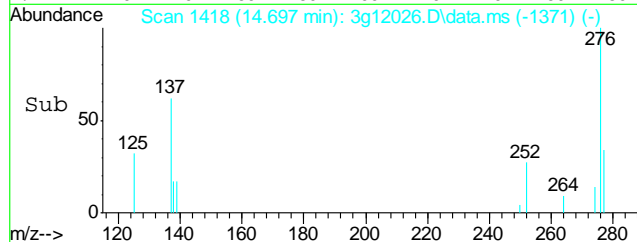
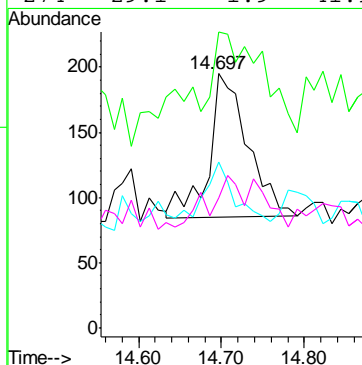
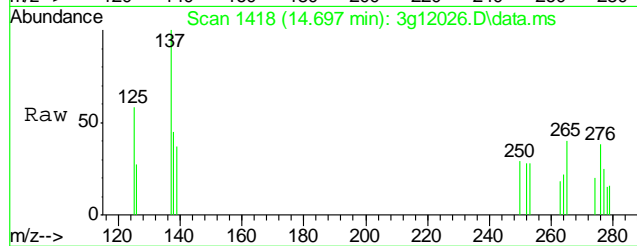
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.339 min Scan# 1384
Delta R.T. 0.000 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

Tgt Ion: 278 Resp: 252
Ion Ratio Lower Upper
278 100
139 0.0 7.8 47.8#
279 11.1 2.3 42.3
276 198.8 108.4 148.4#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.697 min Scan# 1418
Delta R.T. -0.010 min
Lab File: 3g12026.D
Acq: 12 Nov 12 4:00 pm

Tgt Ion: 276 Resp: 361
Ion Ratio Lower Upper
276 100
138 94.2 11.5 51.5#
277 41.6 2.9 42.9
274 29.1 1.9 41.9



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: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1006-MB	GB18409.D	1	11/12/12	SK	n/a	n/a	GGB1006

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

D40798-1

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	91% 60-140%

10.1.1
10

Blank Spike Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1006-BS	GB18410.D	1	11/12/12	SK	n/a	n/a	GGB1006

The QC reported here applies to the following samples:

Method: SW846 8015B

D40798-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	120	109	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	107%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D40795-1MS	GB18412.D	1	11/12/12	SK	n/a	n/a	GGB1006
D40795-1MSD	GB18413.D	1	11/12/12	SK	n/a	n/a	GGB1006
D40795-1	GB18411.D	1	11/12/12	SK	n/a	n/a	GGB1006

The QC reported here applies to the following samples:

Method: SW846 8015B

D40798-1

CAS No.	Compound	D40795-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		149	166	112	164	110	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D40795-1	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	109%	96%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\111212\GB18417.D\FID1A.CH Vial: 11
 Signal #2 : Y:\1\DATA\111212\GB18417.D\FID2B.CH
 Acq On : 12 Nov 2012 10:27 pm Operator: StephK
 Sample : D40798-1, 50X Inst : GC/MS Ins
 Misc : GC3233,GGB1006,5.019,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 13 08:28:18 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 13 08:27:24 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units

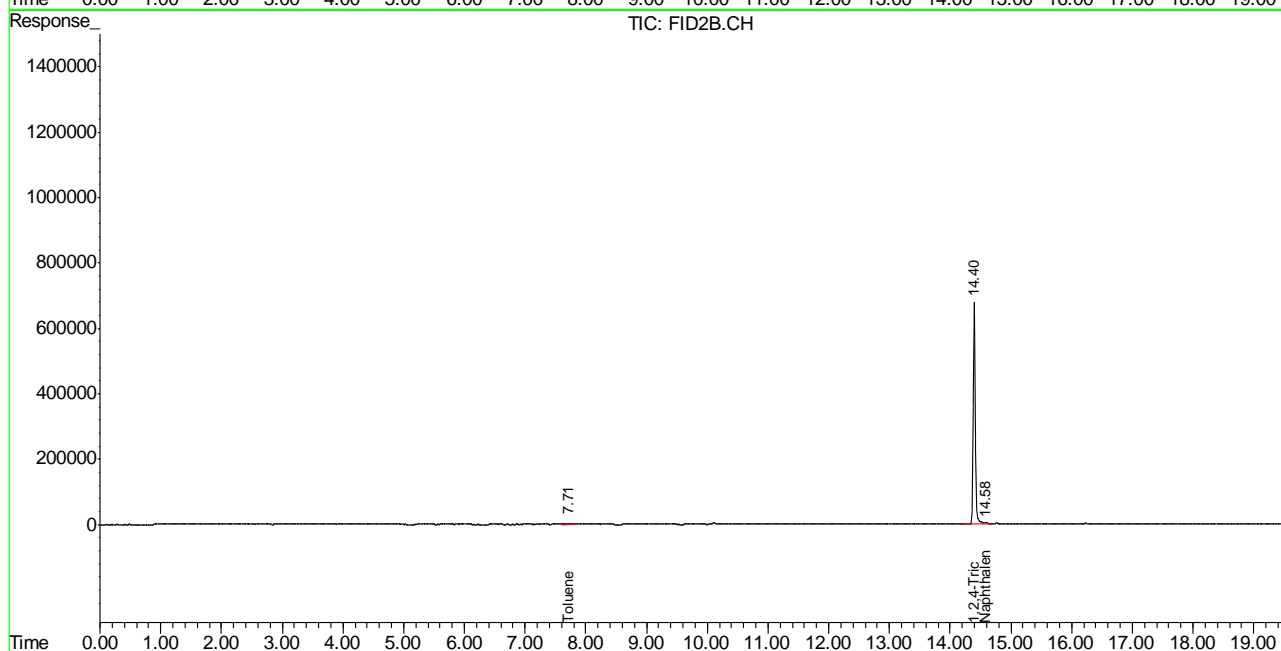
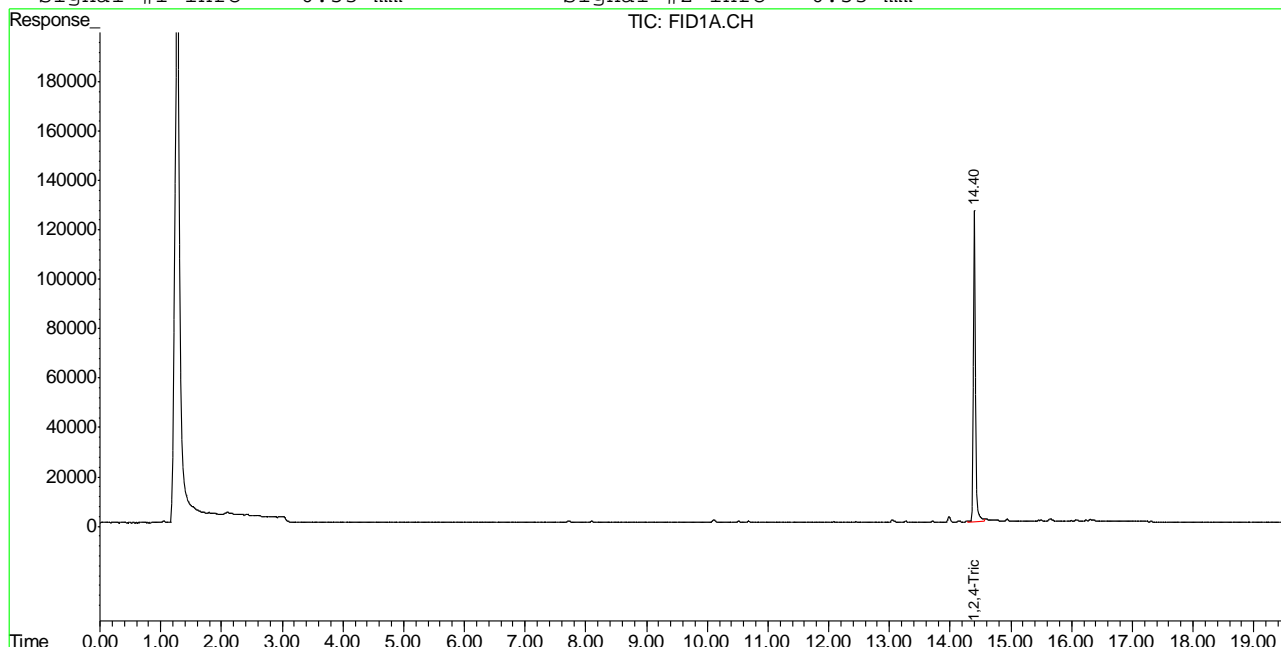
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.40	3096218	98.813	%
10) S	1,2,4-Trichlorobenzene (P)	14.40	16404146	100.932	%
Target Compounds					
1) H	TVH-Gasoline	7.23	2903321	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.71	105271	0.266	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.58	177316	0.899	ug/L

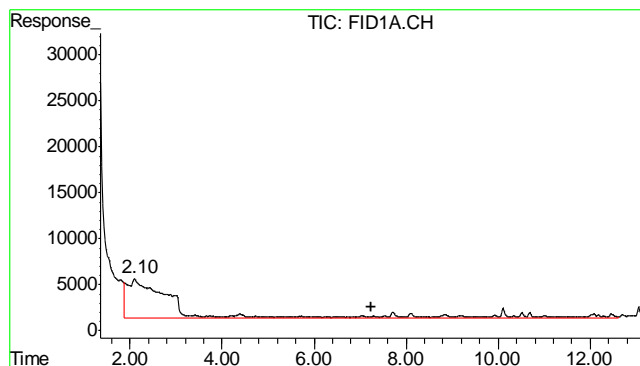
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\111212\GB18417.D\FID1A.CH Vial: 11
 Signal #2 : Y:\1\DATA\111212\GB18417.D\FID2B.CH
 Acq On : 12 Nov 2012 10:27 pm Operator: StephK
 Sample : D40798-1, 50X Inst : GC/MS Ins
 Misc : GC3233,GGB1006,5.019,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 13 9:03 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 13 08:27:24 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

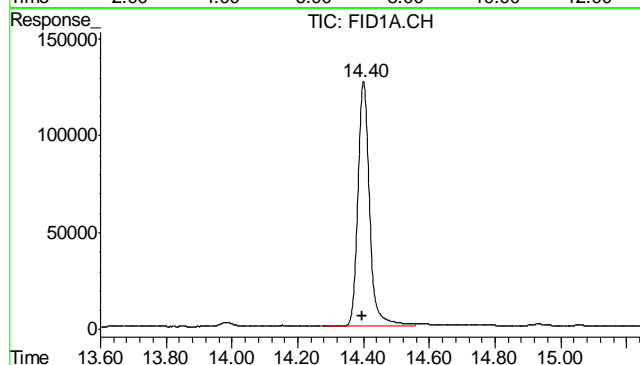
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





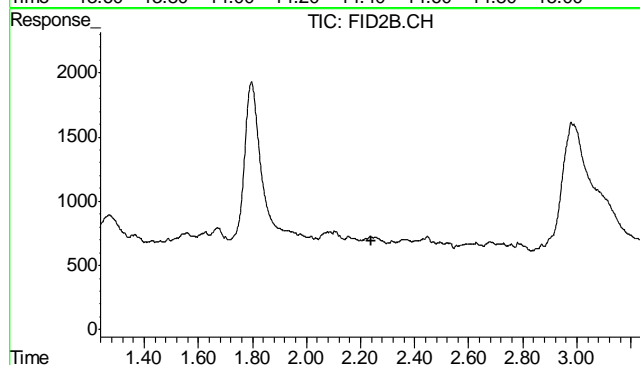
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 2903321
Conc: N.D.



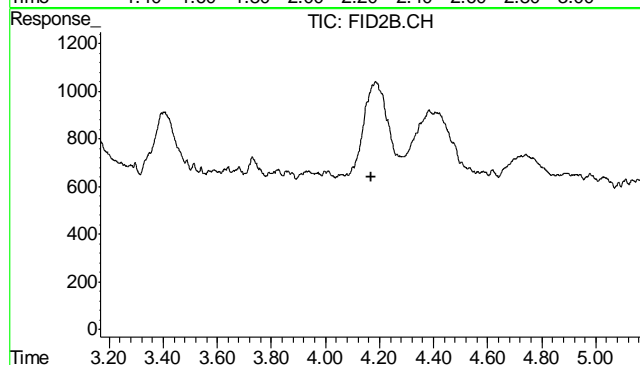
#2 1,2,4-Trichlorobenzene

R.T.: 14.400 min
Delta R.T.: 0.005 min
Response: 3096218
Conc: 98.81 %



#4 Methyl-t-butyl-ether

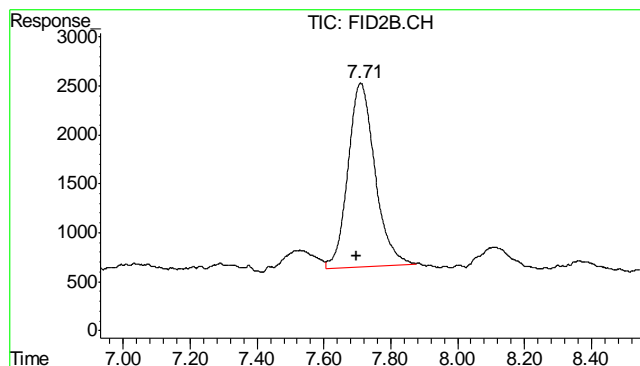
R.T.: 0.000 min
Exp R.T.: 2.238 min
Response: 0
Conc: N.D.



#5 Benzene

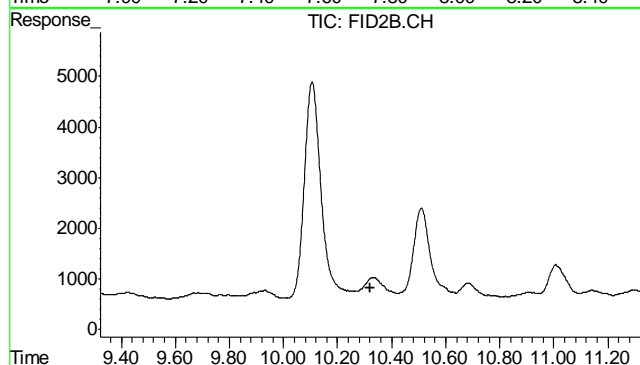
R.T.: 0.000 min
Exp R.T.: 4.168 min
Response: 0
Conc: N.D.

11.11
11



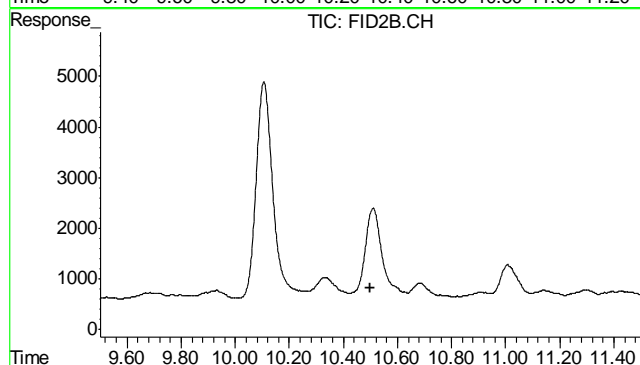
#6 Toluene

R.T.: 7.710 min
Delta R.T.: 0.011 min
Response: 105271
Conc: 0.27 ug/L



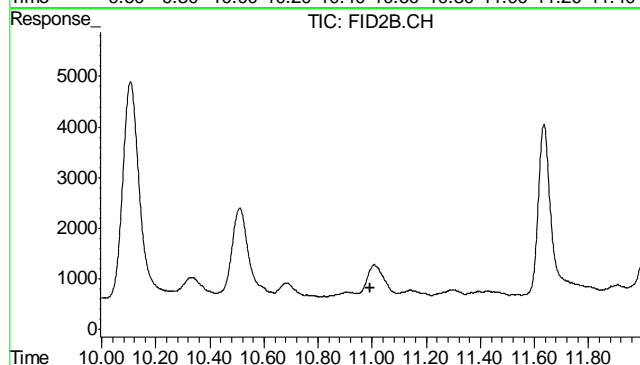
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.322 min
Response: 0
Conc: N.D.



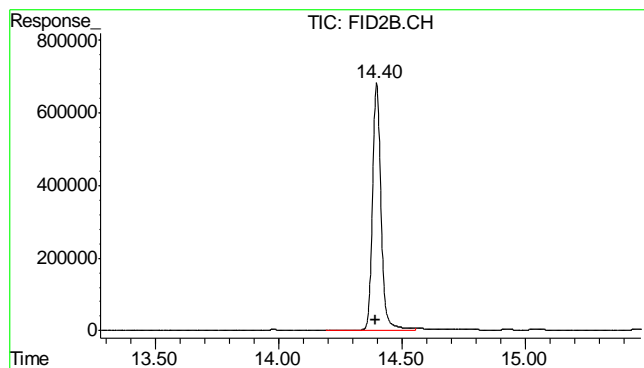
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T. : 10.500 min
Response: 0
Conc: N.D.



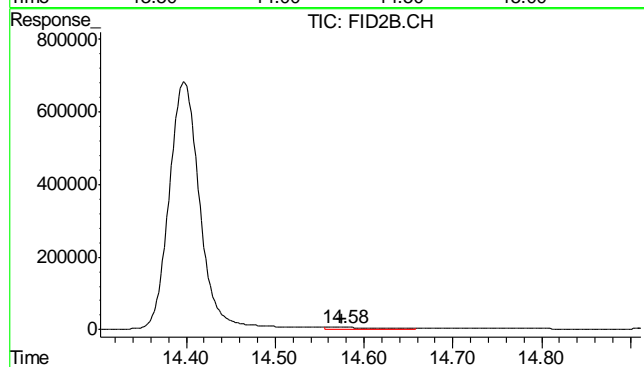
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.993 min
Response: 0
Conc: N.D.



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

R.T.: 14.398 min
 Delta R.T.: 0.005 min
 Response: 16404146
 Conc: 100.93 %



#11 Naphthalene

R.T.: 14.575 min
 Delta R.T.: 0.000 min
 Response: 177316
 Conc: 0.90 ug/L

11.1.1
 11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\111212\GB18409.D\FID1A.CH Vial: 3
 Signal #2 : Y:\1\DATA\111212\GB18409.D\FID2B.CH
 Acq On : 12 Nov 2012 5:43 pm Operator: StephK
 Sample : MB Inst : GC/MS Ins
 Misc : GC3233,GGB1006,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 13 08:27:46 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 13 08:27:24 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.39	2846723	90.851	%
10) S	1,2,4-Trichlorobenzene (P)	14.39	15479798	95.244	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4545832	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.70	107128	0.270	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	14.56	159328	0.808	ug/L

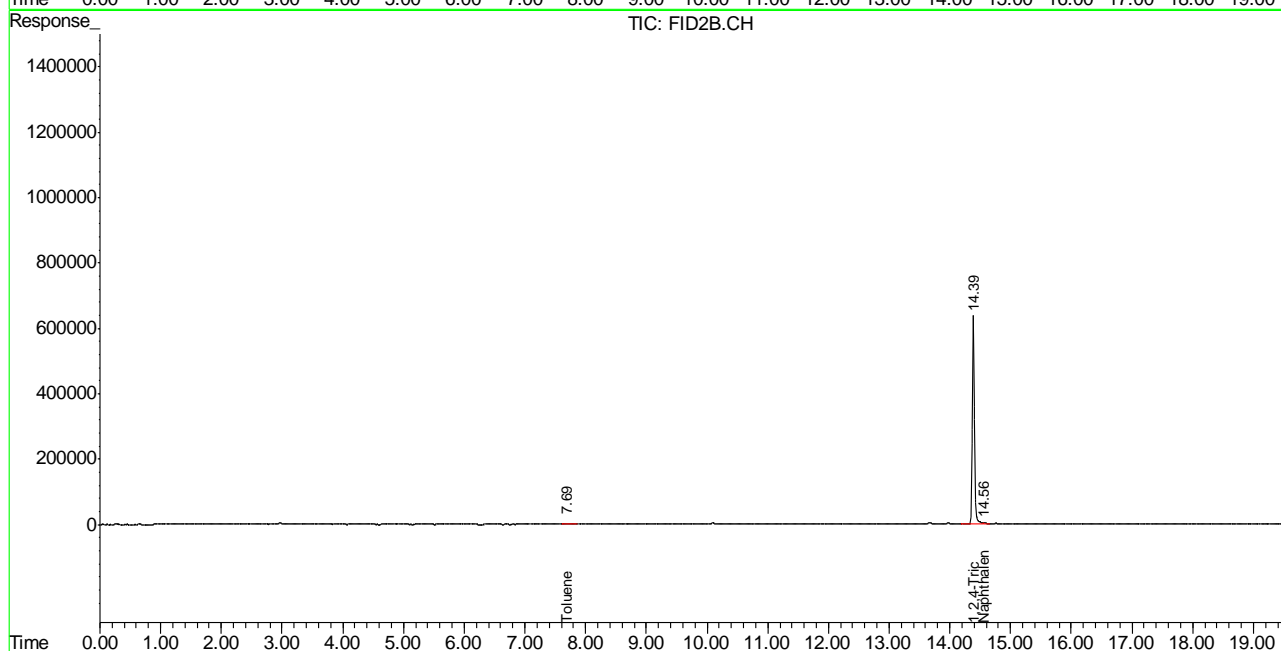
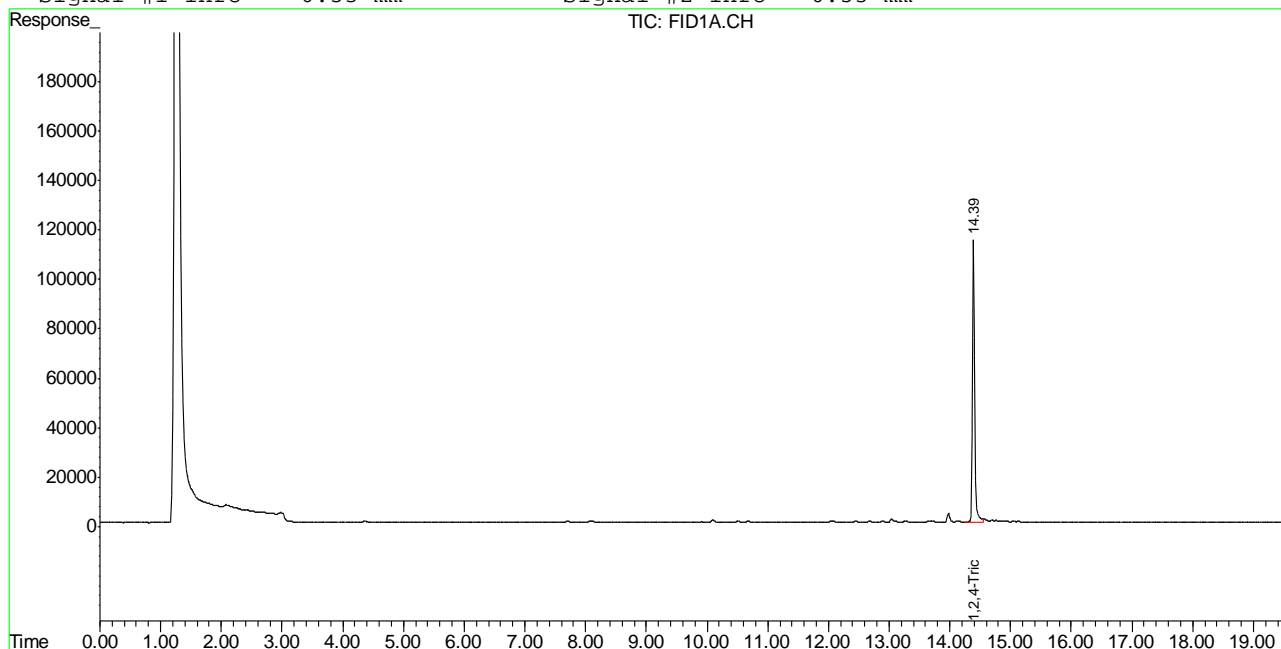
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB18409.D TB868GB868SOIL.M Tue Nov 13 09:07:49 2012 GC

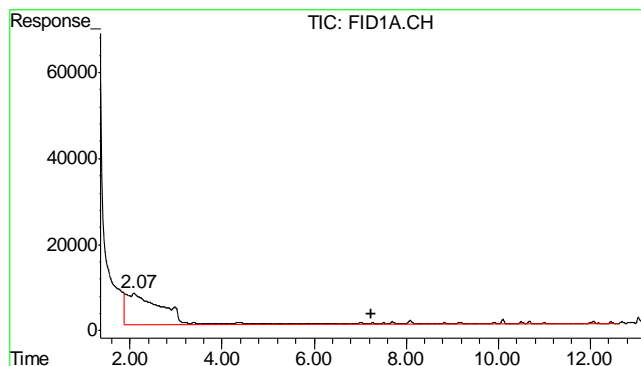
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\111212\GB18409.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\111212\GB18409.D\FID2B.CH
Acq On : 12 Nov 2012 5:43 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3233,GGB1006,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 13 9:01 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Tue Nov 13 08:27:24 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

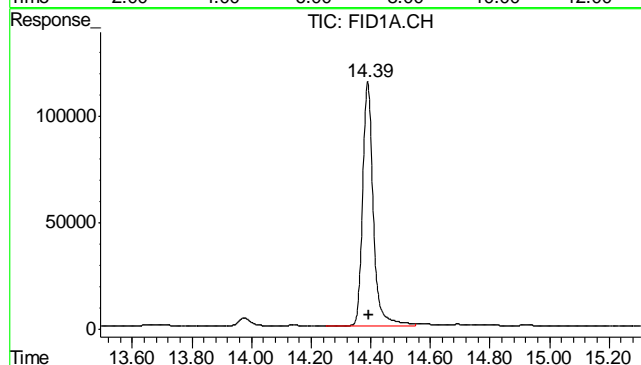
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





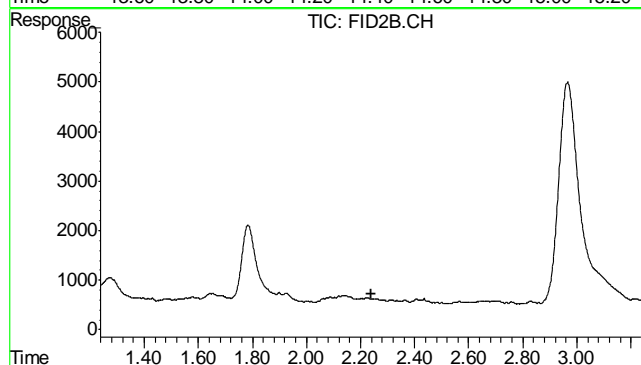
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4545832
Conc: N.D.



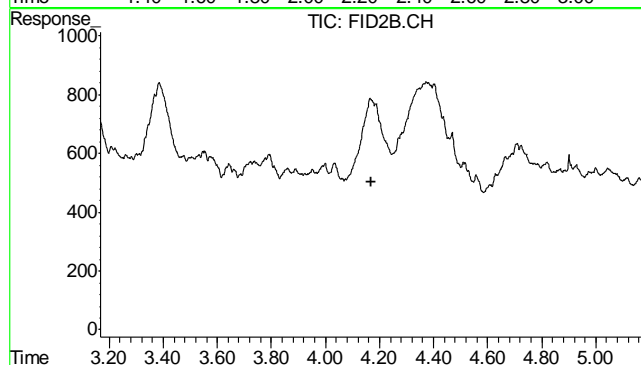
#2 1,2,4-Trichlorobenzene

R.T.: 14.390 min
Delta R.T.: -0.005 min
Response: 2846723
Conc: 90.85 %



#4 Methyl-t-butyl-ether

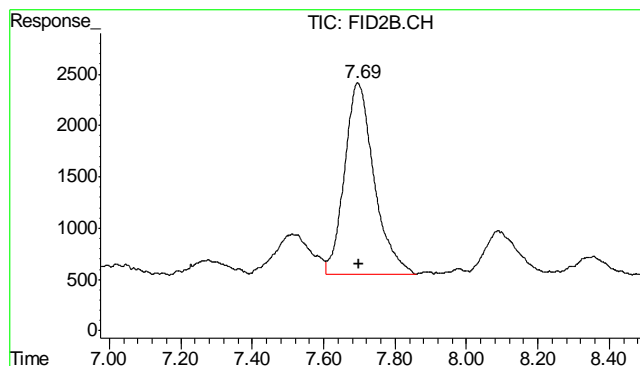
R.T.: 0.000 min
Exp R.T.: 2.238 min
Response: 0
Conc: N.D.



#5 Benzene

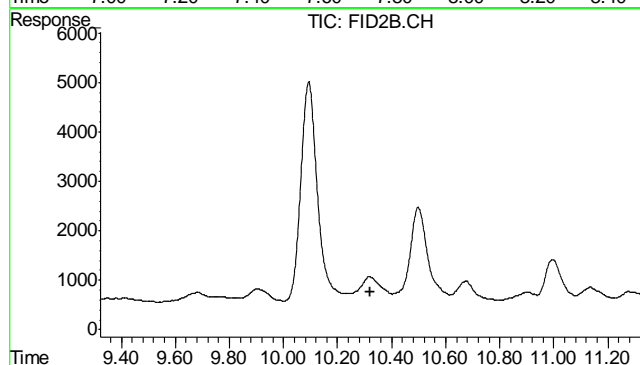
R.T.: 0.000 min
Exp R.T.: 4.168 min
Response: 0
Conc: N.D.

11.21
11



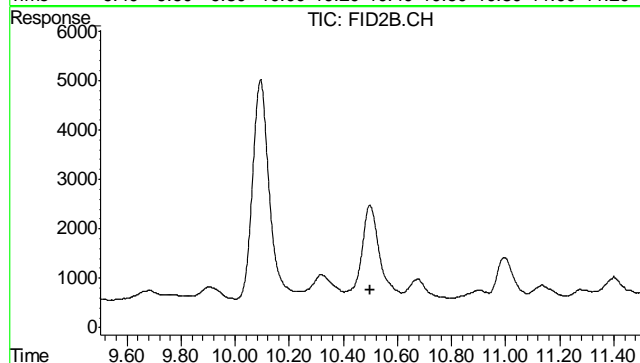
#6 Toluene

R.T.: 7.696 min
Delta R.T.: -0.003 min
Response: 107128
Conc: 0.27 ug/L



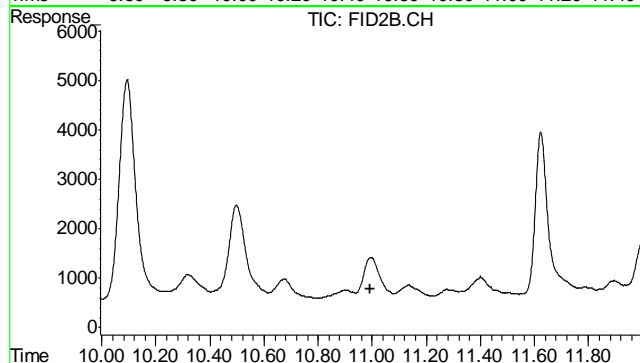
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.322 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

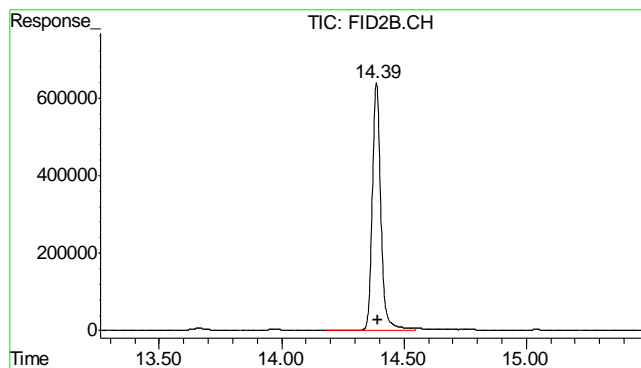
R.T.: 0.000 min
Exp R.T. : 10.500 min
Response: 0
Conc: N.D.



#9 o-Xylene

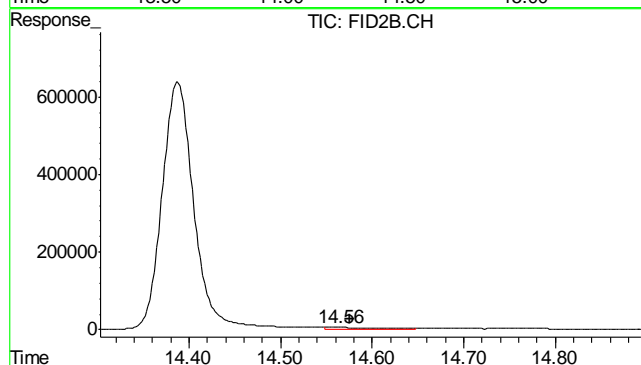
R.T.: 0.000 min
Exp R.T. : 10.993 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.388 min
Delta R.T.: -0.005 min
Response: 15479798
Conc: 95.24 %



#11 Naphthalene

R.T.: 14.562 min
Delta R.T.: -0.013 min
Response: 159328
Conc: 0.81 ug/L

11.2.1
11

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6948-MB	FD19400.D	1	11/12/12	AV	11/12/12	OP6948	GFD976

The QC reported here applies to the following samples:

Method: SW846-8015B

D40798-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	101% 35-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6948-BS	FD19402.D	1	11/12/12	AV	11/12/12	OP6948	GFD976

The QC reported here applies to the following samples:

Method: SW846-8015B

D40798-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	630	94	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	109%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40798
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6948-MS	FD19404.D	1	11/12/12	AV	11/12/12	OP6948	GFD976
OP6948-MSD	FD19406.D	1	11/12/12	AV	11/12/12	OP6948	GFD976
D40799-1	FD19430.D	1	11/12/12	AV	11/12/12	OP6948	GFD976

The QC reported here applies to the following samples:

Method: SW846-8015B

D40798-1

CAS No.	Compound	D40799-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	23.1		720	608	81	612	82	1	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D40799-1	Limits
84-15-1	o-Terphenyl	94%	92%	90%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD111212.SEC\FD19426.D Vial: 66
Acq On : 11-12-2012 08:23:32 PM Operator: ashleyv
Sample : D40798-1 Inst : FID5
Misc : OP6948,GFD976,30.06,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 13 09:26:06 2012 Quant Results File: DRO-GFD939R.RES

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

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

Compound	R.T.	Response	Conc Units

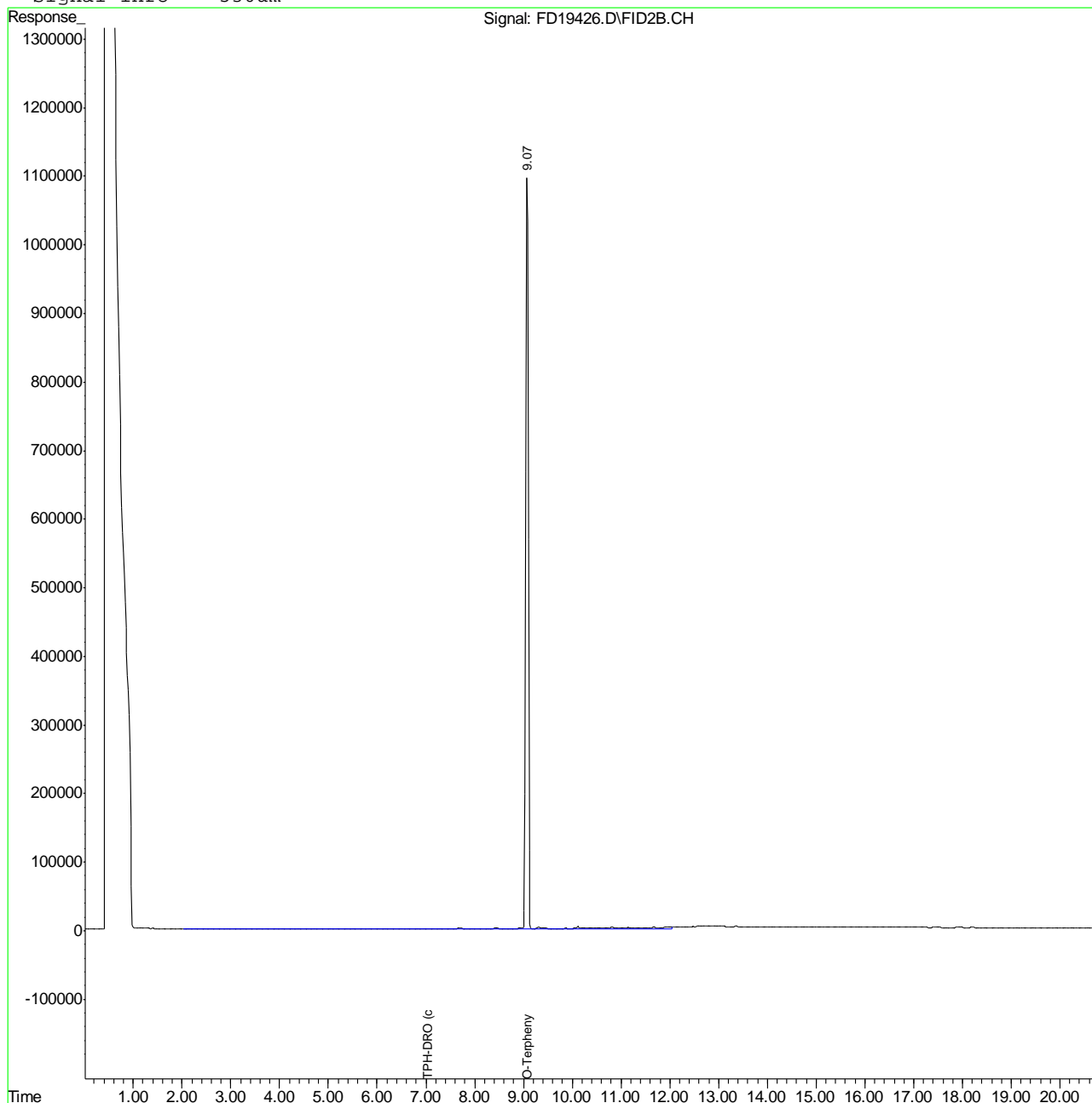
System Monitoring Compounds			
1) S O-Terphenyl	9.08	36979138	911.475 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.04	2519502	69.193 mg/L

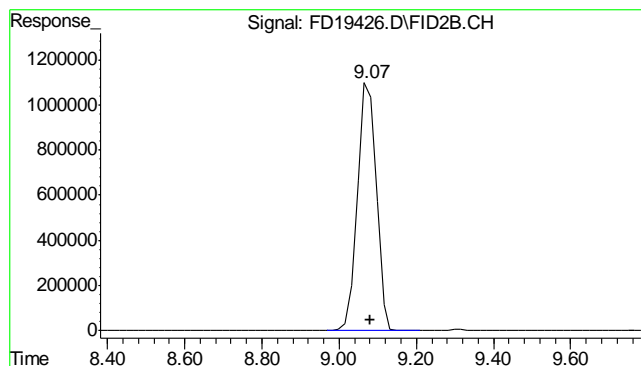
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD111212.SEC\FD19426.D Vial: 66
Acq On : 11-12-2012 08:23:32 PM Operator: ashleyv
Sample : D40798-1 Inst : FID5
Misc : OP6948,GFD976,30.06,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 13 9:26 2012 Quant Results File: DRO-GFD939R.RES

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

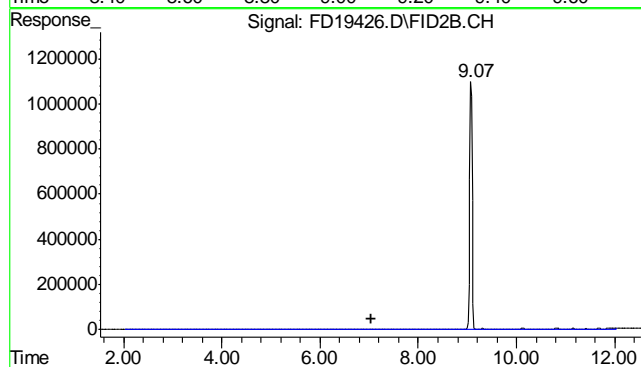
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.079 min
 Delta R.T.: -0.001 min
 Response: 36979138
 Conc: 911.48 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.035 min
 Delta R.T.: 0.000 min
 Response: 2519502
 Conc: 69.19 mg/L m

13.1.1
 13

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD111212.SEC\FD19400.D Vial: 53
Acq On : 11-12-2012 02:28:54 PM Operator: ashleyv
Sample : OP6948-MB Inst : FID5
Misc : OP6948,GFD976,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 13 09:25:53 2012 Quant Results File: DRO-GFD939R.RES

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

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.08	40924247	1008.716 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.04	931533	25.583 mg/L

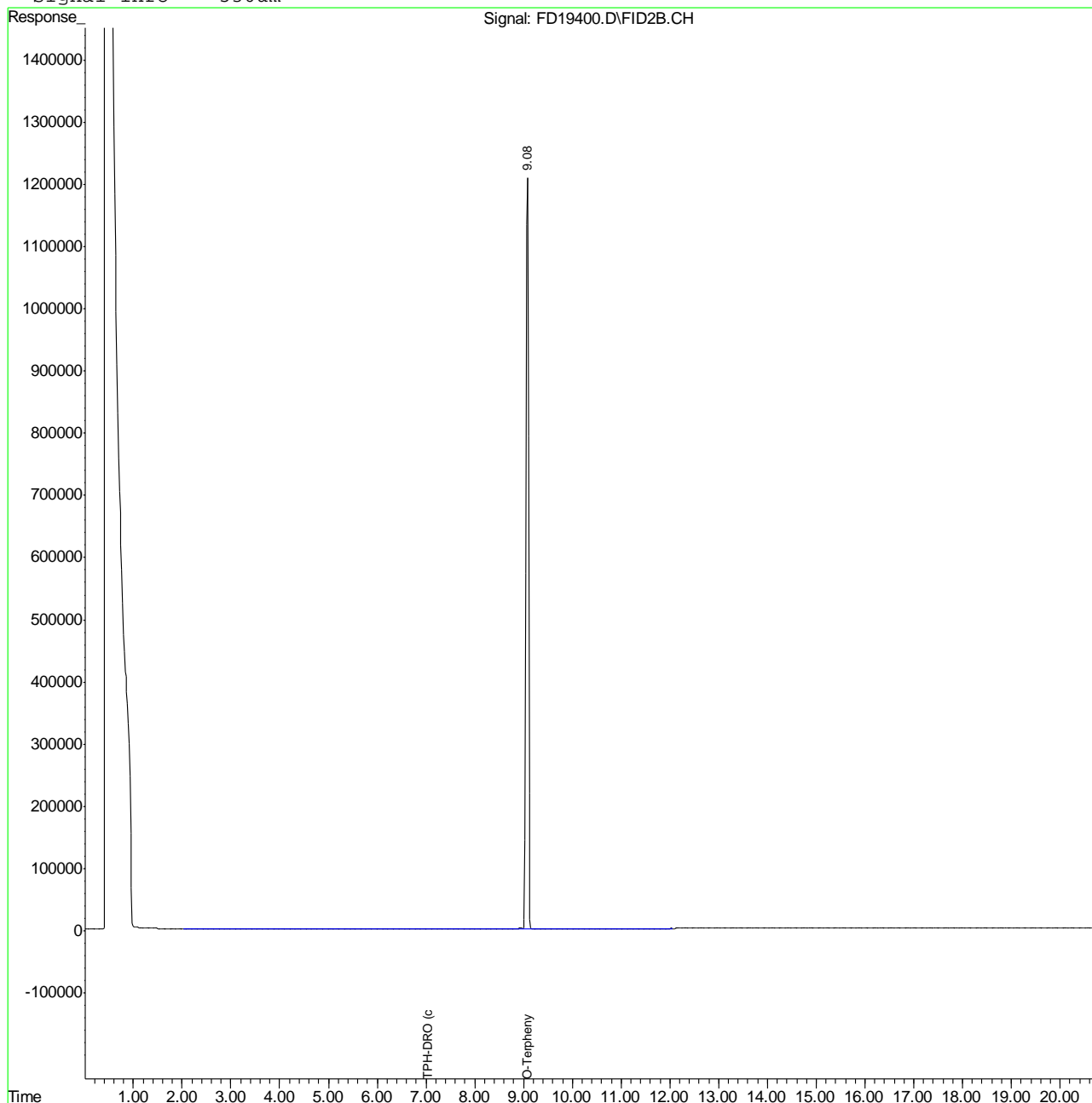
(f)=RT Delta > 1/2 Window (m)=manual int.
FD19400.D DRO-GFD939R.M Tue Nov 13 09:40:26 2012 GC

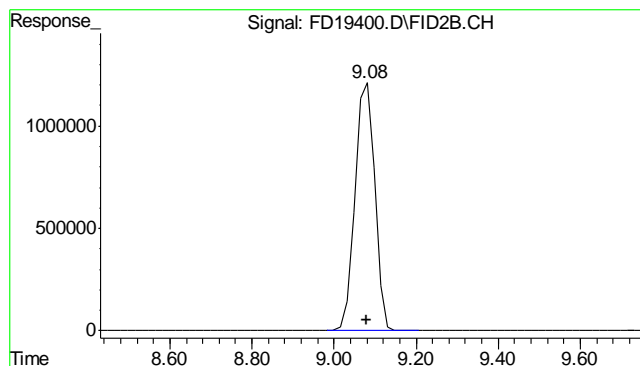
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD111212.SEC\FD19400.D Vial: 53
Acq On : 11-12-2012 02:28:54 PM Operator: ashleyv
Sample : OP6948-MB Inst : FID5
Misc : OP6948,GFD976,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 13 9:25 2012 Quant Results File: DRO-GFD939R.RES

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

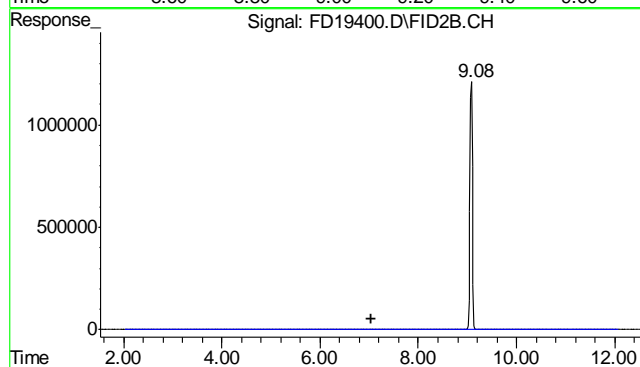
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.082 min
Delta R.T.: 0.002 min
Response: 40924247
Conc: 1008.72 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.035 min
Delta R.T.: 0.000 min
Response: 931533
Conc: 25.58 mg/L m

13.2.1
13

Metals Analysis

QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/13/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.47	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.010	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.060	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.14	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.080	<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	0.12	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.030	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.050	<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	0.27	<3.0

Associated samples MP8869: D40798-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/13/12

Metal	D40778-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	3150	3380	233	98.8	75-125
Beryllium					
Boron	anr				
Cadmium	0.0	51.1	58.2	87.8	75-125
Calcium					
Chromium	65.8	117	58.2	88.0	75-125
Cobalt					
Copper	14.3	68.1	58.2	92.5	75-125
Iron					
Lead	10.3	110	116	85.7	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	23.9	71.5	58.2	81.8	75-125
Phosphorus					
Potassium					
Selenium	0.64	104	116	88.8	75-125
Silicon					
Silver	0.13	21.4	23.3	91.4	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	52.2	104	58.2	89.0	75-125

Associated samples MP8869: D40798-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/13/12

Metal	D40778-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	3150	2830	219	-145.9(a	17.7	20
Beryllium						
Boron	anr					
Cadmium	0.0	46.3	54.8	84.5	9.9	20
Calcium						
Chromium	65.8	108	54.8	77.0	8.0	20
Cobalt						
Copper	14.3	62.1	54.8	87.2	9.2	20
Iron						
Lead	10.3	100	110	81.8	9.5	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	23.9	65.4	54.8	75.7	8.9	20
Phosphorus						
Potassium						
Selenium	0.64	94.8	110	85.9	9.3	20
Silicon						
Silver	0.13	19.4	21.9	87.9	9.8	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	52.2	96.2	54.8	80.3	7.8	20

Associated samples MP8869: D40798-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
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.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40798
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8869
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 11/13/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	194	200	97.0	80-120
Beryllium				
Boron	anr			
Cadmium	45.0	50	90.0	80-120
Calcium				
Chromium	48.3	50	96.6	80-120
Cobalt				
Copper	45.7	50	91.4	80-120
Iron				
Lead	94.8	100	94.8	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	46.3	50	92.6	80-120
Phosphorus				
Potassium				
Selenium	93.5	100	93.5	80-120
Silicon				
Silver	18.9	20	94.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	48.8	50	97.6	80-120

Associated samples MP8869: D40798-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/13/12

Metal	D40778-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	27300	32600	19.4*(a)	0-10
Beryllium				
Boron	anr			
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	571	642	12.4*(a)	0-10
Cobalt				
Copper	124	113	8.9	0-10
Iron				
Lead	89.3	89.5	0.2	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	207	240	15.8*(a)	0-10
Phosphorus				
Potassium				
Selenium	5.60	0.00	100.0(b)	0-10
Silicon				
Silver	1.10	0.00	100.0(b)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	453	543	19.8*(a)	0-10

Associated samples MP8869: D40798-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8869
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8870
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/12/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0025	<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 MP8870: D40798-1

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: D40798
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8870
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 11/12/12

Metal	D40778-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	10.4	116	116	90.8 75-125
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8870: D40798-1

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

14.2.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8870
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/12/12

Metal	D40778-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	10.4	104	110	85.4	10.9	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8870: D40798-1

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: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8870
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/12/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	92.2	100	92.2	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8870: D40798-1

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

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8870
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 11/12/12

Metal	D40778-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	90.1	85.4	5.2	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8870: D40798-1

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

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8871
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 11/13/12

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

Associated samples MP8871: D40798-1

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: D40798
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8871
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/13/12

Metal	D40797-1		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.080	0.43	0.377	92.9	75-125

Associated samples MP8871: D40798-1

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: D40798
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8871
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/13/12

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

Associated samples MP8871: D40798-1

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: D40798
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8871
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/13/12

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

Associated samples MP8871: D40798-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date: 11/13/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	130		
Antimony	150	8.5	18		
Arsenic	130	22	42		
Barium	50	.5	9		
Beryllium	50	6.5	16		
Boron	250	5	22		
Cadmium	50	3	3		
Calcium	2000	27	80	16.5	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	6	100		
Lead	250	9.5	15		
Lithium	10	2.5			
Magnesium	1000	33	110	-0.50	<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	147	<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 MP8877: D40798-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
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: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date: 11/13/12

Metal	D40797-1A Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	14500	149000	125000	107.6	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	6860	128000	125000	96.9	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	56800	179000	125000	97.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8877: D40798-1A

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date: 11/13/12

Metal	D40797-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	14500	153000	125000	110.8	2.6	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	6860	130000	125000	98.5	1.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	56800	180000	125000	98.6	0.6	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8877: D40798-1A

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

14.4.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date: 11/13/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	137000	125000	109.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	122000	125000	97.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	123000	125000	98.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8877: D40798-1A

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

14.4.3
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
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: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date: 11/13/12

D40797-1A		QC		
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	2910	2990	2.8	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1370	1400	2.4	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	11400	11600	2.6	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8877: D40798-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8877
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.4.4
14

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8655/GN17636	1.0	0.0	mg/kg	176	161	91.5	80-120%
Specific Conductivity	GP8677/GN17663			umhos/cm	9992	9790	98.0	90-110%
pH	GN17678			su	8.00	7.97	99.6	99.3-100.7%

Associated Samples:
Batch GP8655: D40798-1
Batch GP8677: D40798-1
Batch GN17678: D40798-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8655/GN17636	D40715-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN17680	D40797-1	mv	138	140	1.4	0-20%

Associated Samples:
Batch GP8655: D40798-1
Batch GN17680: D40798-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

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

Associated Samples:

Batch GP8655: D40798-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40798
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

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

Associated Samples:
Batch GP8655: D40798-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits