



09/27/12

Technical Report for

XTO Energy

PCU 197-36A

1203-02

Accutest Job Number: D39008

Sampling Date: 09/19/12

Report to:

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Total number of pages in report: 146



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


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

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D39008

PCU 197-36A
Project No: 1203-02

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D39008-1	09/19/12	10:40	DS	09/21/12	SO	Soil	CUT 1 SUBLINER COMPOSITE
D39008-1A	09/19/12	10:40	DS	09/21/12	SO	Soil	CUT 1 SUBLINER COMPOSITE

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D39008

Site: PCU 197-36A

Report Date 9/27/2012 10:22:53 AM

On 09/21/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.0 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D39008 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: V5V1448

- All samples were analyzed within the recommended method holding time.
- Sample(s) D39011-1MS, D39011-1MSD 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: OP6688

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39010-1MS, D39010-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB970

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39007-1MS, D39007-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP6706

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D39017-1MS, D39017-1MSD 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: MP8487

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39013-1AMS, D39013-1AMSD, D39013-1ASDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix SO

Batch ID: MP8469

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38897-1MS, D38897-1MSD, D38897-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Silver, Chromium, Nickel, Zinc are outside control limits for sample MP8469-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8469-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP8469-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP8469-SD1 for Nickel: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP8470

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38897-1MS, D38897-1MSD, D38897-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP8479

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38939-1MS, D38939-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN16909

- Sample(s) D39007-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN16886

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R14556

- The data for SW846 3060/7196A M meets quality control requirements.
- D39008-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP8246

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38939-1MS, D38939-1MSD, D38939-1DUP were used as the QC samples for the Chromium, Hexavalent analysis.
- The duplicate RPD(s) for Chromium, Hexavalent are outside control limits for sample GP8246-D1. RPD acceptable due to low duplicate and sample concentrations.

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN16905

- The following samples were run outside of holding time for method SW846 9045D: D39008-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP8487

- D39008-1A 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

Job Number: D39008
Account: XTO Energy
Project: PCU 197-36A
Collected: 09/19/12



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

D39008-1 CUT 1 SUBLINER COMPOSITE

Benzene	0.0836	0.062	0.031	mg/kg	SW846 8260B
Toluene	0.285	0.12	0.062	mg/kg	SW846 8260B
Ethylbenzene	0.0589 J	0.12	0.023	mg/kg	SW846 8260B
Xylene (total)	0.263	0.25	0.12	mg/kg	SW846 8260B
Chrysene	0.0109	0.0093	0.0049	mg/kg	SW846 8270C BY SIM
Fluorene	0.0199	0.0093	0.0049	mg/kg	SW846 8270C BY SIM
Naphthalene	0.114	0.013	0.012	mg/kg	SW846 8270C BY SIM
Pyrene	0.0099	0.0093	0.0049	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)	157	15	9.7	mg/kg	SW846-8015B
Arsenic	7.7	0.11		mg/kg	SW846 6020A
Barium	2130	1.1		mg/kg	SW846 6010C
Chromium	60.9	1.1		mg/kg	SW846 6010C
Copper	13.9	1.1		mg/kg	SW846 6010C
Lead	9.6	5.3		mg/kg	SW846 6010C
Nickel	21.3	3.2		mg/kg	SW846 6010C
Zinc	41.5	3.2		mg/kg	SW846 6010C
Specific Conductivity	1180	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	60.9	2.1		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	88.9			mv	ASTM D1498-76M
pH	8.67			su	SW846 9045D

D39008-1A CUT 1 SUBLINER COMPOSITE

Calcium	20.3	2.0		mg/l	SW846 6010C
Magnesium	4.31	1.0		mg/l	SW846 6010C
Sodium	251	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	13.2			ratio	USDA HANDBOOK 60

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

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

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 1 SUBLINER COMPOSITE	
Lab Sample ID:	D39008-1	Date Sampled: 09/19/12
Matrix:	SO - Soil	Date Received: 09/21/12
Method:	SW846 8260B	Percent Solids: 89.2
Project:	PCU 197-36A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V23827.D	1	09/25/12	BD	n/a	n/a	V5V1448
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0836	0.062	0.031	mg/kg	
108-88-3	Toluene	0.285	0.12	0.062	mg/kg	
100-41-4	Ethylbenzene	0.0589	0.12	0.023	mg/kg	J
1330-20-7	Xylene (total)	0.263	0.25	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	98%		64-130%
460-00-4	4-Bromofluorobenzene	102%		62-131%
17060-07-0	1,2-Dichloroethane-D4	98%		70-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 1 SUBLINER COMPOSITE	
Lab Sample ID:	D39008-1	Date Sampled: 09/19/12
Matrix:	SO - Soil	Date Received: 09/21/12
Method:	SW846 8270C BY SIM SW846 3546	Percent Solids: 89.2
Project:	PCU 197-36A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G11372.D	1	09/24/12	DC	09/24/12	OP6688	E3G531
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0093	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0093	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0093	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0093	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0093	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0093	0.0049	mg/kg	
218-01-9	Chrysene	0.0109	0.0093	0.0049	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0093	0.0049	mg/kg	
206-44-0	Fluoranthene	ND	0.0093	0.0049	mg/kg	
86-73-7	Fluorene	0.0199	0.0093	0.0049	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0093	0.0049	mg/kg	
91-20-3	Naphthalene	0.114	0.013	0.012	mg/kg	
129-00-0	Pyrene	0.0099	0.0093	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%		10-145%
321-60-8	2-Fluorobiphenyl	83%		10-130%
1718-51-0	Terphenyl-d14	81%		22-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

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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

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Client Sample ID:	CUT 1 SUBLINER COMPOSITE	Date Sampled:	09/19/12
Lab Sample ID:	D39008-1	Date Received:	09/21/12
Matrix:	SO - Soil	Percent Solids:	89.2
Method:	SW846 8015B		
Project:	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB17680.D	1	09/22/12	SK	n/a	n/a	GGB970
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	85%		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

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Client Sample ID:	CUT 1 SUBLINER COMPOSITE					Date Sampled:	09/19/12
Lab Sample ID:	D39008-1					Date Received:	09/21/12
Matrix:	SO - Soil					Percent Solids:	89.2
Method:	SW846-8015B SW846 3510C						
Project:	PCU 197-36A						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD17897.D	1	09/27/12	AV	09/26/12	OP6706	GFD910
Run #2							

	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)	157	15	9.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	92%		43-136%		

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

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

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMPOSITE	Date Sampled:	09/19/12
Lab Sample ID:	D39008-1	Date Received:	09/21/12
Matrix:	SO - Soil	Percent Solids:	89.2
Project:	PCU 197-36A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	7.7	0.11	mg/kg	5	09/24/12	09/26/12 JB	SW846 6020A ³	SW846 3050B ⁵
Barium	2130	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Chromium	60.9	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Copper	13.9	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Lead	9.6	5.3	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Mercury	< 0.11	0.11	mg/kg	1	09/25/12	09/25/12 JM	SW846 7471B ¹	SW846 7471B ⁶
Nickel	21.3	3.2	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Selenium	< 5.3	5.3	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Silver	< 3.2	3.2	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴
Zinc	41.5	3.2	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA2839

(2) Instrument QC Batch: MA2842

(3) Instrument QC Batch: MA2844

(4) Prep QC Batch: MP8469

(5) Prep QC Batch: MP8470

(6) Prep QC Batch: MP8479

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMPOSITE	Date Sampled:	09/19/12
Lab Sample ID:	D39008-1	Date Received:	09/21/12
Matrix:	SO - Soil	Percent Solids:	89.2
Project:	PCU 197-36A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1180	1.0	umhos/cm	1	09/26/12	CJ	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	09/25/12	CJ	SW846 3060A/7196A
Chromium, Trivalent ^a	60.9	2.1	mg/kg	1	09/25/12 22:47	JM	SW846 3060/7196A M
Redox Potential Vs H2	88.9		mv	1	09/24/12	CT	ASTM D1498-76M
Solids, Percent	89.2		%	1	09/24/12	SWT	SM19 2540B M
pH	8.67		su	1	09/24/12 13:15	CT	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMPOSITE	Date Sampled:	09/19/12
Lab Sample ID:	D39008-1A	Date Received:	09/21/12
Matrix:	SO - Soil	Percent Solids:	89.2
Project:	PCU 197-36A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	20.3	2.0	mg/l	1	09/25/12	09/25/12 JM	SW846 6010C ¹	SW846 3050B ²
Magnesium	4.31	1.0	mg/l	1	09/25/12	09/25/12 JM	SW846 6010C ¹	SW846 3050B ²
Sodium	251	2.0	mg/l	1	09/25/12	09/25/12 JM	SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2842
(2) Prep QC Batch: MP8487

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMPOSITE	Date Sampled:	09/19/12
Lab Sample ID:	D39008-1A	Date Received:	09/21/12
Matrix:	SO - Soil	Percent Solids:	89.2
Project:	PCU 197-36A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	13.2		ratio	1	09/25/12 19:09	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: D39008

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 9/21/2012 2:45:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 197-36A

Airbill #'s: HDCO

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

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

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

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

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

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

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1448-MB	5V23821.D	1	09/25/12	BD	n/a	n/a	V5V1448

The QC reported here applies to the following samples:

Method: SW846 8260B

D39008-1

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	99% 64-130%
460-00-4	4-Bromofluorobenzene	91% 62-131%
17060-07-0	1,2-Dichloroethane-D4	102% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D39008

Account: XTOKRWR XTO Energy

Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1448-BS	5V23822.D	1	09/25/12	BD	n/a	n/a	V5V1448

The QC reported here applies to the following samples:

Method: SW846 8260B

D39008-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	45.2	90	70-130
100-41-4	Ethylbenzene	50	44.6	89	70-130
108-88-3	Toluene	50	43.9	88	70-130
1330-20-7	Xylene (total)	150	138	92	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	64-130%
460-00-4	4-Bromofluorobenzene	96%	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: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D39011-1MS	5V23824.D	1	09/25/12	BD	n/a	n/a	V5V1448
D39011-1MSD	5V23825.D	1	09/25/12	BD	n/a	n/a	V5V1448
D39011-1	5V23823.D	1	09/25/12	BD	n/a	n/a	V5V1448

The QC reported here applies to the following samples:

Method: SW846 8260B

D39008-1

CAS No.	Compound	D39011-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	170		3120	2610	78	3460	105	28	64-139/30
100-41-4	Ethylbenzene	171		3120	2540	76	3370	102	28	68-136/30
108-88-3	Toluene	786		3120	2770	64	3640	91	27	60-130/30
1330-20-7	Xylene (total)	1130		9370	8350	77	10800	103	26	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D39011-1	Limits
2037-26-5	Toluene-D8	98%	97%	98%	64-130%
460-00-4	4-Bromofluorobenzene	107%	107%	103%	62-131%
17060-07-0	1,2-Dichloroethane-D4	98%	99%	99%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5092512.S\
 Data File : 5V23827.D
 Acq On : 25 Sep 2012 4:38 pm
 Operator : BRETD
 Sample : D39008-1
 Misc : MS4708,V5V1448,5.027,,100,5,1
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 26 10:32:10 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M
 Quant Title : 8260
 QLast Update : Fri Sep 07 10:53:51 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	202359	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	274921	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	271744	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	199249	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	19021	49.01	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	98.02%
61) Toluene-d8	13.851	98	315394	48.93	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.86%
69) 4-Bromofluorobenzene	16.043	95	150221	51.18	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	102.36%

Target Compounds

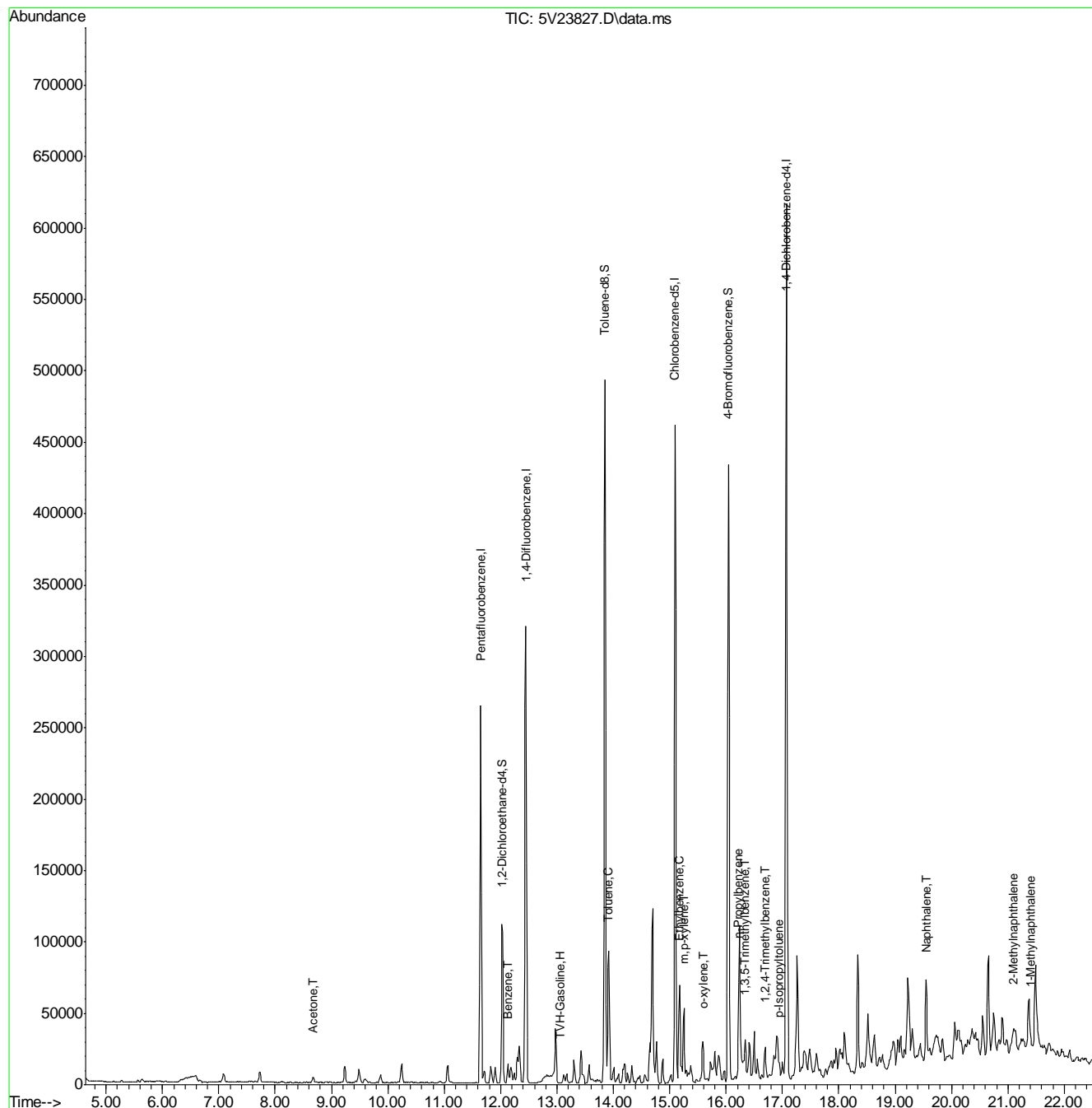
					Qvalue
1) TVH-Gasoline	13.055	TIC	2026255m	171.66	ug/l
15) Acetone	8.679	58	1948	5.66	ug/l # 81
50) Benzene	12.127	78	11338	1.35	ug/l 100
62) Toluene	13.908	92	26838	4.62	ug/l 99
66) Ethylbenzene	15.175	91	10547	0.95	ug/l 96
72) m,p-xylene	15.255	106	15346	3.38	ug/l 93
73) o-xylene	15.597	106	3864	0.87	ug/l 92
77) n-Propylbenzene	16.225	91	5346	0.35	ug/l # 87
80) 1,3,5-Trimethylbenzene	16.340	105	6723m	0.59	ug/l
82) 1,2,4-Trimethylbenzene	16.693	105	10435	0.88	ug/l 88
86) p-Isopropyltoluene	16.945	119	5412	0.41	ug/l 95
91) Naphthalene	19.559	128	7993	0.70	ug/l 100
94) 2-Methylnaphthalene	21.100	142	9918	2.49	ug/l # 93
95) 1-Methylnaphthalene	21.397	142	5174	1.51	ug/l # 89

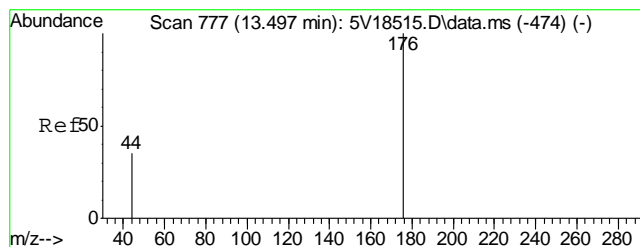
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5092512.S\
Data File : 5V23827.D
Acq On : 25 Sep 2012 4:38 pm
Operator : BRETD
Sample : D39008-1
Misc : MS4708,V5V1448,5.027,,100,5,1
ALS Vial : 9 Sample Multiplier: 1

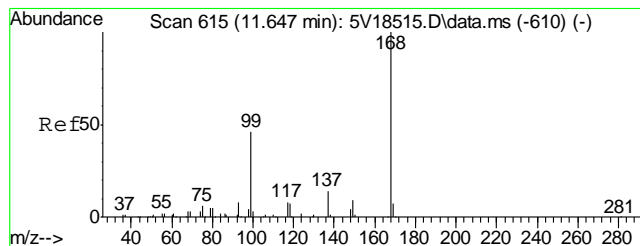
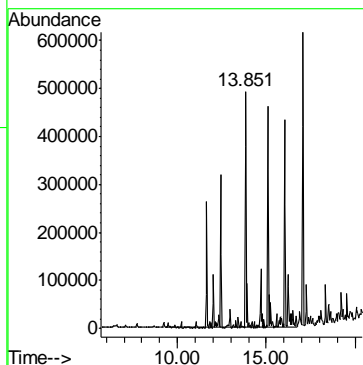
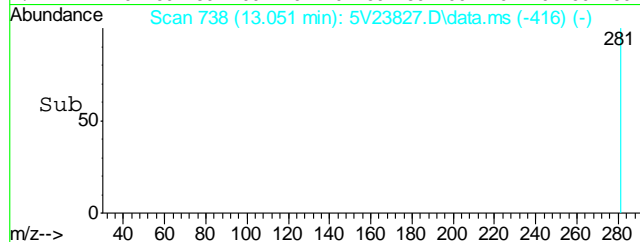
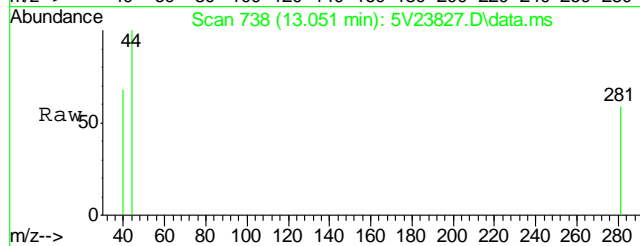
Quant Time: Sep 26 10:32:10 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M
Quant Title : 8260
QLast Update : Fri Sep 07 10:53:51 2012
Response via : Initial Calibration





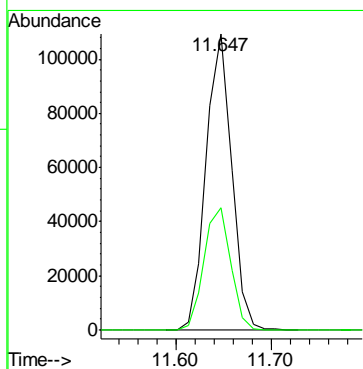
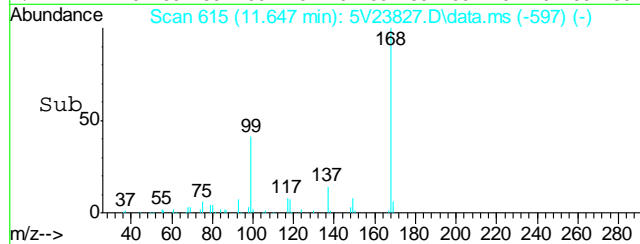
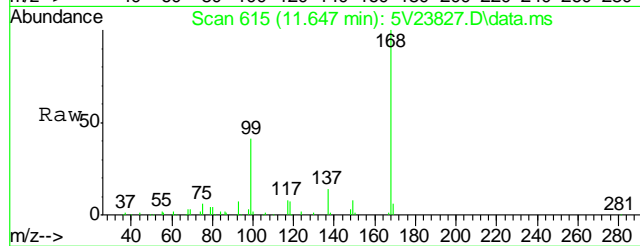
#1
TVH-Gasoline
Concen: 171.66 ug/l m
RT: 13.055 min Scan# 738
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

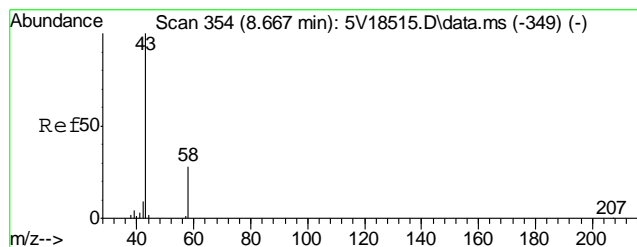
Tgt Ion:TIC Resp: 2026255



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.647 min Scan# 615
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

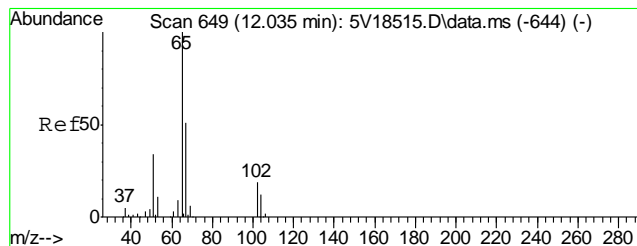
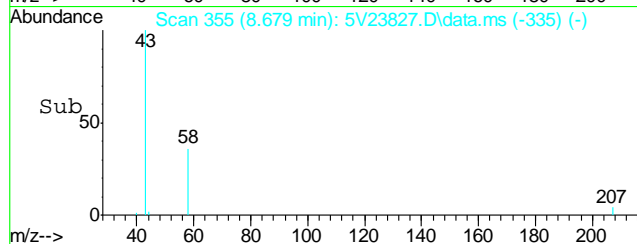
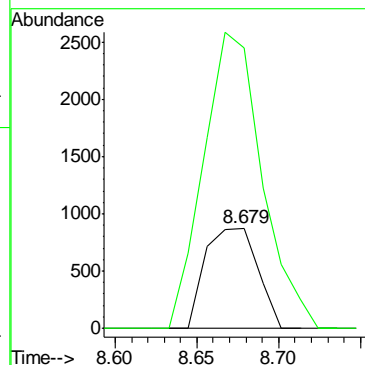
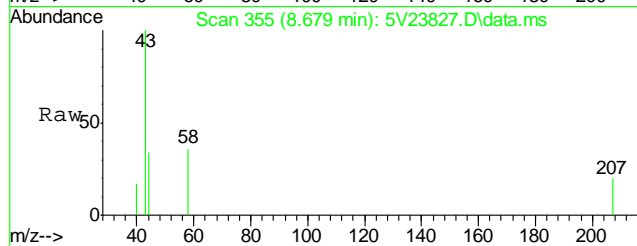
Tgt Ion:168 Resp: 202359
Ion Ratio Lower Upper
168 100
99 43.1 37.4 56.2





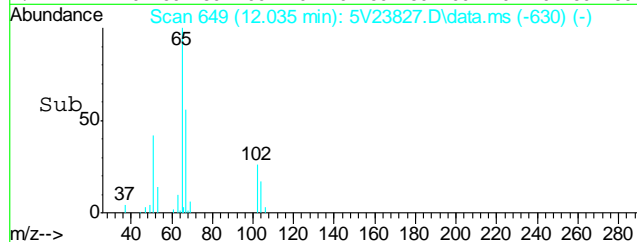
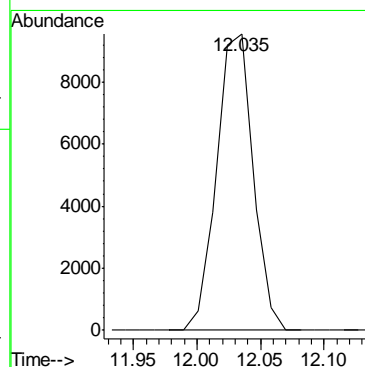
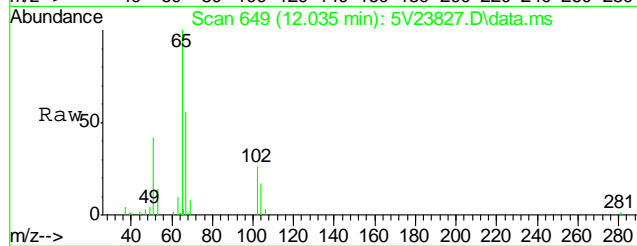
#15
Acetone
Concen: 5.66 ug/l
RT: 8.679 min Scan# 355
Delta R.T. 0.024 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

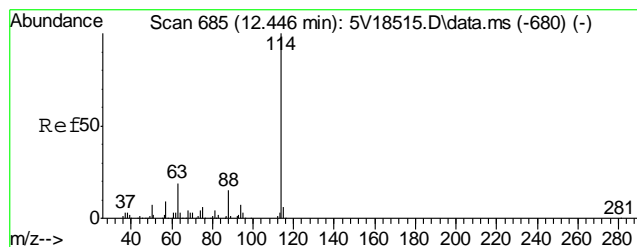
Tgt Ion: 58 Resp: 1948
Ion Ratio Lower Upper
58 100
43 330.3 353.6 393.6#



#33
1,2-Dichloroethane-d4
Concen: 49.01 ug/l
RT: 12.035 min Scan# 649
Delta R.T. 0.012 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

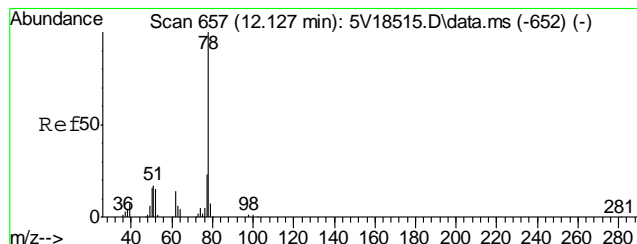
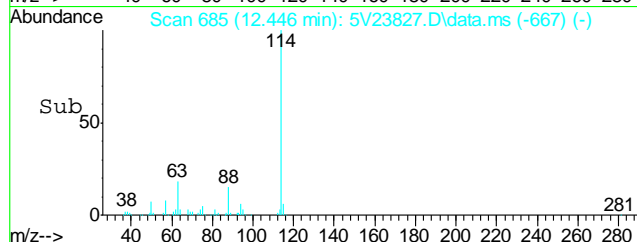
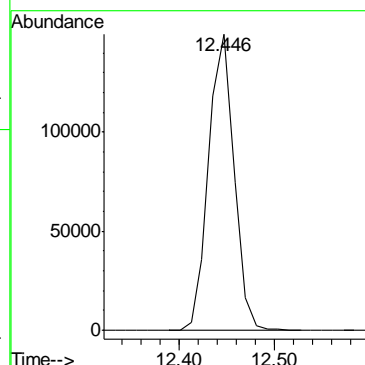
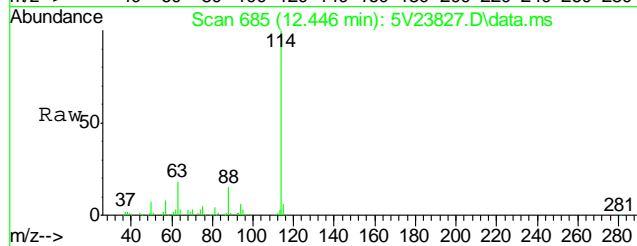
Tgt Ion: 102 Resp: 19021





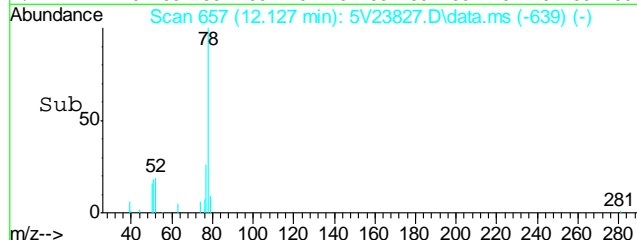
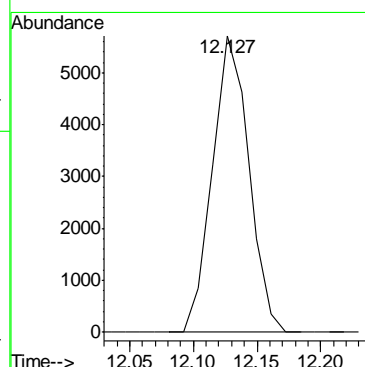
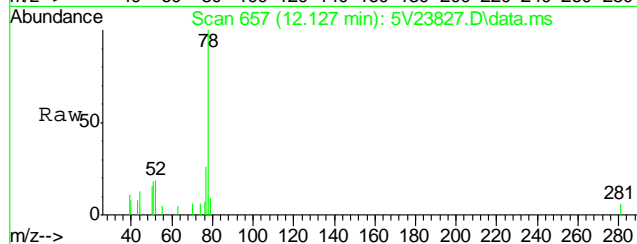
#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.446 min Scan# 685
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

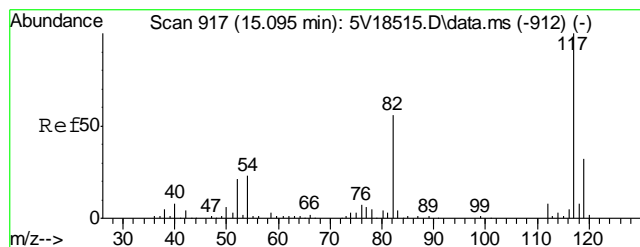
Tgt Ion: 114 Resp: 274921



#50
Benzene
Concen: 1.35 ug/l
RT: 12.127 min Scan# 657
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

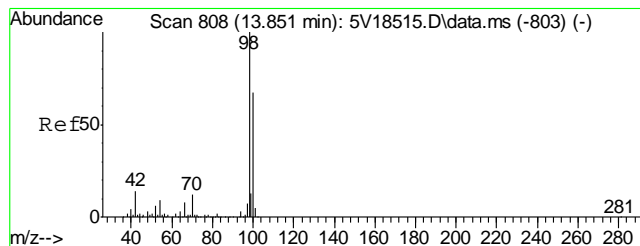
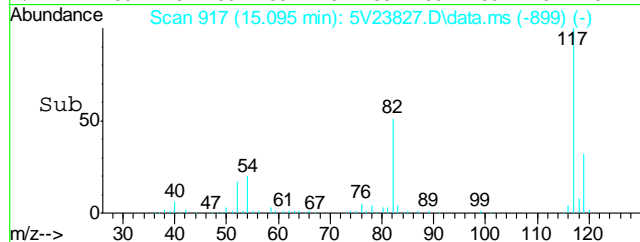
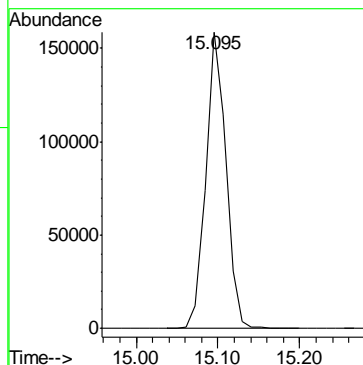
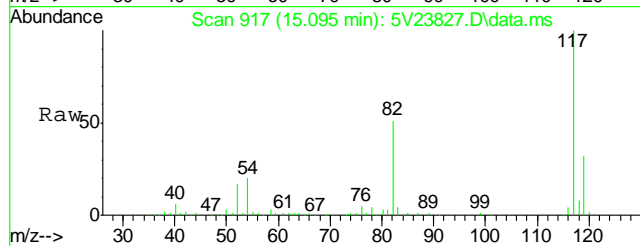
Tgt Ion: 78 Resp: 11338





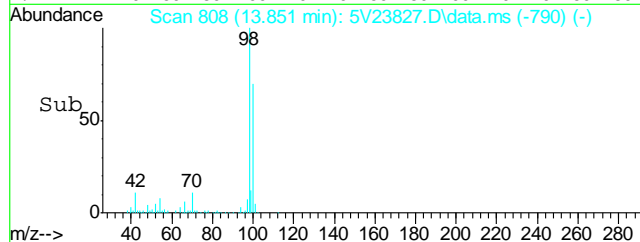
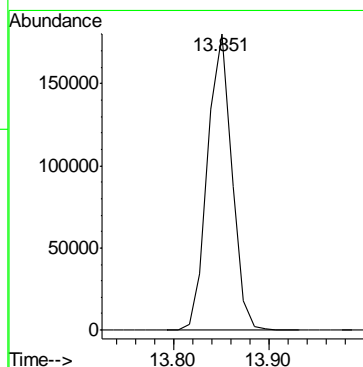
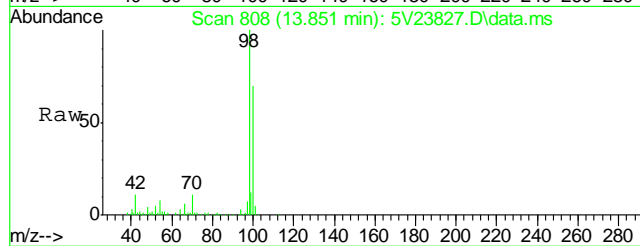
#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.095 min Scan# 917
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

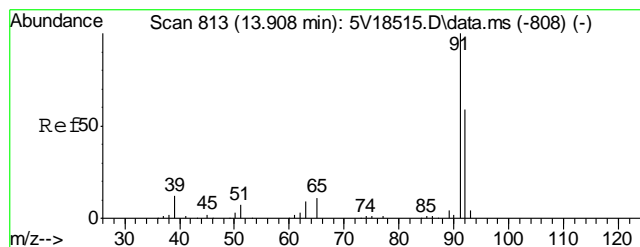
Tgt Ion:117 Resp: 271744



#61
Toluene-d8
Concen: 48.93 ug/l
RT: 13.851 min Scan# 808
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

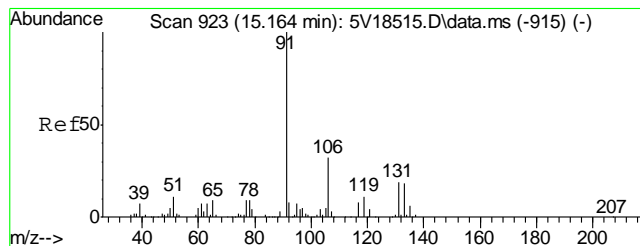
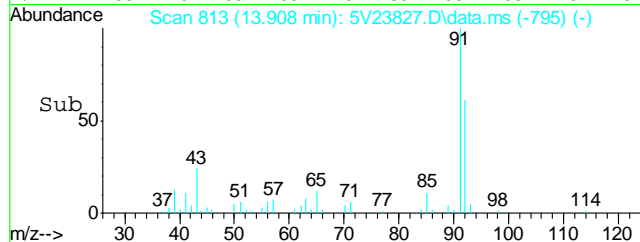
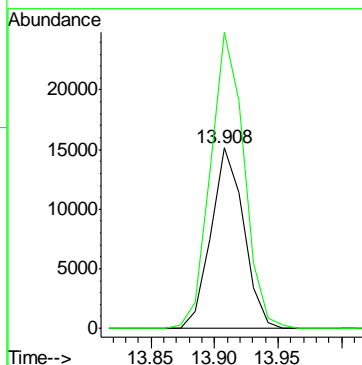
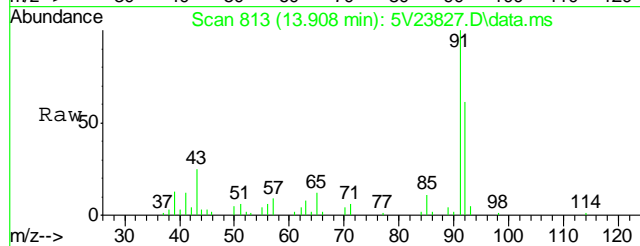
Tgt Ion: 98 Resp: 315394





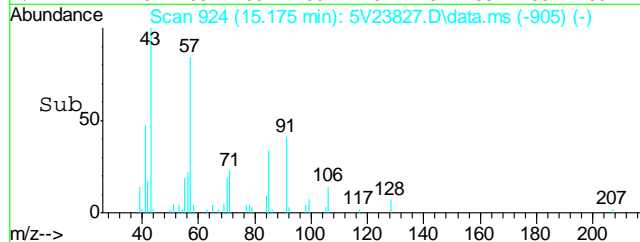
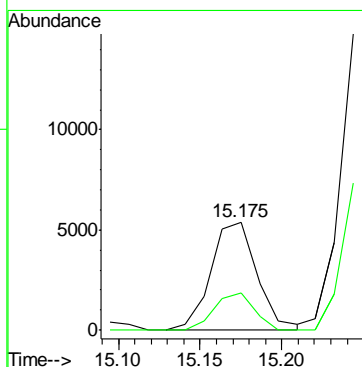
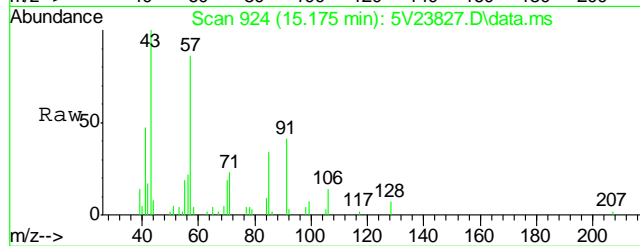
#62
Toluene
Concen: 4.62 ug/l
RT: 13.908 min Scan# 813
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

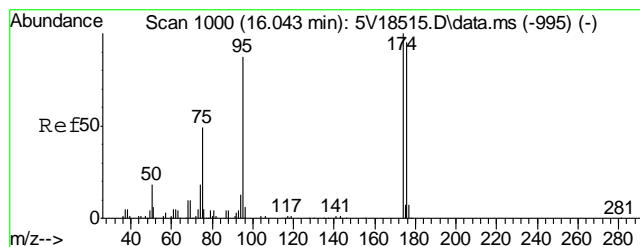
Tgt Ion: 92 Resp: 26838
Ion Ratio Lower Upper
92 100
91 168.7 149.8 189.8



#66
Ethylbenzene
Concen: 0.95 ug/l
RT: 15.175 min Scan# 924
Delta R.T. 0.012 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

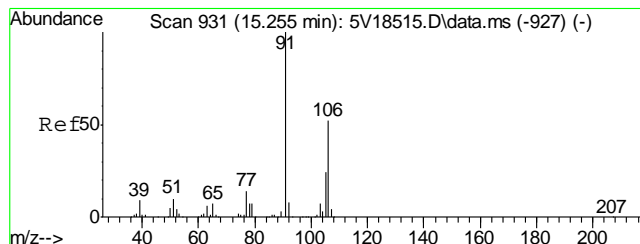
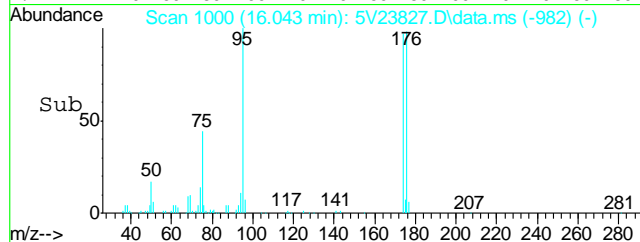
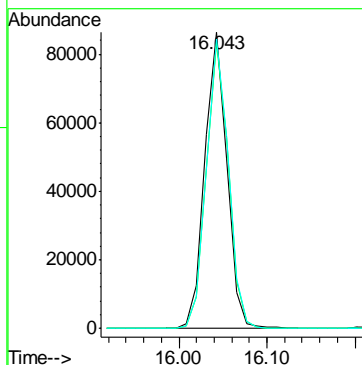
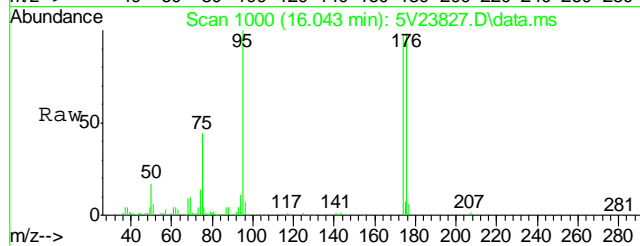
Tgt Ion: 91 Resp: 10547
Ion Ratio Lower Upper
91 100
106 29.3 11.7 51.7





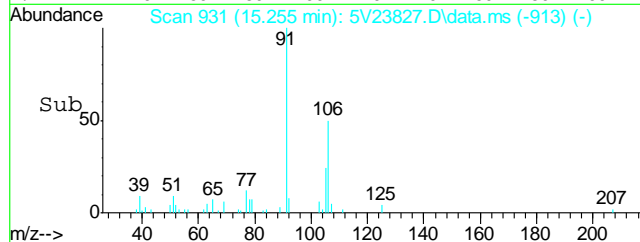
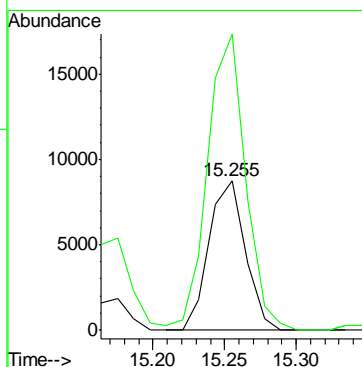
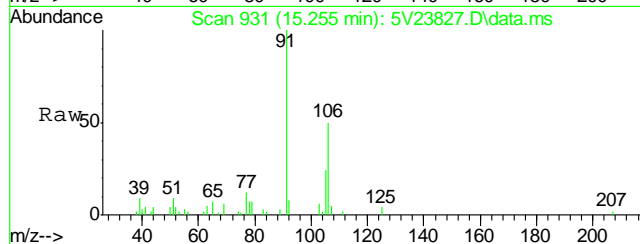
#69
4-Bromofluorobenzene
Concen: 51.18 ug/l
RT: 16.043 min Scan# 1000
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

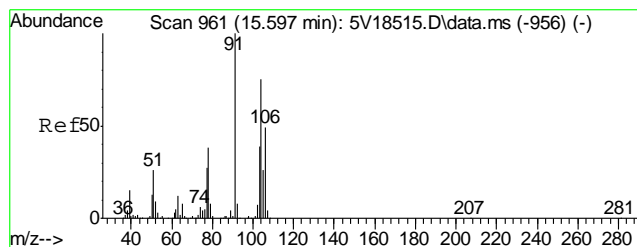
Tgt Ion	Ratio	Lower	Upper
95	100		
174	96.7	77.1	117.1
176	97.2	73.4	113.4



#72
m,p-xylene
Concen: 3.38 ug/l
RT: 15.255 min Scan# 931
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

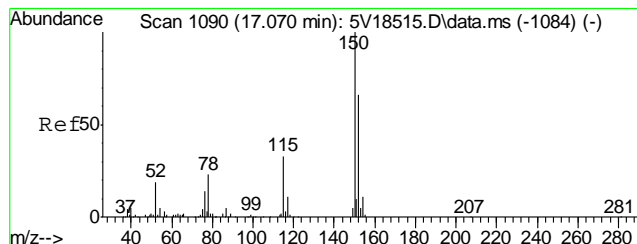
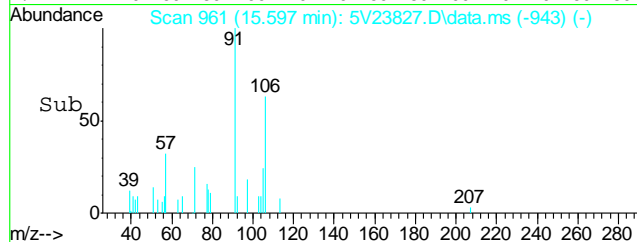
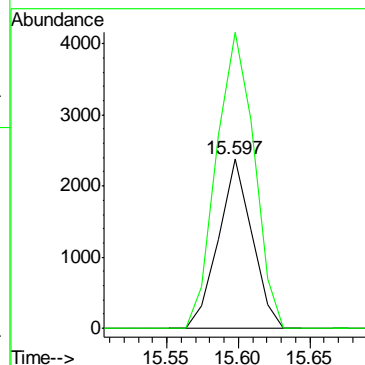
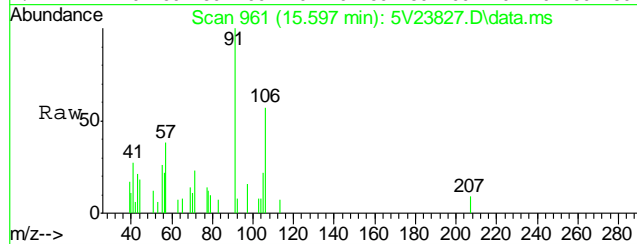
Tgt Ion	Ratio	Lower	Upper
106	100		
91	207.2	177.1	217.1





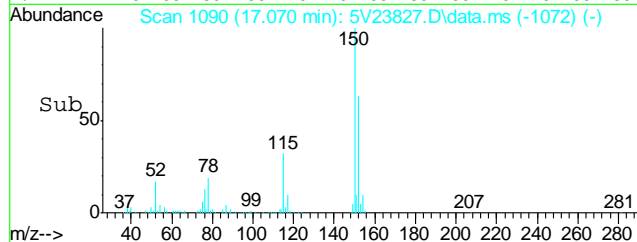
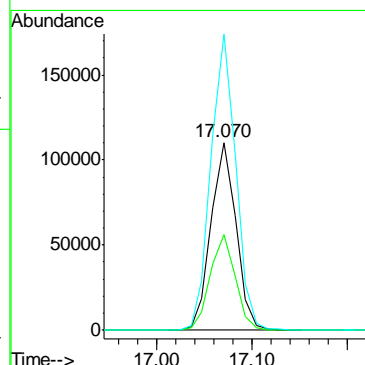
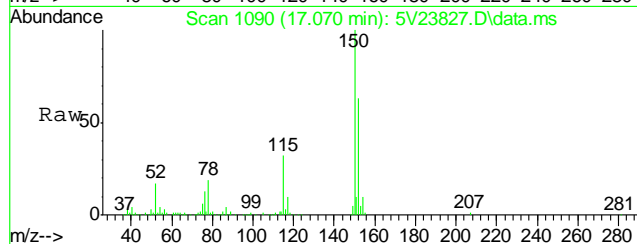
#73
o-xylene
Concen: 0.87 ug/l
RT: 15.597 min Scan# 961
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

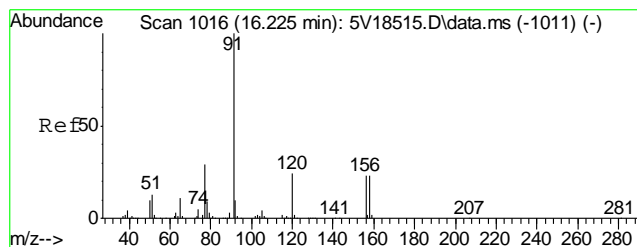
Tgt Ion:106 Resp: 3864
Ion Ratio Lower Upper
106 100
91 196.4 166.6 249.8



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.070 min Scan# 1090
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

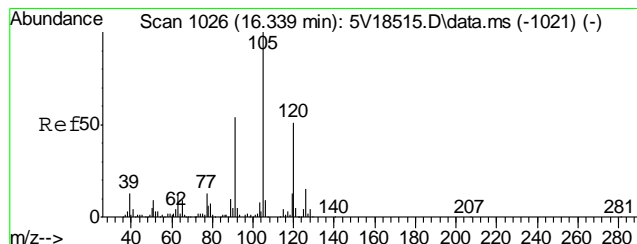
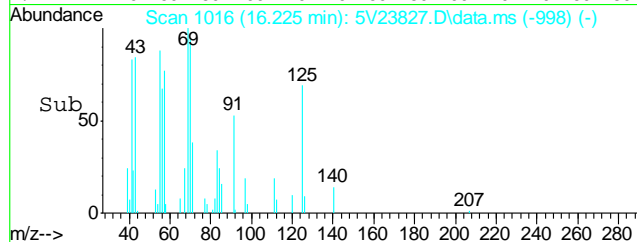
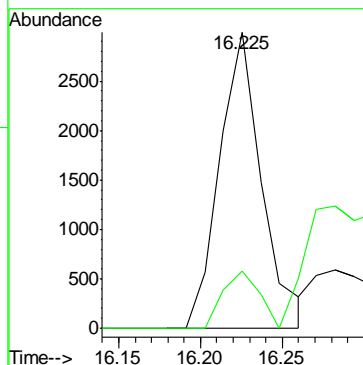
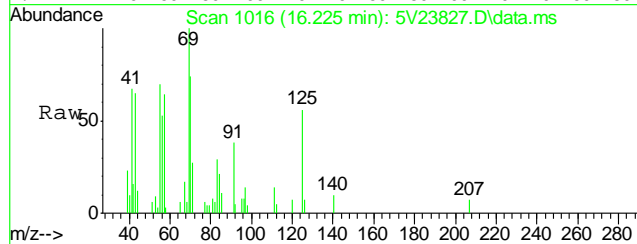
Tgt Ion:152 Resp: 199249
Ion Ratio Lower Upper
152 100
115 51.1 41.4 62.0
150 157.3 153.9 230.9





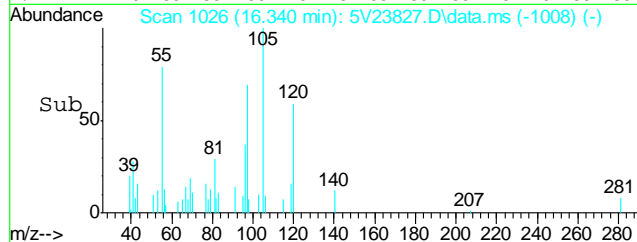
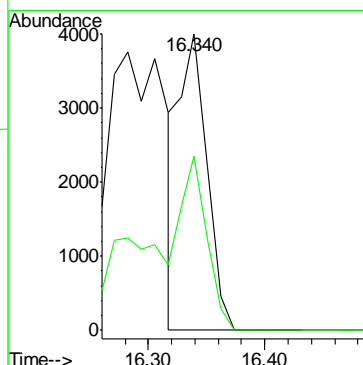
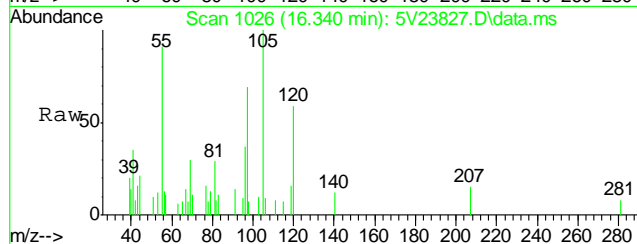
#77
 n-Propylbenzene
 Concen: 0.35 ug/l
 RT: 16.225 min Scan# 1016
 Delta R.T. 0.000 min
 Lab File: 5V23827.D
 Acq: 25 Sep 2012 4:38 pm

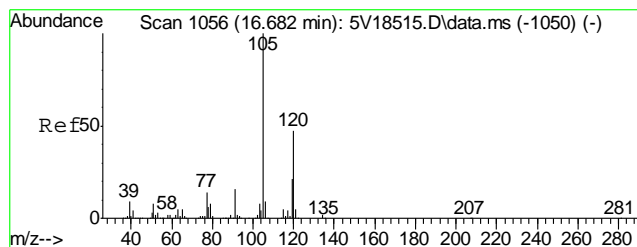
Tgt Ion: 91 Resp: 5346
 Ion Ratio Lower Upper
 91 100
 120 16.8 18.6 27.8#



#80
 1,3,5-Trimethylbenzene
 Concen: 0.59 ug/l m
 RT: 16.340 min Scan# 1026
 Delta R.T. 0.000 min
 Lab File: 5V23827.D
 Acq: 25 Sep 2012 4:38 pm

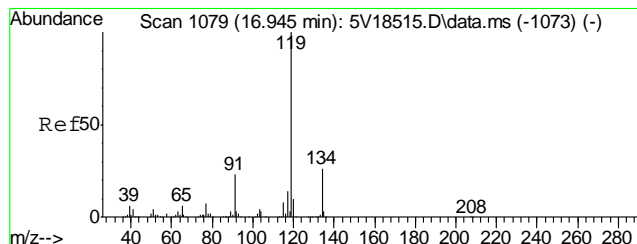
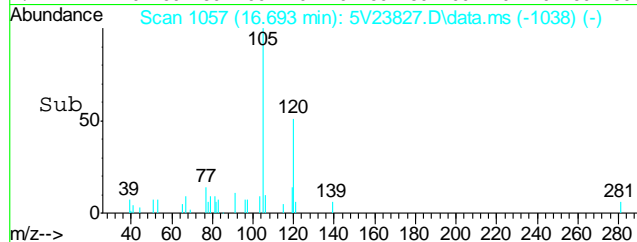
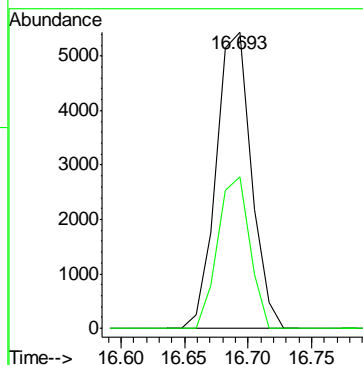
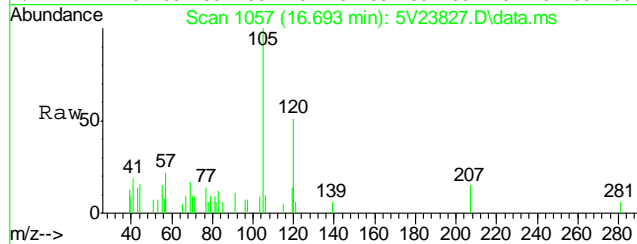
Tgt Ion: 105 Resp: 6723
 Ion Ratio Lower Upper
 105 100
 120 56.6 40.1 60.1





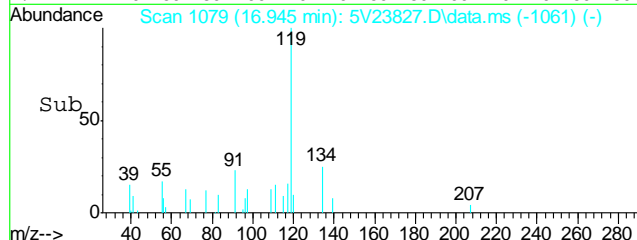
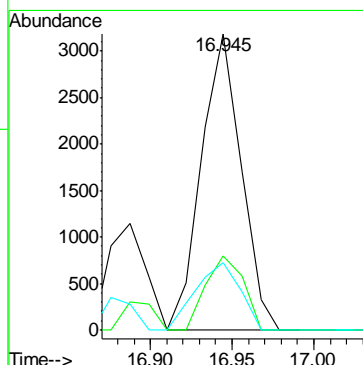
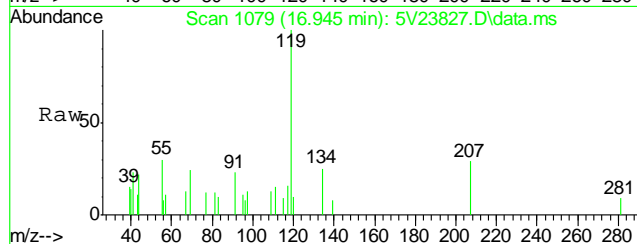
#82
1,2,4-Trimethylbenzene
Concen: 0.88 ug/l
RT: 16.693 min Scan# 1057
Delta R.T. 0.012 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

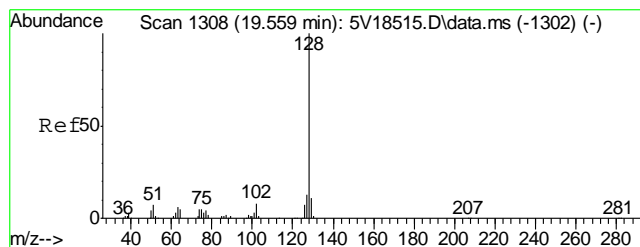
Tgt Ion	Ratio	Lower	Upper
105	100		
120	46.4	43.8	65.8



#86
p-Isopropyltoluene
Concen: 0.41 ug/l
RT: 16.945 min Scan# 1079
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

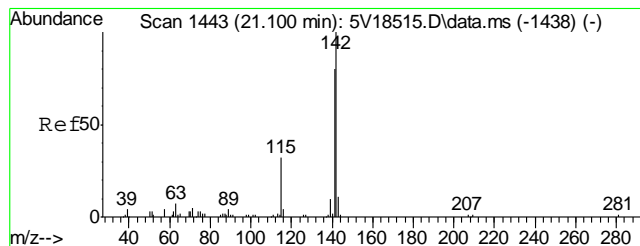
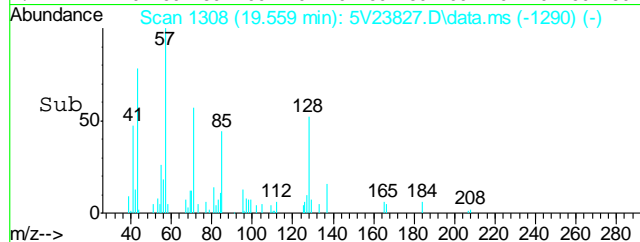
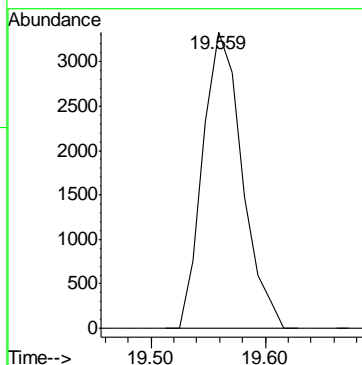
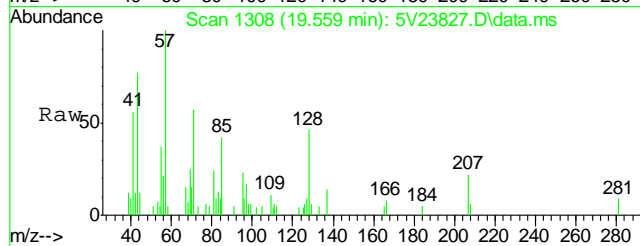
Tgt Ion	Ratio	Lower	Upper
119	100		
134	23.5	21.3	31.9
91	25.2	19.0	28.6





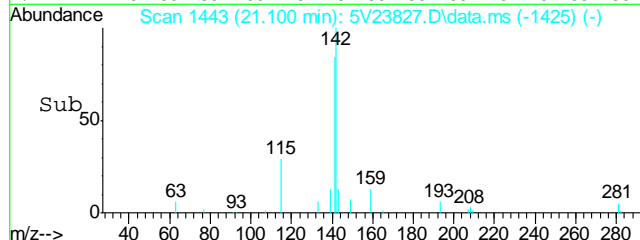
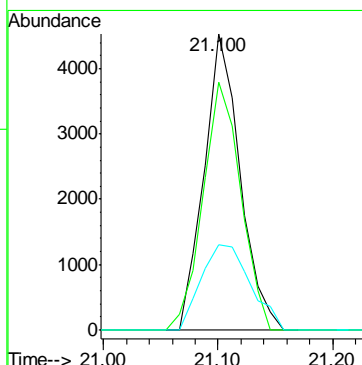
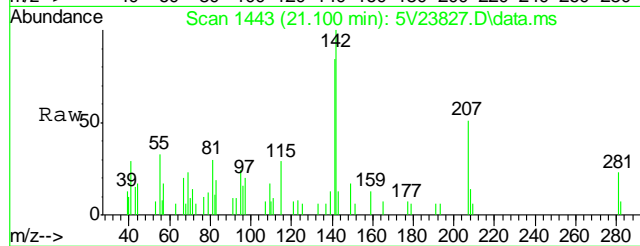
#91
Naphthalene
Concen: 0.70 ug/l
RT: 19.559 min Scan# 1308
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

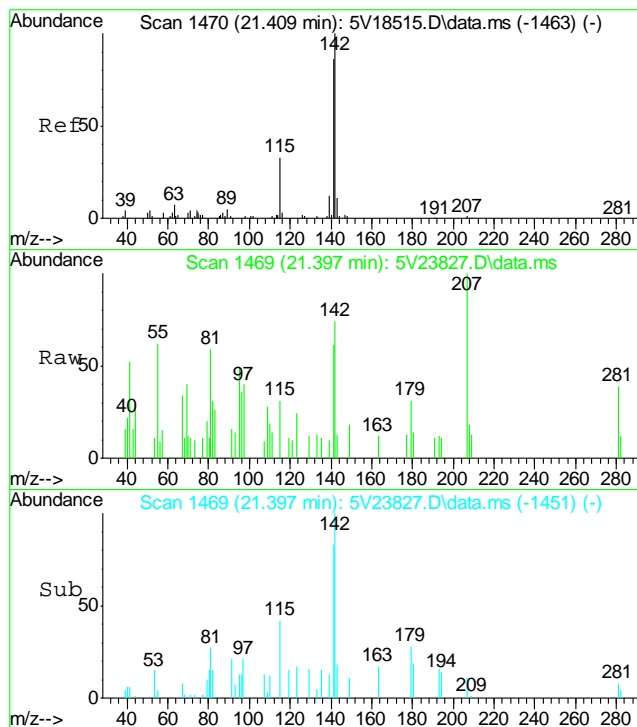
Tgt Ion:128 Resp: 7993



#94
2-Methylnaphthalene
Concen: 2.49 ug/l
RT: 21.100 min Scan# 1443
Delta R.T. 0.000 min
Lab File: 5V23827.D
Acq: 25 Sep 2012 4:38 pm

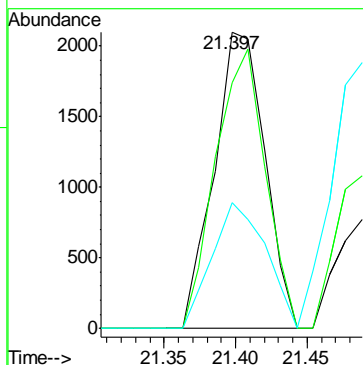
Tgt Ion:142 Resp: 9918
Ion Ratio Lower Upper
142 100
141 87.6 66.2 99.4
115 39.3 25.9 38.9#





#95
 1-Methylnaphthalene
 Concen: 1.51 ug/l
 RT: 21.397 min Scan# 1469
 Delta R.T. 0.001 min
 Lab File: 5V23827.D
 Acq: 25 Sep 2012 4:38 pm

Tgt Ion:	142	Resp:	5174
Ion Ratio	Lower	Upper	
142	100		
141	92.7	68.9	103.3
115	45.1	27.3	40.9



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5092512.S\
Data File : 5V23821.D
Acq On : 25 Sep 2012 1:20 pm
Operator : BRETD
Sample : MB
Misc : MS4708,V5V1448,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Sep 26 09:54:19 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M
Quant Title : 8260
QLast Update : Fri Sep 07 10:53:51 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	174604	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.447	114	235467	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	230191	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	153695	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	17134	51.16	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	102.32%
61) Toluene-d8	13.851	98	270681	49.58	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.16%
69) 4-Bromofluorobenzene	16.043	95	113065	45.47	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.94%

Target Compounds

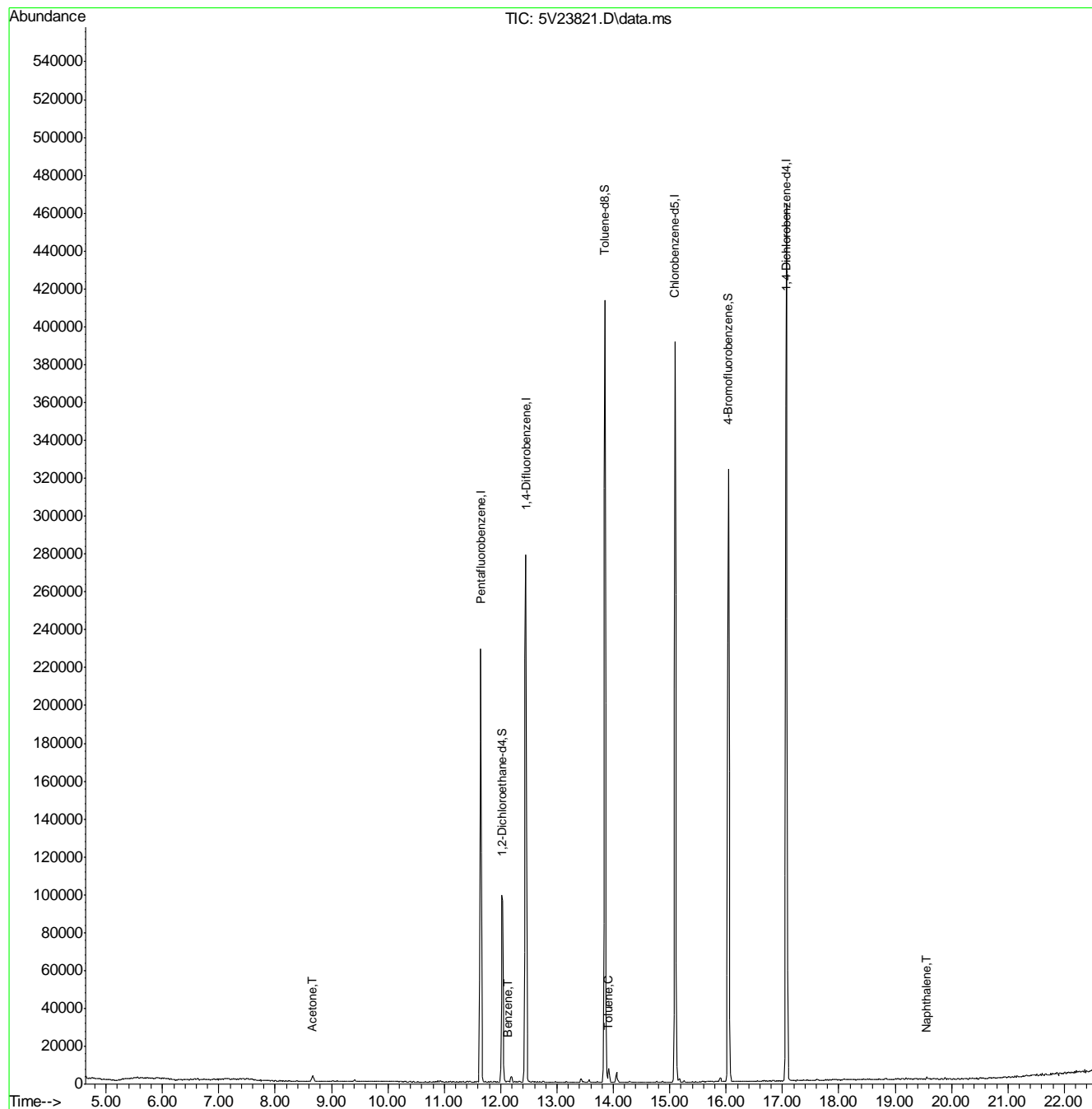
					Qvalue
15) Acetone	8.656	58	1471	3.78 ug/l	95
50) Benzene	12.127	78	352	0.05 ug/l	100
62) Toluene	13.908	92	917	0.19 ug/l #	76
91) Naphthalene	19.559	128	1724	0.20 ug/l	100

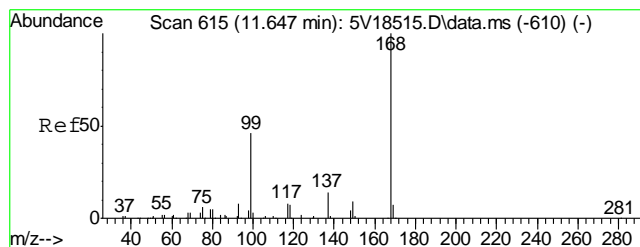
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5092512.S\
Data File : 5V23821.D
Acq On : 25 Sep 2012 1:20 pm
Operator : BRETD
Sample : MB
Misc : MS4708,V5V1448,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

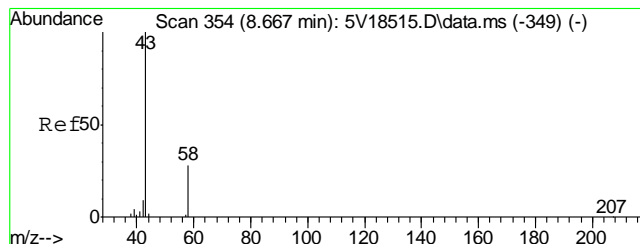
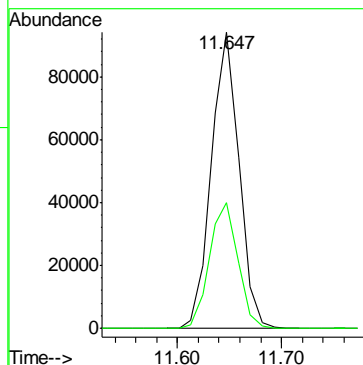
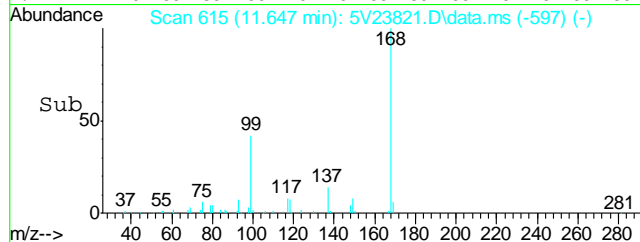
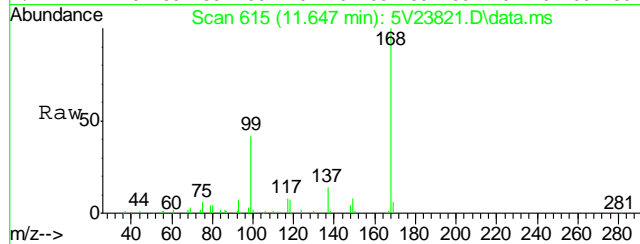
Quant Time: Sep 26 09:54:19 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M
Quant Title : 8260
QLast Update : Fri Sep 07 10:53:51 2012
Response via : Initial Calibration





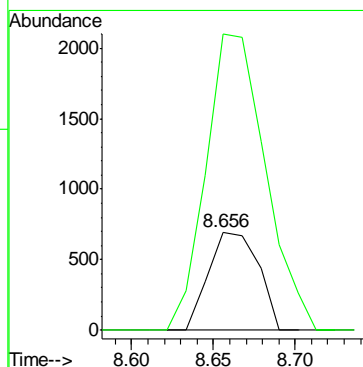
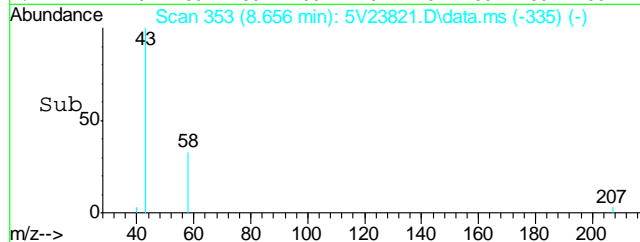
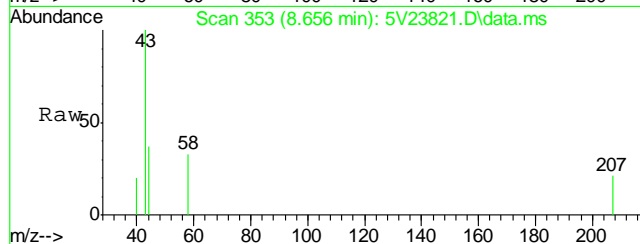
#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.647 min Scan# 615
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

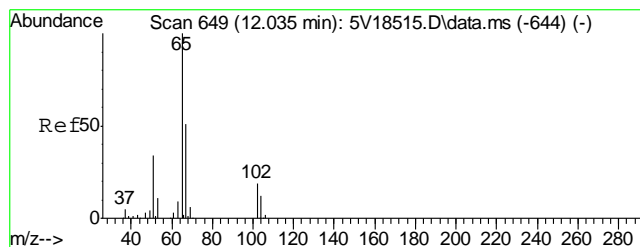
Tgt Ion: 168 Resp: 174604
Ion Ratio Lower Upper
168 100
99 43.4 37.4 56.2



#15
Acetone
Concen: 3.78 ug/l
RT: 8.656 min Scan# 353
Delta R.T. 0.001 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

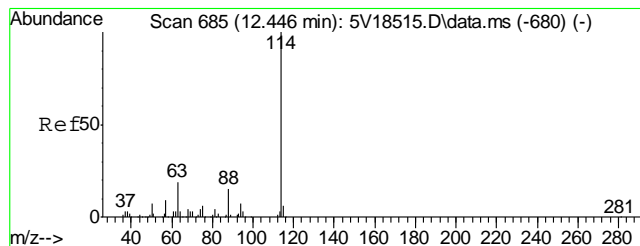
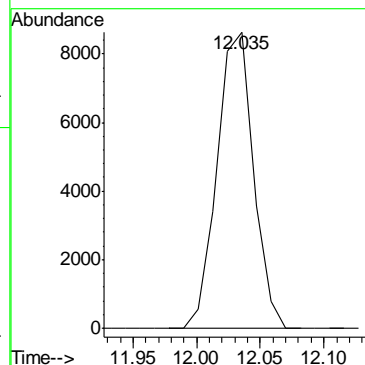
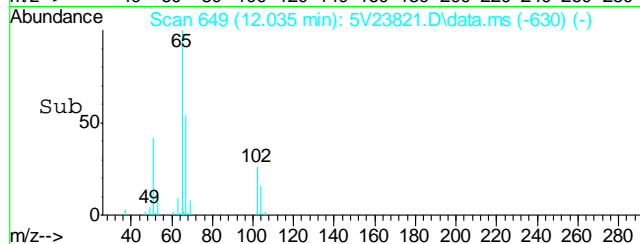
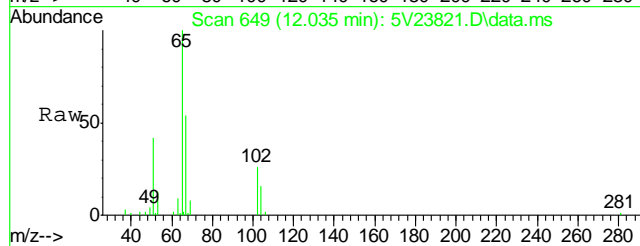
Tgt Ion: 58 Resp: 1471
Ion Ratio Lower Upper
58 100
43 361.5 353.6 393.6





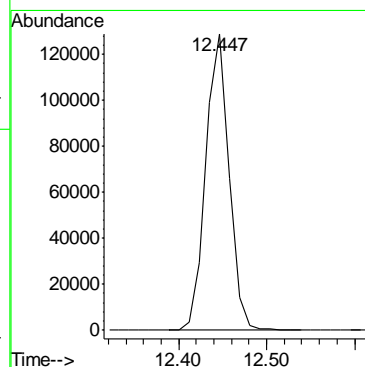
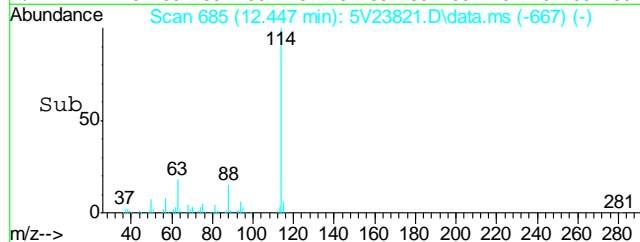
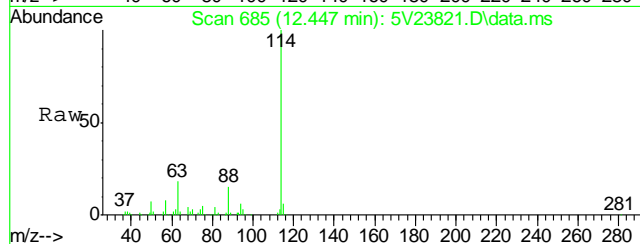
#33
1,2-Dichloroethane-d4
Concen: 51.16 ug/l
RT: 12.035 min Scan# 649
Delta R.T. 0.012 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

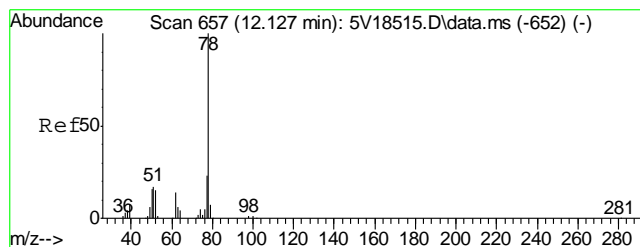
Tgt Ion:102 Resp: 17134



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.447 min Scan# 685
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

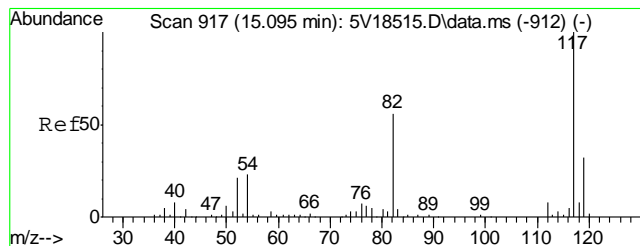
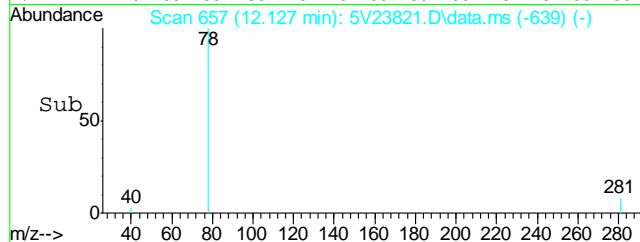
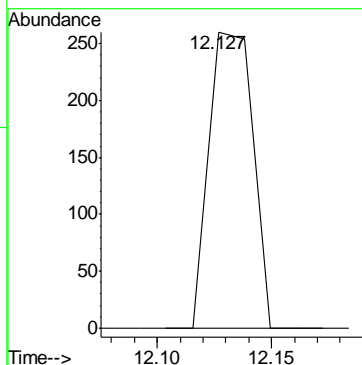
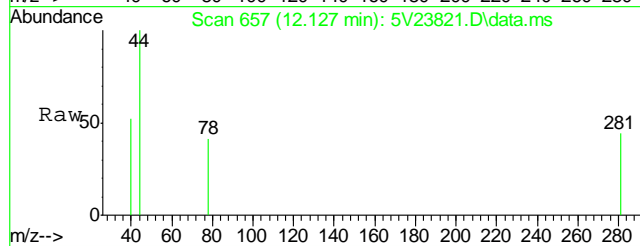
Tgt Ion:114 Resp: 235467





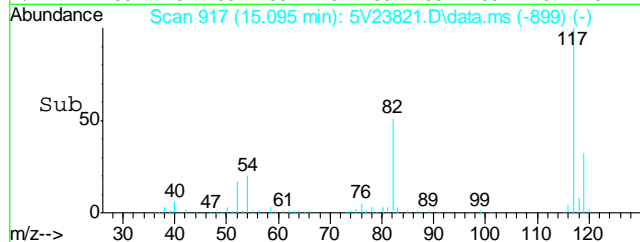
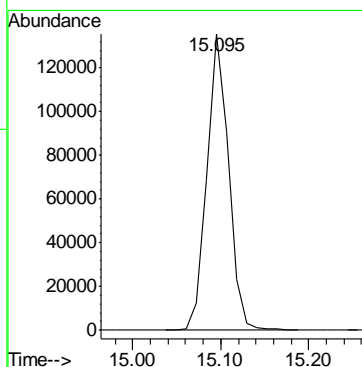
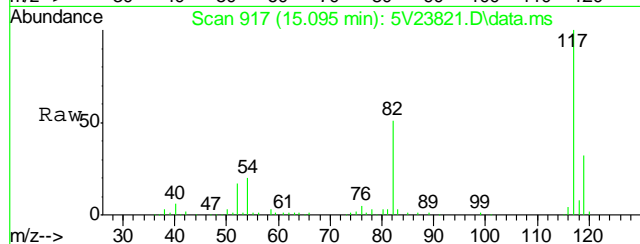
#50
Benzene
Concen: 0.05 ug/l
RT: 12.127 min Scan# 657
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

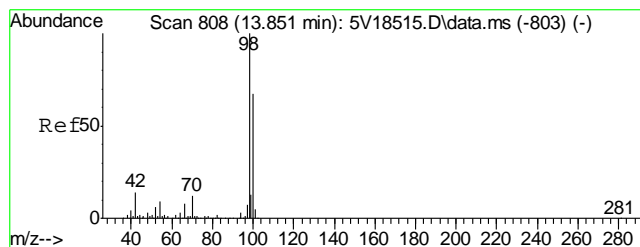
Tgt Ion: 78 Resp: 352



#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.095 min Scan# 917
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

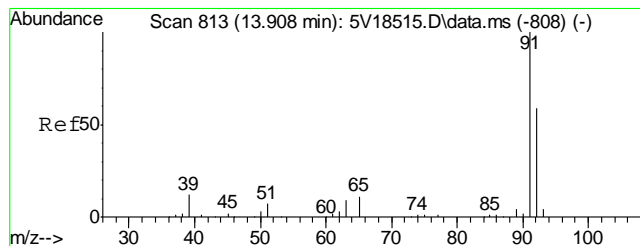
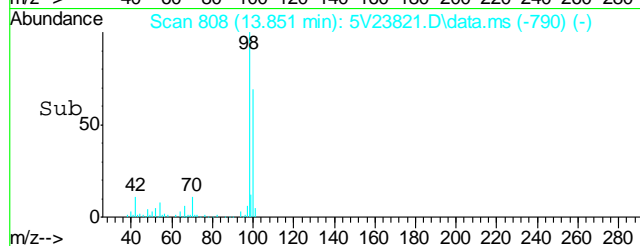
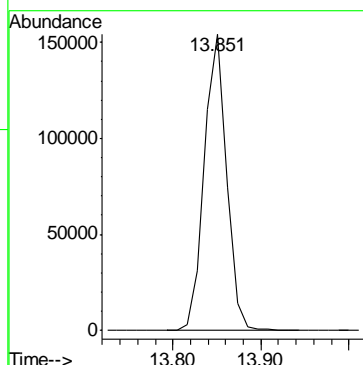
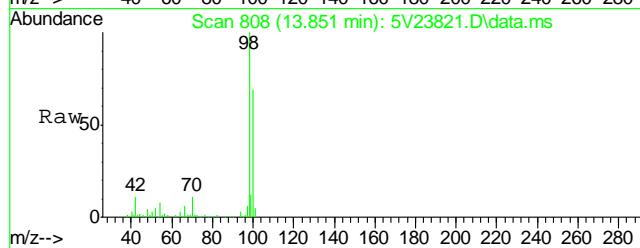
Tgt Ion: 117 Resp: 230191





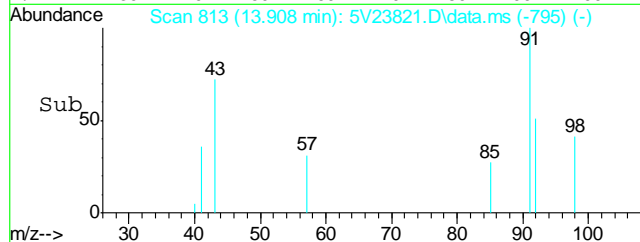
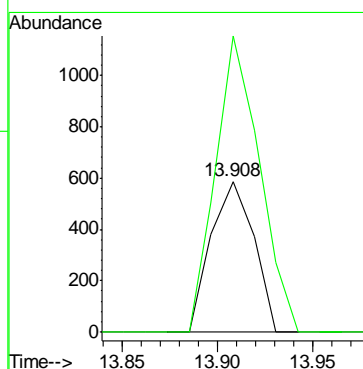
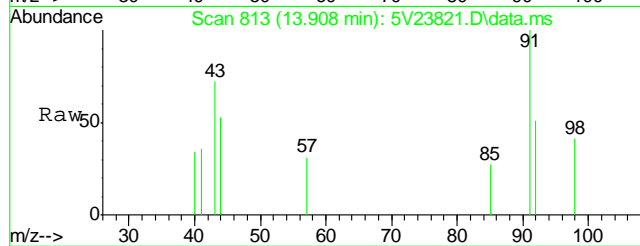
#61
Toluene-d8
Concen: 49.58 ug/l
RT: 13.851 min Scan# 808
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

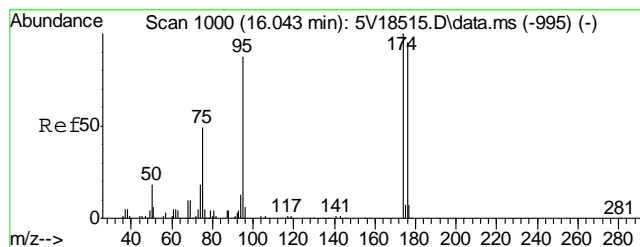
Tgt Ion: 98 Resp: 270681



#62
Toluene
Concen: 0.19 ug/l
RT: 13.908 min Scan# 813
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

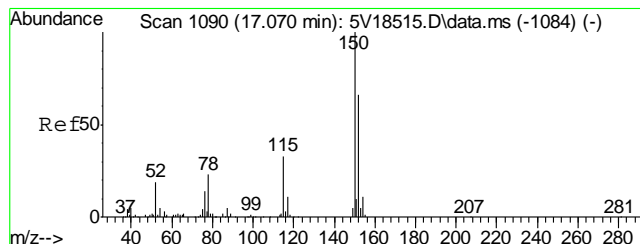
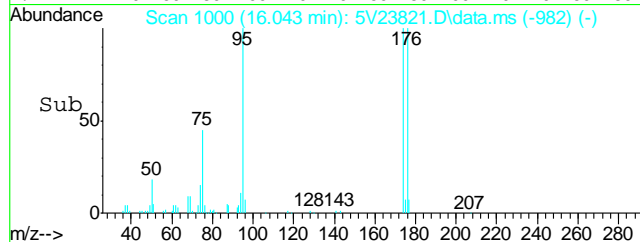
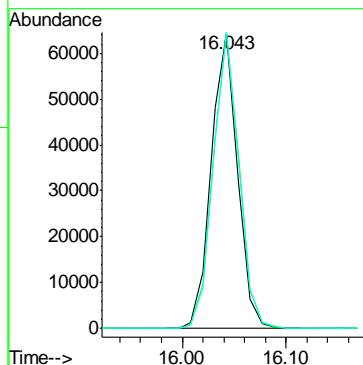
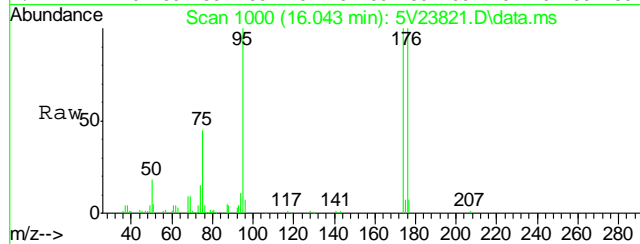
Tgt Ion: 92 Resp: 917
Ion Ratio Lower Upper
92 100
91 202.8 149.8 189.8#





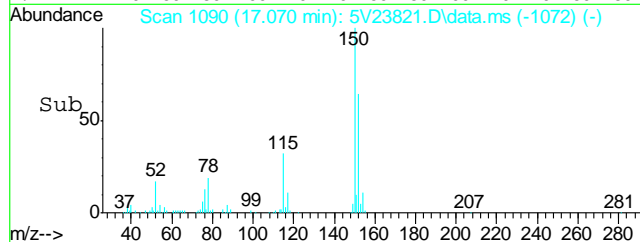
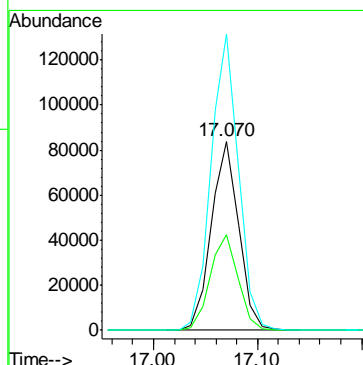
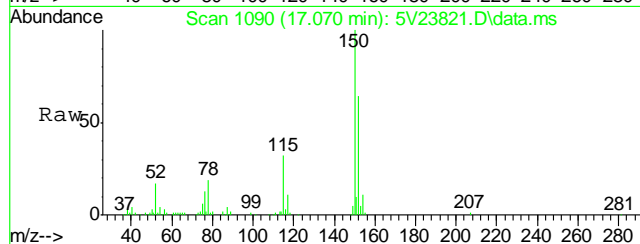
#69
4-Bromofluorobenzene
Concen: 45.47 ug/l
RT: 16.043 min Scan# 1000
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

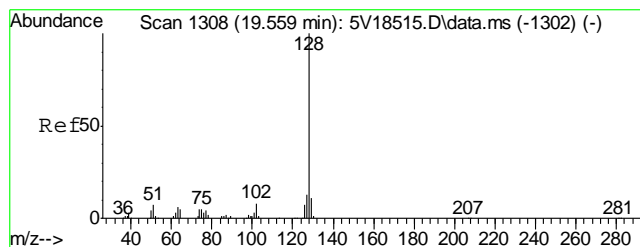
Tgt Ion	Ratio	Lower	Upper
95	100		
174	99.0	77.1	117.1
176	98.1	73.4	113.4



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.070 min Scan# 1090
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

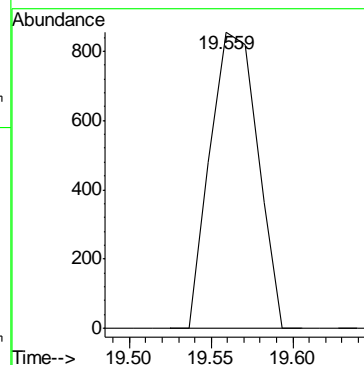
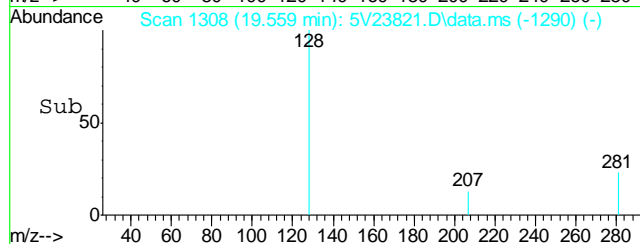
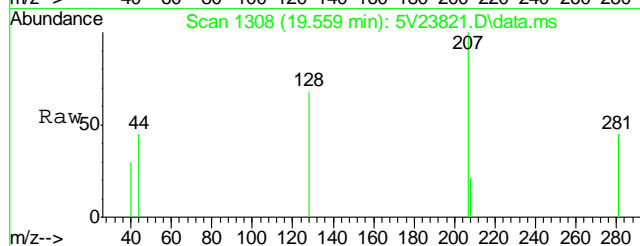
Tgt Ion	Ratio	Lower	Upper
152	100		
115	51.5	41.4	62.0
150	157.0	153.9	230.9





#91
Naphthalene
Concen: 0.20 ug/l
RT: 19.559 min Scan# 1308
Delta R.T. 0.000 min
Lab File: 5V23821.D
Acq: 25 Sep 2012 1:20 pm

Tgt Ion:128 Resp: 1724



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: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6688-MB	3G11363.D	1	09/24/12	DC	09/24/12	OP6688	E3G531

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

D39008-1

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	
50-32-8	Benzo(a)pyrene	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	
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	85% 10-145%
321-60-8	2-Fluorobiphenyl	98% 10-130%
1718-51-0	Terphenyl-d14	107% 22-130%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6688-BS	3G11364.D	1	09/24/12	DC	09/24/12	OP6688	E3G531

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D39008-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	78.4	94	34-130
120-12-7	Anthracene	83.3	83.9	101	35-130
56-55-3	Benzo(a)anthracene	83.3	62.3	75	36-130
50-32-8	Benzo(a)pyrene	83.3	70.5	85	36-130
205-99-2	Benzo(b)fluoranthene	83.3	50.8	61	35-130
207-08-9	Benzo(k)fluoranthene	83.3	86.8	104	37-130
218-01-9	Chrysene	83.3	87.0	104	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	75.9	91	32-130
206-44-0	Fluoranthene	83.3	74.2	89	38-130
86-73-7	Fluorene	83.3	74.5	89	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	74.4	89	28-130
91-20-3	Naphthalene	83.3	79.7	96	35-130
129-00-0	Pyrene	83.3	76.7	92	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	85%	10-145%
321-60-8	2-Fluorobiphenyl	91%	10-130%
1718-51-0	Terphenyl-d14	96%	22-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6688-MS	3G11366.D	1	09/24/12	DC	09/24/12	OP6688	E3G531
OP6688-MSD	3G11367.D	1	09/24/12	DC	09/24/12	OP6688	E3G531
D39010-1	3G11365.D	1	09/24/12	DC	09/24/12	OP6688	E3G531

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D39008-1

CAS No.	Compound	D39010-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		91.7	84.0	92	87.5	96	4	10-155/30
120-12-7	Anthracene	ND		91.7	92.3	101	98.9	108	7	10-155/30
56-55-3	Benzo(a)anthracene	ND		91.7	83.3	91	90.7	99	9	10-175/30
50-32-8	Benzo(a)pyrene	ND		91.7	76.5	83	79.4	87	4	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		91.7	66.3	72	74.9	82	12	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		91.7	89.1	97	99.1	109	11	10-178/30
218-01-9	Chrysene	ND		91.7	89.4	97	96.4	106	8	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		91.7	75.5	82	79.5	87	5	10-144/30
206-44-0	Fluoranthene	ND		91.7	88.9	97	94.4	103	6	10-207/30
86-73-7	Fluorene	5.4	J	91.7	91.3	94	98.5	102	8	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		91.7	74.3	81	78.5	86	5	10-180/30
91-20-3	Naphthalene	36.5		91.7	123	94	127	99	3	10-198/30
129-00-0	Pyrene	ND		91.7	93.4	102	102	112	9	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D39010-1	Limits
4165-60-0	Nitrobenzene-d5	71%	71%	68%	10-145%
321-60-8	2-Fluorobiphenyl	75%	76%	70%	10-130%
1718-51-0	Terphenyl-d14	80%	85%	82%	22-130%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092412\
 Data File : 3g11372.D
 Acq On : 24 Sep 2012 7:14 pm
 Operator : DONC
 Sample : D39008-1
 Misc : OP6688,E3G531,30.04,,,1,1
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Sep 25 09:28:03 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M
 Quant Title : PAHSIM BASE
 QLast Update : Thu Sep 06 09:42:23 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.922	136	176608	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.640	164	103632	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.121	188	175150	4.0000	ug/mL	0.00
19) Chrysene-d12	11.753	240	145180	4.0000	ug/mL	0.00
24) Perylene-d12	13.189	264	86362	4.0000	ug/mL	0.01

System Monitoring Compounds

2) Nitrobenzene-d5	5.223	82	705081	40.5779	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	81.16%		
7) 2-Fluorobiphenyl	6.966	172	1782101	41.3401	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	82.68%		
21) Terphenyl-d14	10.704	244	889653	40.6699	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	81.34%		

Target Compounds

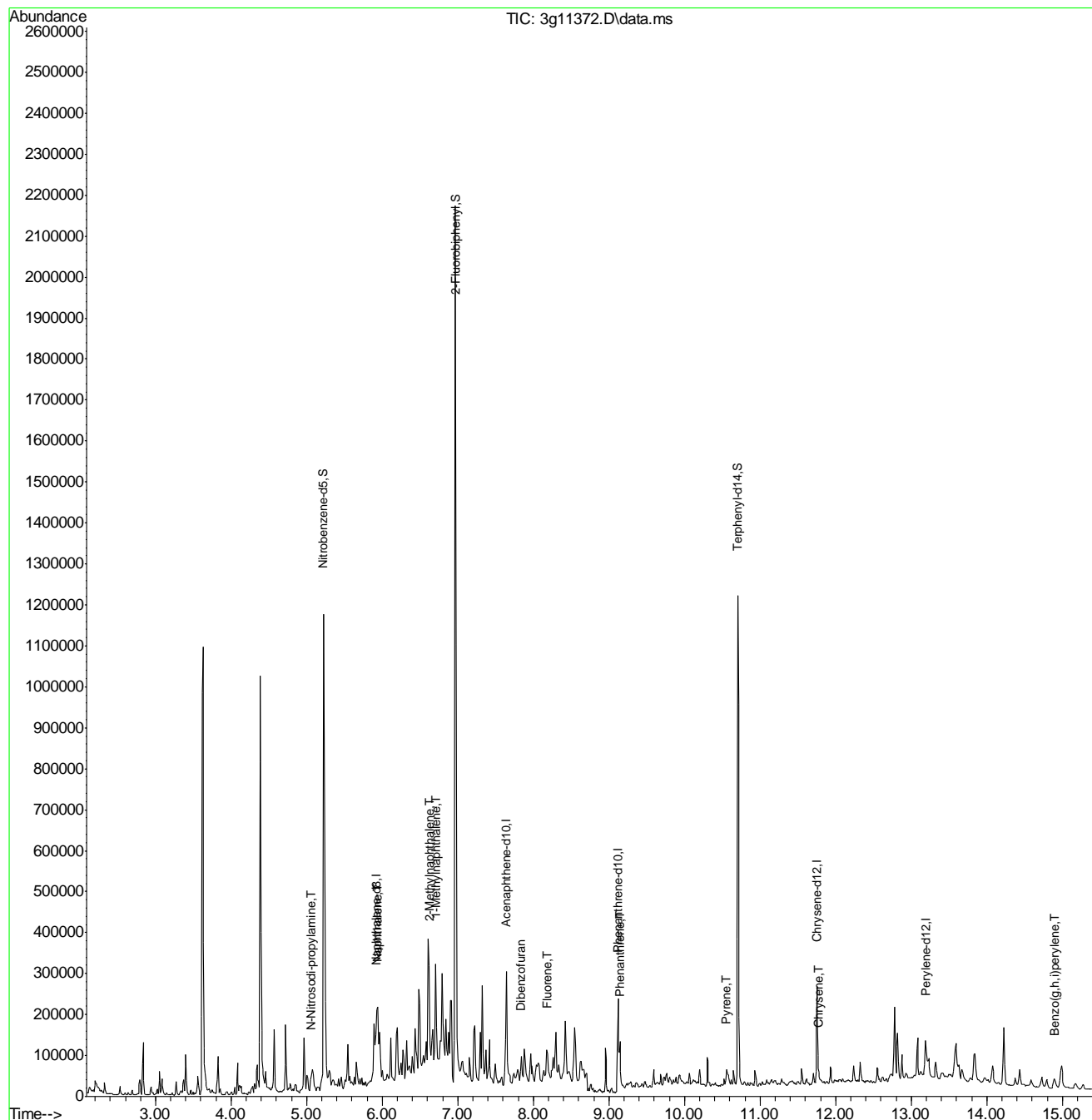
					Qvalue
3) N-Nitrosodimethylamine	2.777	74	248	N.D.	
4) N-Nitrosodi-propylamine	5.061	70	23749	1.7414 ug/mL	86
5) Naphthalene	5.934	128	149837	3.0487 ug/mL	83
8) 2-Methylnaphthalene	6.620	142	217391	7.0955 ug/mL	96
9) 1-Methylnaphthalene	6.707	142	125672	3.9637 ug/mL	97
10) Acenaphthylene	0.000	152	0	N.D. d	
11) Acenaphthene	0.000	154	0	N.D. d	
12) Dibenzofuran	7.840	168	19487	0.3684 ug/mL	78
13) Fluorene	8.183	166	22572	0.5333 ug/mL#	54
14) Diphenylamine	0.000	169	0	N.D. d	
16) Phenanthrene	9.145	178	84885	1.3815 ug/mL#	71
17) Anthracene	0.000	178	0	N.D. d	
18) Fluoranthene	0.000	202	0	N.D. d	
20) Pyrene	10.553	202	18368	0.2643 ug/mL#	75
22) Benzo(a)anthracene	0.000	228	0	N.D. d	
23) Chrysene	11.779	228	19021	0.2914 ug/mL	83
25) Benzo(b)fluoranthene	0.000	252	0	N.D. d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D. d	
27) Benzo(a)pyrene	13.125	252	2085	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.514	276	1815	N.D.	
29) Dibenz(a,h)anthracene	14.524	278	650	N.D.	
30) Benzo(g,h,i)perylene	14.903	276	2934	0.0528 ug/mL#	1

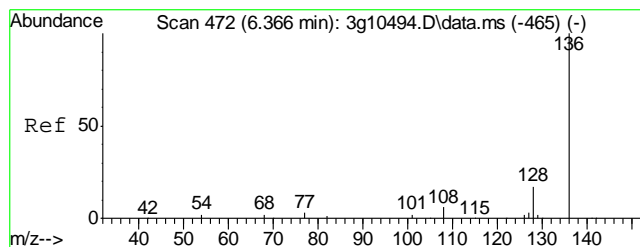
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092412\
Data File : 3g11372.D
Acq On : 24 Sep 2012 7:14 pm
Operator : DONC
Sample : D39008-1
Misc : OP6688,E3G531,30.04,,,1,1
ALS Vial : 13 Sample Multiplier: 1

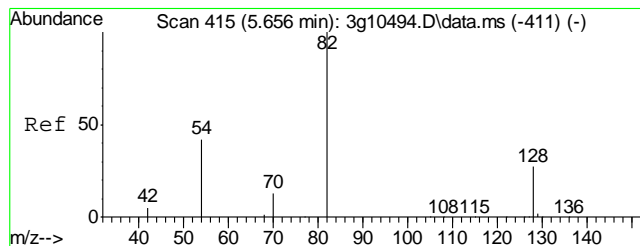
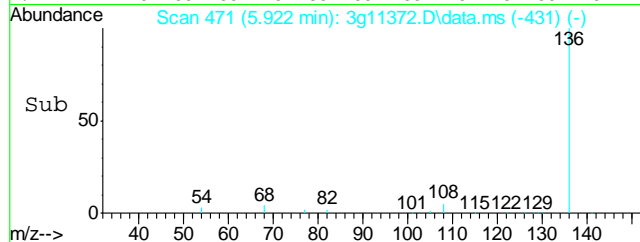
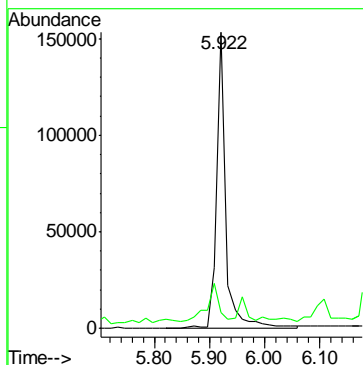
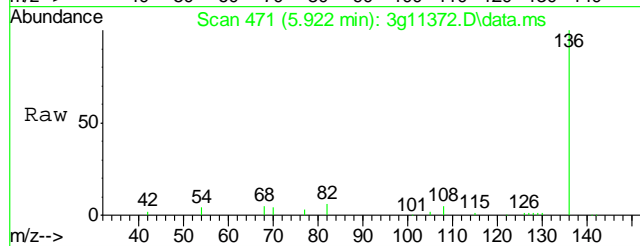
Quant Time: Sep 25 09:28:03 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M
Quant Title : PAHSIM BASE
QLast Update : Thu Sep 06 09:42:23 2012
Response via : Initial Calibration





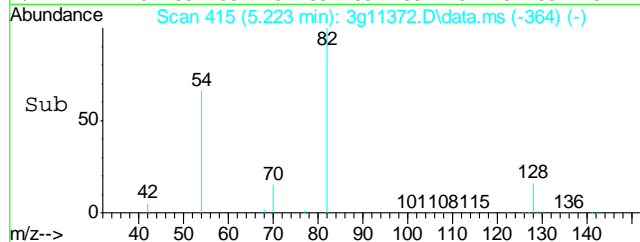
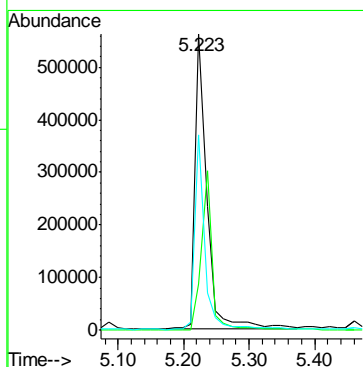
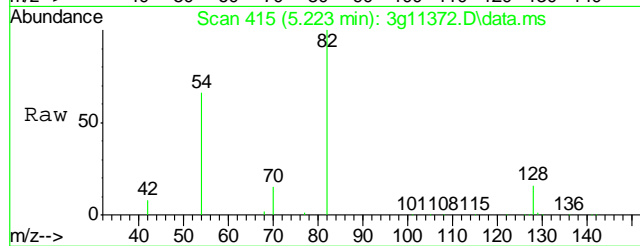
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.922 min Scan# 471
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

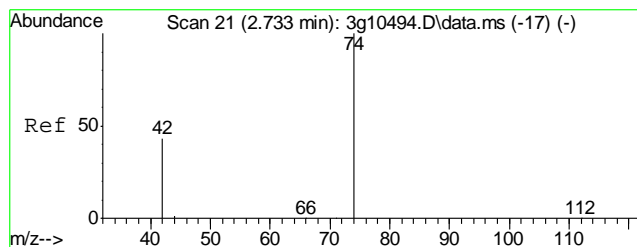
Tgt Ion	Ratio	Lower	Upper
136	100		
68	17.4	0.0	30.4



#2
Nitrobenzene-d5
Concen: 40.5779 ug/mL
RT: 5.223 min Scan# 415
Delta R.T. 0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

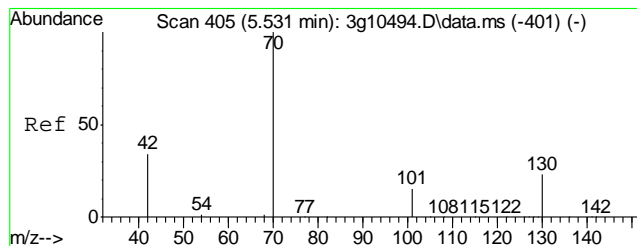
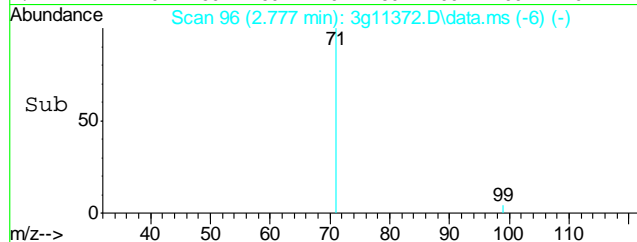
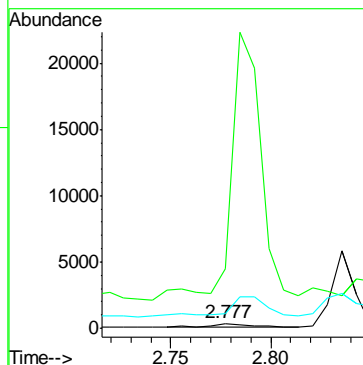
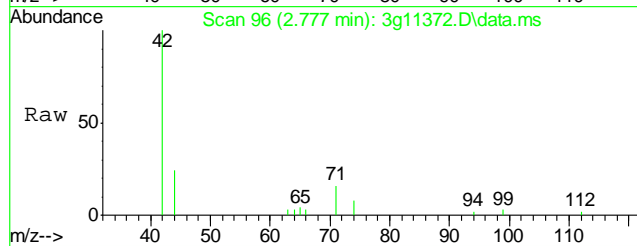
Tgt Ion	Ratio	Lower	Upper
82	100		
128	50.0	19.7	59.7
54	55.7	28.6	68.6





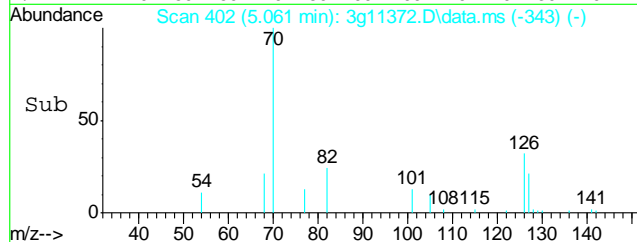
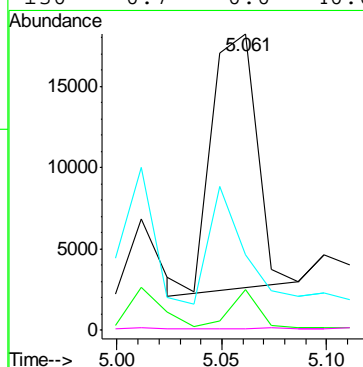
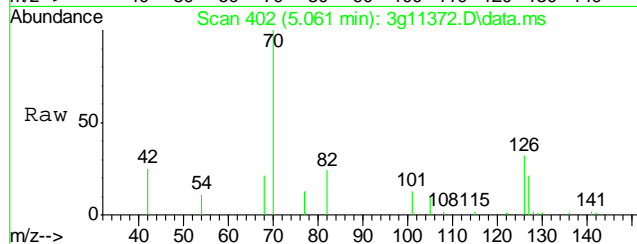
#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.777 min Scan# 96
Delta R.T. 0.152 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

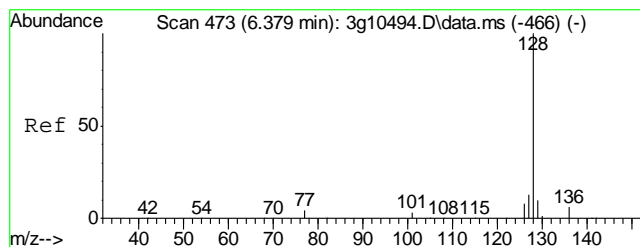
Tgt Ion: 74 Resp: 248
Ion Ratio Lower Upper
74 100
42 8298.0 33.3 73.3#
44 742.7 0.0 23.5#



#4
N-Nitrosodi-propylamine
Concen: 1.7414 ug/mL
RT: 5.061 min Scan# 402
Delta R.T. -0.013 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

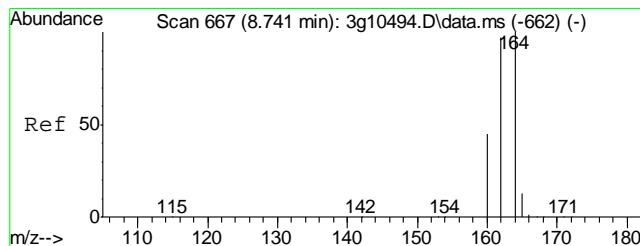
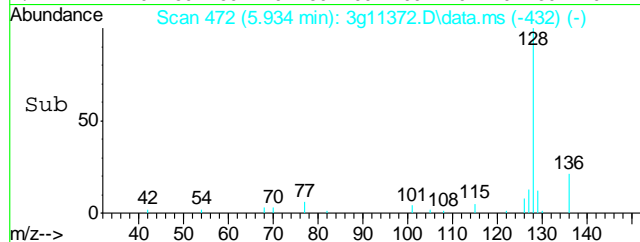
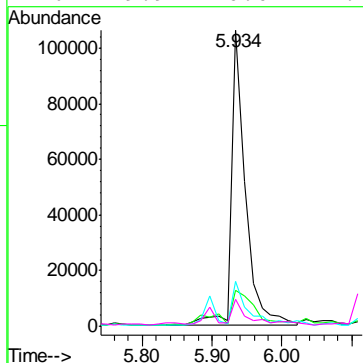
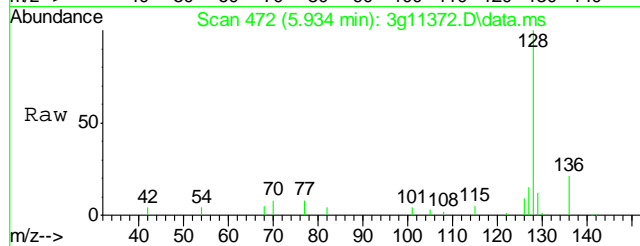
Tgt Ion: 70 Resp: 23749
Ion Ratio Lower Upper
70 100
101 11.2 0.0 30.3
42 44.8 27.6 67.6
130 0.7 0.0 40.0





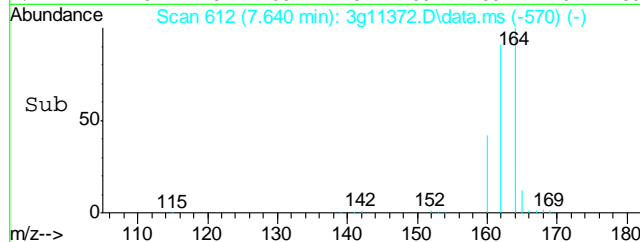
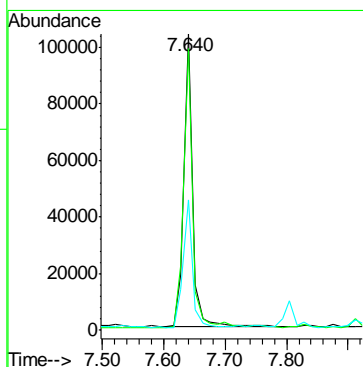
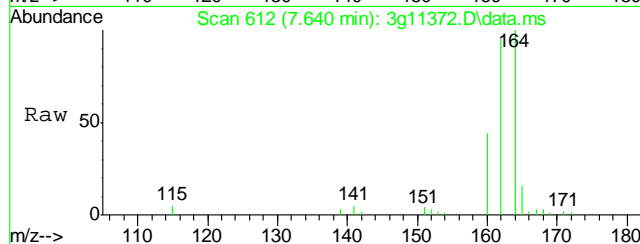
#5
Naphthalene
Concen: 3.0487 ug/mL
RT: 5.934 min Scan# 472
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

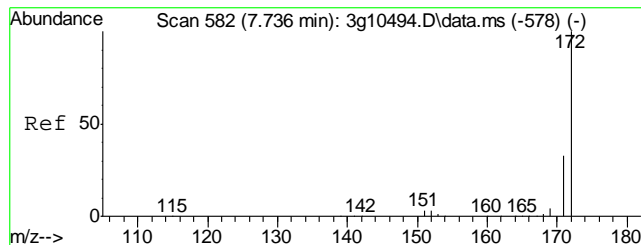
Tgt Ion	Ratio	Lower	Upper
128	100		
129	25.2	0.0	30.8
127	16.3	0.0	33.4
126	9.9	0.0	27.7



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.640 min Scan# 612
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

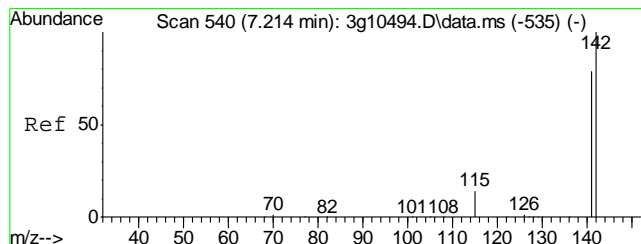
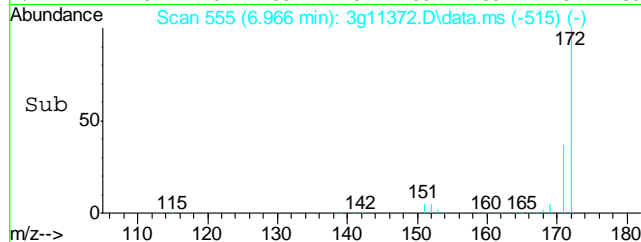
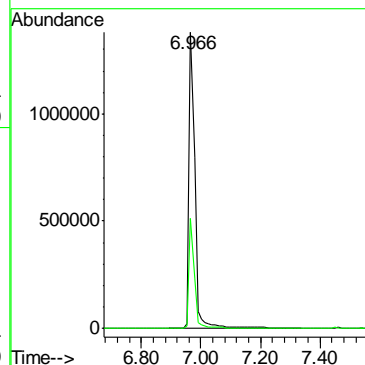
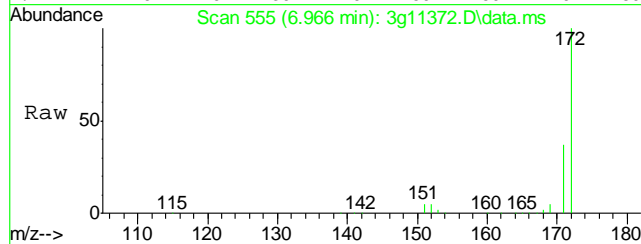
Tgt Ion	Ratio	Lower	Upper
164	100		
162	100.1	73.5	113.5
160	46.9	21.8	61.8





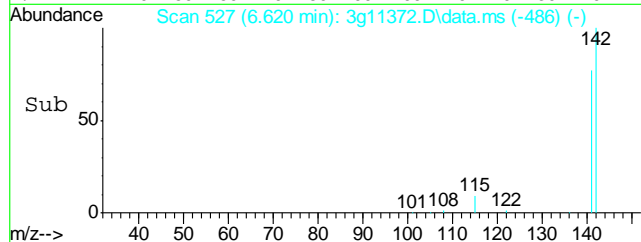
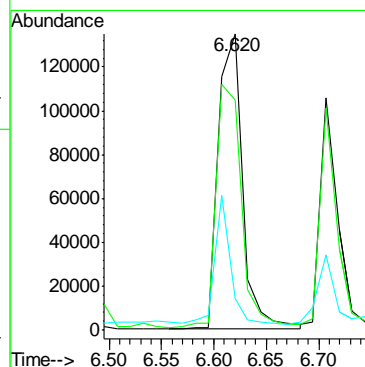
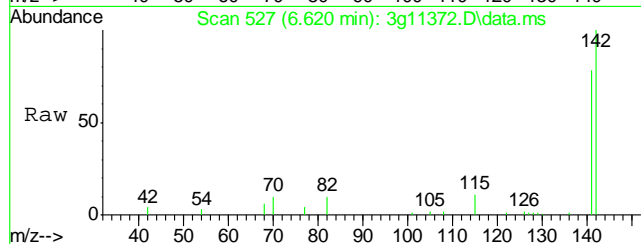
#7
2-Fluorobiphenyl
Concen: 41.3401 ug/mL
RT: 6.966 min Scan# 555
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

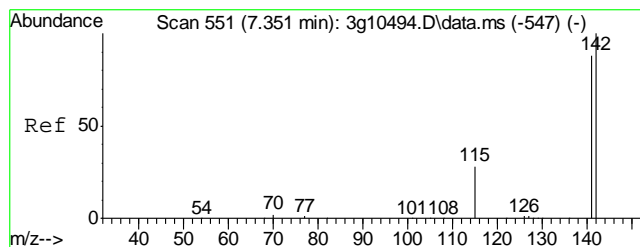
Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.7	13.6	53.6



#8
2-Methylnaphthalene
Concen: 7.0955 ug/mL
RT: 6.620 min Scan# 527
Delta R.T. 0.012 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

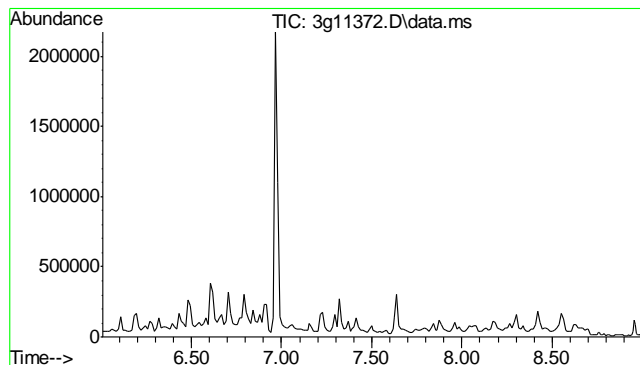
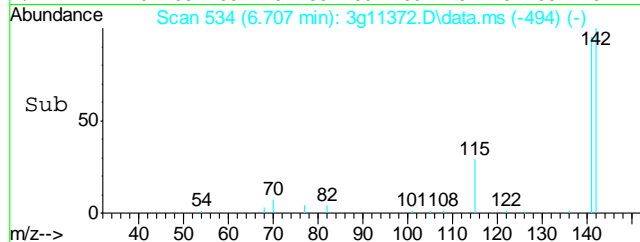
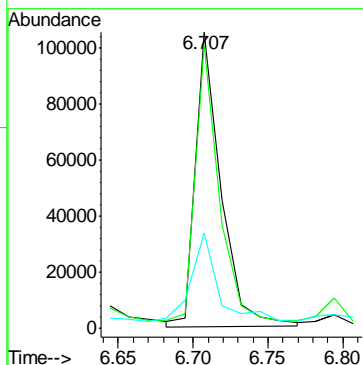
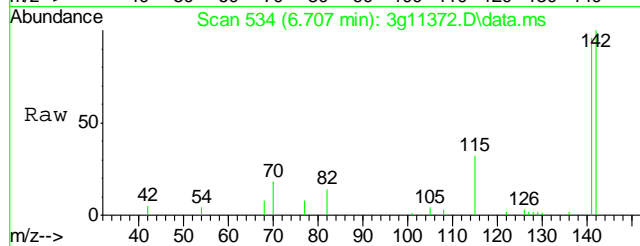
Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.4	64.5	104.5
115	27.6	13.6	53.6





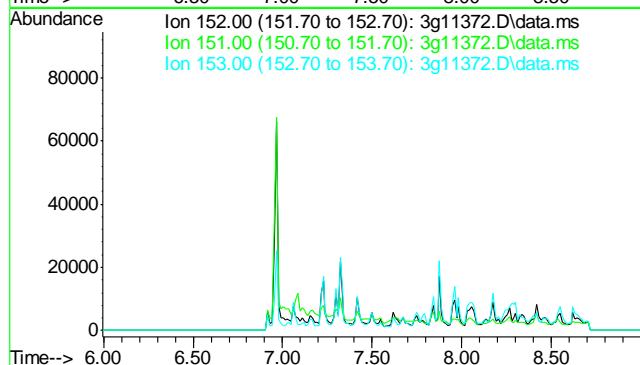
#9
1-Methylnaphthalene
Concen: 3.9637 ug/mL
RT: 6.707 min Scan# 534
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

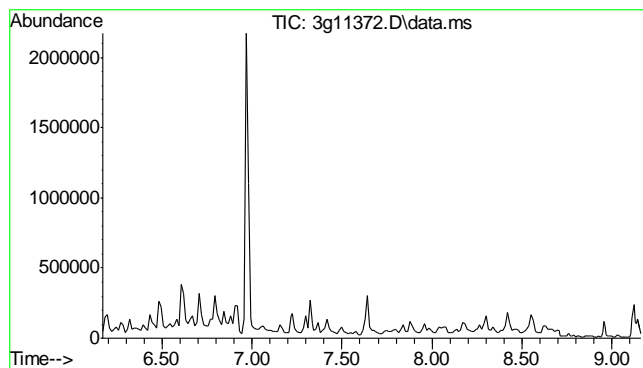
Tgt Ion:	142	Resp:	125672
Ion Ratio	Lower	Upper	
142	100		
141	91.7	67.8	107.8
115	31.1	11.0	51.0



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 7.50 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

Tgt Ion:	152
Sig	Exp Ratio
152	100
151	19.2
153	13.2

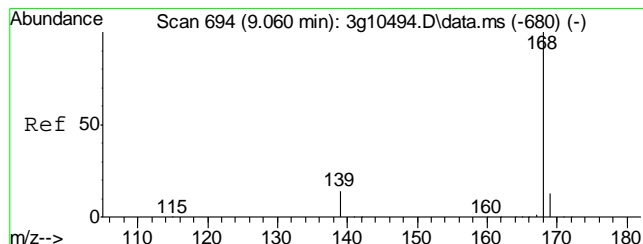
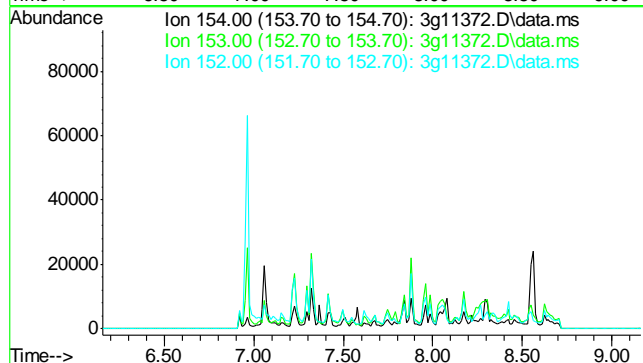




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 7.66 min

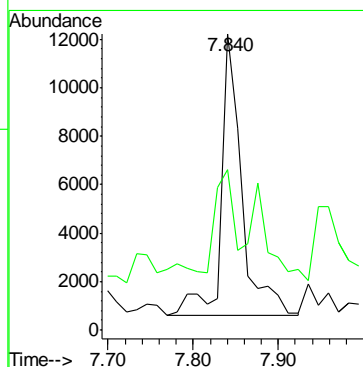
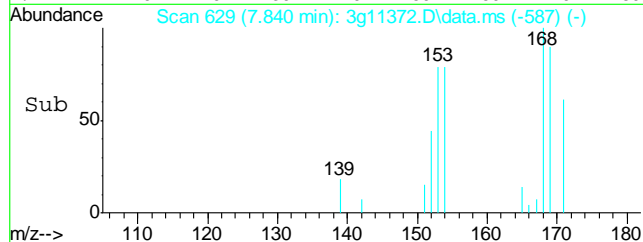
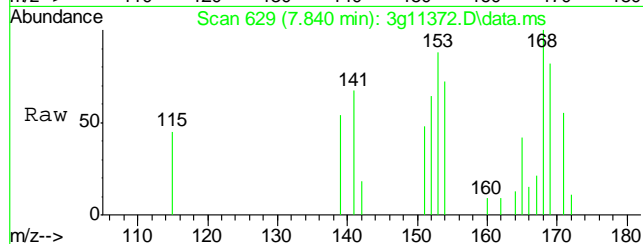
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

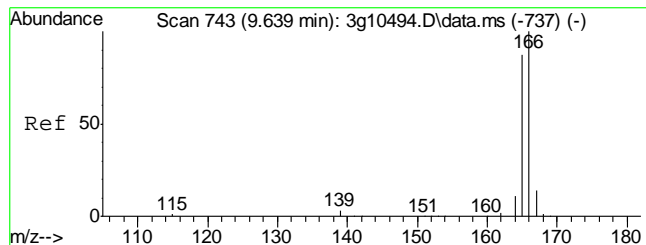
Tgt Ion: 154
Sig Exp Ratio
154 100
153 104.8
152 49.9



#12
Dibenzofuran
Concen: 0.3684 ug/mL
RT: 7.840 min Scan# 629
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

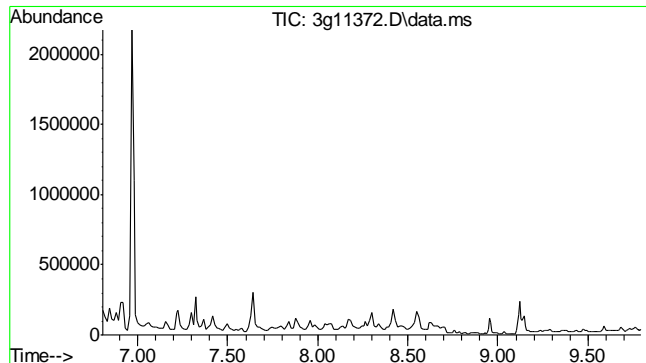
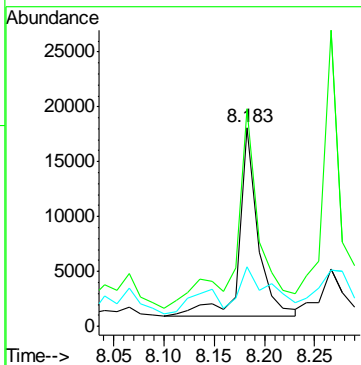
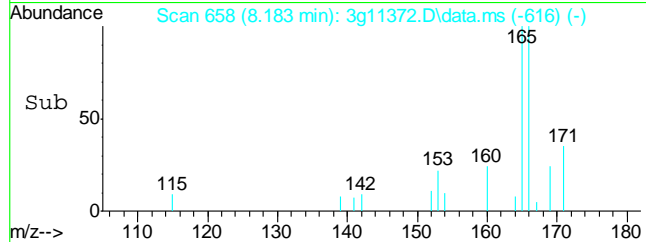
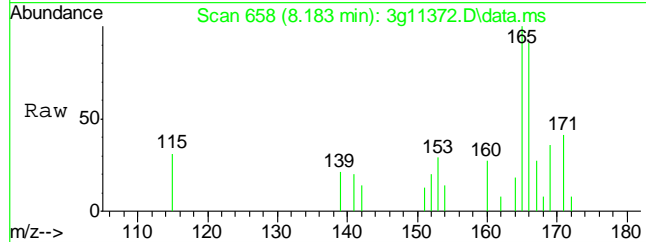
Tgt Ion: 168 Resp: 19487
Ion Ratio Lower Upper
168 100
139 39.4 7.6 47.6





#13
Fluorene
Concen: 0.5333 ug/mL
RT: 8.183 min Scan# 658
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

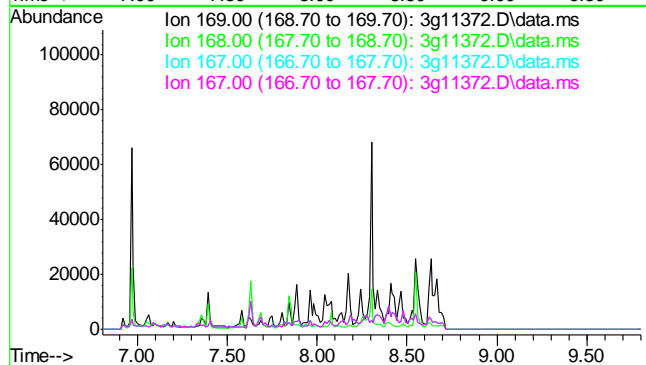
Tgt Ion:	166	Resp:	22572
Ion Ratio	Lower	Upper	
166	100		
165	133.9	71.1	111.1#
167	33.0	0.0	33.3

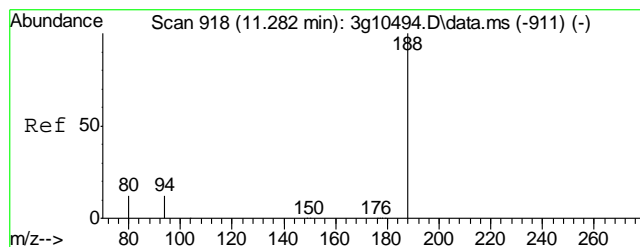


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.30 min

Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

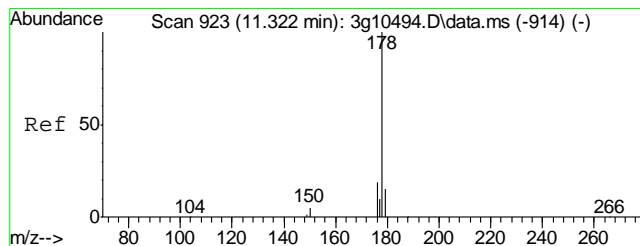
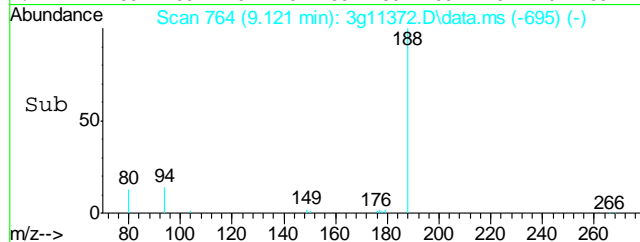
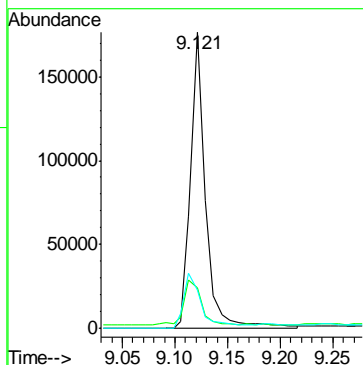
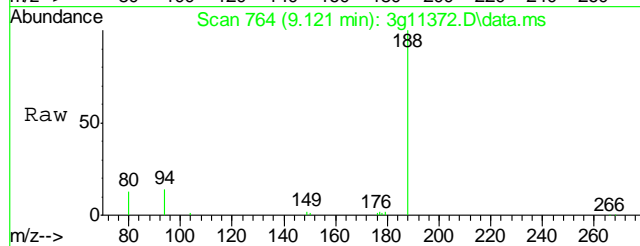
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.0
167	32.9
167	32.9





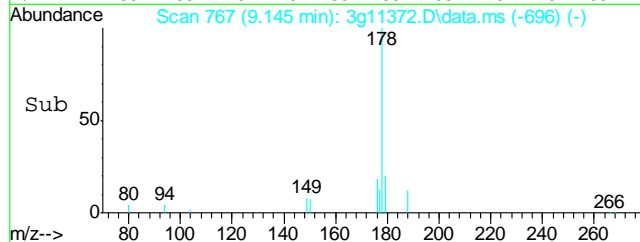
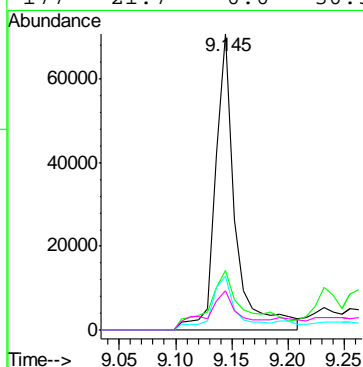
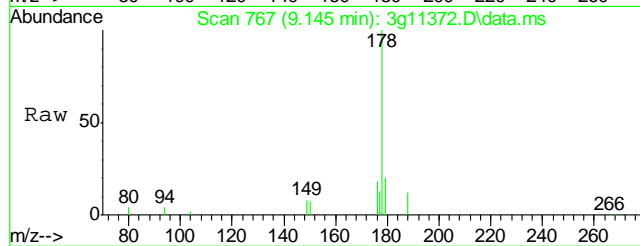
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 9.121 min Scan# 764
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

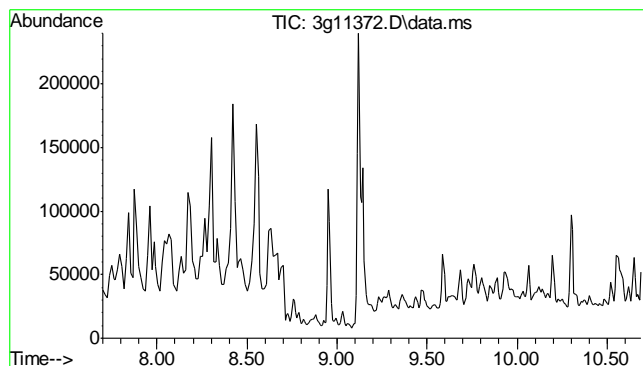
Tgt Ion:188	Resp:	175150
Ion Ratio	Lower	Upper
188	100	
94	16.5	0.0 33.9
80	21.6	0.0 35.5



#16
Phenanthrene
Concen: 1.3815 ug/mL
RT: 9.145 min Scan# 767
Delta R.T. 0.008 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

Tgt Ion:178	Resp:	84885
Ion Ratio	Lower	Upper
178	100	
179	36.7	0.0 35.3#
176	22.8	0.0 38.5
177	21.7	0.0 30.5

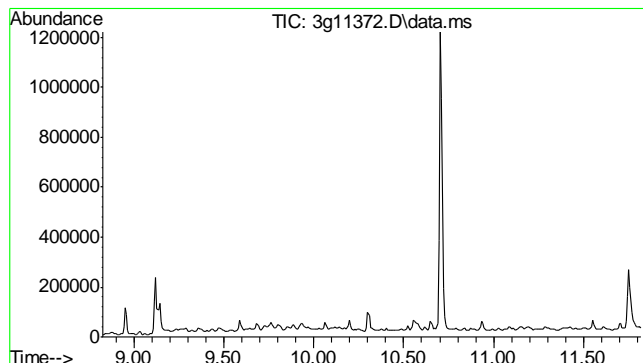
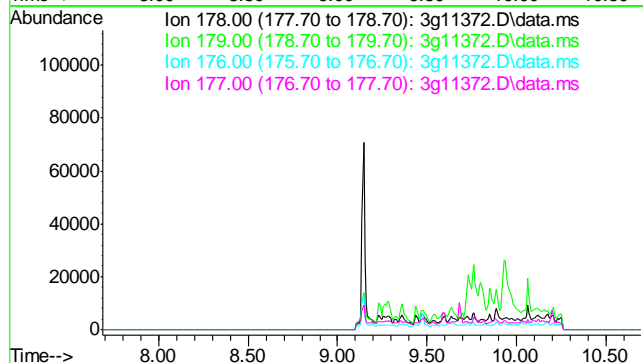




#17
 Anthracene
 Concen: N.D. ug/mL
 Expected RT: 9.19 min

 Lab File: 3g11372.D
 Acq: 24 Sep 12 7:14 pm

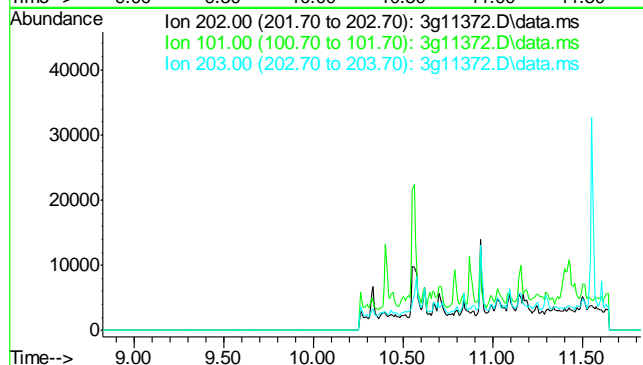
Tgt Ion	Sig	Exp Ratio
178	100	
179	15.2	
176	17.7	
177	9.0	

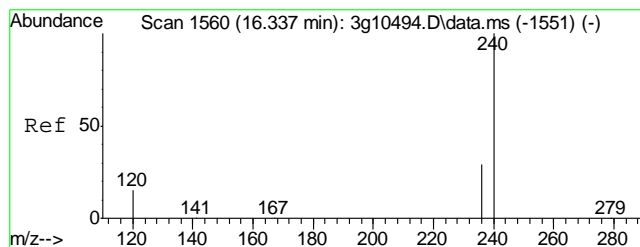


#18
 Fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 10.32 min

 Lab File: 3g11372.D
 Acq: 24 Sep 12 7:14 pm

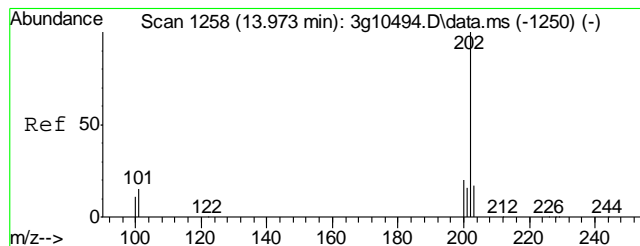
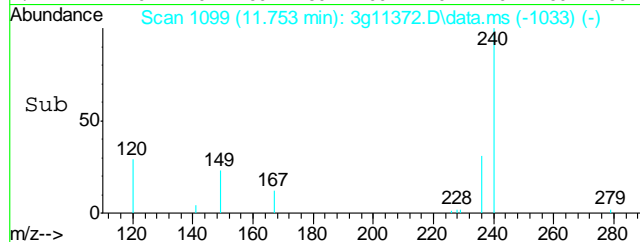
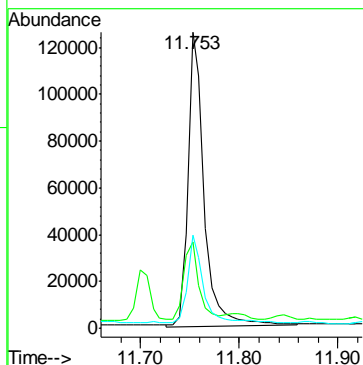
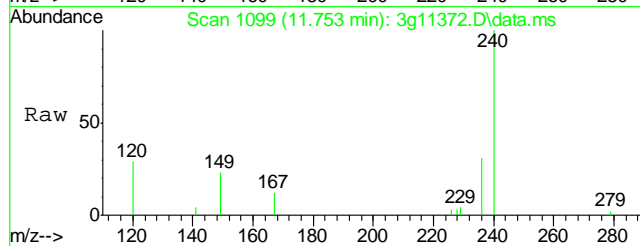
Tgt Ion	Sig	Exp Ratio
202	100	
101	13.0	
203	17.4	





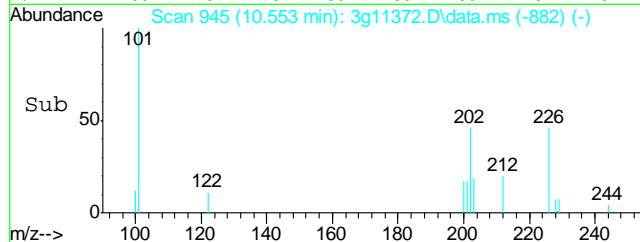
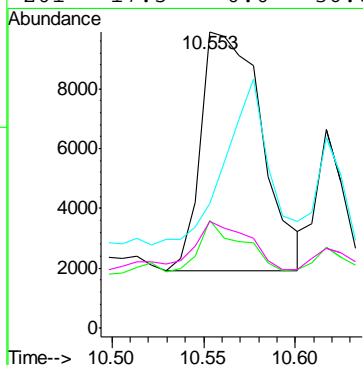
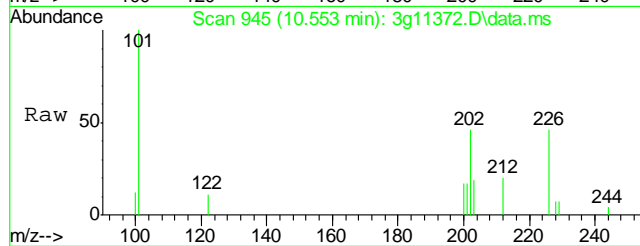
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.753 min Scan# 1099
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

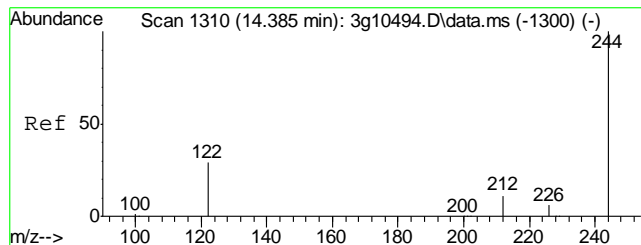
Tgt Ion:	240	Resp:	145180
Ion Ratio	Lower	Upper	
240	100		
120	24.9	0.0	36.2
236	32.4	8.8	48.8



#20
Pyrene
Concen: 0.2643 ug/mL
RT: 10.553 min Scan# 945
Delta R.T. 0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

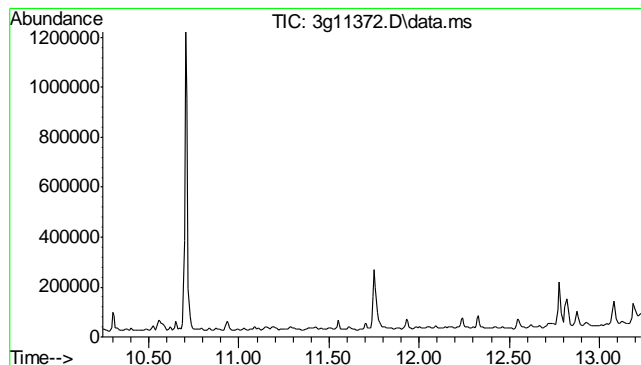
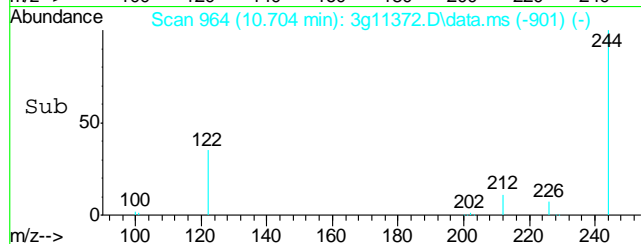
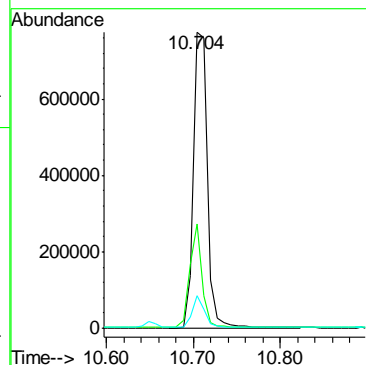
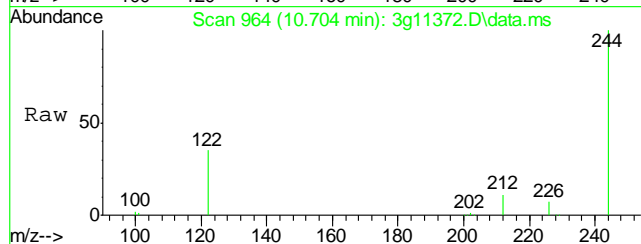
Tgt Ion:	202	Resp:	18368
Ion Ratio	Lower	Upper	
202	100		
200	15.2	0.1	40.1
203	44.8	0.0	37.8#
201	17.5	0.0	36.6





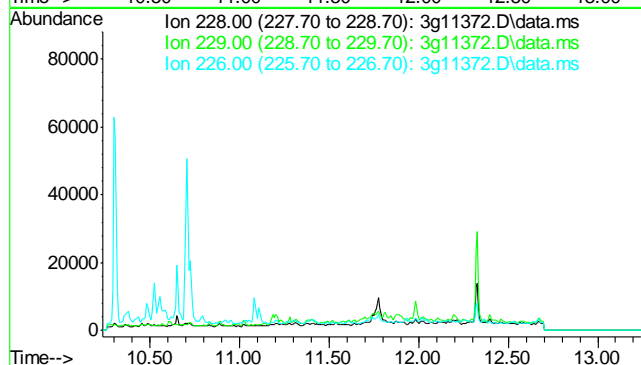
#21
Terphenyl-d14
Concen: 40.6699 ug/mL
RT: 10.704 min Scan# 964
Delta R.T. -0.000 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

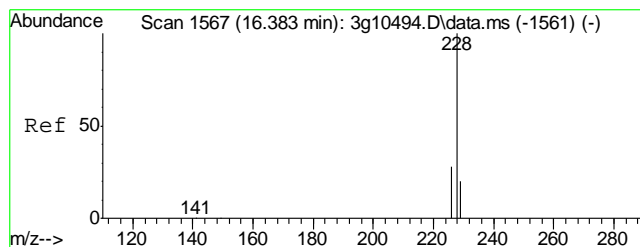
Tgt Ion:	244	Resp:	889653
Ion Ratio	Lower	Upper	
244	100		
122	30.3	1.3	41.3
212	9.3	0.0	28.8



#22
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 11.74 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

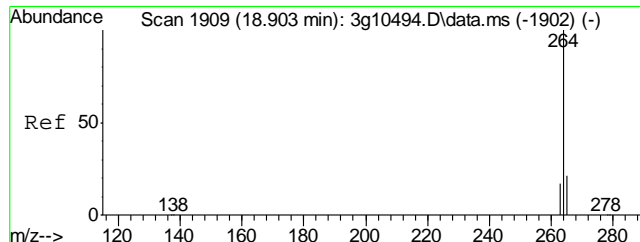
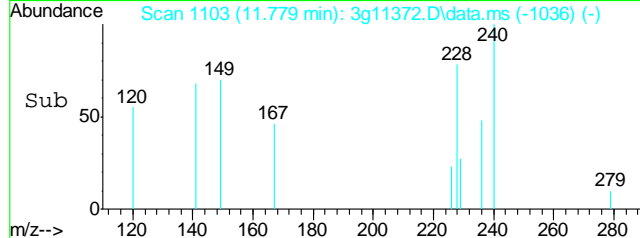
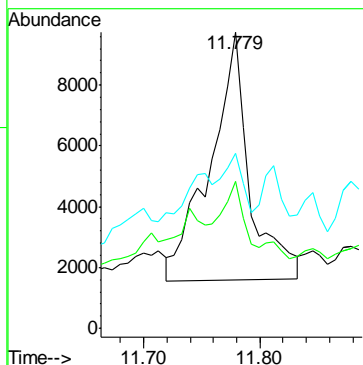
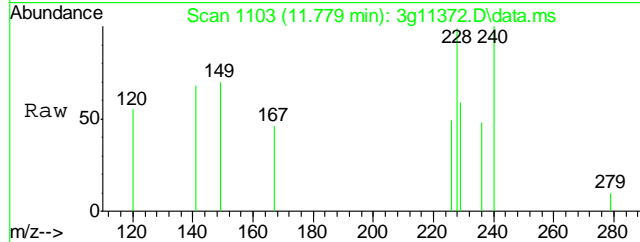
Tgt Ion:	228
Sig	Exp Ratio
228	100
229	19.6
226	26.6





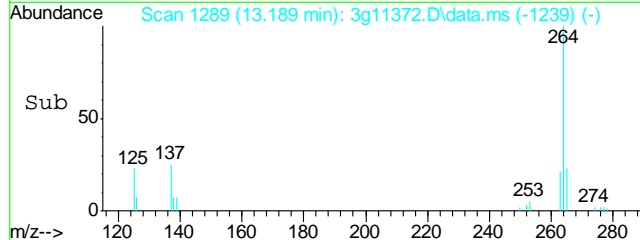
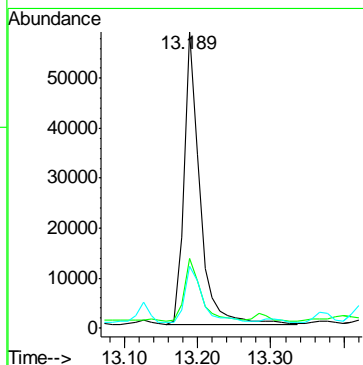
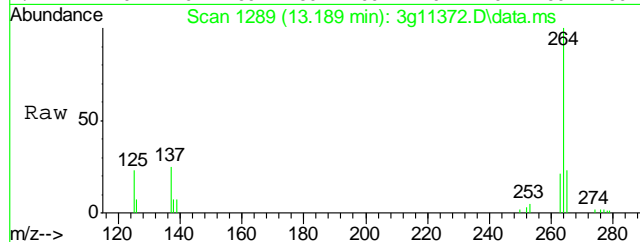
#23
Chrysene
Concen: 0.2914 ug/mL
RT: 11.779 min Scan# 1103
Delta R.T. 0.007 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

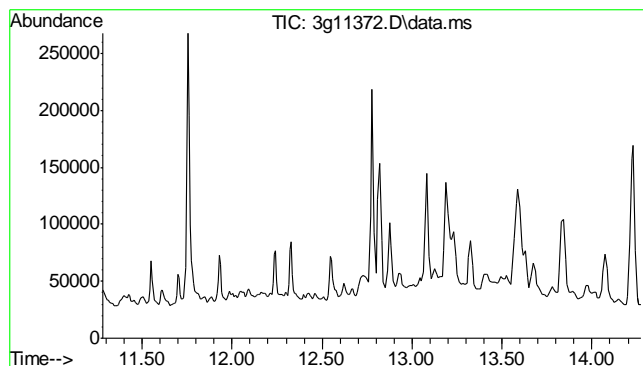
Tgt Ion:	228	Resp:	19021
Ion Ratio	Lower	Upper	
228	100		
226	16.3	8.6	48.6
229	22.4	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.189 min Scan# 1289
Delta R.T. 0.010 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

Tgt Ion:	264	Resp:	86362
Ion Ratio	Lower	Upper	
264	100		
265	21.8	1.0	41.0
263	21.9	0.0	39.0

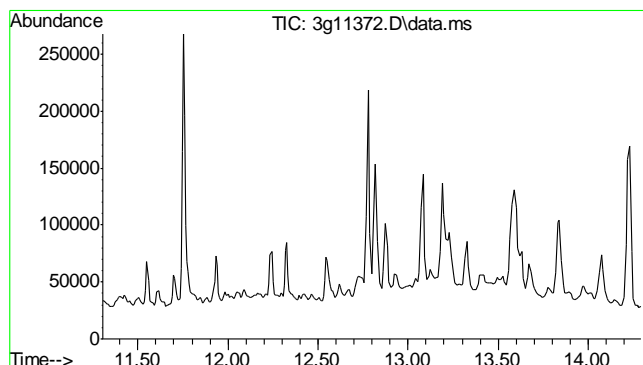
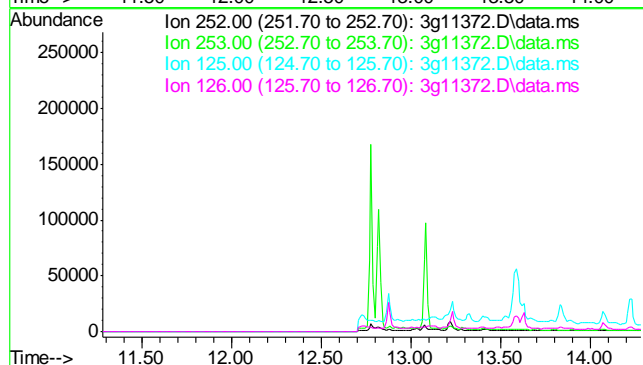




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.78 min

Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

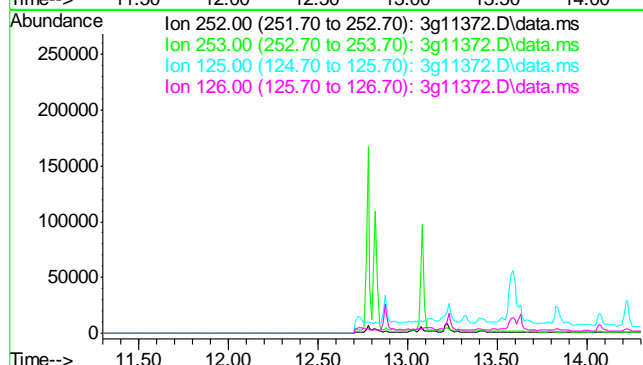
Tgt Ion	252	253	125	126
Sig	252	253	125	126
Exp Ratio	100	22.9	11.5	14.7

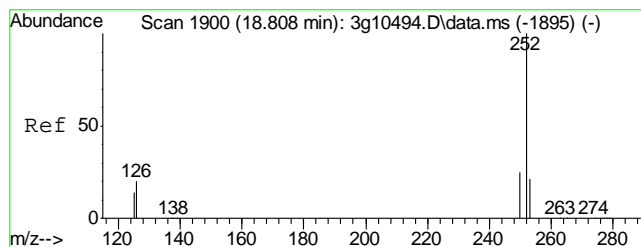


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.80 min

Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

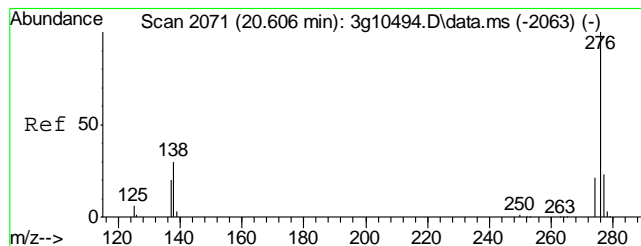
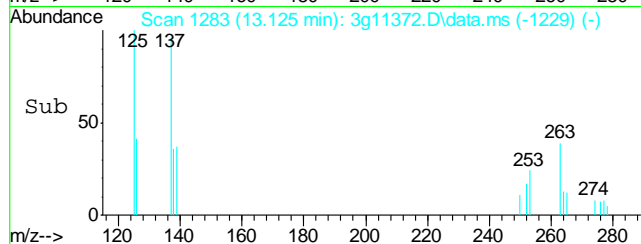
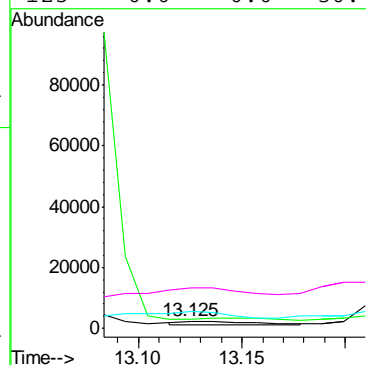
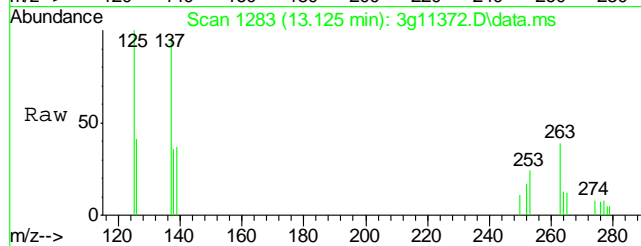
Tgt Ion	252	253	125	126
Sig	252	253	125	126
Exp Ratio	100	21.8	11.0	14.0





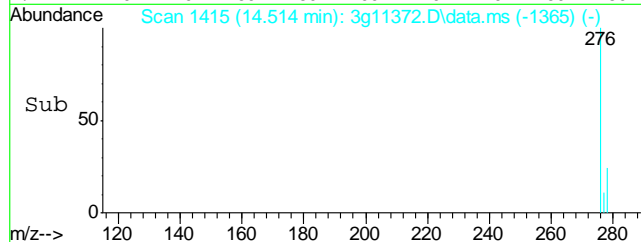
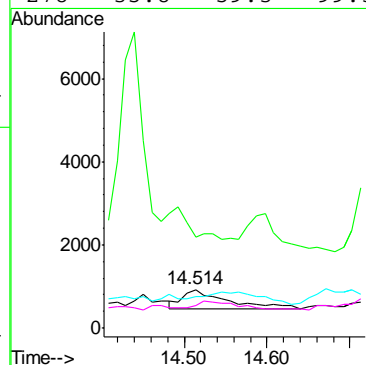
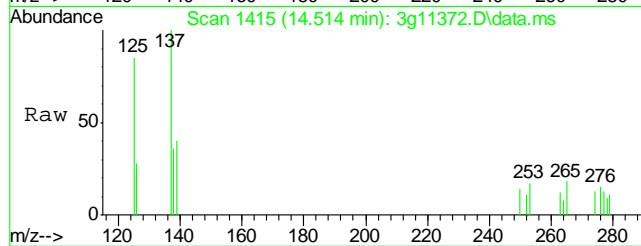
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 13.125 min Scan# 1283
Delta R.T. 0.011 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

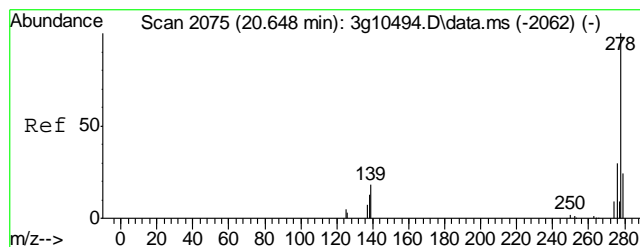
Tgt Ion:	252	Resp:	2085
Ion Ratio	Lower	Upper	
252	100		
253	0.0	1.4	41.4#
126	0.0	0.0	33.6
125	0.0	0.0	30.7



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.514 min Scan# 1415
Delta R.T. 0.022 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

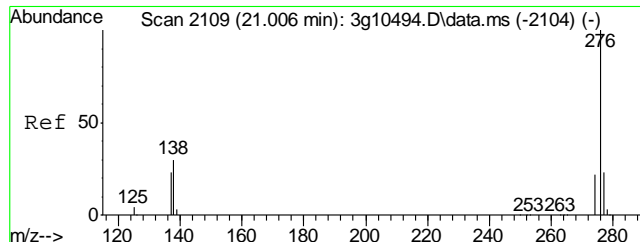
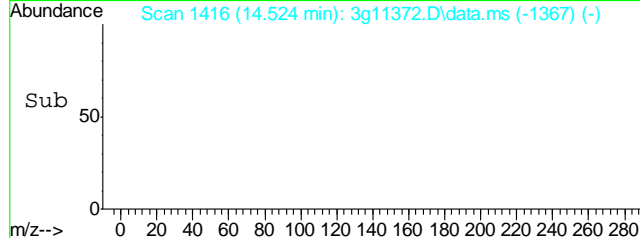
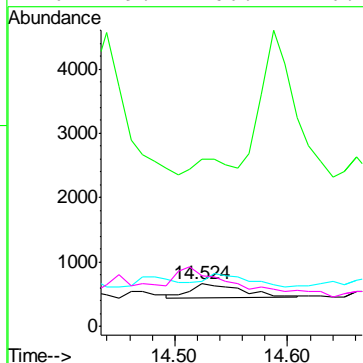
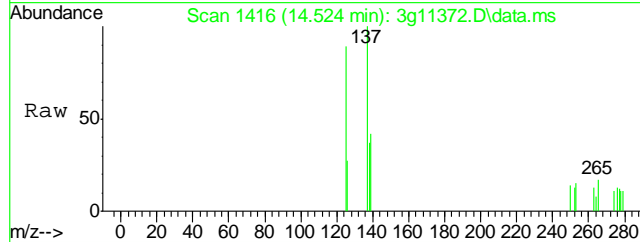
Tgt Ion:	276	Resp:	1815
Ion Ratio	Lower	Upper	
276	100		
138	122.8	5.3	45.3#
277	81.9	5.0	45.0#
278	35.8	59.3	99.3#





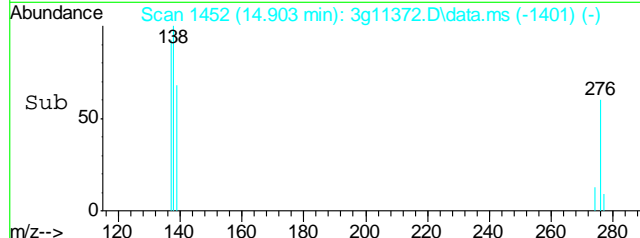
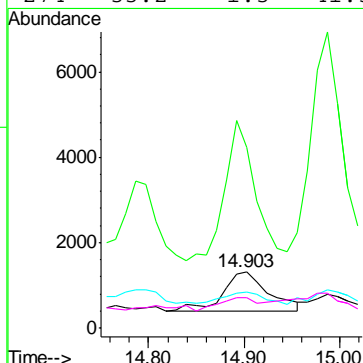
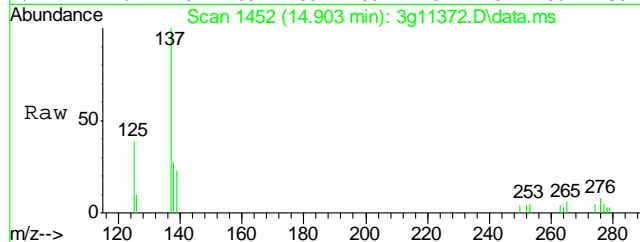
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.524 min Scan# 1416
Delta R.T. 0.011 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

Tgt Ion:	278	Resp:	650
Ion Ratio	Lower	Upper	
278	100		
139	77.5	0.0	38.4#
279	84.5	3.1	43.1#
276	279.2	106.1	146.1#



#30
Benzo(g,h,i)perylene
Concen: 0.0528 ug/mL
RT: 14.903 min Scan# 1452
Delta R.T. 0.032 min
Lab File: 3g11372.D
Acq: 24 Sep 12 7:14 pm

Tgt Ion:	276	Resp:	2934
Ion Ratio	Lower	Upper	
276	100		
138	246.4	1.3	41.3#
277	29.6	3.4	43.4
274	33.2	1.3	41.3



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092412\
Data File : 3g11363.D
Acq On : 24 Sep 2012 3:36 pm
Operator : DONC
Sample : OP6688-MB
Misc : OP6688,E3G531,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 25 09:18:39 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M
Quant Title : PAHSIM BASE
QLast Update : Thu Sep 06 09:42:23 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.922	136	173185	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.640	164	97648	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.121	188	151035	4.0000	ug/mL	0.00
19) Chrysene-d12	11.759	240	148111	4.0000	ug/mL	0.00
24) Perylene-d12	13.199	264	94893	4.0000	ug/mL	0.02

System Monitoring Compounds

2) Nitrobenzene-d5	5.224	82	724213	42.5027	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	85.00%		
7) 2-Fluorobiphenyl	6.966	172	1980649	48.7615	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	97.52%		
21) Terphenyl-d14	10.712	244	1198508	53.7047	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	107.40%		

Target Compounds

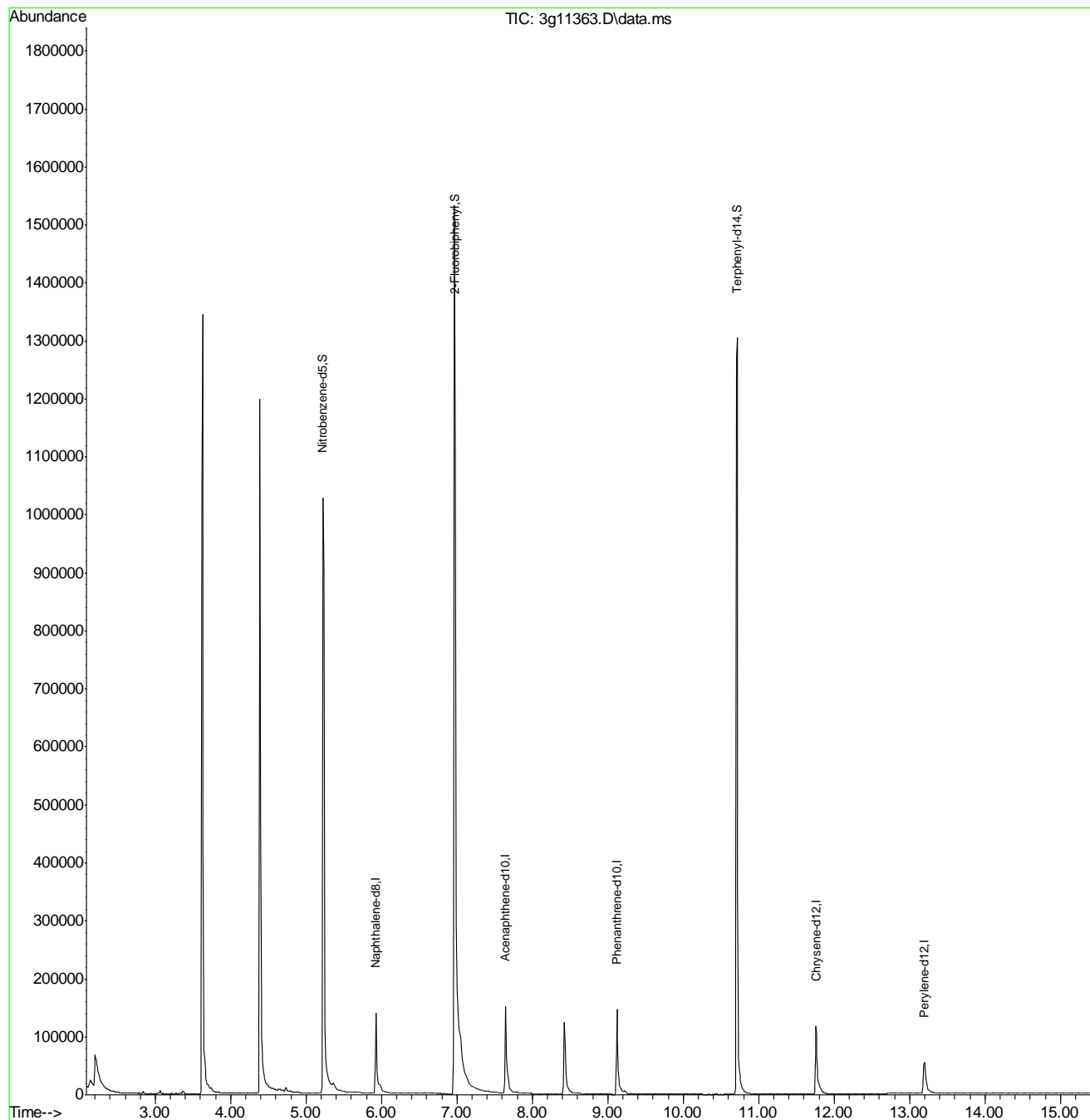
					Qvalue
3) N-Nitrosodimethylamine	2.422	74	206	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.934	128	435	N.D.	
8) 2-Methylnaphthalene	6.620	142	171	N.D.	
9) 1-Methylnaphthalene	6.720	142	77	N.D.	
10) Acenaphthylene	7.663	152	148	N.D.	
11) Acenaphthene	7.640	154	415	N.D.	
12) Dibenzofuran	7.971	168	70	N.D.	
13) Fluorene	0.000	166	0	N.D. d	
14) Diphenylamine	0.000	169	0	N.D. d	
16) Phenanthrene	9.145	178	521	N.D.	
17) Anthracene	9.145	178	521	N.D.	
18) Fluoranthene	10.261	202	137	N.D.	
20) Pyrene	10.427	202	318	N.D.	
22) Benzo(a)anthracene	11.759	228	663	N.D.	
23) Chrysene	11.759	228	663	N.D.	
25) Benzo(b)fluoranthene	12.789	252	110	N.D.	
26) Benzo(k)fluoranthene	12.789	252	110	N.D.	
27) Benzo(a)pyrene	13.189	252	442	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.545	276	211	N.D.	
29) Dibenz(a,h)anthracene	14.566	278	109	N.D.	
30) Benzo(g,h,i)perylene	14.545	276	211	N.D.	

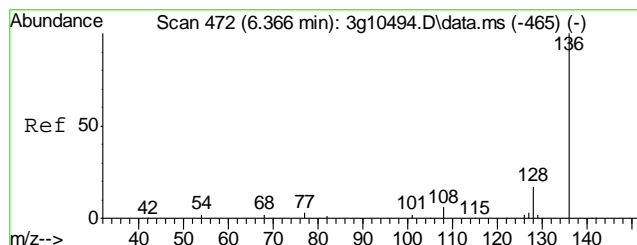
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092412\
Data File : 3g11363.D
Acq On : 24 Sep 2012 3:36 pm
Operator : DONC
Sample : OP6688-MB
Misc : OP6688,E3G531,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

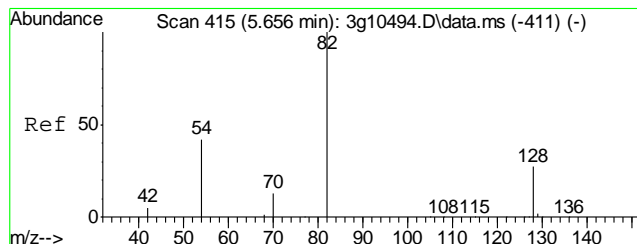
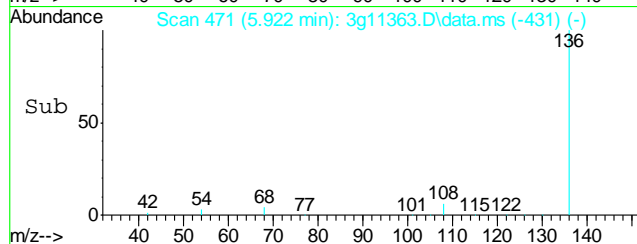
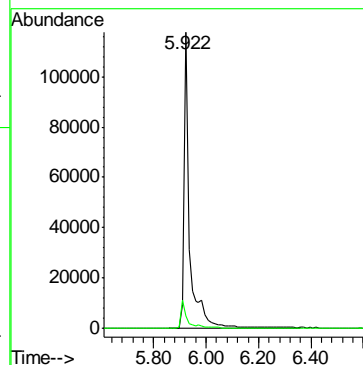
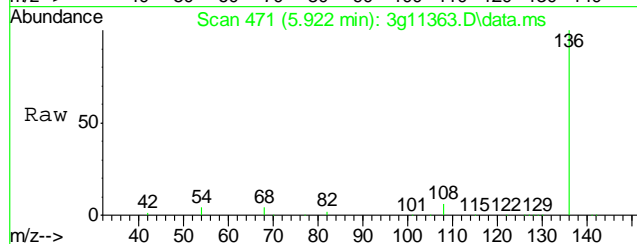
Quant Time: Sep 25 09:18:39 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M
Quant Title : PAHSIM BASE
QLast Update : Thu Sep 06 09:42:23 2012
Response via : Initial Calibration





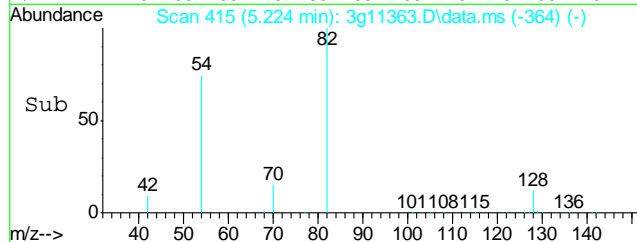
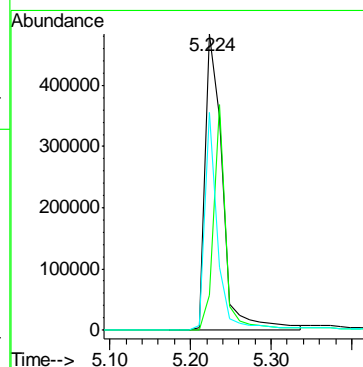
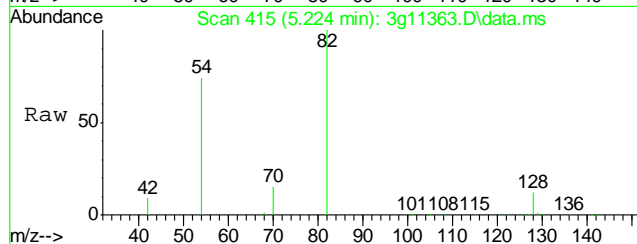
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.922 min Scan# 471
Delta R.T. 0.000 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

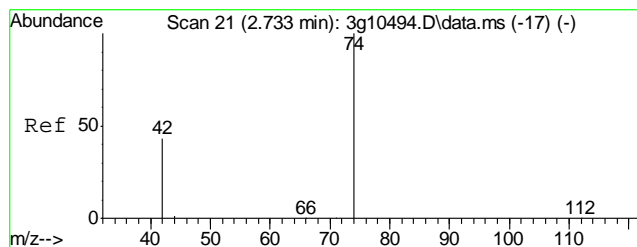
Tgt Ion:	136	Resp:	173185
Ion Ratio	Lower	Upper	
136	100		
68	10.4	0.0	30.4



#2
Nitrobenzene-d5
Concen: 42.5027 ug/mL
RT: 5.224 min Scan# 415
Delta R.T. 0.001 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

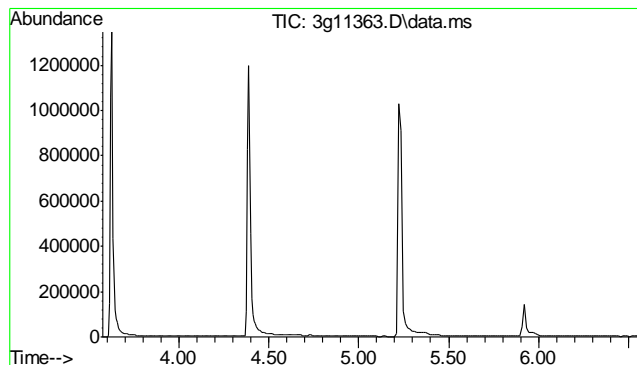
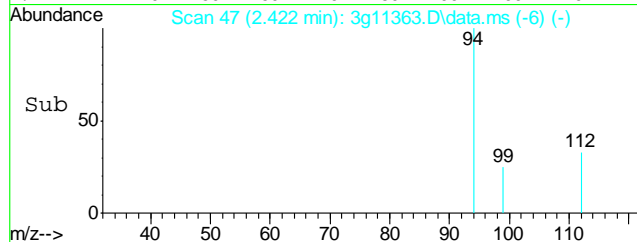
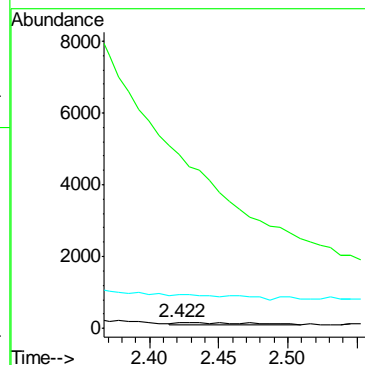
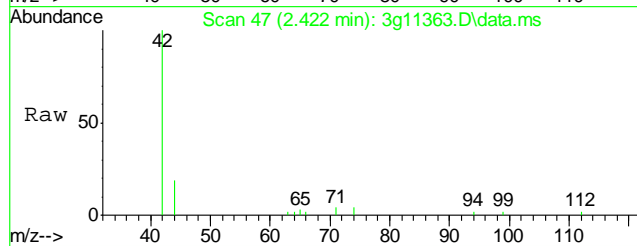
Tgt Ion:	82	Resp:	724213
Ion Ratio	Lower	Upper	
82	100		
128	53.5	19.7	59.7
54	54.6	28.6	68.6





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.422 min Scan# 47
Delta R.T. -0.203 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

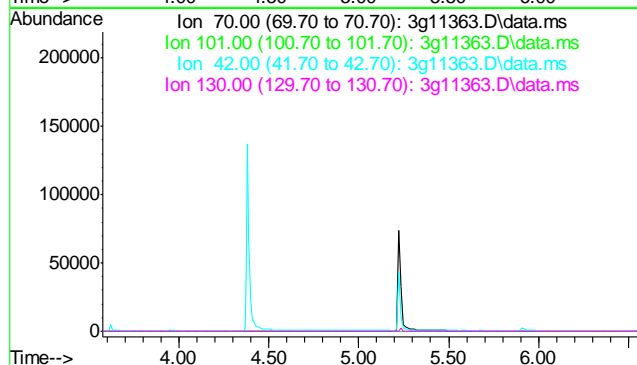
Tgt Ion: 74 Resp: 206
Ion Ratio Lower Upper
74 100
42 0.0 33.3 73.3#
44 47.1 0.0 23.5#

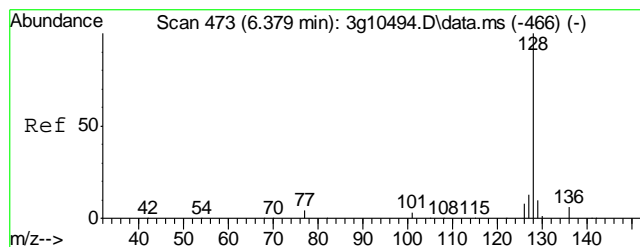


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.07 min

Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

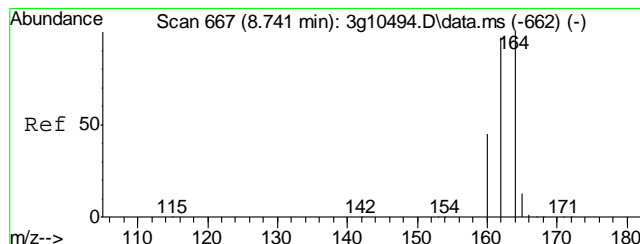
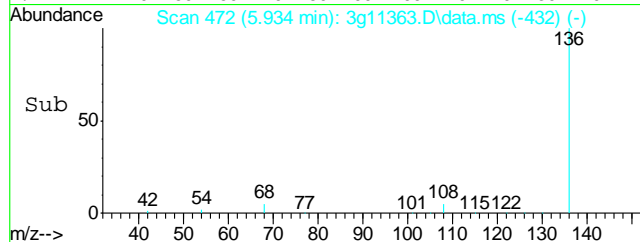
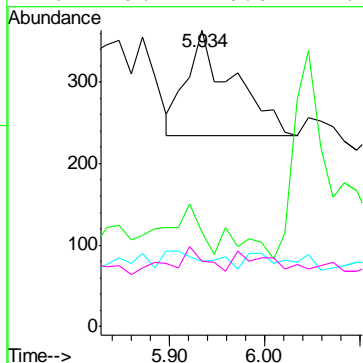
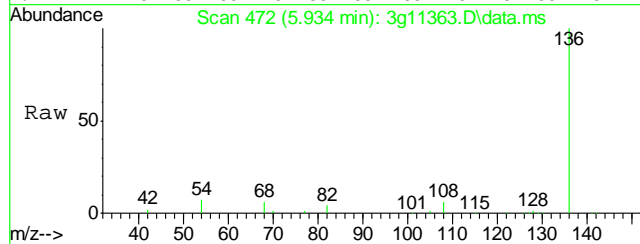
Tgt Ion: 70
Sig Exp Ratio
70 100
101 10.3
42 47.6
130 20.0





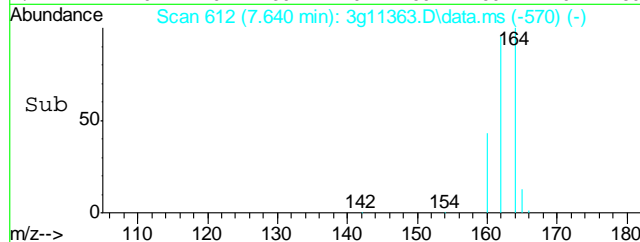
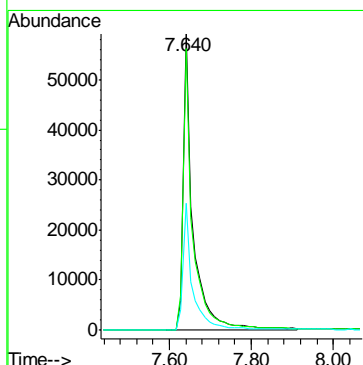
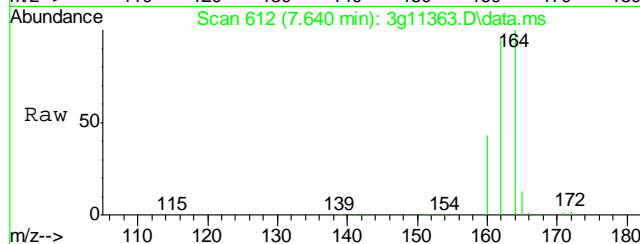
#5
Naphthalene
Concen: Below ug/mL
RT: 5.934 min Scan# 472
Delta R.T. 0.000 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

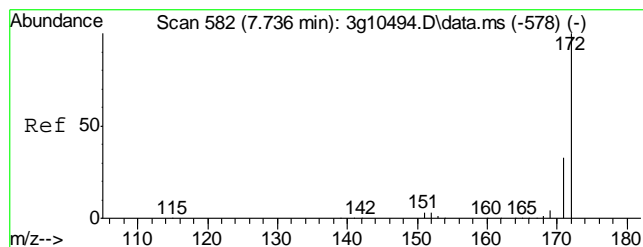
Tgt Ion:128 Resp: 435
Ion Ratio Lower Upper
128 100
129 32.6 0.0 30.8#
127 17.0 0.0 33.4
126 19.1 0.0 27.7



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.640 min Scan# 612
Delta R.T. 0.000 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

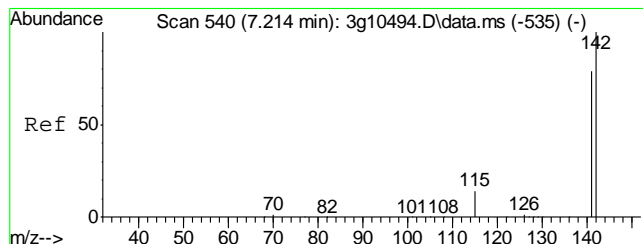
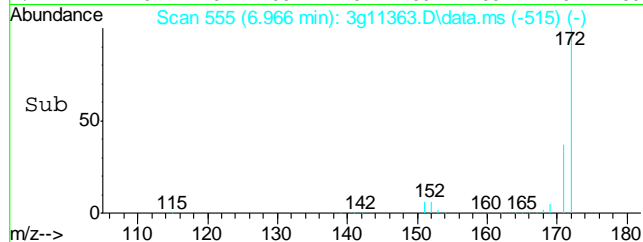
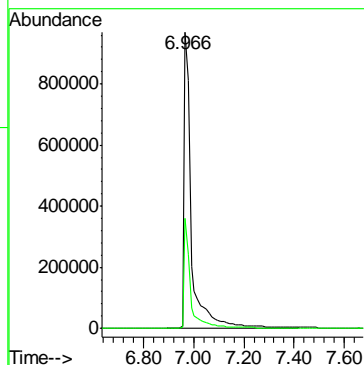
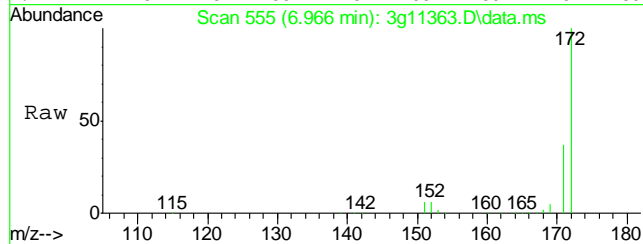
Tgt Ion:164 Resp: 97648
Ion Ratio Lower Upper
164 100
162 96.1 73.5 113.5
160 41.9 21.8 61.8





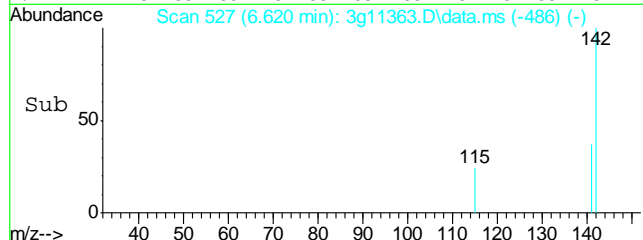
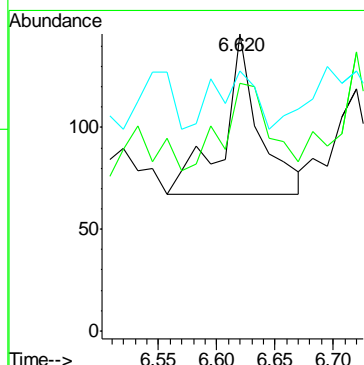
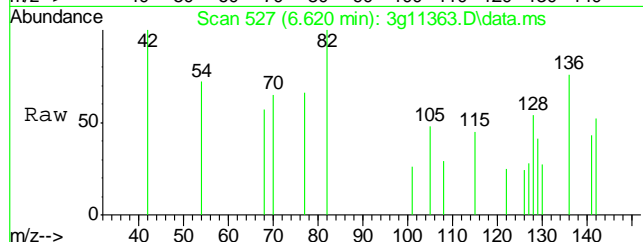
#7
2-Fluorobiphenyl
Concen: 48.7615 ug/mL
RT: 6.966 min Scan# 555
Delta R.T. 0.000 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

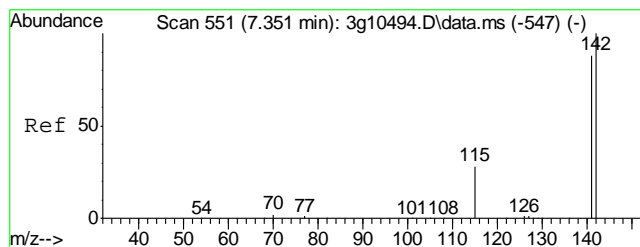
Tgt Ion:172 Resp: 1980649
Ion Ratio Lower Upper
172 100
171 33.6 13.6 53.6



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.620 min Scan# 527
Delta R.T. 0.013 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

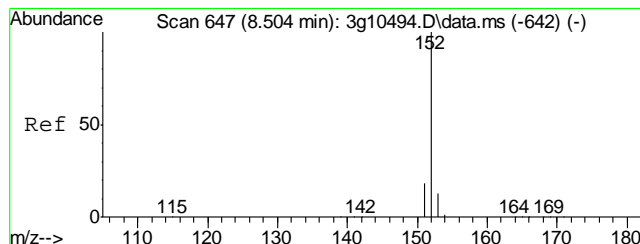
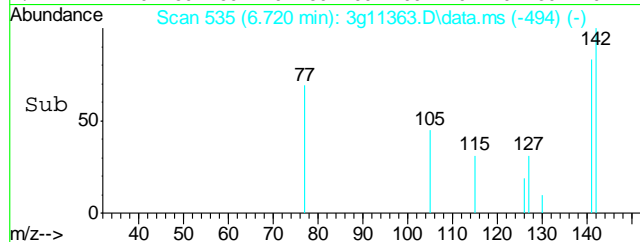
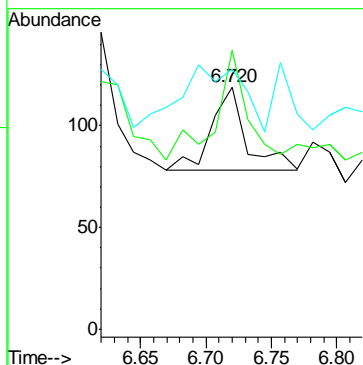
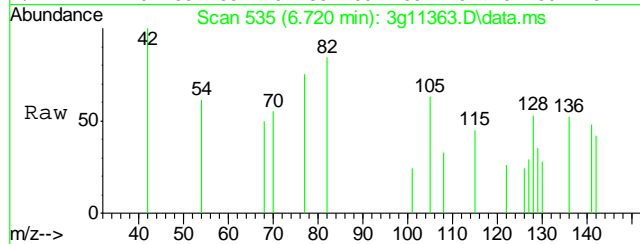
Tgt Ion:142 Resp: 171
Ion Ratio Lower Upper
142 100
141 66.7 64.5 104.5
115 0.0 13.6 53.6#





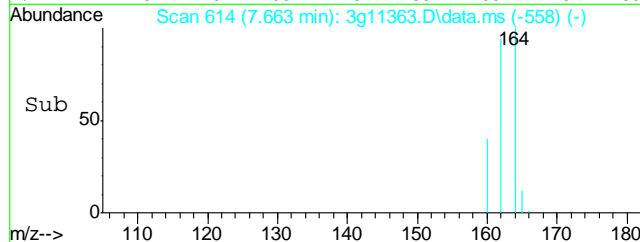
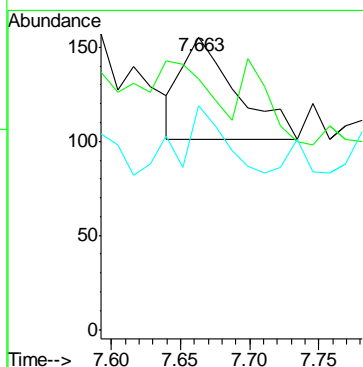
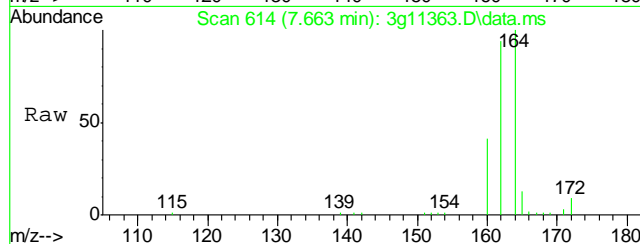
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.720 min Scan# 535
Delta R.T. 0.012 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

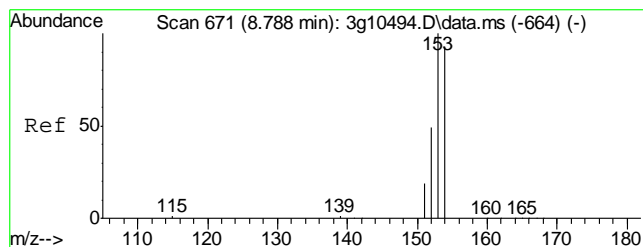
Tgt Ion: 142 Resp: 77
Ion Ratio Lower Upper
142 100
141 118.2 67.8 107.8#
115 0.0 11.0 51.0#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.663 min Scan# 614
Delta R.T. 0.165 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

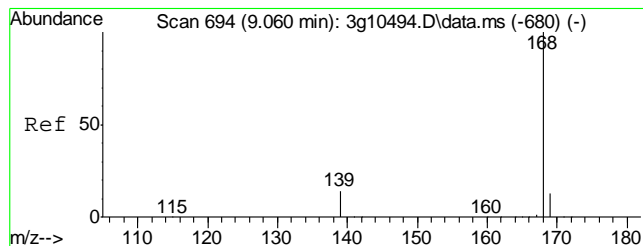
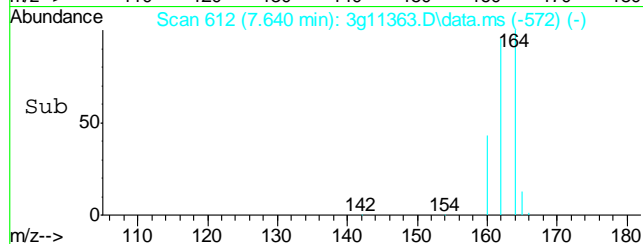
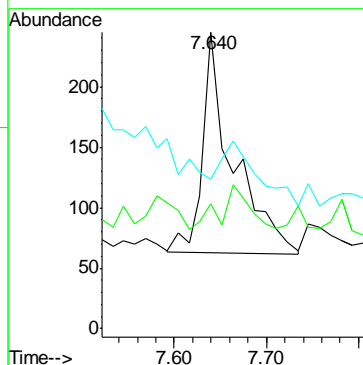
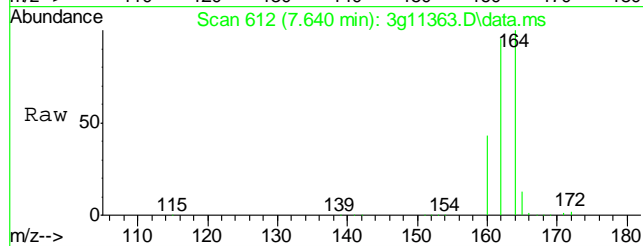
Tgt Ion: 152 Resp: 148
Ion Ratio Lower Upper
152 100
151 0.0 0.0 39.2
153 71.6 0.0 33.2#





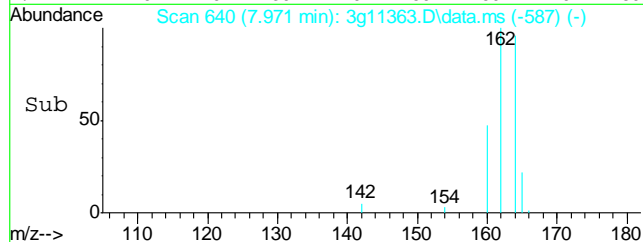
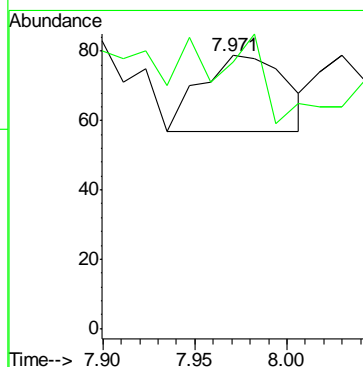
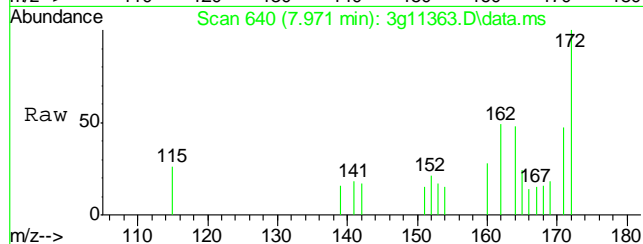
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.640 min Scan# 612
Delta R.T. -0.024 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

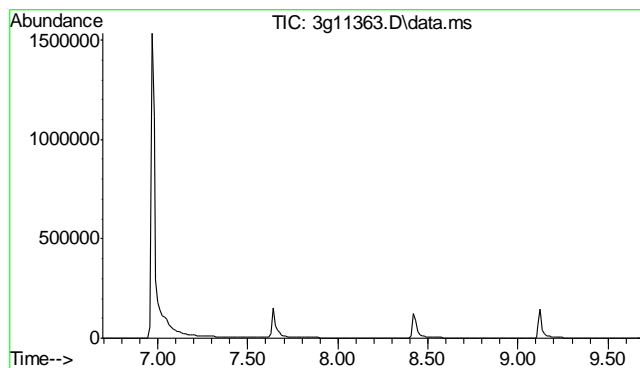
Tgt Ion:	154	Resp:	415
Ion Ratio	Lower	Upper	
154	100		
153	20.0	84.8	124.8#
152	35.7	29.9	69.9



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.971 min Scan# 640
Delta R.T. 0.130 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

Tgt Ion:	168	Resp:	70
Ion Ratio	Lower	Upper	
168	100		
139	32.9	7.6	47.6

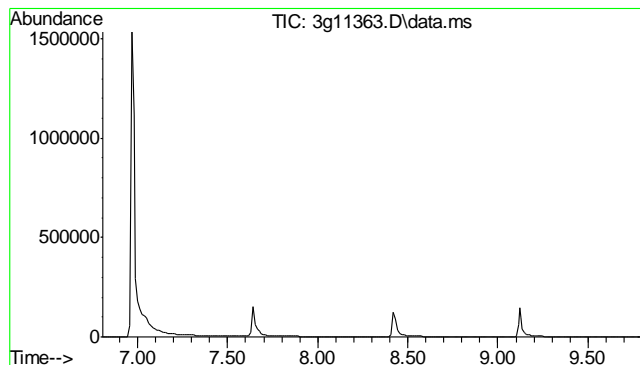
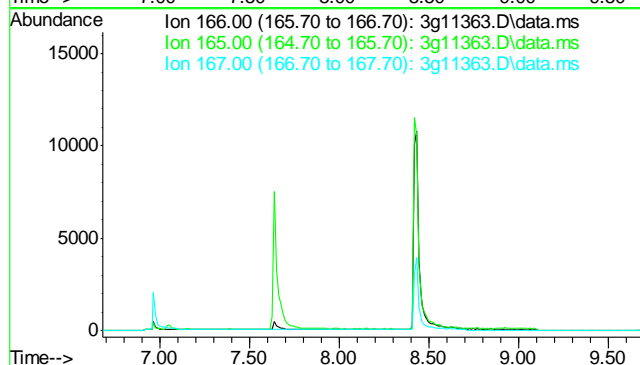




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 8.18 min

Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

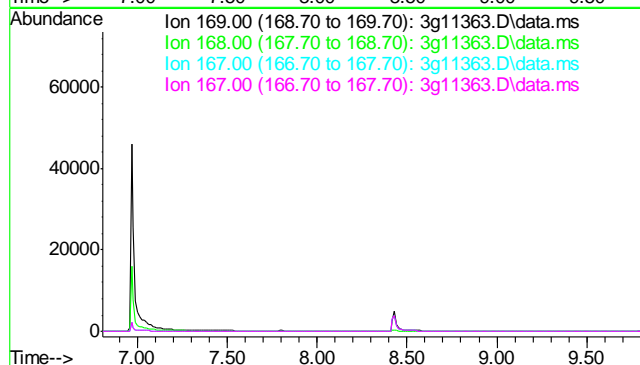
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	91.1
167	13.3

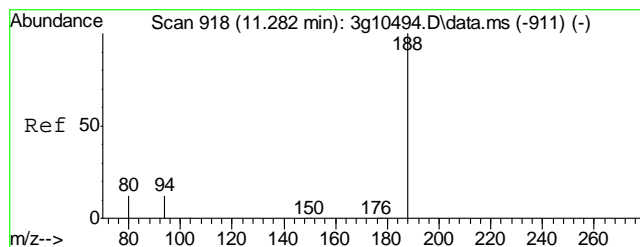


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.30 min

Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

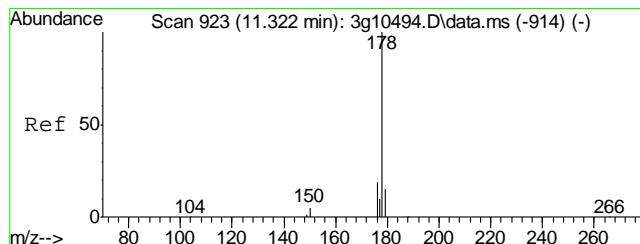
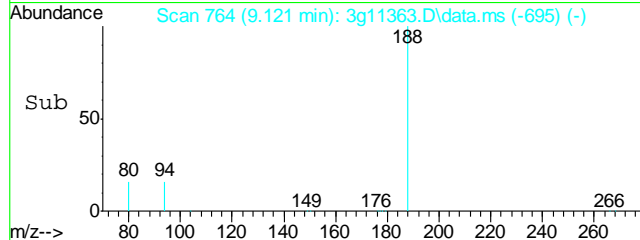
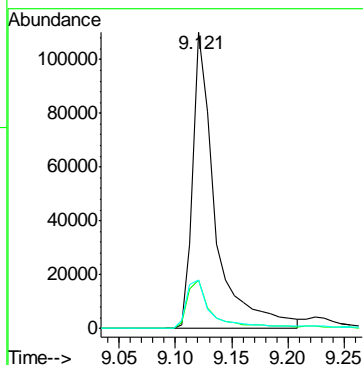
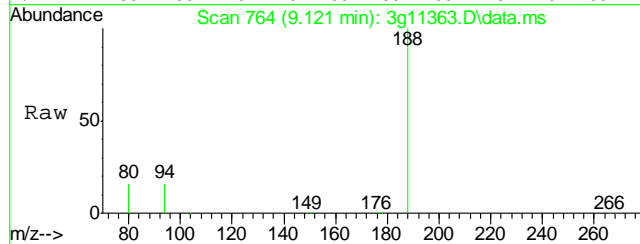
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.0
167	32.9
167	32.9





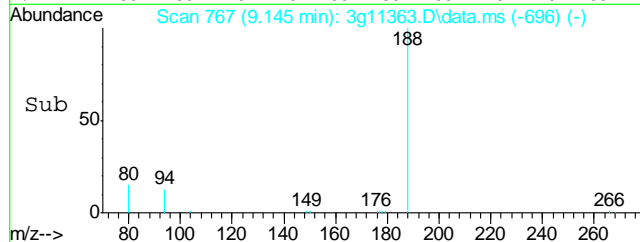
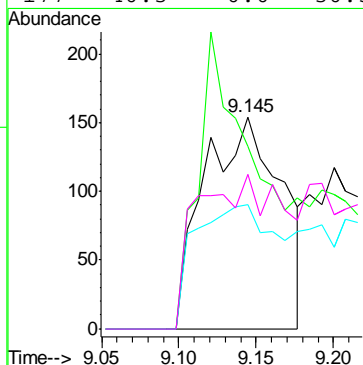
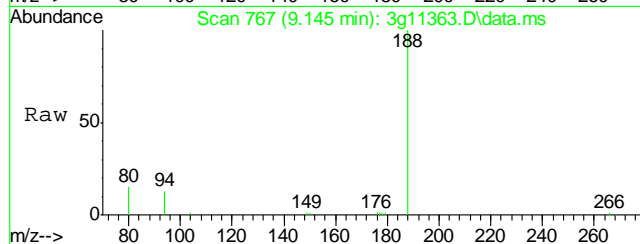
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 9.121 min Scan# 764
Delta R.T. 0.000 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

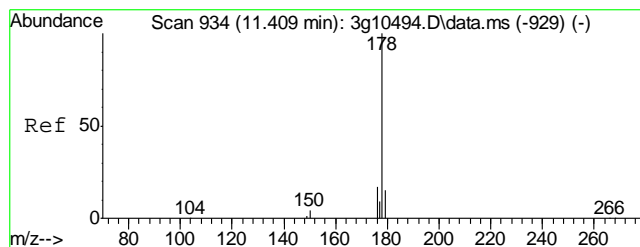
Tgt Ion	Ratio	Lower	Upper
188	100		
94	16.8	0.0	33.9
80	18.5	0.0	35.5



#16
Phenanthrene
Concen: Below ug/mL
RT: 9.145 min Scan# 767
Delta R.T. 0.008 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

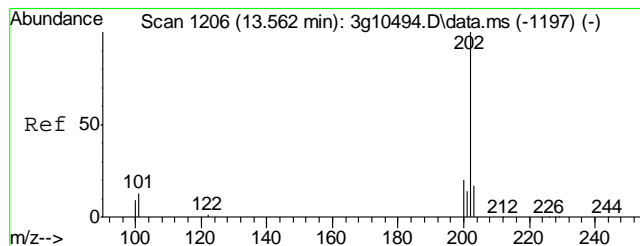
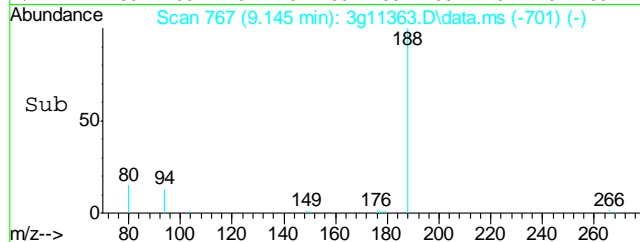
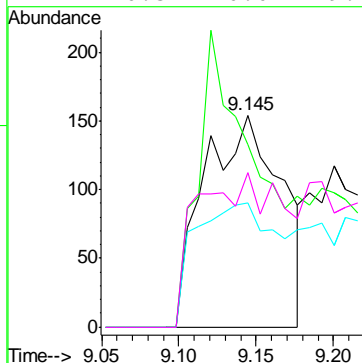
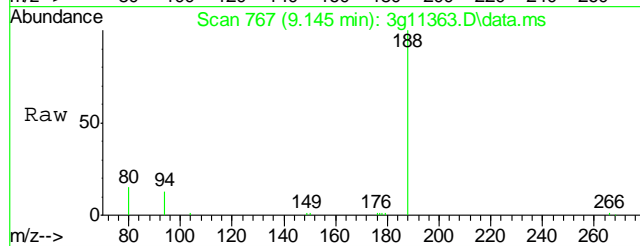
Tgt Ion	Ratio	Lower	Upper
178	100		
179	100.8	0.0	35.3#
176	60.5	0.0	38.5#
177	40.3	0.0	30.5#





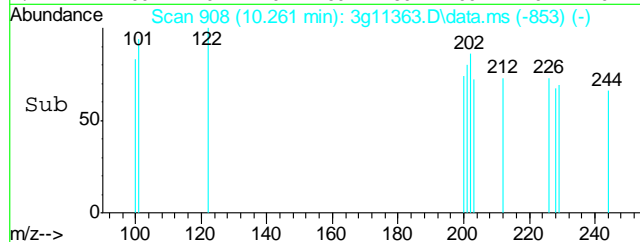
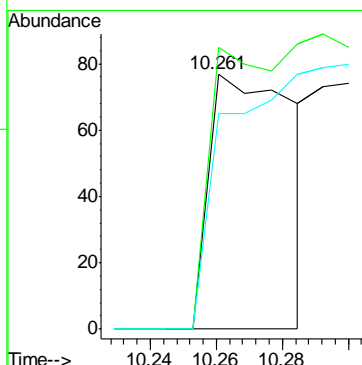
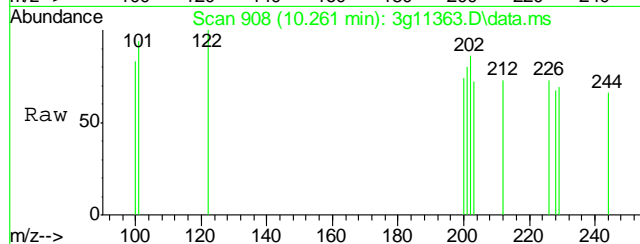
#17
Anthracene
Concen: Below ug/mL
RT: 9.145 min Scan# 767
Delta R.T. -0.047 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

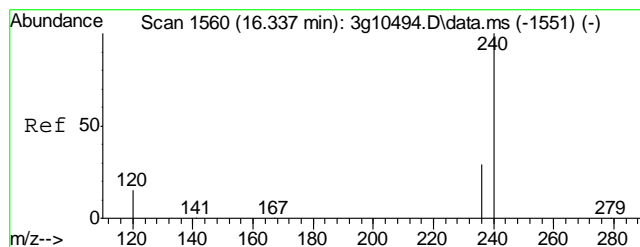
Tgt Ion: 178 Resp: 521
Ion Ratio Lower Upper
178 100
179 100.8 0.0 35.2#
176 60.5 0.0 37.7#
177 40.3 0.0 29.0#



#18
Fluoranthene
Concen: Below ug/mL
RT: 10.261 min Scan# 908
Delta R.T. -0.063 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

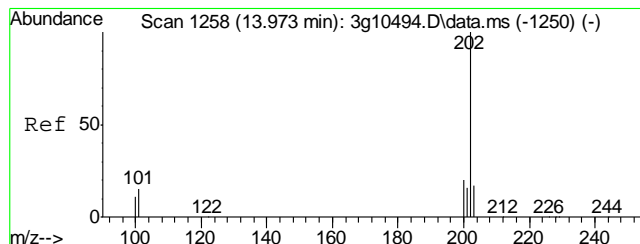
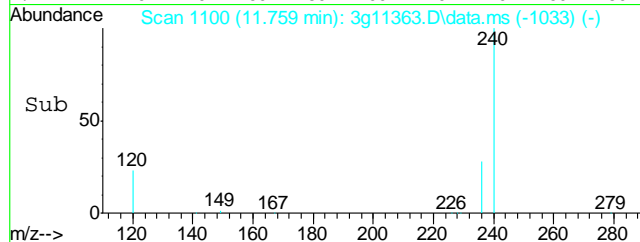
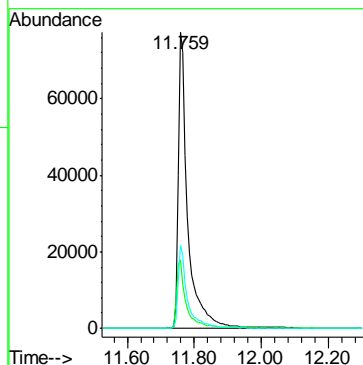
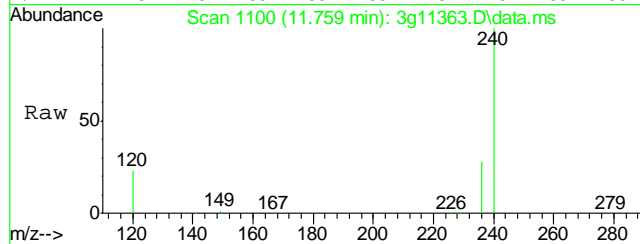
Tgt Ion: 202 Resp: 137
Ion Ratio Lower Upper
202 100
101 294.2 0.0 33.0#
203 228.5 0.0 37.4#





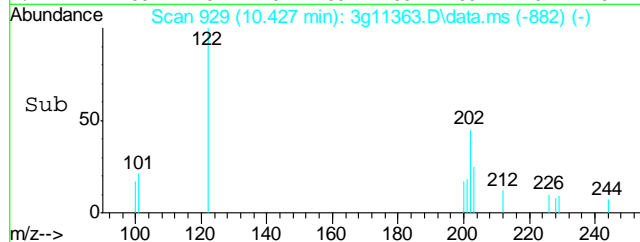
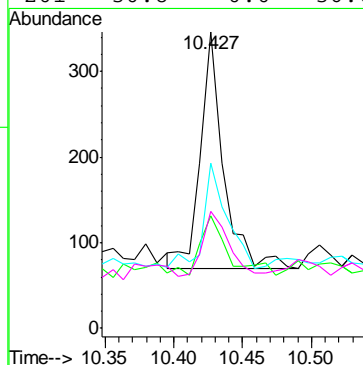
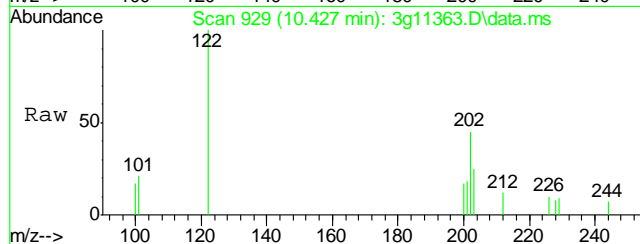
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.759 min Scan# 1100
Delta R.T. 0.007 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

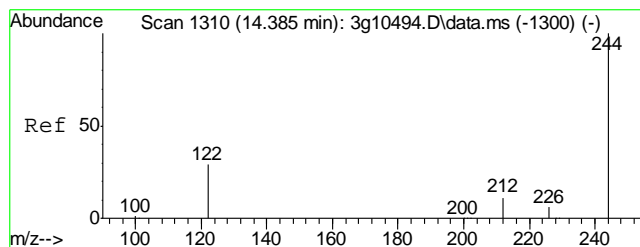
Tgt Ion	Ratio	Lower	Upper
240	100		
120	22.8	0.0	36.2
236	27.5	8.8	48.8



#20
Pyrene
Concen: Below ug/mL
RT: 10.427 min Scan# 929
Delta R.T. -0.126 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

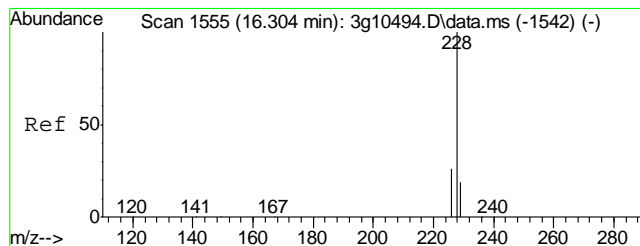
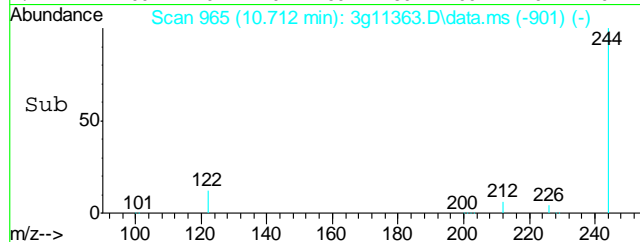
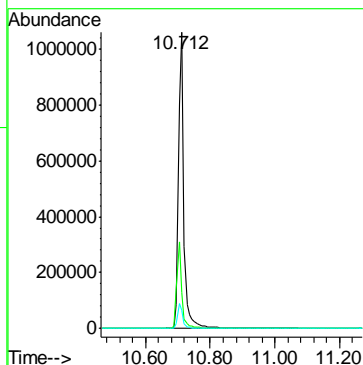
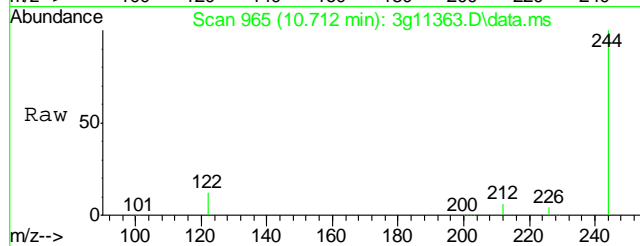
Tgt Ion	Ratio	Lower	Upper
202	100		
200	25.2	0.1	40.1
203	39.3	0.0	37.8
201	30.8	0.0	36.6





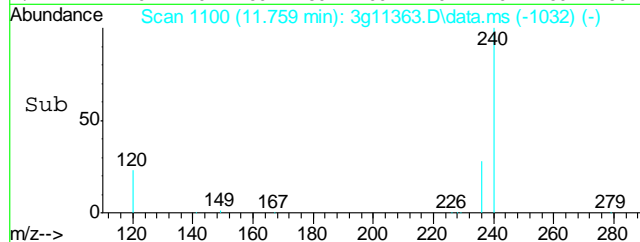
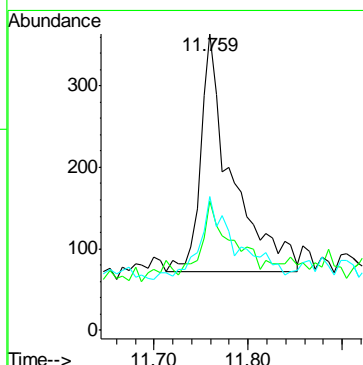
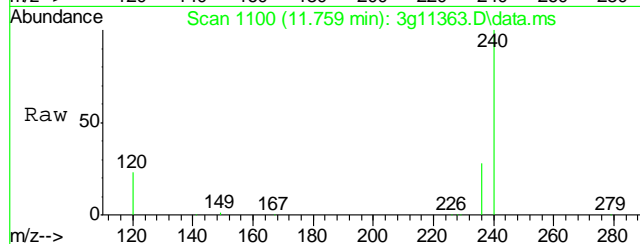
#21
Terphenyl-d14
Concen: 53.7047 ug/mL
RT: 10.712 min Scan# 965
Delta R.T. 0.008 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

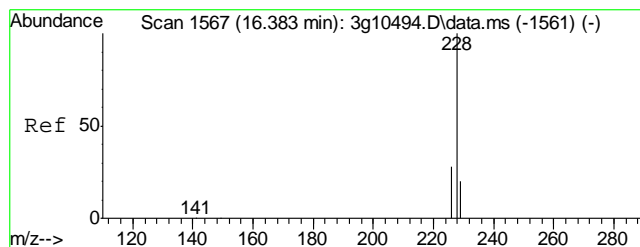
Tgt Ion:244 Resp: 1198508
Ion Ratio Lower Upper
244 100
122 26.8 1.3 41.3
212 8.1 0.0 28.8



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.759 min Scan# 1100
Delta R.T. 0.020 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

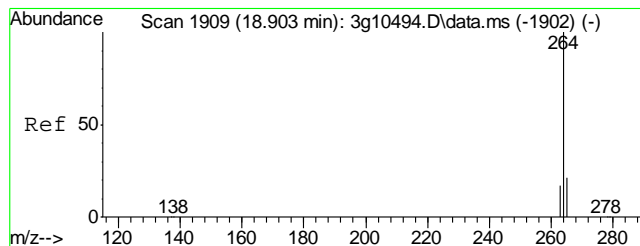
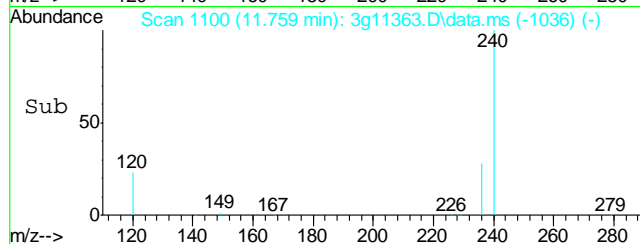
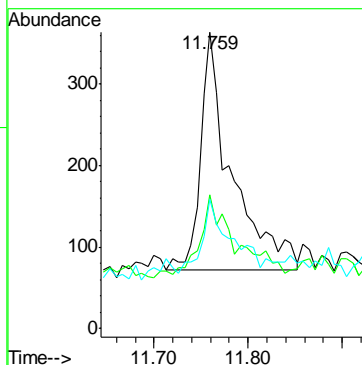
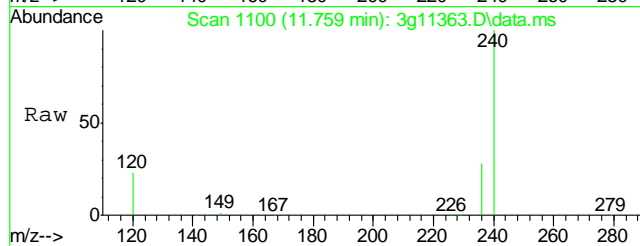
Tgt Ion:228 Resp: 663
Ion Ratio Lower Upper
228 100
229 30.0 0.0 39.6
226 37.0 6.6 46.6





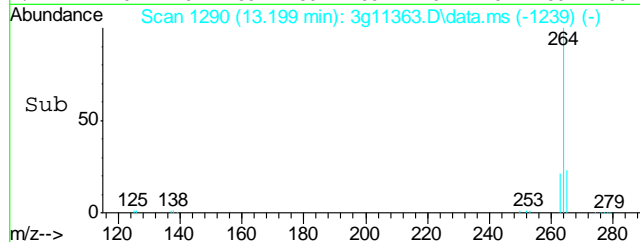
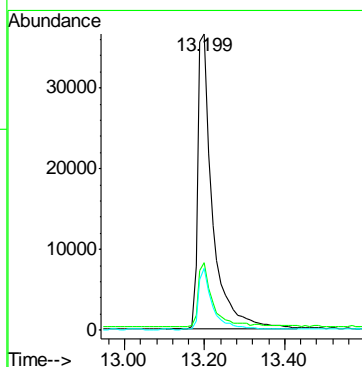
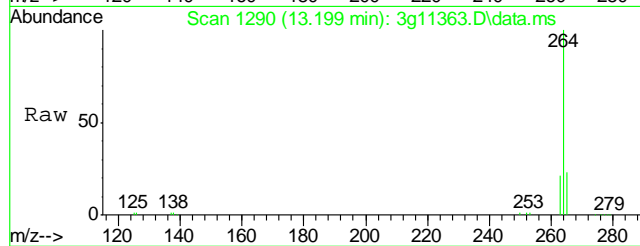
#23
Chrysene
Concen: Below ug/mL
RT: 11.759 min Scan# 1100
Delta R.T. -0.013 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

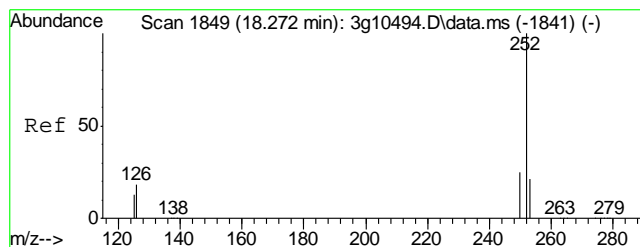
Tgt Ion:	228	Resp:	663
Ion Ratio	100	Lower	Upper
228	100		
226	37.0	8.6	48.6
229	30.0	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.199 min Scan# 1290
Delta R.T. 0.021 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

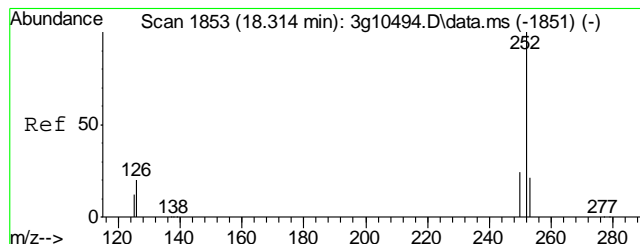
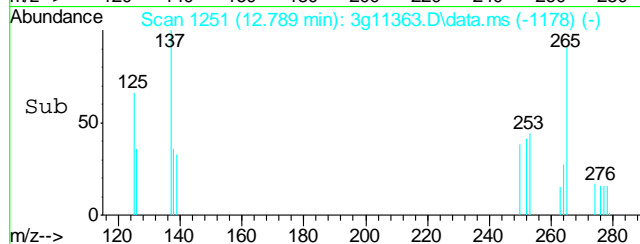
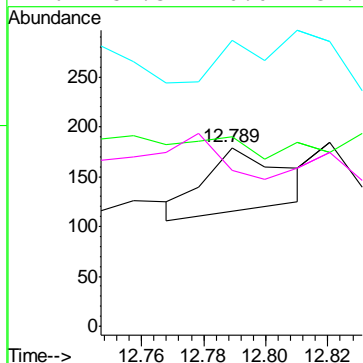
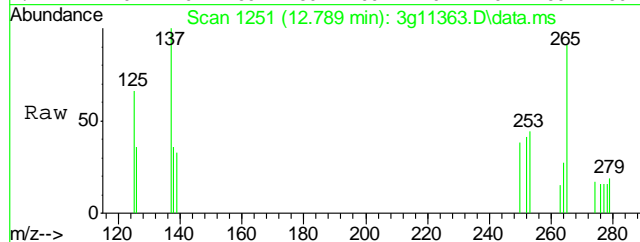
Tgt Ion:	264	Resp:	94893
Ion Ratio	100	Lower	Upper
264	100		
265	20.3	1.0	41.0
263	19.8	0.0	39.0





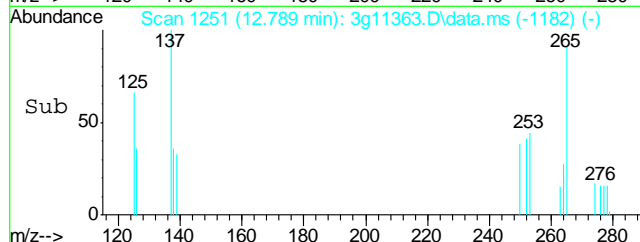
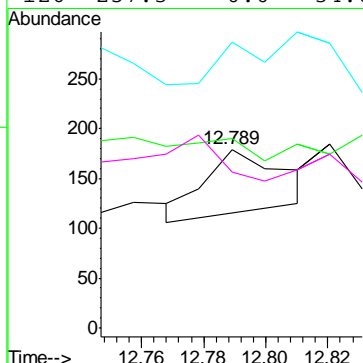
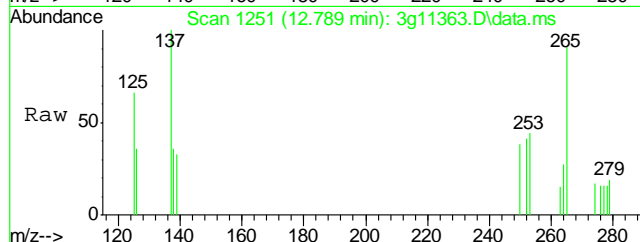
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.789 min Scan# 1251
Delta R.T. 0.011 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

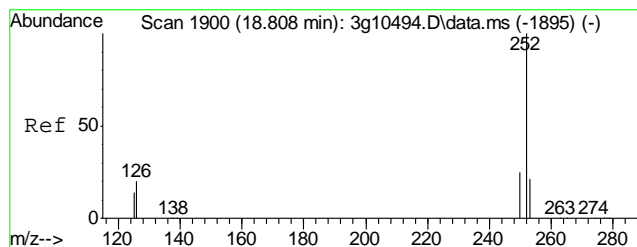
Tgt Ion	252	Resp	110
Ion Ratio	100		
253	0.0	2.9	42.9#
125	0.0	0.0	31.5
126	257.3	0.0	34.7#



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.789 min Scan# 1251
Delta R.T. -0.010 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

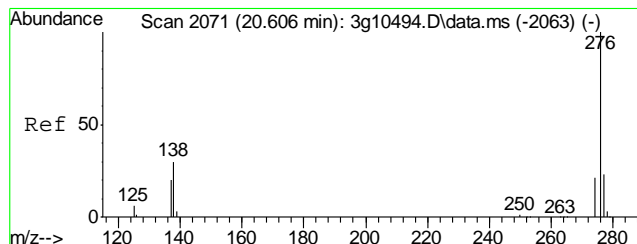
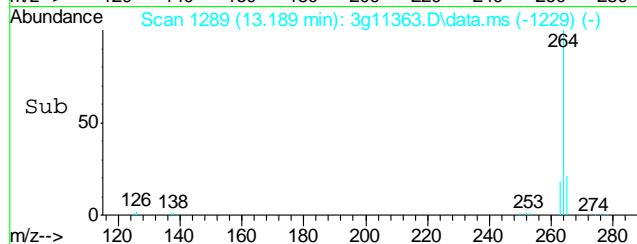
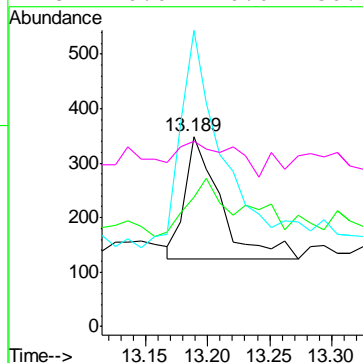
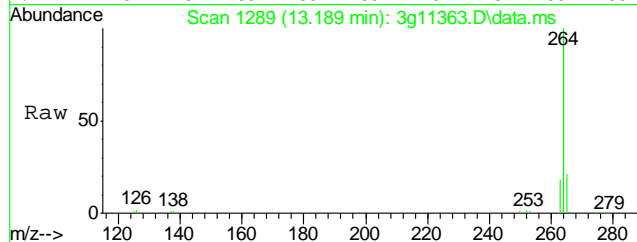
Tgt Ion	252	Resp	110
Ion Ratio	100		
253	0.0	1.8	41.8#
125	0.0	0.0	31.0
126	257.3	0.0	34.0#





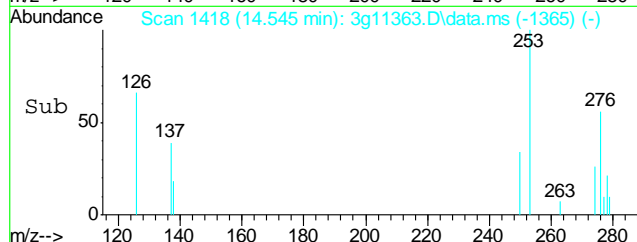
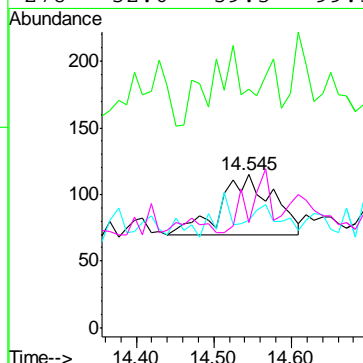
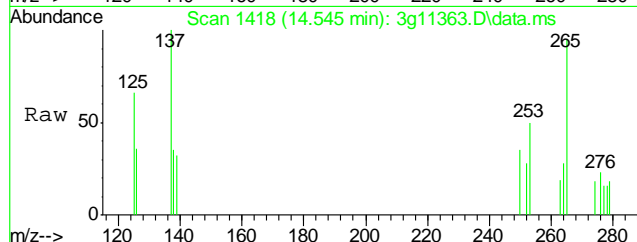
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 13.189 min Scan# 1289
Delta R.T. 0.075 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

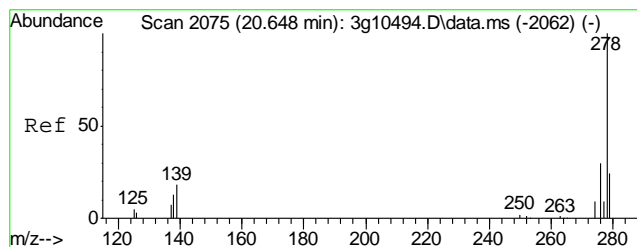
Tgt Ion	Ratio	Lower	Upper
252	100		
253	39.8	1.4	41.4
126	245.9	0.0	33.6#
125	0.0	0.0	30.7



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.545 min Scan# 1418
Delta R.T. 0.053 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

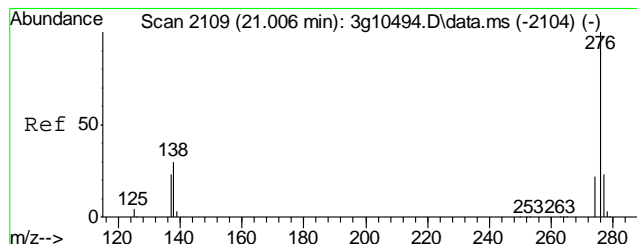
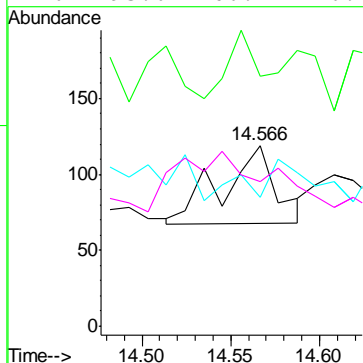
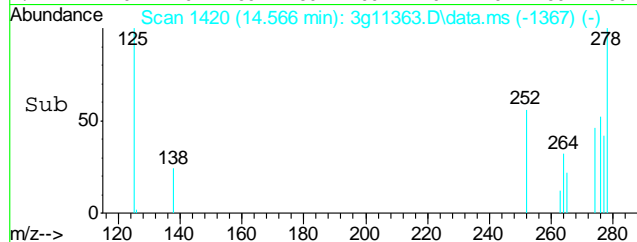
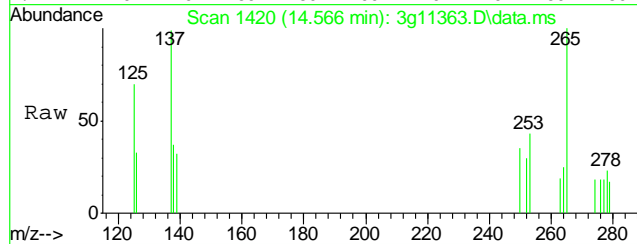
Tgt Ion	Ratio	Lower	Upper
276	100		
138	20.9	5.3	45.3
277	30.8	5.0	45.0
278	52.6	59.3	99.3#





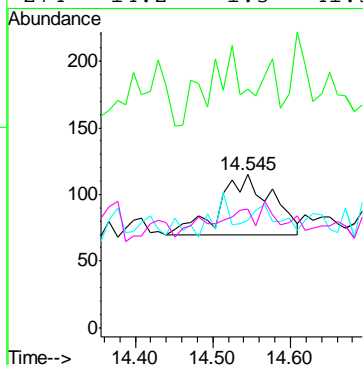
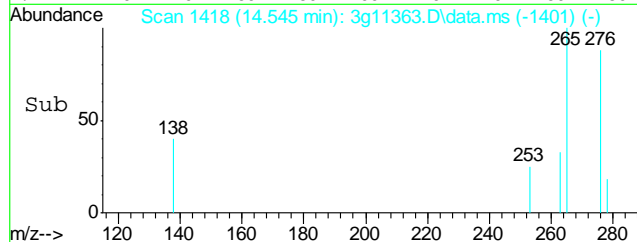
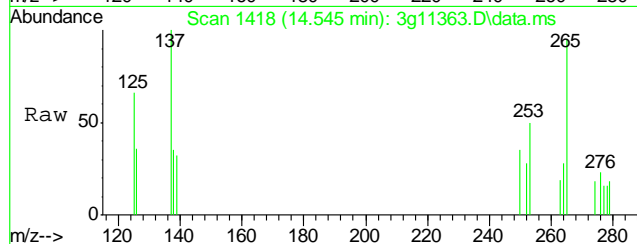
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.566 min Scan# 1420
Delta R.T. 0.053 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

Tgt Ion: 278 Resp: 109
Ion Ratio Lower Upper
278 100
139 52.3 0.0 38.4#
279 52.3 3.1 43.1#
276 193.6 106.1 146.1#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.545 min Scan# 1418
Delta R.T. -0.326 min
Lab File: 3g11363.D
Acq: 24 Sep 12 3:36 pm

Tgt Ion: 276 Resp: 211
Ion Ratio Lower Upper
276 100
138 27.5 1.3 41.3
277 28.0 3.4 43.4
274 14.2 1.3 41.3



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: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB970-MB	GB17675.D	1	09/22/12	SK	n/a	n/a	GGB970

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

D39008-1

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	86% 60-140%

10.1.1
10

Blank Spike Summary

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB970-BS	GB17676.D	1	09/22/12	SK	n/a	n/a	GGB970

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

D39008-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	125	114	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	99%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D39007-1MS	GB17678.D	1	09/22/12	SK	n/a	n/a	GGB970
D39007-1MSD	GB17679.D	1	09/22/12	SK	n/a	n/a	GGB970
D39007-1	GB17677.D	1	09/22/12	SK	n/a	n/a	GGB970

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

D39008-1

CAS No.	Compound	D39007-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	61.0		174	256	112	257	113	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D39007-1	Limits
120-82-1	1,2,4-Trichlorobenzene	91%	102%	91%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092112\GB17680.D\FID1A.CH Vial: 34
 Signal #2 : Y:\1\DATA\092112\GB17680.D\FID2B.CH
 Acq On : 22 Sep 2012 10:51 am Operator: StephK
 Sample : D39008-1, 50X Inst : GC/MS Ins
 Misc : GC3129,GGB970,5.027,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Sep 24 08:48:20 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Sep 24 08:32:35 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	14.36	2665020	85.052	%
10) S	1,2,4-Trichlorobenzene (P)	14.36	14142632	87.017	%
Target Compounds					
1) H	TVH-Gasoline	7.23	5626940	<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	7.65	287500	0.726	ug/L
7) T	Ethylbenzene	10.28	81912	0.242	ug/L
8) T	m,p-Xylene	10.47	285499	0.409	ug/L
9) T	o-Xylene	10.96	87173	0.265	ug/L
11) T	Naphthalene	14.55	820122	4.157	ug/L

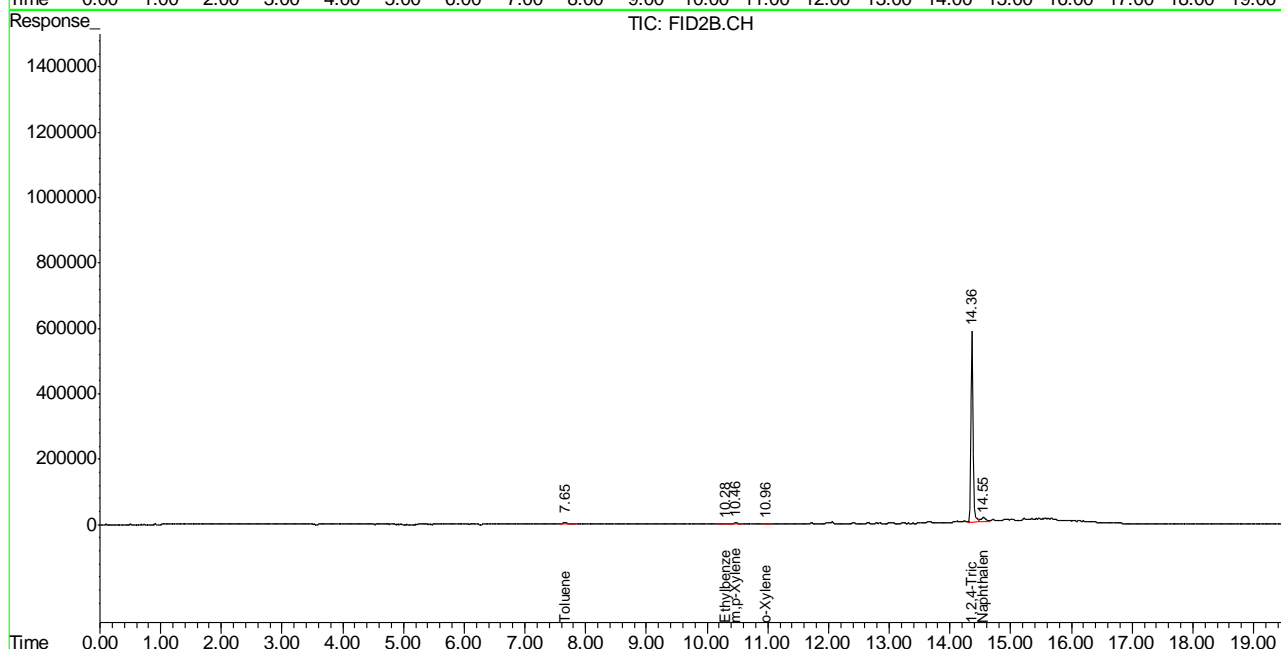
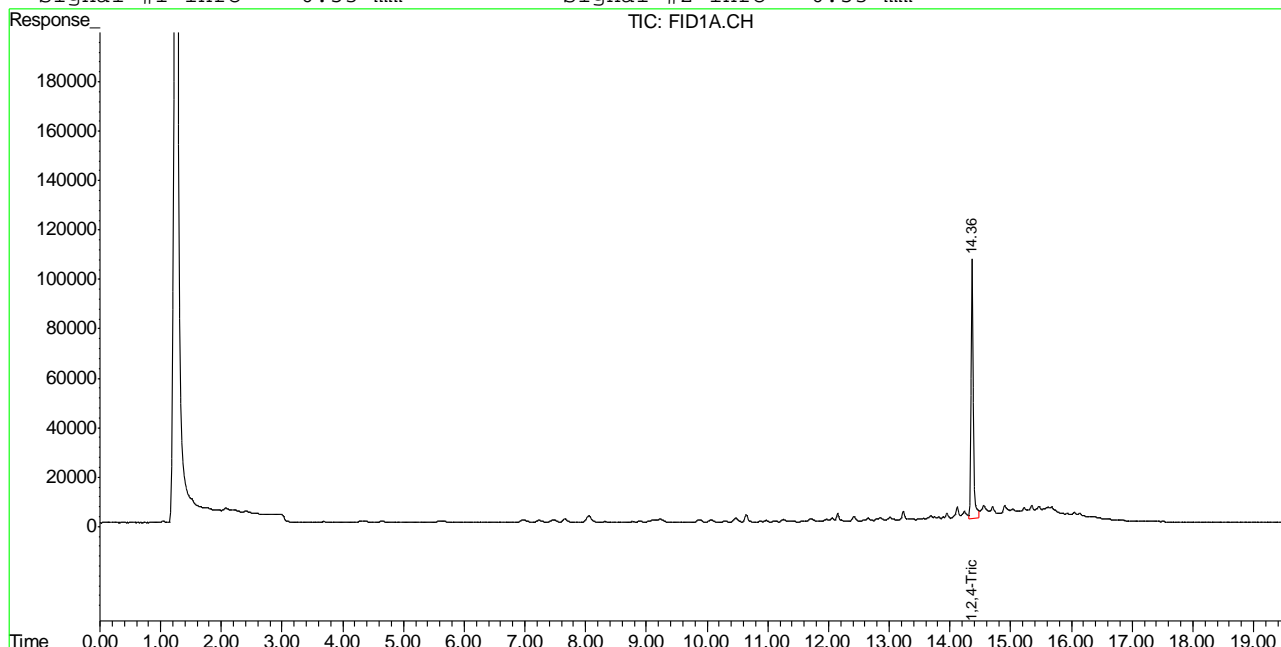
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB17680.D TB868GB868SOIL.M Mon Sep 24 09:03:05 2012 GC

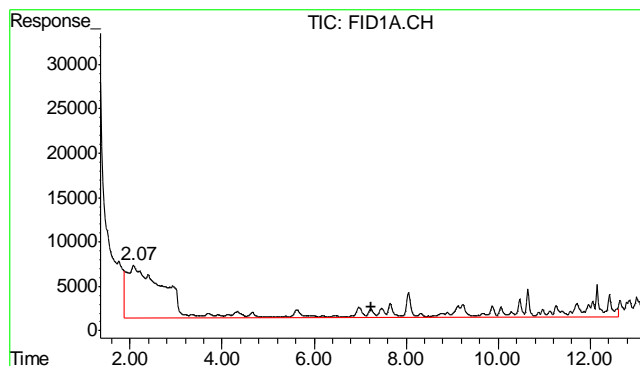
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092112\GB17680.D\FID1A.CH Vial: 34
 Signal #2 : Y:\1\DATA\092112\GB17680.D\FID2B.CH
 Acq On : 22 Sep 2012 10:51 am Operator: StephK
 Sample : D39008-1, 50X Inst : GC/MS Ins
 Misc : GC3129,GGB970,5.027,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Sep 24 8:06 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Sep 24 08:32:35 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

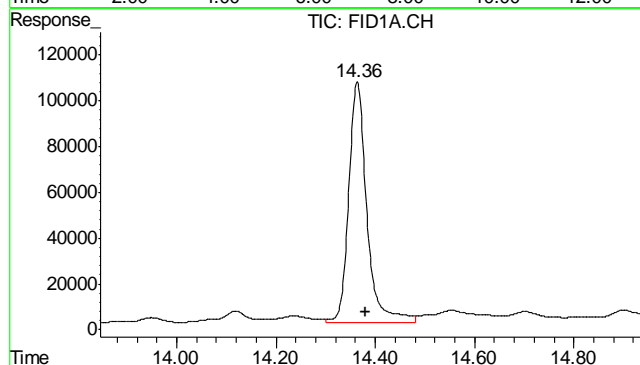
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





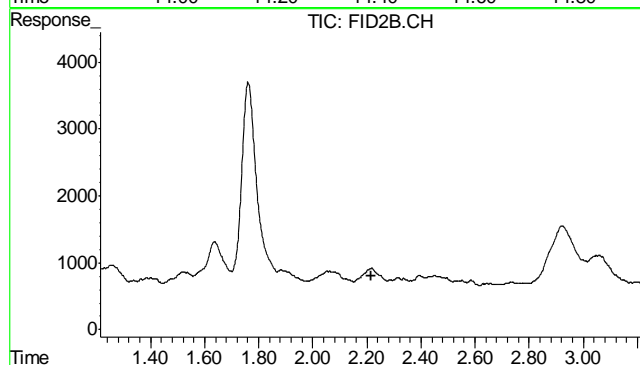
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 5626940
Conc: N.D.



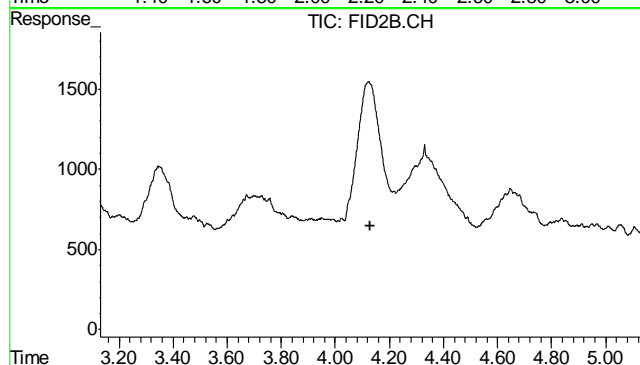
#2 1,2,4-Trichlorobenzene

R.T.: 14.364 min
Delta R.T.: -0.016 min
Response: 2665020
Conc: 85.05 %



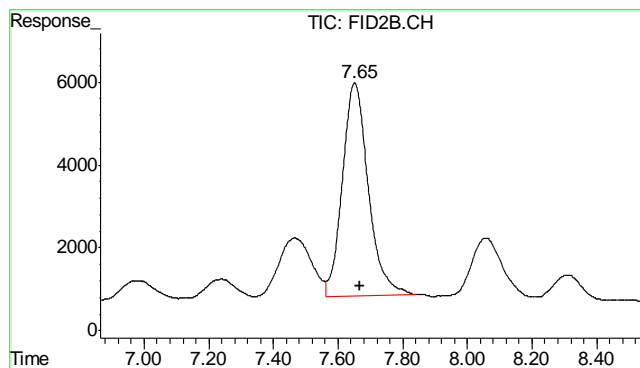
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.214 min
Response: 0
Conc: N.D.



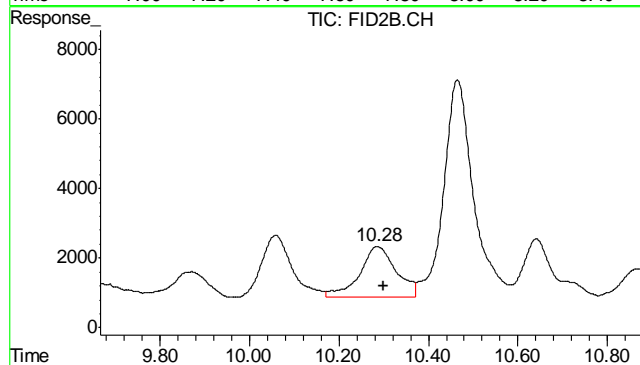
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.130 min
Response: 0
Conc: N.D.



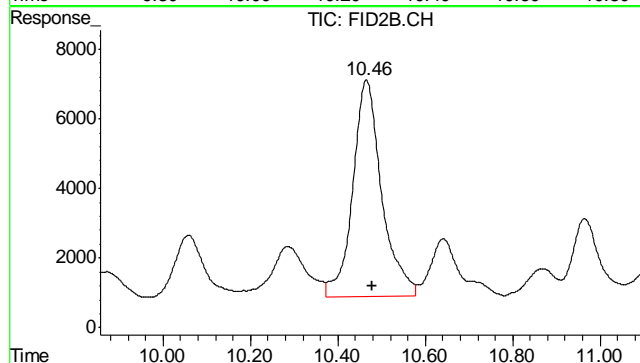
#6 Toluene

R.T.: 7.651 min
Delta R.T.: -0.017 min
Response: 287500
Conc: 0.73 ug/L



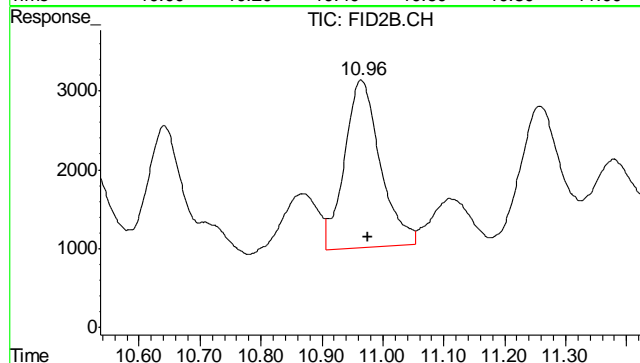
#7 Ethylbenzene

R.T.: 10.285 min
Delta R.T.: -0.015 min
Response: 81912
Conc: 0.24 ug/L



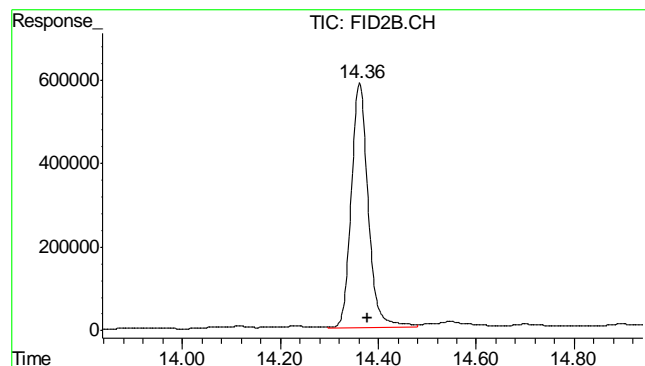
#8 m,p-Xylene

R.T.: 10.465 min
Delta R.T.: -0.014 min
Response: 285499
Conc: 0.41 ug/L



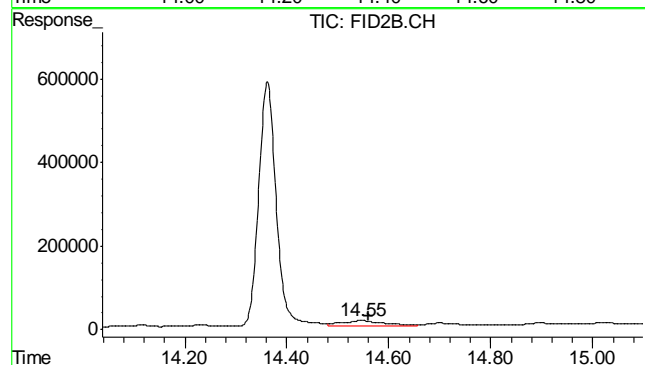
#9 o-Xylene

R.T.: 10.965 min
Delta R.T.: -0.010 min
Response: 87173
Conc: 0.27 ug/L



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

R.T.: 14.362 min
Delta R.T.: -0.016 min
Response: 14142632
Conc: 87.02 %



#11 Naphthalene

R.T.: 14.546 min
Delta R.T.: -0.014 min
Response: 820122
Conc: 4.16 ug/L

11.1.1
11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092112\GB17675.D\FID1A.CH Vial: 29
 Signal #2 : Y:\1\DATA\092112\GB17675.D\FID2B.CH
 Acq On : 22 Sep 2012 7:55 am Operator: StephK
 Sample : MB Inst : GC/MS Ins
 Misc : GC3129,GGB970,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Sep 24 08:48:00 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Sep 24 08:32:35 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	14.37	2679357	85.510	%
10) S	1,2,4-Trichlorobenzene (P)	14.37	14752942	90.772	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4423419	<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	7.65	175664	0.443	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.54	177951	0.902	ug/L

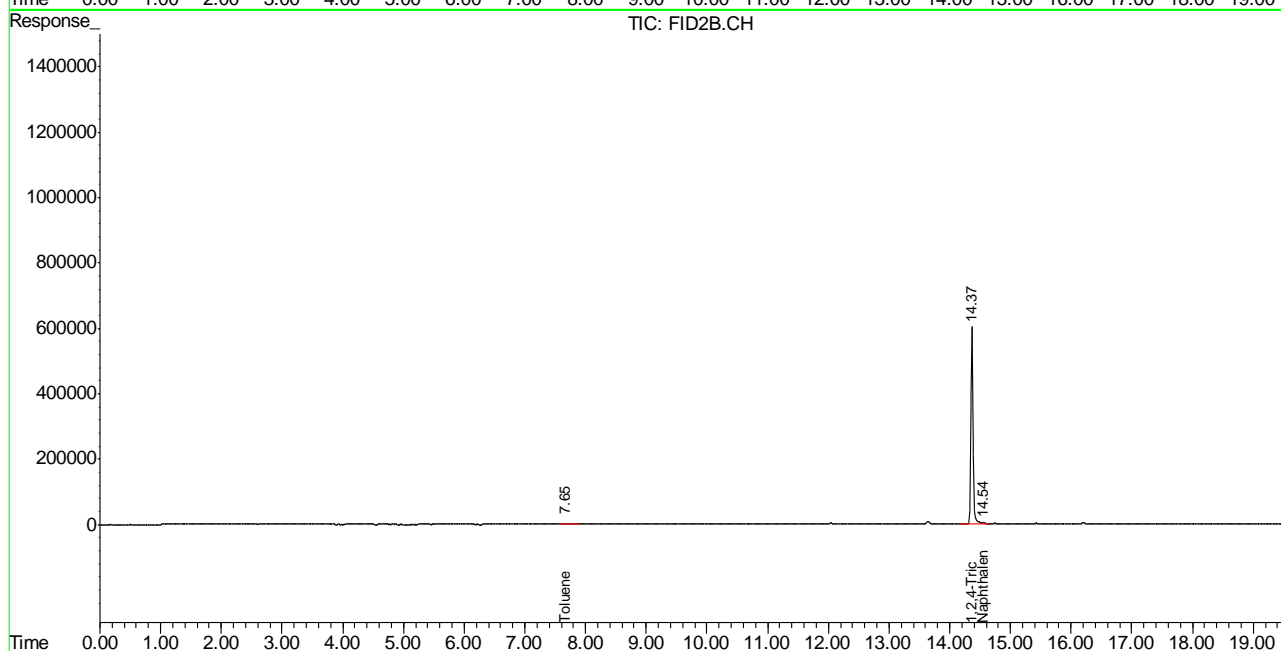
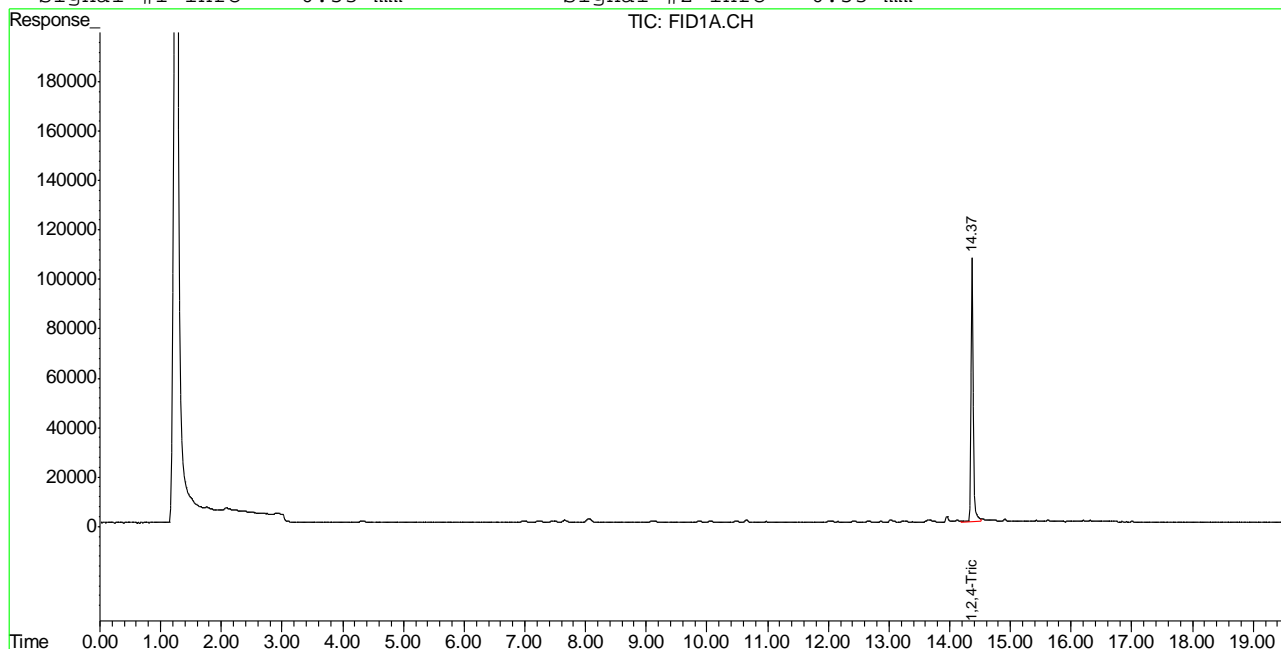
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB17675.D TB868GB868SOIL.M Mon Sep 24 09:02:50 2012 GC

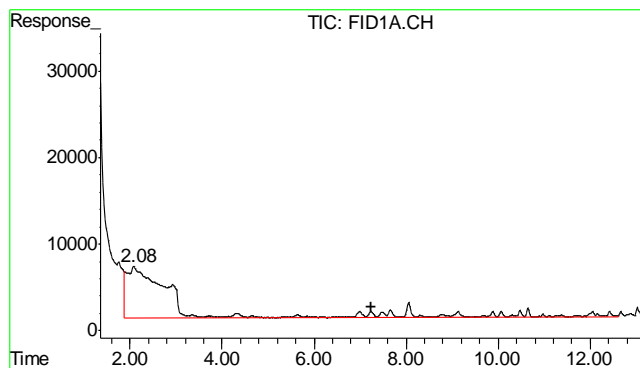
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092112\GB17675.D\FID1A.CH Vial: 29
Signal #2 : Y:\1\DATA\092112\GB17675.D\FID2B.CH
Acq On : 22 Sep 2012 7:55 am Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3129,GGB970,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Sep 24 8:04 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Sep 24 08:32:35 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

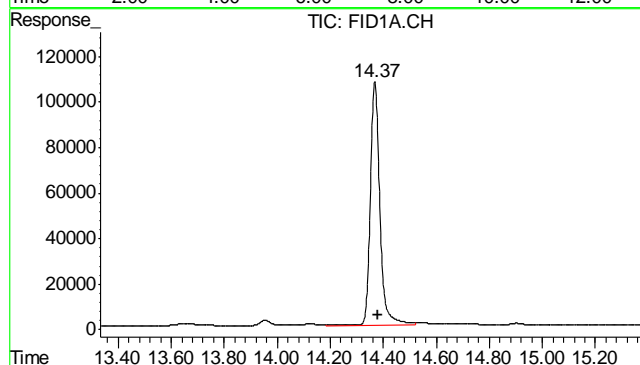
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





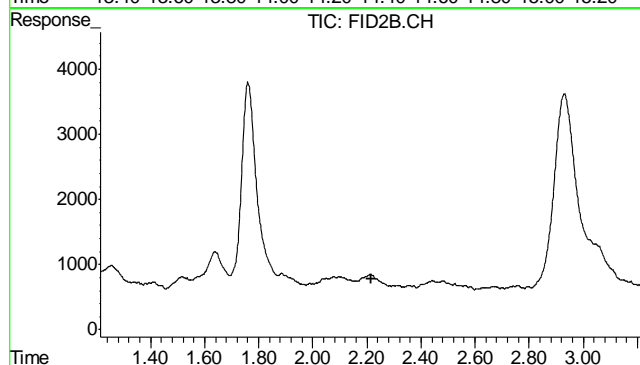
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4423419
Conc: N.D.



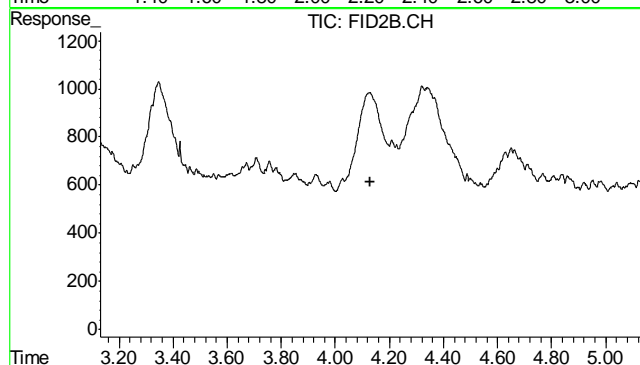
#2 1,2,4-Trichlorobenzene

R.T.: 14.369 min
Delta R.T.: -0.011 min
Response: 2679357
Conc: 85.51 %



#4 Methyl-t-butyl-ether

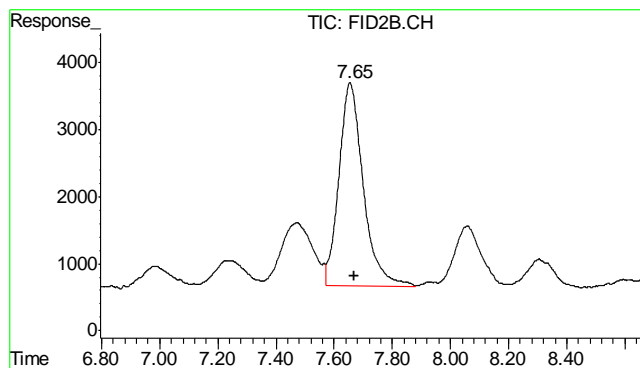
R.T.: 0.000 min
Exp R.T.: 2.214 min
Response: 0
Conc: N.D.



#5 Benzene

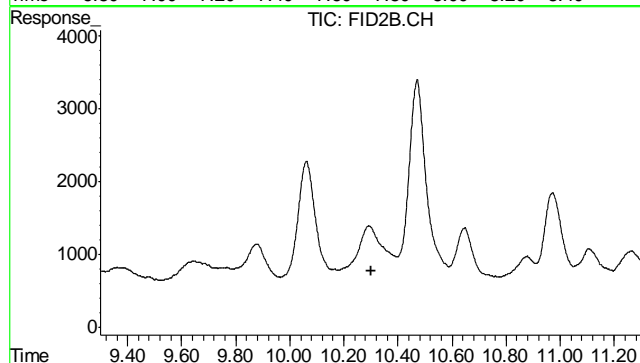
R.T.: 0.000 min
Exp R.T.: 4.130 min
Response: 0
Conc: N.D.

11.21
11



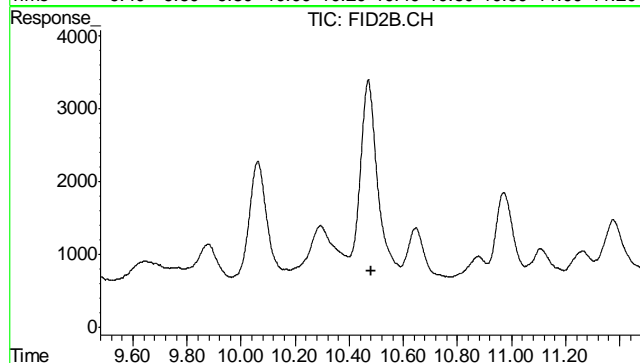
#6 Toluene

R.T.: 7.655 min
Delta R.T.: -0.014 min
Response: 175664
Conc: 0.44 ug/L



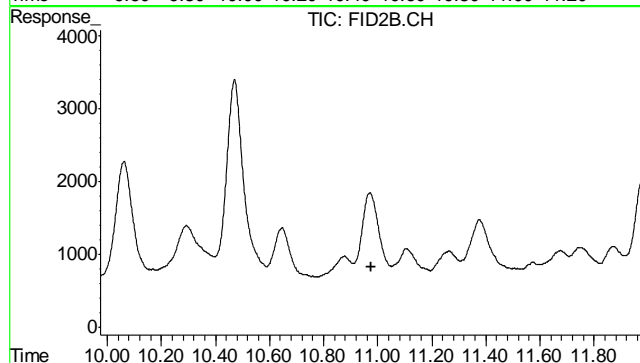
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.300 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

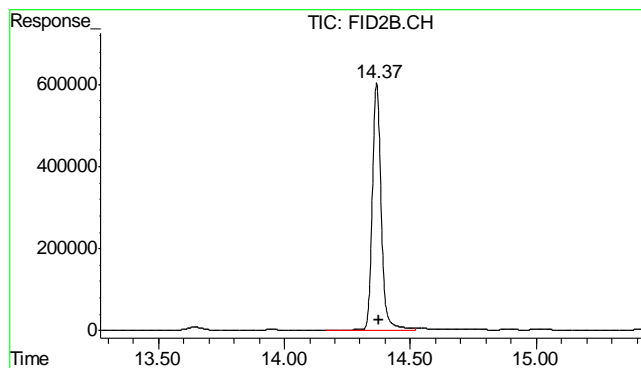
R.T.: 0.000 min
Exp R.T.: 10.479 min
Response: 0
Conc: N.D.



#9 o-Xylene

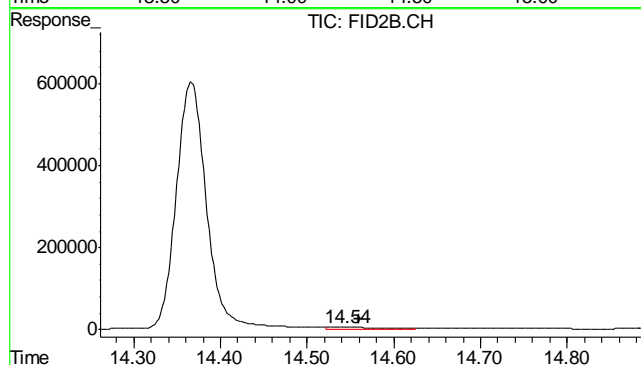
R.T.: 0.000 min
Exp R.T.: 10.975 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.366 min
Delta R.T.: -0.011 min
Response: 14752942
Conc: 90.77 %



#11 Naphthalene

R.T.: 14.544 min
Delta R.T.: -0.016 min
Response: 177951
Conc: 0.90 ug/L

11.2.1
11

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6706-MB	FD17861.D	1	09/26/12	AV	09/26/12	OP6706	GFD910

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

D39008-1

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	88% 43-136%

12.1.1
12

Blank Spike Summary

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6706-BS	FD17863.D	1	09/26/12	AV	09/26/12	OP6706	GFD910

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

D39008-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	584	88	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	94%	43-136%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D39008
Account: XTOKRWR XTO Energy
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6706-MS	FD17865.D	1	09/26/12	AV	09/26/12	OP6706	GFD910
OP6706-MSD	FD17867.D	1	09/26/12	AV	09/26/12	OP6706	GFD910
D39017-1	FD17871.D	1	09/26/12	AV	09/26/12	OP6706	GFD910

The QC reported here applies to the following samples:

Method: SW846-8015B

D39008-1

CAS No.	Compound	D39017-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	675	741	1050	51	1350	91	25	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D39017-1	Limits
84-15-1	o-Terphenyl	97%	92%	94%	43-136%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092612\FD17897.D Vial:
Acq On : 9-27-2012 01:40:54 AM Operator: ashleyv
Sample : D39008-1 Inst : FID5
Misc : OP6706,GFD910,30.07,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Sep 27 08:28:19 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Sep 20 09:45:06 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	9.06	43646434	923.958 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	81305692	2111.547 mg/L

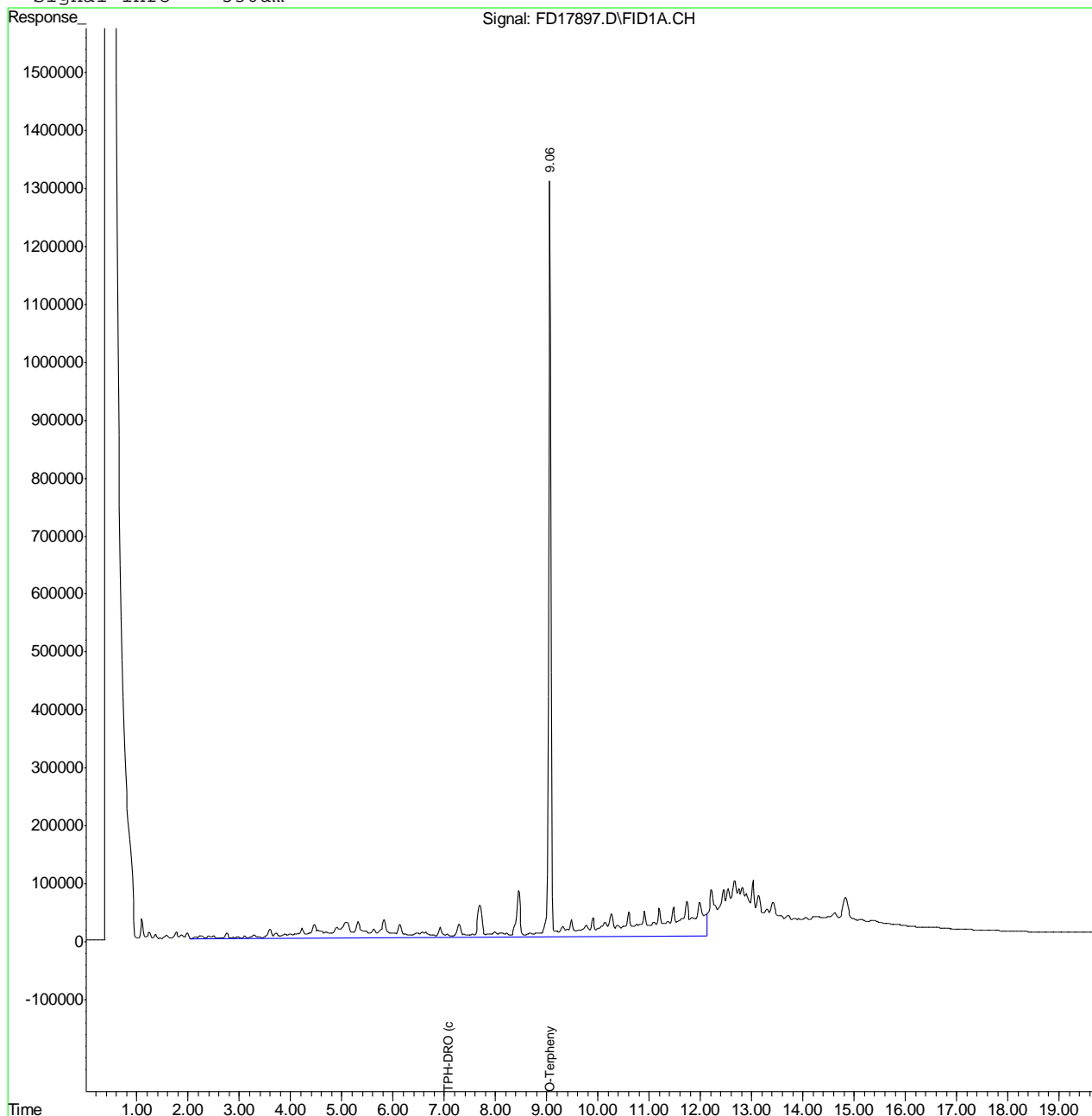
13.1.1
13

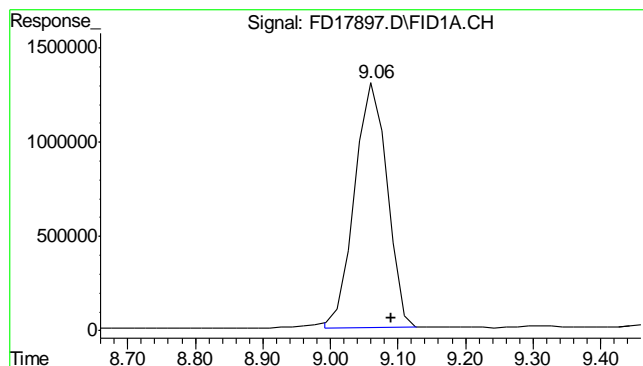
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092612\FD17897.D Vial: 35
 Acq On : 9-27-2012 01:40:54 AM Operator: ashleyv
 Sample : D39008-1 Inst : FID5
 Misc : OP6706,GFD910,30.07,,,2,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Sep 27 8:46 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
 Title : 8015B TEH
 Last Update : Thu Sep 20 09:45:06 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : DRODUAL.M

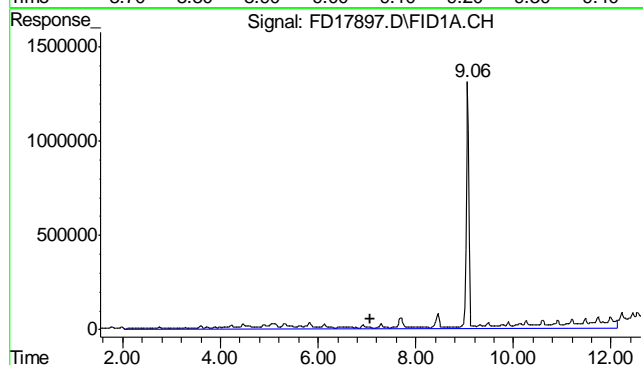
Volume Inj. : 1ul
 Signal Phase : RTX-5
 Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.060 min
 Delta R.T.: -0.030 min
 Response: 43646434
 Conc: 923.96 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min
 Delta R.T.: 0.000 min
 Response: 81305692
 Conc: 2111.55 mg/L m

13.1.1
 13

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092612\FD17861.D Vial: 17
Acq On : 9-26-2012 05:53:12 PM Operator: ashleyv
Sample : OP6706-MB Inst : FID5
Misc : OP6706,GFD910,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Sep 27 08:28:02 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Sep 20 09:45:06 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.09	41744705	883.700 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	2269189	58.932 mg/L

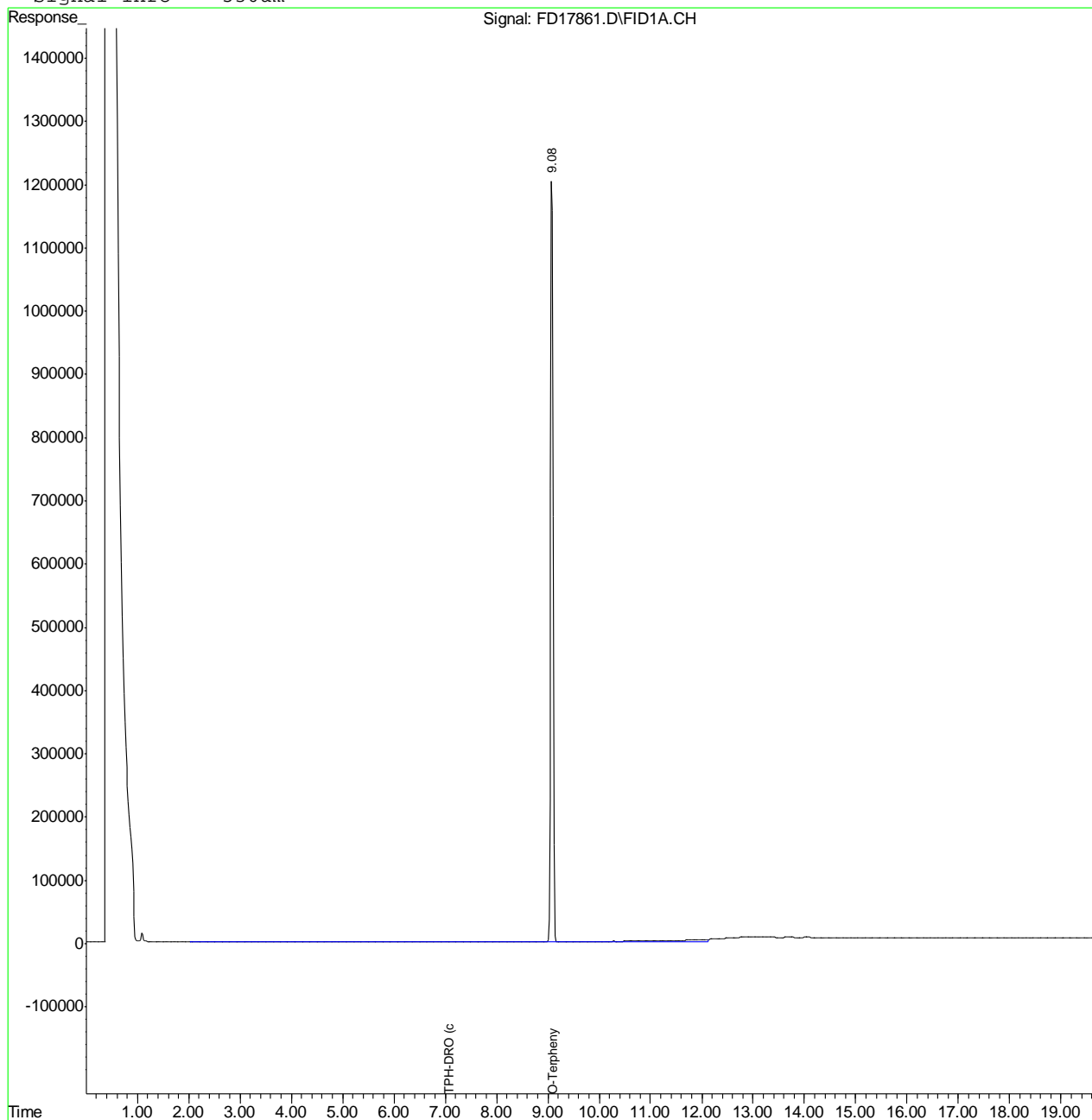
(f)=RT Delta > 1/2 Window (m)=manual int.
FD17861.D DRO-GFD823F.M Thu Sep 27 08:51:50 2012 GC

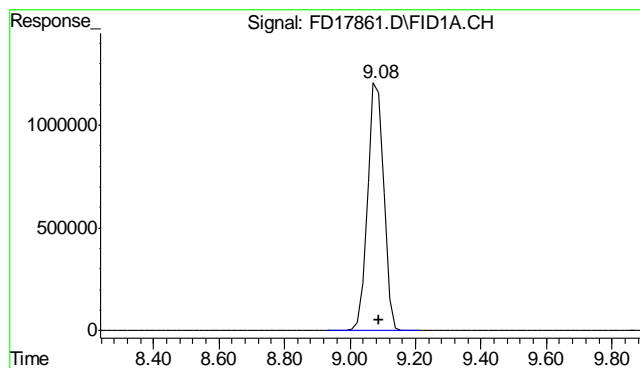
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092612\FD17861.D Vial: 17
Acq On : 9-26-2012 05:53:12 PM Operator: ashleyv
Sample : OP6706-MB Inst : FID5
Misc : OP6706,GFD910,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Sep 27 8:28 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Sep 20 09:45:06 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

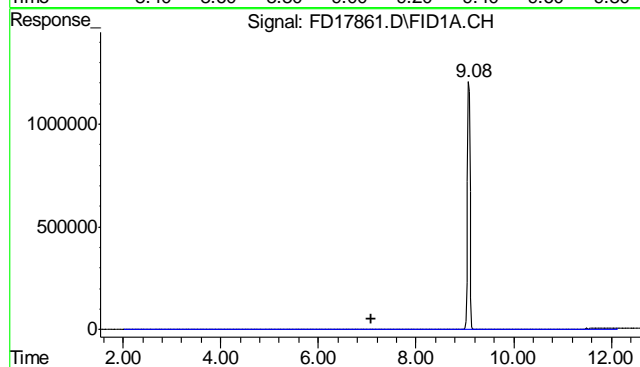
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.086 min
Delta R.T.: -0.004 min
Response: 41744705
Conc: 883.70 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min
Delta R.T.: 0.000 min
Response: 2269189
Conc: 58.93 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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/24/12

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	0.090	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.0	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.020	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.080	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.10	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	-0.020	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.41	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.13	<3.0
Sodium	40	.59	1.9		
Strontium	5.0	.004	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.22	.26		
Vanadium	1.0	.02	.036		
Zinc	3.0	.05	.37	0.090	<3.0

Associated samples MP8469: D39008-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	500	692	233	90.9	75-125
Beryllium					
Boron					
Cadmium	0.18	52.9	58.3	90.4	75-125
Calcium	anr				
Chromium	65.2	121	58.3	89.4	75-125
Cobalt					
Copper	12.1	67.4	58.3	94.8	75-125
Iron					
Lead	9.6	117	117	92.1	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	22.5	71.6	58.3	84.2	75-125
Phosphorus					
Potassium					
Selenium	0.0	104	117	89.2	75-125
Silicon					
Silver	0.069	22.5	23.3	96.2	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	41.1	89.9	58.3	83.7	75-125

Associated samples MP8469: D39008-1

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	500	738	233	110.6	6.4	20
Beryllium						
Boron						
Cadmium	0.18	53.2	58.3	91.0	0.6	20
Calcium	anr					
Chromium	65.2	124	58.3	94.5	2.4	20
Cobalt						
Copper	12.1	65.9	58.3	92.3	2.3	20
Iron						
Lead	9.6	115	117	90.4	1.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	22.5	71.3	58.3	83.7	0.4	20
Phosphorus						
Potassium						
Selenium	0.0	105	117	90.0	1.0	20
Silicon						
Silver	0.069	22.7	23.3	97.0	0.9	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	41.1	89.4	58.3	82.8	0.6	20

Associated samples MP8469: D39008-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D39008
 Account: XTOKRWR - XTO Energy
 Project: PCU 197-36A

QC Batch ID: MP8469
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 09/24/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	182	200	91.0	80-120
Beryllium				
Boron				
Cadmium	47.3	50	94.6	80-120
Calcium	anr			
Chromium	50.3	50	100.6	80-120
Cobalt				
Copper	44.4	50	88.8	80-120
Iron				
Lead	98.4	100	98.4	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.5	50	95.0	80-120
Phosphorus				
Potassium				
Selenium	93.7	100	93.7	80-120
Silicon				
Silver	19.7	20	98.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.6	50	91.2	80-120

Associated samples MP8469: D39008-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 09/24/12

Metal	D38897-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	4370	4600	9.4	0-10
Beryllium				
Boron				
Cadmium	1.60	0.00	100.0(a)	0-10
Calcium	anr			
Chromium	570	671	11.1*(b)	0-10
Cobalt				
Copper	106	102	4.5	0-10
Iron				
Lead	84.3	89.0	5.6	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	197	229	16.1*(b)	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.600	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	400	418	16.2*(b)	0-10

Associated samples MP8469: D39008-1

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8469
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

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

(b) Serial dilution indicates possible matrix interference.

14.1.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8470
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 09/24/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0024	<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 MP8470: D39008-1

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8470
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	6.7	124	117	100.6
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 MP8470: D39008-1

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8470
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	6.7	123	117	99.7	0.8	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 MP8470: D39008-1

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

14.2.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8470
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 09/24/12

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

Associated samples MP8470: D39008-1

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: D39008
 Account: XTOKRWR - XTO Energy
 Project: PCU 197-36A

QC Batch ID: MP8470
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 09/24/12

Metal	D38897-1 Original SDL 5:25 %DIF			QC Limits
Aluminum				
Antimony				
Arsenic	58.3	56.1	3.7	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 MP8470: D39008-1

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8479
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 09/25/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	0.00063	<0.10

Associated samples MP8479: D39008-1

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: D39008
 Account: XTOKRWR - XTO Energy
 Project: PCU 197-36A

QC Batch ID: MP8479
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 09/25/12

Metal	D38939-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
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Mercury	0.021	0.45	0.431	99.5	75-125
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Associated samples MP8479: D39008-1

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: D39008
 Account: XTOKRWR - XTO Energy
 Project: PCU 197-36A

QC Batch ID: MP8479
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 09/25/12

Metal	D38939-1 Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.021	0.45	0.431	99.5	0.0

Associated samples MP8479: D39008-1

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: D39008
 Account: XTOKRWR - XTO Energy
 Project: PCU 197-36A

QC Batch ID: MP8479
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 09/25/12

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

Associated samples MP8479: D39008-1

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
Matrix Type: AQUEOUS

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

Prep Date: 09/25/12

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	6.0	<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	5.0	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	310	750		
Selenium	250	24	55		
Silicon	250	15			
Silver	150	2	4.9		
Sodium	2000	30	490	-46	<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 MP8487: D39008-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
Matrix Type: AQUEOUS

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

Prep Date: 09/25/12

Metal	D39013-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	19200	159000	125000	111.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	6250	135000	125000	103.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	802000	989000	125000	149.6(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8487: D39008-1A

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
Matrix Type: AQUEOUS

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

Prep Date: 09/25/12

Metal	D39013-1A Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	19200	160000	125000	112.6	0.6	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	6250	134000	125000	102.2	0.7	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	802000	1020000	125000	174.4(a)	3.1	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8487: D39008-1A

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
Matrix Type: AQUEOUS

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

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike 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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
Matrix Type: AQUEOUS

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

Prep Date: 09/25/12

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	127000	125000	101.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	131000	125000	104.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8487: D39008-1A

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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
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: D39008
 Account: XTOKRWR - XTO Energy
 Project: PCU 197-36A

QC Batch ID: MP8487
 Matrix Type: AQUEOUS

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

Prep Date: 09/25/12

Metal	D39013-1A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	3840	3840	0.1	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1250	1280	2.4	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	160000	164000	2.2	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8487: D39008-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

QC Batch ID: MP8487
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: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8246/GN16921	1.0	0.0	mg/kg	60.7	66.4	109.0	80-120%
Specific Conductivity	GP8271/GN16934			umhos/cm	99.9	9980	99.9	90-110%
pH	GN16905			su	8.00	8.02	100.0	99.3-100.7%

Associated Samples:
Batch GP8246: D39008-1
Batch GP8271: D39008-1
Batch GN16905: D39008-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8246/GN16921	D38939-1	mg/kg	0.0	0.0	31.4 (a)	0-20%
Redox Potential Vs H2	GN16909	D39007-1	mv	-24	-21	10.7	0-20%

Associated Samples:

Batch GP8246: D39008-1

Batch GN16909: D39008-1

(*) Outside of QC limits

(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8246/GN16921	D38939-1	mg/kg	0.0	40	39.5	98.8	75-125%

Associated Samples:
Batch GP8246: D39008-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D39008
Account: XTOKRWR - XTO Energy
Project: PCU 197-36A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8246/GN16921	D38939-1	mg/kg	0.0	40	40.4	2.2	

Associated Samples:
Batch GP8246: D39008-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

15.4
15