



03/19/14

Technical Report for

XTO Energy

XTO Love Ranch 8

1108-07 PCDA-031214-1326

Accutest Job Number: D55898

Sampling Date: 03/12/14

Report to:

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Total number of pages in report: 141



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

A handwritten signature in black ink, appearing to read 'Scott Heideman'.

Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D55898

XTO Love Ranch 8
Project No: 1108-07 PCDA-031214-1326

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D55898-1	03/12/14	13:26 DA	03/13/14	SO	Soil	NORTH CUTTINGS PIT SUBLINER COMP.
D55898-1A	03/12/14	13:26 DA	03/13/14	SO	Soil	NORTH CUTTINGS PIT SUBLINER COMP.

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D55898

Site: XTO Love Ranch 8

Report Date 3/19/2014 11:24:05 AM

On 03/13/2014, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D55898 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: V5V1864

- All samples were analyzed within the recommended method holding time.
- Sample(s) D55662-1DUP, D55663-1MS 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: OP9561

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D55898-1MS, D55898-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB1321

- All samples were analyzed within the recommended method holding time.
- Sample(s) D55851-13MS, D55851-13MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP9563

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D55919-10MS, D55919-10MSD 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: MP12506

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55897-1AMS, D55897-1AMSD, D55897-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Magnesium are outside control limits for sample MP12506-SD1. Probable cause due to sample homogeneity.
- MP12506-SD1 for Magnesium: Serial dilution indicates possible matrix interference.

Matrix SO

Batch ID: MP12492

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55897-1MS, D55897-1MSD, D55897-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s), and matrix spike duplicate (MSD) recovery(s) of Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- The serial dilution RPD(s) for Cadmium, Lead, Selenium, Barium, Chromium, Nickel, Zinc are outside control limits for sample MP12492-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP12492-SD1 for Nickel, Chromium, Barium, Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP12493

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55897-1MS, D55897-1MSD, D55897-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP12490

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55851-14MS, D55851-14MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN23993

- Sample(s) D55897-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM2540G-2011 M

Matrix SO

Batch ID: GN23964

- The data for SM2540G-2011 M meets quality control requirements.

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP12156

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55982-1MSD, D55982-1DUP, D55982-1MS were used as the QC samples for the Chromium, Hexavalent analysis.
- The matrix spike (MS) recovery(s), and matrix spike duplicate (MSD) recovery(s) of Chromium, Hexavalent are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The duplicate RPD(s) for Chromium, Hexavalent are outside control limits for sample GP12156-D1. RPD acceptable due to low duplicate and sample concentrations.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix SO

Batch ID: R20736

- The data for SW846 3060A/7196A M meets quality control requirements.
- D55898-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN23995

- The following samples were run outside of holding time for method SW846 9045D: D55898-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP12506

- D55898-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Page 1 of 1

Job Number: D55898
Account: XTO Energy
Project: XTO Love Ranch 8
Collected: 03/12/14



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

D55898-1 NORTH CUTTINGS PIT SUBLINER COMP.

Benzo(k)fluoranthene	0.0024 J	0.0049	0.0024	mg/kg	SW846 8270C BY SIM
Indeno(1,2,3-cd)pyrene	0.0033 J	0.0049	0.0024	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)	8.17	7.6	5.7	mg/kg	SW846-8015B
Arsenic	12.6	0.11		mg/kg	SW846 6020A
Barium	397	1.1		mg/kg	SW846 6010C
Chromium	38.8	1.1		mg/kg	SW846 6010C
Copper	11.5	1.1		mg/kg	SW846 6010C
Lead	17.9	5.4		mg/kg	SW846 6010C
Nickel	14.9	3.2		mg/kg	SW846 6010C
Zinc	48.3	3.2		mg/kg	SW846 6010C
Specific Conductivity	7460	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent ^a	38.8	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	482			mv	ASTM D1498-76M
pH	8.63			su	SW846 9045D

D55898-1A NORTH CUTTINGS PIT SUBLINER COMP.

Calcium	348	2.0	mg/l	SW846 6010C
Magnesium	130	1.0	mg/l	SW846 6010C
Sodium	1590	2.0	mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	18.5		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:	NORTH CUTTINGS PIT SUBLINER COMP.					Date Sampled:	03/12/14
Lab Sample ID:	D55898-1					Date Received:	03/13/14
Matrix:	SO - Soil					Percent Solids:	87.6
Method:	SW846 8260B						
Project:	XTO Love Ranch 8						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V30999.D	1	03/13/14	JL	n/a	n/a	V5V1864
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.05 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.064	0.024	mg/kg	
108-88-3	Toluene	ND	0.13	0.064	mg/kg	
100-41-4	Ethylbenzene	ND	0.13	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	94%		64-130%
460-00-4	4-Bromofluorobenzene	100%		62-131%
17060-07-0	1,2-Dichloroethane-D4	91%		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:	NORTH CUTTINGS PIT SUBLINER COMP.			Date Sampled:	03/12/14
Lab Sample ID:	D55898-1			Date Received:	03/13/14
Matrix:	SO - Soil			Percent Solids:	87.6
Method:	SW846 8270C BY SIM SW846 3546				
Project:	XTO Love Ranch 8				

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G18475.D	1	03/14/14	DC	03/14/14	OP9561	E3G918
Run #2							

Run #	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	0.0049	0.0038	mg/kg	
120-12-7	Anthracene	ND	0.0049	0.0034	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0049	0.0024	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0049	0.0030	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.0024	0.0049	0.0024	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.0049	0.0024	mg/kg	
218-01-9	Chrysene	ND	0.0049	0.0024	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0049	0.0024	mg/kg	
206-44-0	Fluoranthene	ND	0.0049	0.0028	mg/kg	
86-73-7	Fluorene	ND	0.0049	0.0035	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0033	0.0049	0.0024	mg/kg	J
91-20-3	Naphthalene	ND	0.0049	0.0030	mg/kg	
129-00-0	Pyrene	ND	0.0049	0.0029	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%		10-175%
321-60-8	2-Fluorobiphenyl	77%		25-130%
1718-51-0	Terphenyl-d14	91%		41-133%

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:	NORTH CUTTINGS PIT SUBLINER COMP.			Date Sampled:	03/12/14
Lab Sample ID:	D55898-1			Date Received:	03/13/14
Matrix:	SO - Soil			Percent Solids:	87.6
Method:	SW846 8015B				
Project:	XTO Love Ranch 8				

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB24067.D	1	03/14/14	AR	n/a	n/a	GGB1321
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	96%		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:	NORTH CUTTINGS PIT SUBLINER COMP.					Date Sampled:	03/12/14
Lab Sample ID:	D55898-1					Date Received:	03/13/14
Matrix:	SO - Soil					Percent Solids:	87.6
Method:	SW846-8015B SW846 3546						
Project:	XTO Love Ranch 8						

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH019449.D	1	03/19/14	JJ	03/14/14	OP9563	GFH934
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	8.17	7.6	5.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	82%		20-130%		

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

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

Report of Analysis

Client Sample ID:	NORTH CUTTINGS PIT SUBLINER COMP.	Date Sampled:	03/12/14
Lab Sample ID:	D55898-1	Date Received:	03/13/14
Matrix:	SO - Soil	Percent Solids:	87.6
Project:	XTO Love Ranch 8		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	12.6	0.11	mg/kg	5	03/14/14	03/14/14 JB	SW846 6020A ²	SW846 3050B ⁷
Barium	397	1.1	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Chromium	38.8	1.1	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Copper	11.5	1.1	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Lead	17.9	5.4	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Mercury	< 0.095	0.095	mg/kg	1	03/14/14	03/14/14 JB	SW846 7471B ¹	SW846 7471B ⁵
Nickel	14.9	3.2	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Selenium	< 5.4	5.4	mg/kg	1	03/14/14	03/18/14 KV	SW846 6010C ⁴	SW846 3050B ⁶
Silver	< 3.2	3.2	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶
Zinc	48.3	3.2	mg/kg	1	03/14/14	03/15/14 KV	SW846 6010C ³	SW846 3050B ⁶

(1) Instrument QC Batch: MA4550

(2) Instrument QC Batch: MA4552

(3) Instrument QC Batch: MA4554

(4) Instrument QC Batch: MA4557

(5) Prep QC Batch: MP12490

(6) Prep QC Batch: MP12492

(7) Prep QC Batch: MP12493

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NORTH CUTTINGS PIT SUBLINER COMP.	Date Sampled:	03/12/14
Lab Sample ID:	D55898-1	Date Received:	03/13/14
Matrix:	SO - Soil	Percent Solids:	87.6
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	87.6		%	1	03/14/14	SWT	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	7460	1.0	umhos/cm	1	03/17/14	JD	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	03/17/14	RW	SW846 3060A/7196A
Chromium, Trivalent ^a	38.8	2.1	mg/kg	1	03/17/14	RW	SW846 3060A/7196A M
Redox Potential Vs H2	482		mv	1	03/17/14	JD	ASTM D1498-76M
pH	8.63		su	1	03/17/14 12:15	JD	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NORTH CUTTINGS PIT SUBLINER COMP.			Date Sampled:	03/12/14
Lab Sample ID:	D55898-1A			Date Received:	03/13/14
Matrix:	SO - Soil			Percent Solids:	87.6
Project:	XTO Love Ranch 8				

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	348	2.0	mg/l	1	03/17/14	03/17/14 KV	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	130	1.0	mg/l	1	03/17/14	03/17/14 KV	SW846 6010C ¹	SW846 3010A/M ²
Sodium	1590	2.0	mg/l	1	03/17/14	03/17/14 KV	SW846 6010C ¹	SW846 3010A/M ²

- (1) Instrument QC Batch: MA4557
(2) Prep QC Batch: MP12506

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NORTH CUTTINGS PIT SUBLINER COMP.	Date Sampled:	03/12/14
Lab Sample ID:	D55898-1A	Date Received:	03/13/14
Matrix:	SO - Soil	Percent Solids:	87.6
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	18.5		ratio	1	03/17/14 13:25	KV	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: D55898

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 3/13/2014 1:10:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: LR 8

Airbill #'s: CO

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: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1864-MB	5V30981.D	1	03/13/14	JL	n/a	n/a	V5V1864

The QC reported here applies to the following samples:

Method: SW846 8260B

D55898-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	19	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	97% 64-130%
460-00-4	4-Bromofluorobenzene	88% 62-131%
17060-07-0	1,2-Dichloroethane-D4	94% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D55898

Account: XTOKRWR XTO Energy

Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1864-BS	5V30982.D	1	03/13/14	JL	n/a	n/a	V5V1864

The QC reported here applies to the following samples:

Method: SW846 8260B

D55898-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2640	106	70-130
100-41-4	Ethylbenzene	2500	2580	103	70-130
108-88-3	Toluene	2500	2580	103	70-130
1330-20-7	Xylene (total)	7500	7910	105	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	64-130%
460-00-4	4-Bromofluorobenzene	103%	62-131%
17060-07-0	1,2-Dichloroethane-D4	88%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Page 1 of 1

Job Number: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D55663-1MS	5V30985.D	1	03/13/14	JL	n/a	n/a	V5V1864
D55663-1	5V30986.D	1	03/13/14	JL	n/a	n/a	V5V1864

The QC reported here applies to the following samples:

Method: SW846 8260B

D55898-1

CAS No.	Compound	D55663-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	5780		10300	14700	87	64-139
100-41-4	Ethylbenzene	2130		10300	10000	77	68-136
108-88-3	Toluene	28900		10300	35200	61	60-130
1330-20-7	Xylene (total)	37000		30800	59400	73	58-142

CAS No.	Surrogate Recoveries	MS	D55663-1	Limits
2037-26-5	Toluene-D8	94%	98%	64-130%
460-00-4	4-Bromofluorobenzene	103%	104%	62-131%
17060-07-0	1,2-Dichloroethane-D4	83%	82%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Page 1 of 1

Job Number: D55898

Account: XTOKRWR XTO Energy

Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D55662-1DUP	5V30984.D	1	03/13/14	JL	n/a	n/a	V5V1864
D55662-1	5V30983.D	1	03/13/14	JL	n/a	n/a	V5V1864

The QC reported here applies to the following samples:

Method: SW846 8260B

D55898-1

CAS No.	Compound	D55662-1 ug/kg	DUP Q	ug/kg	Q	RPD	Limits
71-43-2	Benzene	4320		4520		5	30
100-41-4	Ethylbenzene	77100		79100		3	30
108-88-3	Toluene	125000		129000		3	30
1330-20-7	Xylene (total)	460000		467000		2	30

CAS No.	Surrogate Recoveries	DUP	D55662-1	Limits
2037-26-5	Toluene-D8	102%	101%	64-130%
460-00-4	4-Bromofluorobenzene	100%	99%	62-131%
17060-07-0	1,2-Dichloroethane-D4	87%	92%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031314.S\
Data File : 5V30999.D
Acq On : 13 Mar 2014 8:30 pm
Operator : Jessica1
Sample : D55898-1
Misc : MS7164,V5V1864,5.052,,100,5,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Mar 14 07:55:41 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	120428	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	175894	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	177211	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.036	152	139452	50.00	ug/l	0.01

System Monitoring Compounds

35) 1,2-Dichloroethane-d4	12.012	102	11887	45.59	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	91.18%
64) Toluene-d8	13.805	98	196176	46.96	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.92%
72) 4-Bromofluorobenzene	16.008	95	94423	49.89	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.78%

Target Compounds

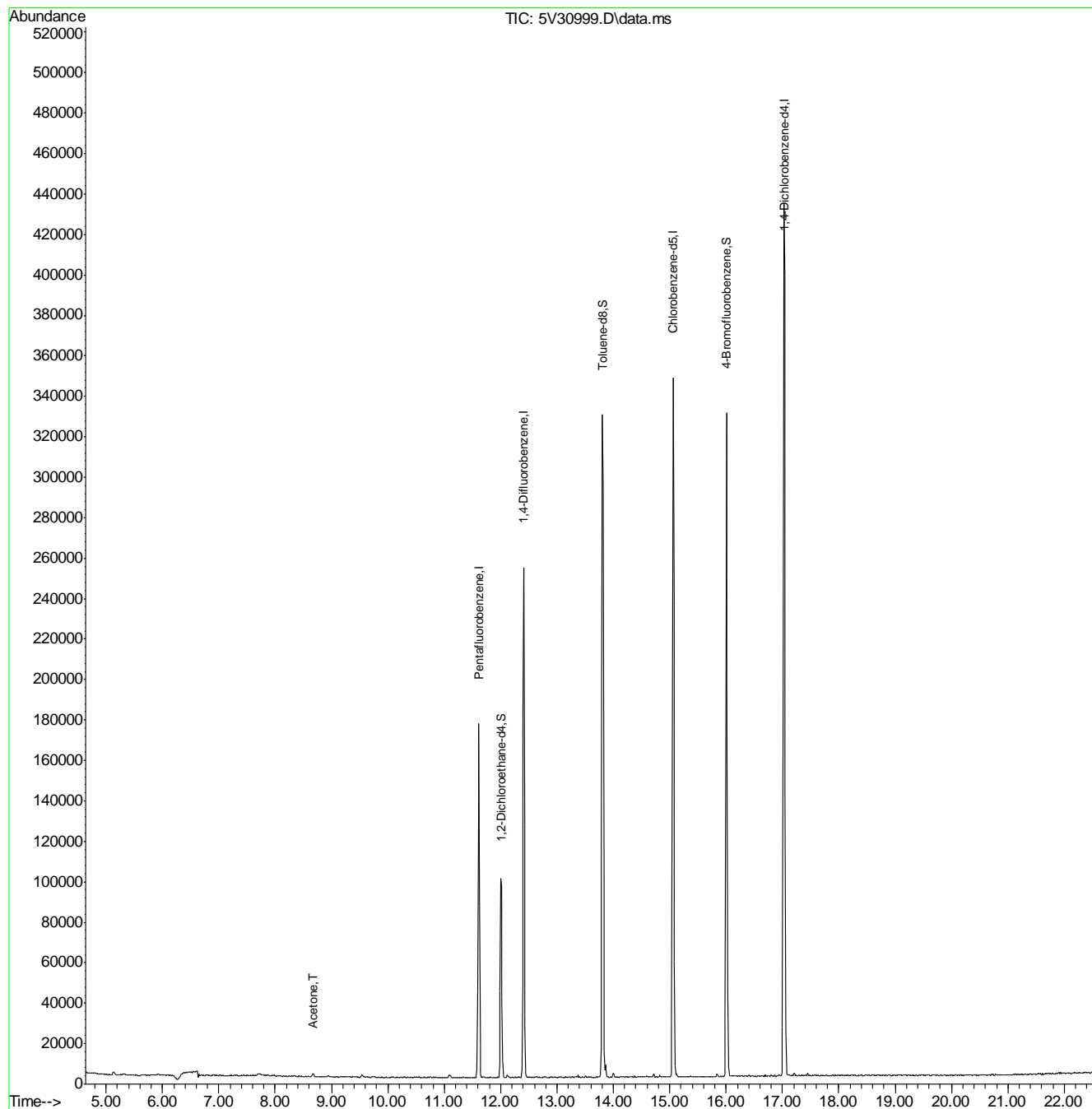
					Qvalue
1) TVH-Gasoline	13.006	TIC	-6871m	51.92	ug/l
15) Acetone	8.667	58	668	0.95	ug/l # 81

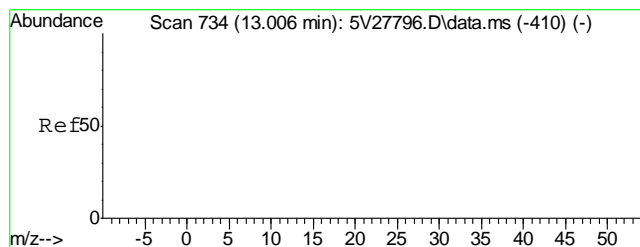
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031314.S\
Data File : 5V30999.D
Acq On : 13 Mar 2014 8:30 pm
Operator : Jessical
Sample : D55898-1
Misc : MS7164,V5V1864,5.052,,100,5,1
ALS Vial : 22 Sample Multiplier: 1

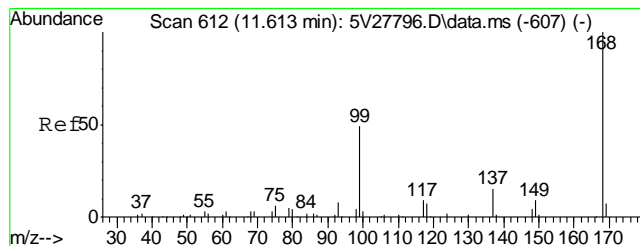
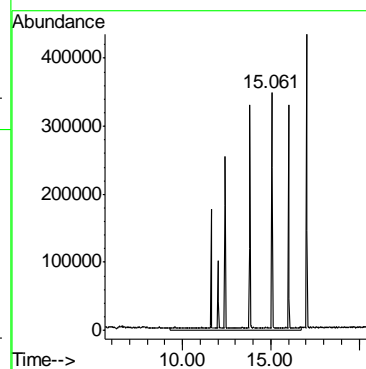
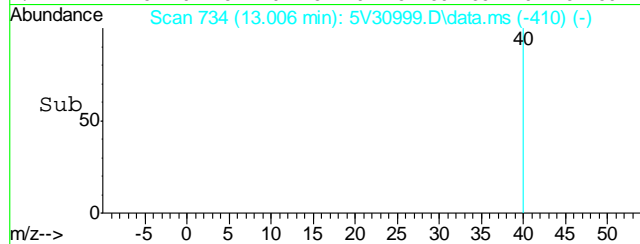
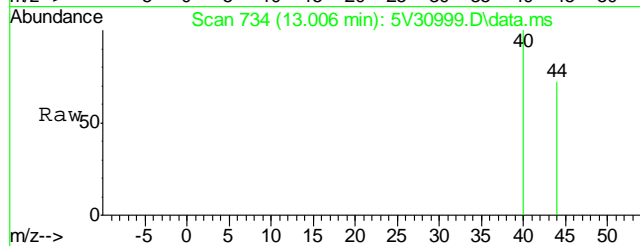
Quant Time: Mar 14 07:55:41 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration





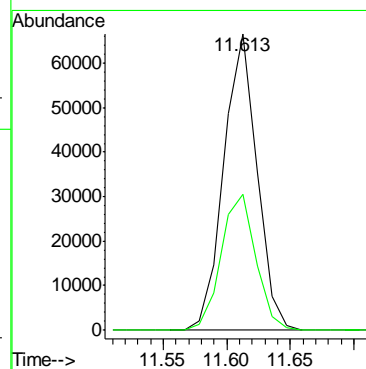
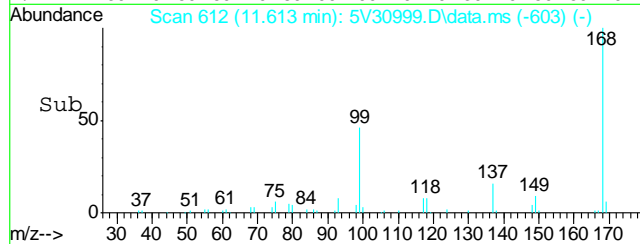
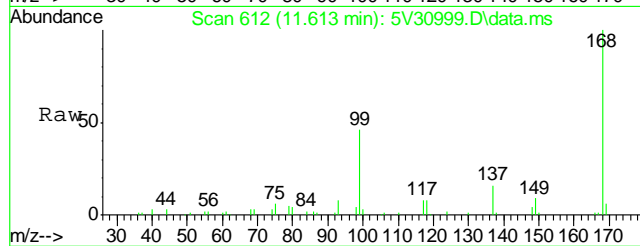
#1
TVH-Gasoline
Concen: 51.92 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

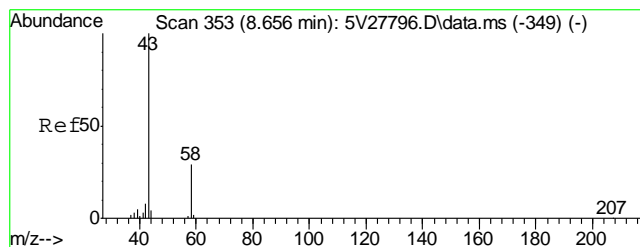
Tgt Ion:TIC Resp: -6871



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.001 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

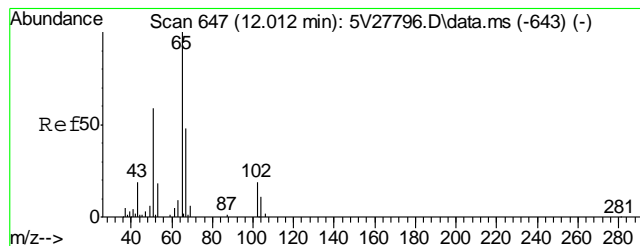
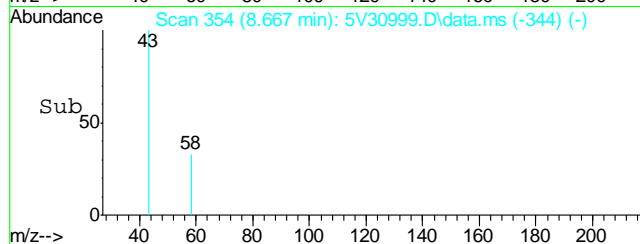
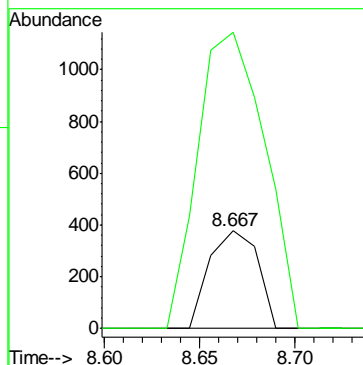
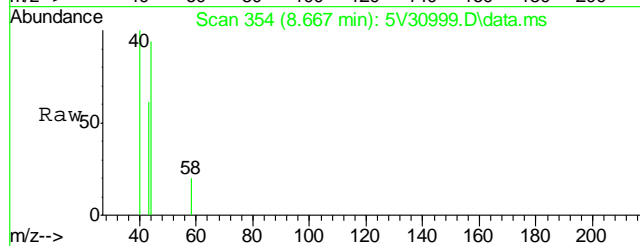
Tgt Ion:168 Resp: 120428
Ion Ratio Lower Upper
168 100
99 47.8 41.4 62.2





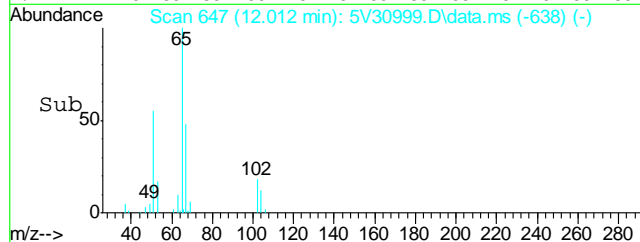
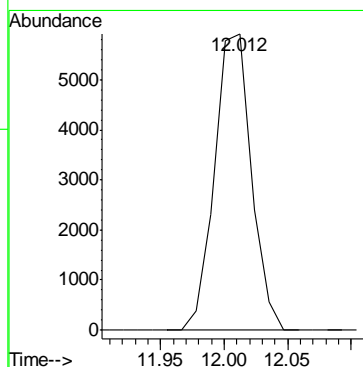
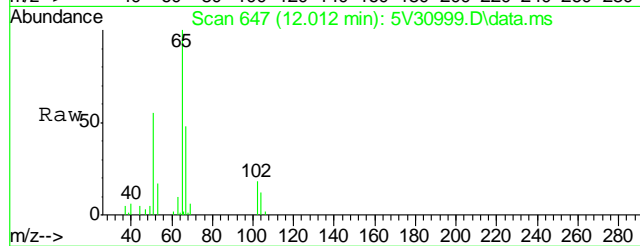
#15
Acetone
Concen: 0.95 ug/l
RT: 8.667 min Scan# 354
Delta R.T. 0.012 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

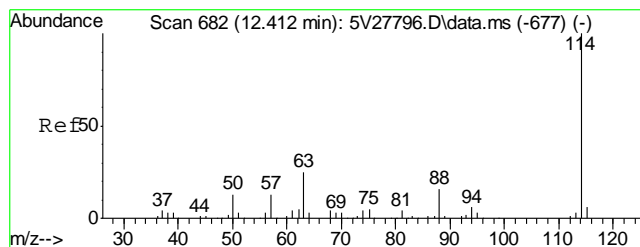
Tgt Ion: 58 Resp: 668
Ion Ratio Lower Upper
58 100
43 419.0 355.9 395.9#



#35
1,2-Dichloroethane-d4
Concen: 45.59 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

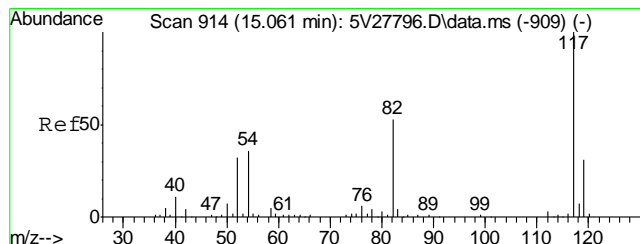
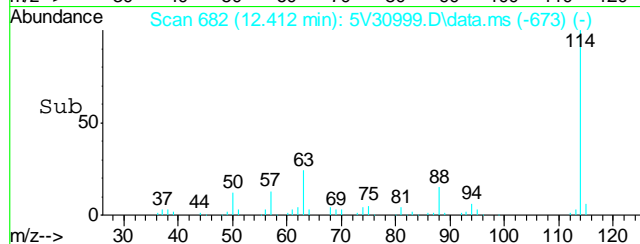
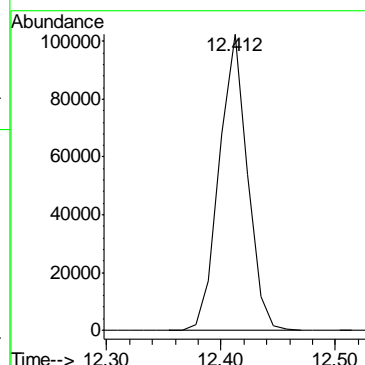
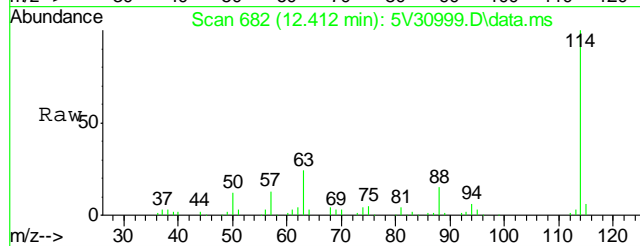
Tgt Ion: 102 Resp: 11887





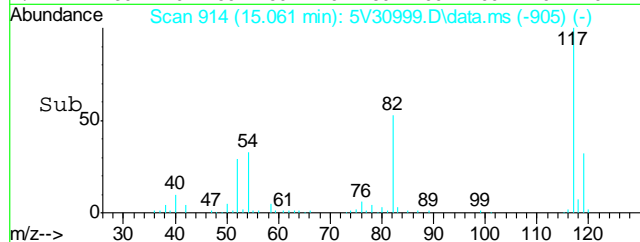
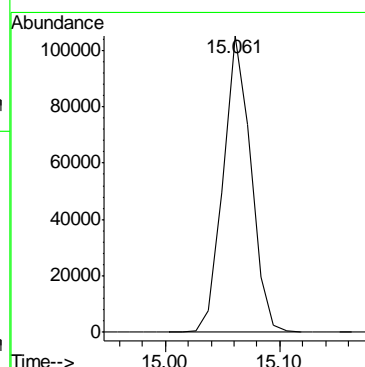
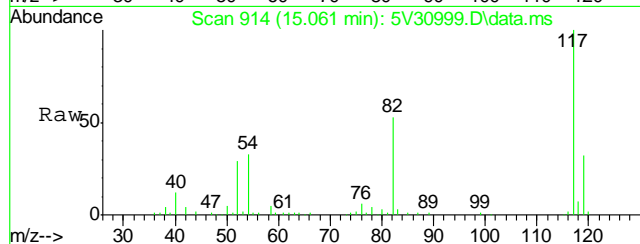
#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. -0.000 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

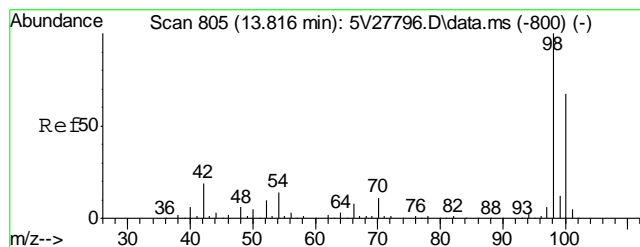
Tgt Ion:114 Resp: 175894



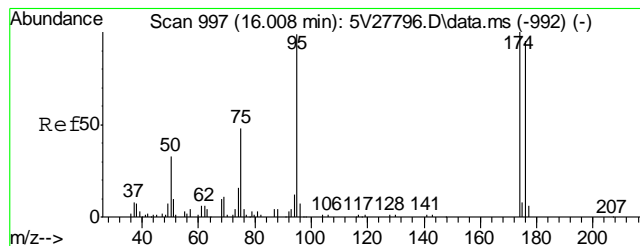
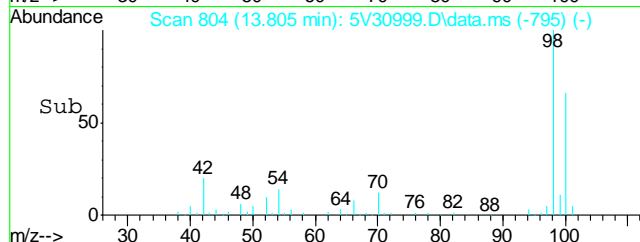
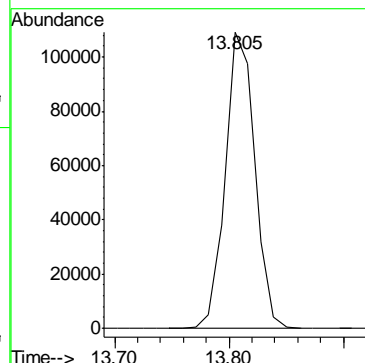
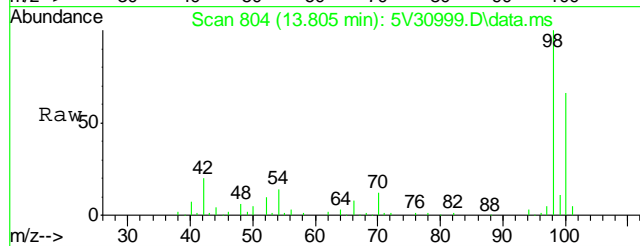
#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.001 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

Tgt Ion:117 Resp: 177211



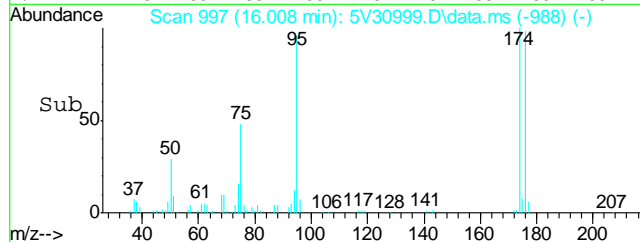
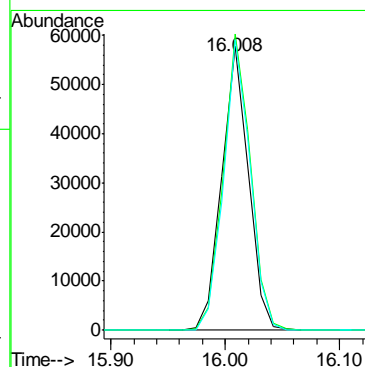
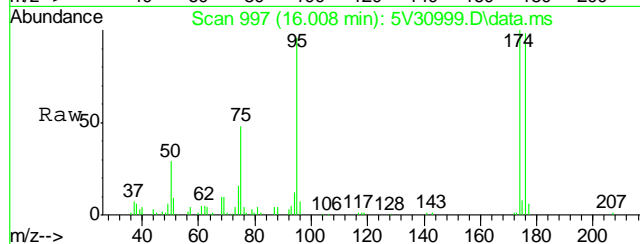


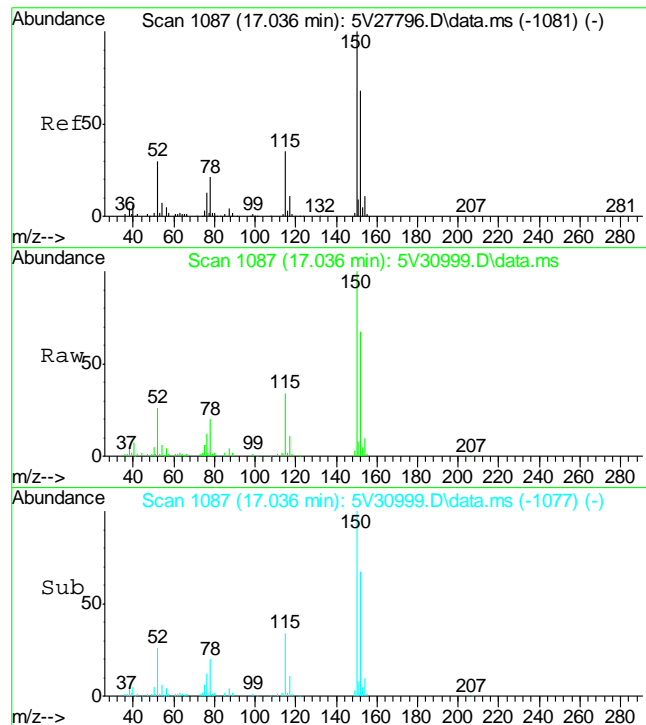
#64
Toluene-d8
Concen: 46.96 ug/l
RT: 13.805 min Scan# 804
Delta R.T. 0.001 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm
Tgt Ion: 98 Resp: 196176



#72
4-Bromofluorobenzene
Concen: 49.89 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

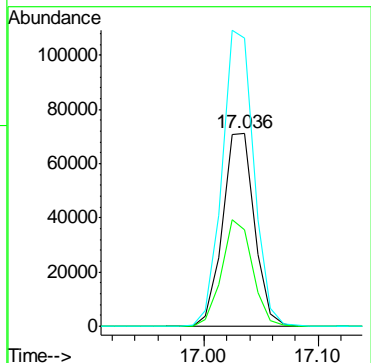
Tgt Ion: 95 Resp: 94423
Ion Ratio Lower Upper
95 100
174 106.1 85.4 125.4
176 101.5 80.6 120.6





#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. 0.012 min
Lab File: 5V30999.D
Acq: 13 Mar 2014 8:30 pm

Tgt Ion:	152	Resp:	139452
Ion Ratio	Lower	Upper	
152	100		
115	53.0	43.4	65.2
150	152.6	142.9	214.3



7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031314.S\
 Data File : 5V30981.D
 Acq On : 13 Mar 2014 10:44 am
 Operator : Jessical
 Sample : MB
 Misc : MS7164,V5V1864,5.0,,100,5,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 13 11:08:16 2014
 Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
 Quant Title : 8260
 QLast Update : Tue Mar 11 09:35:09 2014
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	126774	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	187319	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	182634	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	133985	50.00	ug/l	0.00

System Monitoring Compounds

35) 1,2-Dichloroethane-d4	12.012	102	12963	47.23	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	94.46%
64) Toluene-d8	13.816	98	208592	48.45	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.90%
72) 4-Bromofluorobenzene	16.008	95	85846	44.01	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	88.02%

Target Compounds

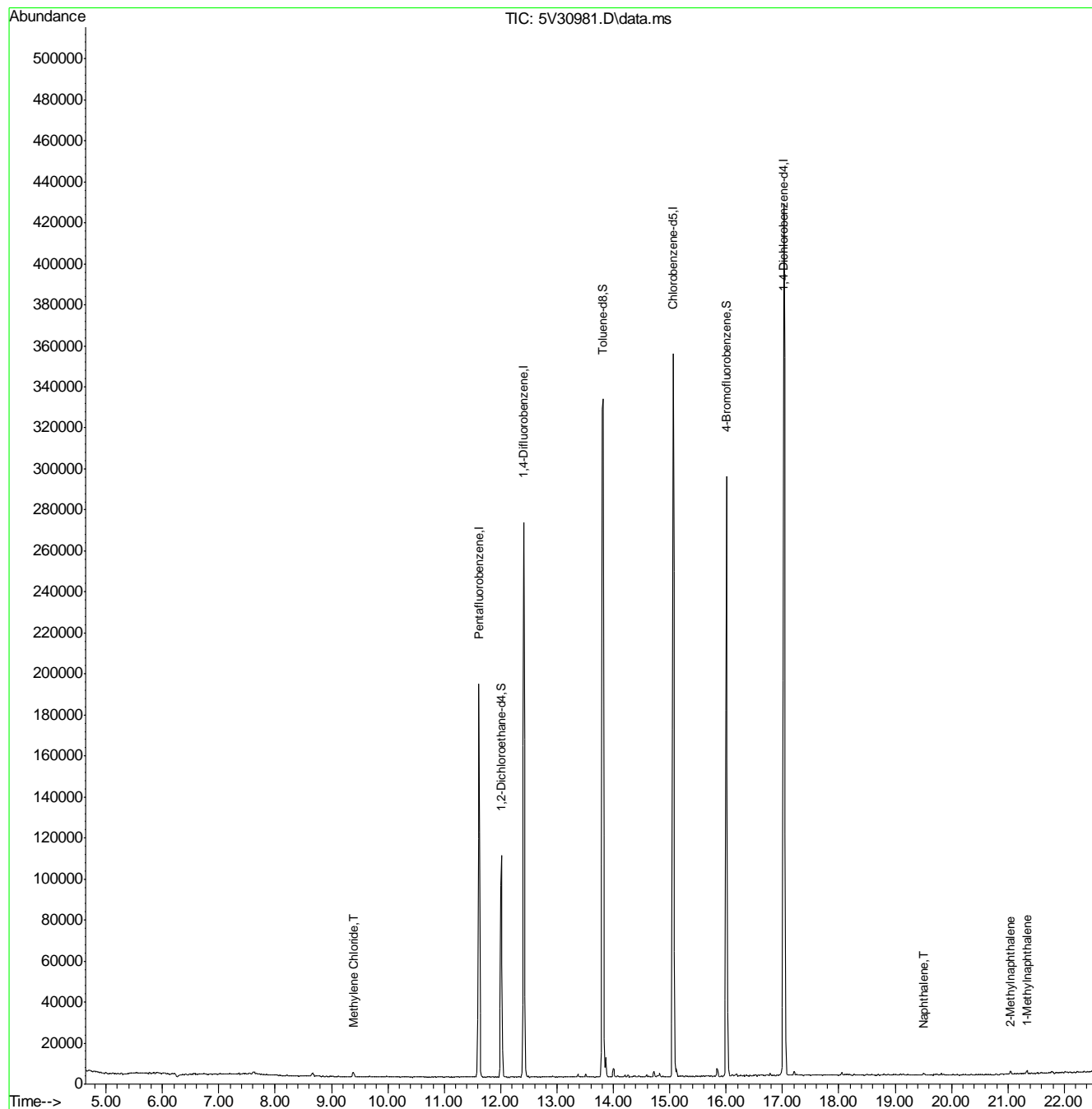
					Qvalue
1) TVH-Gasoline	13.006	TIC	-34317m	49.40	ug/l
18) Methylene Chloride	9.386	84	632	0.50	ug/l # 55
94) Naphthalene	19.502	128	1558	1.58	ug/l 100
97) 2-Methylnaphthalene	21.043	142	936	3.05	ug/l # 64
98) 1-Methylnaphthalene	21.340	142	980	2.91	ug/l # 79

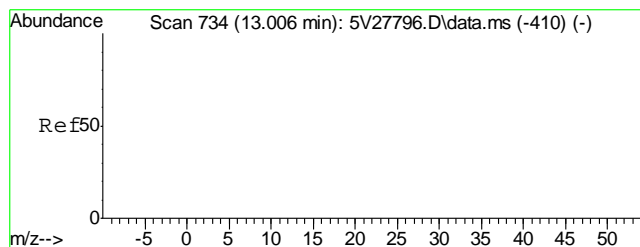
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031314.S\
Data File : 5V30981.D
Acq On : 13 Mar 2014 10:44 am
Operator : Jessical
Sample : MB
Misc : MS7164,V5V1864,5.0,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

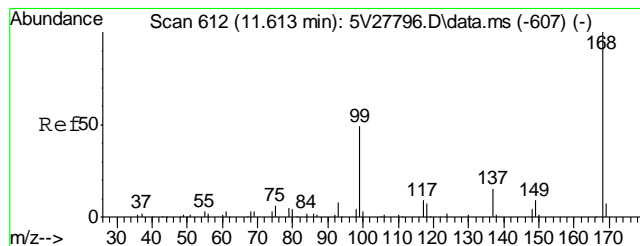
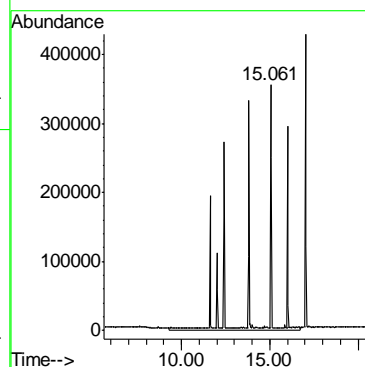
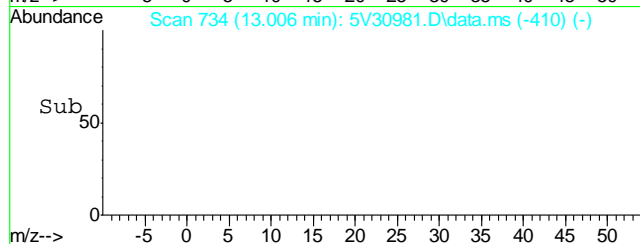
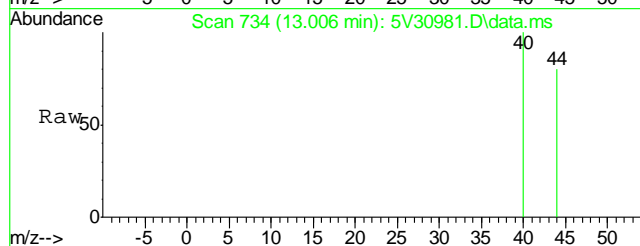
Quant Time: Mar 13 11:08:16 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration





#1
TVH-Gasoline
Concen: 49.40 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

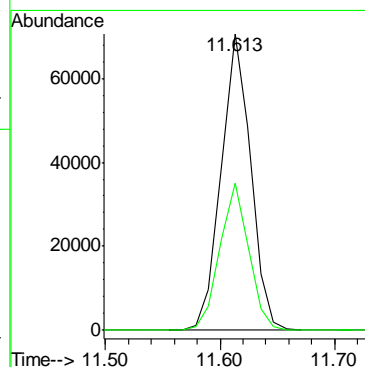
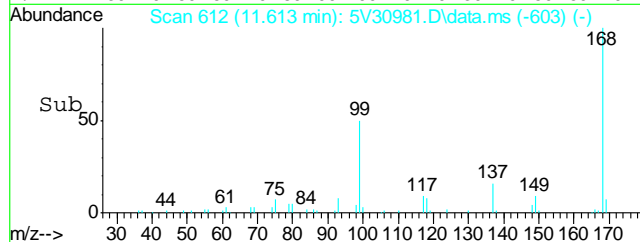
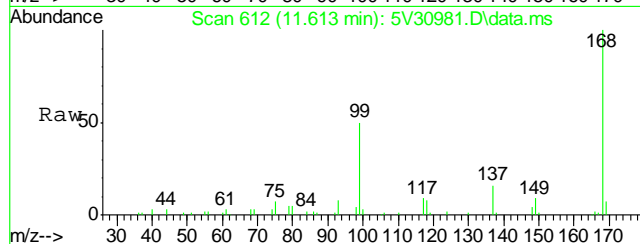
Tgt Ion:TIC Resp: -34317

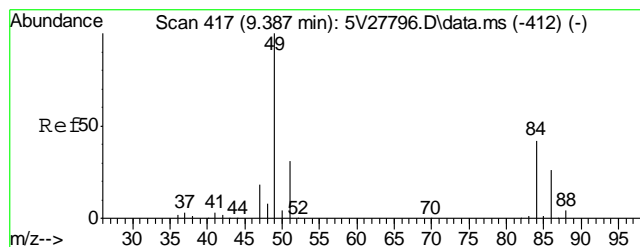


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.001 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

Tgt Ion:168 Resp: 126774

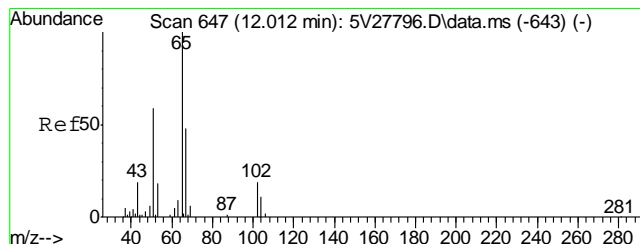
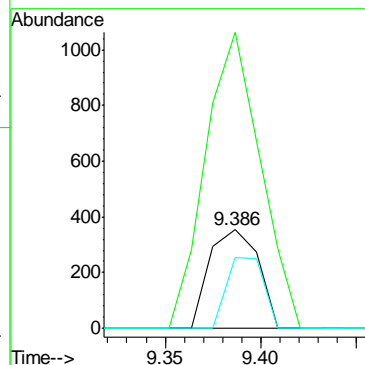
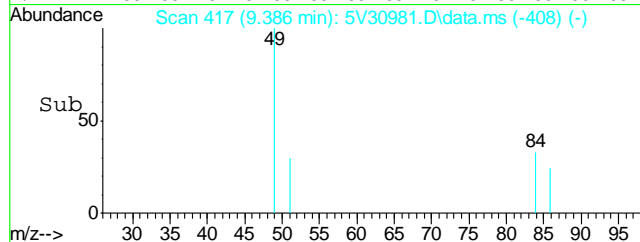
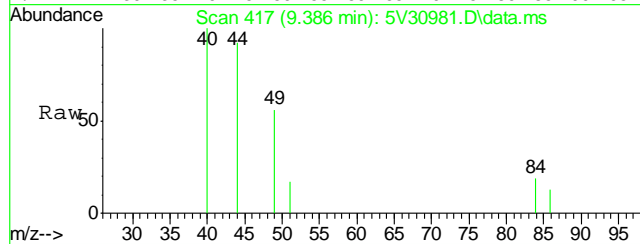
Ion	Ratio	Lower	Upper
168	100		
99	48.5	41.4	62.2





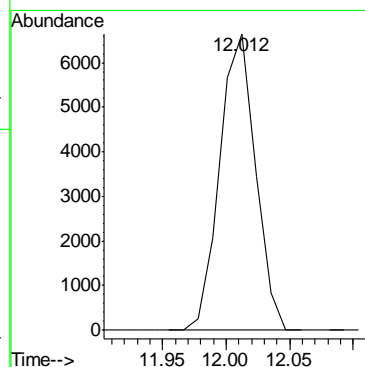
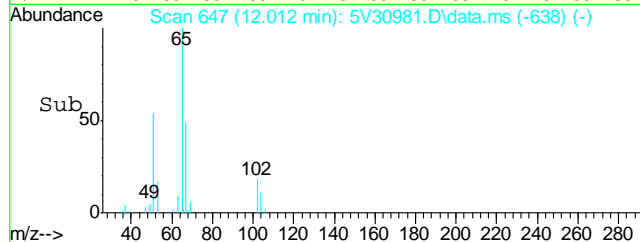
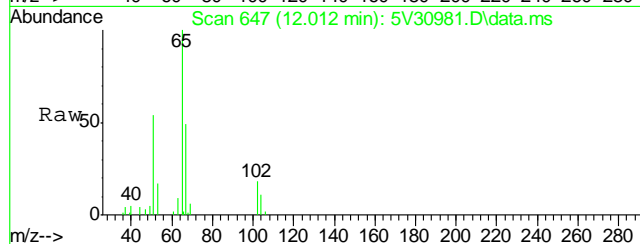
#18
Methylene Chloride
Concen: 0.50 ug/l
RT: 9.386 min Scan# 417
Delta R.T. 0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

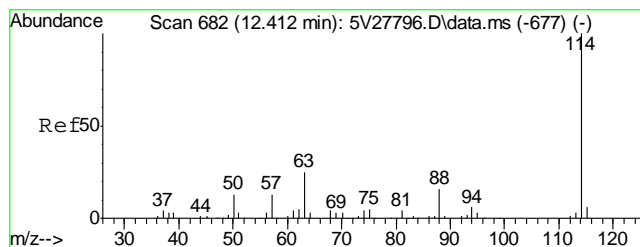
Tgt Ion:	84	Resp:	632
Ion Ratio	Lower	Upper	
84	100		
49	337.7	224.8	264.8#
86	54.9	44.5	84.5



#35
1,2-Dichloroethane-d4
Concen: 47.23 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

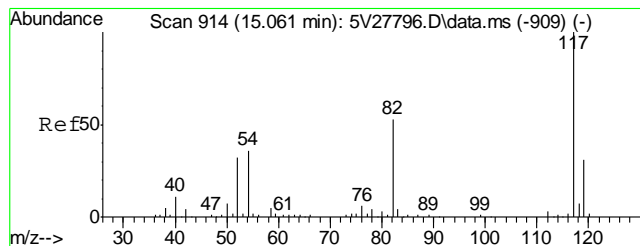
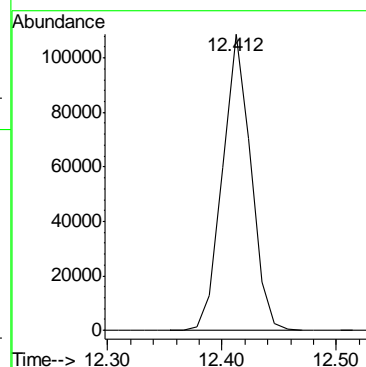
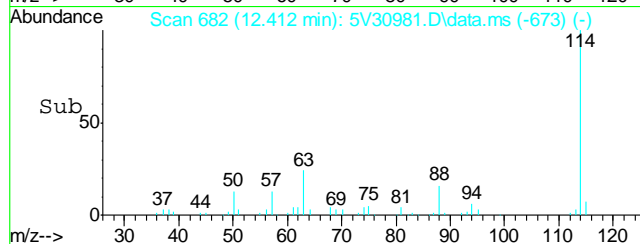
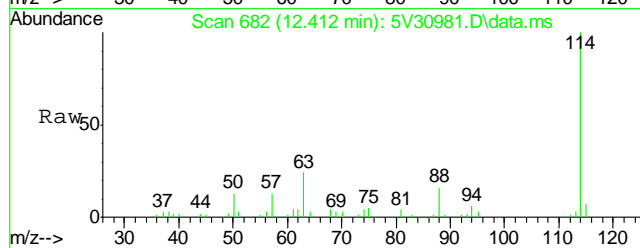
Tgt Ion:	102	Resp:	12963
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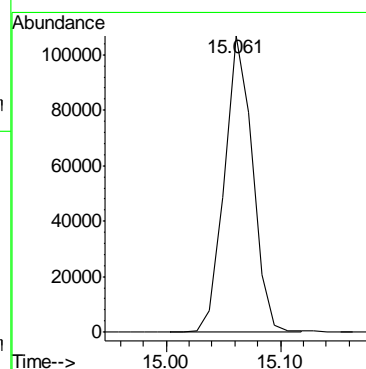
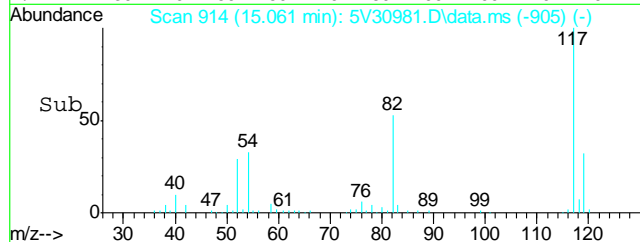
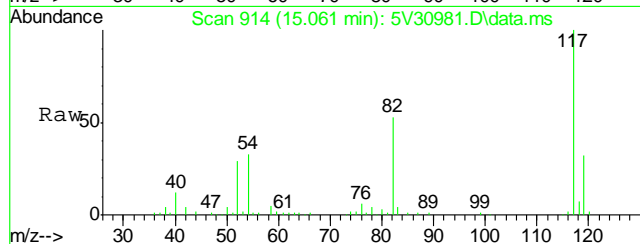
#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. -0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

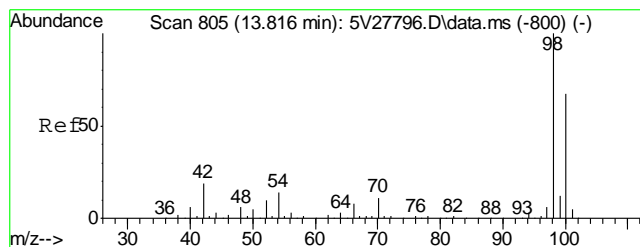
Tgt Ion:114 Resp: 187319



#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.001 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

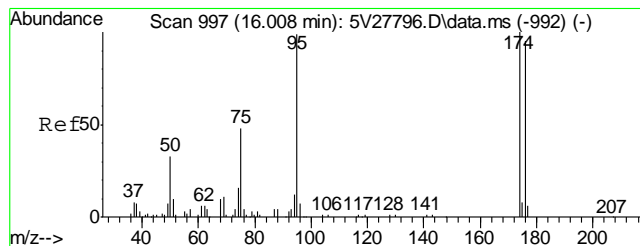
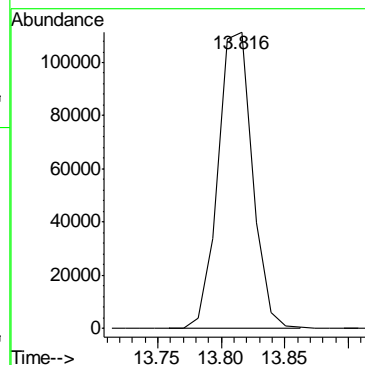
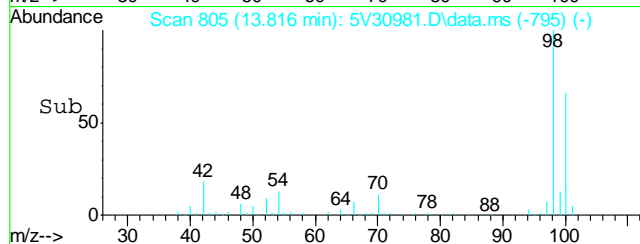
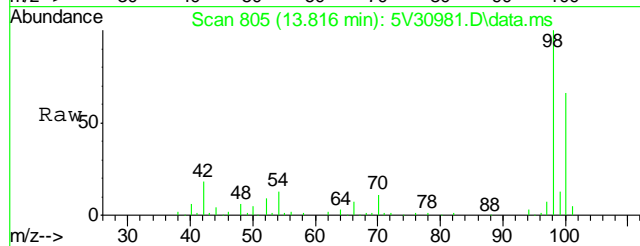
Tgt Ion:117 Resp: 182634





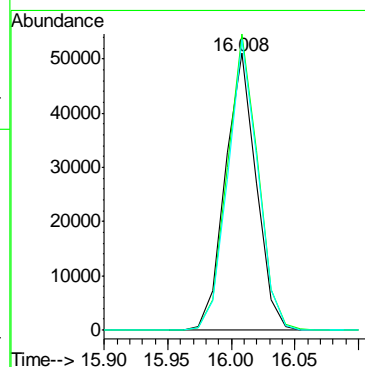
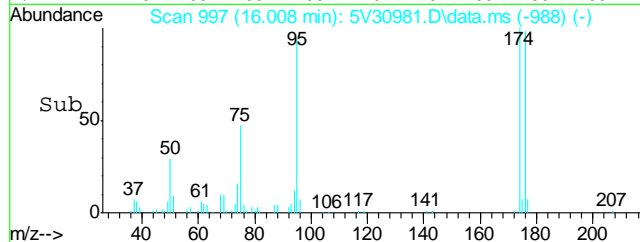
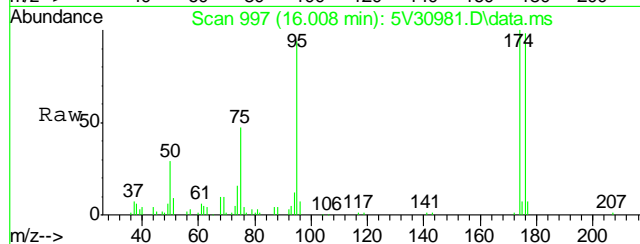
#64
Toluene-d8
Concen: 48.45 ug/l
RT: 13.816 min Scan# 805
Delta R.T. 0.012 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

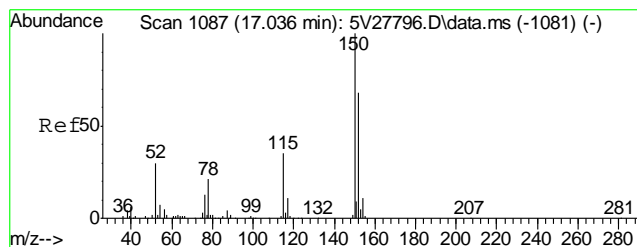
Tgt Ion: 98 Resp: 208592



#72
4-Bromofluorobenzene
Concen: 44.01 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

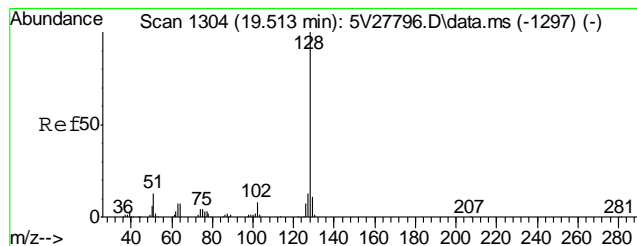
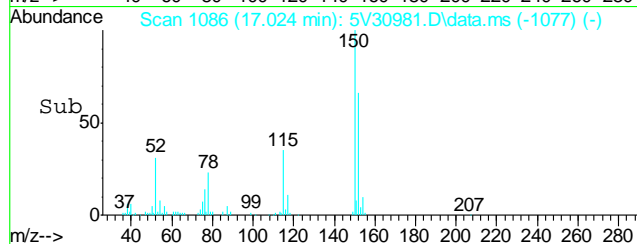
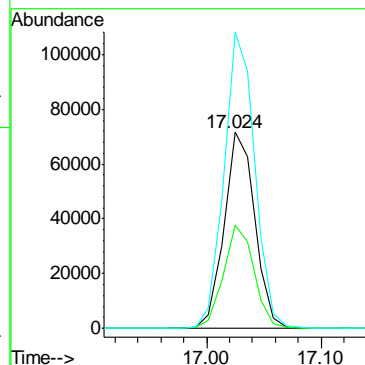
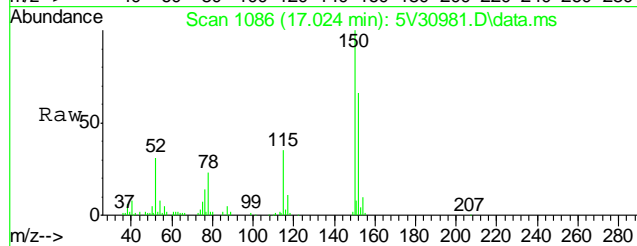
Tgt Ion: 95 Resp: 85846
Ion Ratio Lower Upper
95 100
174 105.9 85.4 125.4
176 101.5 80.6 120.6





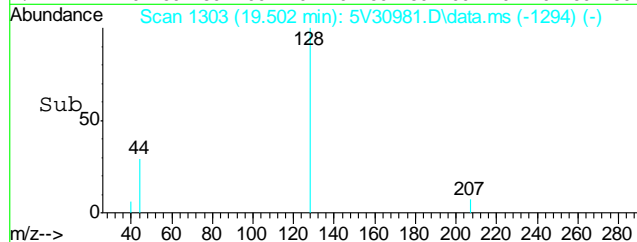
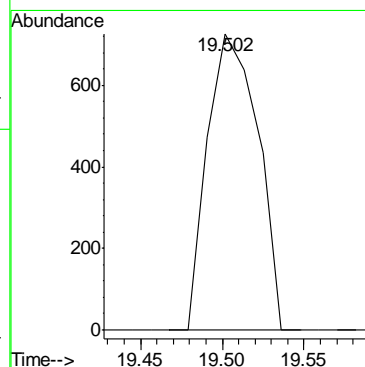
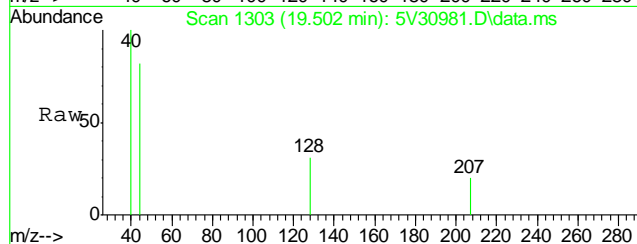
#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.024 min Scan# 1086
Delta R.T. 0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

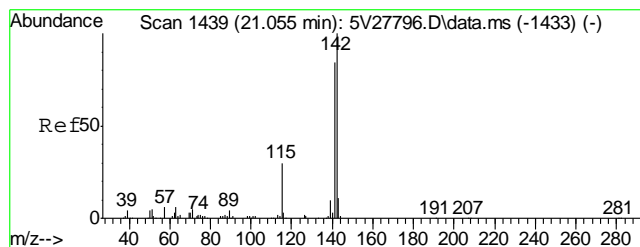
Tgt Ion:	152	Resp:	133985
Ion Ratio	Lower	Upper	
152	100		
115	51.9	43.4	65.2
150	151.2	142.9	214.3



#94
Naphthalene
Concen: 1.58 ug/l
RT: 19.502 min Scan# 1303
Delta R.T. -0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

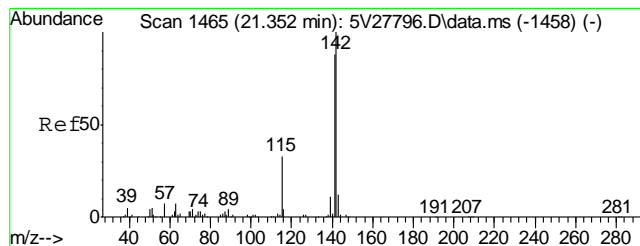
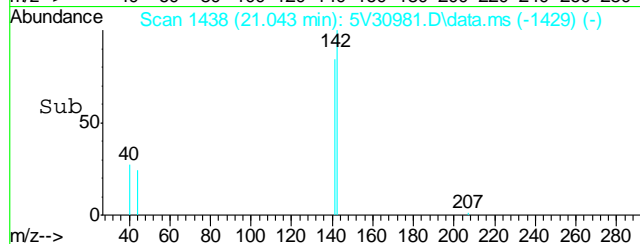
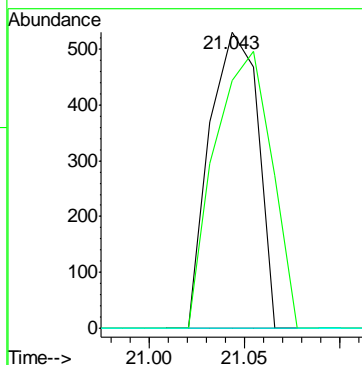
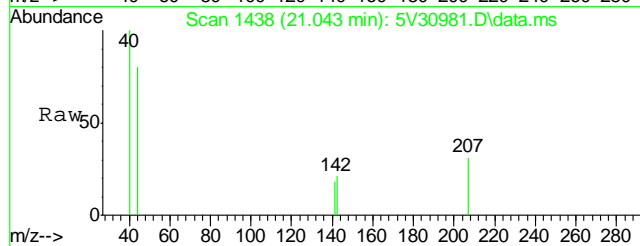
Tgt Ion:	128	Resp:	1558
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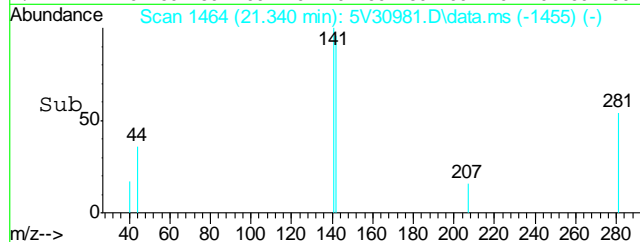
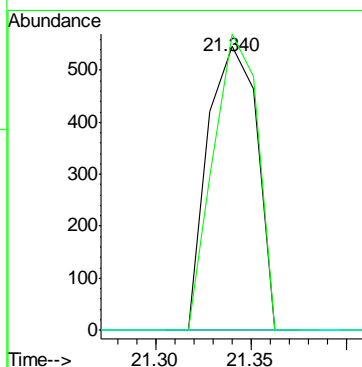
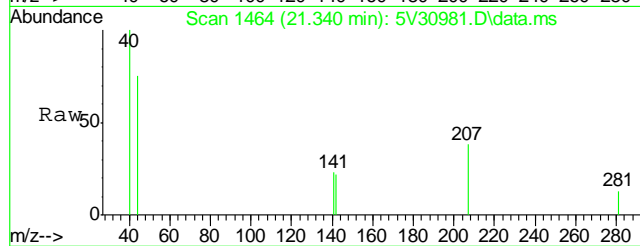
#97
2-Methylnaphthalene
Concen: 3.05 ug/l
RT: 21.043 min Scan# 1438
Delta R.T. 0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

Tgt Ion:	142	Resp:	936
Ion Ratio	Lower	Upper	
142	100		
141	110.3	64.7	104.7#
115	0.0	11.4	51.4#



#98
1-Methylnaphthalene
Concen: 2.91 ug/l
RT: 21.340 min Scan# 1464
Delta R.T. -0.000 min
Lab File: 5V30981.D
Acq: 13 Mar 2014 10:44 am

Tgt Ion:	142	Resp:	980
Ion Ratio	Lower	Upper	
142	100		
141	94.6	68.1	108.1
115	0.0	13.1	53.1#



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: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9561-MB	3G18473.D	1	03/14/14	DC	03/14/14	OP9561	E3G918

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D55898-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	4.3	3.3	ug/kg	
120-12-7	Anthracene	ND	4.3	3.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	4.3	2.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	4.3	2.7	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	4.3	2.1	ug/kg	
50-32-8	Benzo(a)pyrene	ND	4.3	2.1	ug/kg	
218-01-9	Chrysene	ND	4.3	2.1	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	4.3	2.1	ug/kg	
206-44-0	Fluoranthene	ND	4.3	2.4	ug/kg	
86-73-7	Fluorene	ND	4.3	3.1	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	4.3	2.1	ug/kg	
91-20-3	Naphthalene	ND	4.3	2.6	ug/kg	
129-00-0	Pyrene	ND	4.3	2.5	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	106% 10-175%
321-60-8	2-Fluorobiphenyl	97% 25-130%
1718-51-0	Terphenyl-d14	117% 41-133%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9561-BS	3G18474.D	1	03/14/14	DC	03/14/14	OP9561	E3G918

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D55898-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	76.9	92	55-130
120-12-7	Anthracene	83.3	81.9	98	60-130
56-55-3	Benzo(a)anthracene	83.3	87.5	105	62-130
205-99-2	Benzo(b)fluoranthene	83.3	91.8	110	55-130
207-08-9	Benzo(k)fluoranthene	83.3	80.7	97	59-130
50-32-8	Benzo(a)pyrene	83.3	84.8	102	64-130
218-01-9	Chrysene	83.3	90.1	108	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	83.0	100	56-130
206-44-0	Fluoranthene	83.3	80.7	97	59-130
86-73-7	Fluorene	83.3	82.0	98	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	77.0	92	60-130
91-20-3	Naphthalene	83.3	77.3	93	56-130
129-00-0	Pyrene	83.3	89.4	107	65-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	104%	10-175%
321-60-8	2-Fluorobiphenyl	95%	25-130%
1718-51-0	Terphenyl-d14	116%	41-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9561-MS	3G18476.D	1	03/14/14	DC	03/14/14	OP9561	E3G918
OP9561-MSD	3G18477.D	1	03/14/14	DC	03/14/14	OP9561	E3G918
D55898-1	3G18475.D	1	03/14/14	DC	03/14/14	OP9561	E3G918

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D55898-1

CAS No.	Compound	D55898-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		95.1	62.7	66	72.9	77	15	29-139/30
120-12-7	Anthracene	ND		95.1	79.4	83	85.5	90	7	10-182/30
56-55-3	Benzo(a)anthracene	ND		95.1	97.8	103	102	107	4	35-149/30
205-99-2	Benzo(b)fluoranthene	ND		95.1	99.1	104	98.7	104	0	22-174/30
207-08-9	Benzo(k)fluoranthene	2.4	J	95.1	80.1	82	80.6	82	1	10-185/30
50-32-8	Benzo(a)pyrene	ND		95.1	88.9	93	91.8	97	3	10-168/30
218-01-9	Chrysene	ND		95.1	88.6	93	90.4	95	2	10-168/30
53-70-3	Dibenzo(a,h)anthracene	ND		95.1	85.6	90	87.8	92	3	12-160/30
206-44-0	Fluoranthene	ND		95.1	84.9	89	90.9	96	7	20-156/30
86-73-7	Fluorene	ND		95.1	74.1	78	85.0	90	14	10-164/30
193-39-5	Indeno(1,2,3-cd)pyrene	3.3	J	95.1	80.4	81	81.4	82	1	29-136/30
91-20-3	Naphthalene	ND		95.1	54.3	57	72.3	76	28	10-258/30
129-00-0	Pyrene	ND		95.1	94.4	99	101	106	7	10-196/30

CAS No.	Surrogate Recoveries	MS	MSD	D55898-1	Limits
4165-60-0	Nitrobenzene-d5	61%	85%	81%	10-175%
321-60-8	2-Fluorobiphenyl	60%	78%	77%	25-130%
1718-51-0	Terphenyl-d14	94%	99%	91%	41-133%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

Judy Melson
03/17/14 13:10

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031414\
 Data File : 3g18475.D
 Acq On : 14 Mar 2014 7:41 pm
 Operator : DONC
 Sample : D55898-1
 Misc : OP9561,E3G918,30.04,,,1,1
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Mar 17 11:24:40 2014
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
 Quant Title : PAHSIM BASE
 QLast Update : Mon Mar 17 10:02:08 2014
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.674	136	271053	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.389	164	193642	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.867	188	326044	4.0000	ug/mL	0.00
19) Chrysene-d12	11.488	240	310702	4.0000	ug/mL	0.00
24) Perylene-d12	12.850	264	225040	4.0000	ug/mL	-0.01

System Monitoring Compounds

2) Nitrobenzene-d5	4.988	82	1940907	40.7462	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	81.50%		
7) 2-Fluorobiphenyl	6.728	172	2739601	38.5404	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	77.08%		
21) Terphenyl-d14	10.458	244	2737593	45.4408	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	90.88%		

Target Compounds

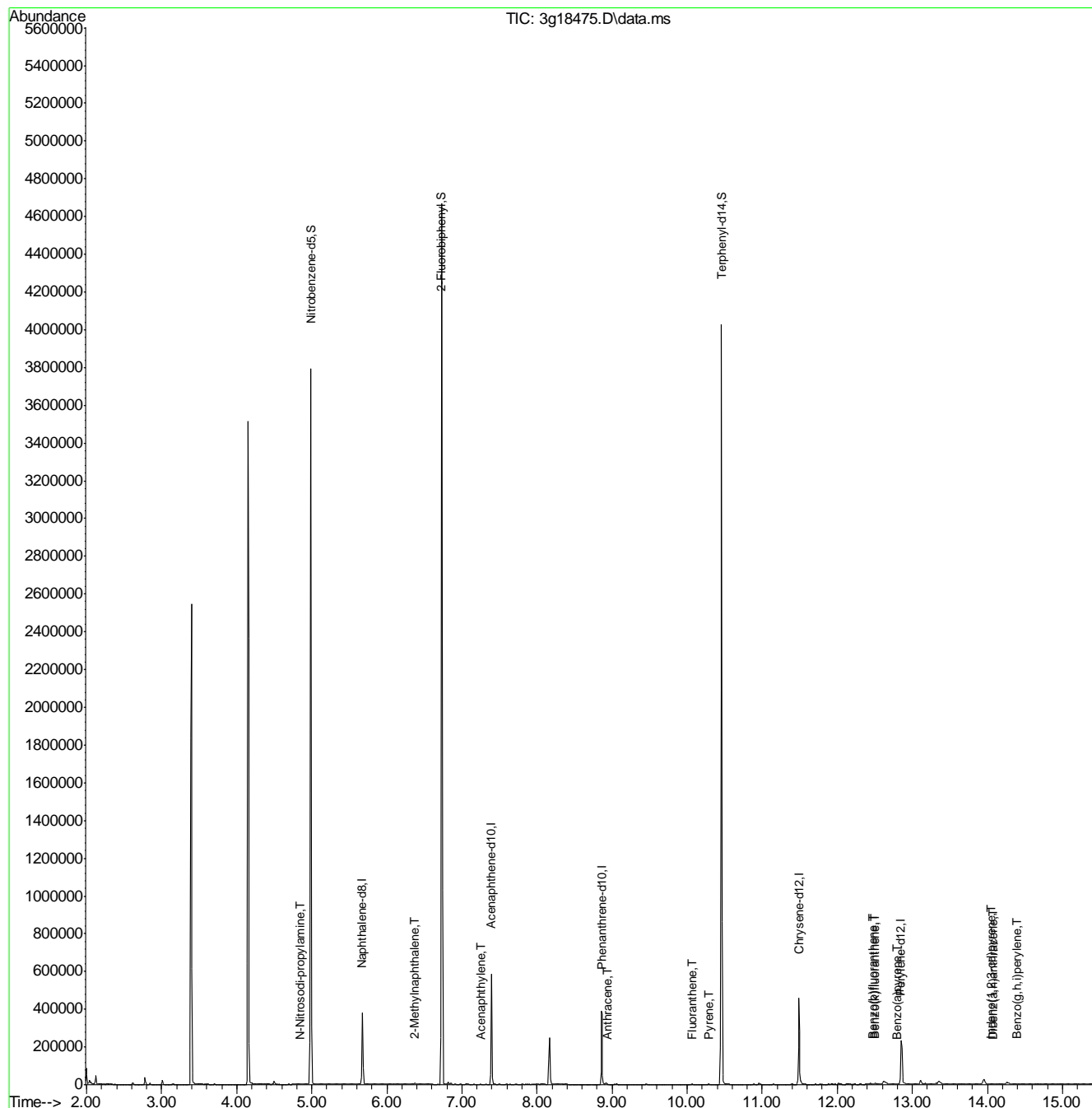
					Qvalue	
3) N-Nitrosodimethylamine	2.387	74	59	N.D.		
4) N-Nitrosodi-propylamine	4.839	70	224	0.0326	ug/mL#	1
5) Naphthalene	5.699	128	2064	N.D.		
8) 2-Methylnaphthalene	6.372	142	3044	0.0510	ug/mL	89
9) 1-Methylnaphthalene	6.472	142	1040	N.D.		
10) Acenaphthylene	7.248	152	306	0.0439	ug/mL#	7
11) Acenaphthene	7.389	154	676	N.D.		
12) Dibenzofuran	7.590	168	463	N.D.		
13) Fluorene	7.933	166	635	N.D.		
14) Diphenylamine	8.051	169	878	N.D.		
16) Phenanthrene	8.883	178	3107	N.D.		
17) Anthracene	8.938	178	391	0.0431	ug/mL	82
18) Fluoranthene	10.070	202	1579	0.0536	ug/mL	94
20) Pyrene	10.292	202	1567	0.0373	ug/mL	76
22) Benzo(a)anthracene	11.481	228	2757	N.D.		
23) Chrysene	11.515	228	1857	N.D.		
25) Benzo(b)fluoranthene	12.482	252	2325m	0.0458	ug/mL	
26) Benzo(k)fluoranthene	12.503	252	2195m	0.0639	ug/mL	
27) Benzo(a)pyrene	12.798	252	1384	0.0614	ug/mL#	29
28) Indeno(1,2,3-cd)pyrene	14.049	276	1864m	0.0856	ug/mL	
29) Dibenz(a,h)anthracene	14.070	278	1083m	0.0588	ug/mL	
30) Benzo(g,h,i)perylene	14.396	276	1783	0.0716	ug/mL#	80

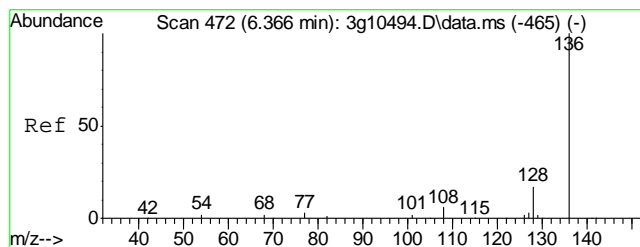
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031414\
Data File : 3g18475.D
Acq On : 14 Mar 2014 7:41 pm
Operator : DONC
Sample : D55898-1
Misc : OP9561,E3G918,30.04,,,1,1
ALS Vial : 14 Sample Multiplier: 1

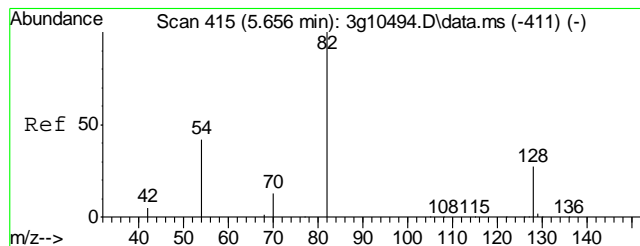
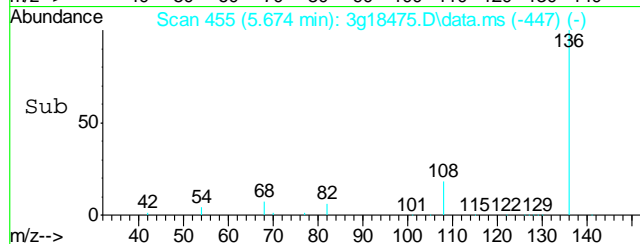
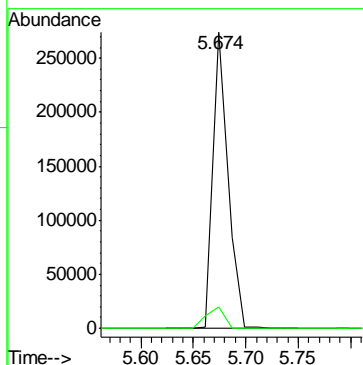
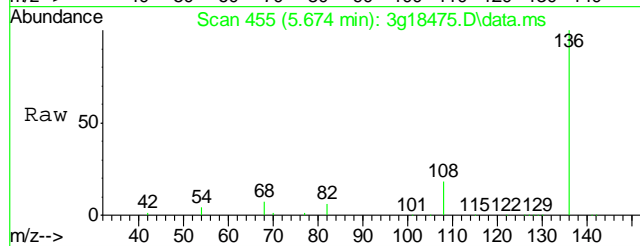
Quant Time: Mar 17 11:24:40 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
Quant Title : PAHSIM BASE
QLast Update : Mon Mar 17 10:02:08 2014
Response via : Initial Calibration





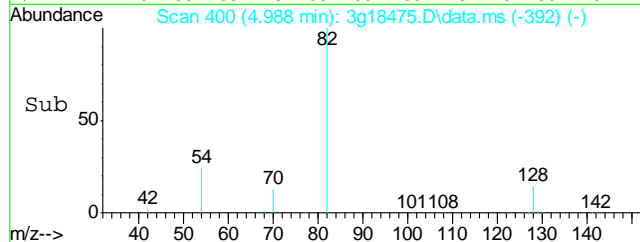
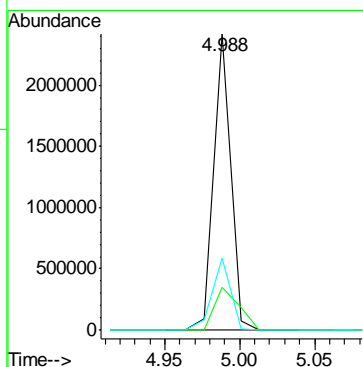
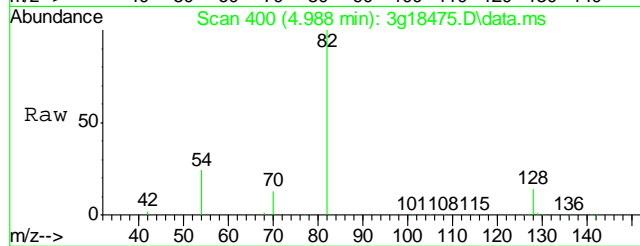
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.674 min Scan# 455
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

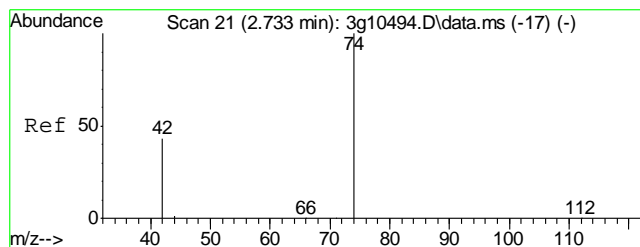
Tgt Ion	Ratio	Lower	Upper
136	100		
68	8.5	0.0	28.2



#2
Nitrobenzene-d5
Concen: 40.7462 ug/mL
RT: 4.988 min Scan# 400
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

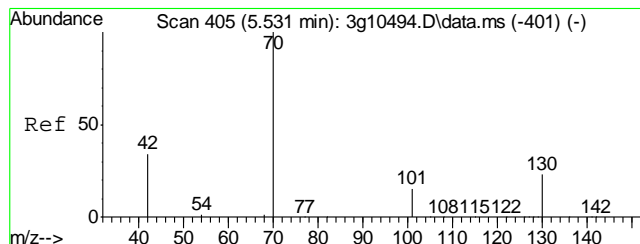
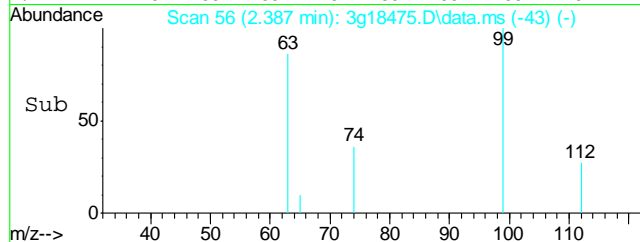
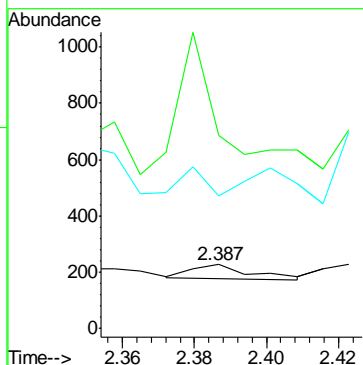
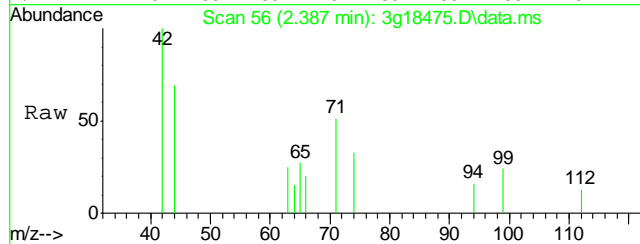
Tgt Ion	Ratio	Lower	Upper
82	100		
128	20.7	6.9	46.9
54	26.4	11.0	51.0





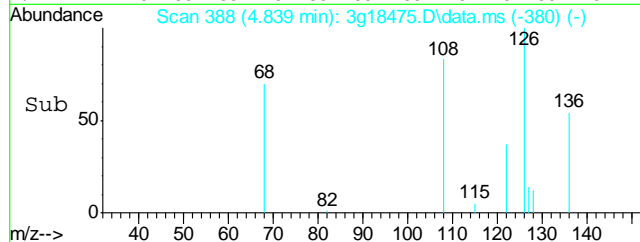
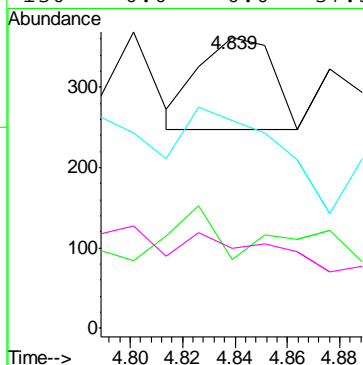
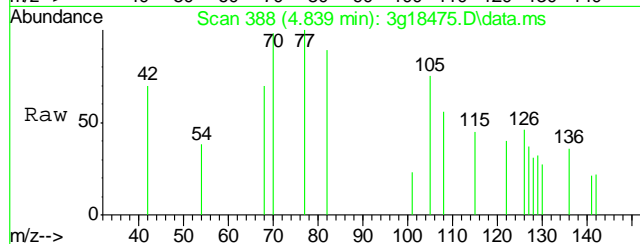
#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.387 min Scan# 56
Delta R.T. -0.007 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

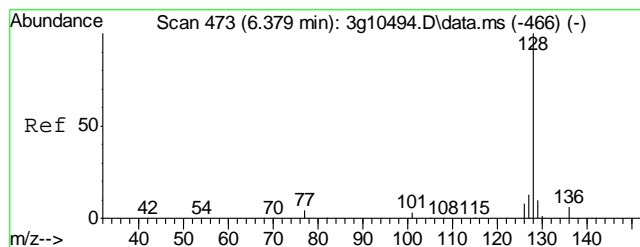
Tgt Ion: 74 Resp: 59
Ion Ratio Lower Upper
74 100
42 744.1 16.2 56.2#
44 76.3 0.0 21.5#



#4
N-Nitrosodi-propylamine
Concen: 0.0326 ug/mL
RT: 4.839 min Scan# 388
Delta R.T. 0.001 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

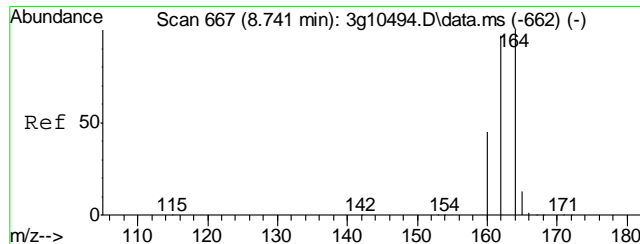
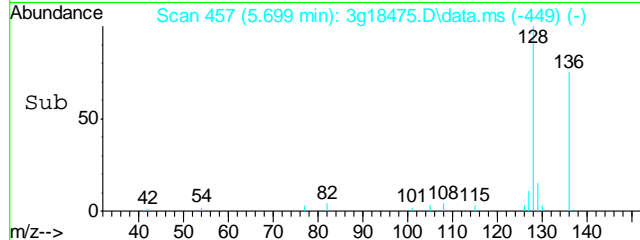
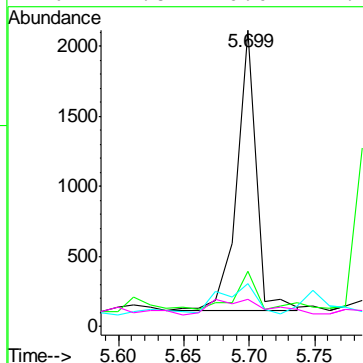
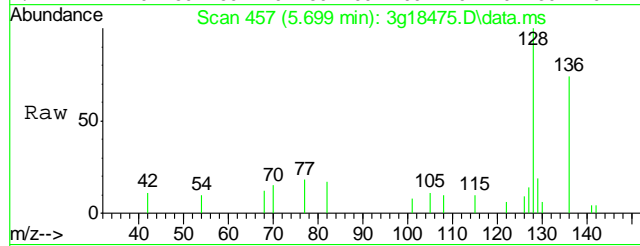
Tgt Ion: 70 Resp: 224
Ion Ratio Lower Upper
70 100
101 33.9 0.0 31.6#
42 138.4 2.8 42.8#
130 0.0 0.0 37.5





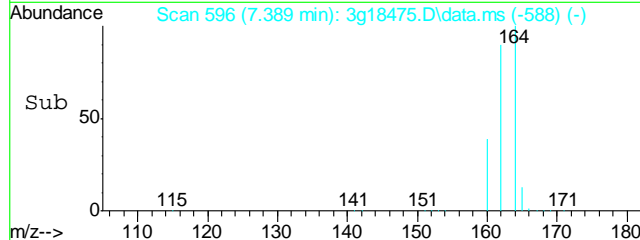
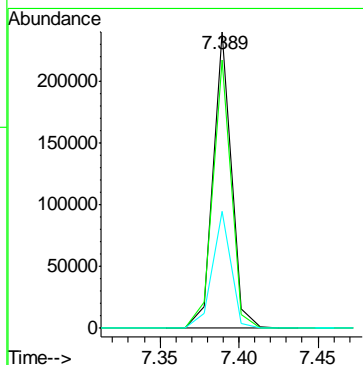
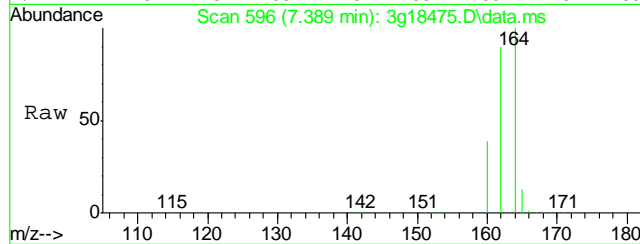
#5
Naphthalene
Concen: Below ug/mL
RT: 5.699 min Scan# 457
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

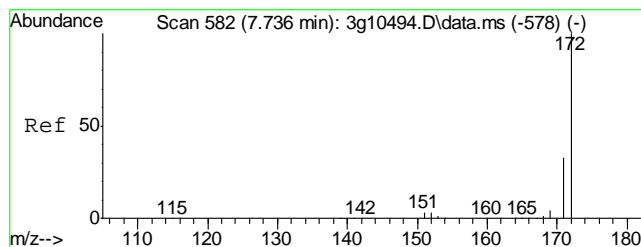
Tgt Ion:	128	Resp:	2064
Ion Ratio	Lower	Upper	
128	100		
129	14.8	0.0	31.0
127	19.3	0.0	33.5
126	17.8	0.0	27.4



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.389 min Scan# 596
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

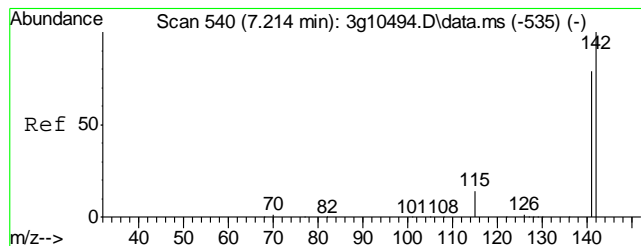
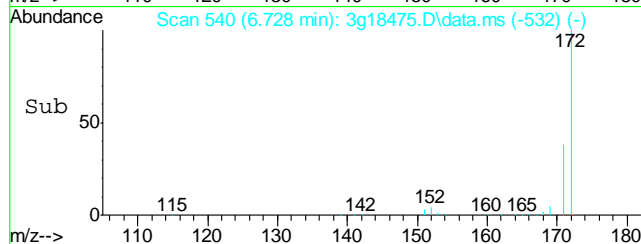
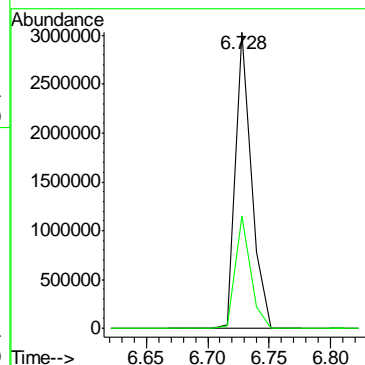
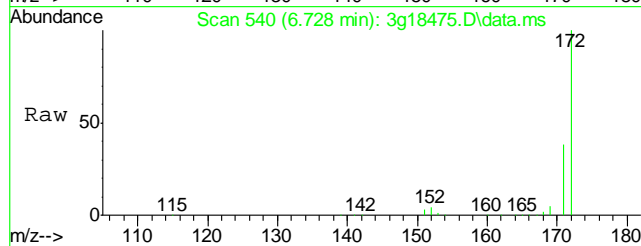
Tgt Ion:	164	Resp:	193642
Ion Ratio	Lower	Upper	
164	100		
162	91.7	65.6	105.6
160	40.5	15.8	55.8





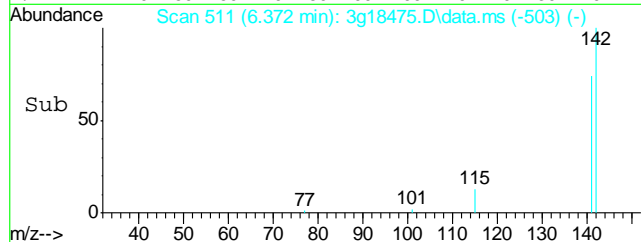
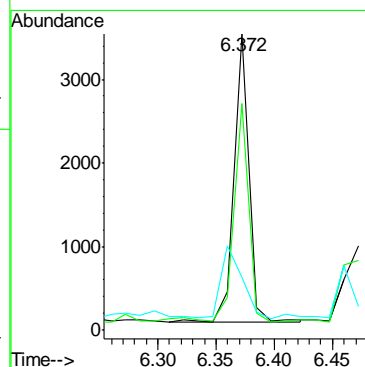
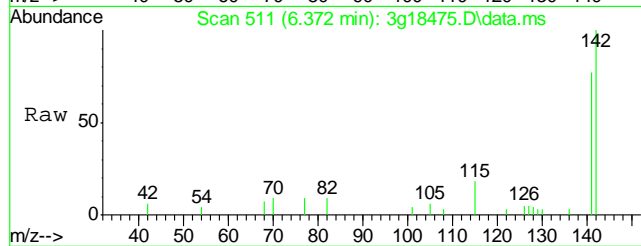
#7
2-Fluorobiphenyl
Concen: 38.5404 ug/mL
RT: 6.728 min Scan# 540
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

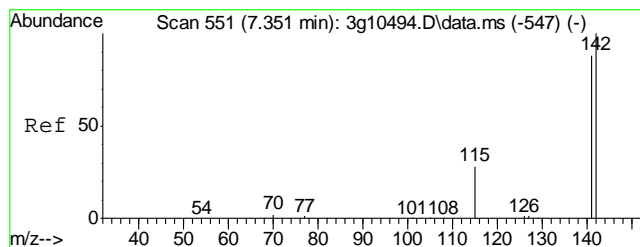
Tgt Ion	Ratio	Lower	Upper
172	100		
171	35.8	14.1	54.1



#8
2-Methylnaphthalene
Concen: 0.0510 ug/mL
RT: 6.372 min Scan# 511
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

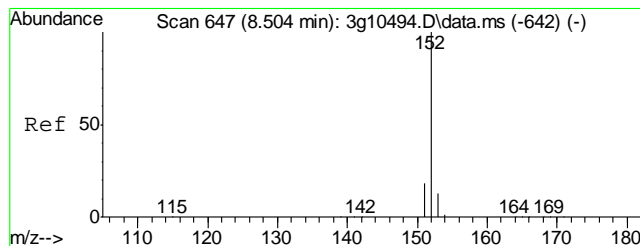
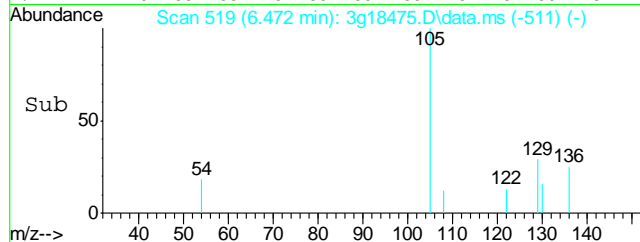
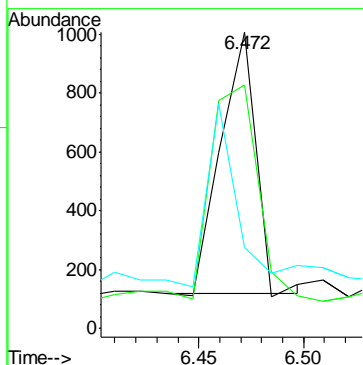
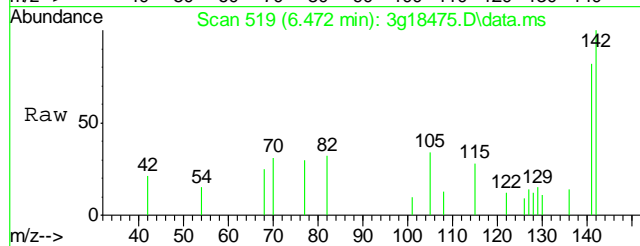
Tgt Ion	Ratio	Lower	Upper
142	100		
141	75.1	61.4	101.4
115	35.7	26.9	66.9





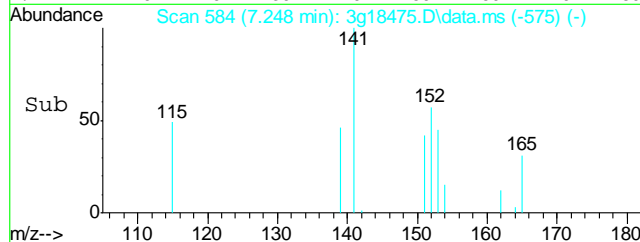
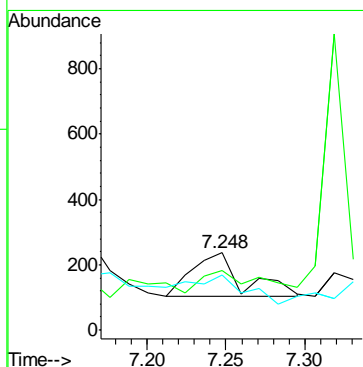
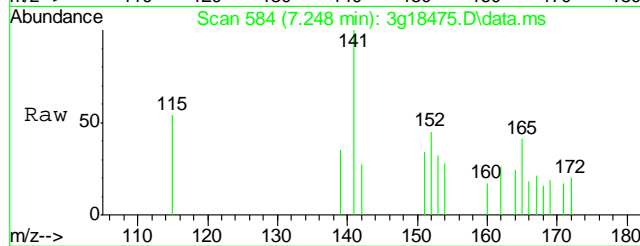
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.472 min Scan# 519
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

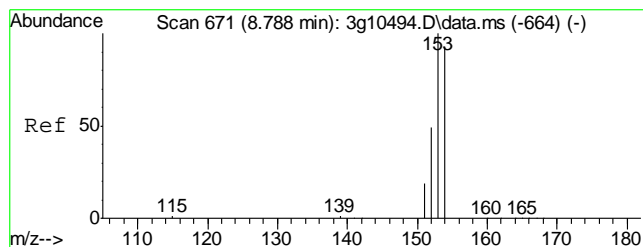
Tgt Ion:	142	Resp:	1040
Ion Ratio	Lower	Upper	
142	100		
141	115.9	67.1	107.1#
115	58.2	24.0	64.0



#10
Acenaphthylene
Concen: 0.0439 ug/mL
RT: 7.248 min Scan# 584
Delta R.T. 0.001 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

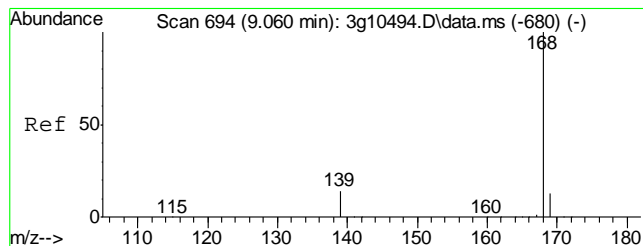
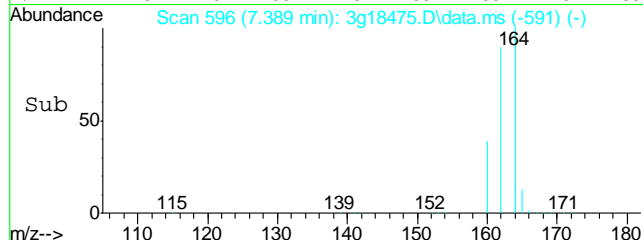
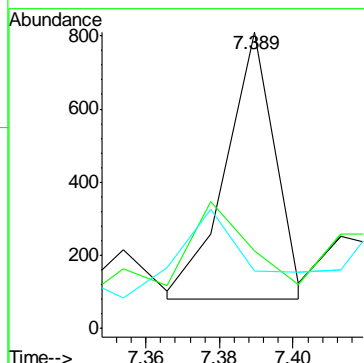
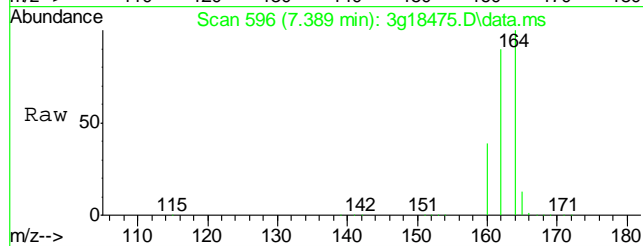
Tgt Ion:	152	Resp:	306
Ion Ratio	Lower	Upper	
152	100		
151	52.0	0.9	40.9#
153	68.0	0.0	33.8#





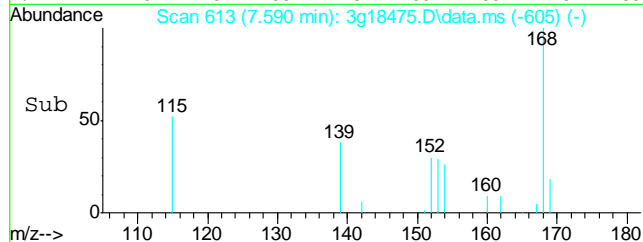
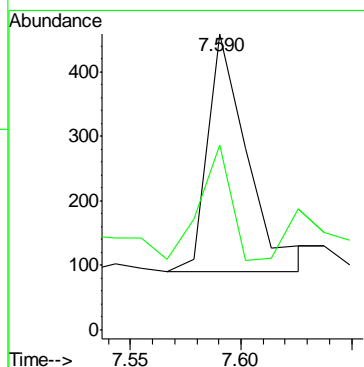
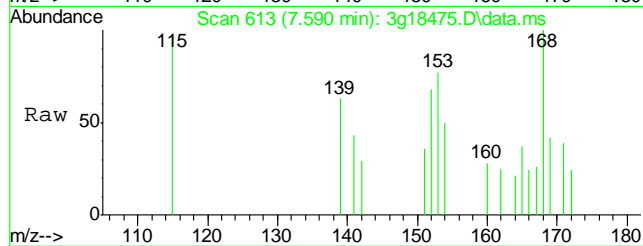
#11
Acenaphthene
Concen: Below ug/mL m
RT: 7.389 min Scan# 596
Delta R.T. -0.036 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

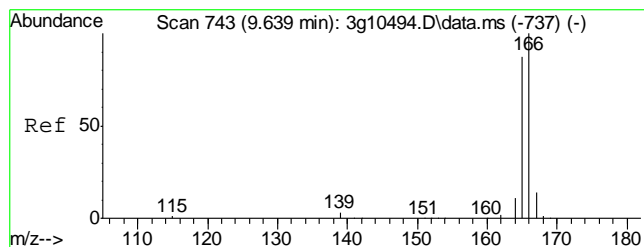
Tgt Ion	Ratio	Lower	Upper
154	100		
153	34.8	82.9	122.9#
152	49.3	23.8	63.8



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.590 min Scan# 613
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

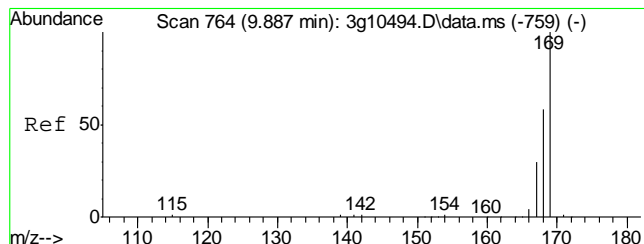
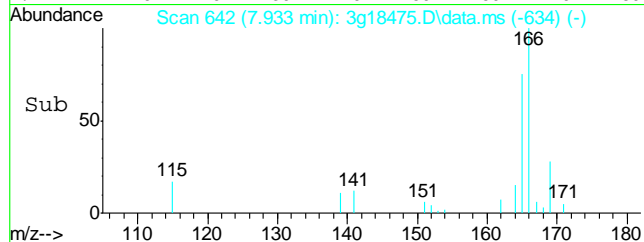
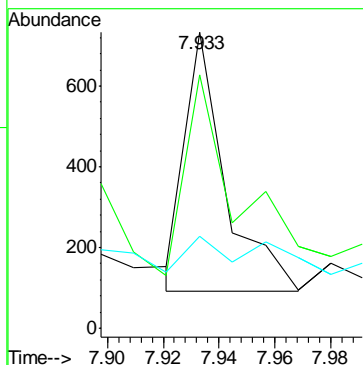
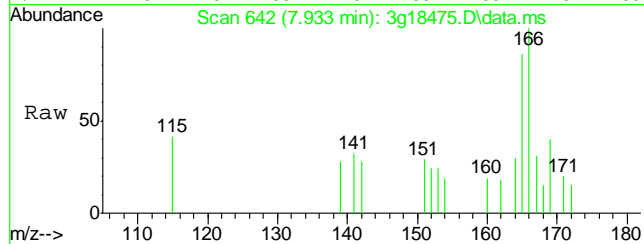
Tgt Ion	Ratio	Lower	Upper
168	100		
139	36.5	11.7	51.7





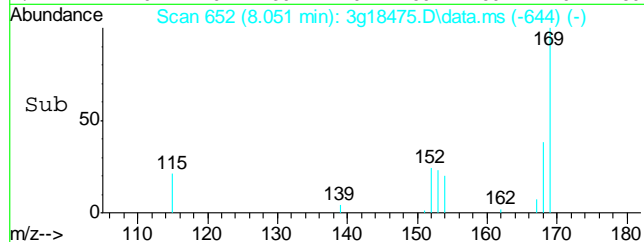
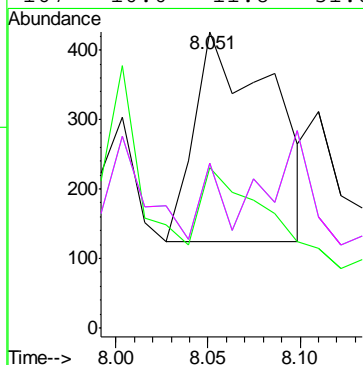
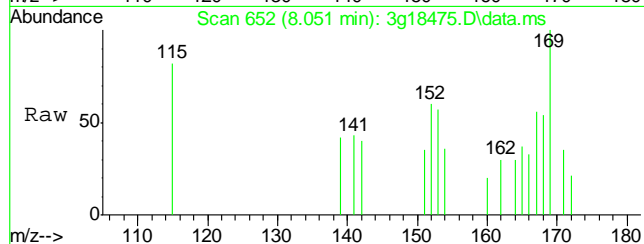
#13
Fluorene
Concen: Below ug/mL m
RT: 7.933 min Scan# 642
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

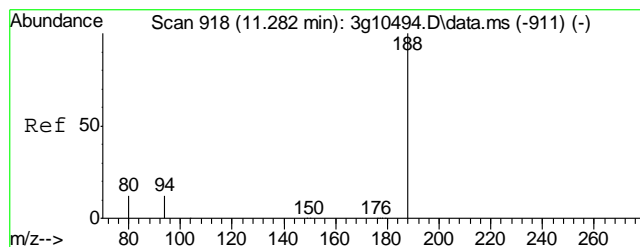
Tgt Ion:	166	Resp:	635
Ion Ratio	Lower	Upper	
166	100		
165	106.5	71.7	111.7
167	31.3	0.0	33.0



#14
Diphenylamine
Concen: Below ug/mL
RT: 8.051 min Scan# 652
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

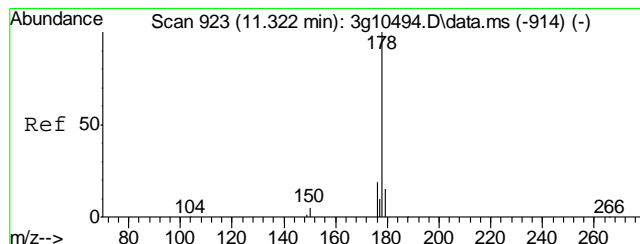
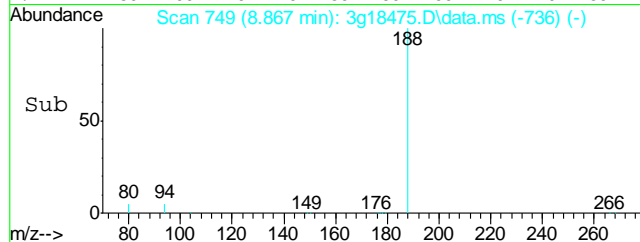
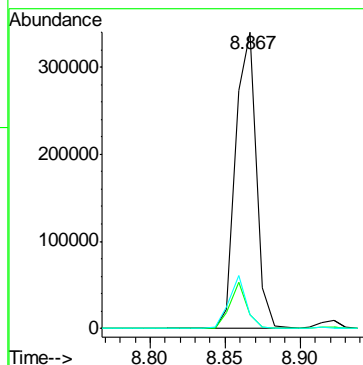
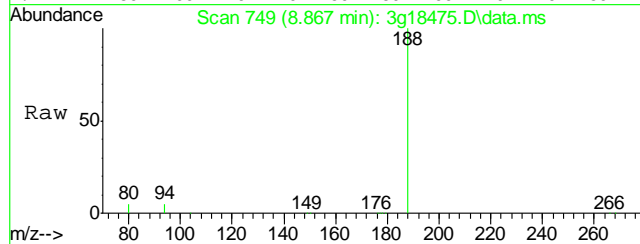
Tgt Ion:	169	Resp:	878
Ion Ratio	Lower	Upper	
169	100		
168	24.3	40.6	80.6#
167	10.0	11.8	51.8#
167	10.0	11.8	51.8#





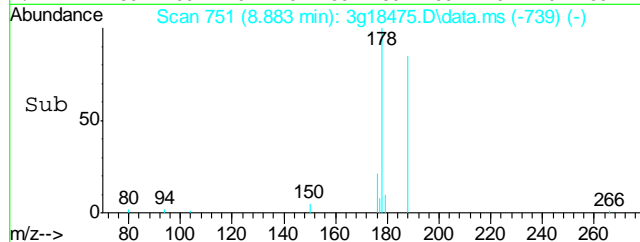
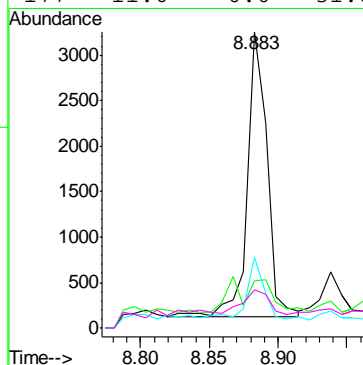
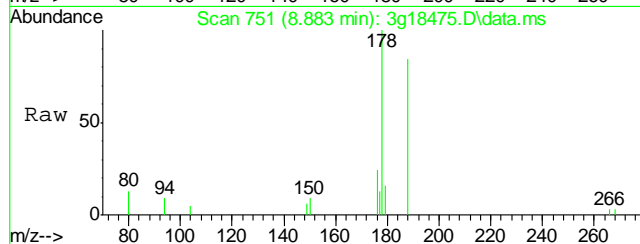
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 749
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

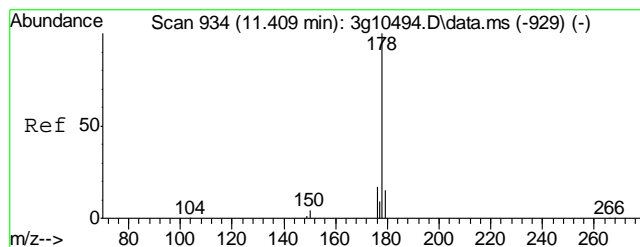
Tgt Ion:188	Resp:	326044
Ion Ratio	Lower	Upper
188 100		
94 12.9	0.0	32.7
80 15.0	0.0	33.0



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.883 min Scan# 751
Delta R.T. -0.008 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

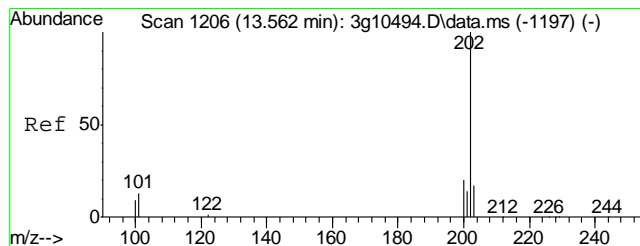
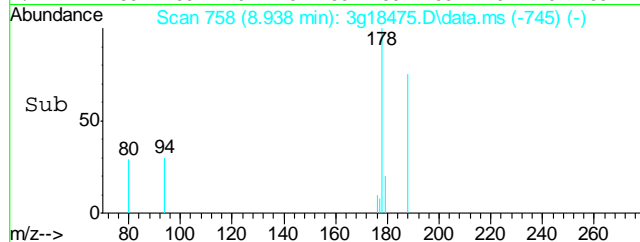
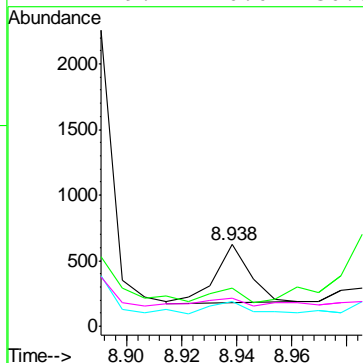
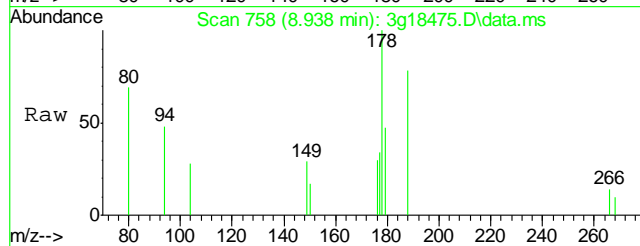
Tgt Ion:178	Resp:	3107
Ion Ratio	Lower	Upper
178 100		
179 13.8	0.0	34.9
176 18.4	0.0	38.2
177 11.6	0.0	31.8





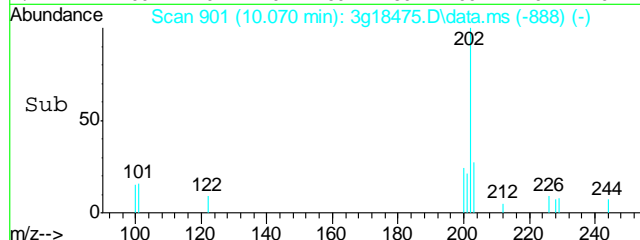
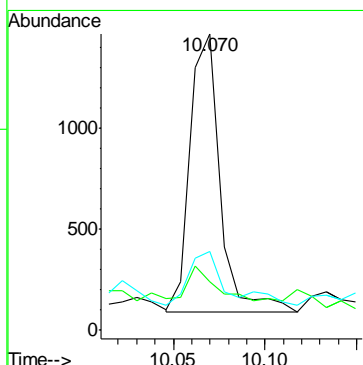
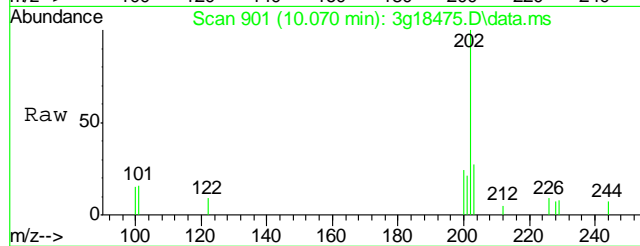
#17
 Anthracene
 Concen: 0.0431 ug/mL
 RT: 8.938 min Scan# 758
 Delta R.T. 0.000 min
 Lab File: 3g18475.D
 Acq: 14 Mar 14 7:41 pm

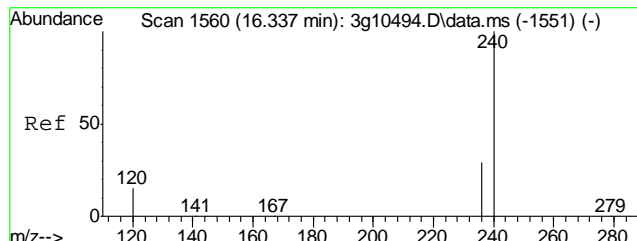
Tgt Ion:	178	Resp:	391
Ion Ratio	Lower	Upper	
178	100		
179	22.3	0.0	34.9
176	24.3	0.0	38.0
177	19.4	0.0	30.5



#18
 Fluoranthene
 Concen: 0.0536 ug/mL
 RT: 10.070 min Scan# 901
 Delta R.T. -0.000 min
 Lab File: 3g18475.D
 Acq: 14 Mar 14 7:41 pm

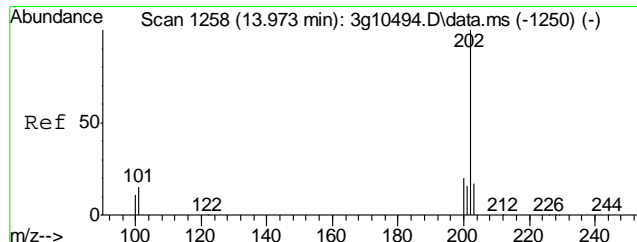
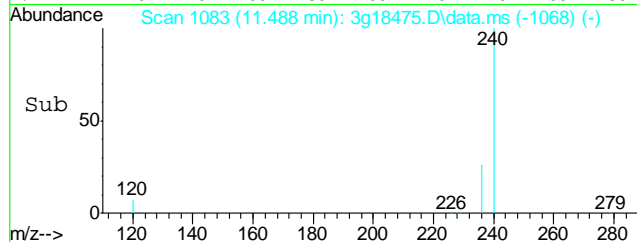
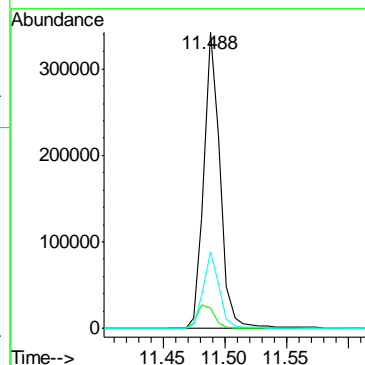
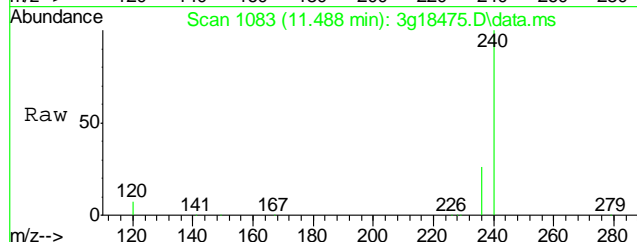
Tgt Ion:	202	Resp:	1579
Ion Ratio	Lower	Upper	
202	100		
101	11.8	0.0	34.2
203	20.1	0.0	37.3





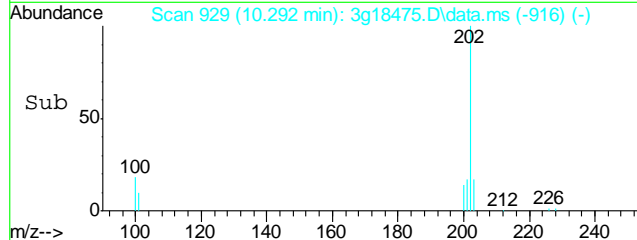
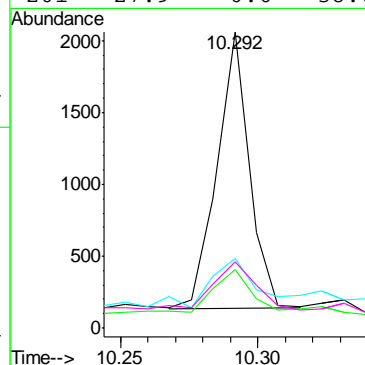
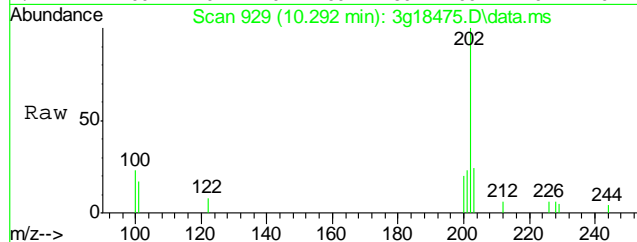
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.488 min Scan# 1083
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

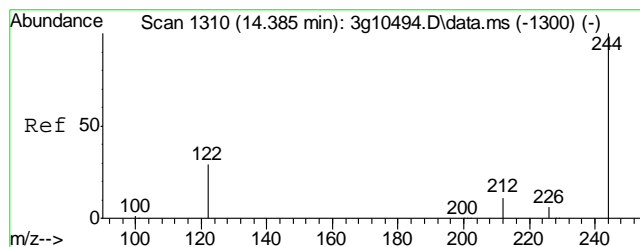
Tgt Ion:	240	Resp:	310702
Ion Ratio	Lower	Upper	
240	100		
120	8.7	0.0	27.8
236	25.6	7.4	47.4



#20
Pyrene
Concen: 0.0373 ug/mL
RT: 10.292 min Scan# 929
Delta R.T. 0.001 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

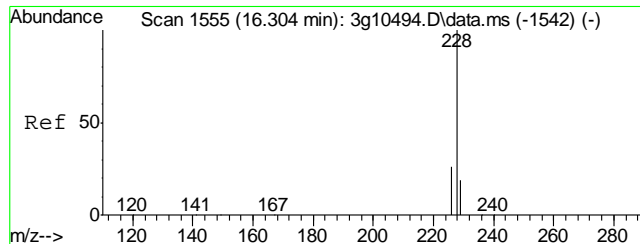
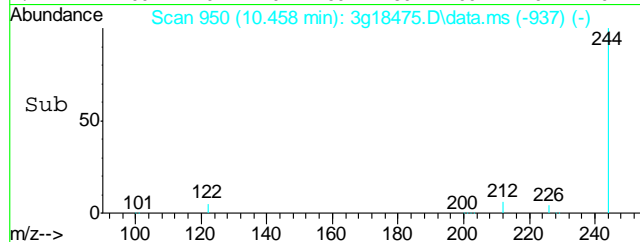
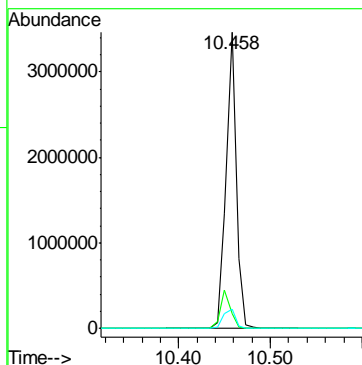
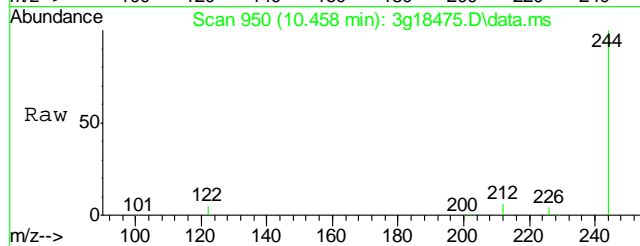
Tgt Ion:	202	Resp:	1567
Ion Ratio	Lower	Upper	
202	100		
200	23.3	0.1	40.1
203	36.9	0.0	37.6
201	27.9	0.0	38.0





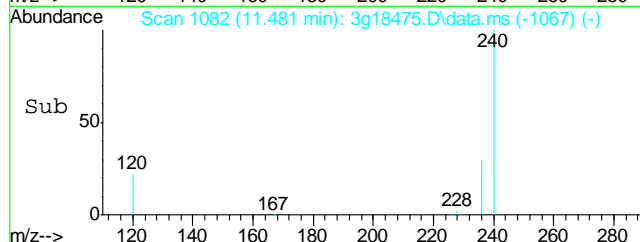
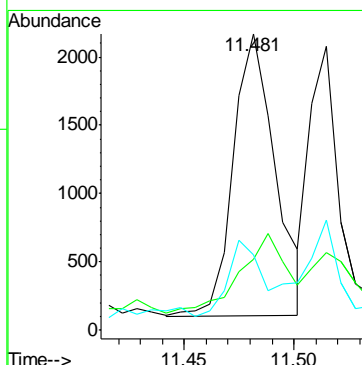
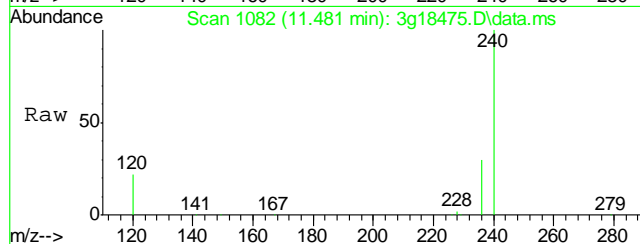
#21
Terphenyl-d14
Concen: 45.4408 ug/mL
RT: 10.458 min Scan# 950
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

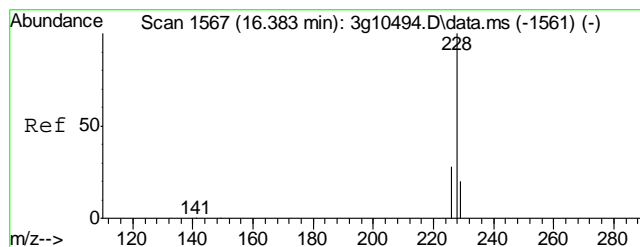
Tgt Ion	Ratio	Lower	Upper
244	100		
122	12.4	0.0	34.7
212	7.6	0.0	27.2



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.481 min Scan# 1082
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

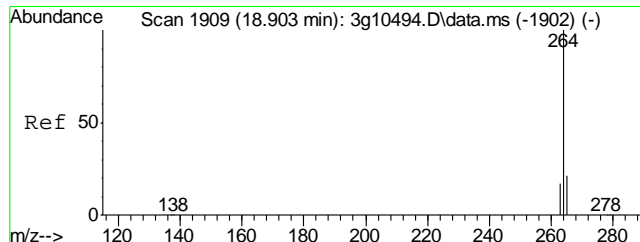
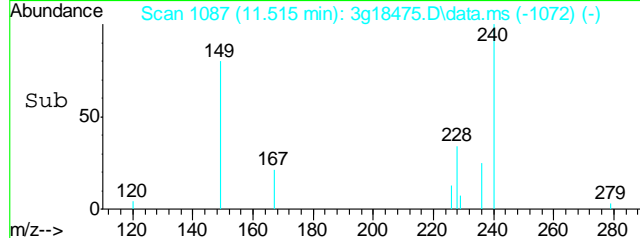
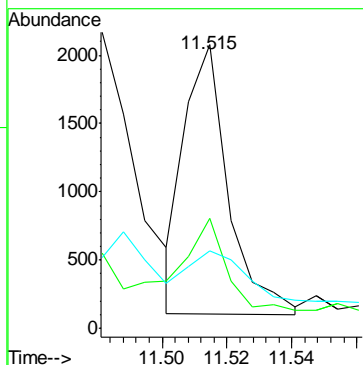
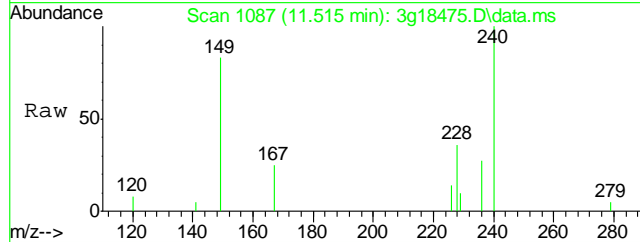
Tgt Ion	Ratio	Lower	Upper
228	100		
229	30.8	0.0	39.5
226	24.3	5.9	45.9





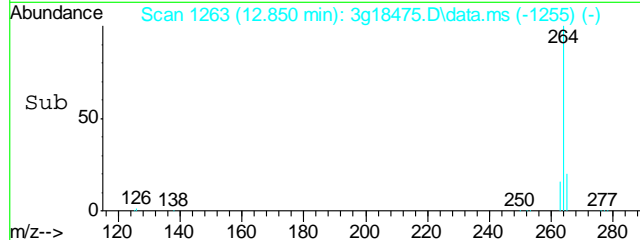
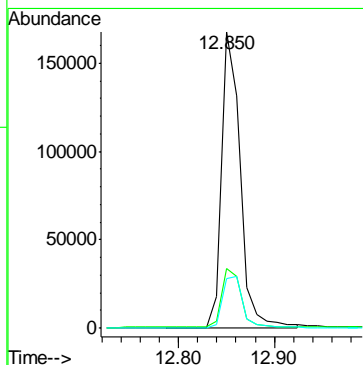
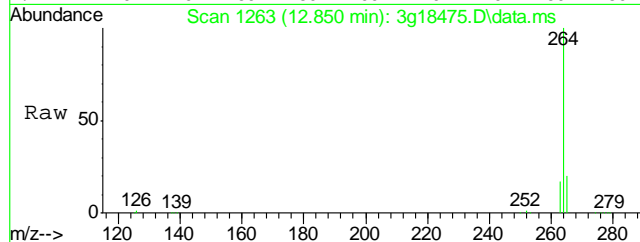
#23
Chrysene
Concen: Below ug/mL m
RT: 11.515 min Scan# 1087
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

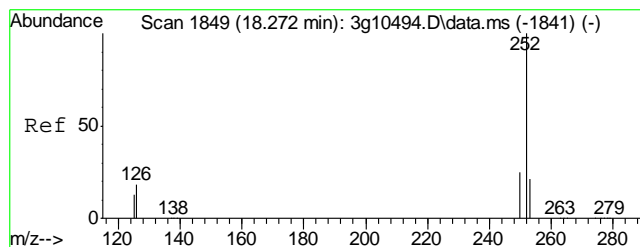
Tgt Ion:	228	Resp:	1857
Ion Ratio	100	Lower	Upper
228	100		
226	36.0	8.0	48.0
229	45.7	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.850 min Scan# 1263
Delta R.T. -0.011 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

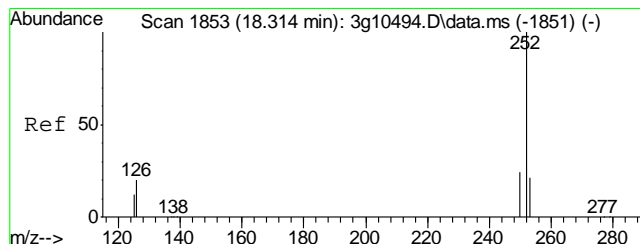
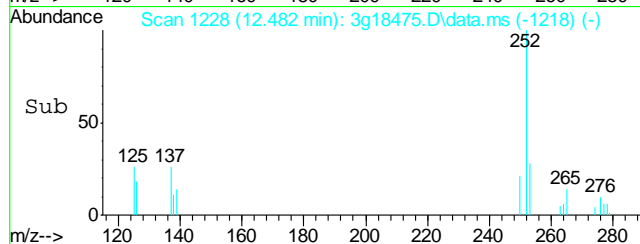
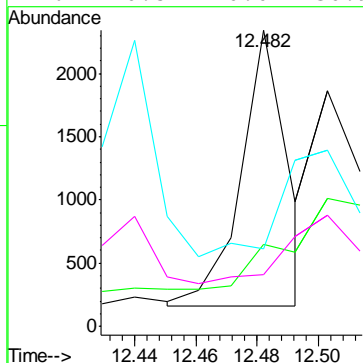
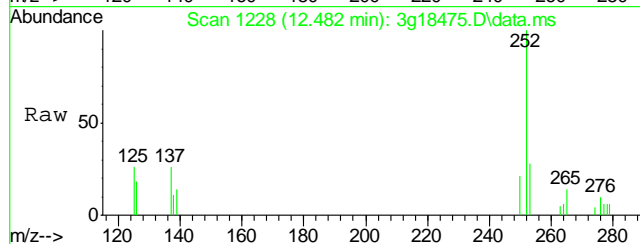
Tgt Ion:	264	Resp:	225040
Ion Ratio	100	Lower	Upper
264	100		
265	20.7	2.2	42.2
263	19.0	0.0	39.4





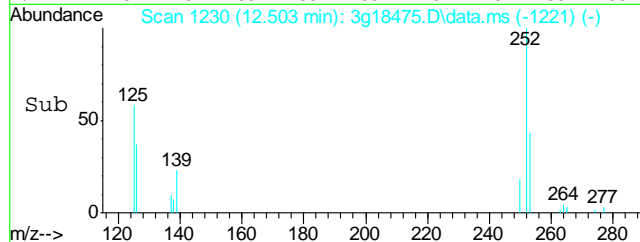
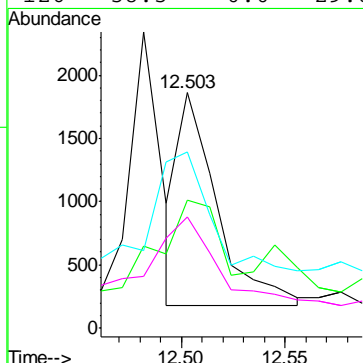
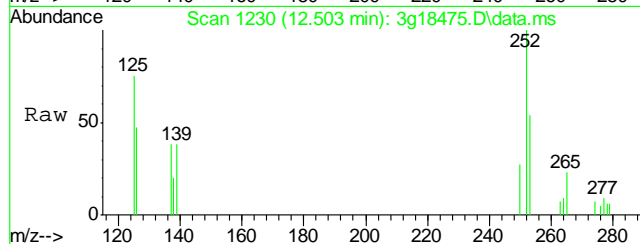
#25
Benzo(b)fluoranthene
Concen: 0.0458 ug/mL m
RT: 12.482 min Scan# 1228
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

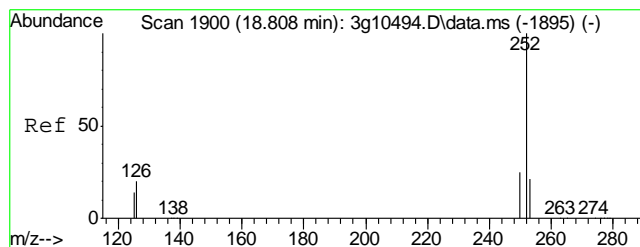
Tgt Ion:	252	Resp:	2325
Ion Ratio	Lower	Upper	
252	100		
253	59.8	25.6	65.6
125	59.0	0.0	38.9#
126	40.5	0.0	30.9#



#26
Benzo(k)fluoranthene
Concen: 0.0639 ug/mL m
RT: 12.503 min Scan# 1230
Delta R.T. -0.010 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

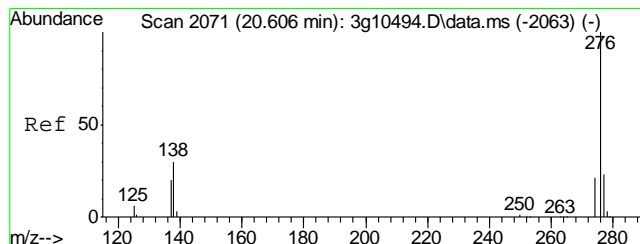
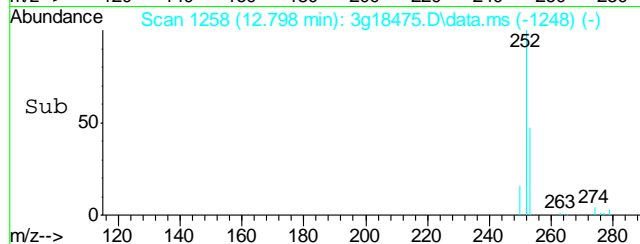
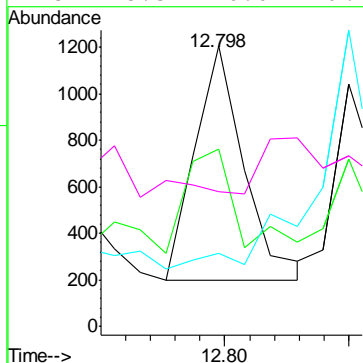
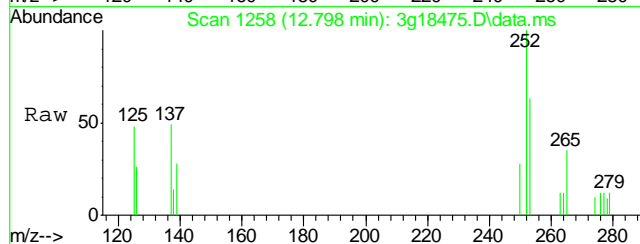
Tgt Ion:	252	Resp:	2195
Ion Ratio	Lower	Upper	
252	100		
253	72.3	21.1	61.1#
125	79.9	0.0	37.0#
126	58.5	0.0	29.8#





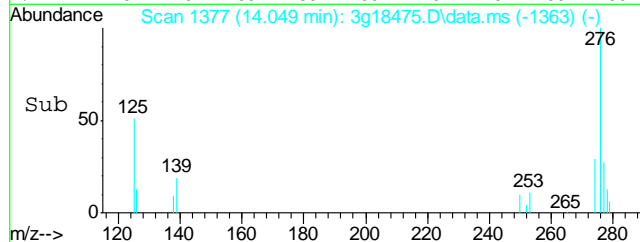
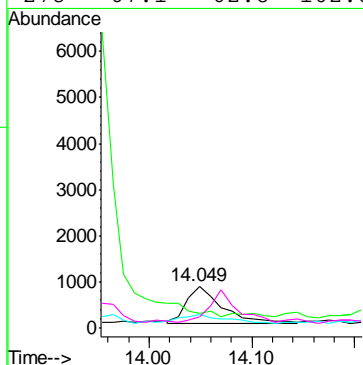
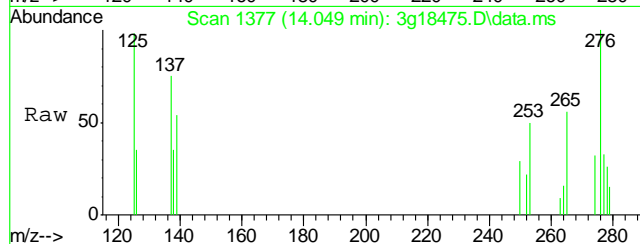
#27
Benzo(a)pyrene
Concen: 0.0614 ug/mL
RT: 12.798 min Scan# 1258
Delta R.T. 0.001 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

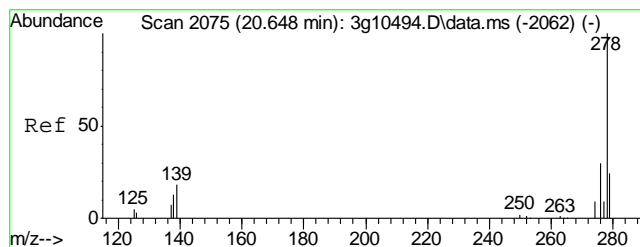
Tgt Ion:	252	Resp:	1384
Ion Ratio	100	Lower	Upper
252	100		
253	70.6	1.6	41.6#
126	0.0	0.0	30.6
125	25.3	0.0	29.4



#28
Indeno(1,2,3-cd)pyrene
Concen: 0.0856 ug/mL m
RT: 14.049 min Scan# 1377
Delta R.T. -0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

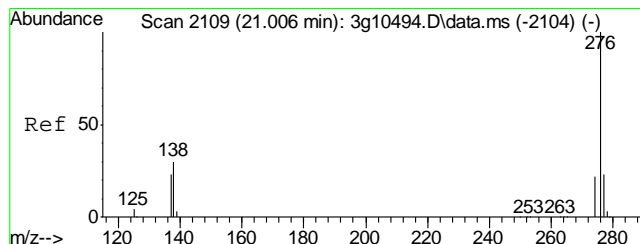
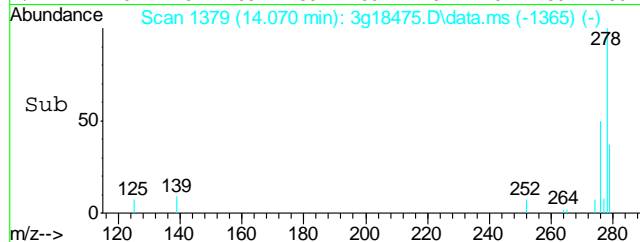
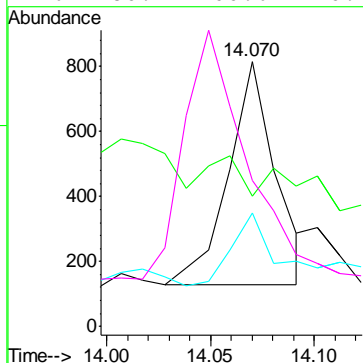
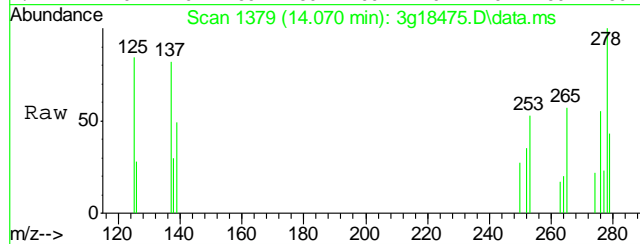
Tgt Ion:	276	Resp:	1864
Ion Ratio	100	Lower	Upper
276	100		
138	0.0	0.0	39.6
277	30.5	5.4	45.4
278	67.1	62.8	102.8





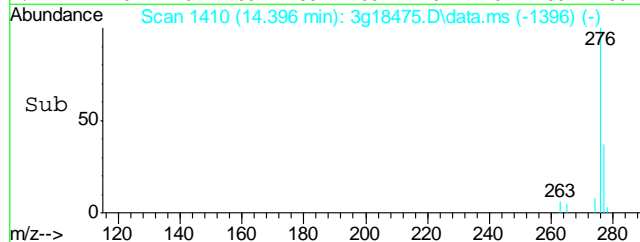
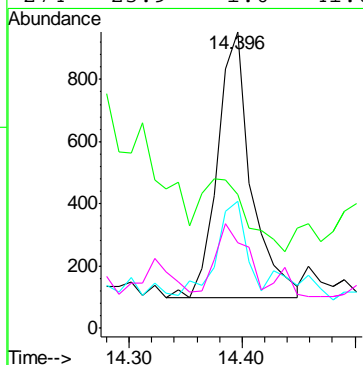
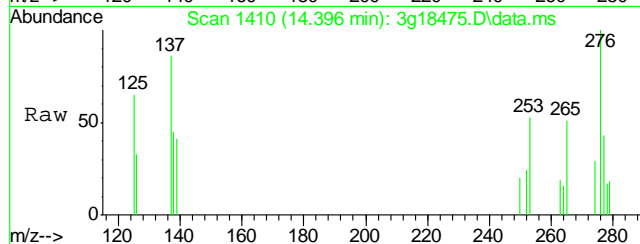
#29
Dibenz(a,h)anthracene
Concen: 0.0588 ug/mL m
RT: 14.070 min Scan# 1379
Delta R.T. 0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

Tgt Ion	Ratio	Lower	Upper
278	100		
139	14.3	0.0	32.8
279	42.1	3.4	43.4
276	180.2	100.6	140.6#



#30
Benzo(g,h,i)perylene
Concen: 0.0716 ug/mL
RT: 14.396 min Scan# 1410
Delta R.T. 0.000 min
Lab File: 3g18475.D
Acq: 14 Mar 14 7:41 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	36.2	0.0	35.9#
277	30.2	3.6	43.6
274	23.9	1.0	41.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031414\
 Data File : 3g18473.D
 Acq On : 14 Mar 2014 6:52 pm
 Operator : DONC
 Sample : OP9561-MB
 Misc : OP9561,E3G918,30.00,,,1,1
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Mar 17 11:17:55 2014
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
 Quant Title : PAHSIM BASE
 QLast Update : Mon Mar 17 10:02:08 2014
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.674	136	278614	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.390	164	193104	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.867	188	334119	4.0000	ug/mL	0.00
19) Chrysene-d12	11.488	240	329070	4.0000	ug/mL	0.00
24) Perylene-d12	12.850	264	247347	4.0000	ug/mL	-0.01

System Monitoring Compounds

2) Nitrobenzene-d5	4.988	82	2600706	53.1160	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 106.24%			
7) 2-Fluorobiphenyl	6.728	172	3446835	48.6248	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 97.24%			
21) Terphenyl-d14	10.458	244	3740796	58.6269	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 117.26%			

Target Compounds

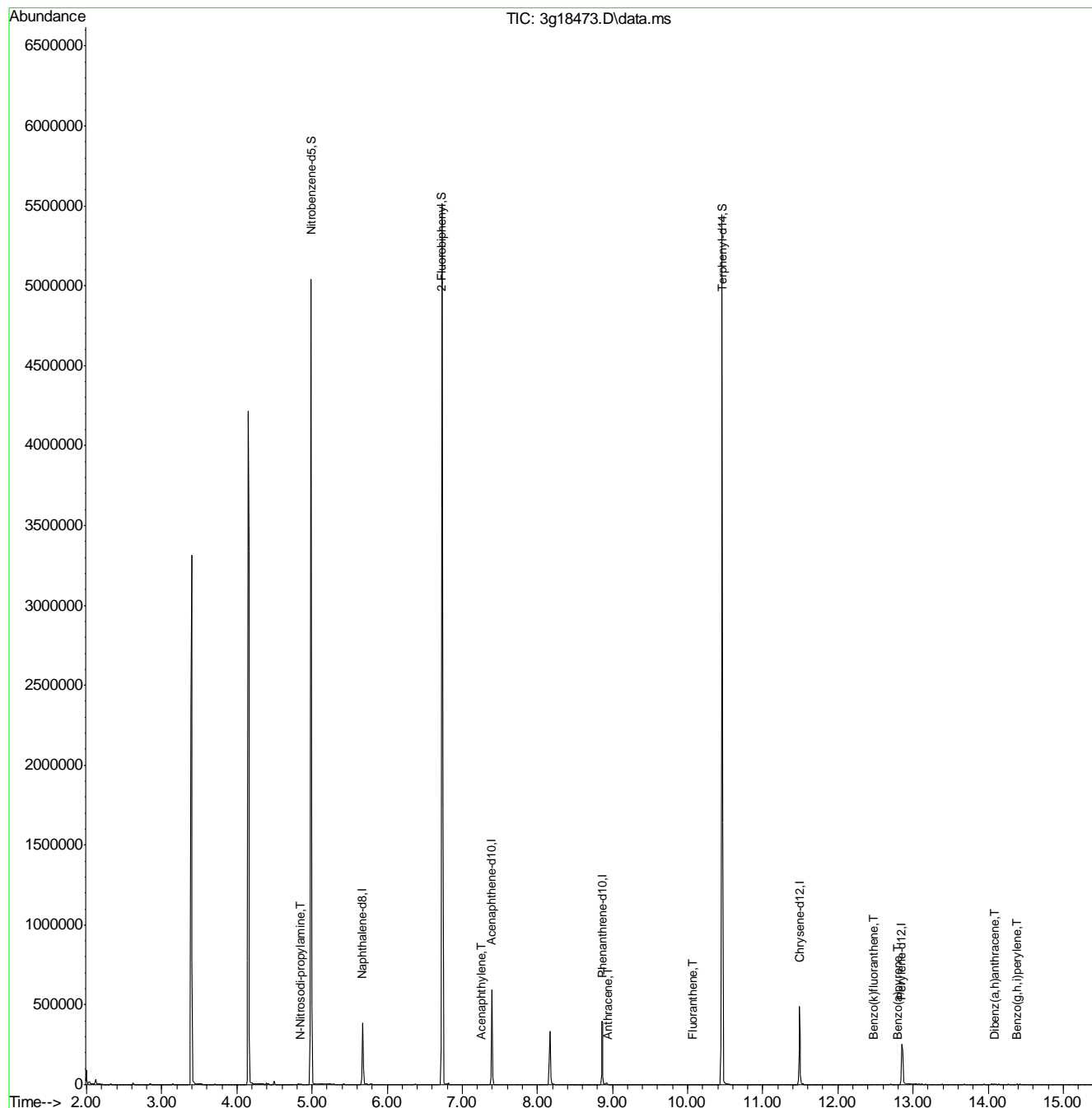
					Qvalue	
3) N-Nitrosodimethylamine	2.380	74	138	N.D.		
4) N-Nitrosodi-propylamine	4.839	70	156	0.0301	ug/mL#	1
5) Naphthalene	5.699	128	871	N.D.		
8) 2-Methylnaphthalene	6.372	142	423	N.D.		
9) 1-Methylnaphthalene	6.472	142	253	N.D.		
10) Acenaphthylene	7.248	152	310	0.0439	ug/mL#	69
11) Acenaphthene	7.390	154	849	N.D.		
12) Dibenzofuran	7.602	168	450	N.D.		
13) Fluorene	7.933	166	357	N.D.		
14) Diphenylamine	8.051	169	155	N.D.		
16) Phenanthrene	8.938	178	355	N.D.		
17) Anthracene	8.938	178	360	0.0428	ug/mL#	59
18) Fluoranthene	10.070	202	516	0.0454	ug/mL	74
20) Pyrene	10.292	202	529	N.D.		
22) Benzo(a)anthracene	11.488	228	1386	N.D.		
23) Chrysene	11.488	228	1386	N.D.		
25) Benzo(b)fluoranthene	12.482	252	969	N.D.		
26) Benzo(k)fluoranthene	12.482	252	989	0.0522	ug/mL	84
27) Benzo(a)pyrene	12.798	252	484	0.0507	ug/mL#	62
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D. d		
29) Dibenz(a,h)anthracene	14.081	278	389	0.0495	ug/mL#	15
30) Benzo(g,h,i)perylene	14.386	276	384	0.0551	ug/mL#	38

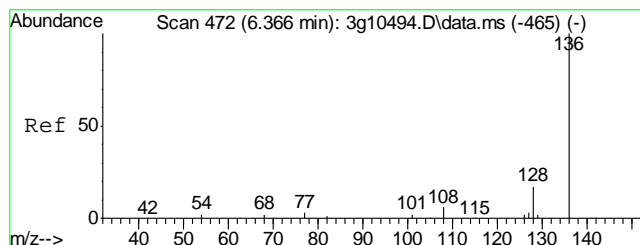
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031414\
Data File : 3g18473.D
Acq On : 14 Mar 2014 6:52 pm
Operator : DONC
Sample : OP9561-MB
Misc : OP9561,E3G918,30.00,,,1,1
ALS Vial : 12 Sample Multiplier: 1

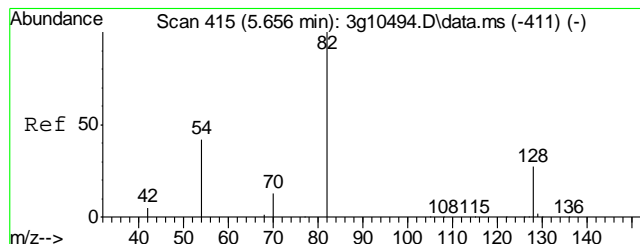
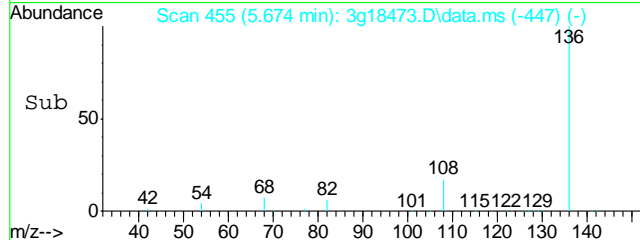
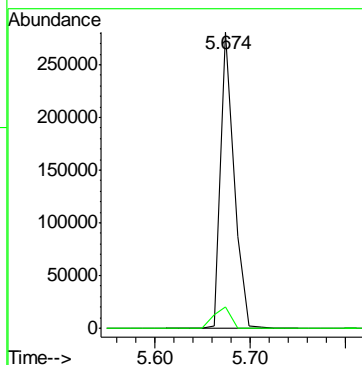
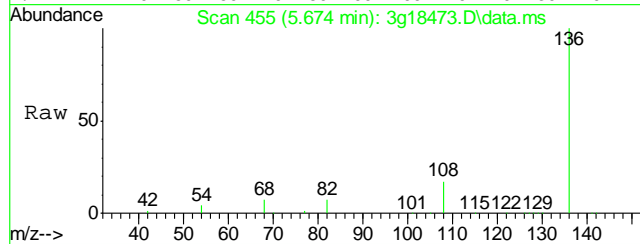
Quant Time: Mar 17 11:17:55 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
Quant Title : PAHSIM BASE
QLast Update : Mon Mar 17 10:02:08 2014
Response via : Initial Calibration





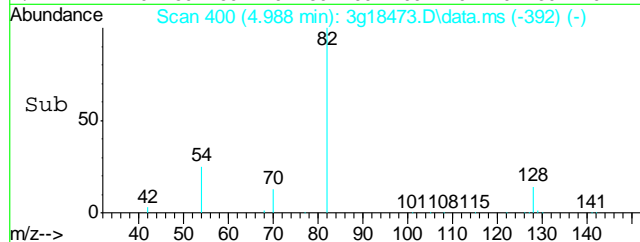
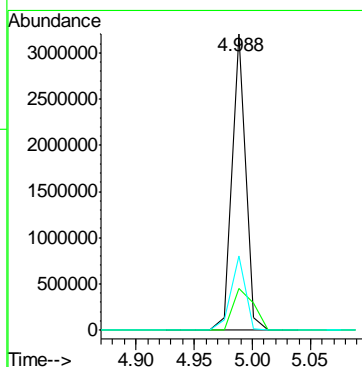
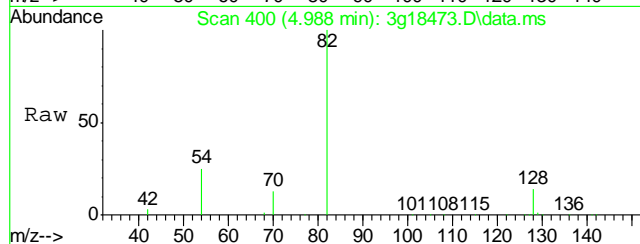
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.674 min Scan# 455
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

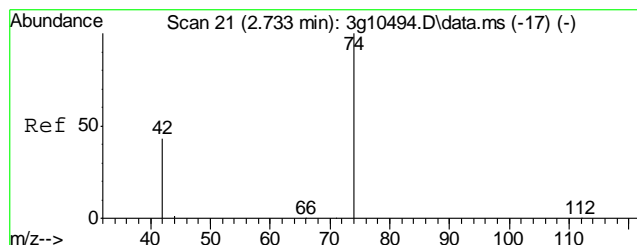
Tgt Ion: 136	Resp: 278614
Ion Ratio	Lower Upper
136 100	
68 8.8	0.0 28.2



#2
Nitrobenzene-d5
Concen: 53.1160 ug/mL
RT: 4.988 min Scan# 400
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

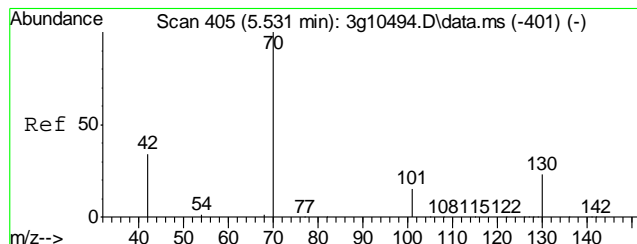
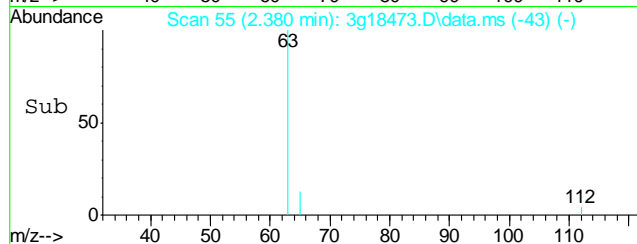
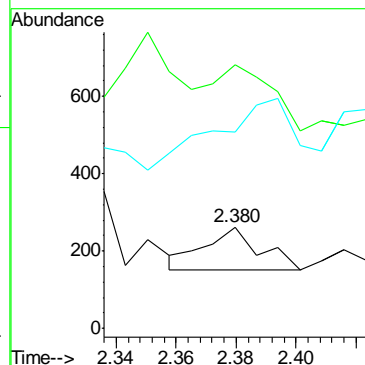
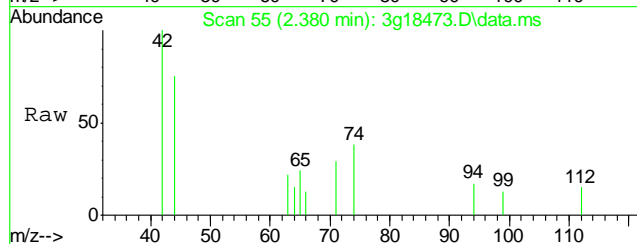
Tgt Ion: 82	Resp: 2600706
Ion Ratio	Lower Upper
82 100	
128 21.4	6.9 46.9
54 26.6	11.0 51.0





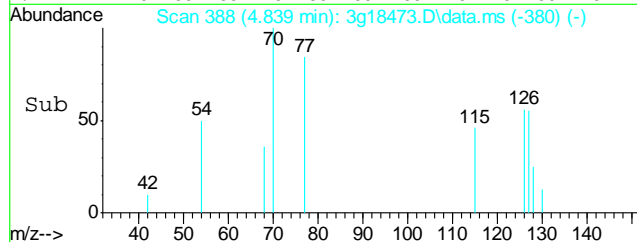
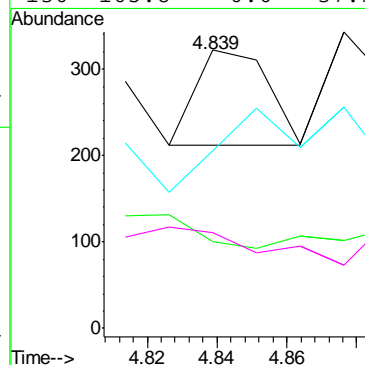
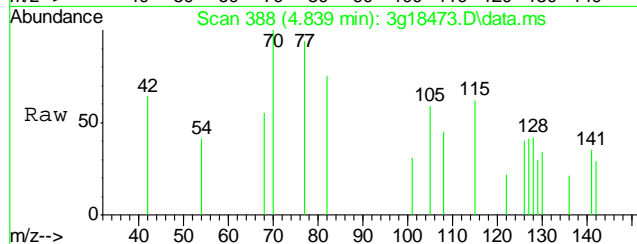
#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.380 min Scan# 55
Delta R.T. -0.015 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

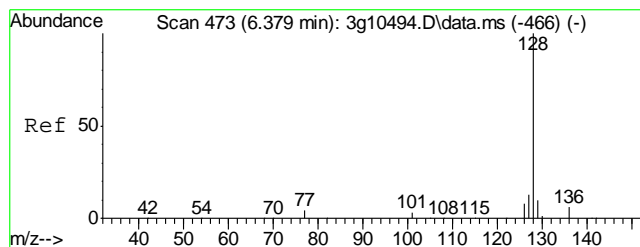
Tgt Ion: 74 Resp: 138
Ion Ratio Lower Upper
74 100
42 0.0 16.2 56.2#
44 255.8 0.0 21.5#



#4
N-Nitrosodi-propylamine
Concen: 0.0301 ug/mL
RT: 4.839 min Scan# 388
Delta R.T. 0.001 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

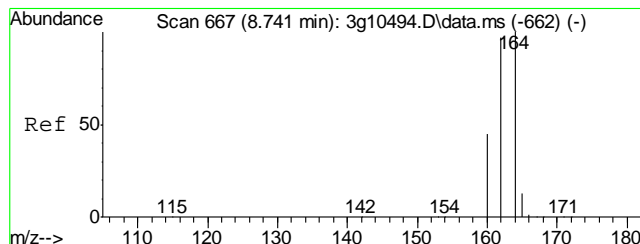
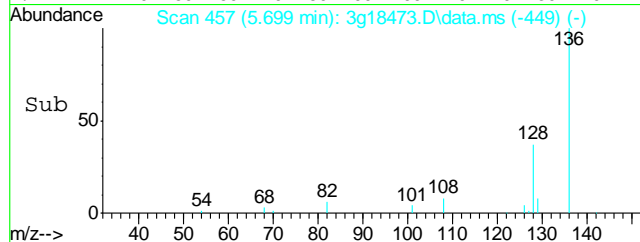
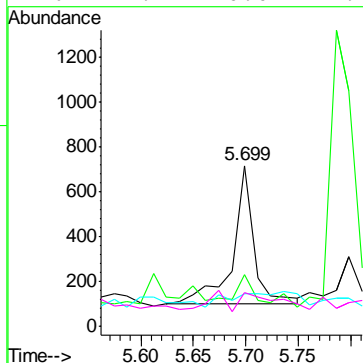
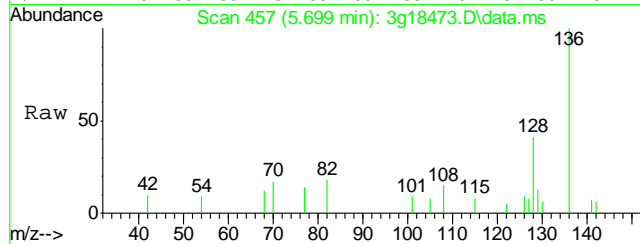
Tgt Ion: 70 Resp: 156
Ion Ratio Lower Upper
70 100
101 41.7 0.0 31.6#
42 72.4 2.8 42.8#
130 105.8 0.0 37.5#





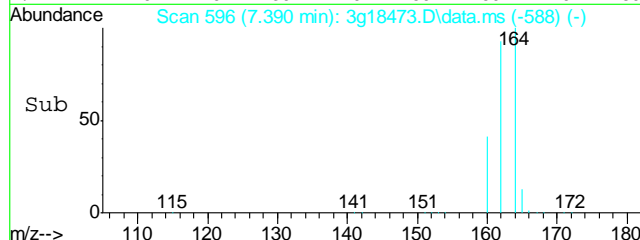
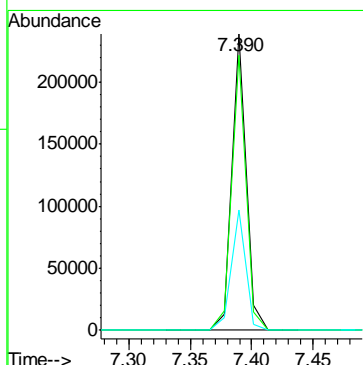
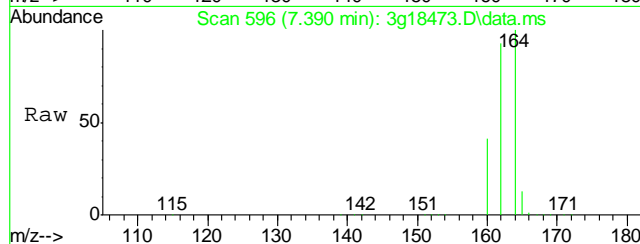
#5
Naphthalene
Concen: Below ug/mL
RT: 5.699 min Scan# 457
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

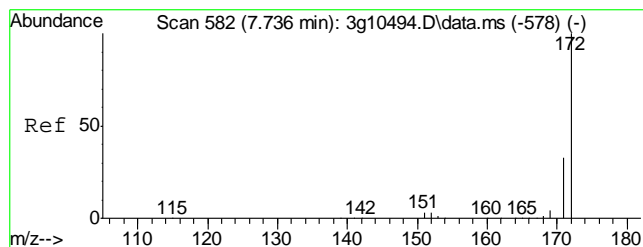
Tgt Ion	128	Resp	871
Ion Ratio	100		
Lower	0.0		
Upper	31.0		
129	17.3		
127	0.0		
126	24.2		



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.390 min Scan# 596
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

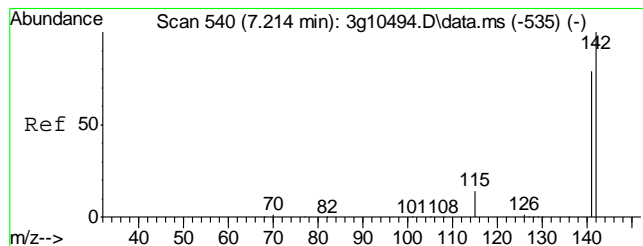
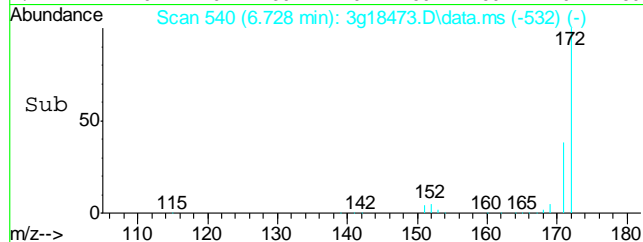
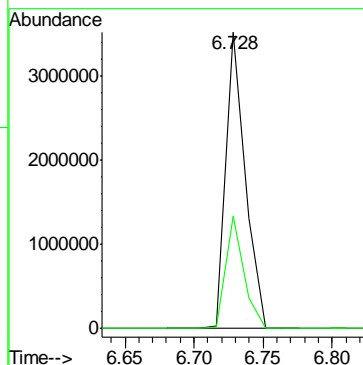
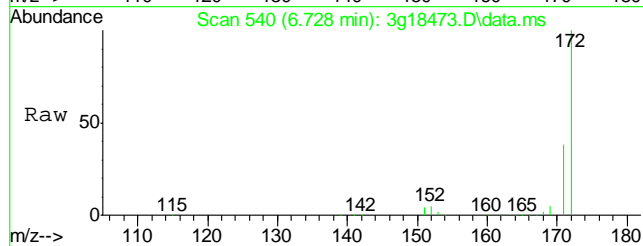
Tgt Ion	164	Resp	193104
Ion Ratio <td>100</td> <td></td> <td></td>	100		
Lower <td>65.6</td> <td></td> <td></td>	65.6		
Upper <td>105.6</td> <td></td> <td></td>	105.6		
162	92.9		
160	41.0		





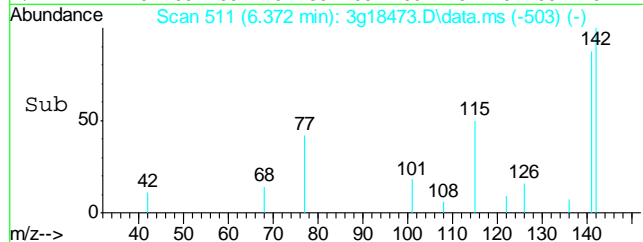
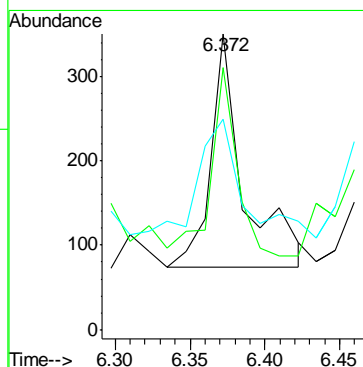
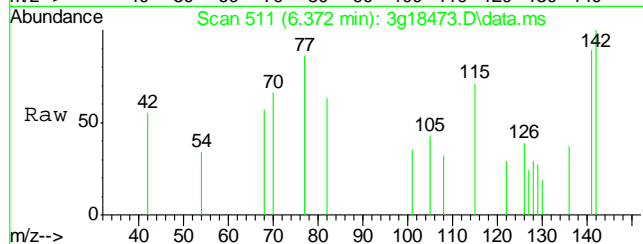
#7
2-Fluorobiphenyl
Concen: 48.6248 ug/mL
RT: 6.728 min Scan# 540
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

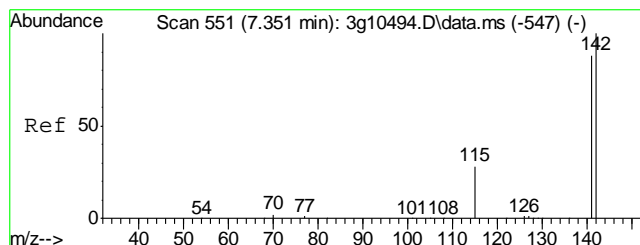
Tgt Ion:172 Resp: 3446835
Ion Ratio Lower Upper
172 100
171 35.3 14.1 54.1



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.372 min Scan# 511
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

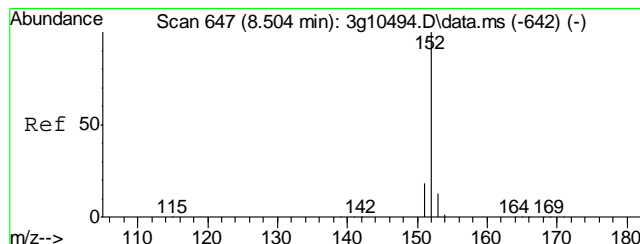
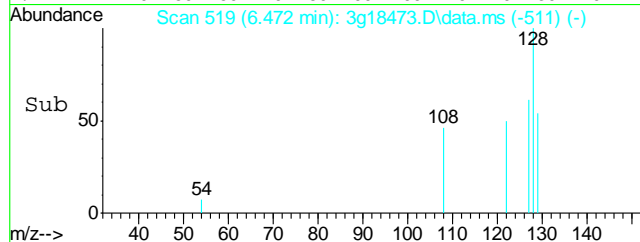
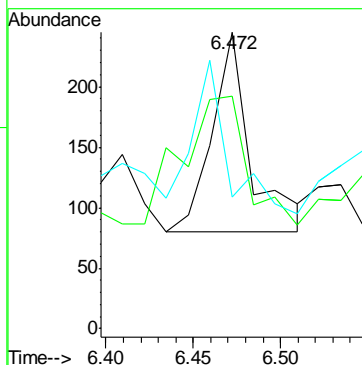
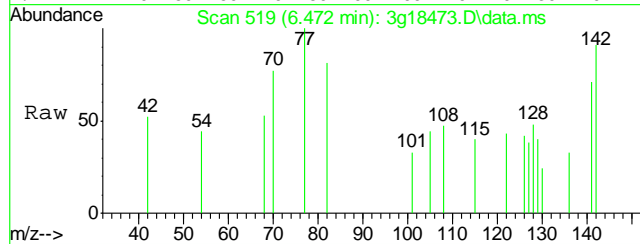
Tgt Ion:142 Resp: 423
Ion Ratio Lower Upper
142 100
141 62.9 61.4 101.4
115 57.7 26.9 66.9





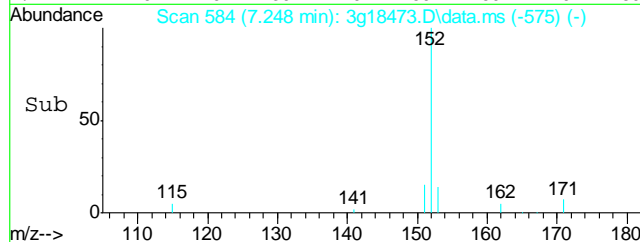
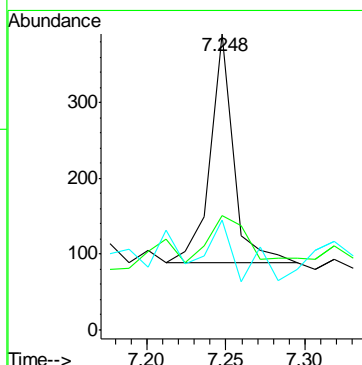
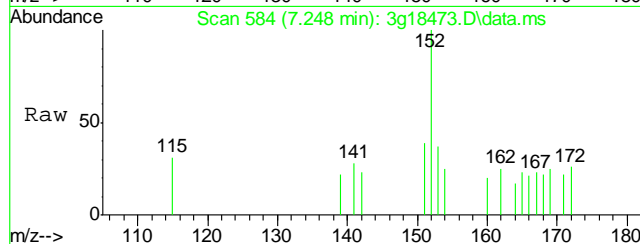
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.472 min Scan# 519
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

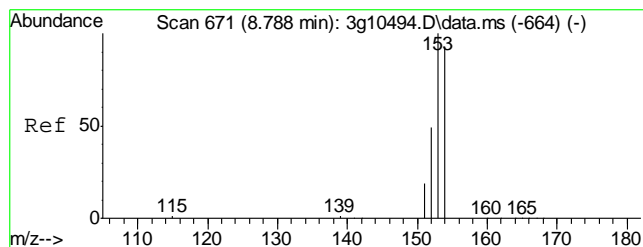
Tgt Ion:142 Resp: 253
Ion Ratio Lower Upper
142 100
141 106.3 67.1 107.1
115 68.8 24.0 64.0#



#10
Acenaphthylene
Concen: 0.0439 ug/mL
RT: 7.248 min Scan# 584
Delta R.T. 0.001 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

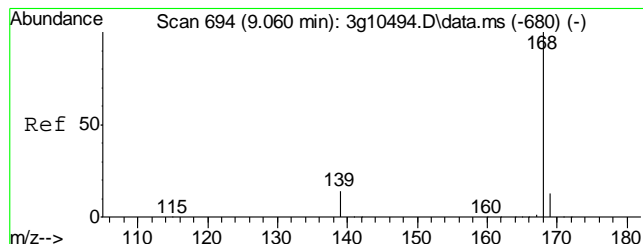
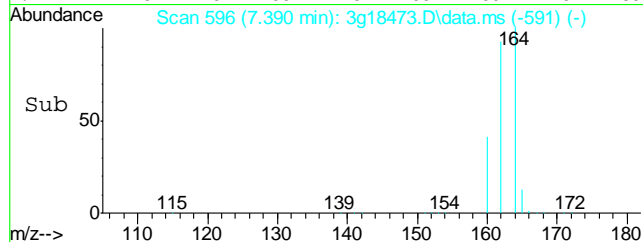
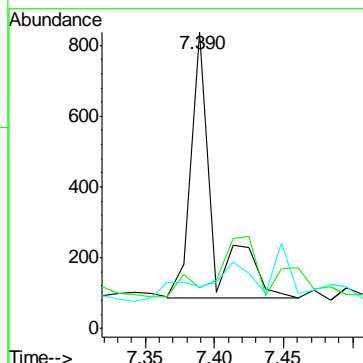
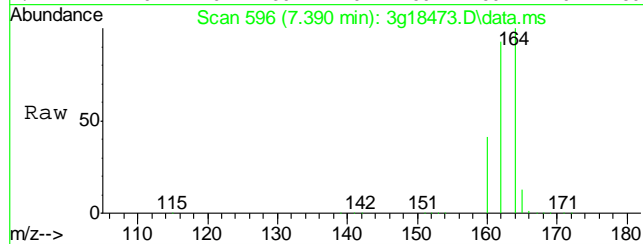
Tgt Ion:152 Resp: 310
Ion Ratio Lower Upper
152 100
151 34.5 0.9 40.9
153 0.0 0.0 33.8





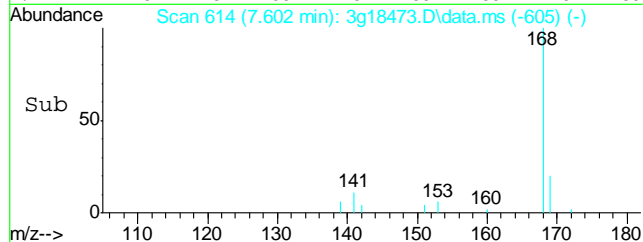
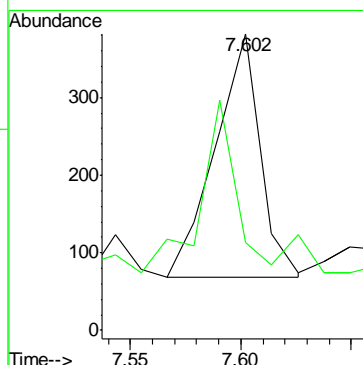
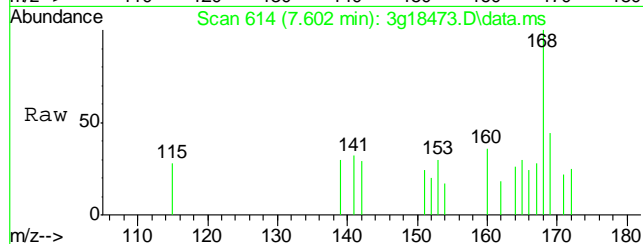
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.390 min Scan# 596
Delta R.T. -0.035 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

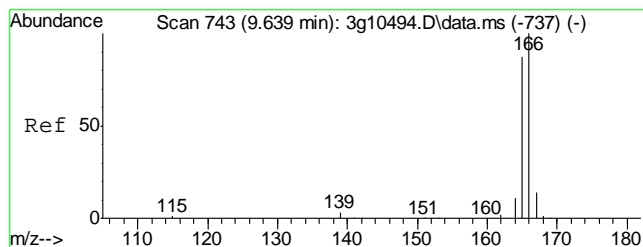
Tgt Ion:154	Resp:	849
Ion Ratio	Lower	Upper
154	100	
153	45.5	82.9 122.9#
152	28.9	23.8 63.8



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.602 min Scan# 614
Delta R.T. 0.012 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

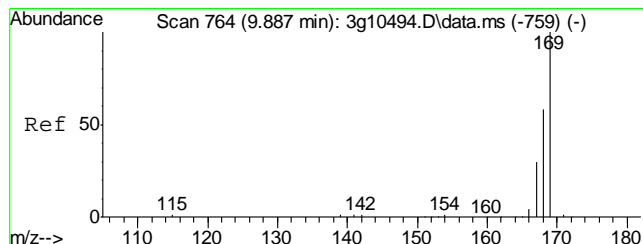
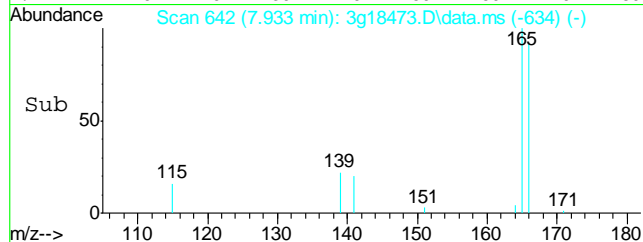
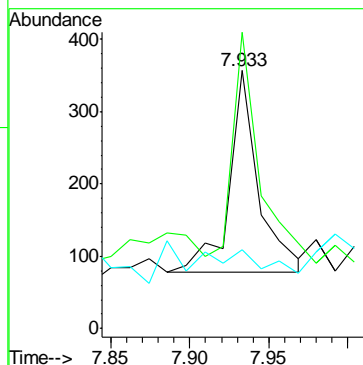
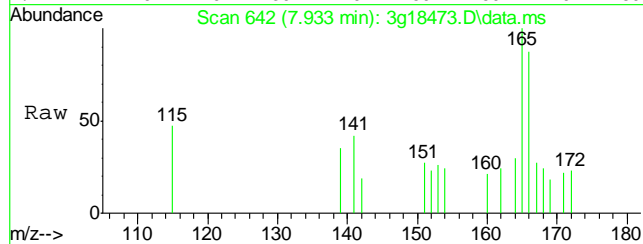
Tgt Ion:168	Resp:	450
Ion Ratio	Lower	Upper
168	100	
139	66.0	11.7 51.7#





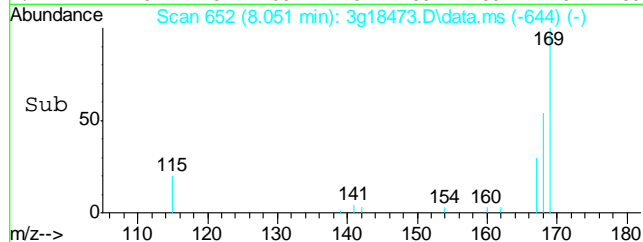
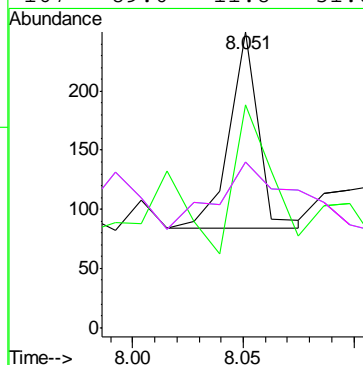
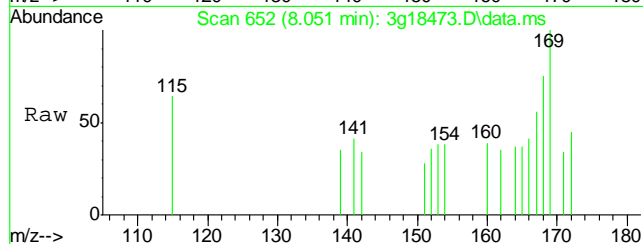
#13
Fluorene
Concen: Below ug/mL
RT: 7.933 min Scan# 642
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

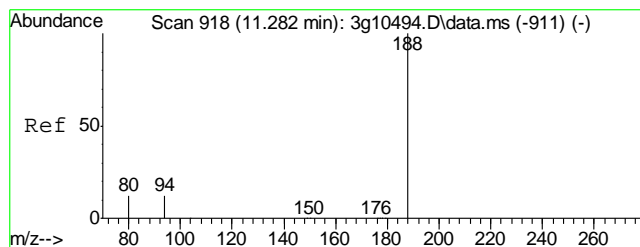
Tgt Ion:166 Resp: 357
Ion Ratio Lower Upper
166 100
165 104.2 71.7 111.7
167 0.0 0.0 33.0



#14
Diphenylamine
Concen: Below ug/mL
RT: 8.051 min Scan# 652
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

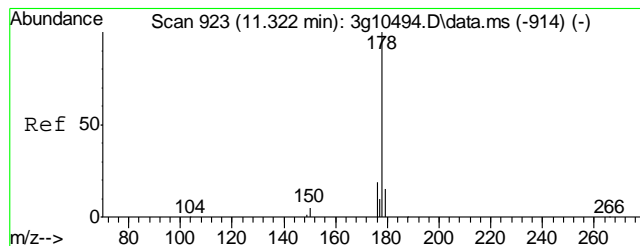
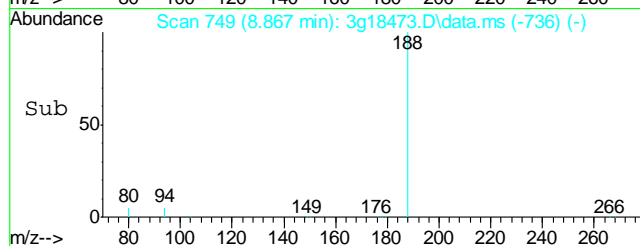
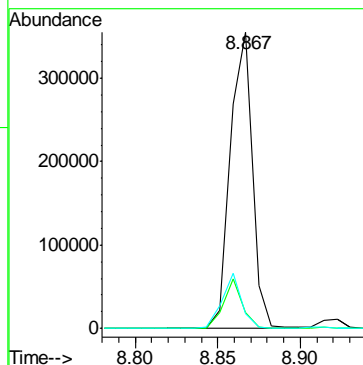
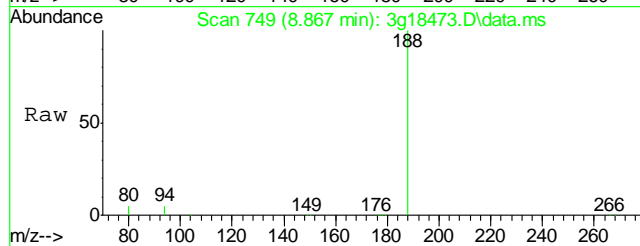
Tgt Ion:169 Resp: 155
Ion Ratio Lower Upper
169 100
168 115.5 40.6 80.6#
167 89.0 11.8 51.8#
167 89.0 11.8 51.8#





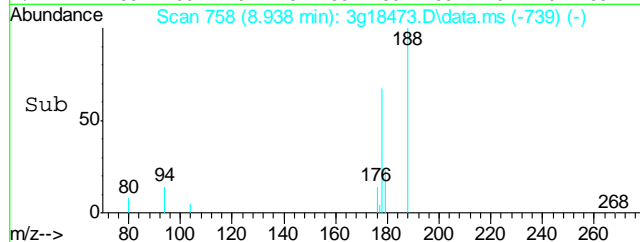
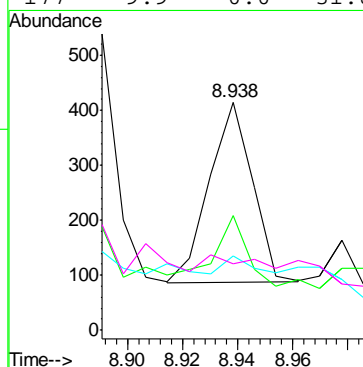
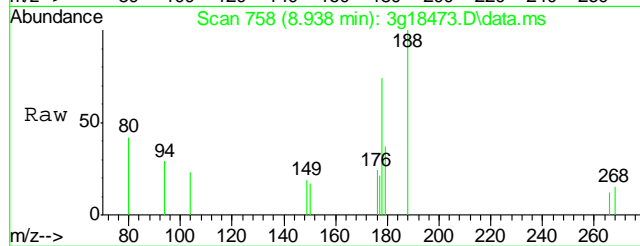
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 749
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

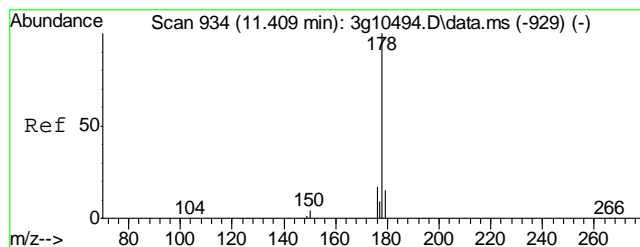
Tgt Ion	Ratio	Lower	Upper
188	100		
94	14.2	0.0	32.7
80	16.2	0.0	33.0



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.938 min Scan# 758
Delta R.T. 0.047 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

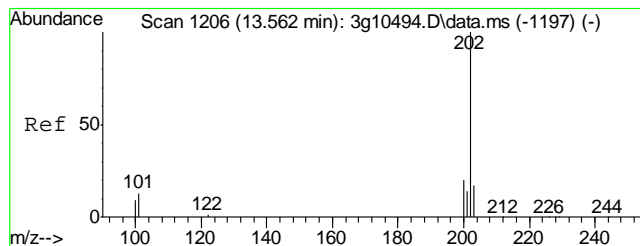
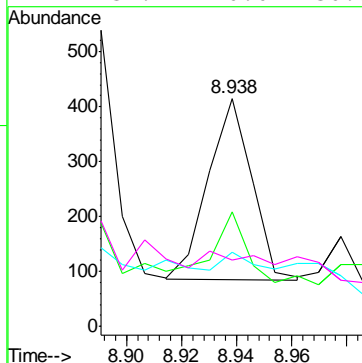
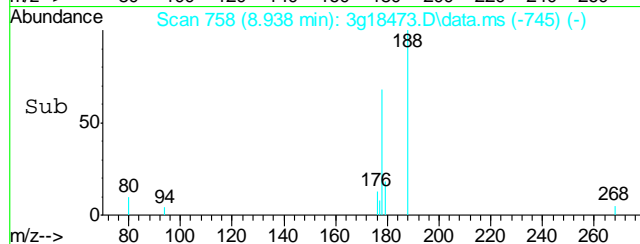
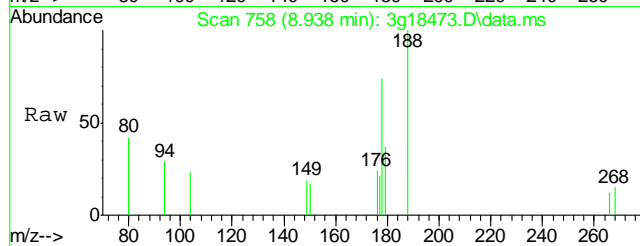
Tgt Ion	Ratio	Lower	Upper
178	100		
179	31.5	0.0	34.9
176	6.5	0.0	38.2
177	9.9	0.0	31.8





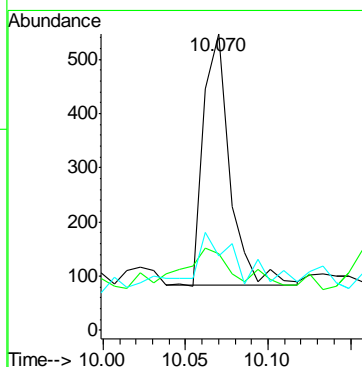
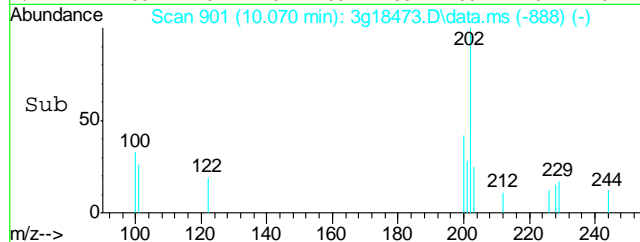
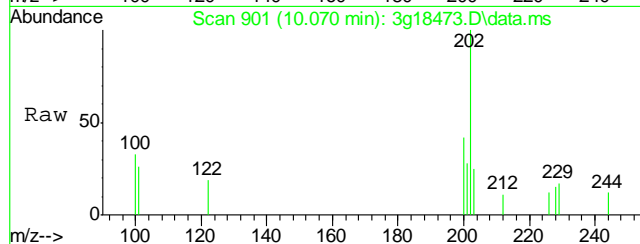
#17
Anthracene
Concen: 0.0428 ug/mL
RT: 8.938 min Scan# 758
Delta R.T. 0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

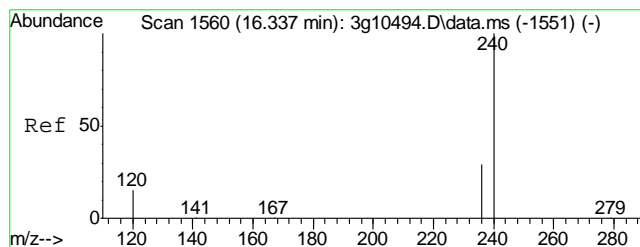
Tgt Ion: 178 Resp: 360
Ion Ratio Lower Upper
178 100
179 36.1 0.0 34.9#
176 9.2 0.0 38.0
177 34.2 0.0 30.5#



#18
Fluoranthene
Concen: 0.0454 ug/mL
RT: 10.070 min Scan# 901
Delta R.T. 0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

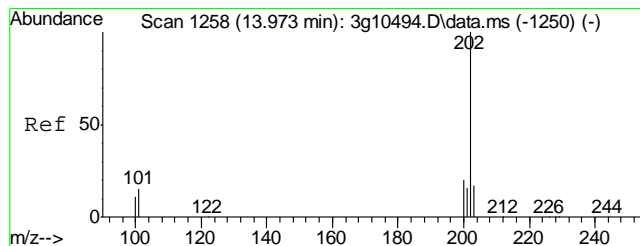
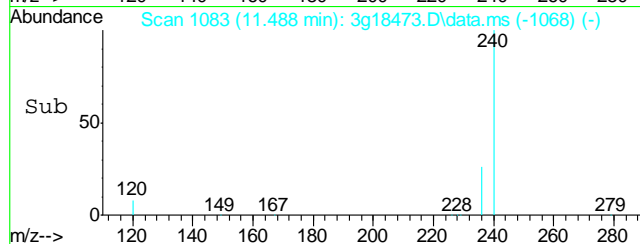
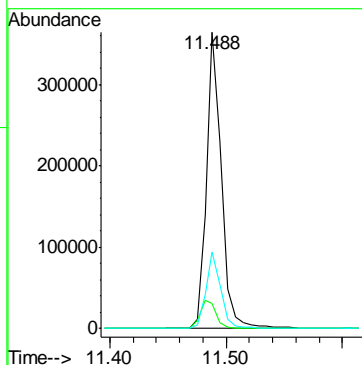
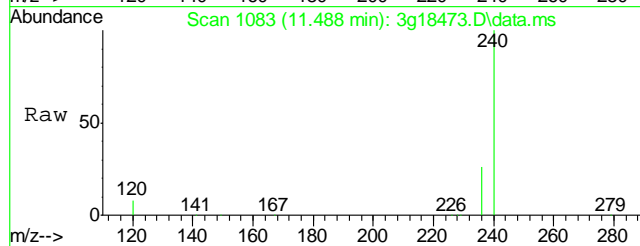
Tgt Ion: 202 Resp: 516
Ion Ratio Lower Upper
202 100
101 29.1 0.0 34.2
203 24.6 0.0 37.3





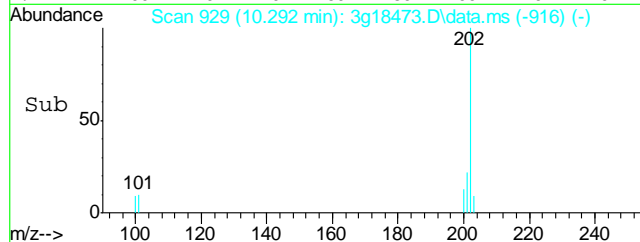
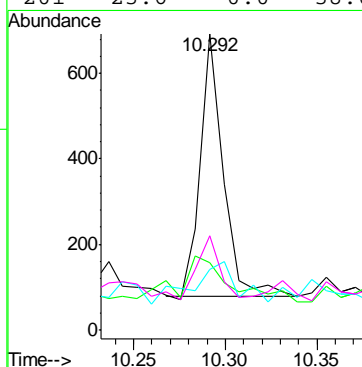
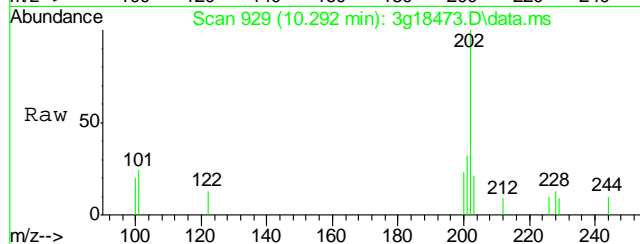
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.488 min Scan# 1083
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

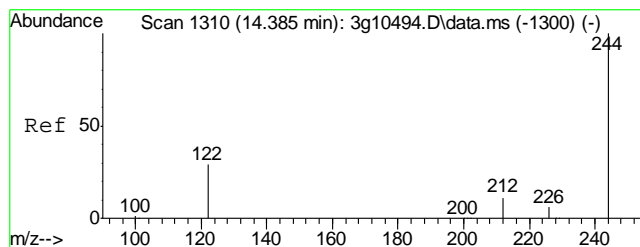
Tgt Ion:	240	Resp:	329070
Ion Ratio	Lower	Upper	
240	100		
120	10.4	0.0	27.8
236	25.6	7.4	47.4



#20
Pyrene
Concen: Below ug/mL
RT: 10.292 min Scan# 929
Delta R.T. 0.001 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

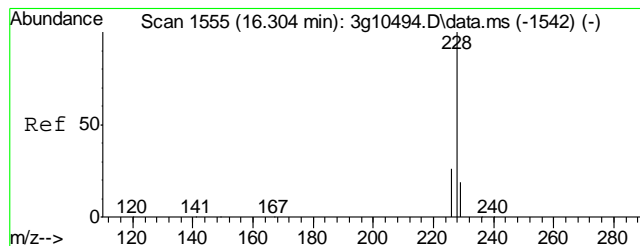
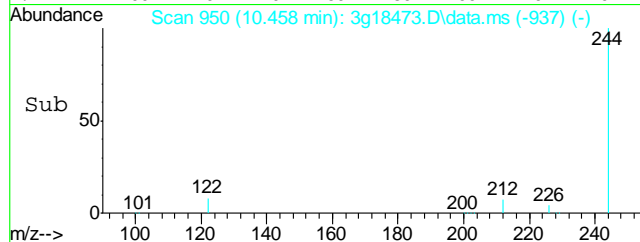
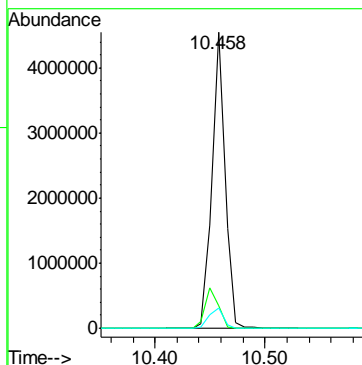
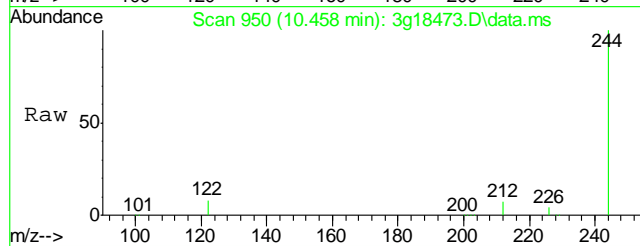
Tgt Ion:	202	Resp:	529
Ion Ratio	Lower	Upper	
202	100		
200	38.6	0.1	40.1
203	31.6	0.0	37.6
201	23.6	0.0	38.0





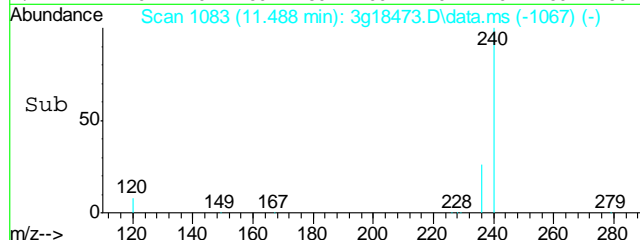
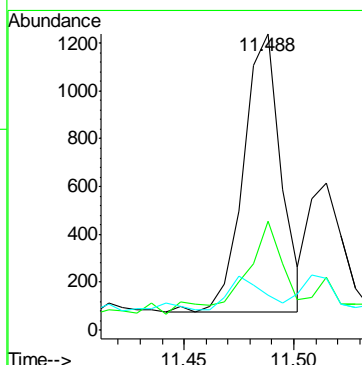
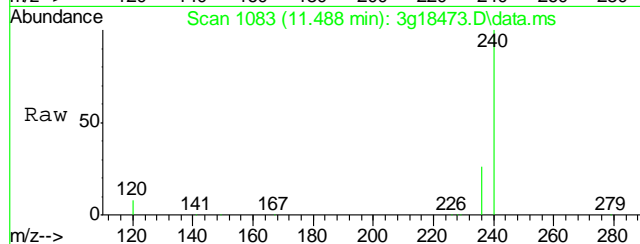
#21
Terphenyl-d14
Concen: 58.6269 ug/mL
RT: 10.458 min Scan# 950
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

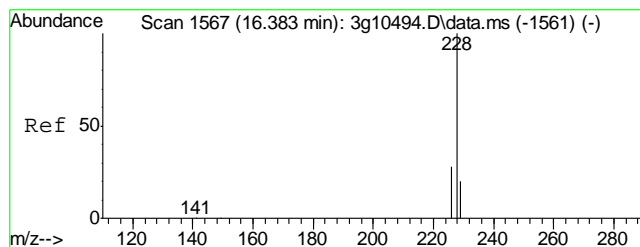
Tgt Ion:244 Resp: 3740796
Ion Ratio Lower Upper
244 100
122 14.1 0.0 34.7
212 7.5 0.0 27.2



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.488 min Scan# 1083
Delta R.T. 0.007 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

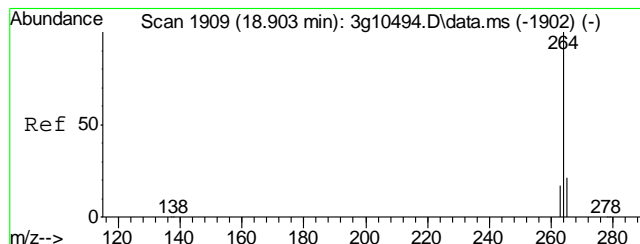
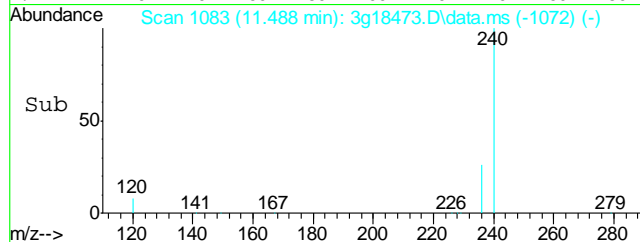
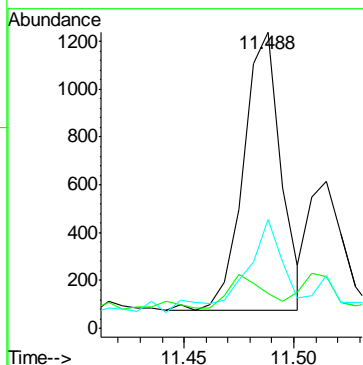
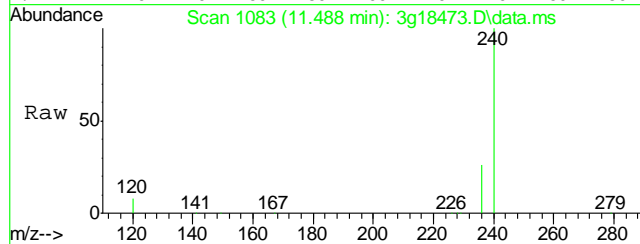
Tgt Ion:228 Resp: 1386
Ion Ratio Lower Upper
228 100
229 36.9 0.0 39.5
226 11.8 5.9 45.9





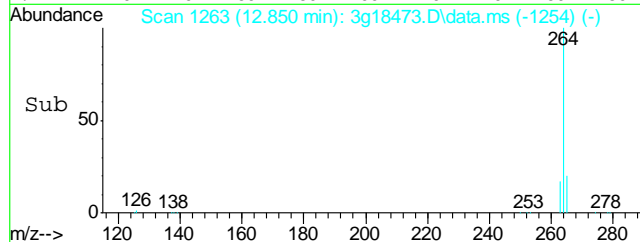
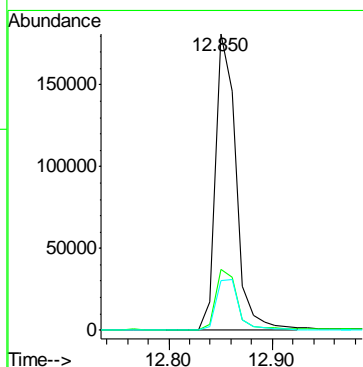
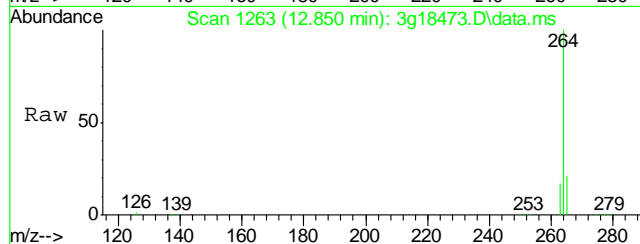
#23
Chrysene
Concen: Below ug/mL
RT: 11.488 min Scan# 1083
Delta R.T. -0.027 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

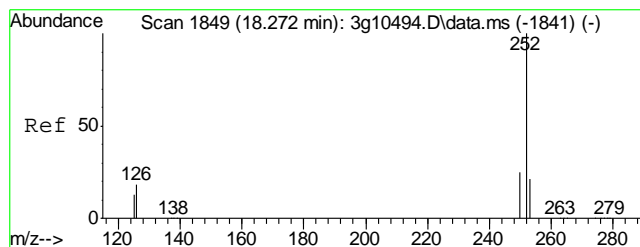
Tgt Ion: 228	Resp: 1386
Ion Ratio	Lower Upper
228	100
226	12.2 8.0 48.0
229	36.9 0.0 39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.850 min Scan# 1263
Delta R.T. -0.011 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

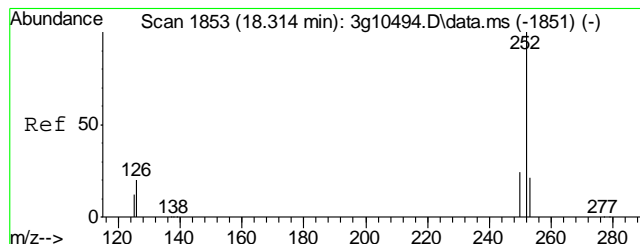
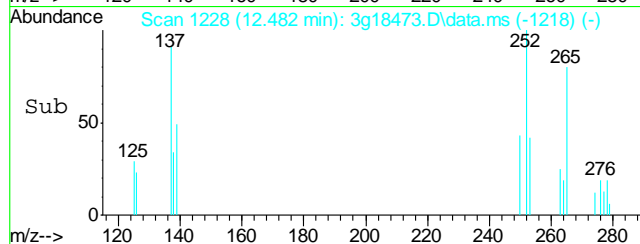
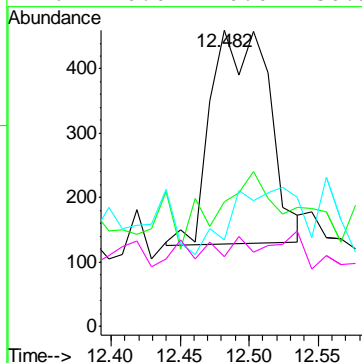
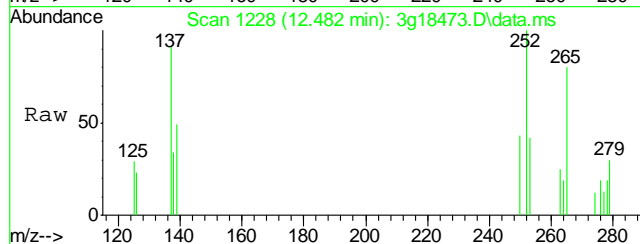
Tgt Ion: 264	Resp: 247347
Ion Ratio	Lower Upper
264	100
265	21.2 2.2 42.2
263	18.7 0.0 39.4





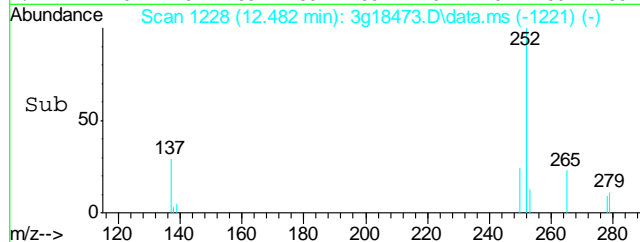
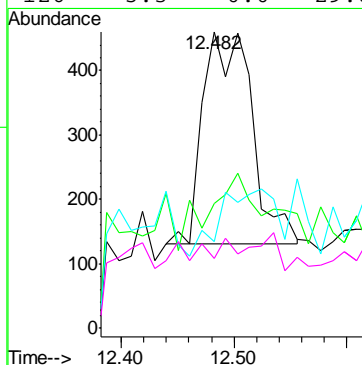
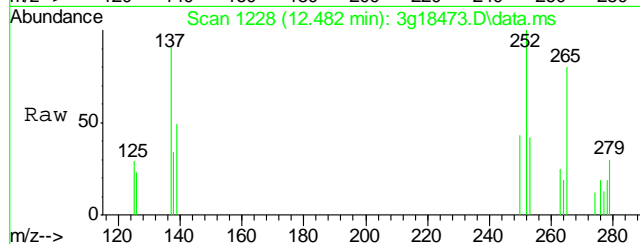
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.482 min Scan# 1228
Delta R.T. -0.000 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

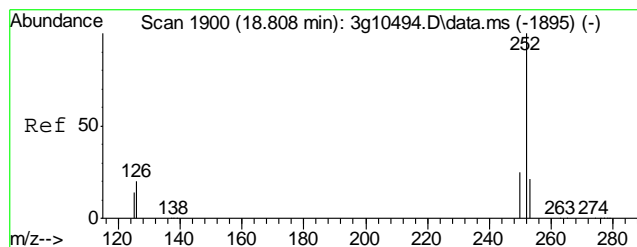
Tgt Ion: 252 Resp: 969
Ion Ratio Lower Upper
252 100
253 15.6 25.6 65.6#
125 34.5 0.0 38.9
126 0.0 0.0 30.9



#26
Benzo(k)fluoranthene
Concen: 0.0522 ug/mL
RT: 12.482 min Scan# 1228
Delta R.T. -0.031 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

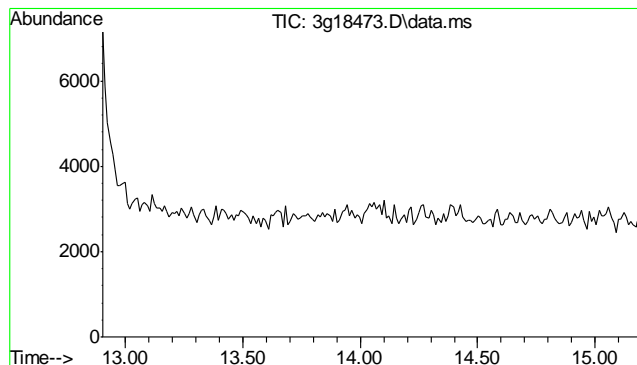
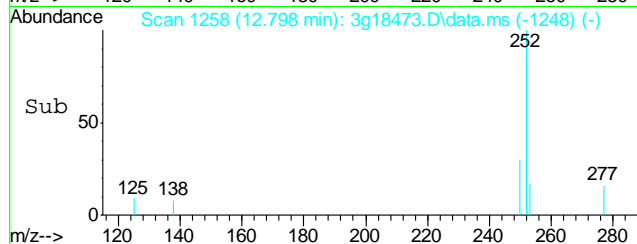
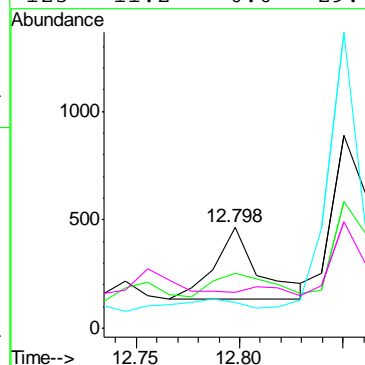
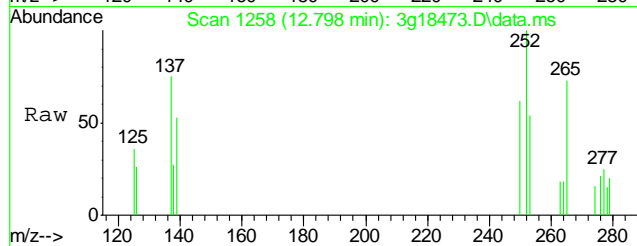
Tgt Ion: 252 Resp: 989
Ion Ratio Lower Upper
252 100
253 44.9 21.1 61.1
125 35.5 0.0 37.0
126 5.3 0.0 29.8





#27
Benzo(a)pyrene
Concen: 0.0507 ug/mL
RT: 12.798 min Scan# 1258
Delta R.T. 0.001 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

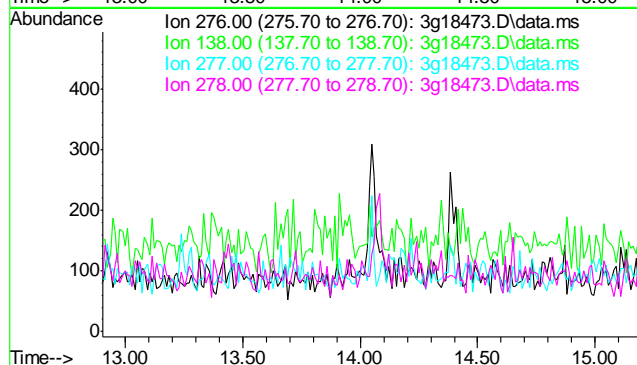
Tgt Ion	Ratio	Lower	Upper
252	100		
253	44.4	1.6	41.6
126	28.1	0.0	30.6
125	11.2	0.0	29.4

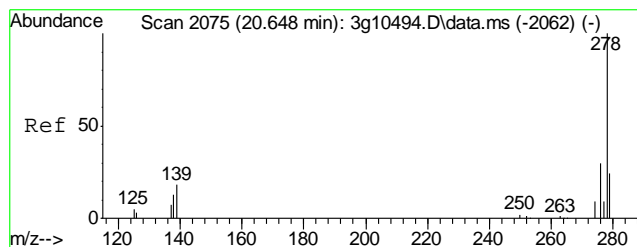


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.05 min

Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

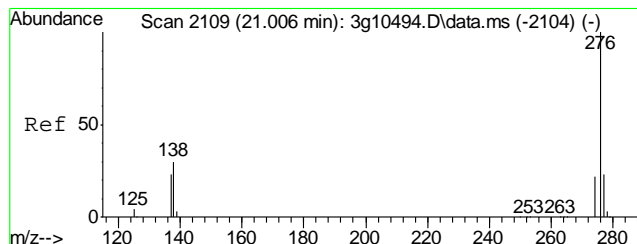
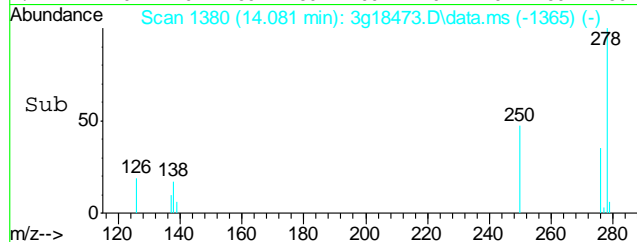
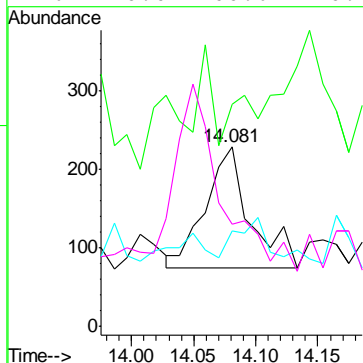
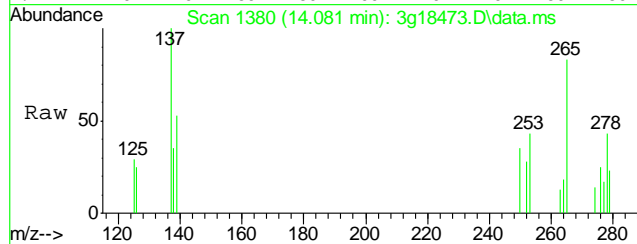
Tgt Ion	Sig	Exp Ratio
276	100	
138	19.6	
277	25.4	
278	82.8	





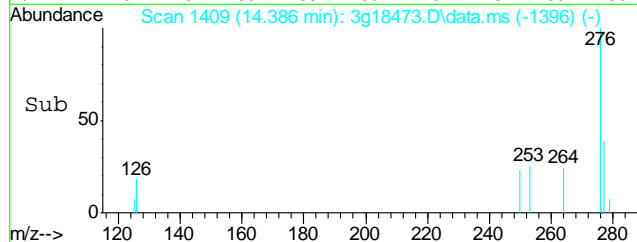
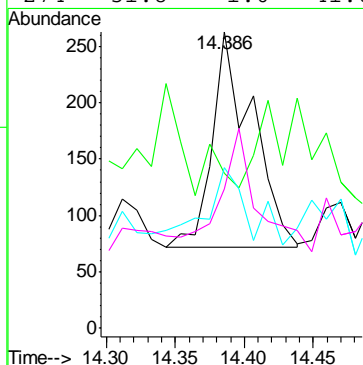
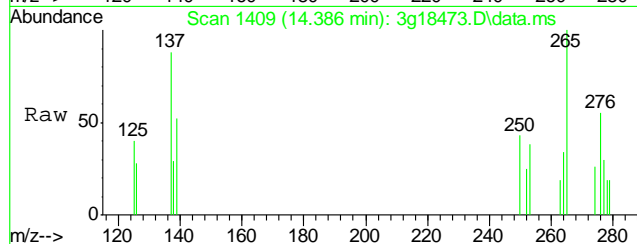
#29
Dibenz(a,h)anthracene
Concen: 0.0495 ug/mL
RT: 14.081 min Scan# 1380
Delta R.T. 0.011 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

Tgt Ion: 278 Resp: 389
Ion Ratio Lower Upper
278 100
139 10.5 0.0 32.8
279 26.7 3.4 43.4
276 0.0 100.6 140.6#



#30
Benzo(g,h,i)perylene
Concen: 0.0551 ug/mL
RT: 14.386 min Scan# 1409
Delta R.T. -0.010 min
Lab File: 3g18473.D
Acq: 14 Mar 14 6:52 pm

Tgt Ion: 276 Resp: 384
Ion Ratio Lower Upper
276 100
138 59.6 0.0 35.9#
277 39.3 3.6 43.6
274 51.8 1.0 41.0#



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: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1321-MB	GB24056.D	1	03/13/14	AR	n/a	n/a	GGB1321

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

D55898-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	9.9	4.9	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	90% 60-140%

10.1.1
10

Blank Spike Summary

Job Number: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1321-BS	GB24057.D	1	03/13/14	AR	n/a	n/a	GGB1321

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

D55898-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	109	112	103	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	101%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D55851-13MS	GB24059.D	1	03/13/14	AR	n/a	n/a	GGB1321
D55851-13MSD	GB24060.D	1	03/13/14	AR	n/a	n/a	GGB1321
D55851-13	GB24058.D	1	03/13/14	AR	n/a	n/a	GGB1321

The QC reported here applies to the following samples:

Method: SW846 8015B

D55898-1

CAS No.	Compound	D55851-13 mg/kg	Spike Q	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	169	164	97	154	91	6	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D55851-13	Limits
120-82-1	1,2,4-Trichlorobenzene	99%	100%	92%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Judy Melson
03/14/14 12:22

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\031314\GB24067.D\FID1A.CH Vial: 23
 Signal #2 : Y:\1\DATA\031314\GB24067.D\FID2B.CH
 Acq On : 14 Mar 2014 2:24 am Operator: ALEXR
 Sample : D55898-1 Inst : GC/MS Ins
 Misc : GC4270,GGB1321,5.052,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Mar 14 08:48:38 2014 Quant Results File: TB1310GB1310SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1310GB1310SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri Mar 14 08:47:23 2014
 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	14.42	3194817	96.104 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.42	8474951	91.055 %	m
Target Compounds				
1) H TVH-Gasoline	7.32	2524356	0.039 mg/L	
4) T Methyl-t-butyl-ether	0.00	0	N.D. ug/L d	
5) T Benzene	0.00	0	N.D. ug/L d	
6) T Toluene	0.00	0	N.D. ug/L d	
7) T Ethylbenzene	0.00	0	N.D. ug/L d	
8) T m,p-Xylene	0.00	0	N.D. ug/L d	
9) T o-Xylene	0.00	0	N.D. ug/L d	
11) T Naphthalene	0.00	0	N.D. ug/L d	

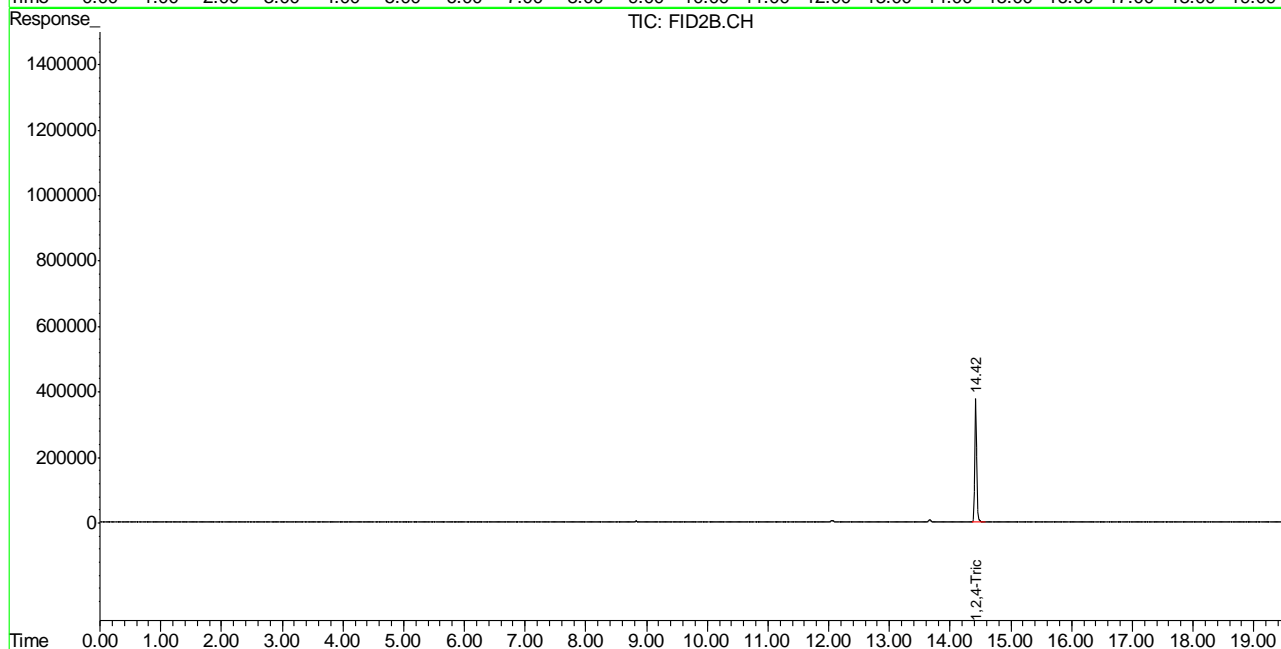
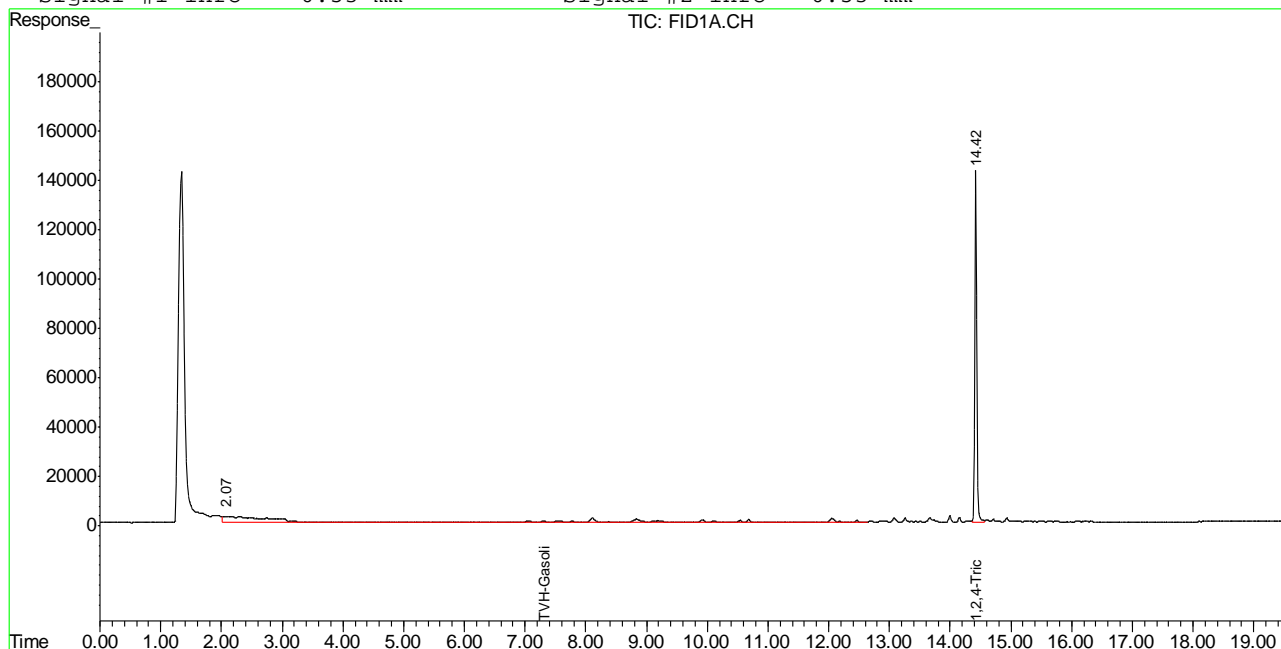
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB24067.D TB1310GB1310SOIL.M Fri Mar 14 10:43:49 2014 GC

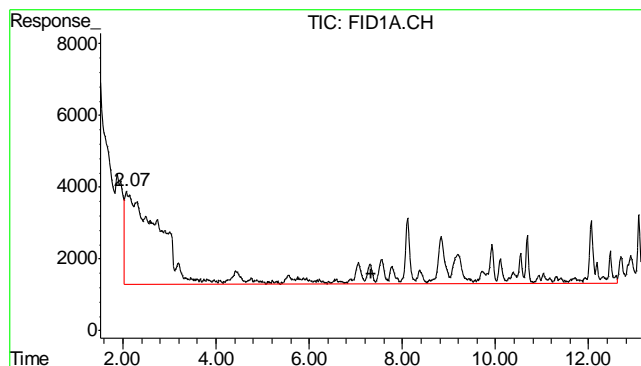
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\031314\GB24067.D\FID1A.CH Vial: 23
 Signal #2 : Y:\1\DATA\031314\GB24067.D\FID2B.CH
 Acq On : 14 Mar 2014 2:24 am Operator: ALEXR
 Sample : D55898-1 Inst : GC/MS Ins
 Misc : GC4270,GGB1321,5.052,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Mar 14 11:15 2014 Quant Results File: TB1310GB1310SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1310GB1310SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri Mar 14 08:47:23 2014
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

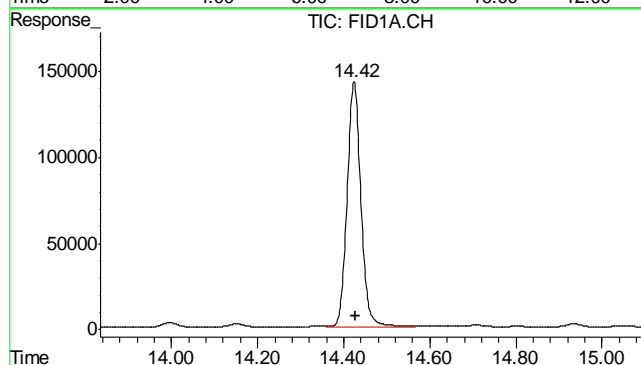
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





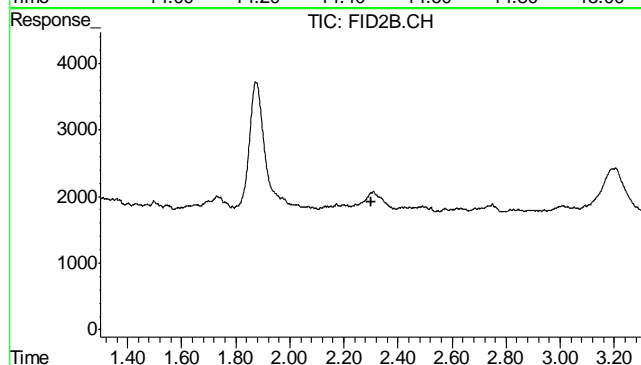
#1 TVH-Gasoline

R.T.: 7.320 min
 Delta R.T.: 0.000 min
 Response: 2524356
 Conc: 0.04 mg/L m



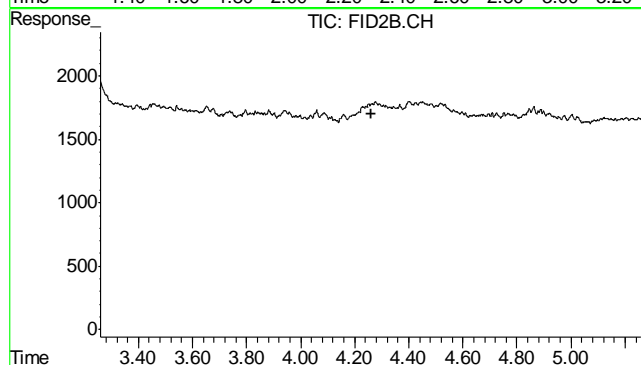
#2 1,2,4-Trichlorobenzene

R.T.: 14.424 min
 Delta R.T.: -0.003 min
 Response: 3194817
 Conc: 96.10 % m



#4 Methyl-t-butyl-ether

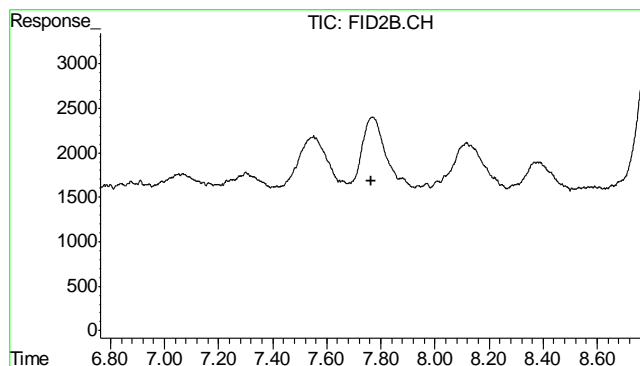
R.T.: 0.000 min
 Exp R.T.: 2.299 min
 Response: 0
 Conc: N.D.



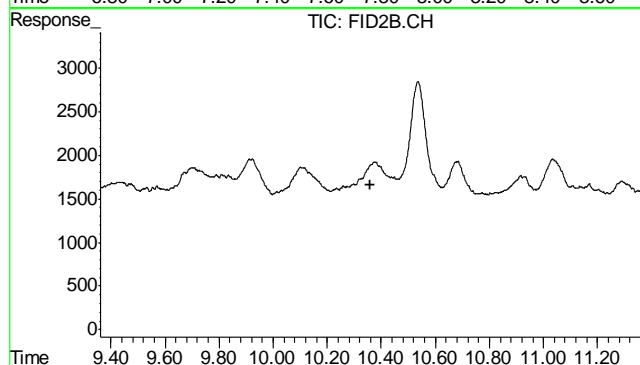
#5 Benzene

R.T.: 0.000 min
 Exp R.T.: 4.260 min
 Response: 0
 Conc: N.D.

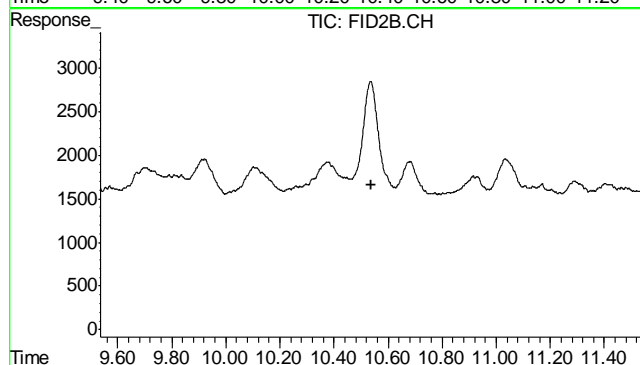
11.1.1



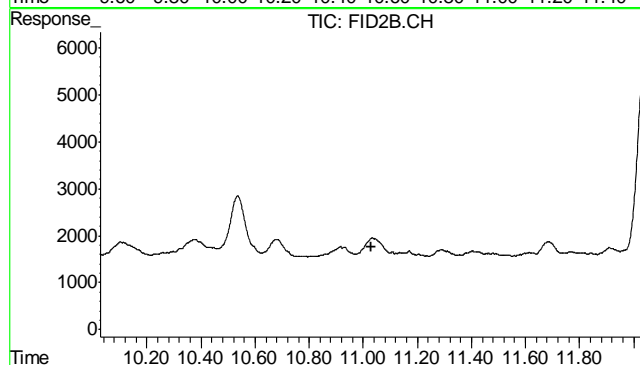
#6 Toluene
 R.T.: 0.000 min
 Exp R.T.: 7.763 min
 Response: 0
 Conc: N.D.



#7 Ethylbenzene
 R.T.: 0.000 min
 Exp R.T.: 10.361 min
 Response: 0
 Conc: N.D.

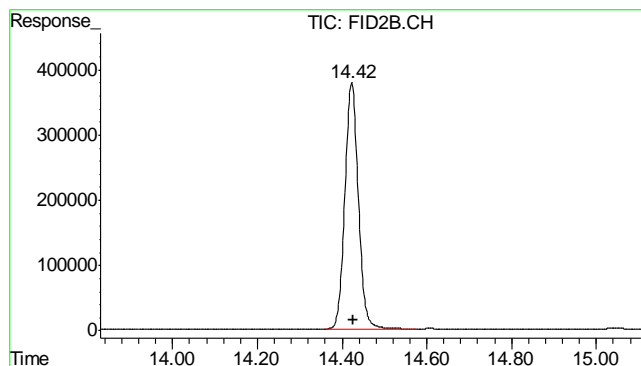


#8 m,p-Xylene
 R.T.: 0.000 min
 Exp R.T.: 10.536 min
 Response: 0
 Conc: N.D.



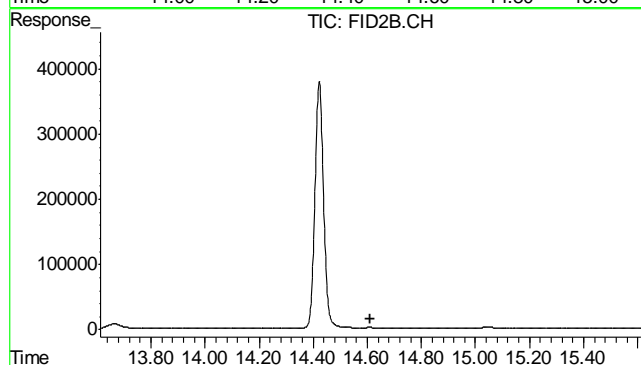
#9 o-Xylene
 R.T.: 0.000 min
 Exp R.T.: 11.028 min
 Response: 0
 Conc: N.D.

11.1.1
 11



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

R.T.: 14.423 min
 Delta R.T.: -0.003 min
 Response: 8474951
 Conc: 91.05 % m



#11 Naphthalene

R.T.: 0.000 min
 Exp R.T. : 14.612 min
 Response: 0
 Conc: N.D.

11.1.1

Judy Melson
03/14/14 12:22

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\031314\GB24056.D\FID1A.CH Vial: 12
 Signal #2 : Y:\1\DATA\031314\GB24056.D\FID2B.CH
 Acq On : 13 Mar 2014 7:54 pm Operator: ALEXR
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC4270,GGB1321,5.054,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Mar 14 08:15:52 2014 Quant Results File: TB1310GB1310SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1310GB1310SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Mar 12 08:35:05 2014
 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	14.42	2992903	90.030 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.42	8031691	86.292 %	m
Target Compounds					
1) H	TVH-Gasoline	7.32	2636547	0.040 mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T	Benzene	0.00	0	N.D. ug/L	d
6) T	Toluene	0.00	0	N.D. ug/L	d
7) T	Ethylbenzene	0.00	0	N.D. ug/L	d
8) T	m,p-Xylene	0.00	0	N.D. ug/L	d
9) T	o-Xylene	0.00	0	N.D. ug/L	d
11) T	Naphthalene	14.60	231231	2.070 ug/L	

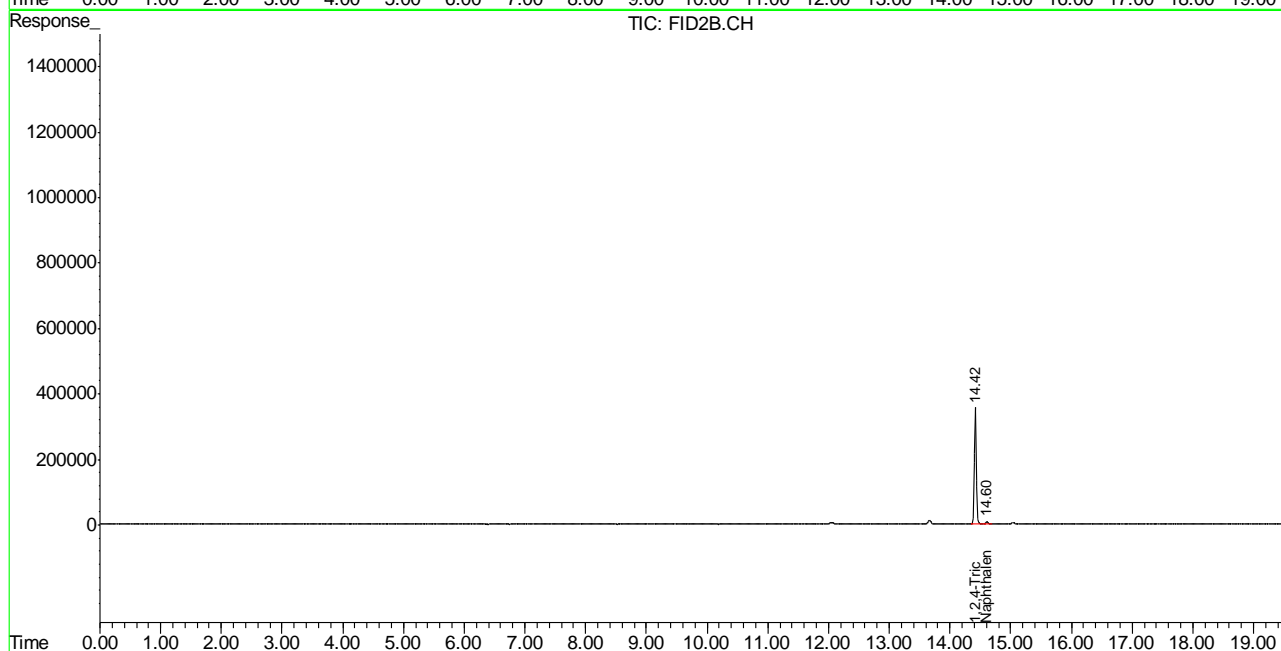
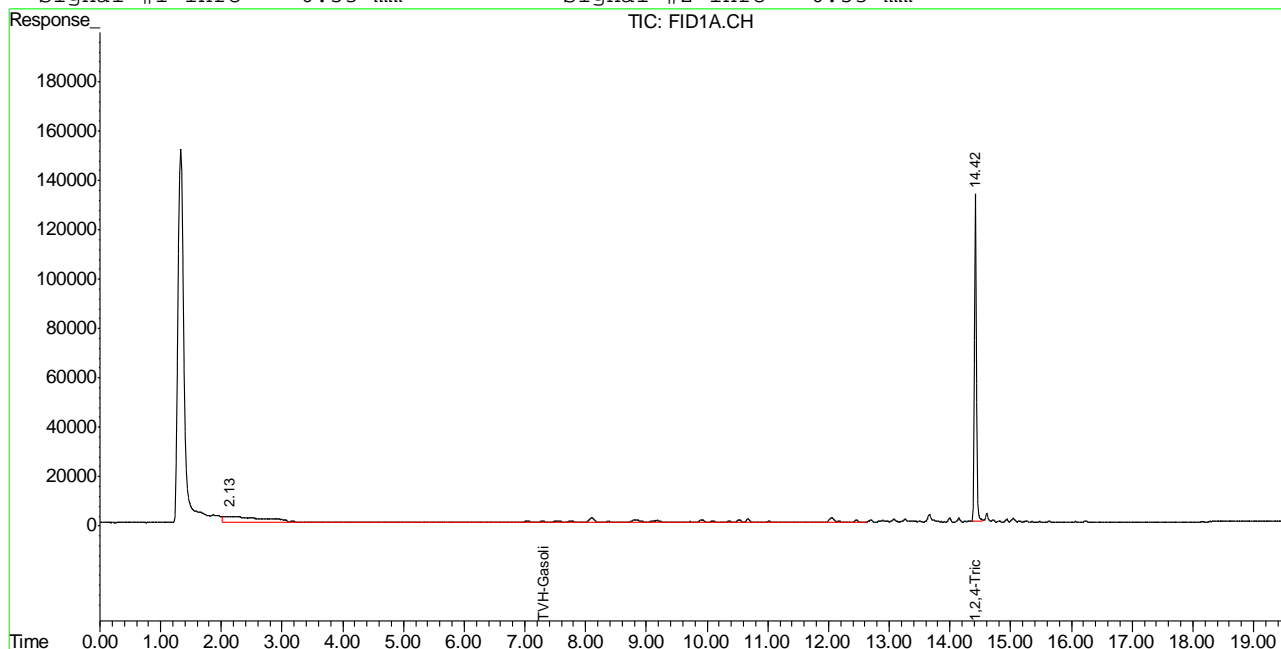
(f)=RT Delta > 1/2 Window (m)=manual int.
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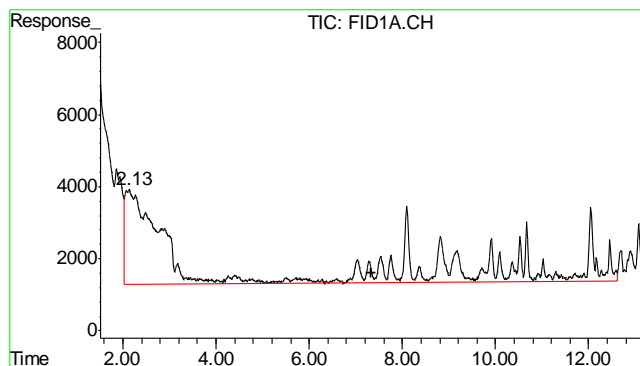
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\031314\GB24056.D\FID1A.CH Vial: 12
Signal #2 : Y:\1\DATA\031314\GB24056.D\FID2B.CH
Acq On : 13 Mar 2014 7:54 pm Operator: ALEXR
Sample : MB, S Inst : GC/MS Ins
Misc : GC4270,GGB1321,5.054,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Mar 14 10:42 2014 Quant Results File: TB1310GB1310SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1310GB1310SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Mar 12 08:35:05 2014
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

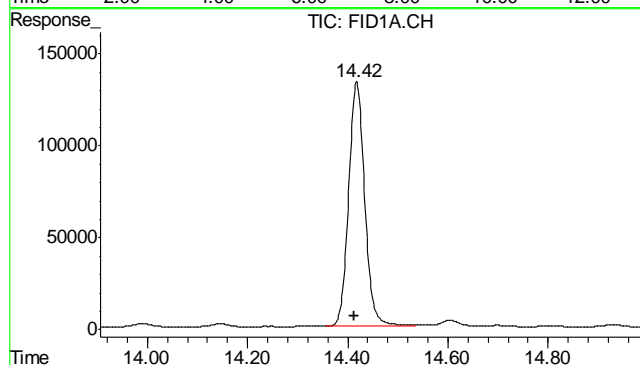
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





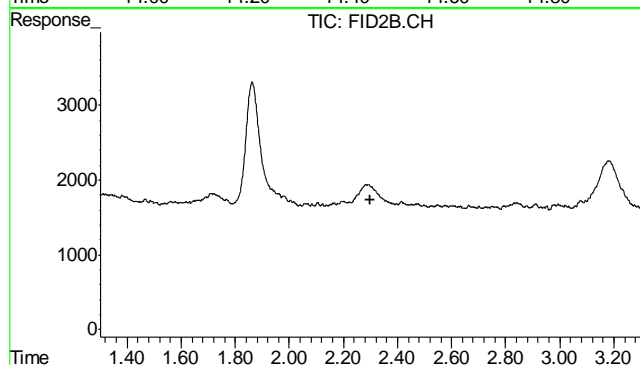
#1 TVH-Gasoline

R.T.: 7.320 min
Delta R.T.: 0.000 min
Response: 2636547
Conc: 0.04 mg/L m



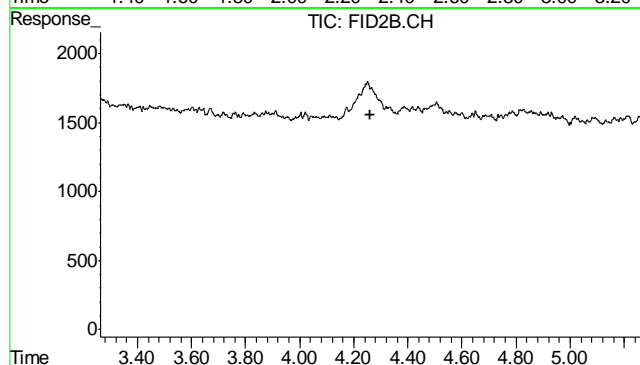
#2 1,2,4-Trichlorobenzene

R.T.: 14.417 min
Delta R.T.: 0.004 min
Response: 2992903
Conc: 90.03 % m



#4 Methyl-t-butyl-ether

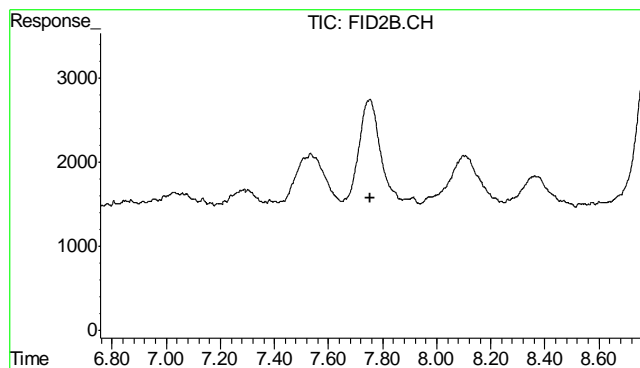
R.T.: 0.000 min
Exp R.T.: 2.301 min
Response: 0
Conc: N.D.



#5 Benzene

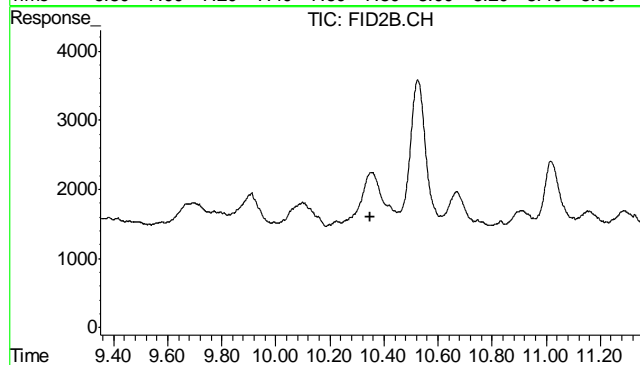
R.T.: 0.000 min
Exp R.T.: 4.262 min
Response: 0
Conc: N.D.

11.21
11



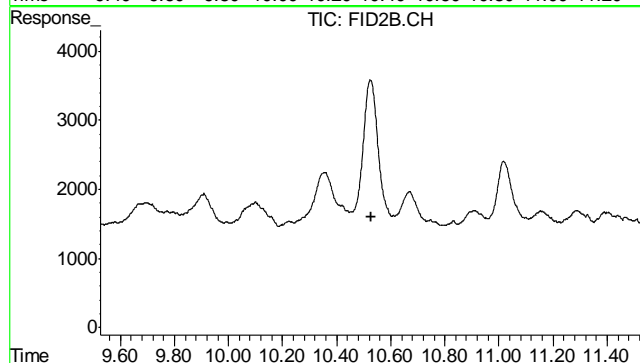
#6 Toluene

R.T.: 0.000 min
Exp R.T. : 7.756 min
Response: 0
Conc: N.D.



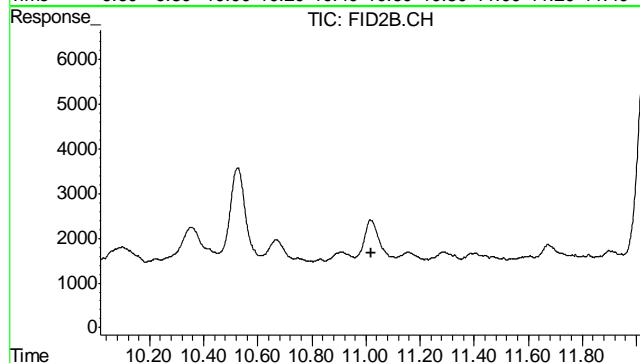
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.350 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

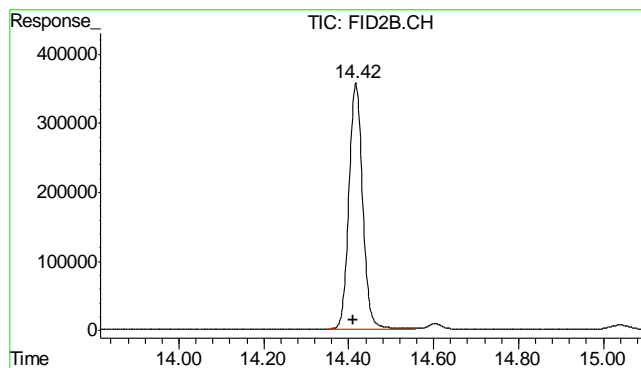
R.T.: 0.000 min
Exp R.T. : 10.526 min
Response: 0
Conc: N.D.



#9 o-Xylene

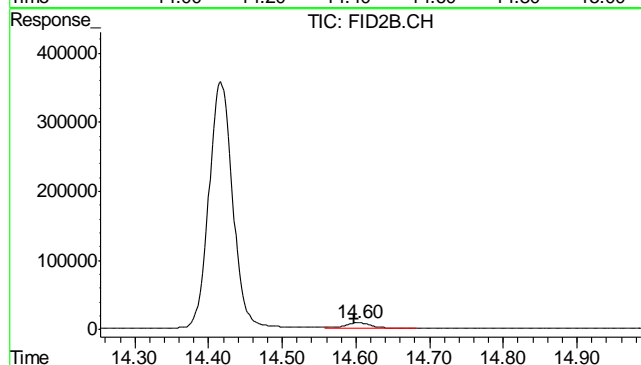
R.T.: 0.000 min
Exp R.T. : 11.018 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.416 min
Delta R.T.: 0.005 min
Response: 8031691
Conc: 86.29 % m



#11 Naphthalene

R.T.: 14.603 min
Delta R.T.: 0.005 min
Response: 231231
Conc: 2.07 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: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9563-MB	FH019195.D	1	03/14/14	JS	03/14/14	OP9563	GFH930

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

D55898-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	91% 20-130%

Blank Spike Summary

Page 1 of 1

Job Number: D55898

Account: XTOKRWR XTO Energy

Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9563-BS	FH019197.D	1	03/14/14	JS	03/14/14	OP9563	GFH930

The QC reported here applies to the following samples:

Method: SW846-8015B

D55898-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	167	145	87	42-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	83%	20-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D55898
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9563-MS	FH019199.D	1	03/14/14	JS	03/14/14	OP9563	GFH930
OP9563-MSD	FH019201.D	1	03/14/14	JS	03/14/14	OP9563	GFH930
D55919-10	FH019203.D	1	03/14/14	JS	03/14/14	OP9563	GFH930

The QC reported here applies to the following samples:

Method: SW846-8015B

D55898-1

CAS No.	Compound	D55919-10 mg/kg	Spike Q	mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	6.21	J	191	178	90	155	78	14	20-150/30

CAS No.	Surrogate Recoveries	MS	MSD	D55919-10	Limits
84-15-1	o-Terphenyl	86%	82%	62%	20-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031814\
Data File : FH019449.D
Signal(s) : FID1A.ch
Acq On : 19 Mar 2014 5:32 am
Operator : JENNJ1
Sample : D55898-1
Misc : OP9563,GFH934,30.01,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 19 08:14:45 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH934F.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Mar 19 07:46:07 2014
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
4) s o-Terphenyl	13.370	1959138171	1637.508 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	10.948	286330816	214.880 ug/ml
2) H TPH-DRO (C10-C32)	12.133	506706342	381.022 ug/ml
3) TPH-ORO (>C28-C40)	0.000	0	N.D. ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

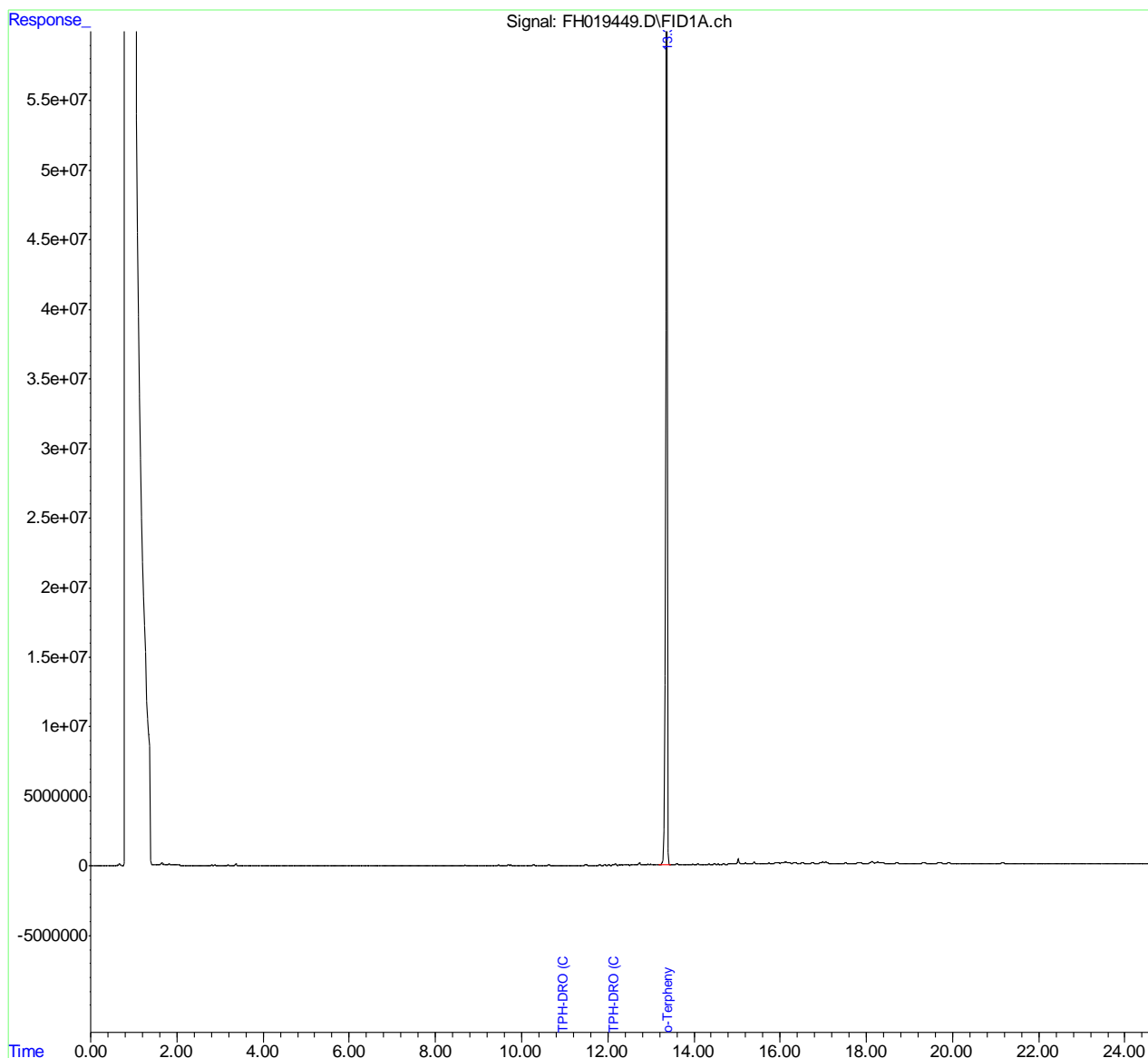
13.1.1
13

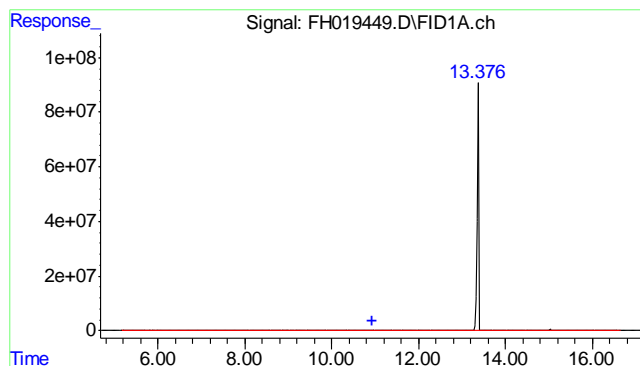
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031814\
 Data File : FH019449.D
 Signal(s) : FID1A.ch
 Acq On : 19 Mar 2014 5:32 am
 Operator : JENNJ1
 Sample : D55898-1
 Misc : OP9563,GFH934,30.01,,,1,1
 ALS Vial : 15 Sample Multiplier: 1

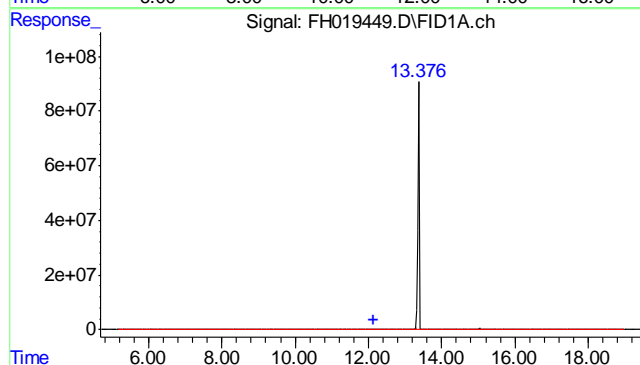
Integration File: autoint1.e
 Quant Time: Mar 19 08:14:45 2014
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH934F.M
 Quant Title : DRO-ORO FRONT
 QLast Update : Wed Mar 19 07:46:07 2014
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :

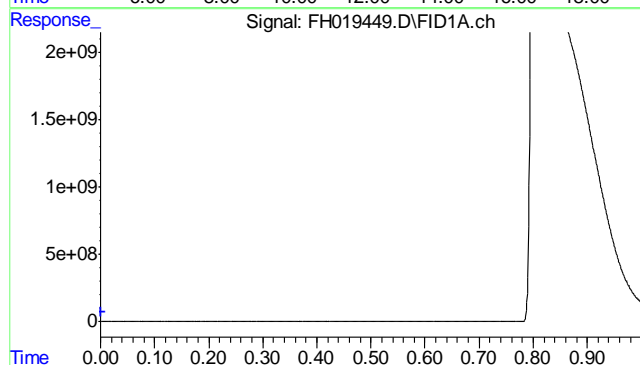




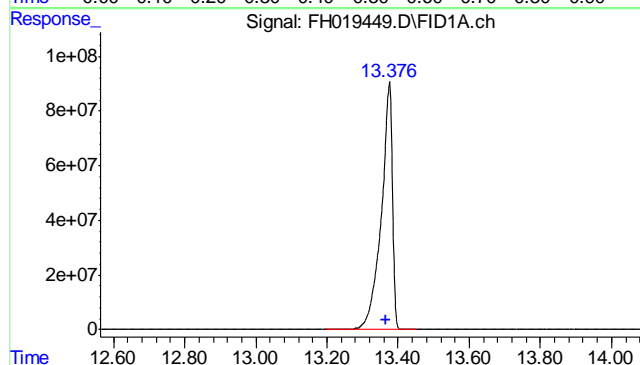
#1 TPH-DRO (C10-C28)
 R.T.: 10.948 min
 Delta R.T.: 0.000 min
 Response: 286330816
 Conc: 214.88 ug/ml m



#2 TPH-DRO (C10-C32)
 R.T.: 12.133 min
 Delta R.T.: 0.000 min
 Response: 506706342
 Conc: 381.02 ug/ml m



#3 TPH-ORO (>C28-C40)
 R.T.: 0.000 min
 Exp R.T.: 0.000 min
 Response: 0
 Conc: N.D.



#4 o-Terphenyl
 R.T.: 13.370 min
 Delta R.T.: 0.004 min
 Response: 1959138171
 Conc: 1637.51 ug/ml

13.11
13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031414\
Data File : FH019195.D
Signal(s) : FID1A.ch
Acq On : 14 Mar 2014 4:35 pm
Operator : JOHNS
Sample : OP9563-MB
Misc : OP9563,GFH930,30.00,,,1,1
ALS Vial : 6 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 17 11:37:36 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH928F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Mar 14 11:35:11 2014
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
4) s o-Terphenyl	13.404	2462576264	1824.097 ug/mlm
Target Compounds			
1) H TPH-DRO (C10-C28)	10.948	145029983	134.336 ug/ml
2) H TPH-DRO (C10-C32)	12.133	315477943	283.755 ug/ml
3) TPH-ORO (>C28-C40)	0.000	0	N.D. ug/ml

(f)=RT Delta > 1/2 Window

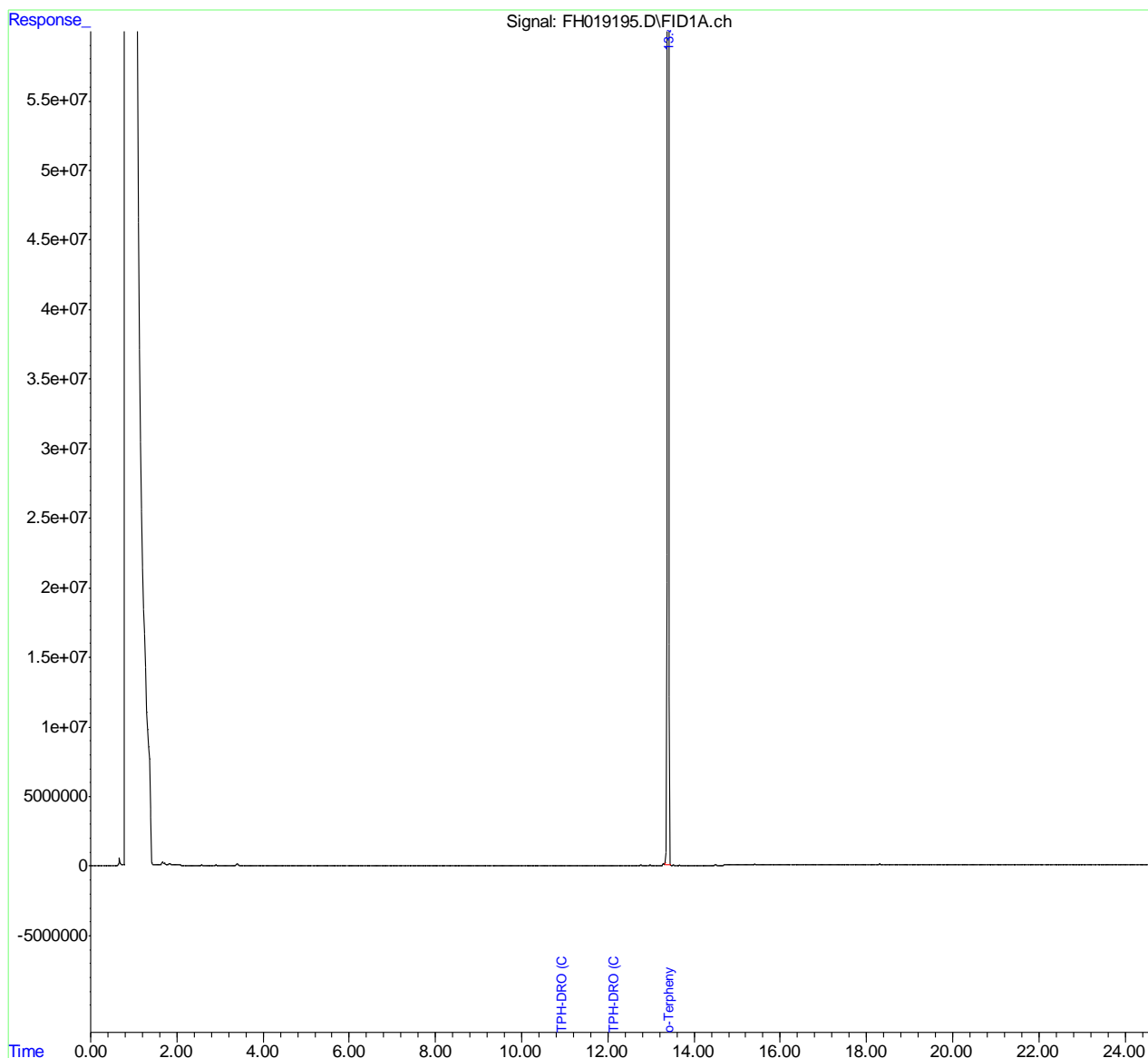
(m)=manual int.

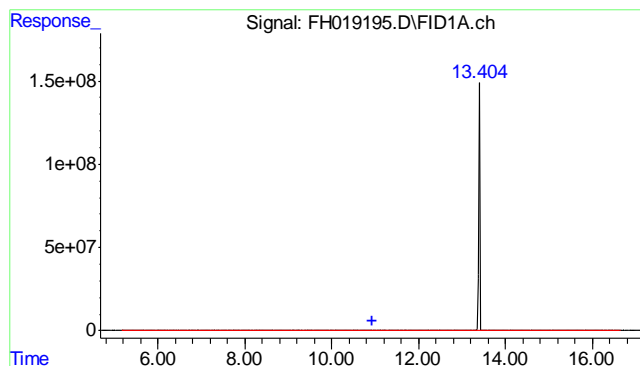
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031414\
Data File : FH019195.D
Signal(s) : FID1A.ch
Acq On : 14 Mar 2014 4:35 pm
Operator : JOHNS
Sample : OP9563-MB
Misc : OP9563,GFH930,30.00,,,1,1
ALS Vial : 6 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 17 11:37:36 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH928F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Mar 14 11:35:11 2014
Response via : Initial Calibration
Integrator: ChemStation

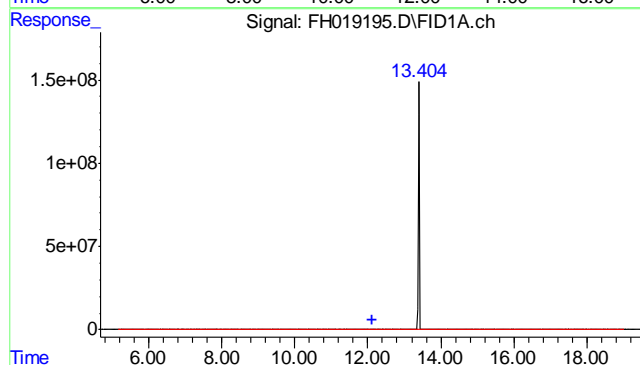
Volume Inj. :
Signal Phase :
Signal Info :





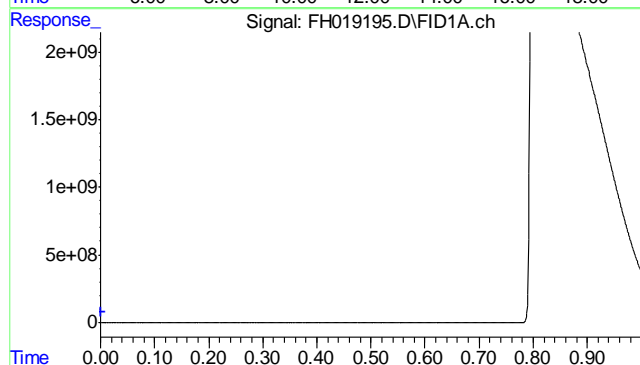
#1 TPH-DRO (C10-C28)

R.T.: 10.948 min
Delta R.T.: 0.000 min
Response: 145029983
Conc: 134.34 ug/ml m



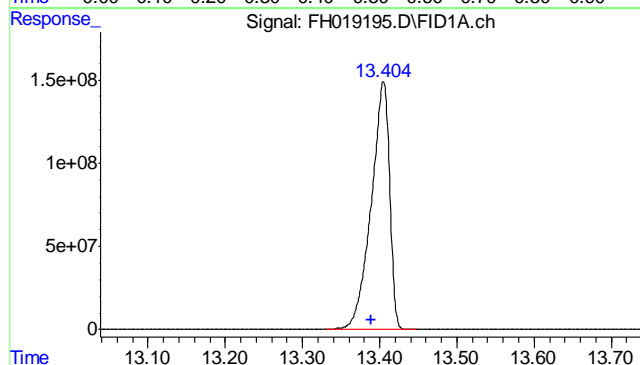
#2 TPH-DRO (C10-C32)

R.T.: 12.133 min
Delta R.T.: 0.000 min
Response: 315477943
Conc: 283.75 ug/ml m



#3 TPH-ORO (>C28-C40)

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



#4 o-Terphenyl

R.T.: 13.404 min
Delta R.T.: 0.015 min
Response: 2462576264
Conc: 1824.10 ug/ml m

13.2.1
13

Metals Analysis

QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12490
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 03/14/14

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.008	0.0021	<0.10

Associated samples MP12490: D55898-1

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: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12490
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 03/14/14

Metal	D55851-14		SpikeLot		QC	
	Original MS		HGWSR1		% Rec	
						Limits

Mercury	0.025	0.49	0.441	105.4	75-125
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Associated samples MP12490: D55898-1

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: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12490
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 03/14/14

Metal	D55851-14 Original MSD		Spikelot HGWSR1 % Rec		MSD RPD	QC Limit
Mercury	0.025	0.47	0.408	109.1	4.2	20

Associated samples MP12490: D55898-1

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: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12490
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 03/14/14

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

Associated samples MP12490: D55898-1

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: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12492
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.86	1.8		
Antimony	3.0	.21	.5		
Arsenic	2.5	.38	.63		
Barium	1.0	.02	.36	0.070	<1.0
Beryllium	1.0	.08	.06		
Boron	5.0	.08	.16		
Cadmium	1.0	.02	.28	0.0	<1.0
Calcium	40	.22	6.8		
Chromium	1.0	.03	.03	-0.020	<1.0
Cobalt	0.50	.04	.039		
Copper	1.0	.08	.13	-0.15	<1.0
Iron	7.0	.15	1.8		
Lead	5.0	.21	.25	0.10	<5.0
Lithium	0.50	.04	.13		
Magnesium	20	.68	1.8		
Manganese	0.50	.001	.038		
Molybdenum	1.0	.04	.13		
Nickel	3.0	.05	.07	0.030	<3.0
Phosphorus	10	1.5	1.2		
Potassium	200	9.9	12		
Selenium	5.0	.71	1.1	-0.18	<5.0
Silicon	5.0	.47	1.1		
Silver	3.0	.03	.05	0.0	<3.0
Sodium	40	.49	3.7		
Strontium	5.0	.001	.022		
Thallium	1.0	.18	.46		
Tin	5.0	1.2	2.3		
Titanium	1.0	.01	.46		
Uranium	5.0	.29	.31		
Vanadium	1.0	.04	.043		
Zinc	3.0	.04	.16	0.67	<3.0

Associated samples MP12492: D55898-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

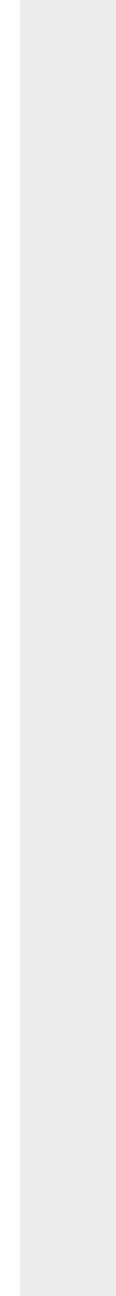
QC Batch ID: MP12492
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



14.2.1
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12492
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/14

Metal	D55897-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	222	468	222	113.5	75-125
Beryllium					
Boron					
Cadmium	0.23	45.7	55.5	82.1	75-125
Calcium					
Chromium	15.1	57.9	55.5	77.1	75-125
Cobalt					
Copper	12.7	60.1	55.5	85.0	75-125
Iron					
Lead	6.6	95.8	111	80.3	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	22.3	65.6	55.5	78.0	75-125
Phosphorus					
Potassium					
Selenium	5.3	96.6	111	82.2	75-125
Silicon					
Silver	0.0	19.2	22.2	86.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	36.1	69.5	55.5	62.5N(a)	75-125

Associated samples MP12492: D55898-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12492
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 03/14/14

Metal	D55897-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) Spike recovery indicates possible matrix interference.

14.2.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12492
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/14

Metal	D55897-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	222	413	224	87.8	12.5	20
Beryllium						
Boron						
Cadmium	0.23	45.7	56.1	81.3	0.0	20
Calcium						
Chromium	15.1	61.8	56.1	83.3	6.5	20
Cobalt						
Copper	12.7	61.2	56.1	86.2	1.8	20
Iron						
Lead	6.6	97.8	112	81.3	2.1	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	22.3	66.1	56.1	78.1	0.8	20
Phosphorus						
Potassium						
Selenium	5.3	96.6	112	81.4	0.0	20
Silicon						
Silver	0.0	19.2	22.4	85.6	0.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	36.1	73.2	56.1	68.5N(a)	5.2	20

Associated samples MP12492: D55898-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12492
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 03/14/14

Metal	D55897-1 Original MSD	Spike lot ICPALL2 % Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) Spike recovery indicates possible matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12492
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 03/14/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	200	200	100.0	80-120
Beryllium				
Boron				
Cadmium	46.5	50	93.0	80-120
Calcium				
Chromium	48.6	50	97.2	80-120
Cobalt				
Copper	46.8	50	93.6	80-120
Iron				
Lead	96.4	100	96.4	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	49.2	50	98.4	80-120
Phosphorus				
Potassium				
Selenium	94.1	100	94.1	80-120
Silicon				
Silver	19.9	20	99.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.1	50	90.2	80-120

Associated samples MP12492: D55898-1

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

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Prep Date: 03/14/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12492
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/14/14

Metal		D55897-1 Original SDL 1:5		%DIF	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	2020	2300	16.9*(a)	0-10	
Beryllium					
Boron					
Cadmium	2.10	0.00	100.0(b)	0-10	
Calcium					
Chromium	142	167	21.2*(a)	0-10	
Cobalt					
Copper	117	114	2.6	0-10	
Iron					
Lead	52.6	99.0	65.6 (b)	0-10	
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	195	233	14.8*(a)	0-10	
Phosphorus					
Potassium					
Selenium	48.2	0.00	100.0(b)	0-10	
Silicon					
Silver	0.00	0.00	NC	0-10	
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	329	428	35.4*(a)	0-10	

Associated samples MP12492: D55898-1

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

14.2.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12492
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 03/14/14

	D55897-1		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12493
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 03/14/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.55	.75		
Antimony	0.20	.0011	.029		
Arsenic	0.10	.0085	.024	-0.0052	<0.10
Barium	1.0	.008	.16		
Beryllium	0.10	.008	.049		
Boron	20	.25	.07		
Cadmium	0.050	.018	.038		
Calcium	200	2.8	13		
Chromium	1.0	.027	.11		
Cobalt	0.10	.0025	.0085		
Copper	1.0	.03	.1		
Iron	5.0	1.8	1.8		
Lead	0.25	.004	.0075		
Magnesium	50	.65	.65		
Manganese	0.50	.06	.07		
Molybdenum	0.50	.025	.046		
Nickel	1.0	.0044	.17		
Phosphorus	30	1.3	4.9		
Potassium	100	1.5	2.5		
Selenium	0.20	.03	.13		
Silver	0.050	.00095	.01		
Sodium	250	2.5	5.5		
Strontium	10	.005	.027		
Thallium	0.10	.0012	.0075		
Tin	5.0	.032	2.3		
Titanium	1.0	.03	.085		
Uranium	0.25	.00085	.0015		
Vanadium	2.0	.019	.11		
Zinc	5.0	.11	1.4		

Associated samples MP12493: D55898-1

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: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12493
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 03/14/14

Metal	D55897-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	8.5	131	111	110.3
Barium				75-125
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12493: D55898-1

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

14.3.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12493
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 03/14/14

Metal	D55897-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	8.5	128	112	106.6	2.3	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 MP12493: D55898-1

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

14.3.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12493
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 03/14/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	94.9	100	94.9	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 MP12493: D55898-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12493
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 03/14/14

Metal	D55897-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	77.4	73.1	5.5	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 MP12493: D55898-1

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

14.3.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	55	210		
Antimony	150	11	95		
Arsenic	130	19	28		
Barium	50	1	7		
Beryllium	50	4.5	6		
Boron	250	4	33		
Cadmium	50	1	1.8		
Calcium	2000	12	210	-32	<2000
Chromium	50	1.5	2		
Cobalt	25	2.5	2.9		
Copper	50	4	9.5		
Iron	350	7.5	48		
Lead	250	11	110		
Lithium	25	2	14		
Magnesium	1000	34	95	40.0	<1000
Manganese	25	2.5	2.3		
Molybdenum	50	2	4.2		
Nickel	150	2.5	4.4		
Phosphorus	500	75	100		
Potassium	5000	500	1400		
Selenium	250	36	55		
Silicon	250	24	26		
Silver	150	1.5	3		
Sodium	2000	37	850	-20	<2000
Strontium	25	.05	.6		
Thallium	50	9	20		
Tin	250	60	80		
Titanium	50	.5	11		
Uranium	250	15	28		
Vanadium	50	2	2		
Zinc	150	2	16		

Associated samples MP12506: D55898-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

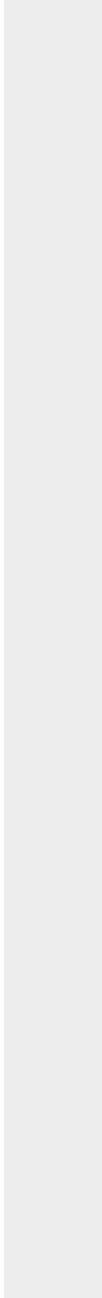
QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



14.4.1
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	D55897-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	123000	261000	125000	110.4	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	33700	165000	125000	105.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	294000	430000	125000	108.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP12506: D55898-1A

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: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

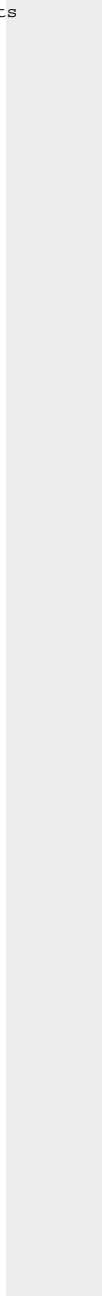
QC Batch ID: MP12506
 Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	D55897-1A Original MS	Spikelot ICPALL2	% Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested



14.4.2 14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	D55897-1A Original	MSD	SpikeLot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	123000	255000	125000	105.6	2.3	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	33700	164000	125000	104.2	0.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	294000	417000	125000	98.4	3.1	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP12506: D55898-1A

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: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

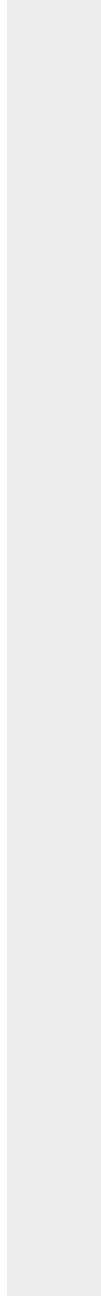
QC Batch ID: MP12506
 Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	D55897-1A Original MSD	SpikeLot ICPALL2 % Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested



14.4.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	136000	125000	108.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	135000	125000	108.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	132000	125000	105.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12506: D55898-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

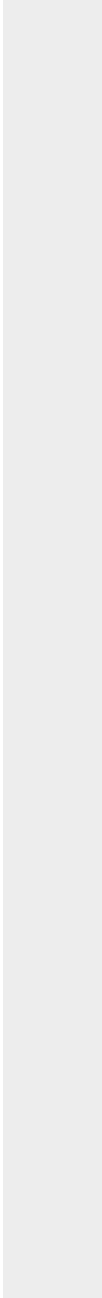
QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested



14.4.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55898
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP12506
 Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

Metal	D55897-1A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	24500	26100	6.3	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	6730	7480	11.1*(a)	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	58700	64500	9.9	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12506: D55898-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12506
Matrix Type: AQUEOUS

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

Prep Date: 03/17/14

	D55897-1A		QC
Metal	Original SDL 1:5	%DIF	Limits

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

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: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP12156/GN23994	1.0	0.0	mg/kg	141.5	129	91.2	80-120%
Specific Conductivity	GP12146/GN23979			umhos/cm	9995	10100	100.7	90-110%
pH	GN23995			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:
Batch GN23995: D55898-1
Batch GP12146: D55898-1
Batch GP12156: D55898-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP12156/GN23994	D55982-1	mg/kg	0.0	7.1	200.0(a)	0-20%
Redox Potential Vs H2	GN23993	D55897-1	mv	486	489	0.6	0-20%

Associated Samples:

Batch GN23993: D55898-1

Batch GP12156: D55898-1

(*) Outside of QC limits

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

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP12156/GN23994	D55982-1	mg/kg	0.0	40.0	23.2	58.1*(a)	75-125%

Associated Samples:

Batch GP12156: D55898-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D55898
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP12156/GN23994	D55982-1	mg/kg	0.0	40.0	20.5	12.8	20%

Associated Samples:
Batch GP12156: D55898-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

15.4
15