



10/09/13

Technical Report for

XTO Energy

FRU 197-31A

1111-02A Cut 1 Subliner Comp

Accutest Job Number: D51203

Sampling Date: 09/30/13

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 Conference 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: D51203

FRU 197-31A

Project No: 1111-02A Cut 1 Subliner Comp

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D51203-1	09/30/13	11:45 DS	10/02/13	SO	Soil	CUT 1 SUBLINER COMP
D51203-1A	09/30/13	11:45 DS	10/02/13	SO	Soil	CUT 1 SUBLINER COMP

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy**Job No** D51203**Site:** FRU 197-31A**Report Date** 10/9/2013 1:45:52 PM

On 10/02/2013, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.6 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D51203 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:** V5V1764

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51084-1MS, D51084-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: SO**Batch ID:** OP8670

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51039-1MS, D51039-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix: SO**Batch ID:** GGB1231

- All samples were analyzed within the recommended method holding time.
- Sample(s) D51200-1MS, D51200-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix: SO**Batch ID:** OP8682

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D51224-3MS, D51224-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of TPH-DRO (C10-C28) are outside control limits. Probable cause due to matrix interference.

Metals By Method SW846 6010C

Matrix: AQ

Batch ID: MP11305

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51224-6AMS, D51224-6AMSD, D51224-6ASDL were used as the QC samples for the metals analysis.

Matrix: SO

Batch ID: MP11290

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51202-1MS, D51202-1MSD, D51202-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Copper, Lead, Silver are outside control limits for sample MP11290-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP11290-SD1 for Barium, Chromium, Nickel, Zinc : Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix: SO

Batch ID: MP11291

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51202-1MS, D51202-1MSD, D51202-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix: SO

Batch ID: MP11292

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51148-1MS, D51148-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix: SO

Batch ID: GN22168

- Sample(s) D51122-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM2540B-2011 M

Matrix: SO

Batch ID: GN22130

- The data for SM2540B-2011 M meets quality control requirements.

Wet Chemistry By Method SW846 3060A/7196A

Matrix: SO

Batch ID: GP11117

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51202-1MS, D51202-1MSD, D51202-1DUP were used as the QC samples for the Chromium, Hexavalent analysis.
- The duplicate RPD(s) for Chromium, Hexavalent are outside control limits for sample GP11117-D1. RPD acceptable due to low duplicate and sample concentrations.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix: SO

Batch ID: R18969

- The data for SW846 3060A/7196A M meets quality control requirements.
- D51203-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D**Matrix:** SO**Batch ID:** GN22154

- The following samples were run outside of holding time for method SW846 9045D: D51203-1

Wet Chemistry By Method USDA HANDBOOK 60**Matrix:** SO**Batch ID:** MP11305

- D51203-1A 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: D51203
Account: XTO Energy
Project: FRU 197-31A
Collected: 09/30/13



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

D51203-1 CUT 1 SUBLINER COMP

TPH-DRO (C10-C28)	26.7	7.5	5.6	mg/kg	SW846-8015B
Arsenic	5.0	0.11		mg/kg	SW846 6020A
Barium	361	1.1		mg/kg	SW846 6010C
Chromium	41.3	1.1		mg/kg	SW846 6010C
Copper	8.5	1.1		mg/kg	SW846 6010C
Lead	9.2	5.4		mg/kg	SW846 6010C
Nickel	14.8	3.3		mg/kg	SW846 6010C
Zinc	36.8	3.3		mg/kg	SW846 6010C
Specific Conductivity	1610	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent ^a	41.0	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	225			mv	ASTM D1498-76M
pH	10.18			su	SW846 9045D

D51203-1A CUT 1 SUBLINER COMP

Calcium	4.75	2.0		mg/l	SW846 6010C
Magnesium	3.56	1.0		mg/l	SW846 6010C
Sodium	370	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	31.3			ratio	USDA HANDBOOK 60

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

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

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Method:	SW846 8260B		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V29362.D	1	10/02/13	BD	n/a	n/a	V5V1764
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.062	0.031	mg/kg	
108-88-3	Toluene	ND	0.12	0.062	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	98%		64-130%
460-00-4	4-Bromofluorobenzene	101%		62-131%
17060-07-0	1,2-Dichloroethane-D4	96%		70-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Method:	SW846 8270C BY SIM SW846 3546		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G16537.D	1	10/03/13	DC	10/03/13	OP8670	E3G817
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0094	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0094	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0094	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0094	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0094	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0094	0.0049	mg/kg	
218-01-9	Chrysene	ND	0.0094	0.0049	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0094	0.0049	mg/kg	
206-44-0	Fluoranthene	ND	0.0094	0.0049	mg/kg	
86-73-7	Fluorene	ND	0.0094	0.0056	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0094	0.0049	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	ND	0.0094	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	72%		10-175%
321-60-8	2-Fluorobiphenyl	71%		25-130%
1718-51-0	Terphenyl-d14	86%		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

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Report of Analysis

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Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Method:	SW846 8015B		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB22395.D	1	10/02/13	EV	n/a	n/a	GGB1231
Run #2							

	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	12	6.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	80%		60-140%		

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

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

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Report of Analysis

Page 1 of 1

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Method:	SW846-8015B SW846 3546		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH013760.D	1	10/05/13	TU	10/04/13	OP8682	GFH723
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	26.7	7.5	5.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	65%		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: CUT 1 SUBLINER COMP**Lab Sample ID:** D51203-1**Matrix:** SO - Soil**Project:** FRU 197-31A**Date Sampled:** 09/30/13**Date Received:** 10/02/13**Percent Solids:** 88.5

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.0	0.11	mg/kg	5	10/03/13	10/04/13 JB	SW846 6020A ²	SW846 3050B ⁶
Barium	361	1.1	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Chromium	41.3	1.1	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Copper	8.5	1.1	mg/kg	1	10/03/13	10/07/13 JM	SW846 6010C ⁴	SW846 3050B ⁵
Lead	9.2	5.4	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Mercury	< 0.097	0.097	mg/kg	1	10/04/13	10/04/13 JB	SW846 7471B ¹	SW846 7471B ⁷
Nickel	14.8	3.3	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Selenium	< 5.4	5.4	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Silver	< 3.3	3.3	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵
Zinc	36.8	3.3	mg/kg	1	10/03/13	10/04/13 JM	SW846 6010C ³	SW846 3050B ⁵

(1) Instrument QC Batch: MA4035

(2) Instrument QC Batch: MA4036

(3) Instrument QC Batch: MA4038

(4) Instrument QC Batch: MA4043

(5) Prep QC Batch: MP11290

(6) Prep QC Batch: MP11291

(7) Prep QC Batch: MP11292

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Project:	FRU 197-31A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1610	1.0	umhos/cm	1	10/08/13	JD	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	10/08/13	RW	SW846 3060A/7196A
Chromium, Trivalent ^a	41.0	2.1	mg/kg	1	10/08/13	RW	SW846 3060A/7196A M
Redox Potential Vs H2	225		mv	1	10/04/13	AK	ASTM D1498-76M
Solids, Percent	88.5		%	1	10/03/13	SWT	SM2540B-2011 M
pH	10.18		su	1	10/03/13 12:30	AK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1A	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Project:	FRU 197-31A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	4.75	2.0	mg/l	1	10/04/13	10/04/13 JM	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	3.56	1.0	mg/l	1	10/04/13	10/04/13 JM	SW846 6010C ¹	SW846 3010A/M ²
Sodium	370	2.0	mg/l	1	10/04/13	10/04/13 JM	SW846 6010C ¹	SW846 3010A/M ²

(1) Instrument QC Batch: MA4038
(2) Prep QC Batch: MP11305

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 SUBLINER COMP	Date Sampled:	09/30/13
Lab Sample ID:	D51203-1A	Date Received:	10/02/13
Matrix:	SO - Soil	Percent Solids:	88.5
Project:	FRU 197-31A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	31.3		ratio	1	10/04/13 21:27	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

PAGE 1 OF 1

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

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D51203

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)												Matrix Codes					
Company Name KRW Consulting		Project Name XTO FRV 197-31A		<div style="writing-mode: vertical-rl; transform: rotate(180deg);">X Table 910</div>												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank					
Street Address 8000 West 14th Street, Suite 200		Street																			
City Lakewood, CO 80214		City State																			
Project Contact Dwayne Knudson		Project # 1111-02A																			
Phone # 970-488-1098		Client Purchase Order #																			
Sample(s) Name(s) David Sanders		Project Manager Joe Hess		Street Address 21459 CR 5		City Rifle, CO 81650		Attention: Jessica Dooling													
Turnaround Time (Business days)		Date Deliverable Information		Comments / Special Instructions																	
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 5 Business Days (By contract only) <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency <input type="checkbox"/> Emergency & Rush TIA data available VIA Lablink		Approved By (Accutest PM): / Date: _____ _____ _____		<div><input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> COMMBN <input type="checkbox"/> COMMBN+ <input type="checkbox"/> State Forms Required <input type="checkbox"/> Send Forms to State <input type="checkbox"/> Report by Fax <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> EDD Format</div> <div>Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC Narrative (= = chromatograms)</div>												Please email to: KRW Piceance Team					
Sample Custody must be documented below each time samples change possession, including courier delivery.																					
Relinquished by Sampler: 1 [Signature]		Date Time: 10/1/13 1:53		Received By: 1 [Signature]		Date Time: 10/1/13 1:53		Relinquished By: 2		Date Time: 10/1/13 1:53		Received By: 2 Jacob Portin									
Relinquished by Sampler: 3		Date Time:		Received By: 3		Date Time:		Relinquished By: 4		Date Time:		Received By: 4									
Relinquished by: 5		Date Time:		Received By: 5		Date Time:		Custody Seal # NDCC		<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable <input checked="" type="checkbox"/>									
										<input checked="" type="checkbox"/> On Ice <input type="checkbox"/> Not Intact		Cooler Temp. 3.6									

D51203: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D51203

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 10/2/2013 1:00:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO

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: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1764-MB	5V29351.D	1	10/02/13	BD	n/a	n/a	V5V1764

The QC reported here applies to the following samples:

Method: SW846 8260B

D51203-1

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

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	101% 64-130%
460-00-4	4-Bromofluorobenzene	84% 62-131%
17060-07-0	1,2-Dichloroethane-D4	101% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1764-BS	5V29352.D	1	10/02/13	BD	n/a	n/a	V5V1764

The QC reported here applies to the following samples:

Method: SW846 8260B

D51203-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2560	102	70-130
100-41-4	Ethylbenzene	2500	2700	108	70-130
108-88-3	Toluene	2500	2660	106	70-130
1330-20-7	Xylene (total)	7500	8520	114	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	102%	64-130%
460-00-4	4-Bromofluorobenzene	100%	62-131%
17060-07-0	1,2-Dichloroethane-D4	96%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1764-BS	5V29354.D	1	10/02/13	BD	n/a	n/a	V5V1764

The QC reported here applies to the following samples:

Method: SW846 8260B

D51203-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
---------	----------	----------------	--------------	----------	--------

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	102%	64-130%
460-00-4	4-Bromofluorobenzene	91%	62-131%
17060-07-0	1,2-Dichloroethane-D4	90%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51084-1MS	5V29357.D	1	10/02/13	BD	n/a	n/a	V5V1764
D51084-1MSD	5V29358.D	1	10/02/13	BD	n/a	n/a	V5V1764
D51084-1	5V29356.D	1	10/02/13	BD	n/a	n/a	V5V1764

The QC reported here applies to the following samples:

Method: SW846 8260B

D51203-1

CAS No.	Compound	D51084-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		4170	4230	102	4120	99	3	64-139/30
100-41-4	Ethylbenzene	ND		4170	4180	100	4140	99	1	68-136/30
108-88-3	Toluene	ND		4170	3740	90	3810	91	2	60-130/30
1330-20-7	Xylene (total)	ND		12500	13200	106	13000	104	2	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D51084-1	Limits
2037-26-5	Toluene-D8	98%	101%	102%	64-130%
460-00-4	4-Bromofluorobenzene	119%	118%	125%	62-131%
17060-07-0	1,2-Dichloroethane-D4	92%	96%	91%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51084-1MS	5V29359.D	1	10/02/13	BD	n/a	n/a	V5V1764
D51084-1MSD	5V29360.D	1	10/02/13	BD	n/a	n/a	V5V1764
D51084-1	5V29356.D	1	10/02/13	BD	n/a	n/a	V5V1764

The QC reported here applies to the following samples:

Method: SW846 8260B

D51203-1

CAS No.	Compound	D51084-1 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
---------	----------	-------------------	------------	-------	-------------	---------	--------------	----------	-----	-------------------

CAS No.	Surrogate Recoveries	MS	MSD	D51084-1	Limits
2037-26-5	Toluene-D8	106%	102%	102%	64-130%
460-00-4	4-Bromofluorobenzene	127%	126%	125%	62-131%
17060-07-0	1,2-Dichloroethane-D4	87%	87%	91%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100213.S\
Data File : 5V29362.D
Acq On : 2 Oct 2013 6:51 pm
Operator : BRETD
Sample : D51203-1
Misc : MS6481,V5V1764,5.074,,100,5,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Oct 03 08:48:11 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	166253	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	216616	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	215179	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.036	152	158937	50.00	ug/l	0.00

System Monitoring Compounds

35) 1,2-Dichloroethane-d4	12.012	102	16252	48.11	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.22%
64) Toluene-d8	13.805	98	238910	49.01	ug/l	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	98.02%
72) 4-Bromofluorobenzene	16.008	95	114398	50.35	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.70%

Target Compounds

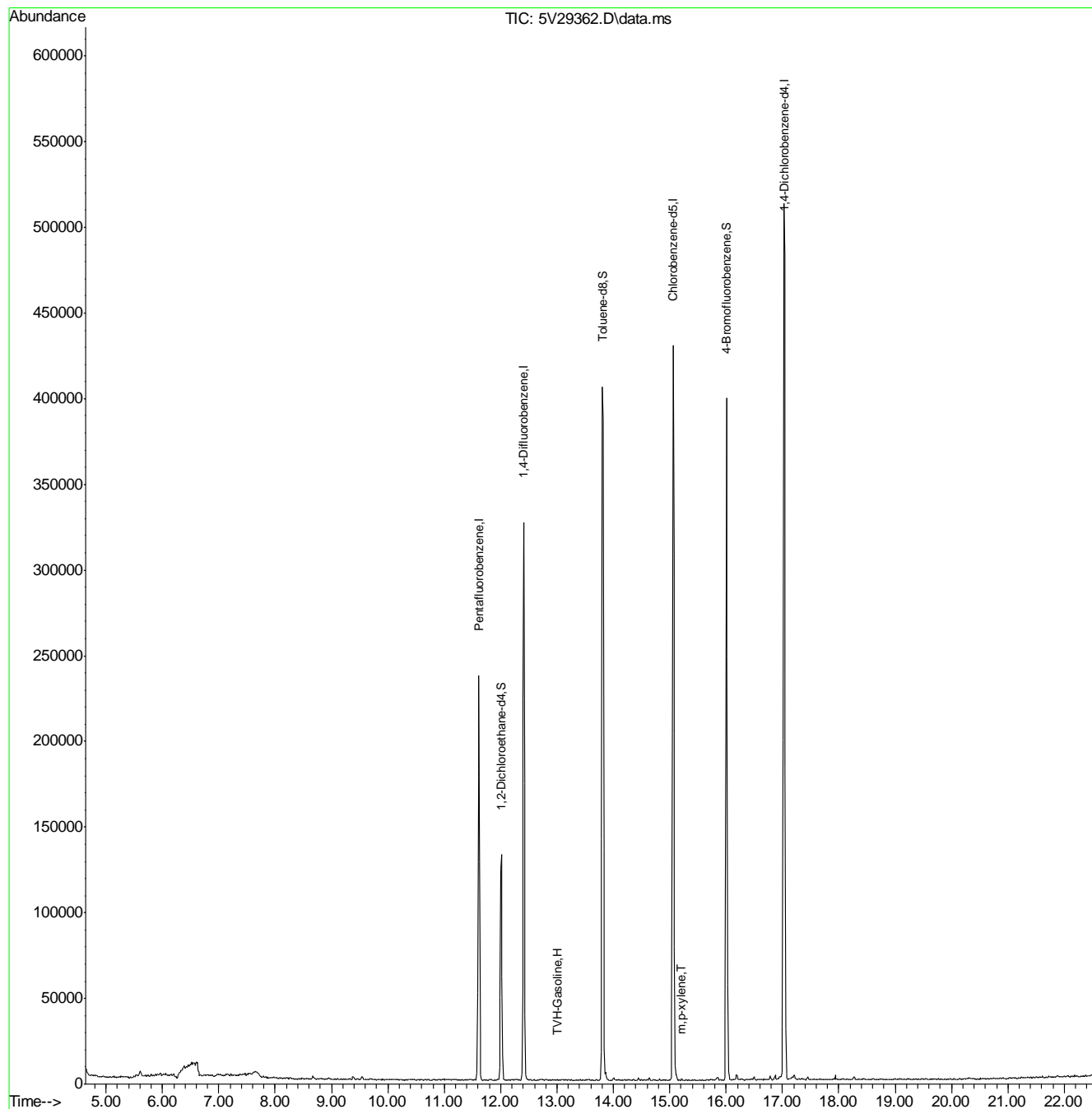
					Qvalue
1) TVH-Gasoline	13.006	TIC	12372m	58.69	ug/l
75) m,p-xylene	15.209	106	373	0.15	ug/l

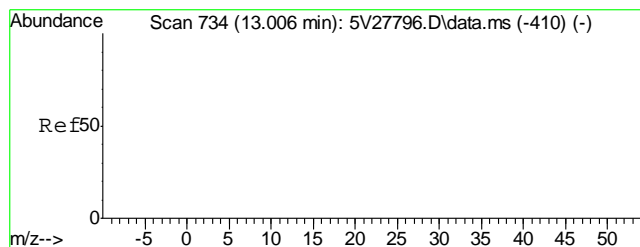
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100213.S\
Data File : 5V29362.D
Acq On : 2 Oct 2013 6:51 pm
Operator : BRETD
Sample : D51203-1
Misc : MS6481,V5V1764,5.074,,100,5,1
ALS Vial : 16 Sample Multiplier: 1

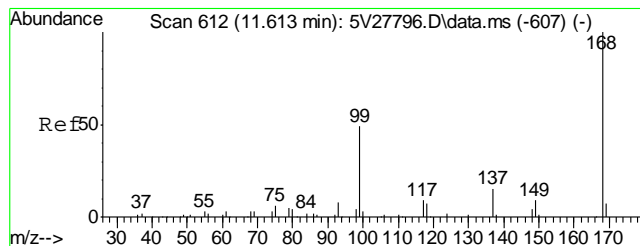
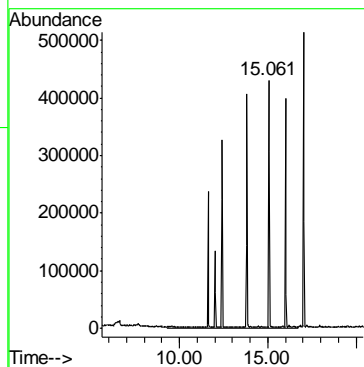
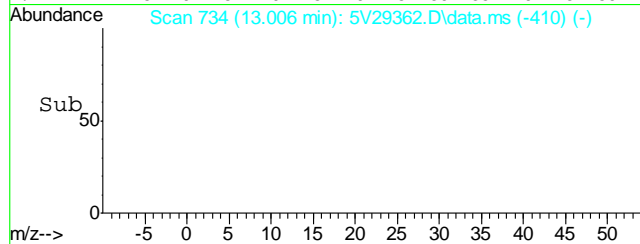
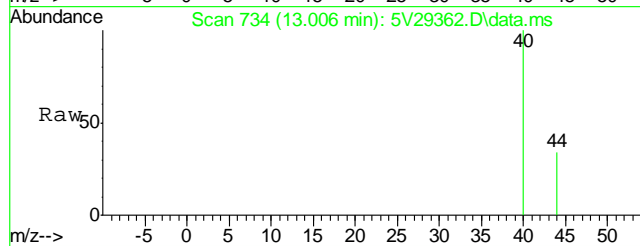
Quant Time: Oct 03 08:48:11 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration





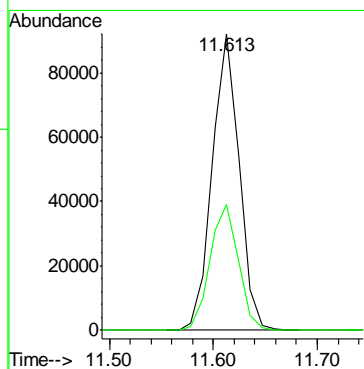
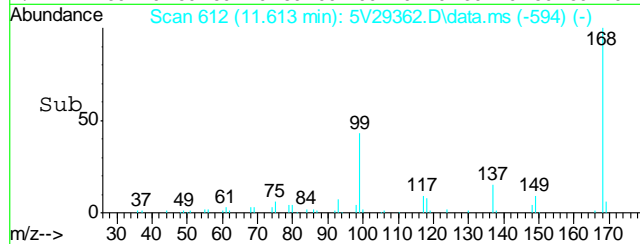
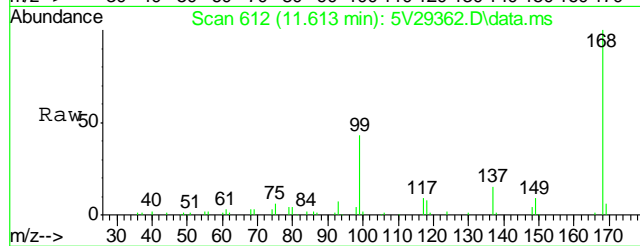
#1
TVH-Gasoline
Concen: 58.69 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

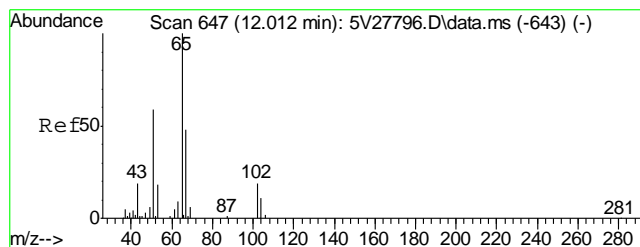
Tgt Ion:TIC Resp: 12372



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

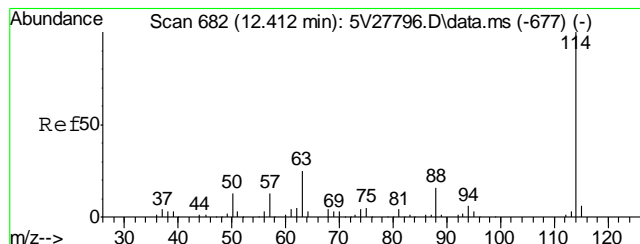
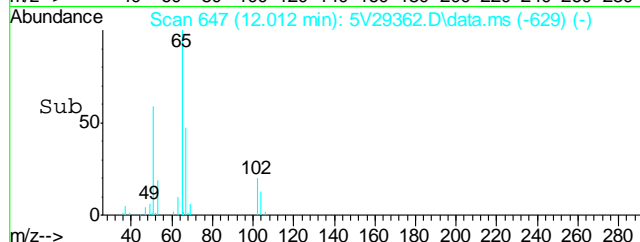
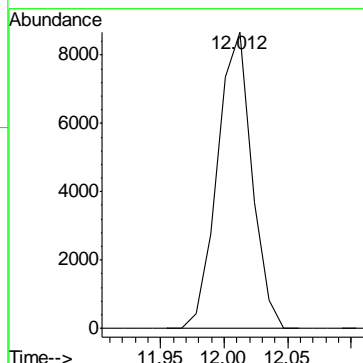
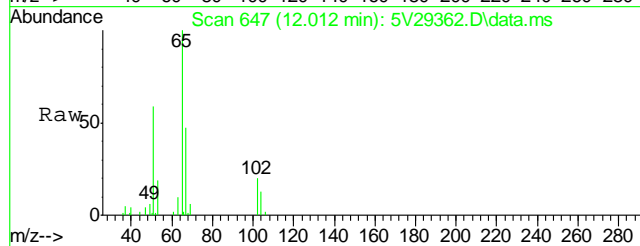
Tgt Ion:168 Resp: 166253
Ion Ratio Lower Upper
168 100
99 44.4 41.4 62.2





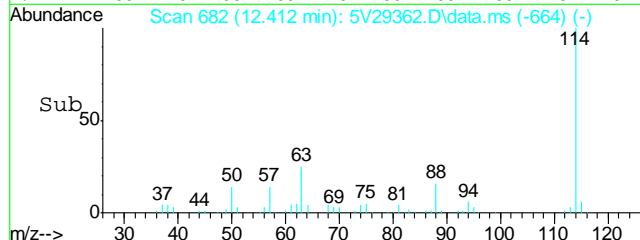
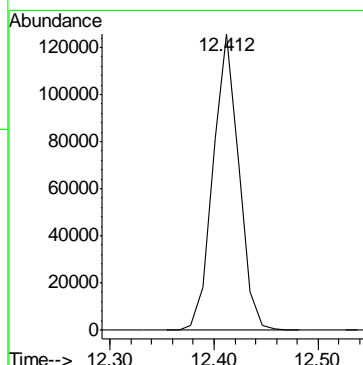
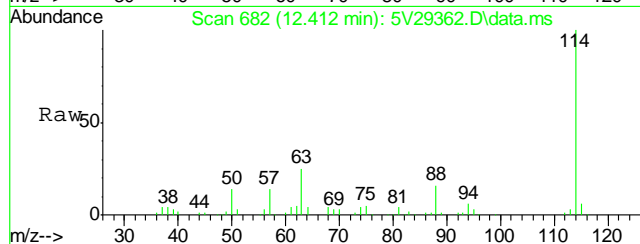
#35
1,2-Dichloroethane-d4
Concen: 48.11 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

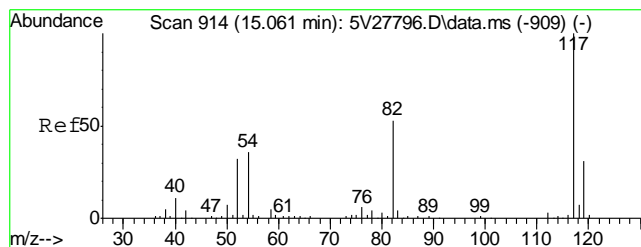
Tgt Ion:102 Resp: 16252



#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

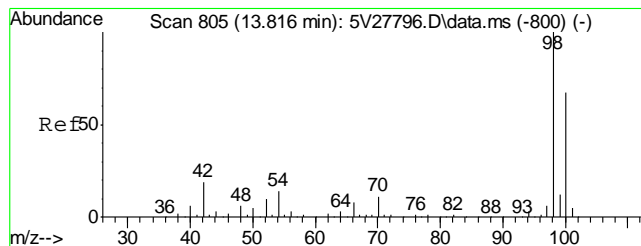
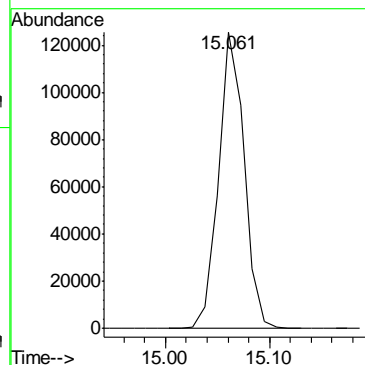
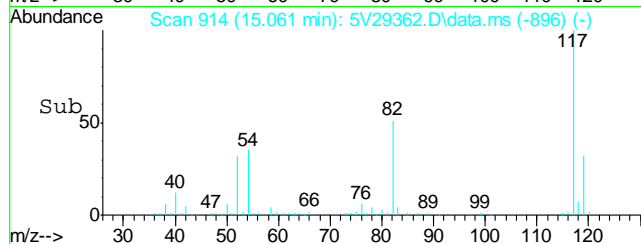
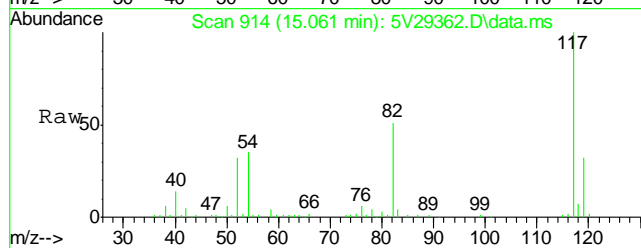
Tgt Ion:114 Resp: 216616





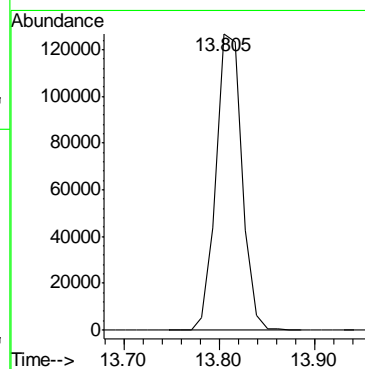
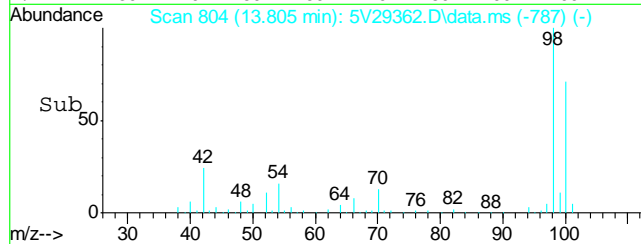
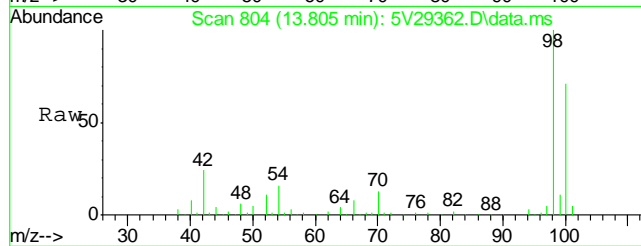
#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

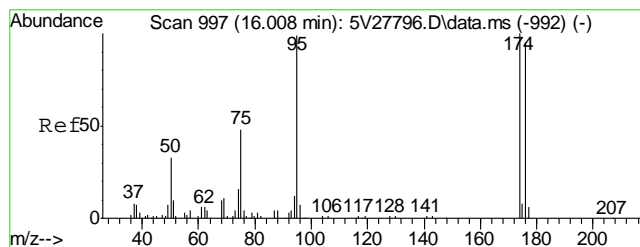
Tgt Ion: 117 Resp: 215179



#64
Toluene-d8
Concen: 49.01 ug/l
RT: 13.805 min Scan# 804
Delta R.T. -0.011 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

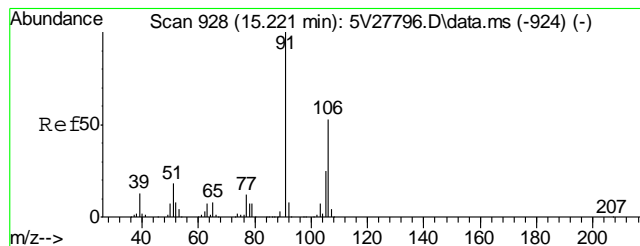
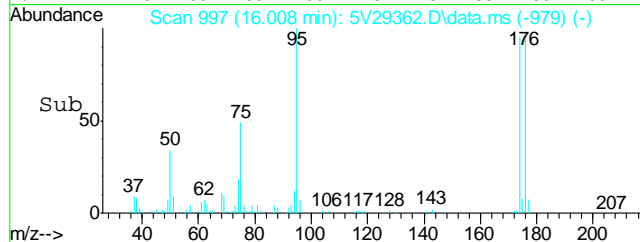
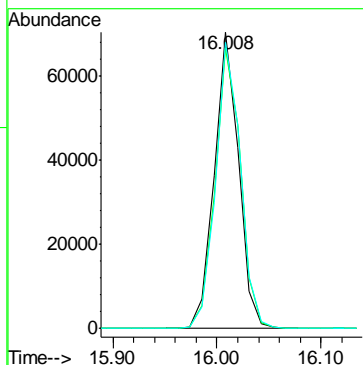
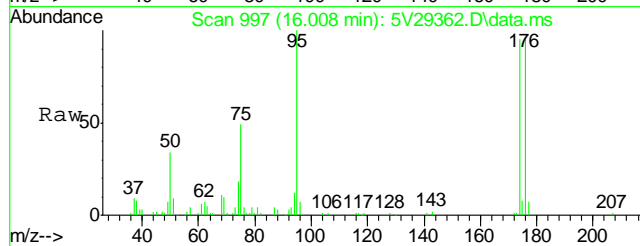
Tgt Ion: 98 Resp: 238910





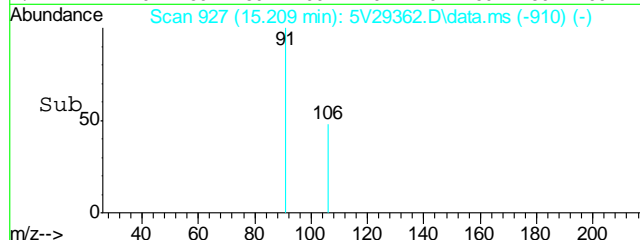
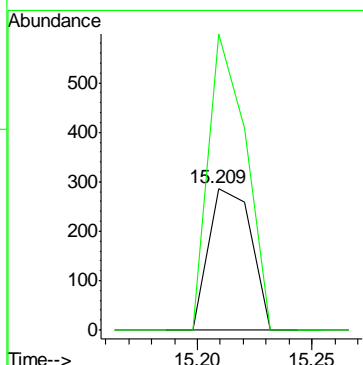
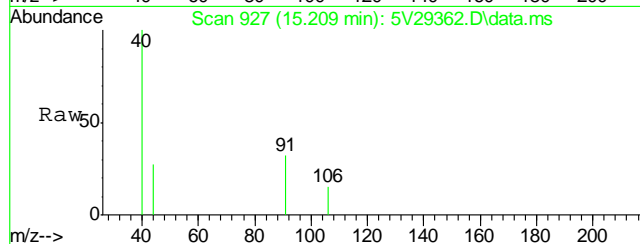
#72
4-Bromofluorobenzene
Concen: 50.35 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

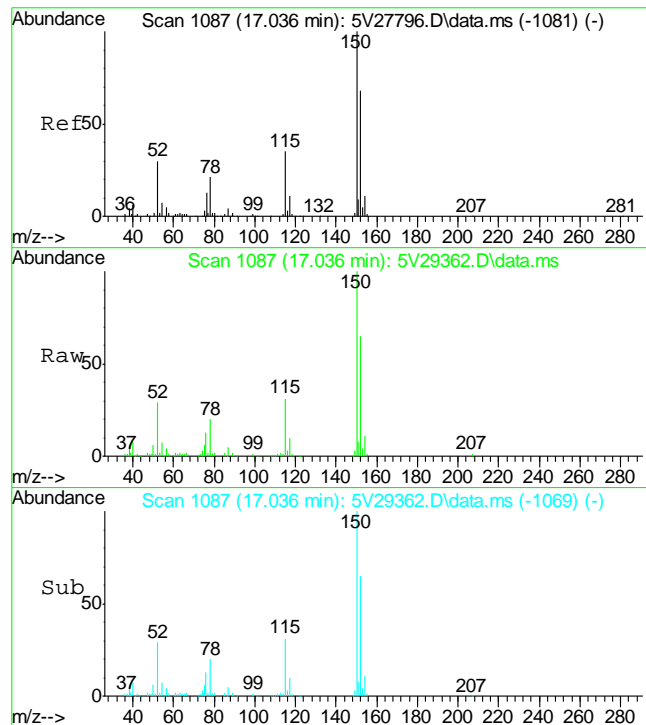
Tgt Ion	Ratio	Lower	Upper
95	100		
174	99.3	85.4	125.4
176	99.3	80.6	120.6



#75
m,p-xylene
Concen: 0.15 ug/l
RT: 15.209 min Scan# 927
Delta R.T. -0.011 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

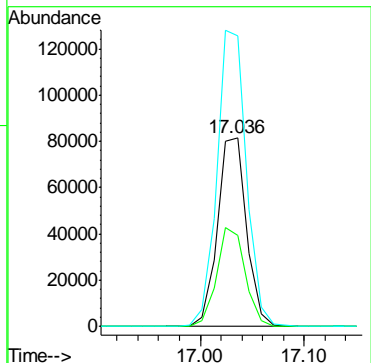
Tgt Ion	Ratio	Lower	Upper
106	100		
91	185.0	174.8	214.8





#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. 0.000 min
Lab File: 5V29362.D
Acq: 2 Oct 2013 6:51 pm

Tgt Ion:	152	Resp:	158937
Ion Ratio	Lower	Upper	
152	100		
115	51.2	43.4	65.2
150	158.9	142.9	214.3



7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100213.S\
Data File : 5V29351.D
Acq On : 2 Oct 2013 1:07 pm
Operator : BRETD
Sample : MB
Misc : MS6481,V5V1764,5.000,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 03 09:15:35 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	155231	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	212288	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	202438	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.025	152	132604	50.00	ug/l	-0.01

System Monitoring Compounds

35) 1,2-Dichloroethane-d4	12.013	102	15972	50.63	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.26%
64) Toluene-d8	13.816	98	231512	50.48	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.96%
72) 4-Bromofluorobenzene	16.008	95	89552	41.89	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	83.78%

Target Compounds

					Qvalue
1) TVH-Gasoline	13.006	TIC	-9922m	57.07	ug/l
94) Naphthalene	19.513	128	995	0.98	ug/l

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

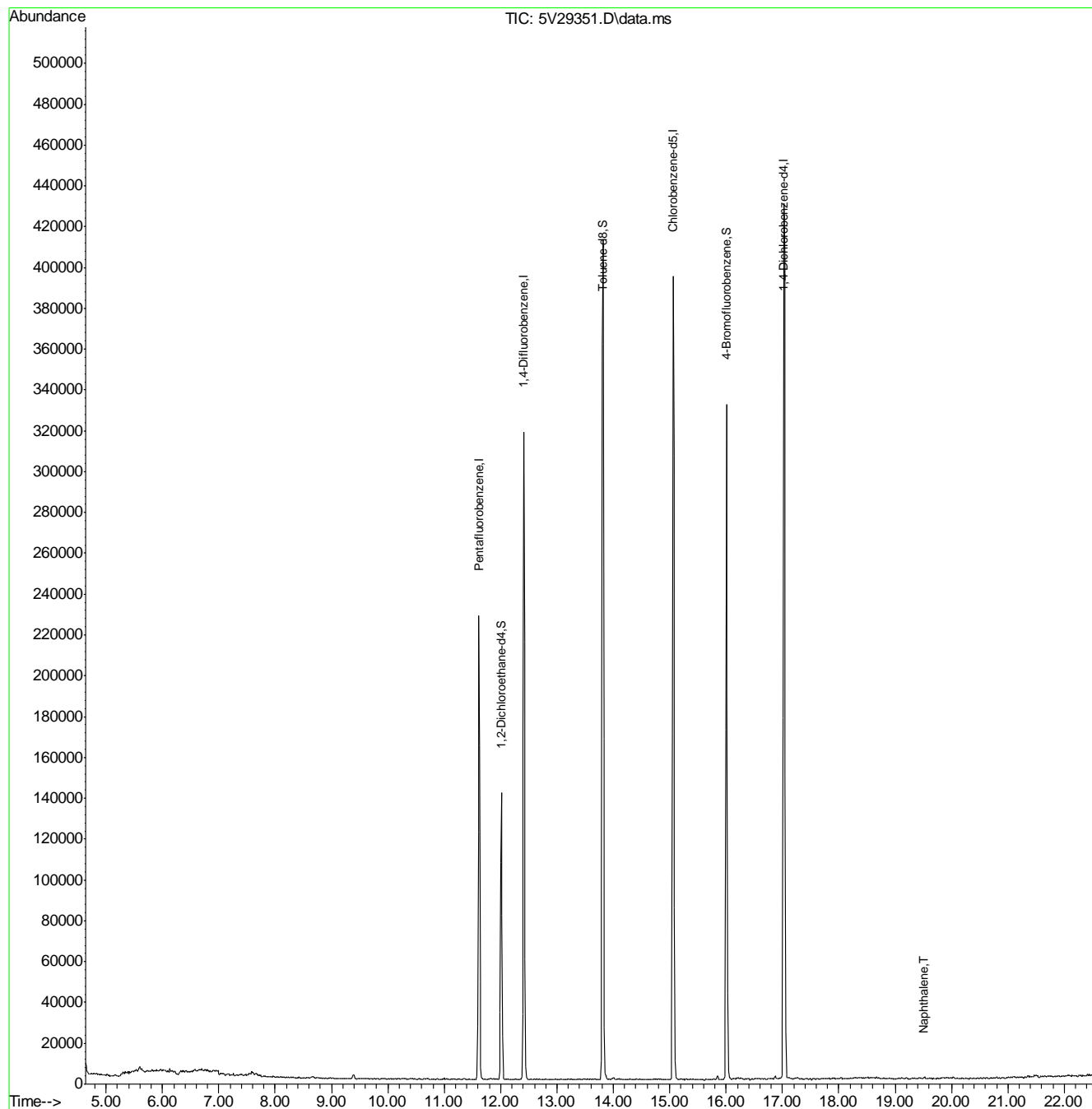
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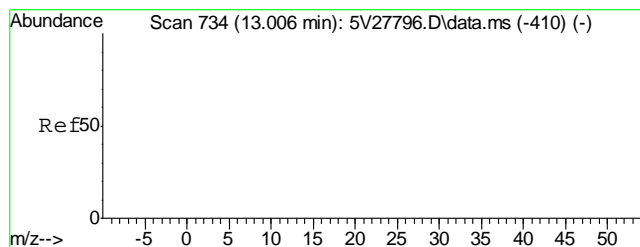
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Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100213.S\
Data File : 5V29351.D
Acq On : 2 Oct 2013 1:07 pm
Operator : BRETD
Sample : MB
Misc : MS6481,V5V1764,5.000,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

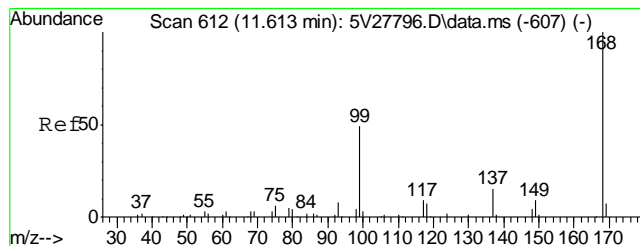
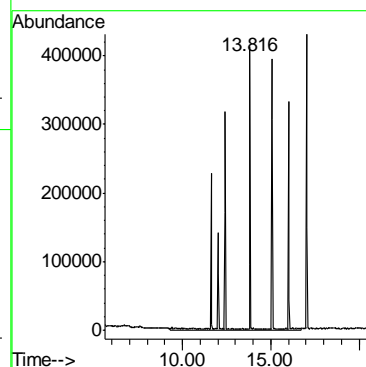
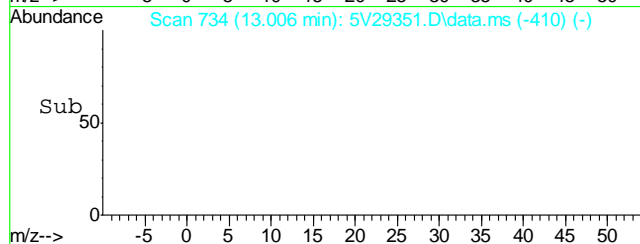
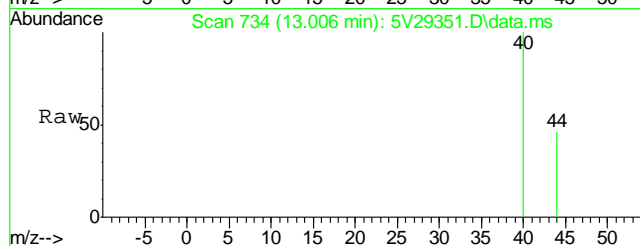
Quant Time: Oct 03 09:15:35 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration





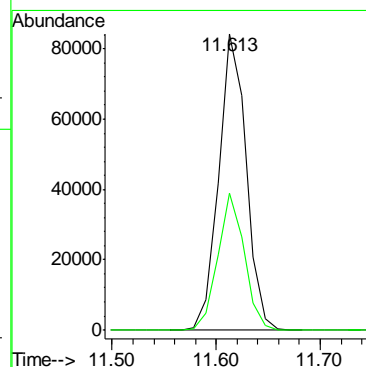
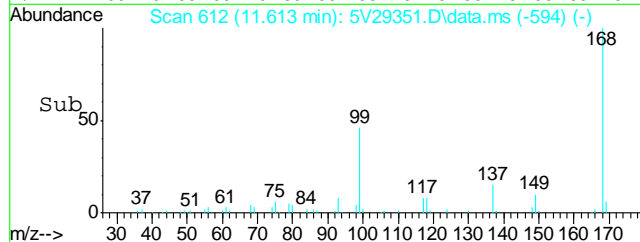
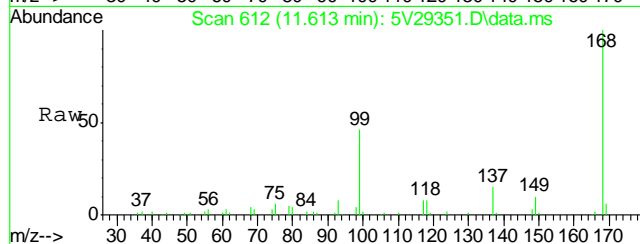
#1
TVH-Gasoline
Concen: 57.07 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

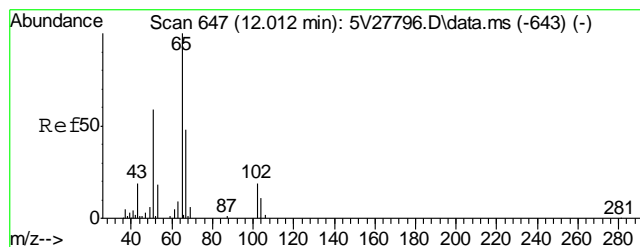
Tgt Ion:TIC Resp: -9922



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

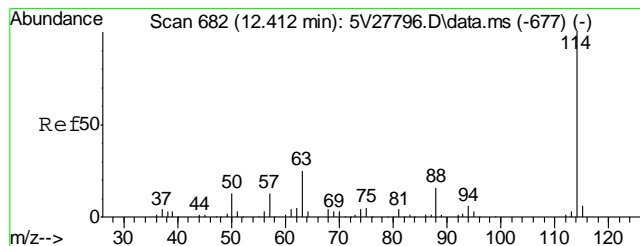
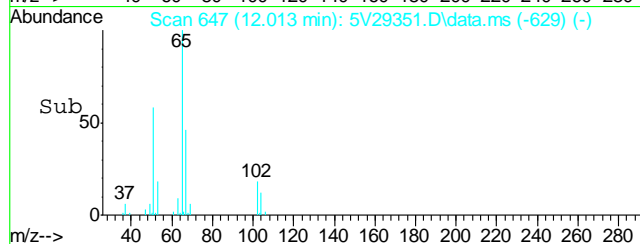
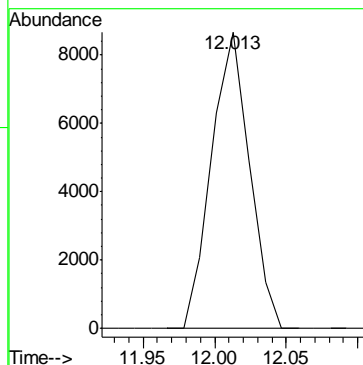
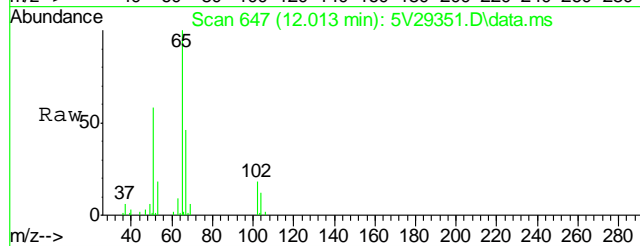
Tgt Ion:168 Resp: 155231
Ion Ratio Lower Upper
168 100
99 44.5 41.4 62.2





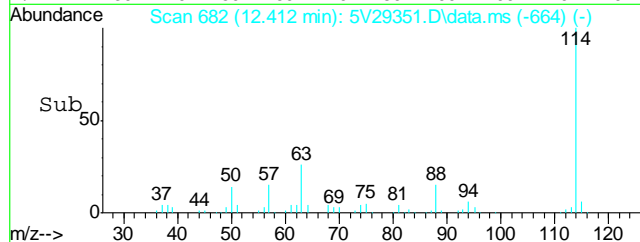
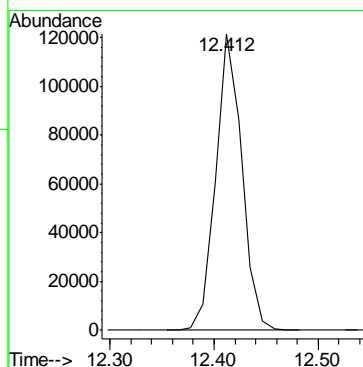
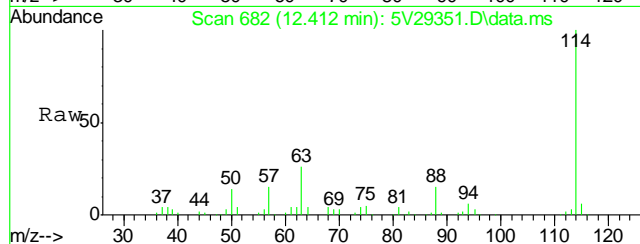
#35
1,2-Dichloroethane-d4
Concen: 50.63 ug/l
RT: 12.013 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

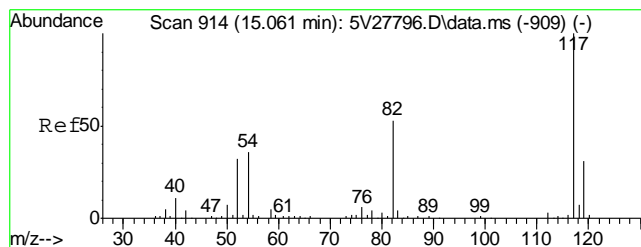
Tgt Ion:102 Resp: 15972



#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

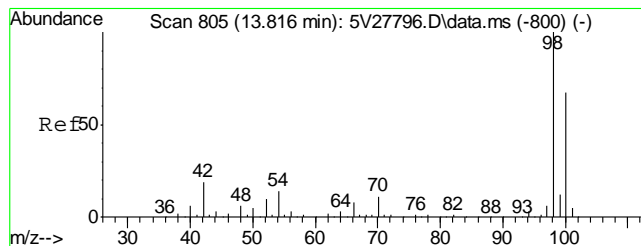
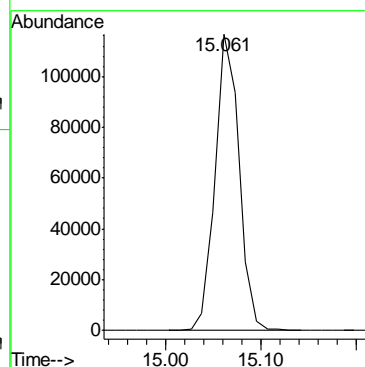
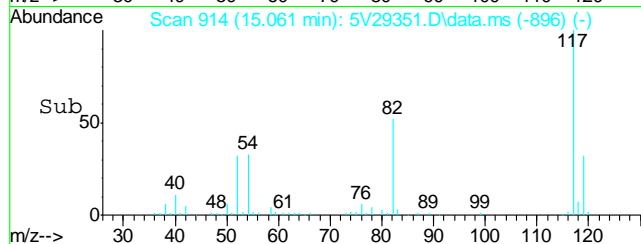
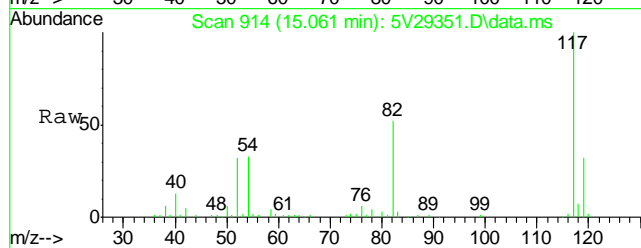
Tgt Ion:114 Resp: 212288





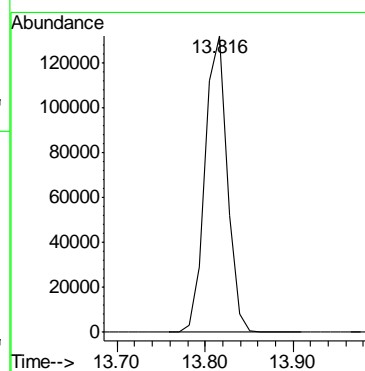
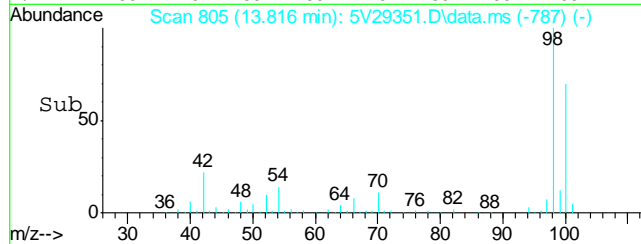
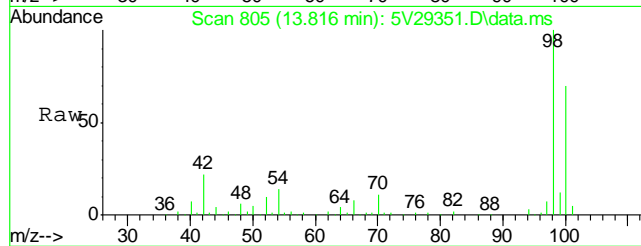
#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

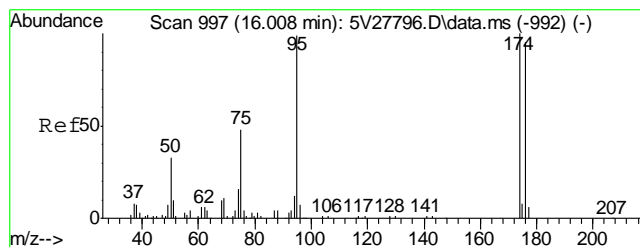
Tgt Ion:117 Resp: 202438



#64
Toluene-d8
Concen: 50.48 ug/l
RT: 13.816 min Scan# 805
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

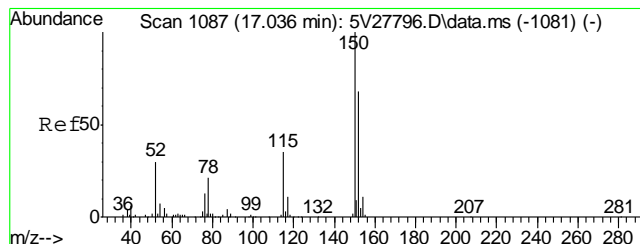
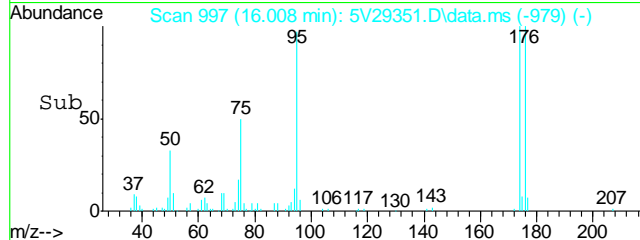
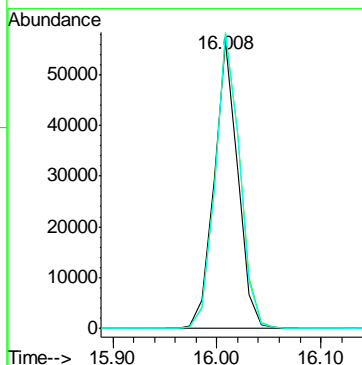
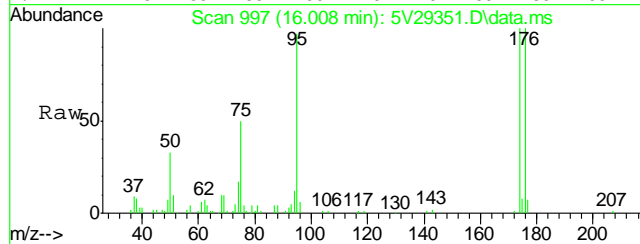
Tgt Ion: 98 Resp: 231512





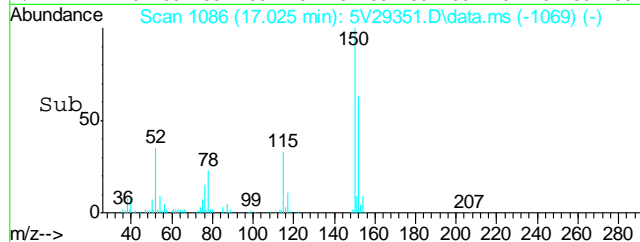
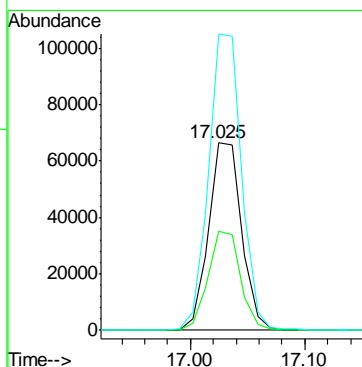
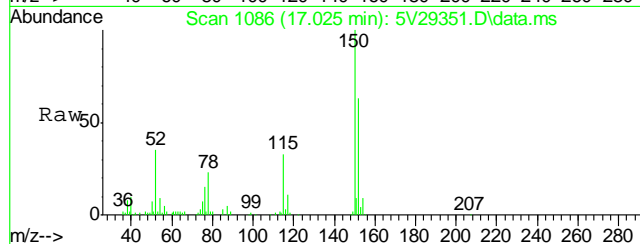
#72
4-Bromofluorobenzene
Concen: 41.89 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

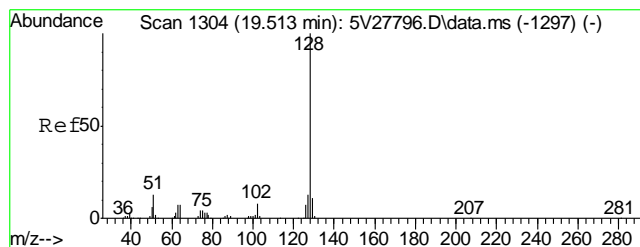
Tgt Ion:	95	Resp:	89552
Ion Ratio	Lower	Upper	
95	100		
174	106.7	85.4	125.4
176	105.8	80.6	120.6



#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.025 min Scan# 1086
Delta R.T. -0.011 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

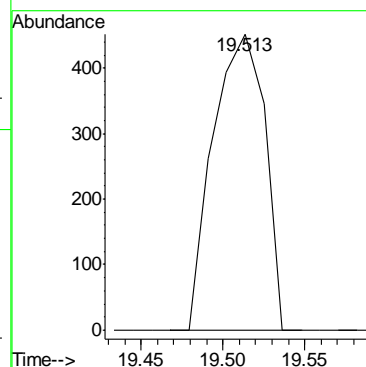
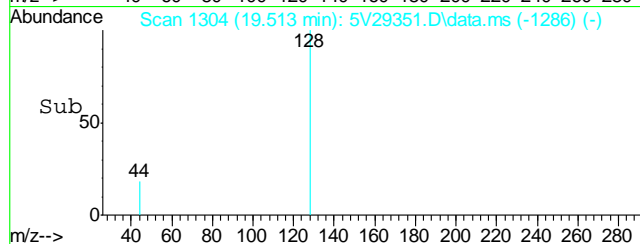
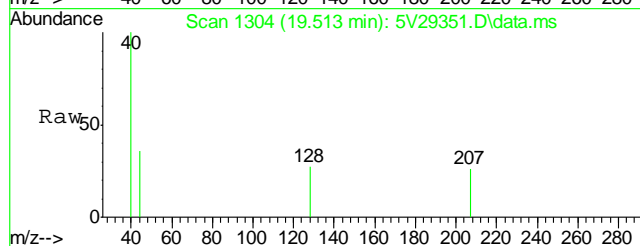
Tgt Ion:	152	Resp:	132604
Ion Ratio	Lower	Upper	
152	100		
115	51.6	43.4	65.2
150	158.5	142.9	214.3





#94
Naphthalene
Concen: 0.98 ug/l
RT: 19.513 min Scan# 1304
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

Tgt Ion: 128 Resp: 995



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: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8670-MB	3G16517.D	1	10/03/13	DC	10/03/13	OP8670	E3G817

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

D51203-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.3	4.3	ug/kg	
120-12-7	Anthracene	ND	8.3	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	5.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.3	4.3	ug/kg	
91-20-3	Naphthalene	ND	12	10	ug/kg	
129-00-0	Pyrene	ND	8.3	4.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	97% 10-175%
321-60-8	2-Fluorobiphenyl	89% 25-130%
1718-51-0	Terphenyl-d14	112% 41-133%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8670-BS	3G16518.D	1	10/03/13	DC	10/03/13	OP8670	E3G817

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D51203-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	71.6	86	55-130
120-12-7	Anthracene	83.3	65.3	78	60-130
56-55-3	Benzo(a)anthracene	83.3	70.3	84	62-130
205-99-2	Benzo(b)fluoranthene	83.3	77.2	93	55-130
207-08-9	Benzo(k)fluoranthene	83.3	57.0	68	59-130
50-32-8	Benzo(a)pyrene	83.3	63.2	76	64-130
218-01-9	Chrysene	83.3	68.3	82	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	63.1	76	56-130
206-44-0	Fluoranthene	83.3	62.6	75	59-130
86-73-7	Fluorene	83.3	73.5	88	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	62.9	75	60-130
91-20-3	Naphthalene	83.3	69.2	83	56-130
129-00-0	Pyrene	83.3	72.0	86	65-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	100%	10-175%
321-60-8	2-Fluorobiphenyl	91%	25-130%
1718-51-0	Terphenyl-d14	105%	41-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8670-MS1	3G16520.D	1	10/03/13	DC	10/03/13	OP8670	E3G817
OP8670-MSD1	3G16521.D	1	10/03/13	DC	10/03/13	OP8670	E3G817
D51039-1	3G16519.D	1	10/03/13	DC	10/03/13	OP8670	E3G817

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D51203-1

CAS No.	Compound	D51039-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		102	79.3	78	74.9	73	6	29-139/30
120-12-7	Anthracene	ND		102	76.5	75	80.3	79	5	10-182/30
56-55-3	Benzo(a)anthracene	ND		102	84.3	82	89.9	88	6	35-149/30
205-99-2	Benzo(b)fluoranthene	ND		102	68.5	67	72.1	71	5	22-174/30
207-08-9	Benzo(k)fluoranthene	ND		102	82.8	81	89.3	88	8	10-185/30
50-32-8	Benzo(a)pyrene	ND		102	72.7	71	76.7	75	5	10-168/30
218-01-9	Chrysene	ND		102	77.0	75	83.1	81	8	10-168/30
53-70-3	Dibenzo(a,h)anthracene	ND		102	69.4	68	73.0	72	5	12-160/30
206-44-0	Fluoranthene	ND		102	75.4	74	79.9	78	6	20-156/30
86-73-7	Fluorene	ND		102	86.3	84	84.4	83	2	10-164/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		102	69.6	68	72.7	71	4	29-136/30
91-20-3	Naphthalene	ND		102	76.3	75	68.8	67	10	10-258/30
129-00-0	Pyrene	ND		102	86.6	85	93.6	92	8	10-196/30

CAS No.	Surrogate Recoveries	MS	MSD	D51039-1	Limits
4165-60-0	Nitrobenzene-d5	86%	80%	64%	10-175%
321-60-8	2-Fluorobiphenyl	77%	75%	67%	25-130%
1718-51-0	Terphenyl-d14	94%	107%	102%	41-133%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
 Data File : 3g16537.D
 Acq On : 3 Oct 2013 8:56 pm
 Operator : DONC
 Sample : D51203-1
 Misc : OP8670,E3G817,30.13,,,1,1
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 04 15:02:40 2013
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G810.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Sep 24 08:29:29 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.682	136	221041	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	151002	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.872	188	230669	4.0000	ug/mL	0.00
19) Chrysene-d12	11.501	240	184762	4.0000	ug/mL	0.00
24) Perylene-d12	12.865	264	125572	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.996	82	997698	35.8835	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	71.76%		
7) 2-Fluorobiphenyl	6.736	172	2088675	35.5026	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	71.00%		
21) Terphenyl-d14	10.463	244	1503953	43.0219	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	86.04%		

Target Compounds

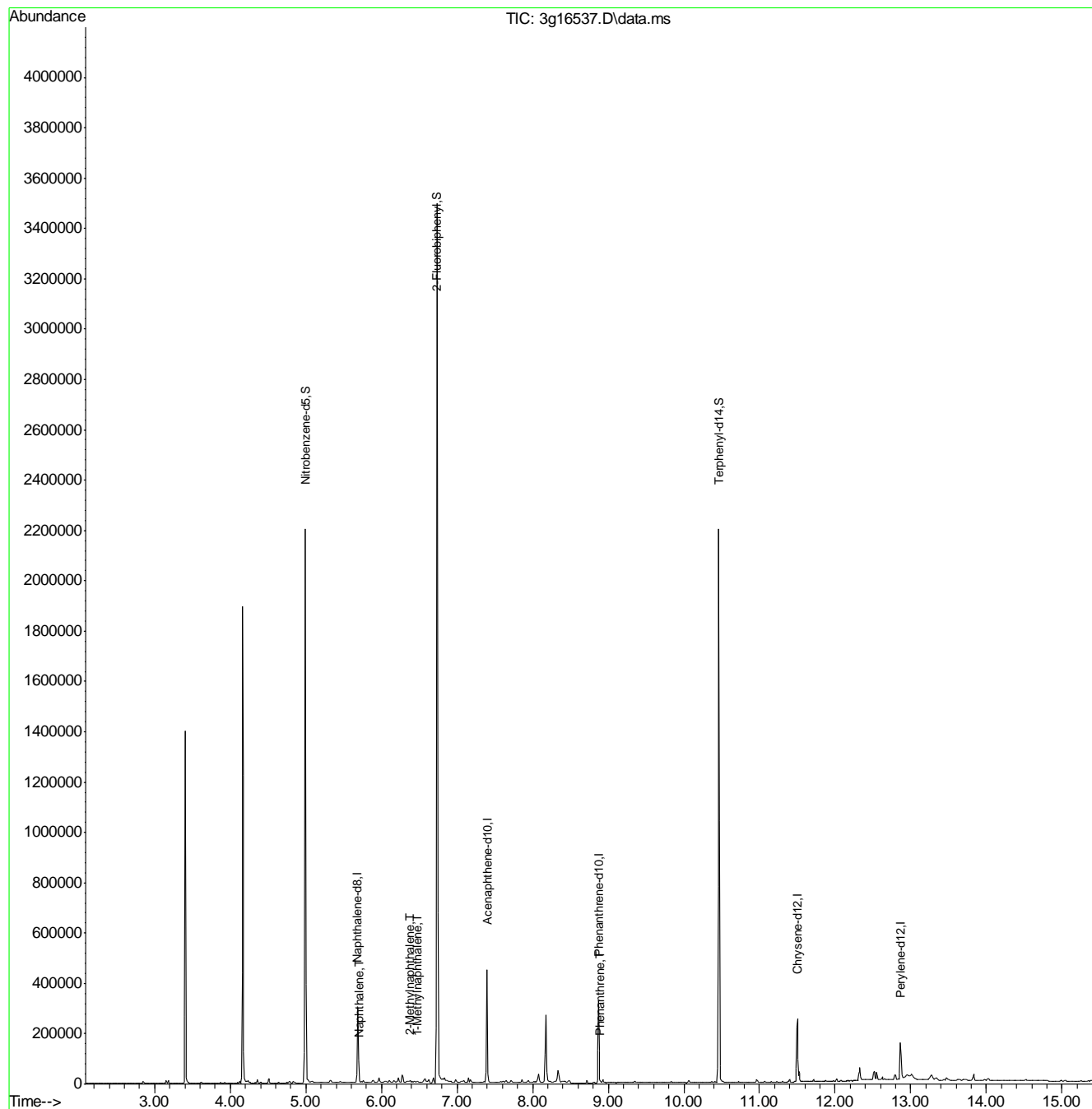
					Qvalue	
3) N-Nitrosodimethylamine	2.407	74	50	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.707	128	2910	0.0364	ug/mL#	79
8) 2-Methylnaphthalene	6.380	142	3503	0.0578	ug/mL	87
9) 1-Methylnaphthalene	6.480	142	2205	0.0429	ug/mL	92
10) Acenaphthylene	7.256	152	645	N.D.		
11) Acenaphthene	7.398	154	863	N.D.		
12) Dibenzofuran	7.610	168	938	N.D.		
13) Fluorene	7.941	166	970	N.D.		
14) Diphenylamine	0.000	169	0	N.D.	d	
16) Phenanthrene	8.896	178	3143	0.0335	ug/mL#	72
17) Anthracene	0.000	178	0	N.D.	d	
18) Fluoranthene	0.000	202	0	N.D.	d	
20) Pyrene	10.305	202	552	N.D.		
22) Benzo(a)anthracene	11.495	228	1278	N.D.		
23) Chrysene	11.495	228	1278	N.D.		
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d	
27) Benzo(a)pyrene	0.000	252	0	N.D.	d	
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
29) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d	
30) Benzo(g,h,i)perylene	0.000	276	0	N.D.	d	

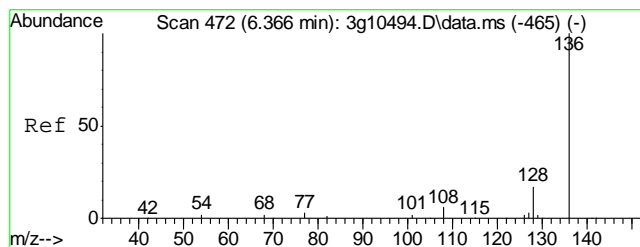
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
Data File : 3g16537.D
Acq On : 3 Oct 2013 8:56 pm
Operator : DONC
Sample : D51203-1
Misc : OP8670,E3G817,30.13,,,1,1
ALS Vial : 24 Sample Multiplier: 1

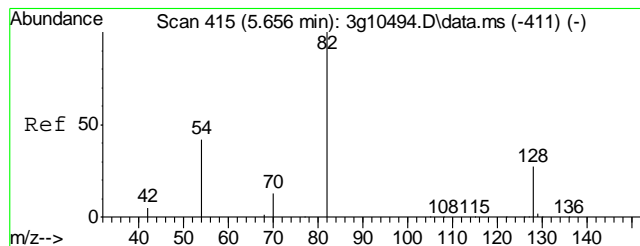
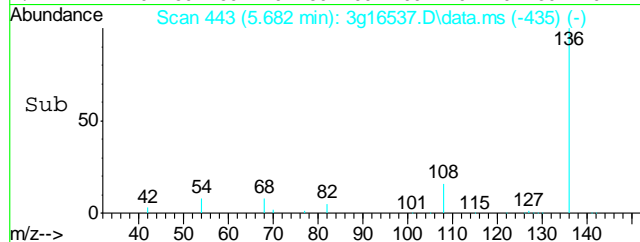
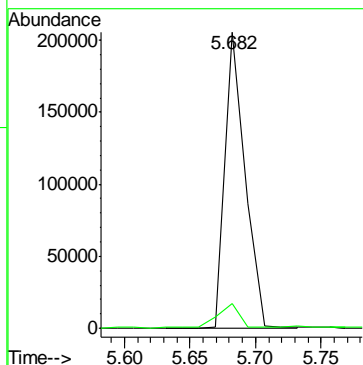
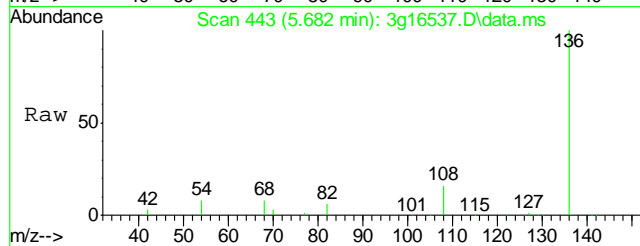
Quant Time: Oct 04 15:02:40 2013
Quant Method : C:\msdchem\1\METHODS\SIMPE3G810.M
Quant Title : PAHSIM BASE
QLast Update : Tue Sep 24 08:29:29 2013
Response via : Initial Calibration





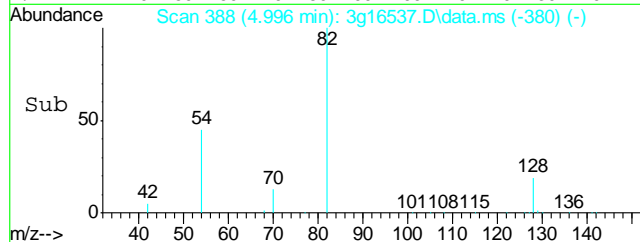
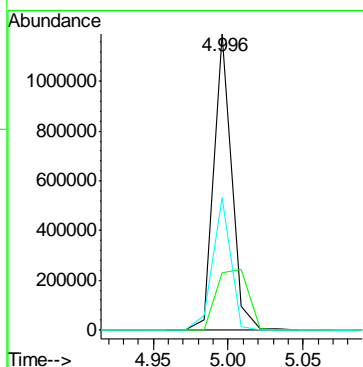
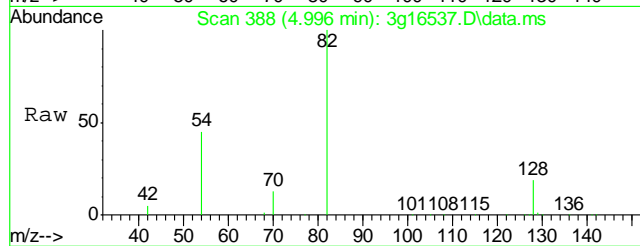
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

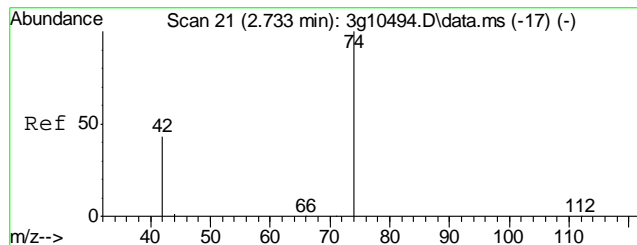
Tgt Ion	Ratio	Lower	Upper
136	100		
68	8.5	0.0	21.1



#2
Nitrobenzene-d5
Concen: 35.8835 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

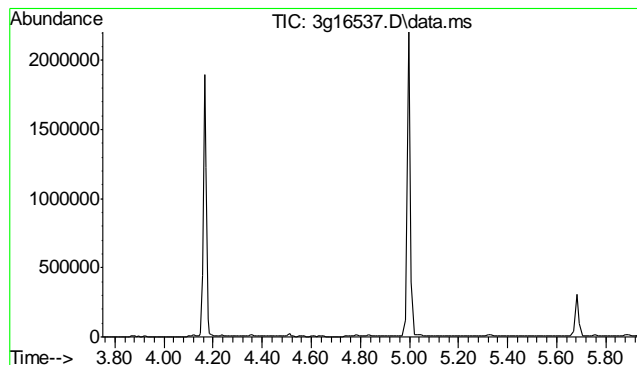
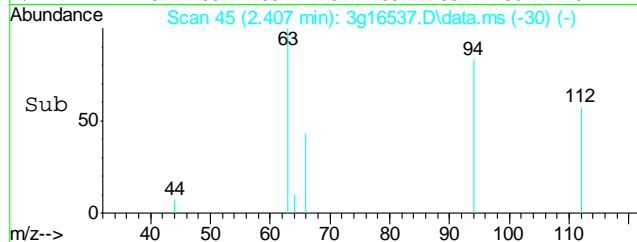
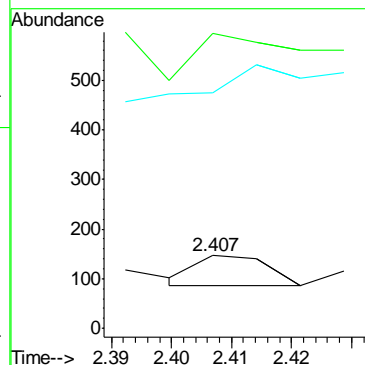
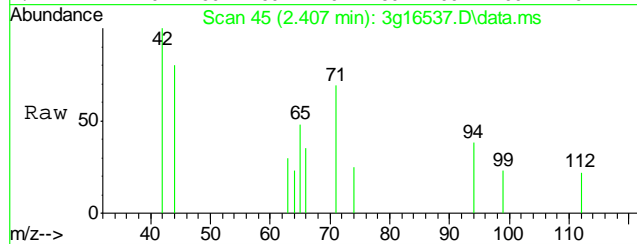
Tgt Ion	Ratio	Lower	Upper
82	100		
128	36.0	36.8	76.8#
54	45.8	40.5	80.5





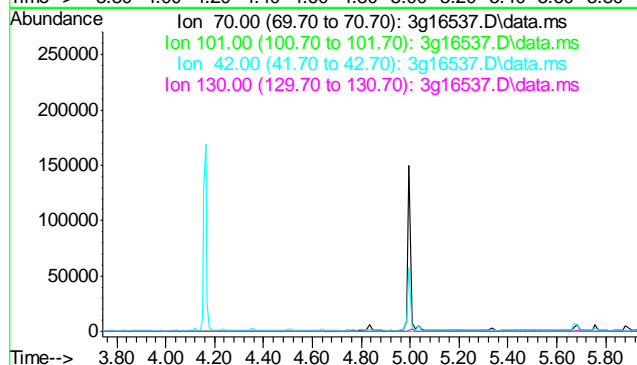
#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.407 min Scan# 45
Delta R.T. 0.007 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

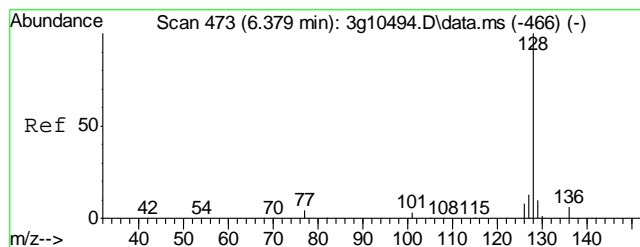
Tgt Ion: 74 Resp: 50
Ion Ratio Lower Upper
74 100
42 390.0 58.5 98.5#
44 236.0 0.0 24.0#



#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

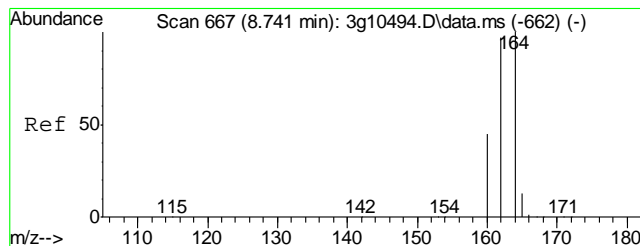
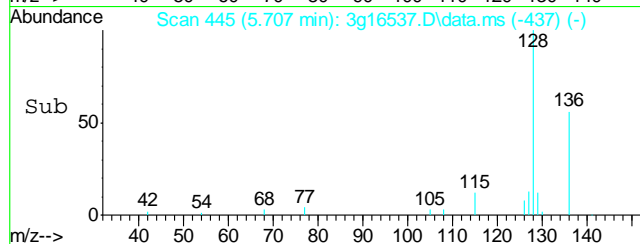
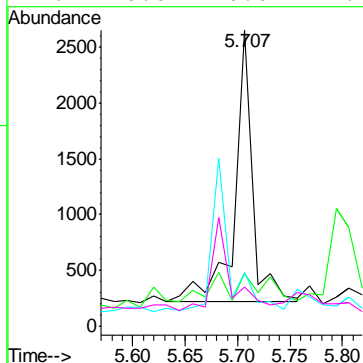
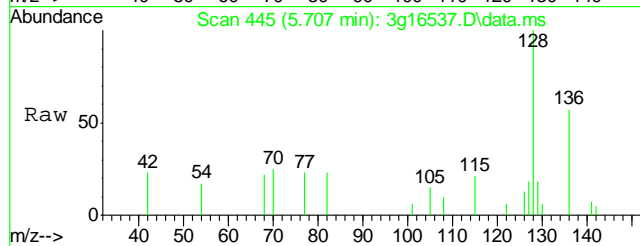
Tgt Ion: 70
Sig Exp Ratio
70 100
101 11.9
42 57.4
130 21.7





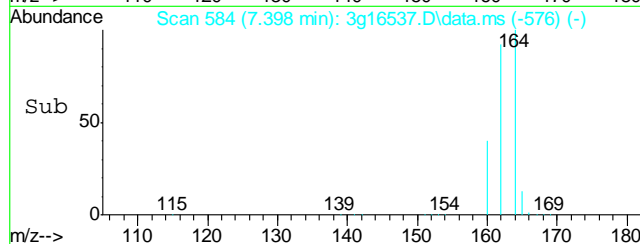
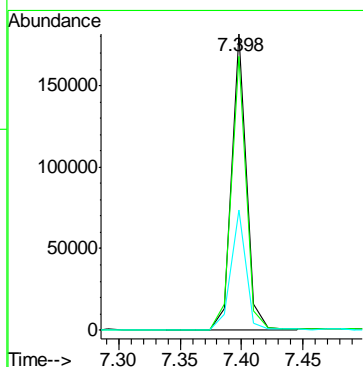
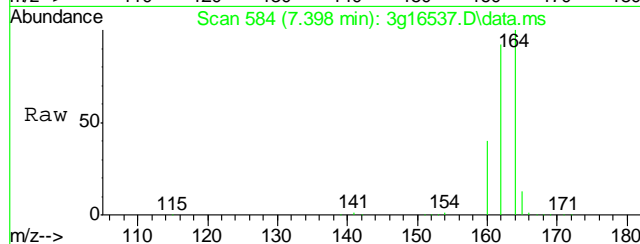
#5
Naphthalene
Concen: 0.0364 ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

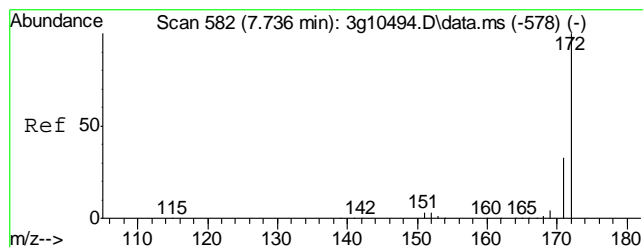
Tgt Ion:	128	Resp:	2910
Ion Ratio	Lower	Upper	
128	100		
129	14.6	0.0	31.2
127	0.0	0.0	32.4
126	0.0	0.0	27.2



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

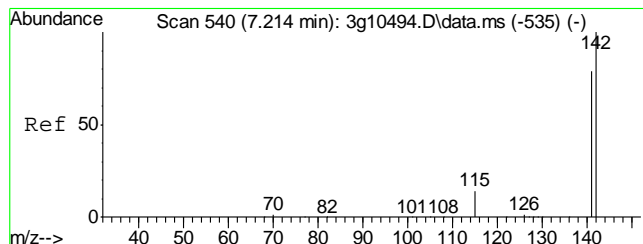
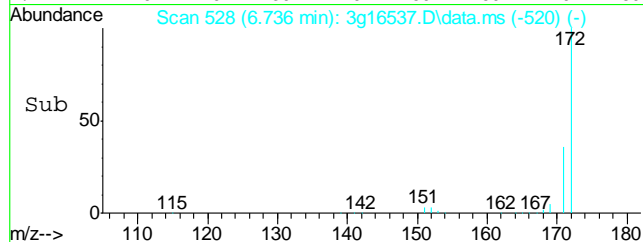
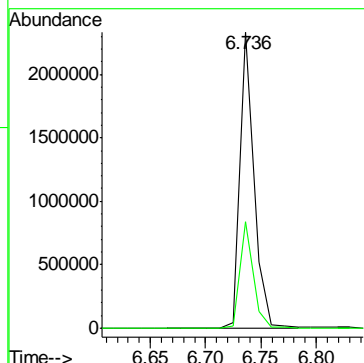
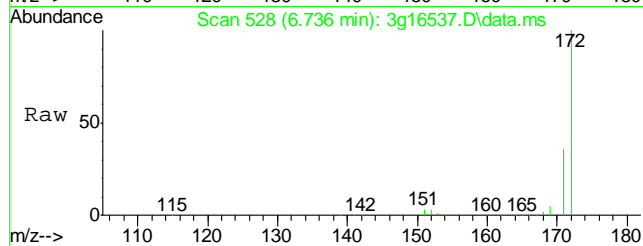
Tgt Ion:	164	Resp:	151002
Ion Ratio	Lower	Upper	
164	100		
162	92.4	83.7	123.7
160	41.5	31.9	71.9





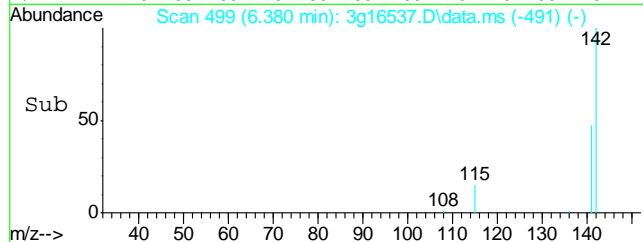
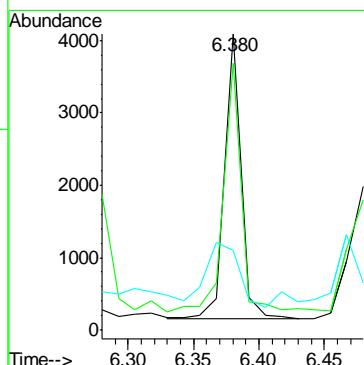
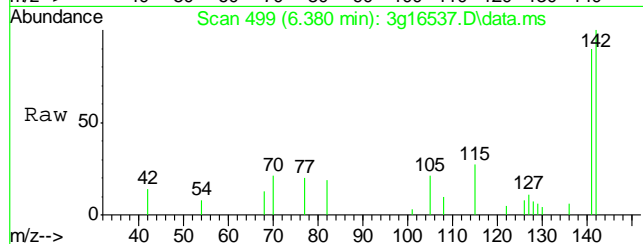
#7
2-Fluorobiphenyl
Concen: 35.5026 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

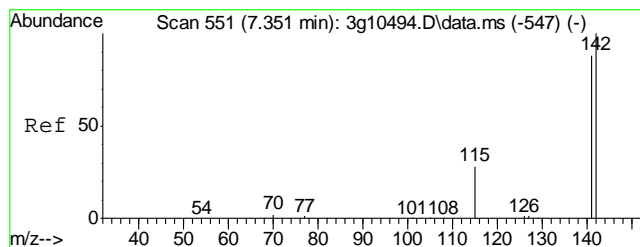
Tgt Ion	Ratio	Lower	Upper
172	100		
171	34.3	12.2	52.2



#8
2-Methylnaphthalene
Concen: 0.0578 ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

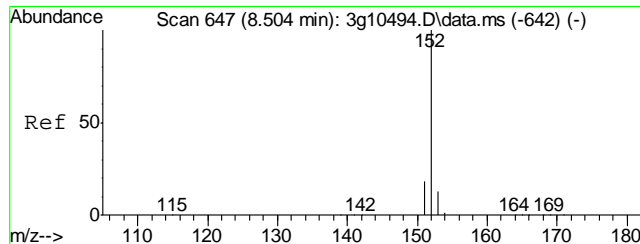
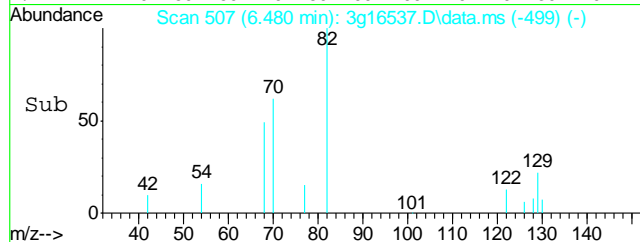
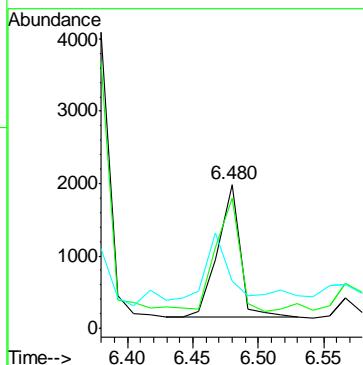
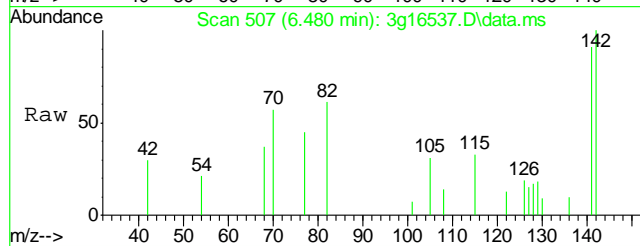
Tgt Ion	Ratio	Lower	Upper
142	100		
141	90.0	62.0	102.0
115	43.8	11.3	51.3





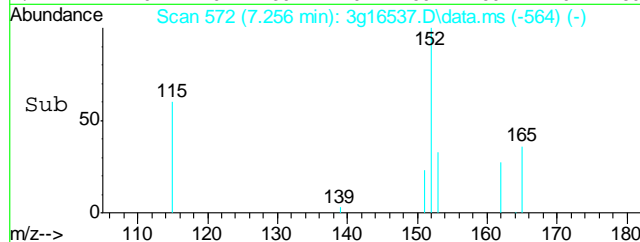
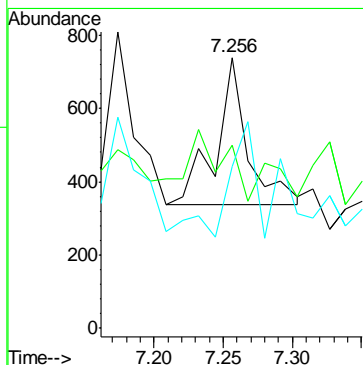
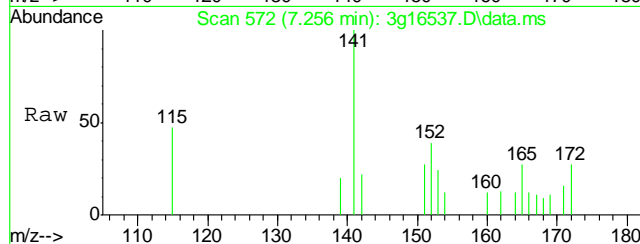
#9
1-Methylnaphthalene
Concen: 0.0429 ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

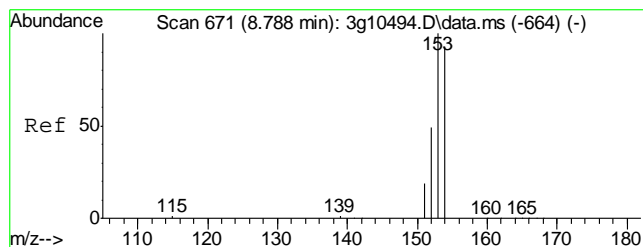
Tgt Ion	Ratio	Lower	Upper
142	100		
141	86.9	67.5	107.5
115	54.9	19.4	59.4



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.256 min Scan# 572
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

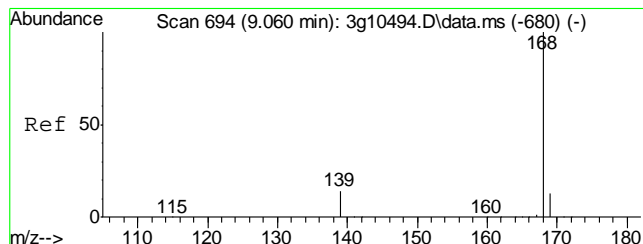
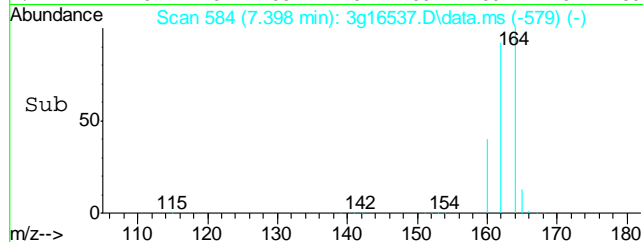
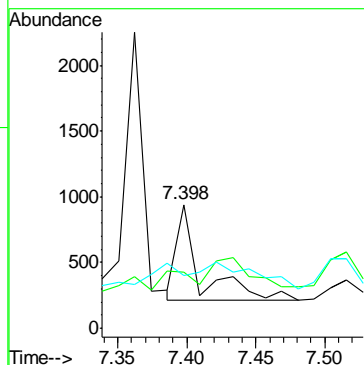
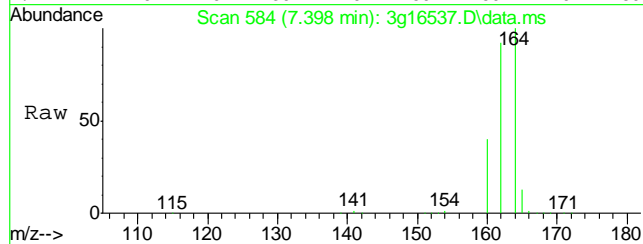
Tgt Ion	Ratio	Lower	Upper
152	100		
151	60.3	0.0	39.2#
153	57.7	0.0	32.9#





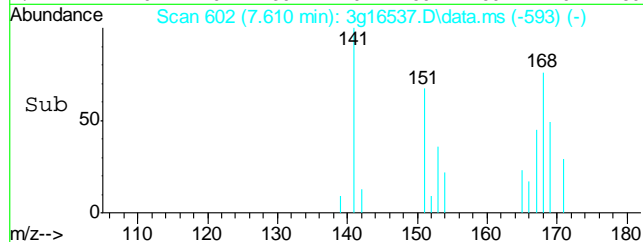
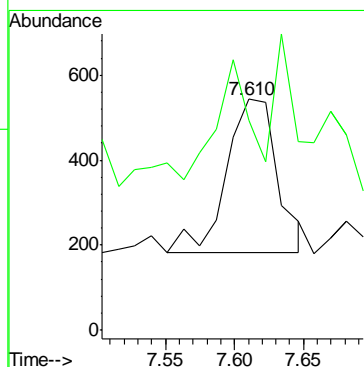
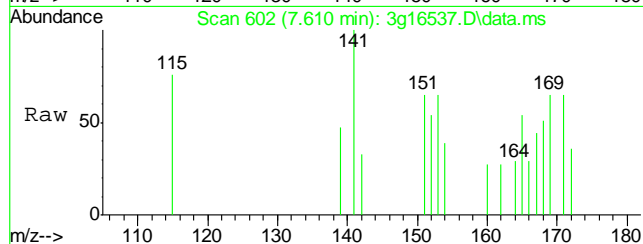
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.398 min Scan# 584
Delta R.T. -0.035 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

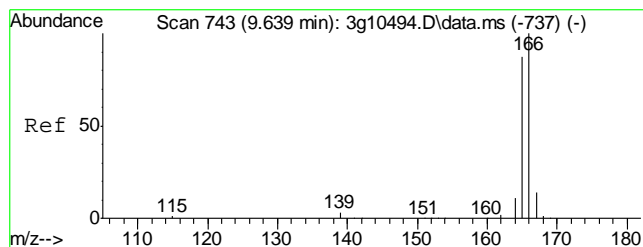
Tgt Ion	Ratio	Lower	Upper
154	100		
153	0.0	82.4	122.4#
152	26.5	30.0	70.0#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.610 min Scan# 602
Delta R.T. 0.012 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

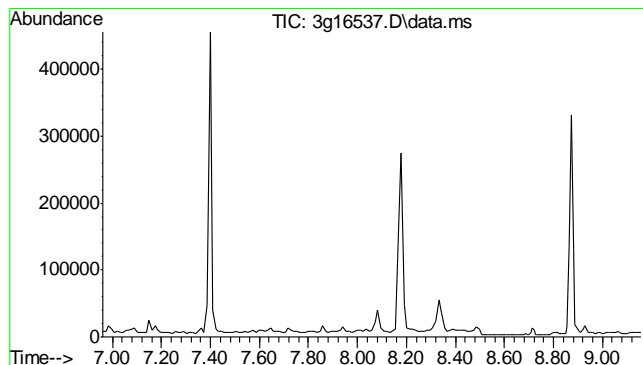
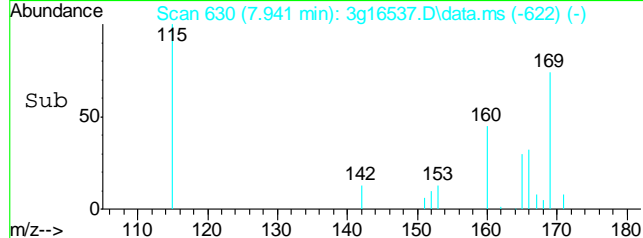
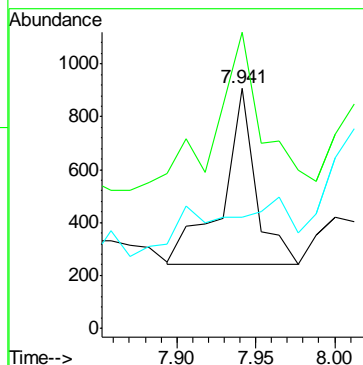
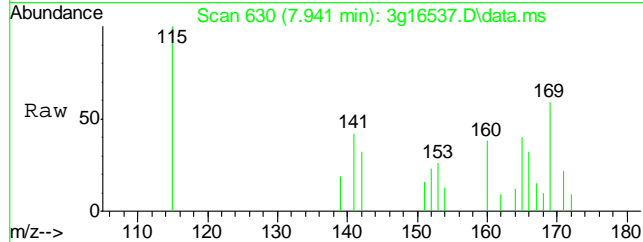
Tgt Ion	Ratio	Lower	Upper
168	100		
139	40.1	13.4	53.4





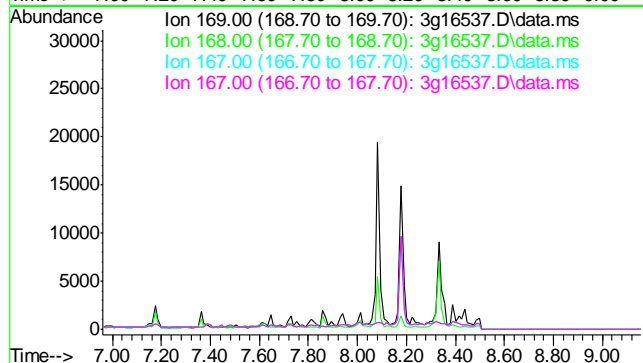
#13
 Fluorene
 Concen: Below ug/mL
 RT: 7.941 min Scan# 630
 Delta R.T. 0.000 min
 Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

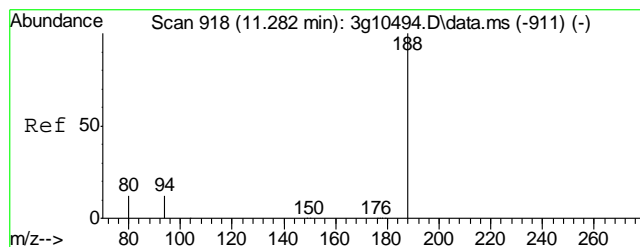
Tgt Ion	166	165	167	Resp	970	Lower	Upper
Ion Ratio	100	129.0	19.2			72.0	112.0#



#14
 Diphenylamine
 Concen: N.D. ug/mL
 Expected RT: 8.06 min
 Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

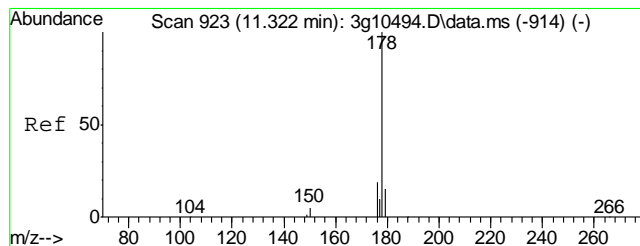
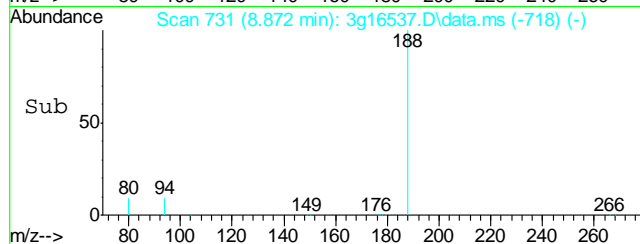
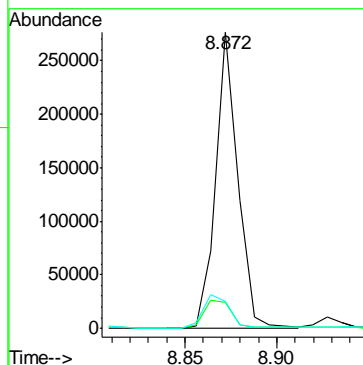
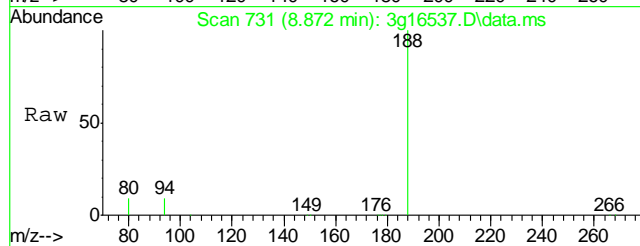
Tgt Ion	169	168	167	167	Exp Ratio
Sig	100	61.7	34.1	34.1	





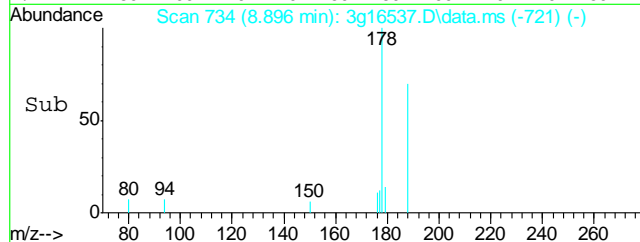
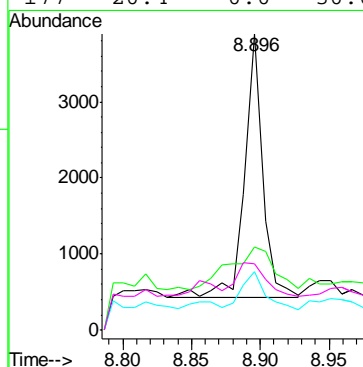
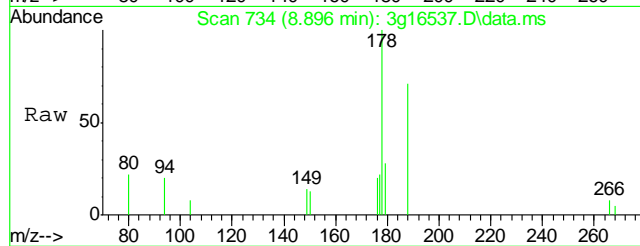
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.872 min Scan# 731
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

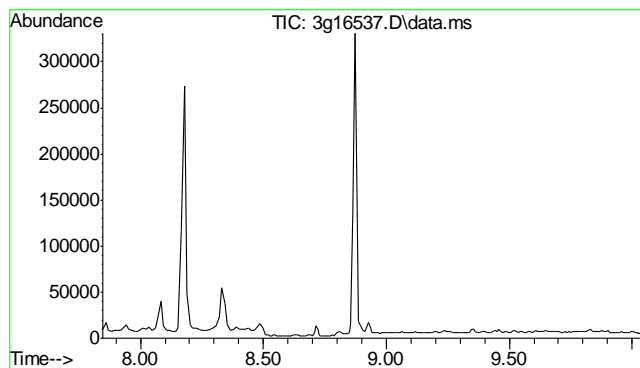
Tgt Ion:188	Resp:	230669
Ion Ratio	Lower	Upper
188	100	
94	11.9	0.0 28.3
80	13.3	0.0 27.8



#16
Phenanthrene
Concen: 0.0335 ug/mL
RT: 8.896 min Scan# 734
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

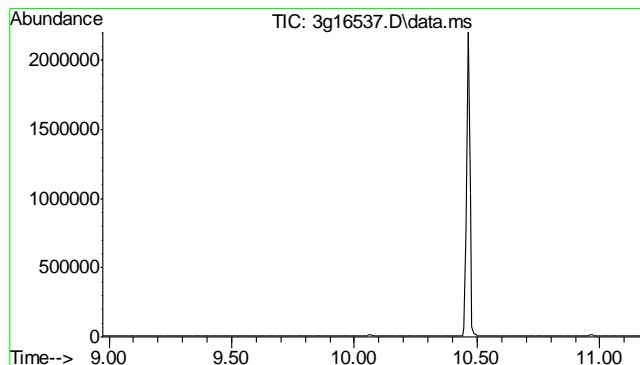
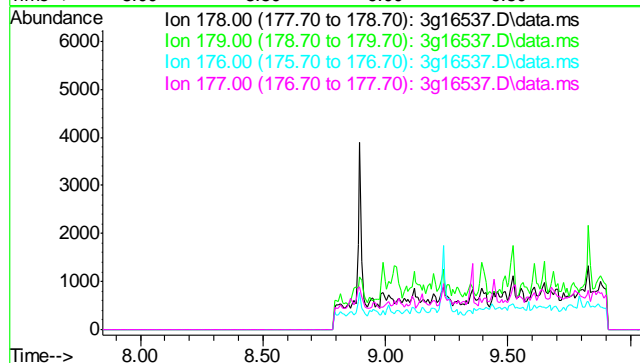
Tgt Ion:178	Resp:	3143
Ion Ratio	Lower	Upper
178	100	
179	40.9	0.0 35.2#
176	18.2	0.0 38.6
177	20.4	0.0 30.0





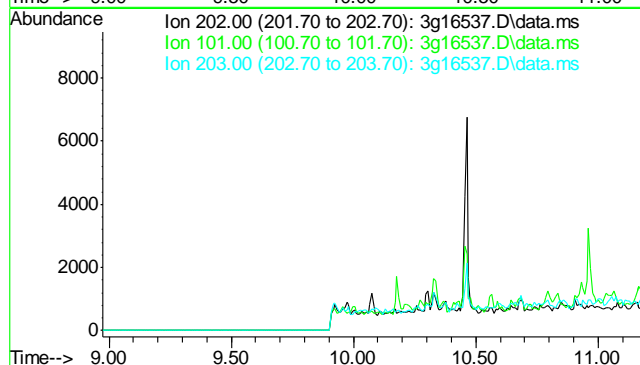
#17
 Anthracene
 Concen: N.D. ug/mL
 Expected RT: 8.94 min
 Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

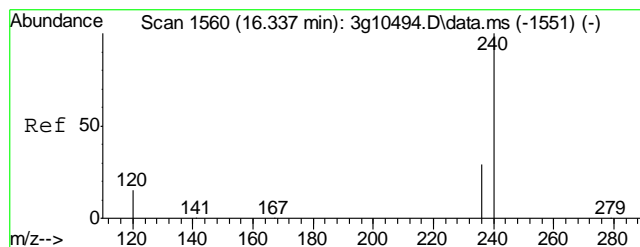
Tgt Ion	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7



#18
 Fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 10.07 min
 Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

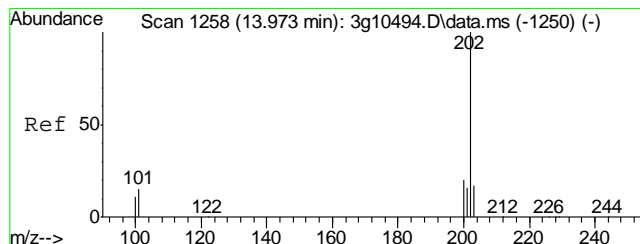
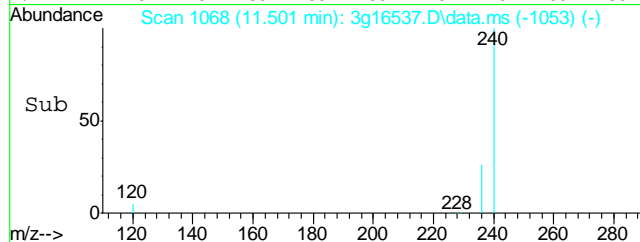
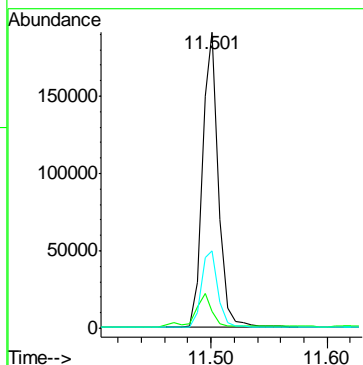
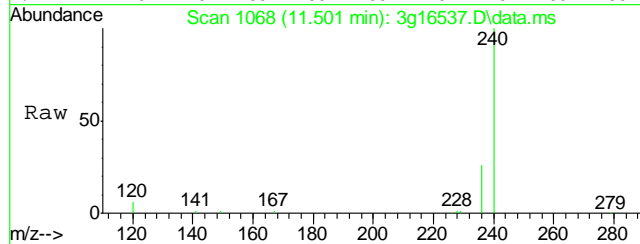
Tgt Ion	Exp Ratio
202	100
101	12.6
203	17.4





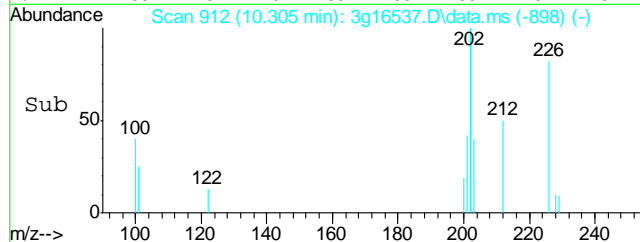
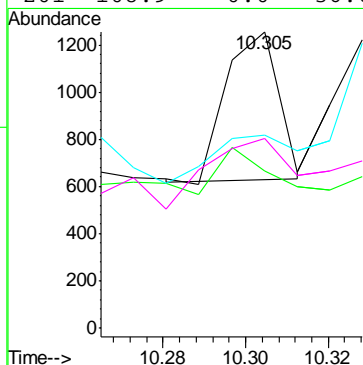
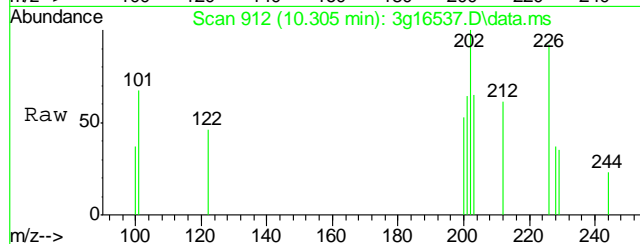
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.501 min Scan# 1068
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

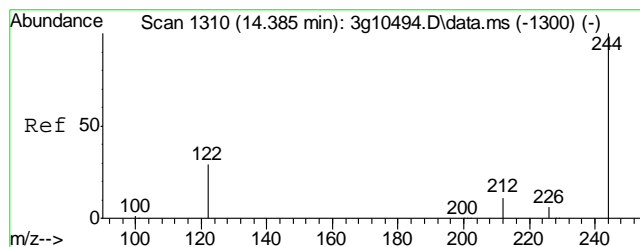
Tgt Ion	Ratio	Lower	Upper
240	100		
120	12.0	0.2	40.2
236	27.9	8.8	48.8



#20
Pyrene
Concen: Below ug/mL
RT: 10.305 min Scan# 912
Delta R.T. 0.008 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

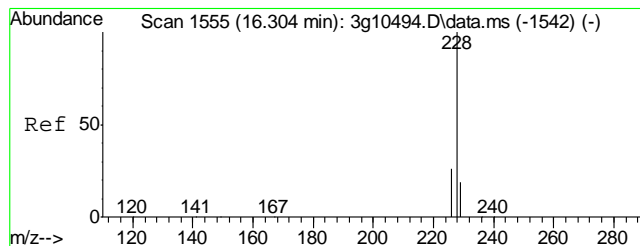
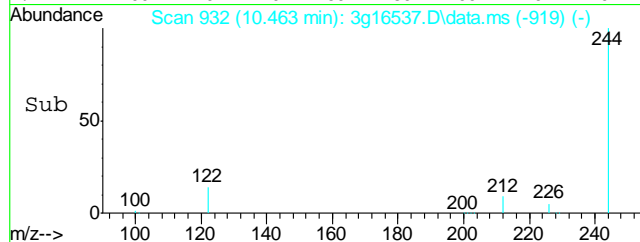
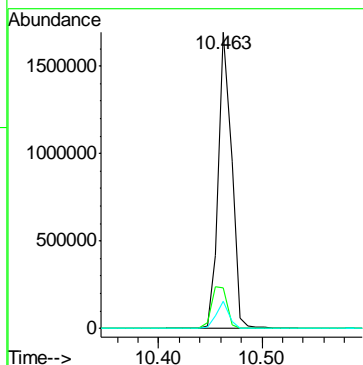
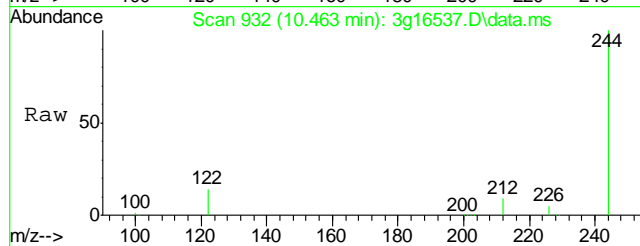
Tgt Ion	Ratio	Lower	Upper
202	100		
200	44.0	0.2	40.2#
203	0.0	0.0	37.8
201	108.9	0.0	36.6#





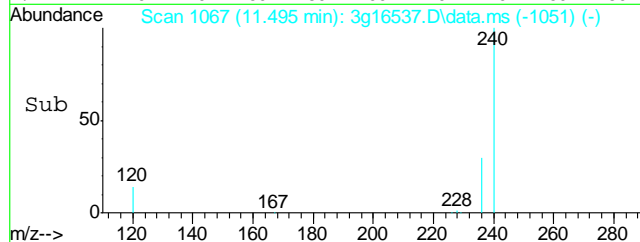
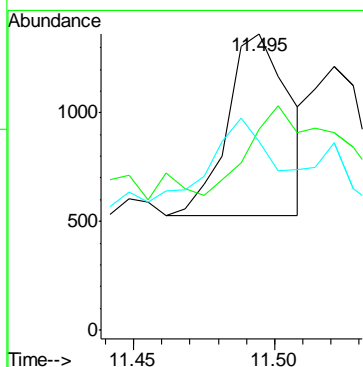
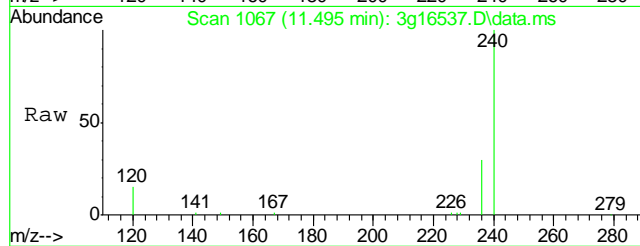
#21
Terphenyl-d14
Concen: 43.0219 ug/mL
RT: 10.463 min Scan# 932
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

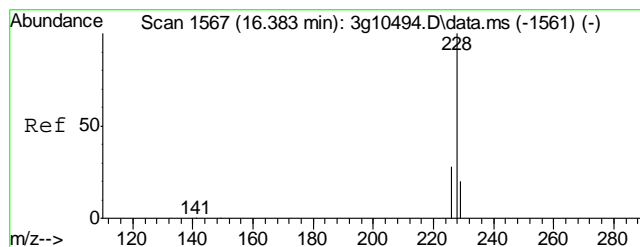
Tgt Ion	Ratio	Lower	Upper
244	100		
122	16.6	7.8	47.8
212	8.6	0.0	32.8



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. 0.007 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

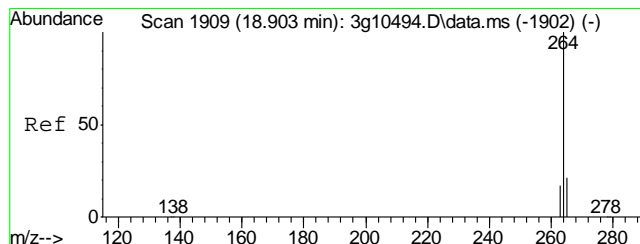
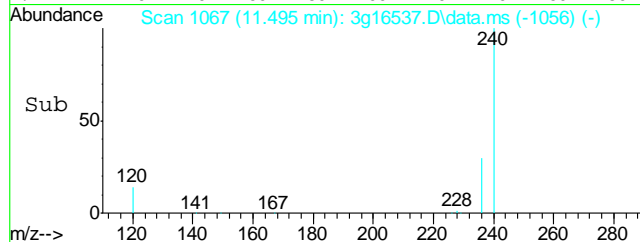
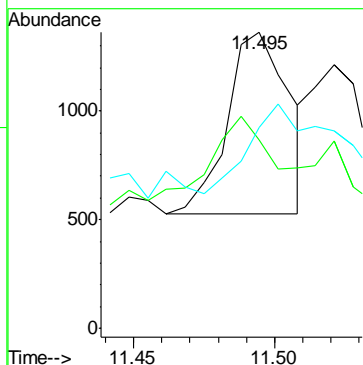
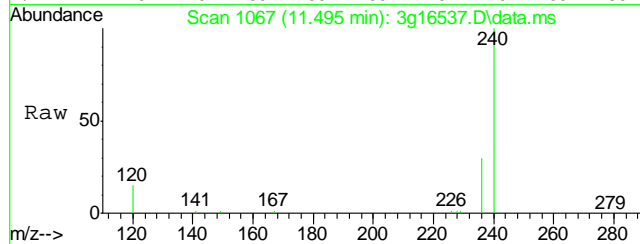
Tgt Ion	Ratio	Lower	Upper
228	100		
229	70.0	0.0	39.4#
226	54.1	6.6	46.6#





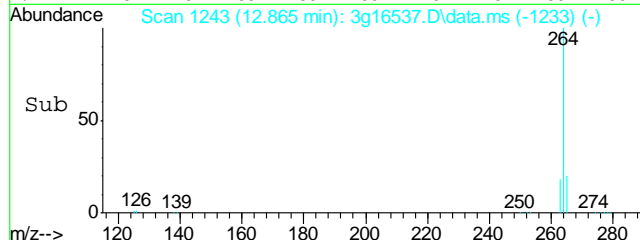
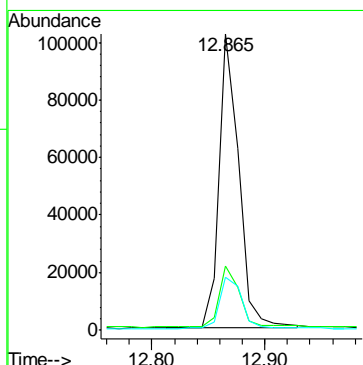
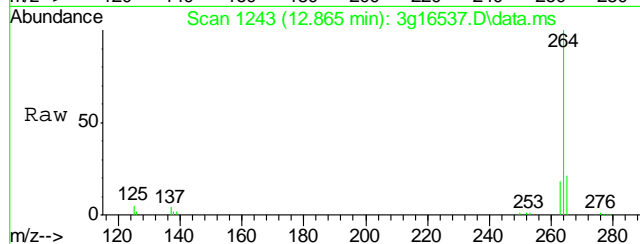
#23
Chrysene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. -0.026 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

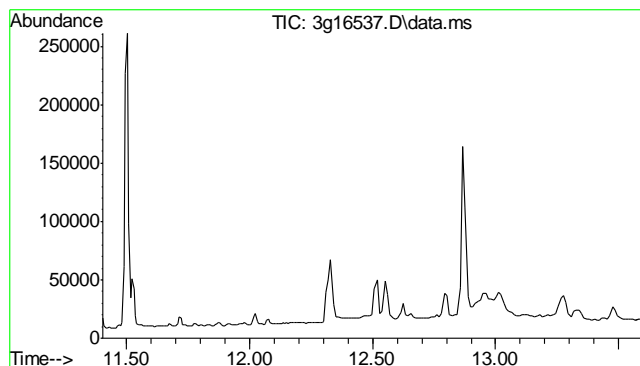
Tgt Ion	Ratio	Lower	Upper
228	100		
226	54.1	8.6	48.6#
229	71.1	0.0	39.4#



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.865 min Scan# 1243
Delta R.T. 0.000 min
Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

Tgt Ion	Ratio	Lower	Upper
264	100		
265	22.0	1.2	41.2
263	20.3	0.7	40.7

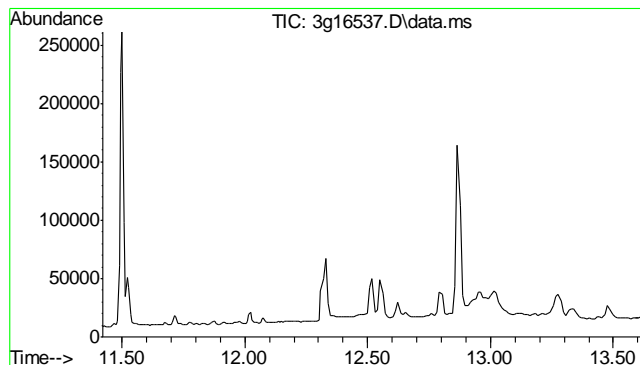
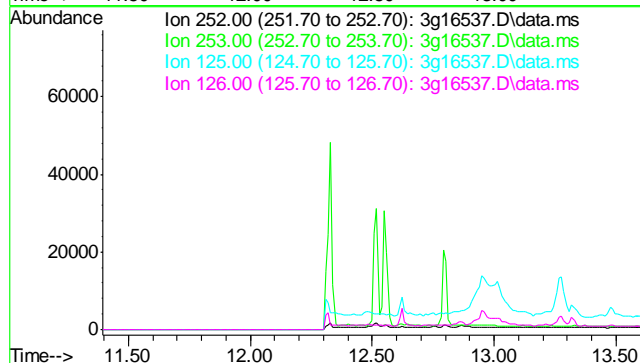




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

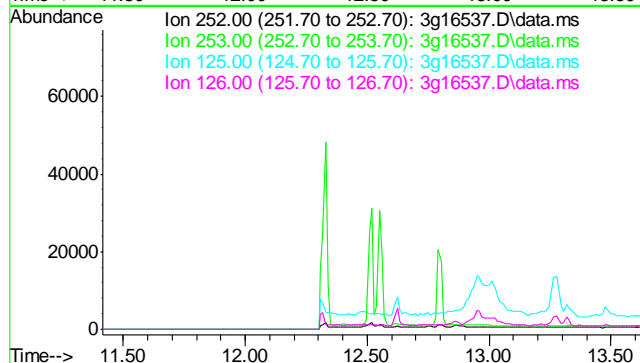
Tgt Ion	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9

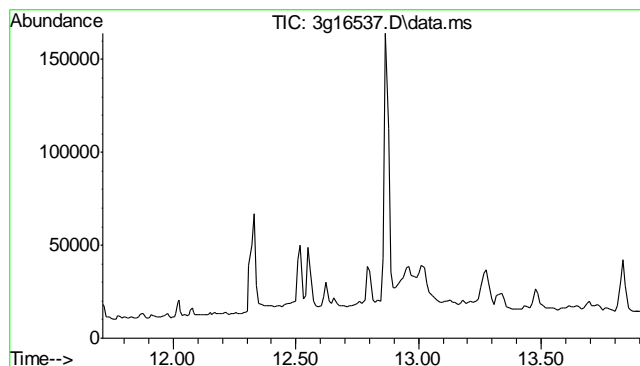


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

Lab File: 3g16537.D
Acq: 3 Oct 13 8:56 pm

Tgt Ion	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1

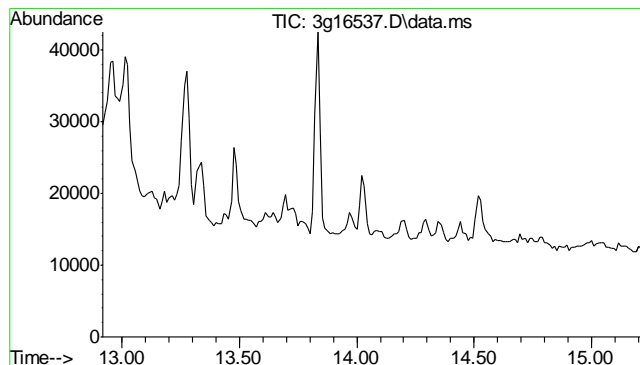
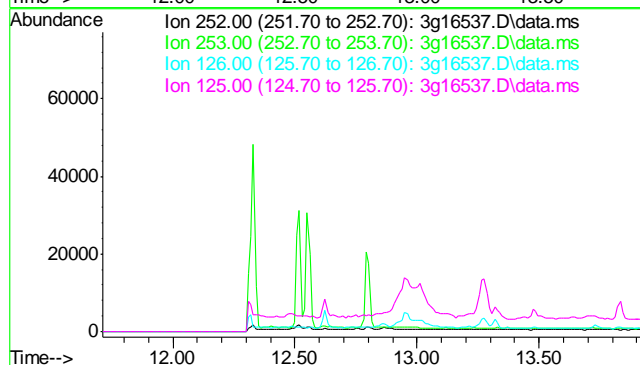




#27
 Benzo(a)pyrene
 Concen: N.D. ug/mL
 Expected RT: 12.81 min

 Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

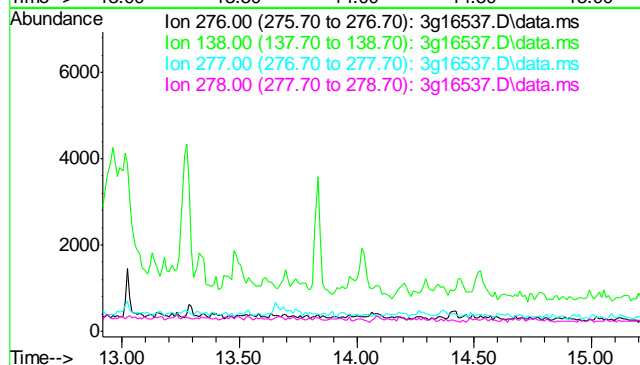
Tgt Ion	Sig	Exp Ratio
252	100	
253	21.5	
126	20.4	
125	14.5	

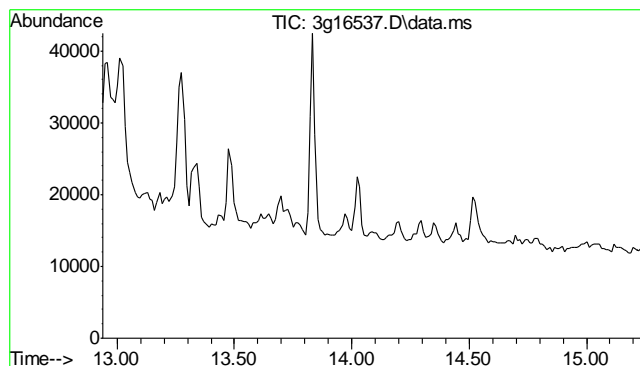


#28
 Indeno(1,2,3-cd)pyrene
 Concen: N.D. ug/mL
 Expected RT: 14.06 min

 Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

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

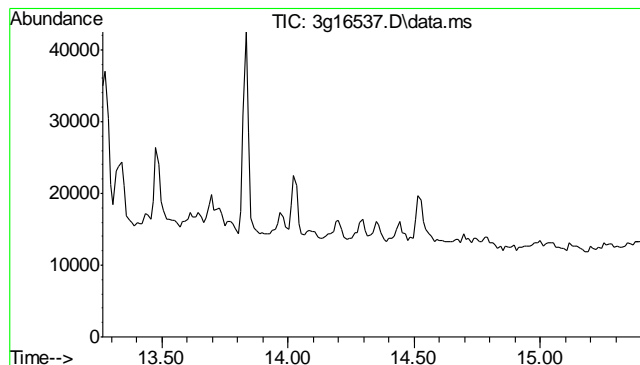
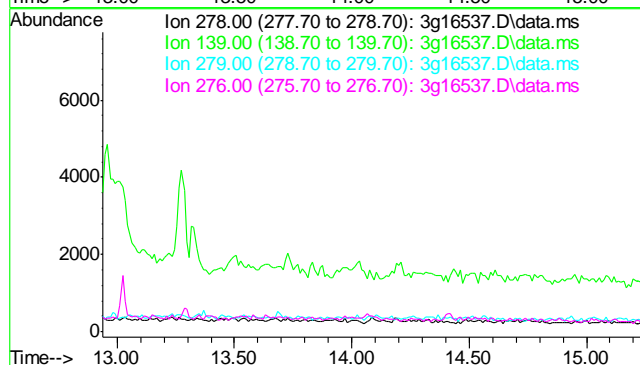




#29
 Dibenz(a,h)anthracene
 Concen: N.D. ug/mL
 Expected RT: 14.09 min

Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

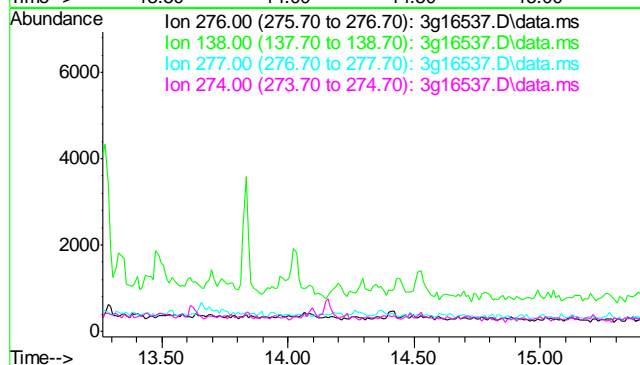
Tgt Ion	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2



#30
 Benzo(g,h,i)perylene
 Concen: N.D. ug/mL
 Expected RT: 14.41 min

Lab File: 3g16537.D
 Acq: 3 Oct 13 8:56 pm

Tgt Ion	Exp Ratio
276	100
138	35.1
277	23.3
274	21.5



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
 Data File : 3g16517.D
 Acq On : 3 Oct 2013 12:54 pm
 Operator : DONC
 Sample : OP8670-MB
 Misc : OP8670,E3G817,30.00,,,1,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 04 13:28:03 2013
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G810.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Sep 24 08:29:29 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.682	136	217864	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	117785	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.873	188	188996	4.0000	ug/mL	0.00
19) Chrysene-d12	11.501	240	166287	4.0000	ug/mL	0.00
24) Perylene-d12	12.865	264	135532	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5		4.996	82	1331104	48.5730	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	97.14%	
7) 2-Fluorobiphenyl		6.736	172	2051275	44.6998	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	89.40%	
21) Terphenyl-d14		10.464	244	1754721	55.7722	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	111.54%	

Target Compounds

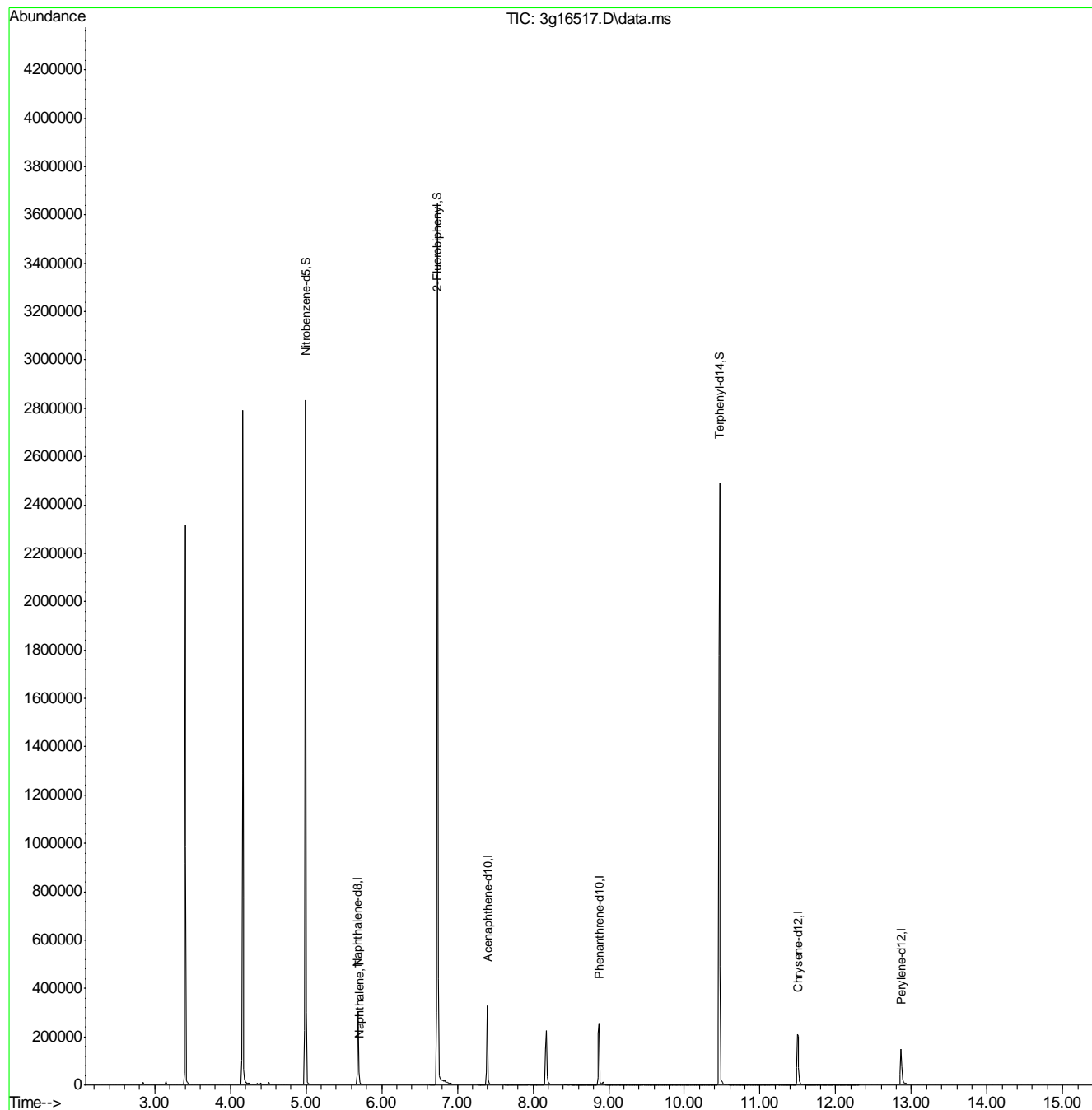
						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.707	128	6089	0.0773	ug/mL	98
8) 2-Methylnaphthalene	6.380	142	1089	N.D.		
9) 1-Methylnaphthalene	6.480	142	479	N.D.		
10) Acenaphthylene	7.256	152	63	N.D.		
11) Acenaphthene	7.422	154	1060	N.D.		
12) Dibenzofuran	7.599	168	528	N.D.		
13) Fluorene	7.941	166	540	N.D.		
14) Diphenylamine	0.000	169	0	N.D.	d	
16) Phenanthrene	8.889	178	943	N.D.		
17) Anthracene	0.000	178	0	N.D.	d	
18) Fluoranthene	0.000	202	0	N.D.	d	
20) Pyrene	10.298	202	337	N.D.		
22) Benzo(a)anthracene	11.495	228	896	N.D.		
23) Chrysene	11.495	228	896	N.D.		
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d	
27) Benzo(a)pyrene	0.000	252	0	N.D.	d	
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
29) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d	
30) Benzo(g,h,i)perylene	0.000	276	0	N.D.	d	

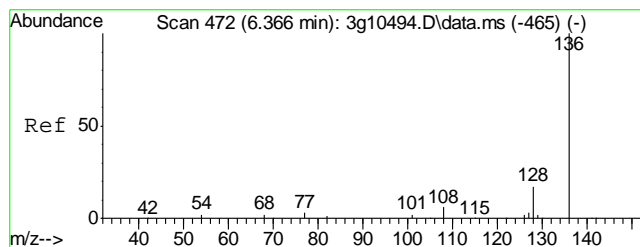
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
Data File : 3g16517.D
Acq On : 3 Oct 2013 12:54 pm
Operator : DONC
Sample : OP8670-MB
Misc : OP8670,E3G817,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

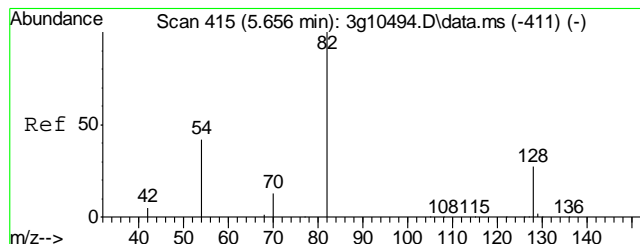
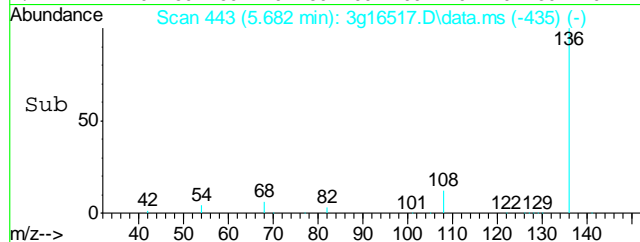
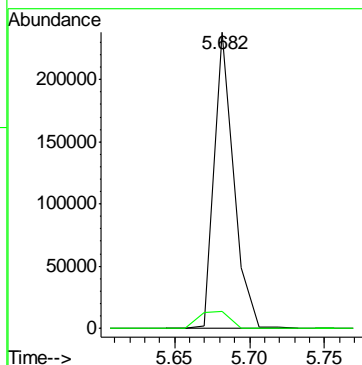
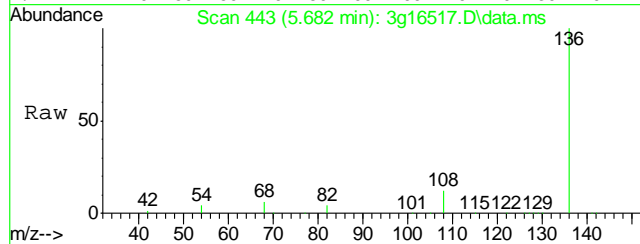
Quant Time: Oct 04 13:28:03 2013
Quant Method : C:\msdchem\1\METHODS\SIMPE3G810.M
Quant Title : PAHSIM BASE
QLast Update : Tue Sep 24 08:29:29 2013
Response via : Initial Calibration





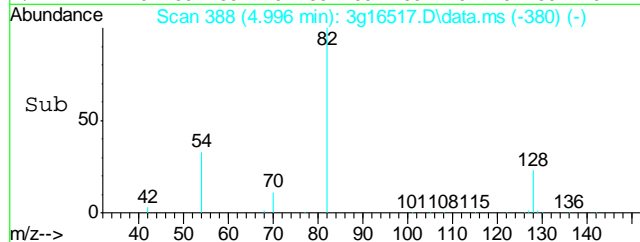
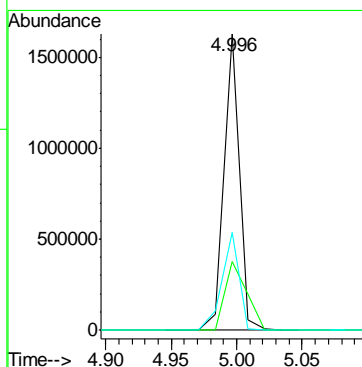
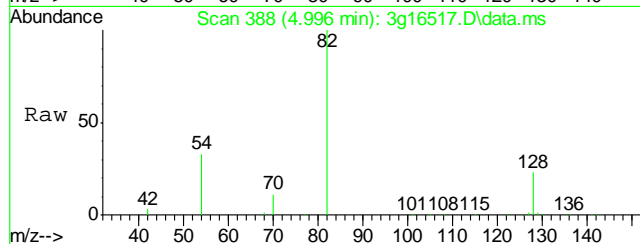
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

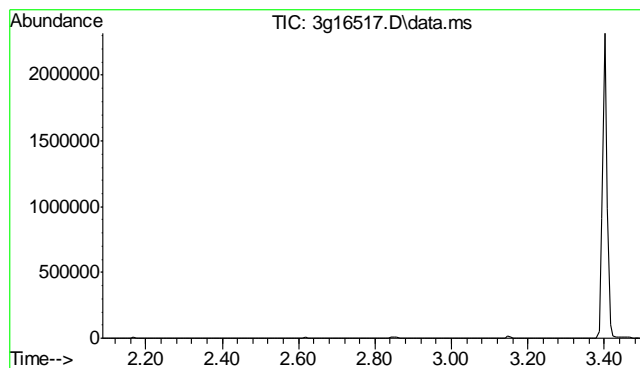
Tgt Ion:	136	Resp:	217864
Ion Ratio	Lower	Upper	
136	100		
68	8.8	0.0	21.1



#2
Nitrobenzene-d5
Concen: 48.5730 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:	82	Resp:	1331104
Ion Ratio	Lower	Upper	
82	100		
128	32.9	36.8	76.8#
54	36.6	40.5	80.5#

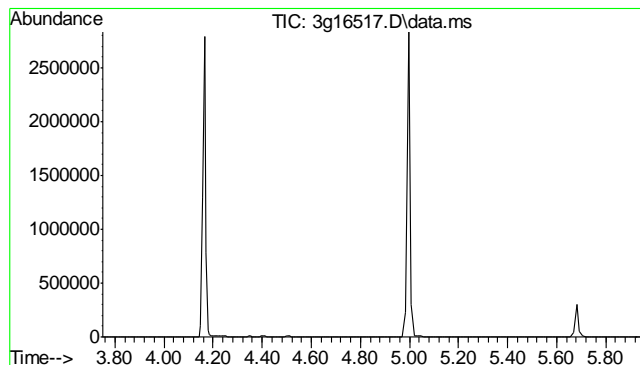
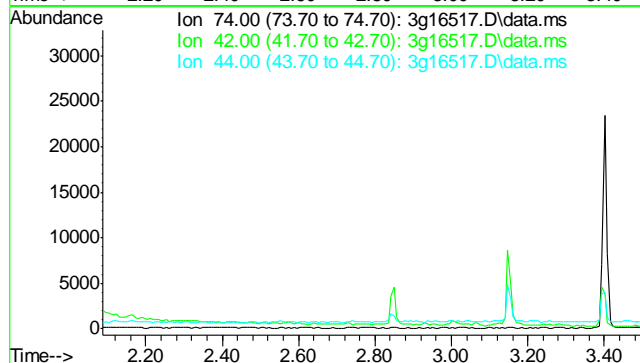




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.40 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

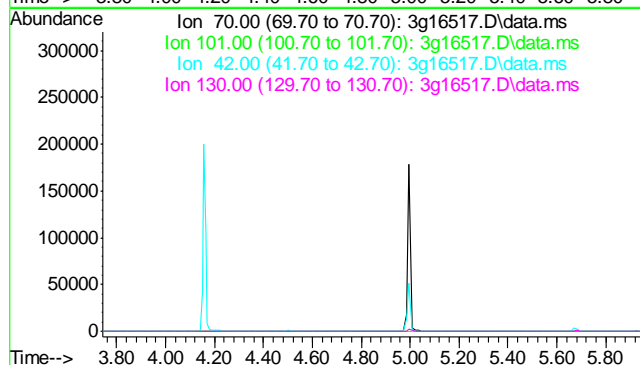
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	78.5
44	4.0

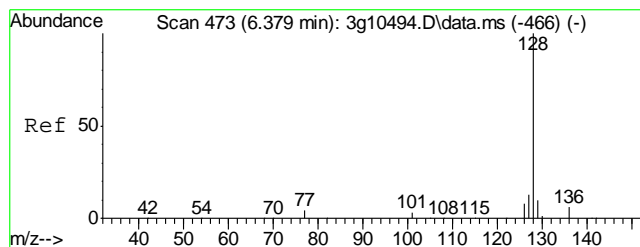


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

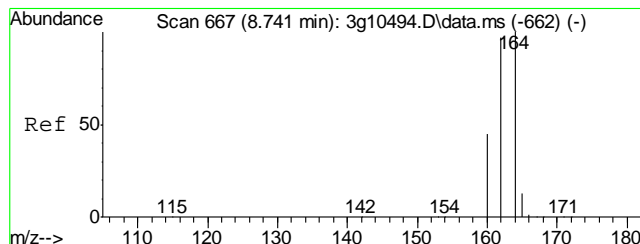
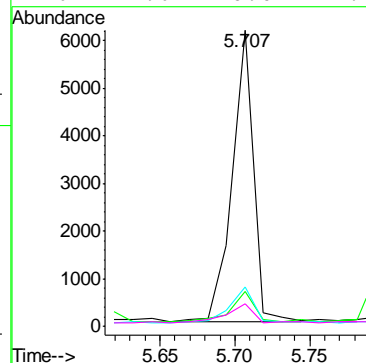
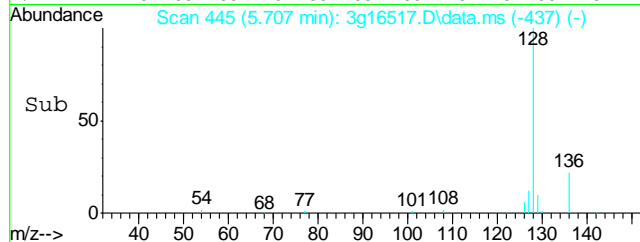
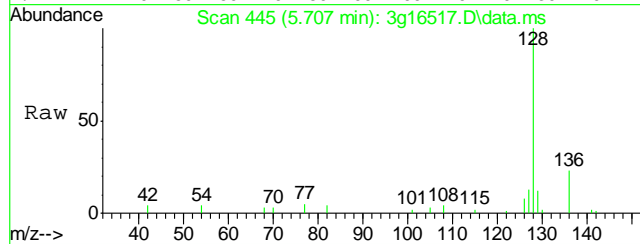
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7





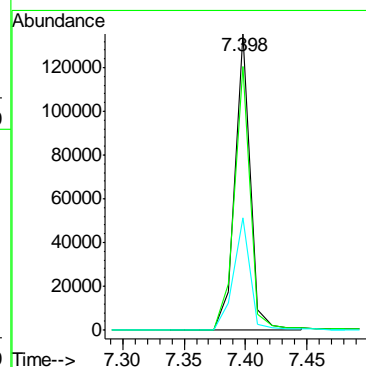
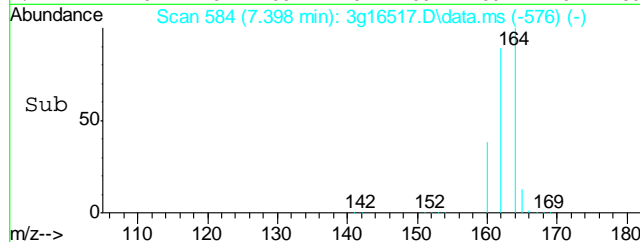
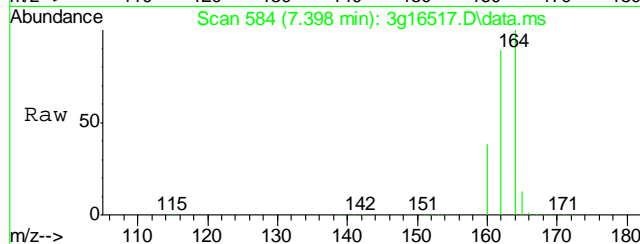
#5
Naphthalene
Concen: 0.0773 ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

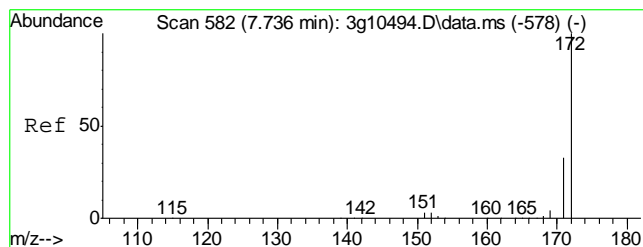
Tgt Ion:128	Resp:	6089
Ion Ratio	Lower	Upper
128	100	
129	10.9	0.0 31.2
127	13.6	0.0 32.4
126	7.6	0.0 27.2



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

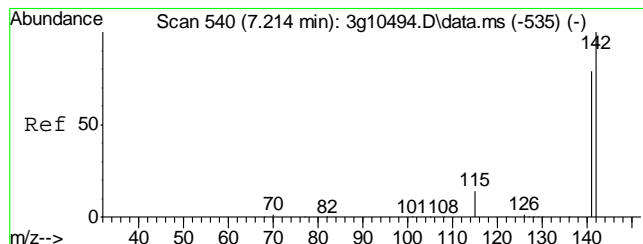
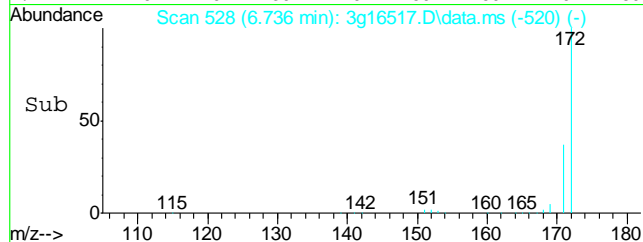
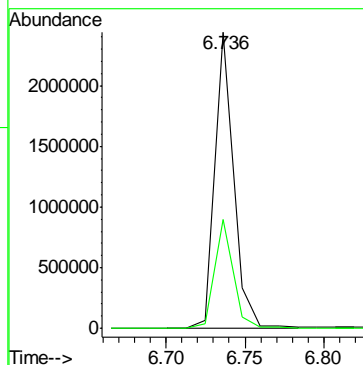
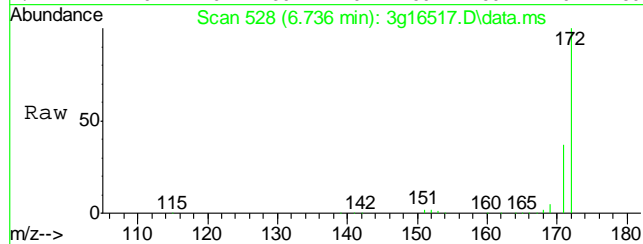
Tgt Ion:164	Resp:	117785
Ion Ratio	Lower	Upper
164	100	
162	92.1	83.7 123.7
160	40.9	31.9 71.9





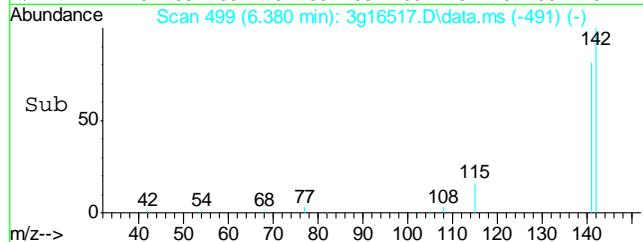
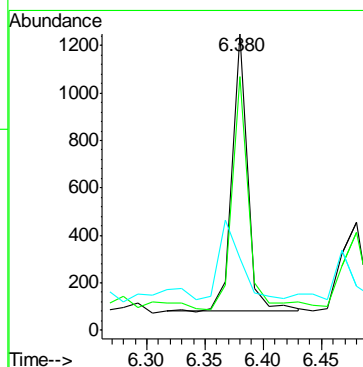
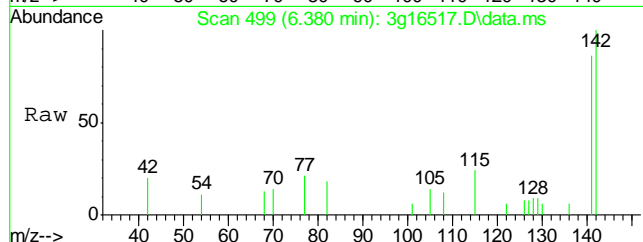
#7
2-Fluorobiphenyl
Concen: 44.6998 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

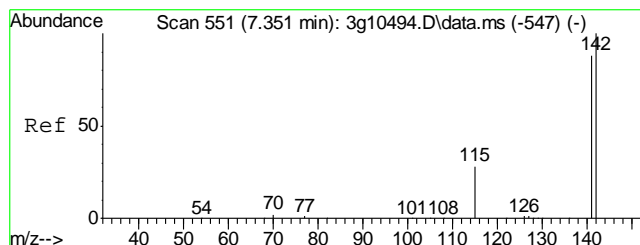
Tgt Ion:172 Resp: 2051275
Ion Ratio Lower Upper
172 100
171 36.0 12.2 52.2



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

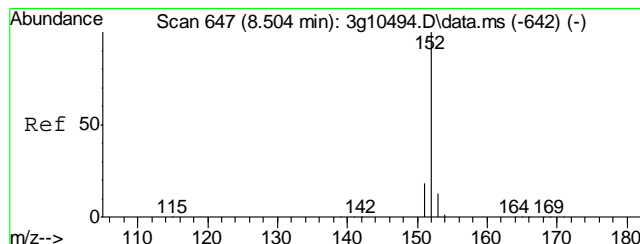
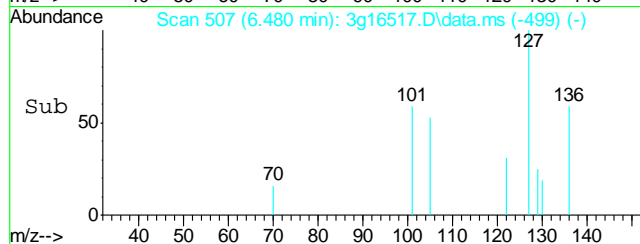
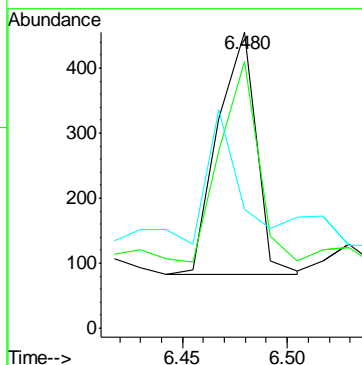
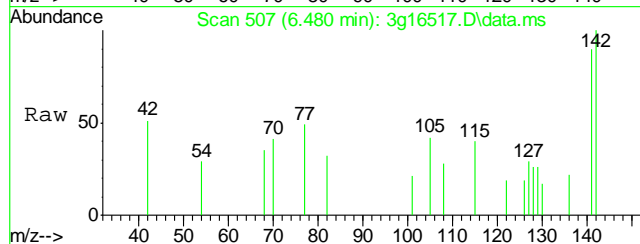
Tgt Ion:142 Resp: 1089
Ion Ratio Lower Upper
142 100
141 86.3 62.0 102.0
115 39.8 11.3 51.3





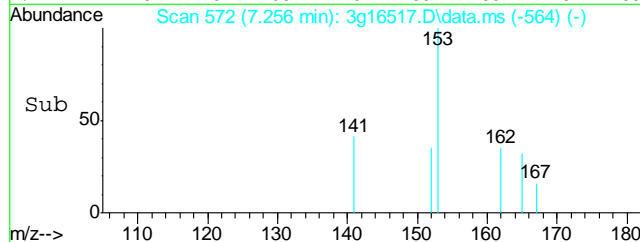
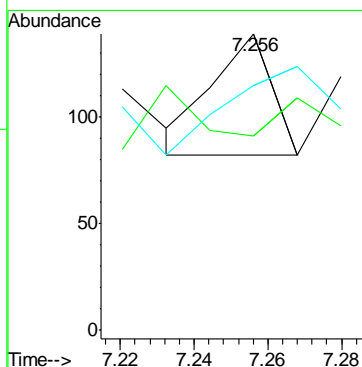
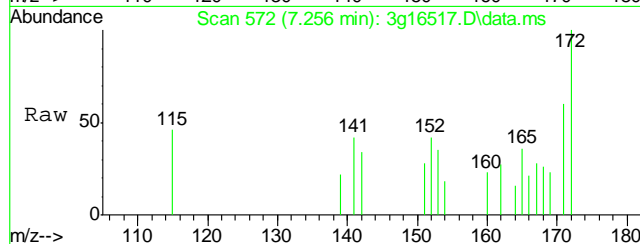
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

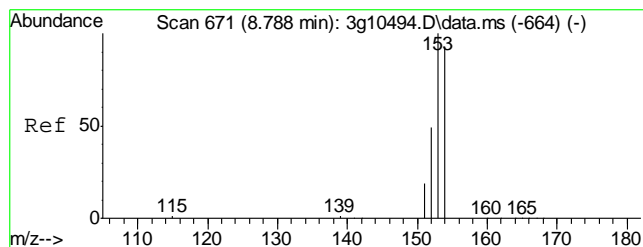
Tgt Ion:142	Resp:	479
Ion Ratio	Lower	Upper
142	100	
141	80.2	67.5 107.5
115	67.6	19.4 59.4#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.256 min Scan# 572
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

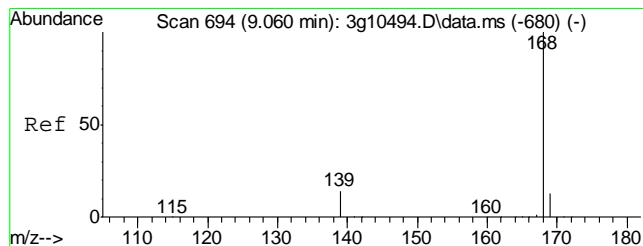
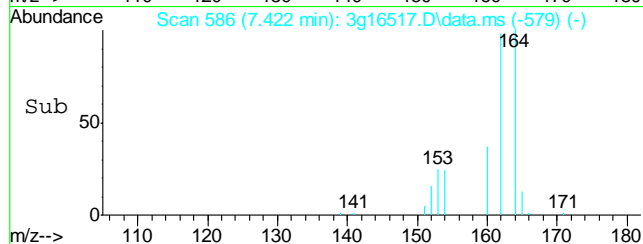
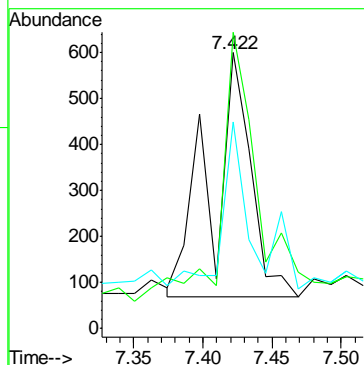
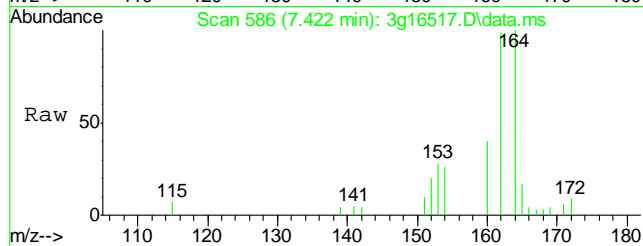
Tgt Ion:152	Resp:	63
Ion Ratio	Lower	Upper
152	100	
151	76.2	0.0 39.2#
153	154.0	0.0 32.9#





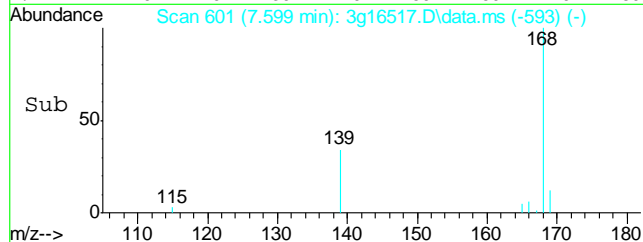
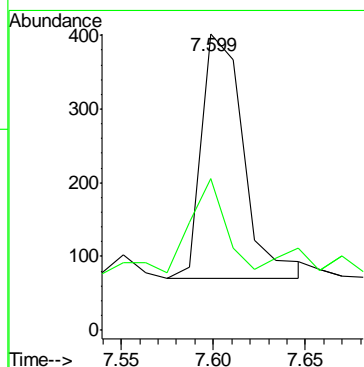
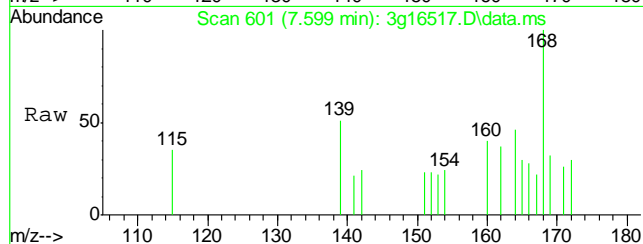
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.422 min Scan# 586
Delta R.T. -0.012 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

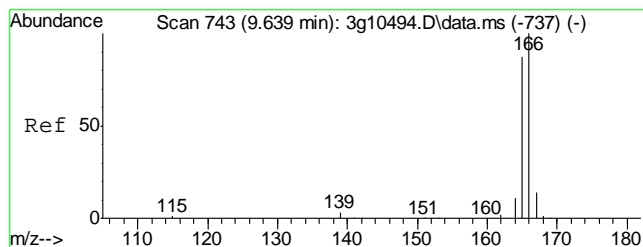
Tgt Ion:	154	Resp:	1060
Ion Ratio	Lower	Upper	
154	100		
153	82.0	82.4	122.4#
152	37.2	30.0	70.0



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.599 min Scan# 601
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

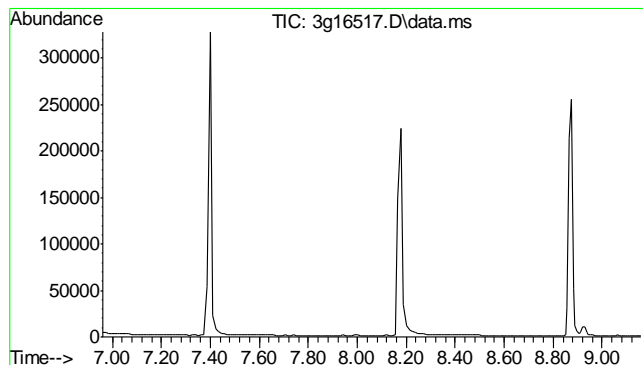
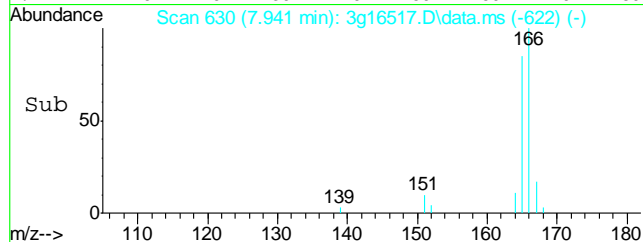
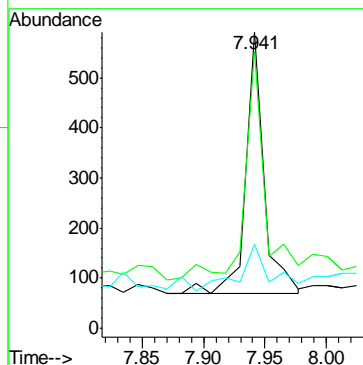
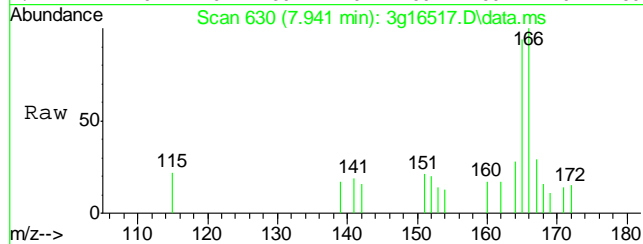
Tgt Ion:	168	Resp:	528
Ion Ratio	Lower	Upper	
168	100		
139	36.7	13.4	53.4





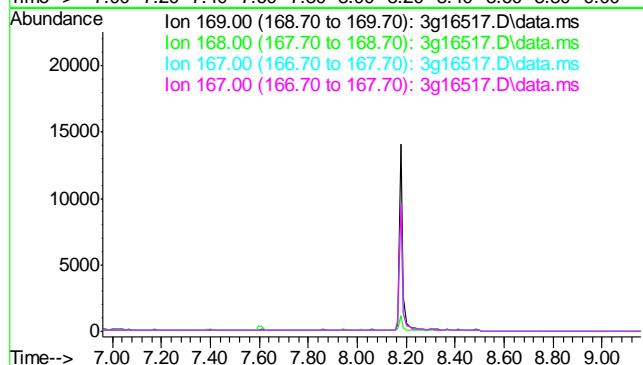
#13
Fluorene
Concen: Below ug/mL
RT: 7.941 min Scan# 630
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

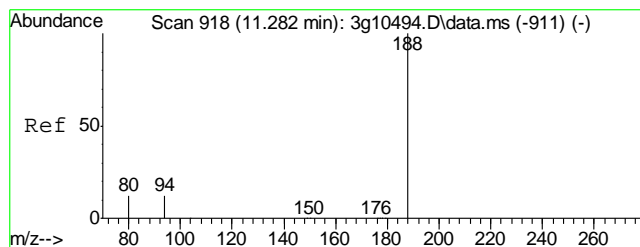
Tgt Ion: 166 Resp: 540
Ion Ratio Lower Upper
166 100
165 95.4 72.0 112.0
167 31.3 0.0 33.1



#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

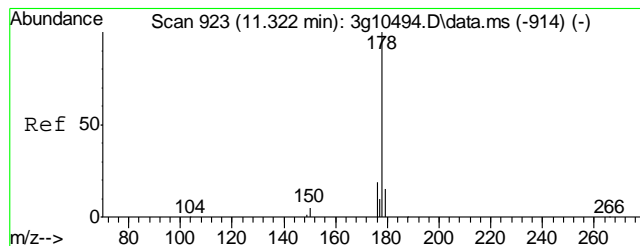
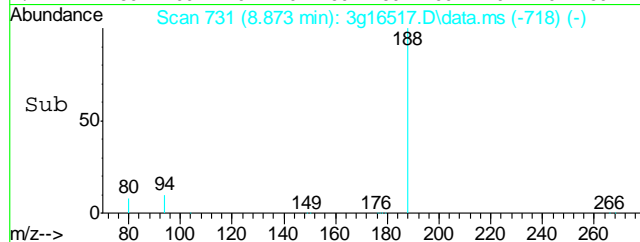
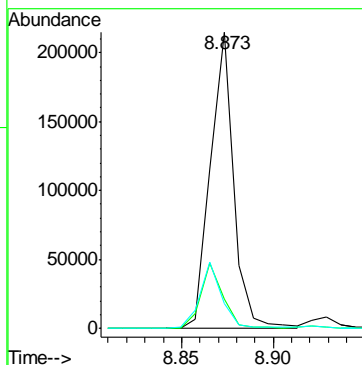
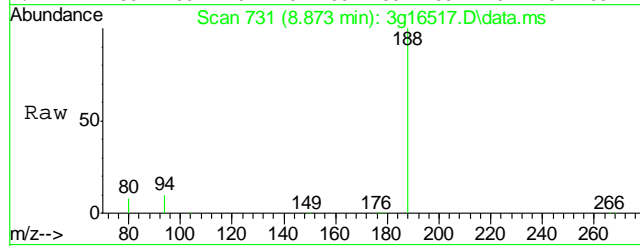
Tgt Ion: 169
Sig Exp Ratio
169 100
168 61.7
167 34.1
167 34.1





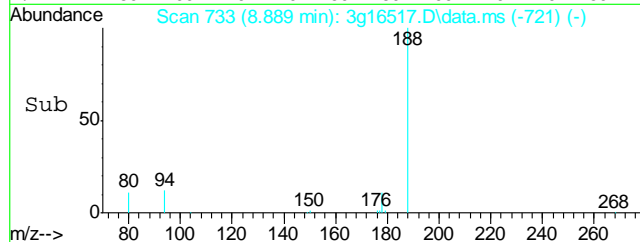
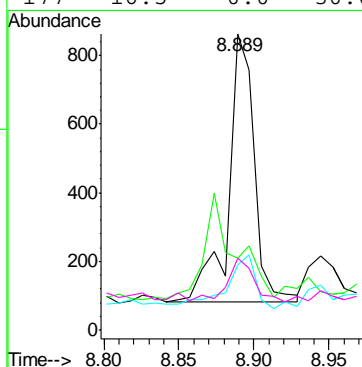
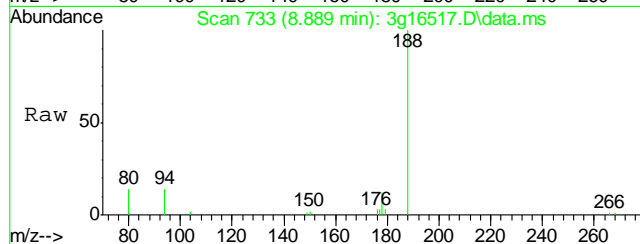
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.873 min Scan# 731
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

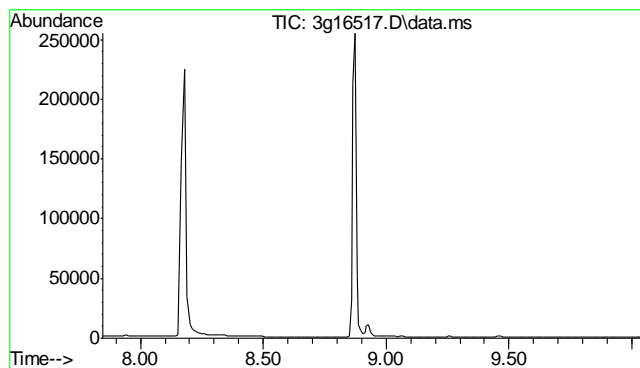
Tgt Ion	Ratio	Lower	Upper
188	100		
94	20.9	0.0	28.3
80	20.8	0.0	27.8



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.889 min Scan# 733
Delta R.T. -0.007 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion	Ratio	Lower	Upper
178	100		
179	47.3	0.0	35.2#
176	23.6	0.0	38.6
177	16.5	0.0	30.0

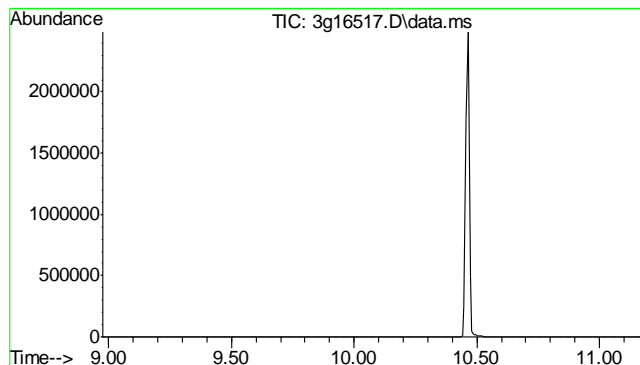
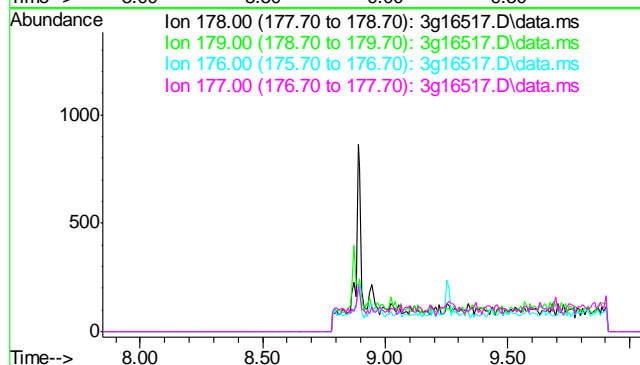




#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

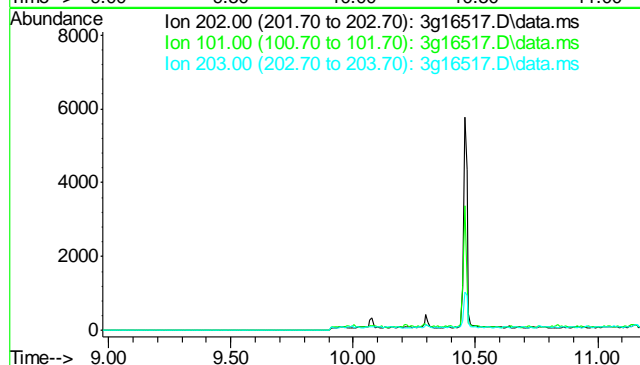
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7

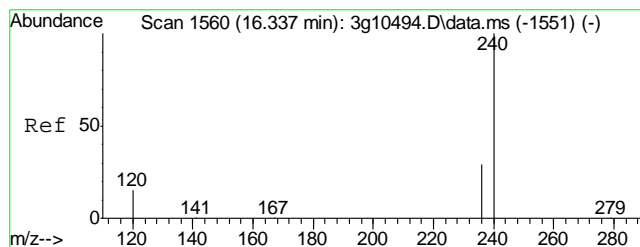


#18
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 10.07 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

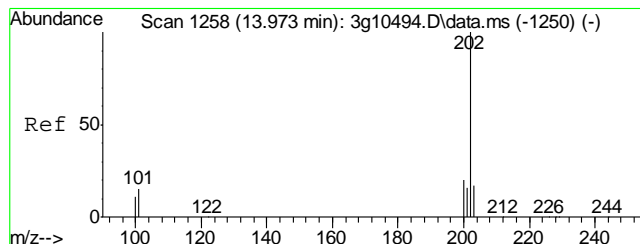
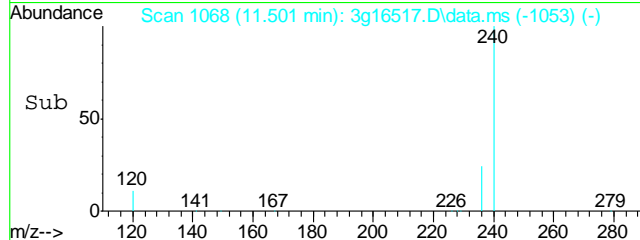
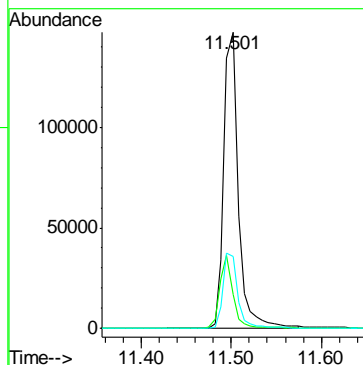
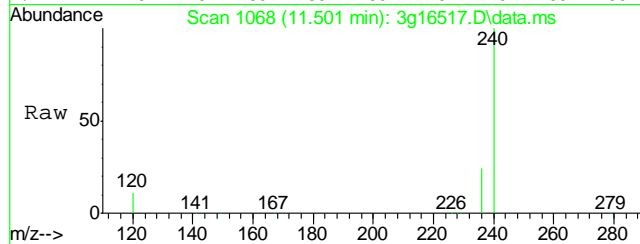
Tgt Ion:	202
Sig	Exp Ratio
202	100
101	12.6
203	17.4





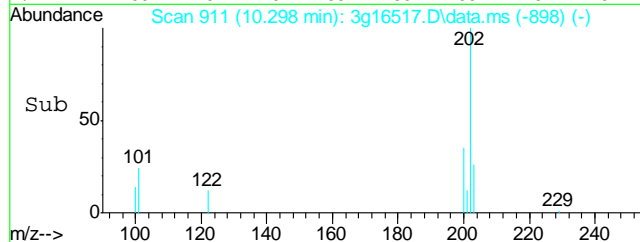
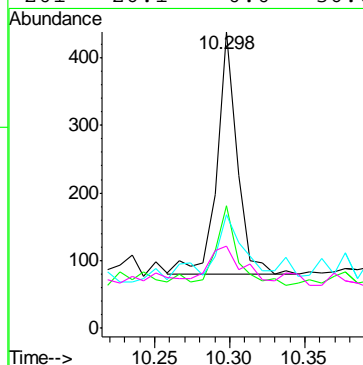
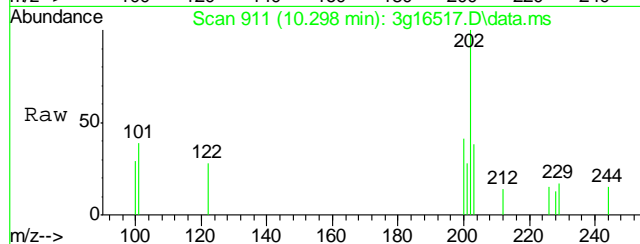
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.501 min Scan# 1068
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

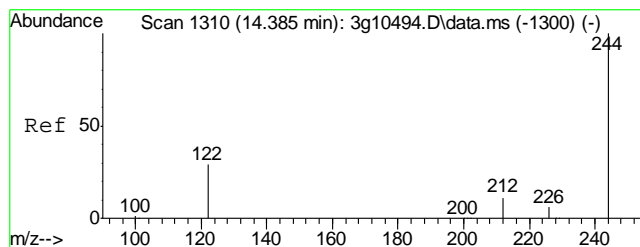
Tgt Ion:	240	Resp:	166287
Ion Ratio	Lower	Upper	
240	100		
120	22.3	0.2	40.2
236	25.7	8.8	48.8



#20
Pyrene
Concen: Below ug/mL
RT: 10.298 min Scan# 911
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

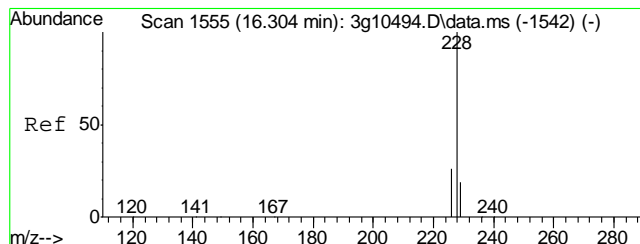
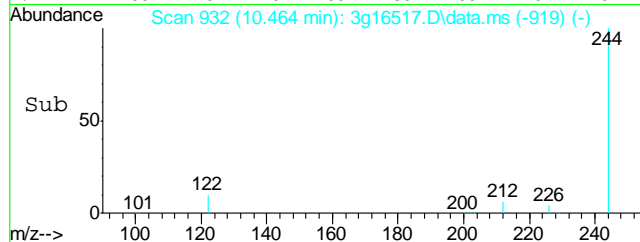
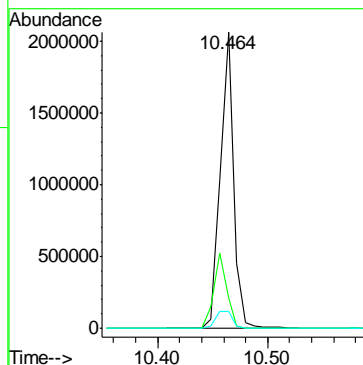
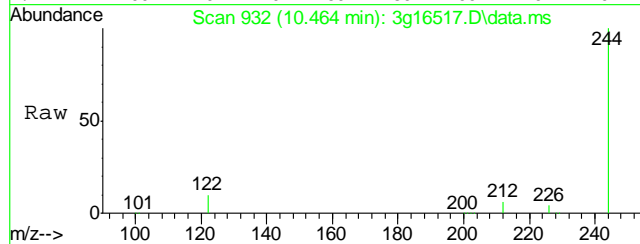
Tgt Ion:	202	Resp:	337
Ion Ratio	Lower	Upper	
202	100		
200	35.3	0.2	40.2
203	49.9	0.0	37.8#
201	26.1	0.0	36.6





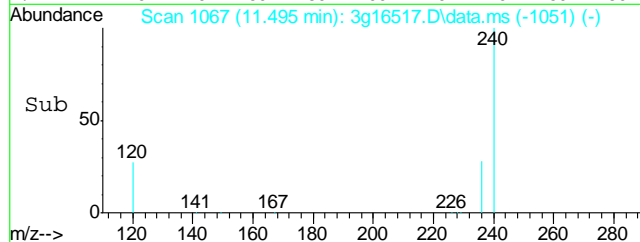
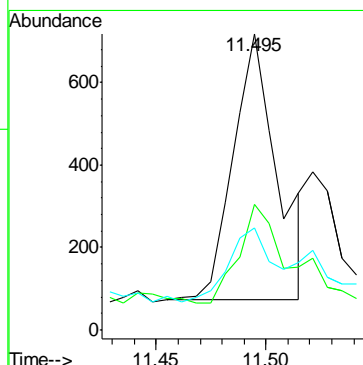
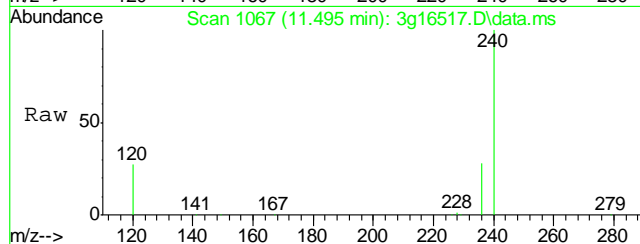
#21
Terphenyl-d14
Concen: 55.7722 ug/mL
RT: 10.464 min Scan# 932
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

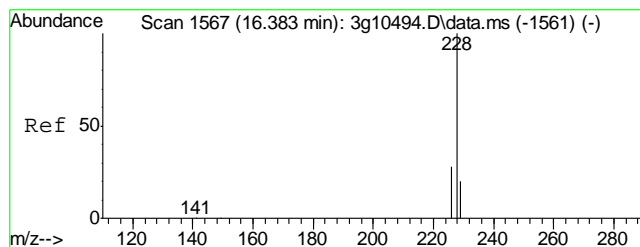
Tgt Ion:244 Resp: 1754721
Ion Ratio Lower Upper
244 100
122 24.9 7.8 47.8
212 7.3 0.0 32.8



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. 0.007 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

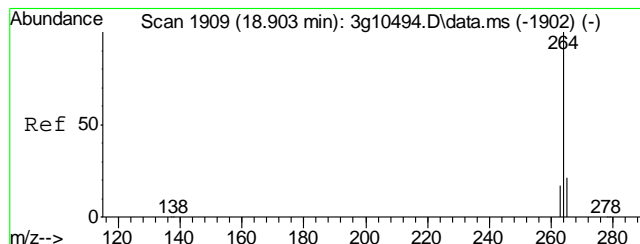
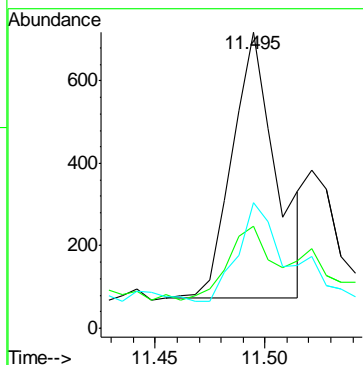
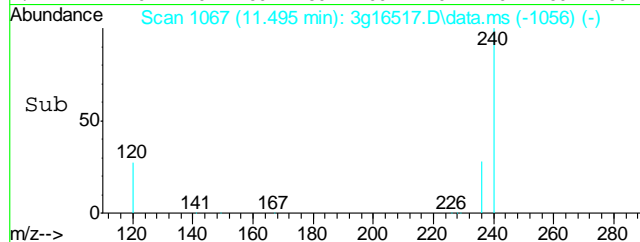
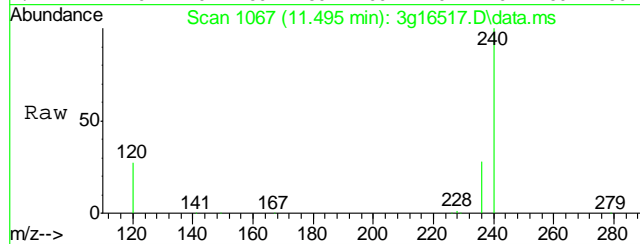
Tgt Ion:228 Resp: 896
Ion Ratio Lower Upper
228 100
229 43.1 0.0 39.4#
226 27.5 6.6 46.6





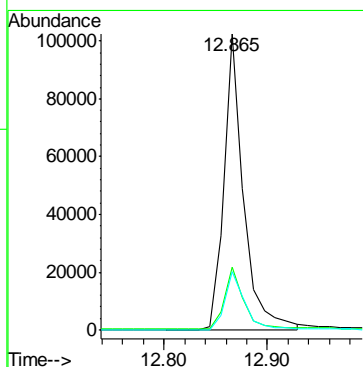
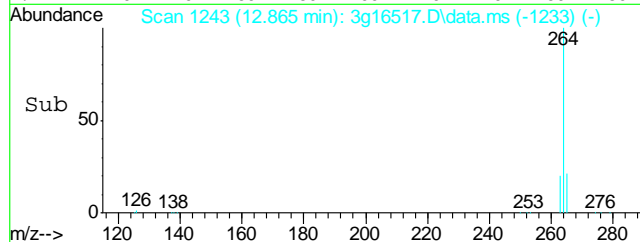
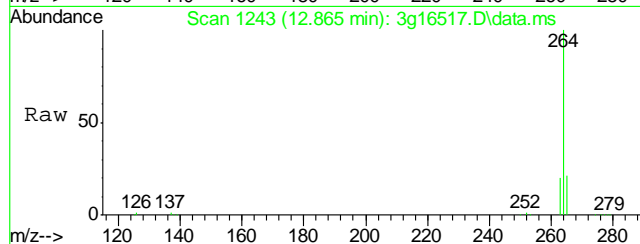
#23
Chrysene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. -0.026 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

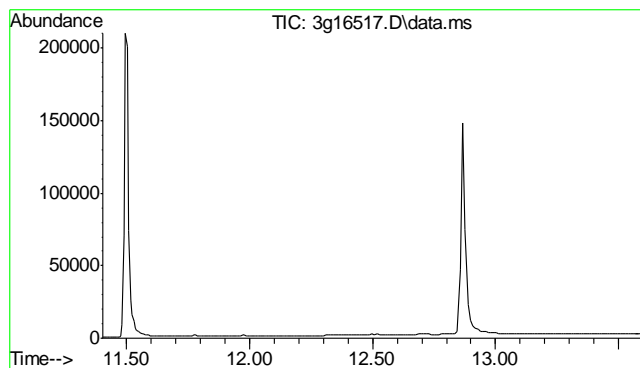
Tgt Ion:	228	Resp:	896
Ion Ratio	Lower	Upper	
228	100		
226	27.5	8.6	48.6
229	43.1	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.865 min Scan# 1243
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:	264	Resp:	135532
Ion Ratio	Lower	Upper	
264	100		
265	21.0	1.2	41.2
263	20.2	0.7	40.7

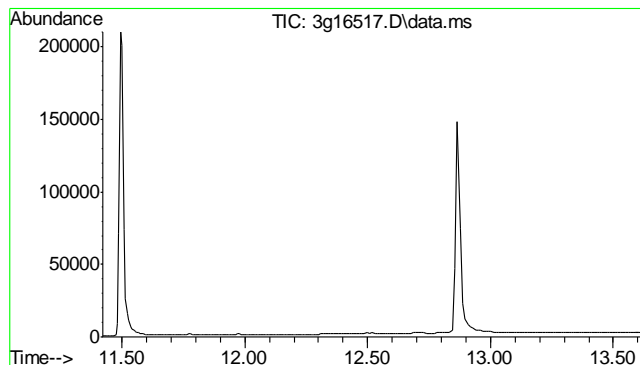
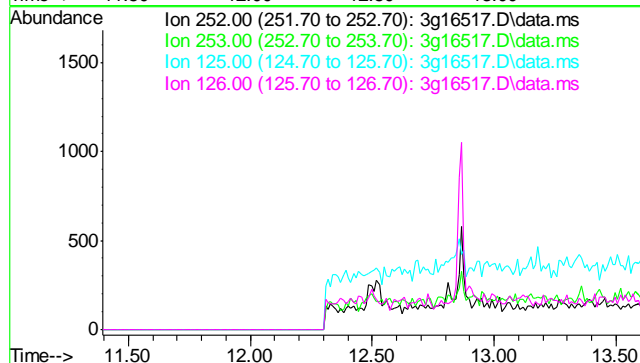




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

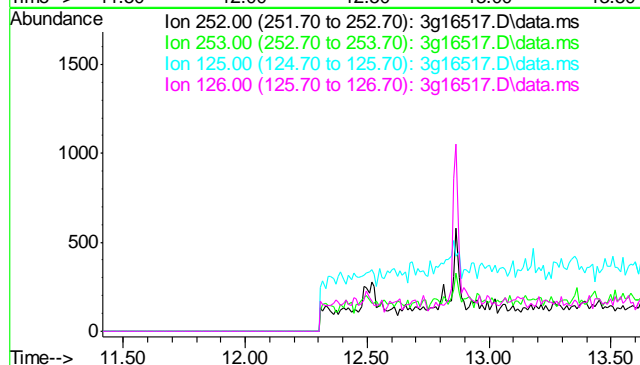
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9

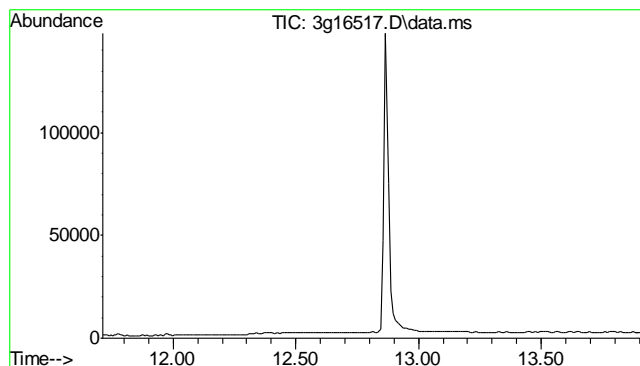


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1

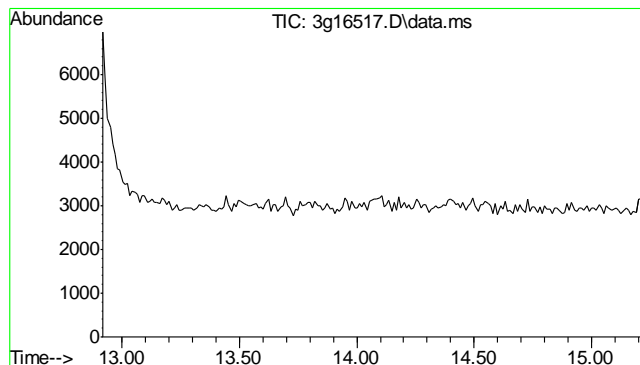
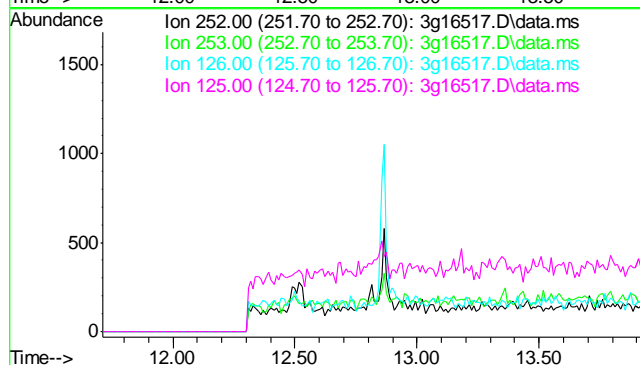




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

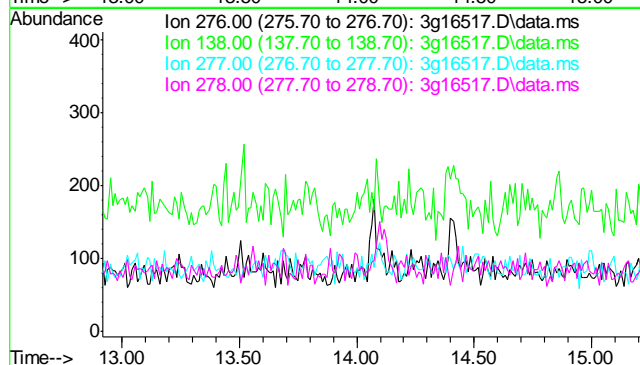
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5

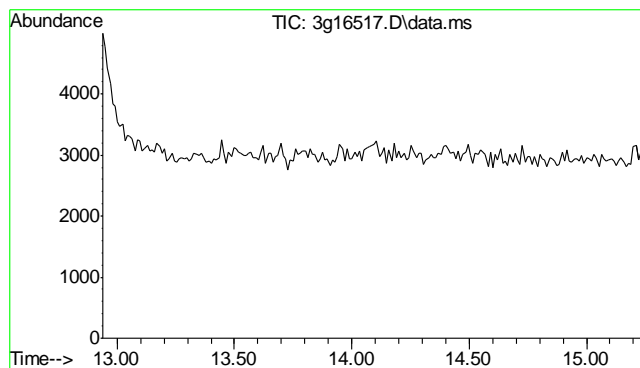


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

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

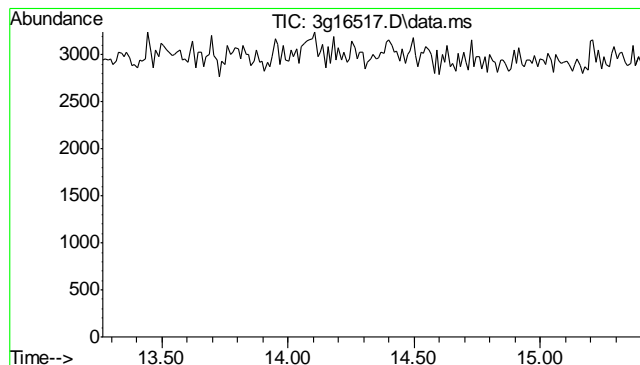
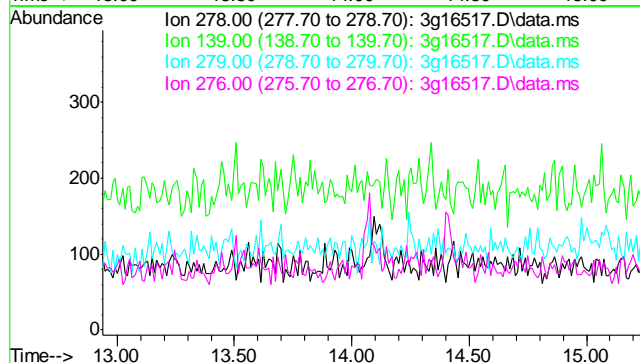




#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

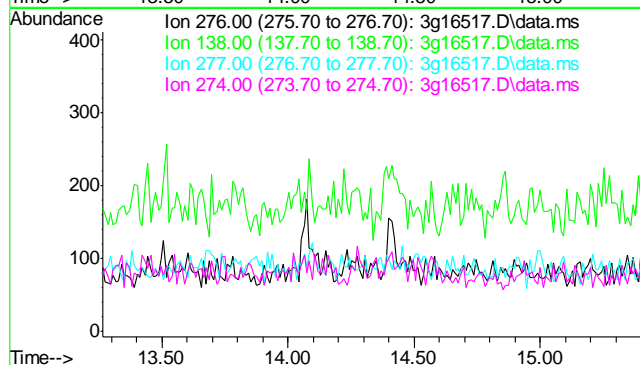
Tgt Ion:	278
Sig	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2



#30
Benzo(g,h,i)perylene
Concen: N.D. ug/mL
Expected RT: 14.41 min

Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:	276
Sig	Exp Ratio
276	100
138	35.1
277	23.3
274	21.5



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1231-MB	GB22388.D	1	10/02/13	EV	n/a	n/a	GGB1231

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

D51203-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	85% 60-140%

10.1.1
10

Blank Spike Summary

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1231-BS	GB22387.D	1	10/02/13	EV	n/a	n/a	GGB1231

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

D51203-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	116	105	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51200-1MS	GB22391.D	1	10/02/13	EV	n/a	n/a	GGB1231
D51200-1MSD	GB22392.D	1	10/02/13	EV	n/a	n/a	GGB1231
D51200-1	GB22390.D	1	10/02/13	EV	n/a	n/a	GGB1231

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

D51203-1

CAS No.	Compound	D51200-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		149	156	105	157	105	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D51200-1	Limits
120-82-1	1,2,4-Trichlorobenzene	93%	93%	86%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100213\GB22395.D\FID1A.CH Vial: 10
Signal #2 : Y:\1\DATA\100213\GB22395.D\FID2B.CH
Acq On : 2 Oct 2013 8:59 pm Operator: ELISEV
Sample : D51203-1 Inst : GC/MS Ins
Misc : GC3914,GGB1231,5.074,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 03 08:08:14 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Oct 03 08:07:23 2013
Response via : Initial Calibration
DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.36	2420842	80.131 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.36	11197034	84.794 %	m
Target Compounds					
1) H	TVH-Gasoline	7.28	4296220	0.061 mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T	Benzene	4.14	104280	0.272 ug/L	
6) T	Toluene	7.66	107870	0.291 ug/L	
7) T	Ethylbenzene	0.00	0	N.D. ug/L	d
8) T	m,p-Xylene	10.46	167309	0.443 ug/L	m
9) T	o-Xylene	0.00	0	N.D. ug/L	d
11) T	Naphthalene	14.54	26409	0.153 ug/L	m

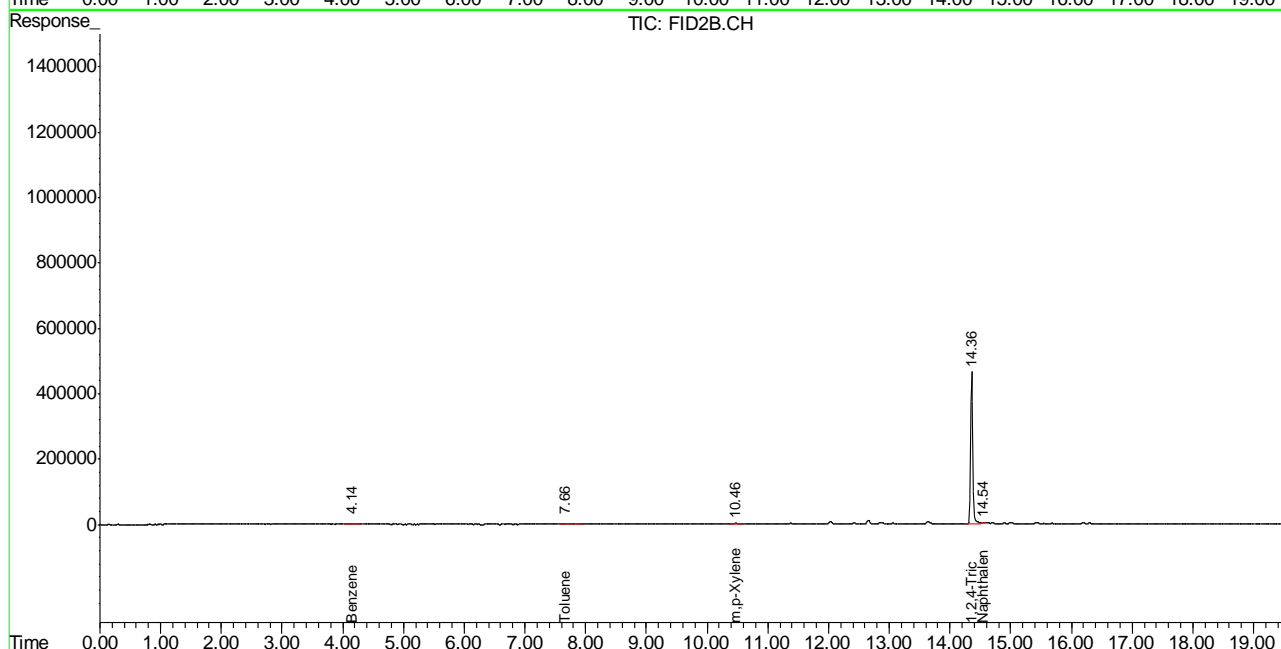
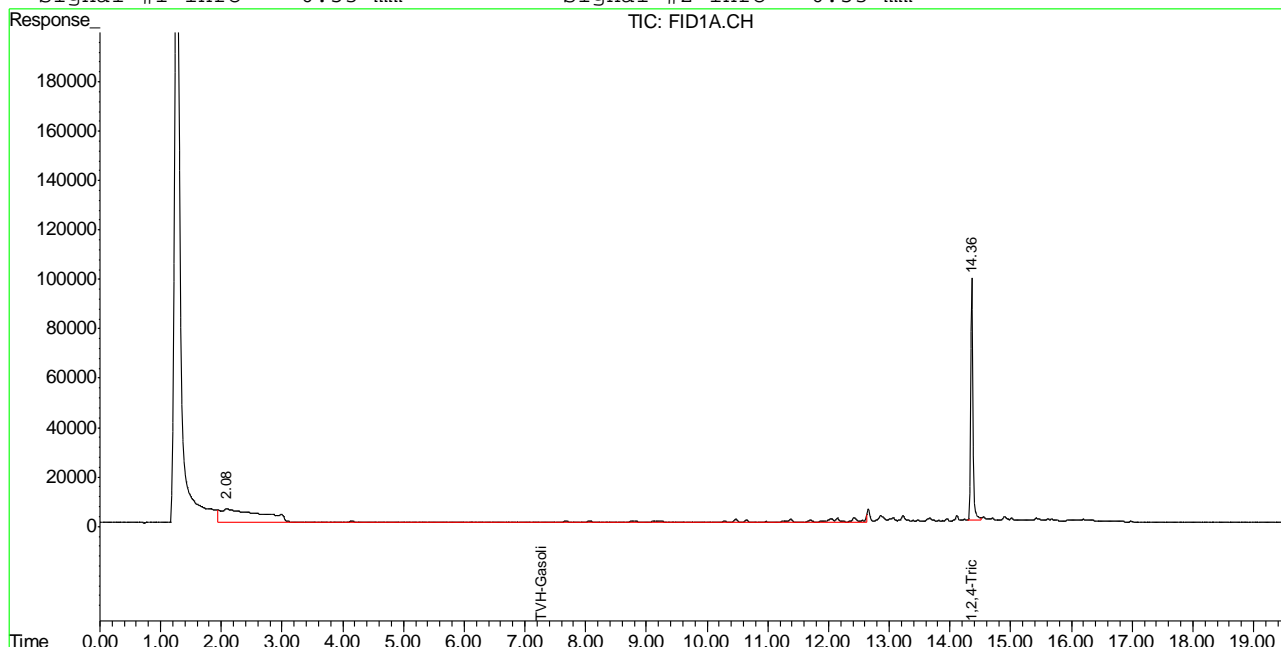
11.1.1
11

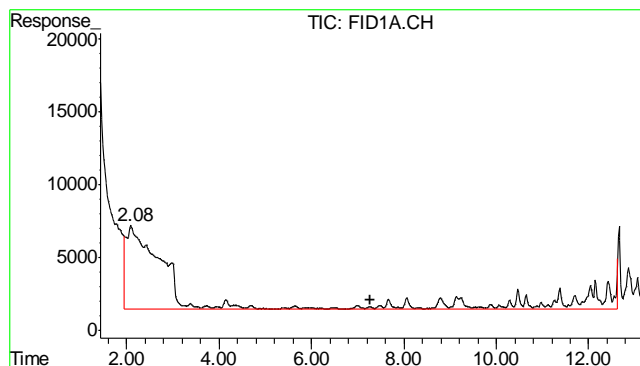
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100213\GB22395.D\FID1A.CH Vial: 10
 Signal #2 : Y:\1\DATA\100213\GB22395.D\FID2B.CH
 Acq On : 2 Oct 2013 8:59 pm Operator: ELISEV
 Sample : D51203-1 Inst : GC/MS Ins
 Misc : GC3914,GGB1231,5.074,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Oct 3 8:25 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Oct 03 08:07:23 2013
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

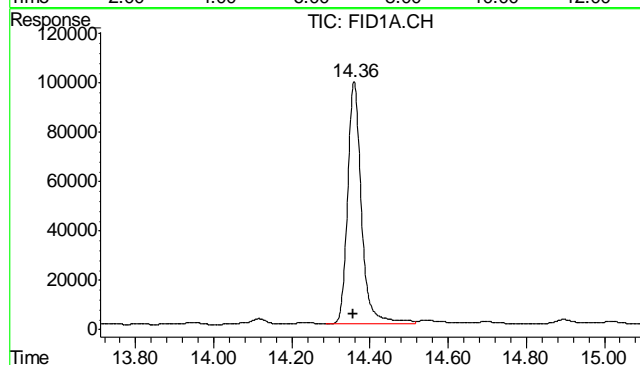
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





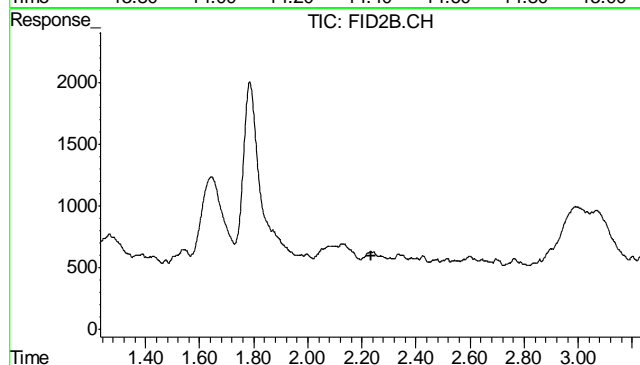
#1 TVH-Gasoline

R.T.: 7.280 min
Delta R.T.: 0.000 min
Response: 4296220
Conc: 0.06 mg/L m



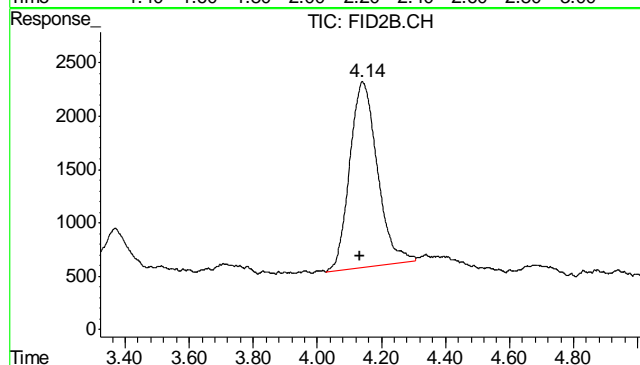
#2 1,2,4-Trichlorobenzene

R.T.: 14.359 min
Delta R.T.: 0.002 min
Response: 2420842
Conc: 80.13 % m



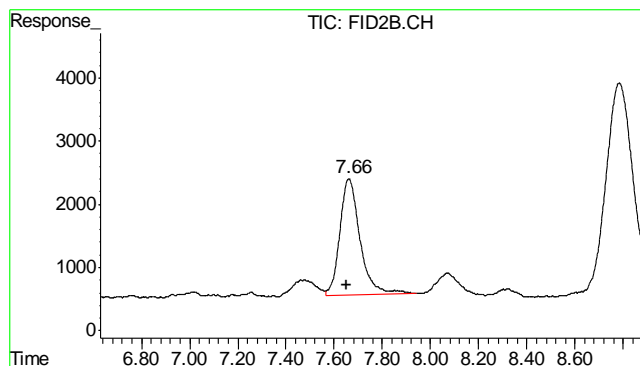
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.233 min
Response: 0
Conc: N.D.

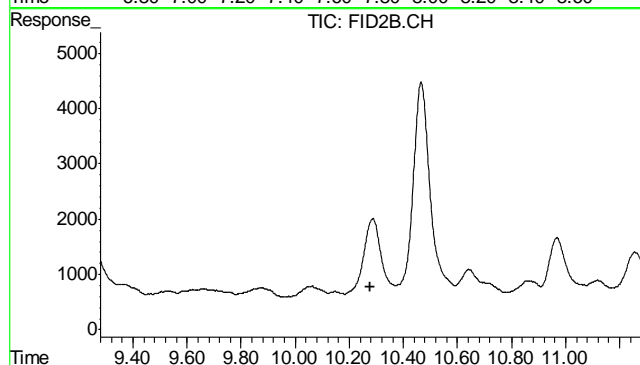


#5 Benzene

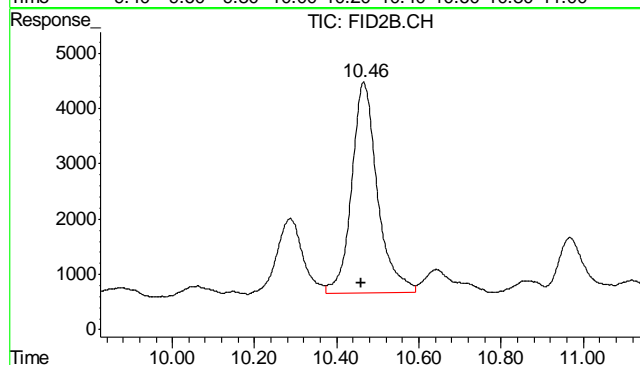
R.T.: 4.141 min
Delta R.T.: 0.010 min
Response: 104280
Conc: 0.27 ug/L



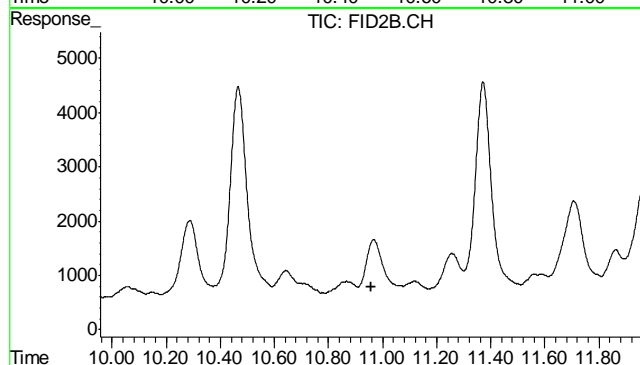
#6 Toluene
R.T.: 7.661 min
Delta R.T.: 0.009 min
Response: 107870
Conc: 0.29 ug/L



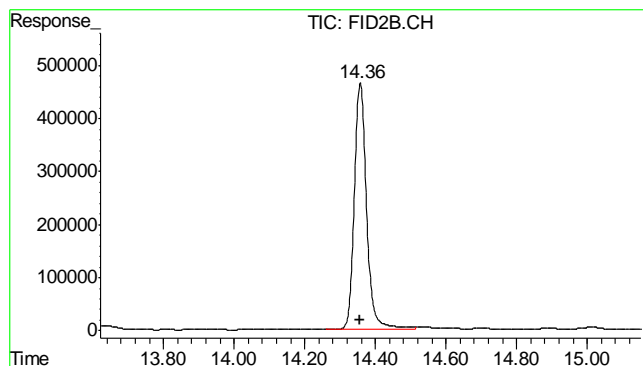
#7 Ethylbenzene
R.T.: 0.000 min
Exp R.T.: 10.279 min
Response: 0
Conc: N.D.



#8 m,p-Xylene
R.T.: 10.465 min
Delta R.T.: 0.005 min
Response: 167309
Conc: 0.44 ug/L m

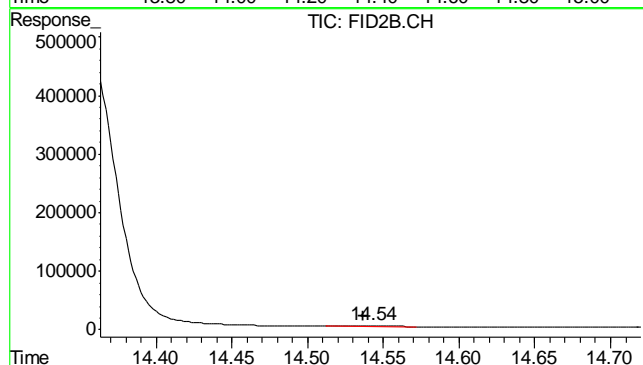


#9 o-Xylene
R.T.: 0.000 min
Exp R.T.: 10.956 min
Response: 0
Conc: N.D.



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

R.T.: 14.356 min
 Delta R.T.: 0.000 min
 Response: 11197034
 Conc: 84.79 % m



#11 Naphthalene

R.T.: 14.542 min
 Delta R.T.: 0.005 min
 Response: 26409
 Conc: 0.15 ug/L m

11.1.1
11

Jennifer Laidlaw
10/03/13 09:15

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100213\GB22388.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\100213\GB22388.D\FID2B.CH
Acq On : 2 Oct 2013 4:51 pm Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3914,GGB1231,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 03 08:07:46 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Oct 03 08:07:23 2013
Response via : Initial Calibration
DataAcq Meth : TVB4.M

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

Compound		R.T.	Response	Conc Units	

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.36	2563808	84.863 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.36	11827632	89.570 %	m
Target Compounds					
1) H	TVH-Gasoline	7.28	4113266	0.059 mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T	Benzene	0.00	0	N.D. ug/L	d
6) T	Toluene	7.65	113265	0.306 ug/L	
7) T	Ethylbenzene	0.00	0	N.D. ug/L	d
8) T	m,p-Xylene	10.46	150042	0.397 ug/L	m
9) T	o-Xylene	0.00	0	N.D. ug/L	d
11) T	Naphthalene	14.54	260490	1.511 ug/L	m

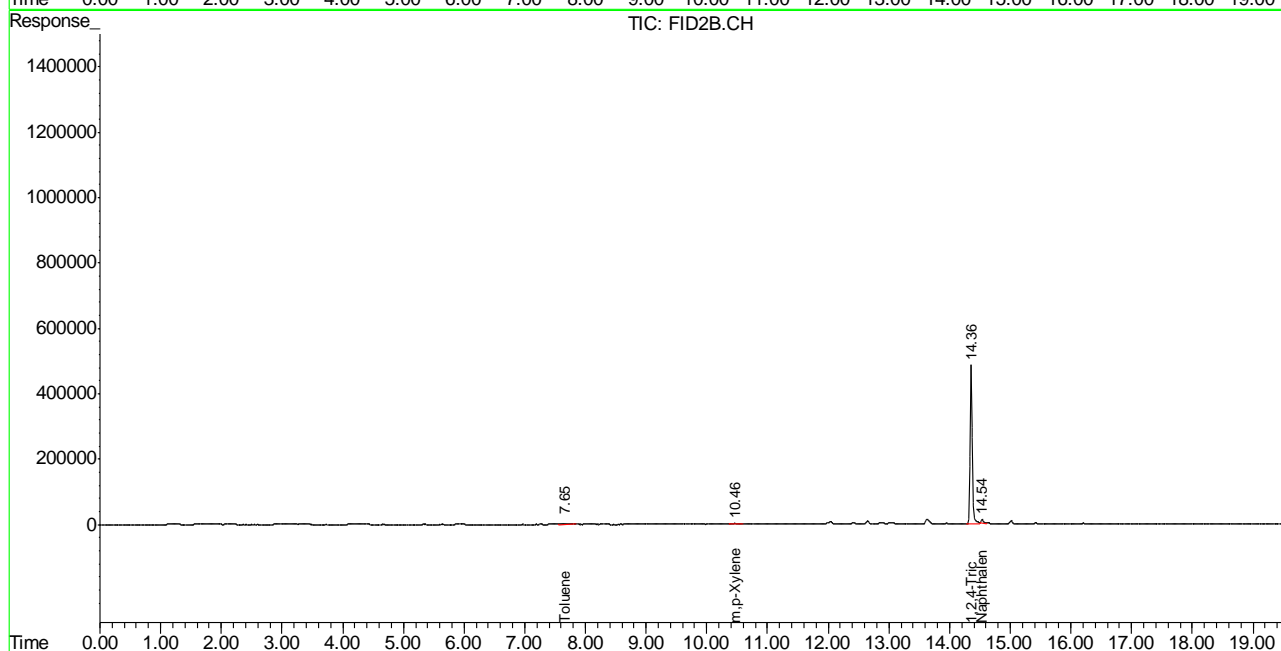
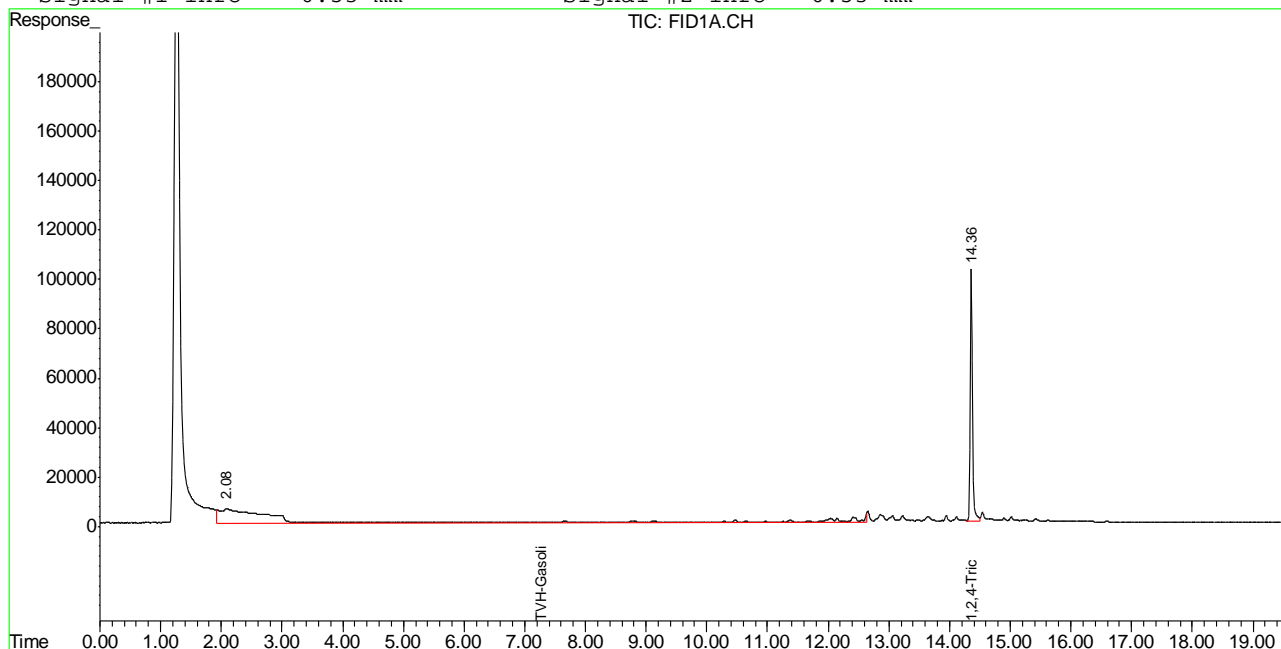
(f)=RT Delta > 1/2 Window (m)=manual int.
GB22388.D TB1125GB1125SOIL.M Thu Oct 03 08:21:14 2013 GC

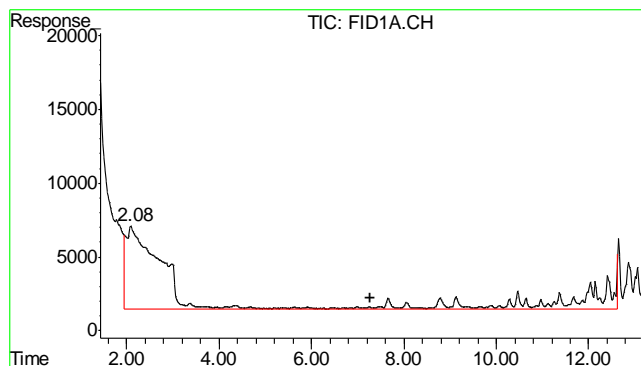
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100213\GB22388.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\100213\GB22388.D\FID2B.CH
Acq On : 2 Oct 2013 4:51 pm Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3914,GGB1231,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 3 8:17 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Oct 03 08:07:23 2013
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

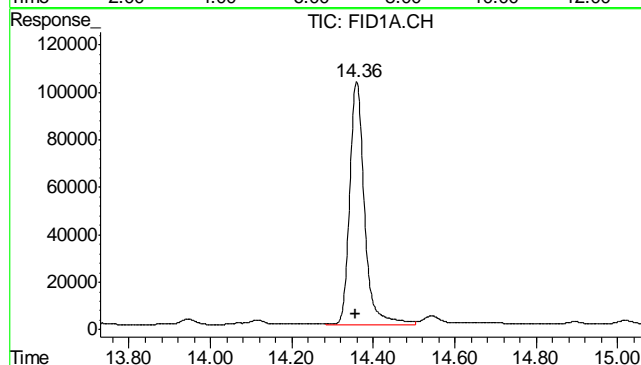
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





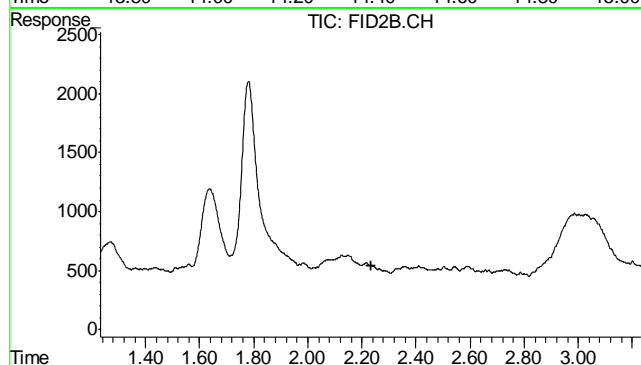
#1 TVH-Gasoline

R.T.: 7.280 min
Delta R.T.: 0.000 min
Response: 4113266
Conc: 0.06 mg/L m



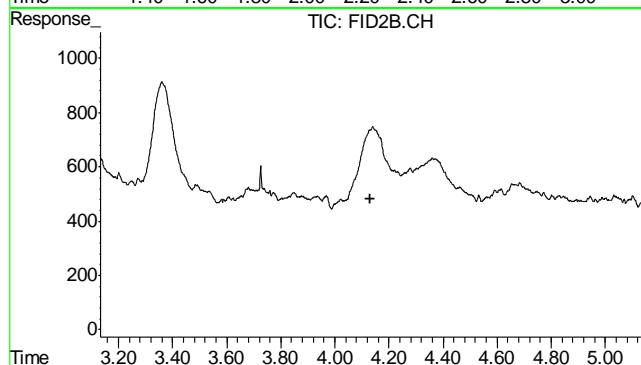
#2 1,2,4-Trichlorobenzene

R.T.: 14.358 min
Delta R.T.: 0.001 min
Response: 2563808
Conc: 84.86 % m



#4 Methyl-t-butyl-ether

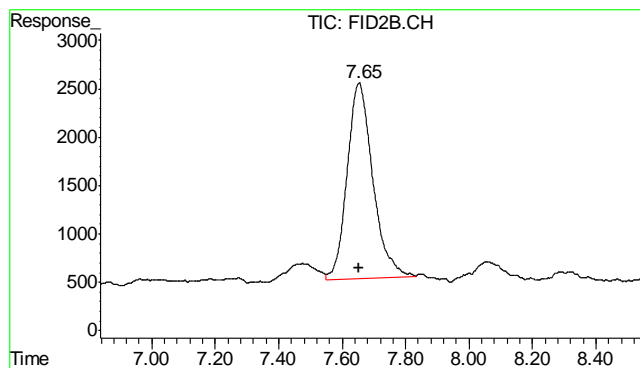
R.T.: 0.000 min
Exp R.T.: 2.233 min
Response: 0
Conc: N.D.



#5 Benzene

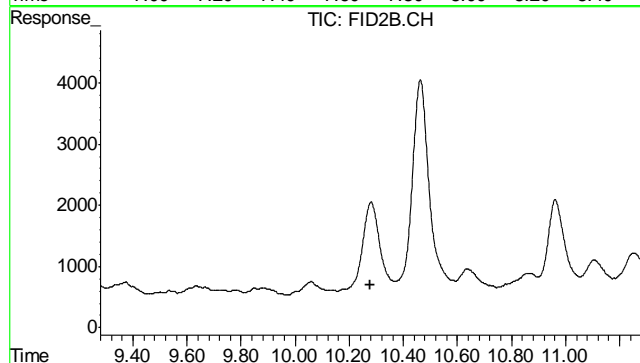
R.T.: 0.000 min
Exp R.T.: 4.132 min
Response: 0
Conc: N.D.

11.21
11



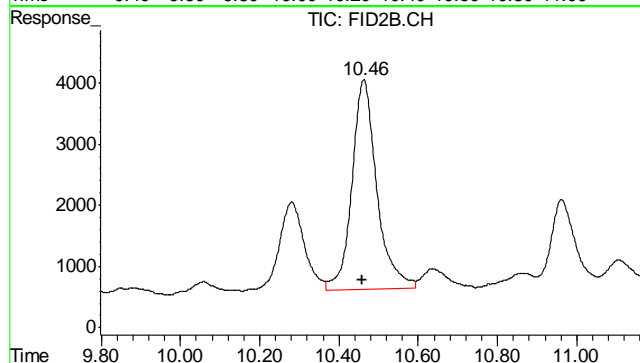
#6 Toluene

R.T.: 7.654 min
Delta R.T.: 0.002 min
Response: 113265
Conc: 0.31 ug/L



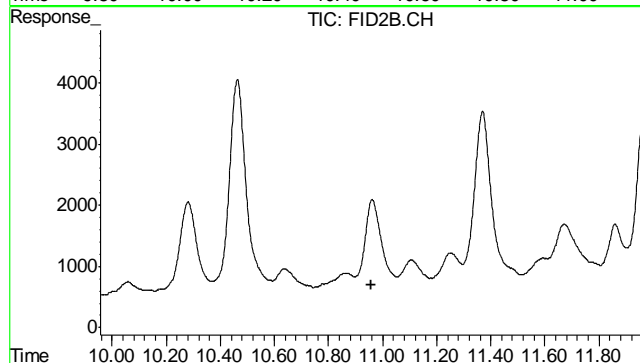
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.279 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

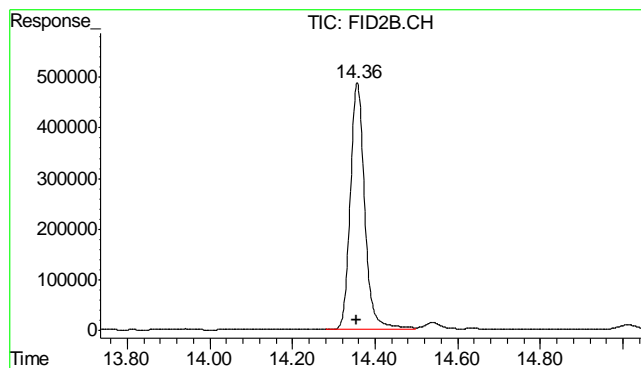
R.T.: 10.463 min
Delta R.T.: 0.003 min
Response: 150042
Conc: 0.40 ug/L m



#9 o-Xylene

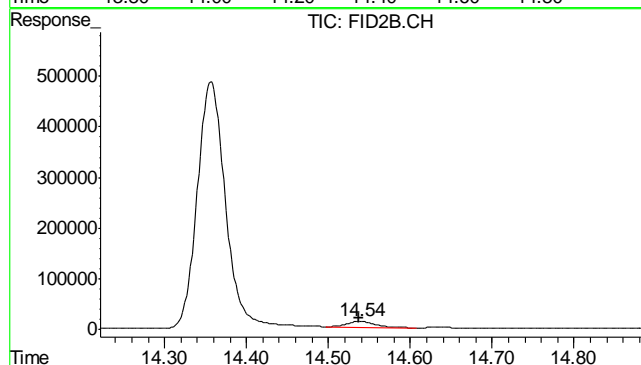
R.T.: 0.000 min
Exp R.T.: 10.956 min
Response: 0
Conc: N.D.

11.21 11



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

R.T.: 14.356 min
Delta R.T.: 0.000 min
Response: 11827632
Conc: 89.57 % m



#11 Naphthalene

R.T.: 14.539 min
Delta R.T.: 0.002 min
Response: 260490
Conc: 1.51 ug/L m

11.2.1
11

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8682-MB	FH013720.D	1	10/04/13	TU	10/04/13	OP8682	GFH723

The QC reported here applies to the following samples:

Method: SW846-8015B

D51203-1

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	80% 20-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8682-BS	FH013722.D	1	10/04/13	TU	10/04/13	OP8682	GFH723

The QC reported here applies to the following samples:

Method: SW846-8015B

D51203-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	582	87	42-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	86%	20-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51203
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8682-MS	FH013724.D	10	10/04/13	TU	10/04/13	OP8682	GFH723
OP8682-MSD	FH013726.D	10	10/04/13	TU	10/04/13	OP8682	GFH723
D51224-3	FH013732.D	10	10/04/13	TU	10/04/13	OP8682	GFH723

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

D51203-1

CAS No.	Compound	D51224-3 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	618		835	579	-5*	743	15*	25	20-150/30

CAS No.	Surrogate Recoveries	MS	MSD	D51224-3	Limits
84-15-1	o-Terphenyl	59%	74%	78%	20-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH100413.SEC\
 Data File : FH013760.D
 Signal(s) : FID2B.ch
 Acq On : 5 Oct 2013 4:43 am
 Operator : TIMU
 Sample : D51203-1
 Misc : OP8682,GFH723,30.04,,,1,1
 ALS Vial : 74 Sample Multiplier: 1

Integration File: events.e
 Quant Time: Oct 07 08:16:19 2013
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH689R.M
 Quant Title : DRO-ORO REAR
 QLast Update : Wed Sep 11 09:58:51 2013
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) s o-Terphenyl	12.163	2262859533	1304.152 ug/ml
Target Compounds			
2) H TPH-DRO (C10-C28)	9.818	997691352	709.303 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

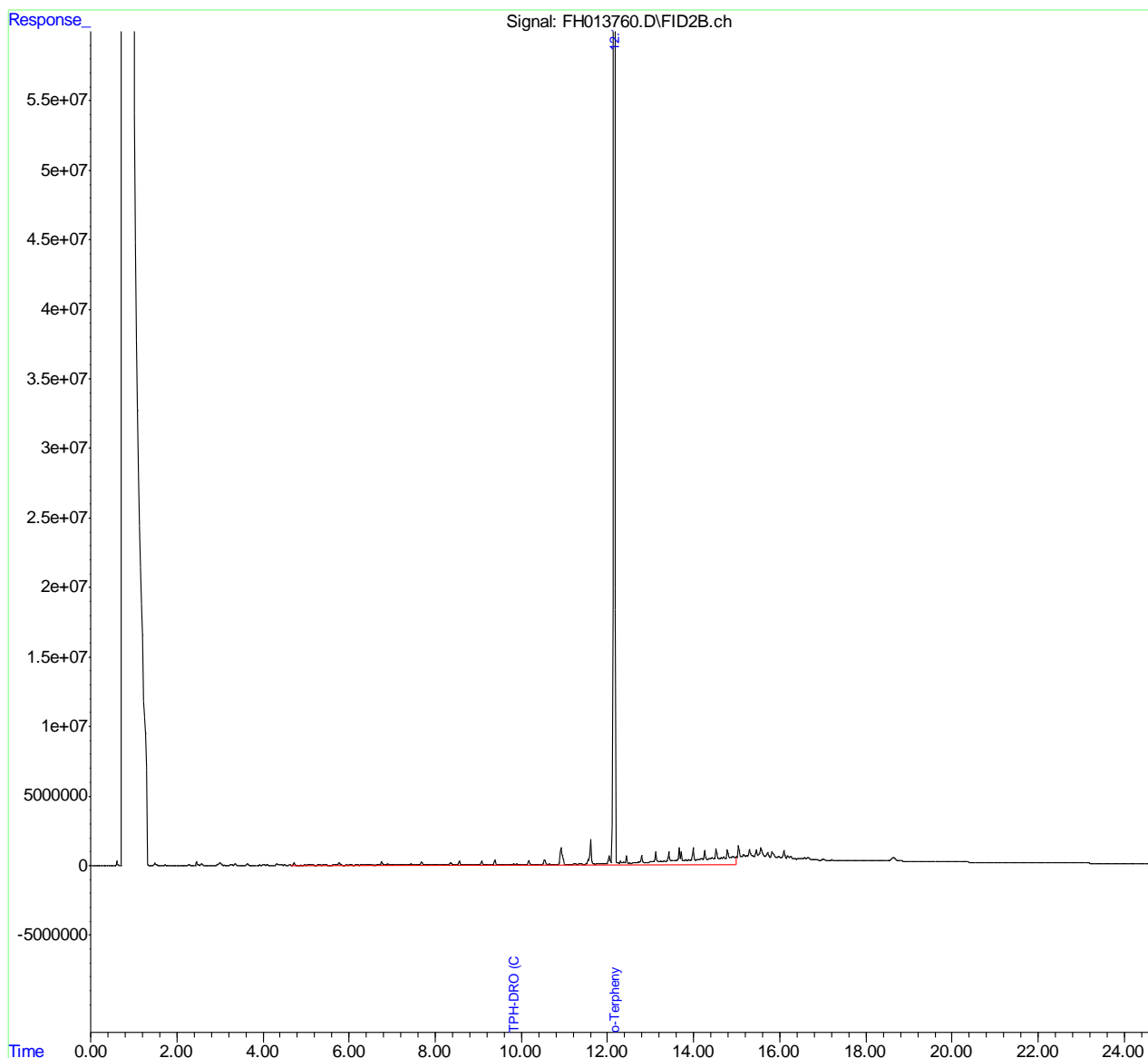
13.1.1
13

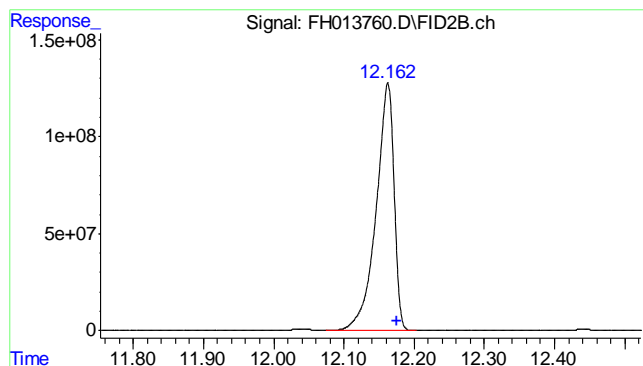
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH100413.SEC\
 Data File : FH013760.D
 Signal(s) : FID2B.ch
 Acq On : 5 Oct 2013 4:43 am
 Operator : TIMU
 Sample : D51203-1
 Misc : OP8682,GFH723,30.04,,,1,1
 ALS Vial : 74 Sample Multiplier: 1

Integration File: events.e
 Quant Time: Oct 07 08:16:19 2013
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH689R.M
 Quant Title : DRO-ORO REAR
 QLast Update : Wed Sep 11 09:58:51 2013
 Response via : Initial Calibration
 Integrator: ChemStation

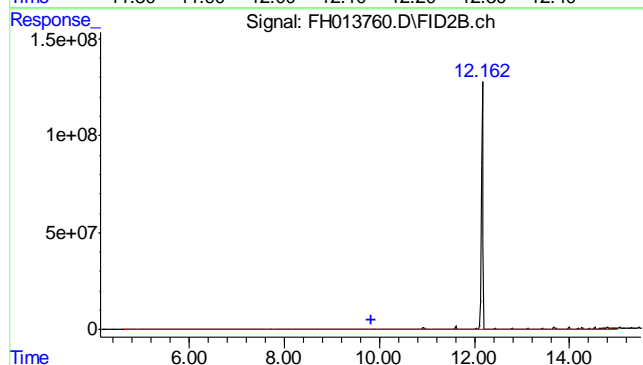
Volume Inj. :
 Signal Phase :
 Signal Info :





#1 o-Terphenyl

R.T.: 12.163 min
 Delta R.T.: -0.012 min
 Response: 2262859533
 Conc: 1304.15 ug/ml



#2 TPH-DRO (C10-C28)

R.T.: 9.818 min
 Delta R.T.: 0.000 min
 Response: 997691352
 Conc: 709.30 ug/ml m

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH100413.SEC\
Data File : FH013720.D
Signal(s) : FID2B.ch
Acq On : 4 Oct 2013 4:50 pm
Operator : TIMU
Sample : OP8682-MB
Misc : OP8682,GFH723,30.00,,,1,1
ALS Vial : 54 Sample Multiplier: 1

Integration File: events.e
Quant Time: Oct 07 08:29:11 2013
Quant Method : C:\msdchem\1\METHODS\DRO-GFH689R.M
Quant Title : DRO-ORO REAR
QLast Update : Wed Sep 11 09:58:51 2013
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) s o-Terphenyl	12.171	2782035293	1603.368 ug/ml
Target Compounds			
2) H TPH-DRO (C10-C28)	9.818	77975044	55.436 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

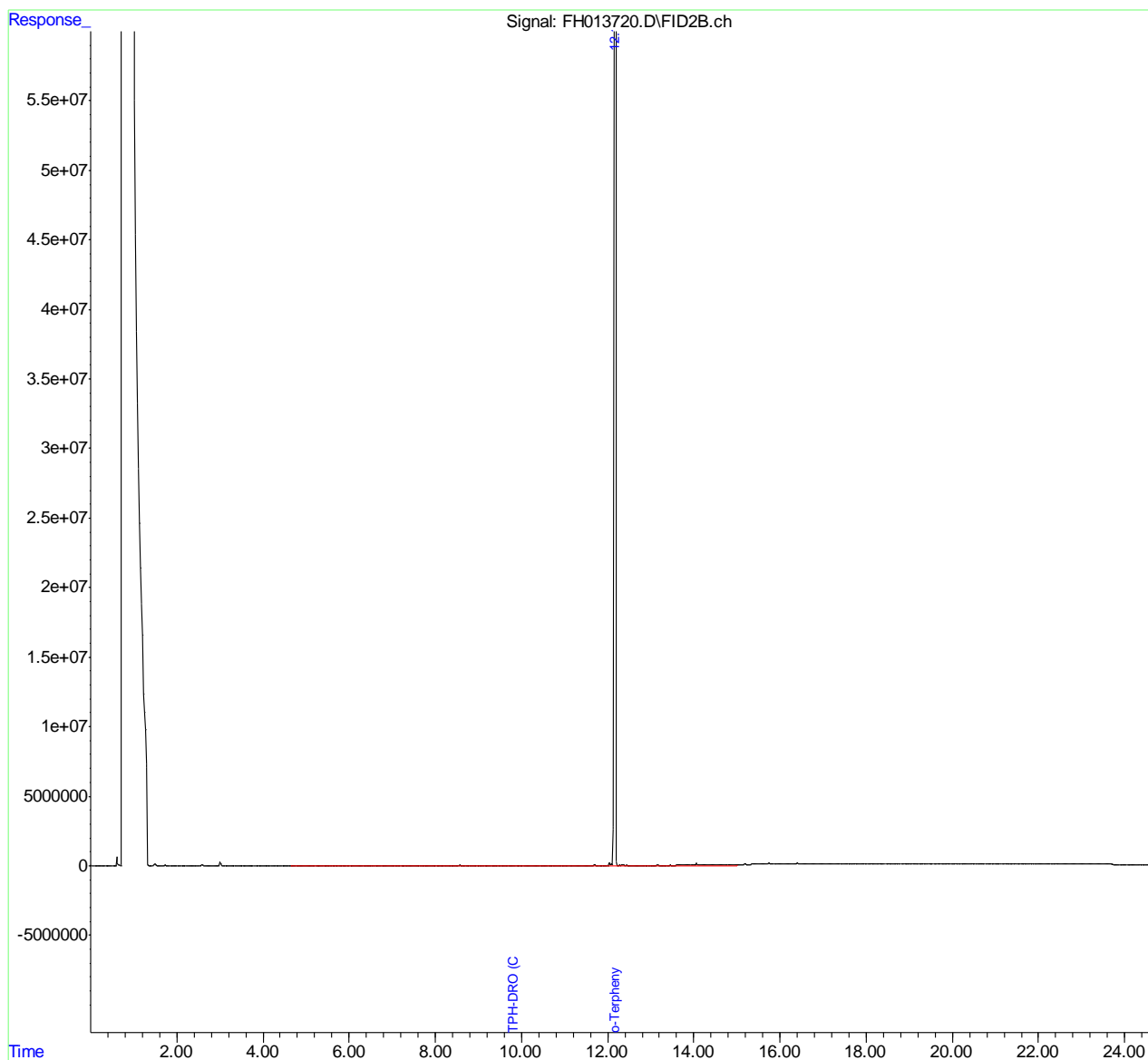
13.2.1
13

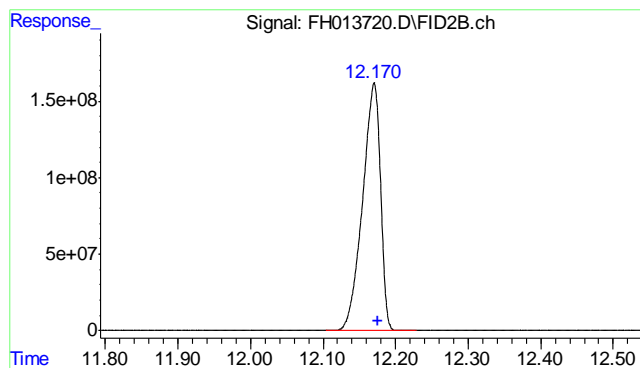
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH100413.SEC\
Data File : FH013720.D
Signal(s) : FID2B.ch
Acq On : 4 Oct 2013 4:50 pm
Operator : TIMU
Sample : OP8682-MB
Misc : OP8682,GFH723,30.00,,,1,1
ALS Vial : 54 Sample Multiplier: 1

Integration File: events.e
Quant Time: Oct 07 08:29:11 2013
Quant Method : C:\msdchem\1\METHODS\DRO-GFH689R.M
Quant Title : DRO-ORO REAR
QLast Update : Wed Sep 11 09:58:51 2013
Response via : Initial Calibration
Integrator: ChemStation

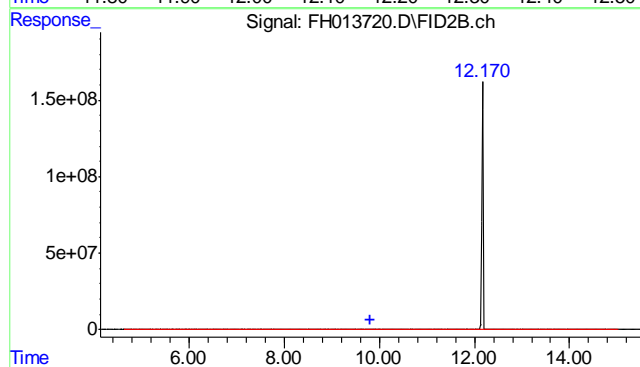
Volume Inj. :
Signal Phase :
Signal Info :





#1 o-Terphenyl

R.T.: 12.171 min
Delta R.T.: -0.004 min
Response: 2782035293
Conc: 1603.37 ug/ml



#2 TPH-DRO (C10-C28)

R.T.: 9.818 min
Delta R.T.: 0.000 min
Response: 77975044
Conc: 55.44 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: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/03/13

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	0.030	<1.0
Beryllium	1.0	.08	.06		
Boron	5.0	.08	.16		
Cadmium	1.0	.02	.28	0.010	<1.0
Calcium	40	.22	6.8		
Chromium	1.0	.03	.03	0.030	<1.0
Cobalt	0.50	.04	.039		
Copper	1.0	.12	.13	0.13	<1.0
Iron	7.0	.15	1.8		
Lead	5.0	.21	.25	-0.21	<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	-0.020	<3.0
Phosphorus	10	1.5	1.2		
Potassium	200	9.9	12		
Selenium	5.0	.71	1.1	0.29	<5.0
Silicon	5.0	.47	1.1		
Silver	3.0	.03	.05	-0.050	<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	0.21	<3.0

Associated samples MP11290: D51203-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/03/13

Metal	D51202-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	225	467	235	102.2	75-125
Beryllium					
Boron	anr				
Cadmium	0.13	51.1	58.7	86.9	75-125
Calcium					
Chromium	42.0	97.2	58.7	94.9	75-125
Cobalt					
Copper	7.0	66.8	58.7	101.9	75-125
Iron					
Lead	8.1	110	117	86.8	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	14.2	63.3	58.7	85.5	75-125
Phosphorus					
Potassium					
Selenium	0.0	105	117	89.5	75-125
Silicon					
Silver	0.15	22.3	23.5	94.4	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	34.8	83.4	58.7	82.8	75-125

Associated samples MP11290: D51203-1

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/03/13

Metal	D51202-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	225	494	228	117.2	5.6	20
Beryllium						
Boron	anr					
Cadmium	0.13	48.3	57	84.6	5.6	20
Calcium						
Chromium	42.0	89.1	57	83.5	8.7	20
Cobalt						
Copper	7.0	64.7	57	101.3	3.2	20
Iron						
Lead	8.1	105	114	85.0	4.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	14.2	60.9	57	83.9	3.9	20
Phosphorus						
Potassium						
Selenium	0.0	100	114	87.8	4.9	20
Silicon						
Silver	0.15	21.0	22.8	91.5	6.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	34.8	79.8	57	79.0	4.4	20

Associated samples MP11290: D51203-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/03/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	196	200	98.0	80-120
Beryllium				
Boron	anr			
Cadmium	47.4	50	94.8	80-120
Calcium				
Chromium	50.5	50	101.0	80-120
Cobalt				
Copper	52.0	50	104.0	80-120
Iron				
Lead	97.5	100	97.5	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.3	50	96.6	80-120
Phosphorus				
Potassium				
Selenium	98.7	100	98.7	80-120
Silicon				
Silver	20.6	20	103.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.1	50	94.2	80-120

Associated samples MP11290: D51203-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/03/13

Metal	D51202-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	1960	2150	10.2*(a)	0-10
Beryllium				
Boron	anr			
Cadmium	1.10	0.00	100.0(b)	0-10
Calcium				
Chromium	358	403	12.6*(a)	0-10
Cobalt				
Copper	61.0	67.0	11.9 (b)	0-10
Iron				
Lead	91.7	59.5	14.3 (b)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	112	131	16.1*(a)	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	1.30	1.50	15.4 (b)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	321	357	19.0*(a)	0-10

Associated samples MP11290: D51203-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11290
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

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

14.1.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11291
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/03/13

Metal	RL	IDL	MDL	MB	
				raw	final
Arsenic	0.10	.0085	.024	0.0076	<0.10

Associated samples MP11291: D51203-1

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: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11291
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/03/13

Metal	D51202-1		SpikeLot		QC
	Original	MS	ICPALL2	% Rec	Limits
Arsenic	7.0	123	117	98.8	75-125

Associated samples MP11291: D51203-1

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: D51203
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11291
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 10/03/13

Metal	D51202-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Arsenic	7.0	118	114	97.4	4.1	20

Associated samples MP11291: D51203-1

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: D51203
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11291
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 10/03/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Arsenic	96.8	100	96.8	80-120

Associated samples MP11291: D51203-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51203
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11291
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 10/03/13

Metal	D51202-1			QC Limits
	Original	SDL 5:25	%DIF	
Arsenic	60.0	60.9	1.6	0-10

Associated samples MP11291: D51203-1

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: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11292
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 10/04/13

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.008	-0.00086	<0.10

Associated samples MP11292: D51203-1

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: D51203
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11292
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/04/13

Metal	D51148-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
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Mercury 0.037 0.45 0.389 106.2 75-125

Associated samples MP11292: D51203-1

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: D51203
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11292
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/04/13

Metal	D51148-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.037	0.42	0.364	105.3	6.9	20

Associated samples MP11292: D51203-1

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: D51203
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11292
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/04/13

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.41	0.4	102.5	80-120

Associated samples MP11292: D51203-1

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: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date: 10/04/13

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	-29	<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	16.0	<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	-140	<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 MP11305: D51203-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date: 10/04/13

Metal	D51224-6A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	19600	148000	125000	102.7	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	5170	127000	125000	97.5	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	16500	137000	125000	96.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP11305: D51203-1A

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: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date: 10/04/13

Metal	D51224-6A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	19600	149000	125000	103.5	0.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	5170	128000	125000	98.3	0.8	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	16500	137000	125000	96.4	0.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP11305: D51203-1A

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: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date: 10/04/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	130000	125000	104.0	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	122000	125000	97.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	121000	125000	96.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11305: D51203-1A

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

14.4.3
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date: 10/04/13

Metal	D51224-6A		QC	
	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	3920	3920	0.2	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1030	1100	6.3	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	3300	3260	0.9	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11305: D51203-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.4.4
14

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP11117/GN22215	1.0	0.32	mg/kg	106	104	97.7	80-120%
Chromium, Hexavalent	GP11117/GN22215	1.0	0.36	mg/kg	106	104	97.9	80-120%
Specific Conductivity	GP11110/GN22203			umhos/cm	9979	9980	100.0	90-110%
pH	GN22154			su	8.00	8.03	100.4	99.3-100.7%

Associated Samples:
Batch GN22154: D51203-1
Batch GP11110: D51203-1
Batch GP11117: D51203-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP11117/GN22215	D51202-1	mg/kg	0.38	0.50	26.2(a)	0-20%
Redox Potential Vs H2	GN22168	D51122-1	mv	133	130	2.3	0-20%

Associated Samples:

Batch GN22168: D51203-1

Batch GP11117: D51203-1

(*) Outside of QC limits

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

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP11117/GN22215	D51202-1	mg/kg	0.38	40	35.8	89.5	75-125%

Associated Samples:

Batch GP11117: D51203-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51203
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP11117/GN22215	D51202-1	mg/kg	0.38	40	35.4	1.2	20%

Associated Samples:
Batch GP11117: D51203-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

15.4
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