



10/08/13

Technical Report for

XTO Energy

FRU 197-31A

1111-02A RP Contents

Accutest Job Number: D51124

Sampling Date: 09/30/13

Report to:

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Total number of pages in report: 144



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: D51124

FRU 197-31A

Project No: 1111-02A RP Contents

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D51124-1	09/30/13	12:15	DS	10/01/13	SO	Soil	RP CONTENTS
D51124-1A	09/30/13	12:15	DS	10/01/13	SO	Soil	RP CONTENTS

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D51124

Site: FRU 197-31A

Report Date 10/7/2013 3:21:59 PM

On 10/01/2013, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D51124 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.
- Sample(s) D51039-1MS, D51039-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8015B

Matrix: SO

Batch ID: GGB1230

- All samples were analyzed within the recommended method holding time.
- Sample(s) D51008-1MS, D51008-1MSD 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: OP8666

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51127-1MS, D51127-1MSD were used as the QC samples indicated.

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: MP11267

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51122-1MS, D51122-1MSD, D51122-1SDL were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Zinc are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Cadmium, Selenium, Silver are outside control limits for sample MP11267-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP11267-SD1 for Nickel, Zinc : Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix: SO

Batch ID: MP11268

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51122-1MS, D51122-1MSD, D51122-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix: SO

Batch ID: MP11269

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51122-1MS, D51122-1MSD 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: GN22110

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix: SO

Batch ID: GP11063

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51041-1MS, D51041-1MSD, D51041-1DUP were used as the QC samples for the Chromium, Hexavalent analysis.
- The duplicate RPD(s) for Chromium, Hexavalent are outside control limits for sample GP11063-D1. RPD acceptable due to low duplicate and sample concentrations.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix: SO

Batch ID: R18904

- The data for SW846 3060A/7196A M meets quality control requirements.
- D51124-1 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: D51124-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix: SO

Batch ID: MP11305

- D51124-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

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

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

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

Summary of Hits

Job Number: D51124
Account: XTO Energy
Project: FRU 197-31A
Collected: 09/30/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D51124-1 RP CONTENTS

Chrysene	0.0102 J	0.014	0.0071	mg/kg	SW846 8270C BY SIM
Fluoranthene	0.0114 J	0.014	0.0071	mg/kg	SW846 8270C BY SIM
Naphthalene	0.0739	0.019	0.017	mg/kg	SW846 8270C BY SIM
Pyrene	0.0160	0.014	0.0071	mg/kg	SW846 8270C BY SIM
TPH-GRO (C6-C10)	27.0	23	11	mg/kg	SW846 8015B
TPH-DRO (C10-C28)	259	11	8.2	mg/kg	SW846-8015B
Arsenic	4.3	0.17		mg/kg	SW846 6020A
Barium	17600	33		mg/kg	SW846 6010C
Chromium	27.0	1.7		mg/kg	SW846 6010C
Copper	16.7	1.7		mg/kg	SW846 6010C
Lead	11.5	8.3		mg/kg	SW846 6010C
Nickel	12.2	5.0		mg/kg	SW846 6010C
Zinc	33.8	5.0		mg/kg	SW846 6010C
Specific Conductivity	23500	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent ^a	26.9	2.7		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	159			mv	ASTM D1498-76M
pH	12.28			su	SW846 9045D

D51124-1A RP CONTENTS

Calcium	10.8	2.0		mg/l	SW846 6010C
Sodium	2700	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	226			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

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Client Sample ID:	RP CONTENTS	Date Sampled:	09/30/13
Lab Sample ID:	D51124-1	Date Received:	10/01/13
Matrix:	SO - Soil	Percent Solids:	60.9
Method:	SW846 8260B		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V29365.D	1	10/02/13	BD	n/a	n/a	V5V1764
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.01 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.11	0.057	mg/kg	
108-88-3	Toluene	ND	0.23	0.11	mg/kg	
100-41-4	Ethylbenzene	ND	0.23	0.043	mg/kg	
1330-20-7	Xylene (total)	ND	0.46	0.23	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	97%		64-130%
460-00-4	4-Bromofluorobenzene	104%		62-131%
17060-07-0	1,2-Dichloroethane-D4	101%		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

Report of Analysis

Client Sample ID:	RP CONTENTS	Date Sampled:	09/30/13
Lab Sample ID:	D51124-1	Date Received:	10/01/13
Matrix:	SO - Soil	Percent Solids:	60.9
Method:	SW846 8270C BY SIM SW846 3546		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G16535.D	1	10/03/13	DC	10/03/13	OP8670	E3G817
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.014	0.0071	mg/kg	
120-12-7	Anthracene	ND	0.014	0.0071	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.014	0.0071	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.014	0.0071	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.014	0.0071	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.014	0.0071	mg/kg	
218-01-9	Chrysene	0.0102	0.014	0.0071	mg/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.014	0.0071	mg/kg	
206-44-0	Fluoranthene	0.0114	0.014	0.0071	mg/kg	J
86-73-7	Fluorene	ND	0.014	0.0082	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.014	0.0071	mg/kg	
91-20-3	Naphthalene	0.0739	0.019	0.017	mg/kg	
129-00-0	Pyrene	0.0160	0.014	0.0071	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	50%		10-175%
321-60-8	2-Fluorobiphenyl	48%		25-130%
1718-51-0	Terphenyl-d14	89%		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:	RP CONTENTS	Date Sampled:	09/30/13
Lab Sample ID:	D51124-1	Date Received:	10/01/13
Matrix:	SO - Soil	Percent Solids:	60.9
Method:	SW846 8015B		
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB22384.D	1	10/02/13	EV	n/a	n/a	GGB1230
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	27.0	23	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	76%		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

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Client Sample ID:	RP CONTENTS			Date Sampled:	09/30/13
Lab Sample ID:	D51124-1			Date Received:	10/01/13
Matrix:	SO - Soil			Percent Solids:	60.9
Method:	SW846-8015B SW846 3546				
Project:	FRU 197-31A				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI09510.D	1	10/03/13	TU	10/02/13	OP8666	GFI637
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)	259	11	8.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	88%		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:	RP CONTENTS	Date Sampled:	09/30/13
Lab Sample ID:	D51124-1	Date Received:	10/01/13
Matrix:	SO - Soil	Percent Solids:	60.9
Project:	FRU 197-31A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.3	0.17	mg/kg	5	10/02/13	10/04/13 JB	SW846 6020A ³	SW846 3050B ⁵
Barium	17600	33	mg/kg	20	10/02/13	10/03/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.7	1.7	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	27.0	1.7	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	16.7	1.7	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	11.5	8.3	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.14	0.14	mg/kg	1	10/04/13	10/04/13 JB	SW846 7471B ²	SW846 7471B ⁶
Nickel	12.2	5.0	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 8.3	8.3	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 5.0	5.0	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	33.8	5.0	mg/kg	1	10/02/13	10/02/13 JM	SW846 6010C ¹	SW846 3050B ⁴

- (1) Instrument QC Batch: MA4027
 (2) Instrument QC Batch: MA4035
 (3) Instrument QC Batch: MA4036
 (4) Prep QC Batch: MP11267
 (5) Prep QC Batch: MP11268
 (6) Prep QC Batch: MP11269

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP CONTENTS	Date Sampled:	09/30/13
Lab Sample ID:	D51124-1	Date Received:	10/01/13
Matrix:	SO - Soil	Percent Solids:	60.9
Project:	FRU 197-31A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	23500	1.0	umhos/cm	1	10/03/13	JD	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	10/02/13	JD	SW846 3060A/7196A
Chromium, Trivalent ^a	26.9	2.7	mg/kg	1	10/02/13 16:37	JM	SW846 3060A/7196A M
Redox Potential Vs H2	159		mv	1	10/04/13	AK	ASTM D1498-76M
Solids, Percent	60.9		%	1	10/01/13	SWT	SM2540B-2011 M
pH	12.28		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: RP CONTENTS
Lab Sample ID: D51124-1A
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 60.9

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	10.8	2.0	mg/l	1	10/04/13	10/04/13 JM	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	< 1.0	1.0	mg/l	1	10/04/13	10/04/13 JM	SW846 6010C ¹	SW846 3010A/M ²
Sodium	2700	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:	RP CONTENTS	Date Sampled:	09/30/13
Lab Sample ID:	D51124-1A	Date Received:	10/01/13
Matrix:	SO - Soil	Percent Solids:	60.9
Project:	FRU 197-31A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	226		ratio	1	10/04/13 20:49	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

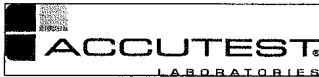
Misc. Forms

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 # D51124

Client / Reporting Information		Project Information										Requested Analysis (see TEST CODE sheet)										Matrix Codes										
Company Name KRW Consulting		Project Name: XTO FRU 197-31A										<div>Table 910</div>										<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</div>										
Street Address 8000 West 14th Street; Suite 200		Billing Information (if different from Report to)																														
City Lakewood, CO 80214		Company Name XTO Energy																														
Project Contact Dwayne Knudson		Street Address 21459 CR 5																														
Phone # 970-488-1098		City Rifle, CO 81650																														
Sampler(s) Name(s) David Sanders 970-488-1098		Project Manager Joe Hess										Attention: Jessica Dooling																				
Field ID / Point of Collection RP Contents		Collection										Number of preserved Bottles										LAB USE ONLY										
MECH/DI Vial #		Date 9/30/13		Time 1215		Sampled by DS		Matrix SO		# of bottles 5		HCl		NaOH		HNO3		H2SO4		NONE		DI Water		MEOH		FNCORE		Residue		01		
Turnaround Time (Business days)		Data 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: _____ _____ _____ _____ _____										<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 Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC Narrative (+ chromatograms)										Please email to: KRW Piceance Team										
Relinquished by Sample:		Date Time: 9/30/13 1200		Received By: Service Center		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		
Relinquished by:		Date Time:		Received By:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		
Relinquished by:		Date Time:		Received By:		Relinquished By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		Date Time:		Received By:		
Custody Seal #		Intact		Not Intact		Preserved where applicable		On Ice		Cooler Temp.		3.3																				

D51124: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D51124

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 10/1/2013 11:50:00 AM

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

D51124: Chain of Custody

Page 2 of 2

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: D51124
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

D51124-1

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: D51124
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

D51124-1

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

Job Number: D51124
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

D51124-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
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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: D51124
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

D51124-1

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: D51124
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

D51124-1

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 : 5V29365.D
 Acq On : 2 Oct 2013 8:24 pm
 Operator : BRETD
 Sample : D51124-1
 Misc : MS6481,V5V1764,5.012,,100,5,1
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 03 09:11:29 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	148305	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	199402	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	206395	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	162070	50.00	ug/l	-0.01

System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.012	102	15182	50.38	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.76%
64) Toluene-d8	13.805	98	225770	48.29	ug/l	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.58%
72) 4-Bromofluorobenzene	16.008	95	113155	51.92	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	103.84%

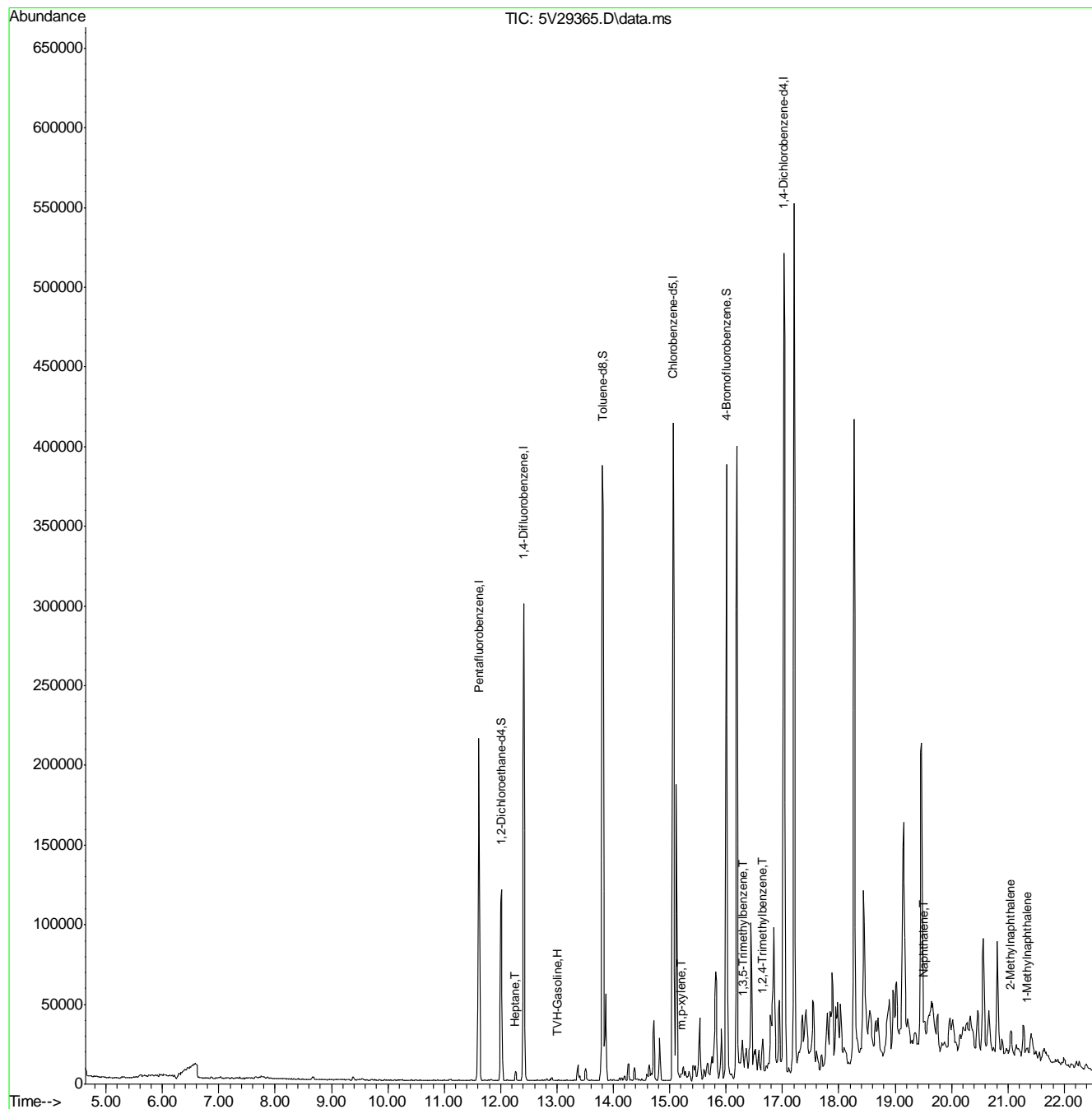
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	1804252m	189.06	ug/l	
45) Heptane	12.264	43	2519	1.29	ug/l	# 84
75) m,p-xylene	15.209	106	958	0.40	ug/l	95
83) 1,3,5-Trimethylbenzene	16.294	105	3302	1.11	ug/l	91
85) 1,2,4-Trimethylbenzene	16.648	105	4439	1.21	ug/l	97
94) Naphthalene	19.513	128	5603	1.57	ug/l	100
97) 2-Methylnaphthalene	21.043	142	7048	3.08	ug/l	92
98) 1-Methylnaphthalene	21.340	142	3489	2.23	ug/l	# 80

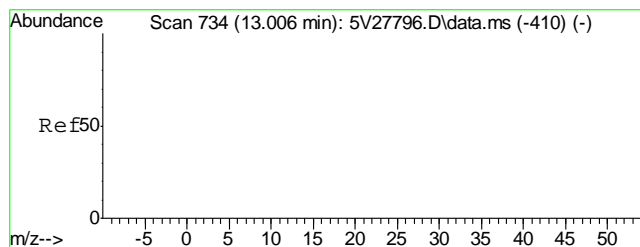
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100213.S\
Data File : 5V29365.D
Acq On : 2 Oct 2013 8:24 pm
Operator : BRETD
Sample : D51124-1
Misc : MS6481,V5V1764,5.012,,100,5,1
ALS Vial : 19 Sample Multiplier: 1

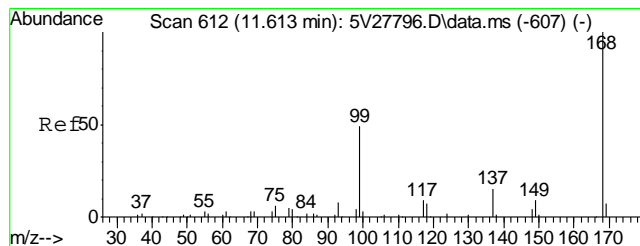
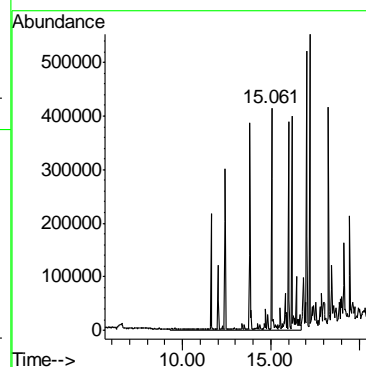
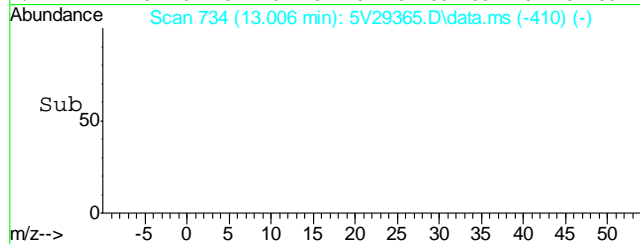
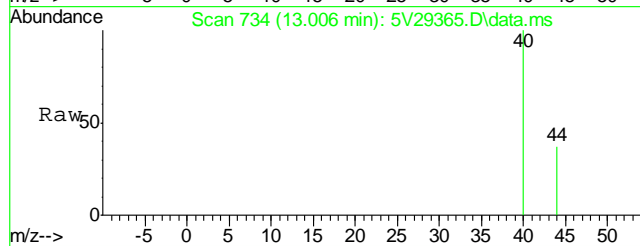
Quant Time: Oct 03 09:11:29 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration





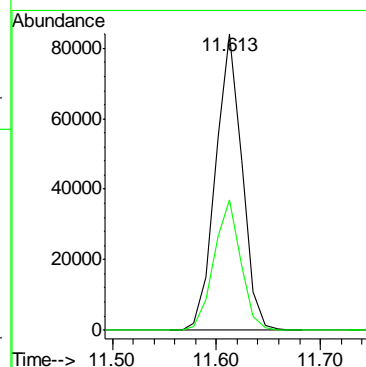
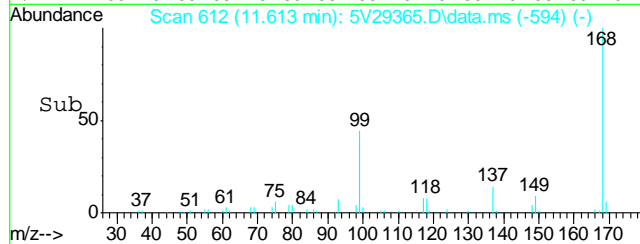
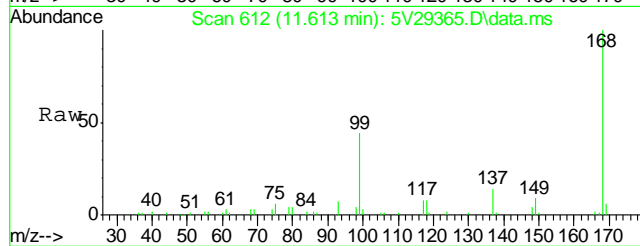
#1
TVH-Gasoline
Concen: 189.06 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

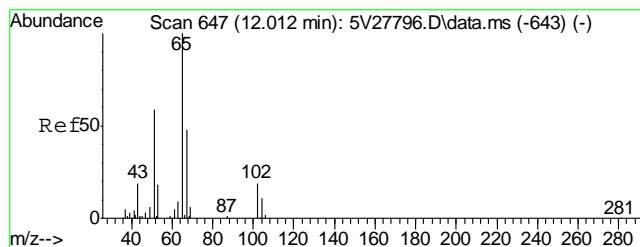
Tgt Ion:TIC Resp: 1804252



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

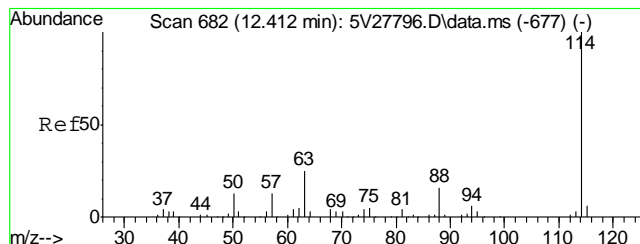
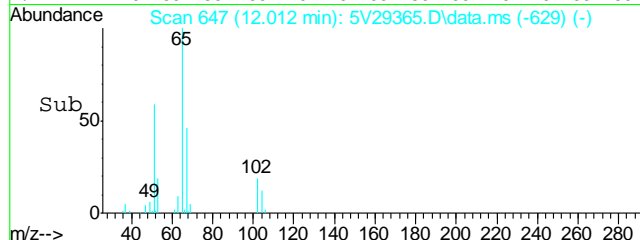
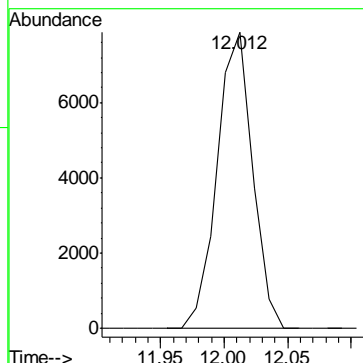
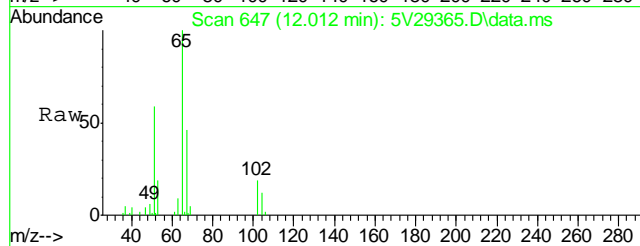
Tgt Ion:168 Resp: 148305
Ion Ratio Lower Upper
168 100
99 44.4 41.4 62.2





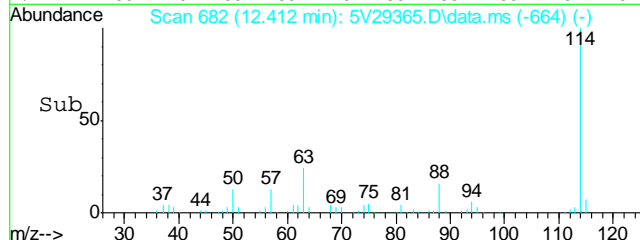
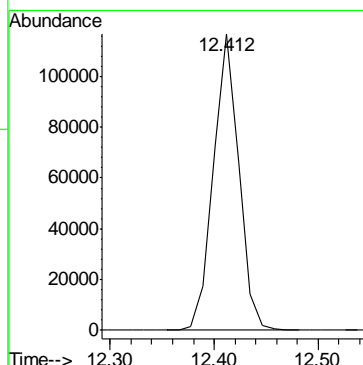
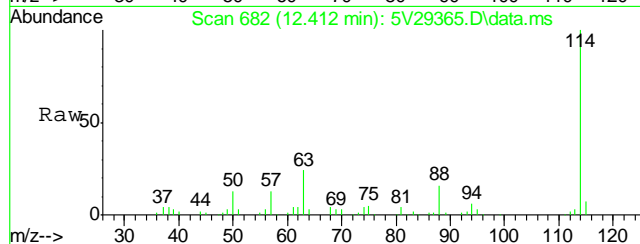
#35
1,2-Dichloroethane-d4
Concen: 50.38 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

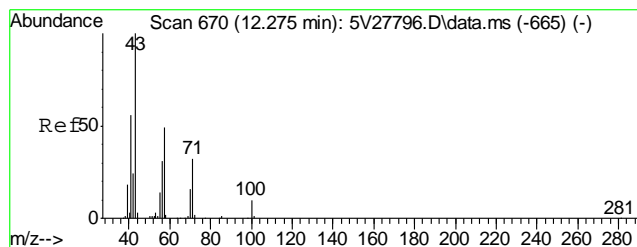
Tgt Ion:102 Resp: 15182



#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

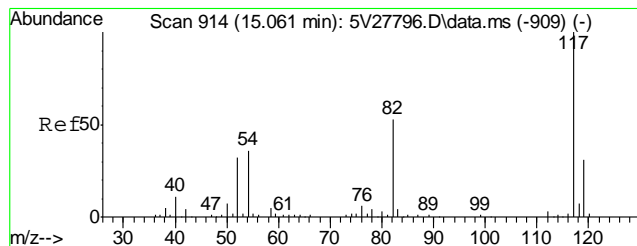
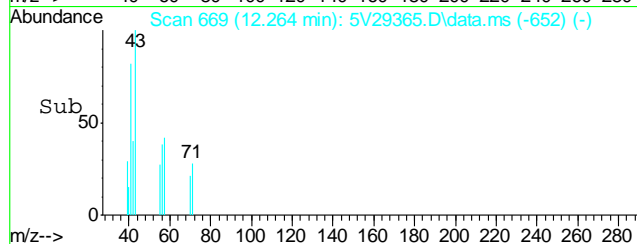
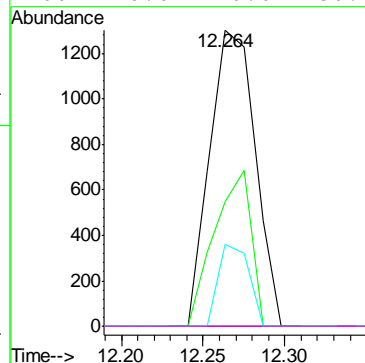
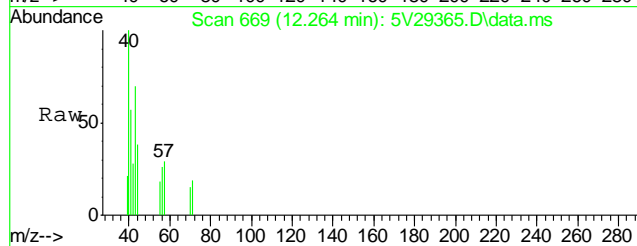
Tgt Ion:114 Resp: 199402





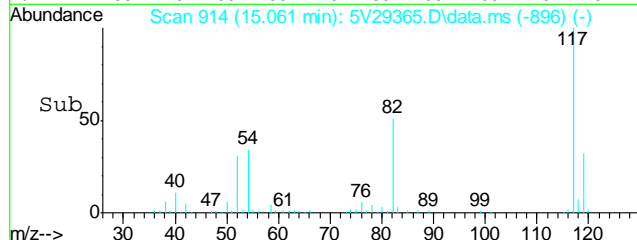
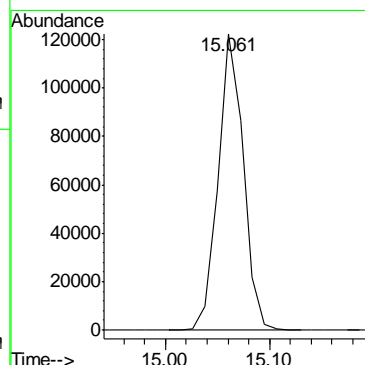
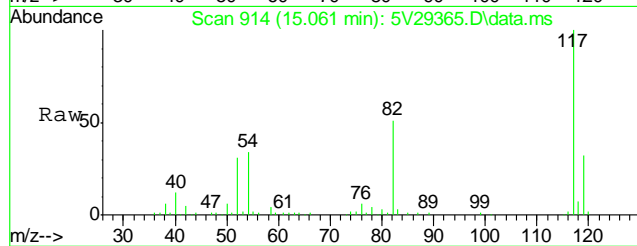
#45
Heptane
Concen: 1.29 ug/l
RT: 12.264 min Scan# 669
Delta R.T. -0.010 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

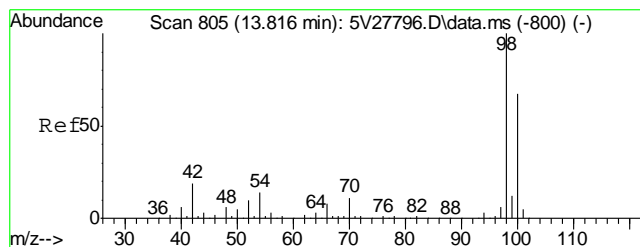
Tgt Ion	Ratio	Lower	Upper
43	100		
57	42.4	28.7	68.7
71	18.6	11.3	51.3
100	0.0	0.0	30.2



#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

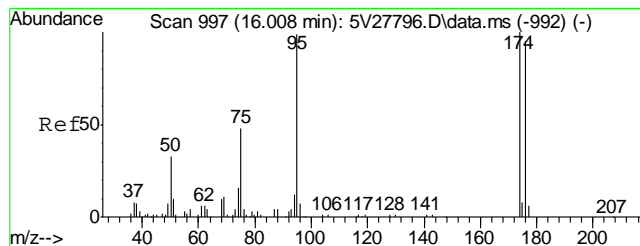
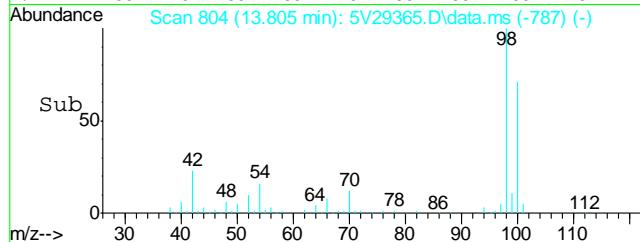
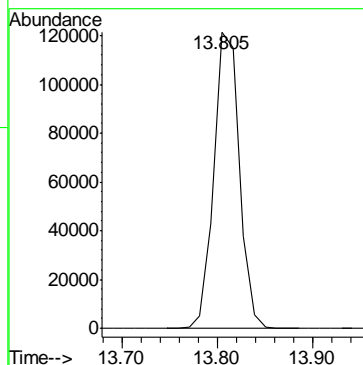
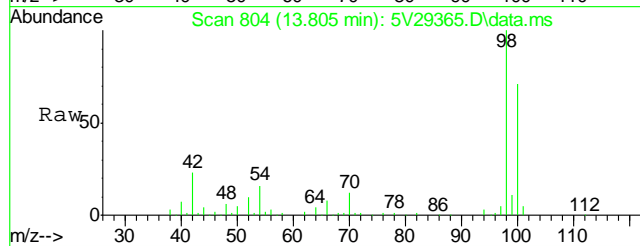
Tgt Ion: 117 Resp: 206395





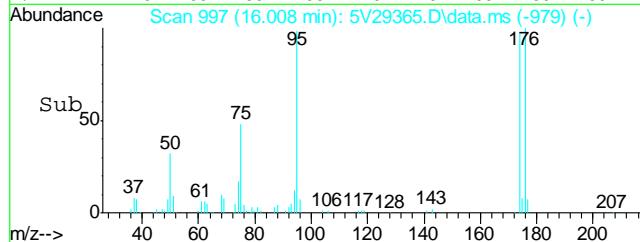
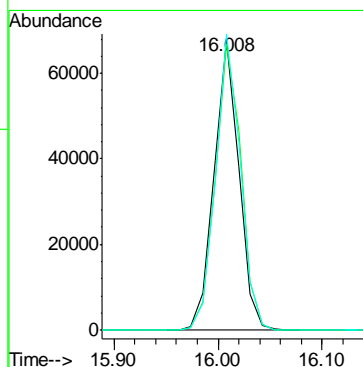
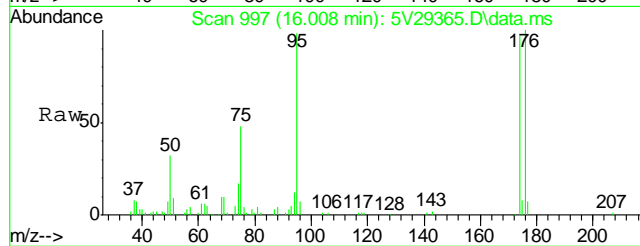
#64
Toluene-d8
Concen: 48.29 ug/l
RT: 13.805 min Scan# 804
Delta R.T. -0.011 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

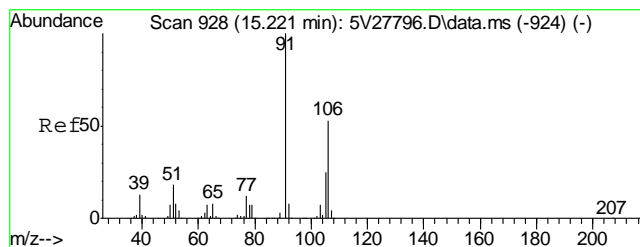
Tgt Ion: 98 Resp: 225770



#72
4-Bromofluorobenzene
Concen: 51.92 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

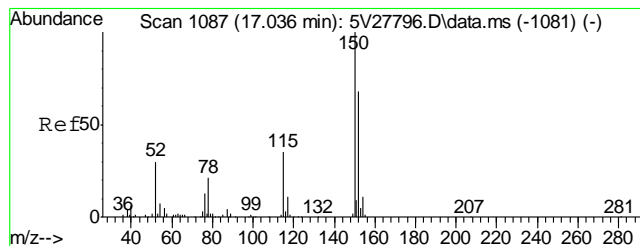
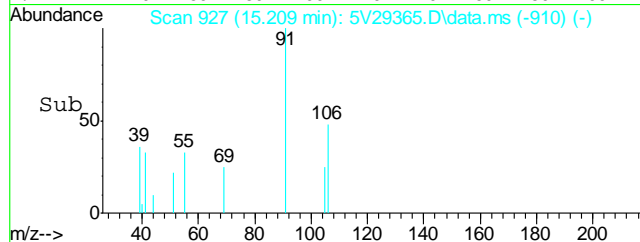
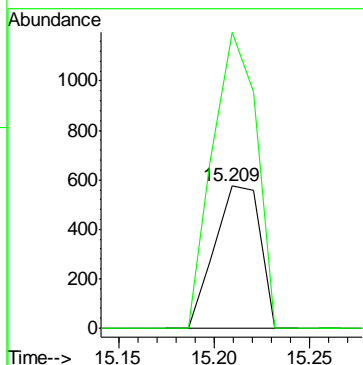
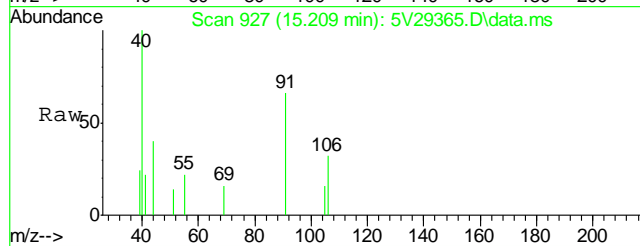
Tgt Ion: 95 Resp: 113155
Ion Ratio Lower Upper
95 100
174 102.0 85.4 125.4
176 101.5 80.6 120.6





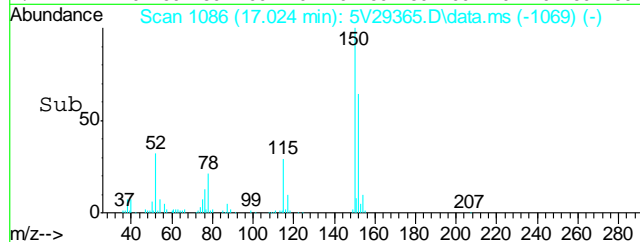
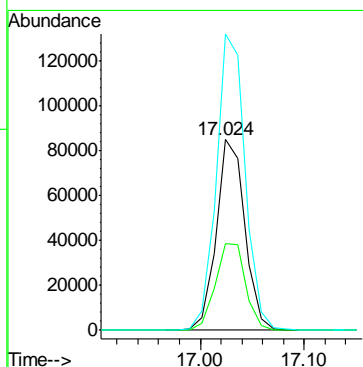
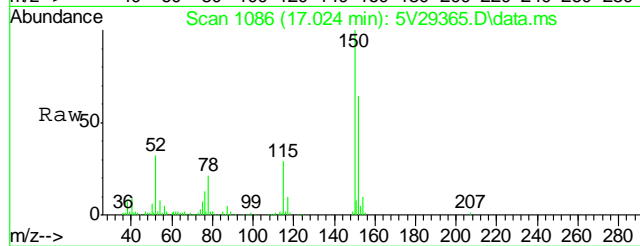
#75
m,p-xylene
Concen: 0.40 ug/l
RT: 15.209 min Scan# 927
Delta R.T. -0.011 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

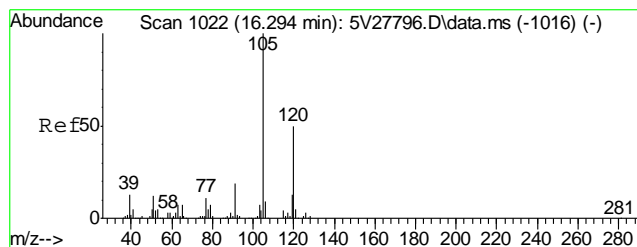
Tgt Ion:106 Resp: 958
Ion Ratio Lower Upper
106 100
91 202.0 174.8 214.8



#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.024 min Scan# 1086
Delta R.T. -0.011 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

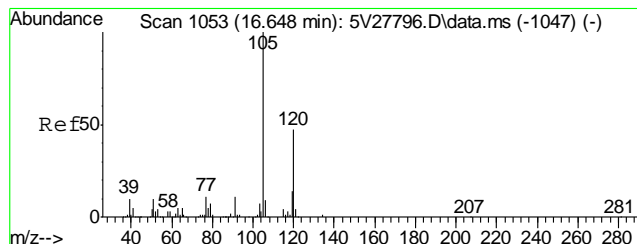
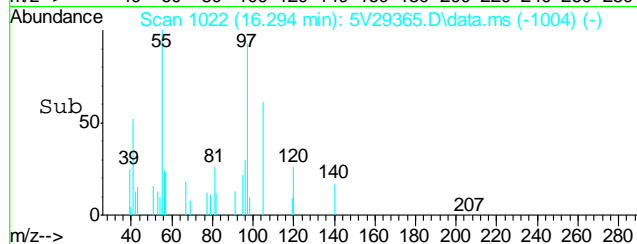
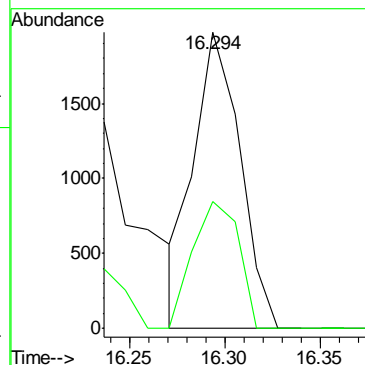
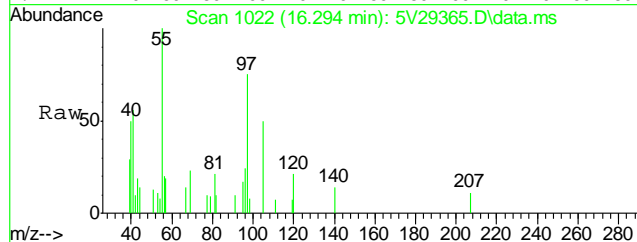
Tgt Ion:152 Resp: 162070
Ion Ratio Lower Upper
152 100
115 48.1 43.4 65.2
150 157.0 142.9 214.3





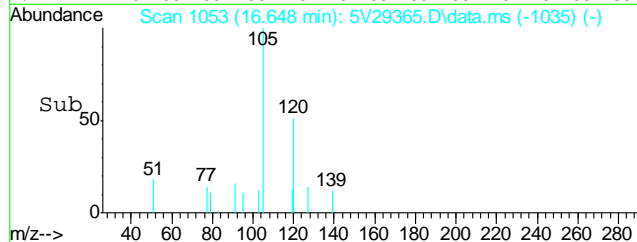
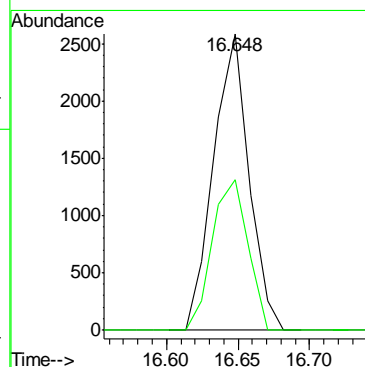
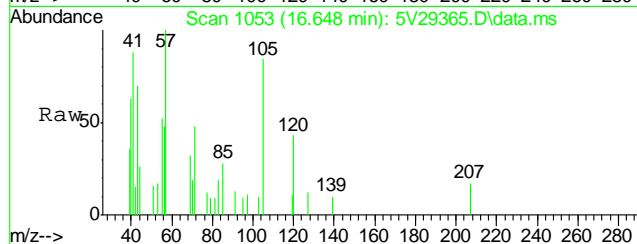
#83
1,3,5-Trimethylbenzene
Concen: 1.11 ug/l
RT: 16.294 min Scan# 1022
Delta R.T. 0.001 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

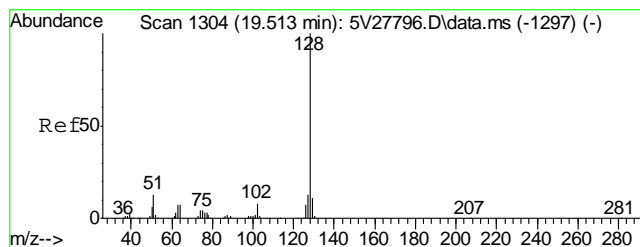
Tgt Ion:105 Resp: 3302
Ion Ratio Lower Upper
105 100
120 42.8 28.6 68.6



#85
1,2,4-Trimethylbenzene
Concen: 1.21 ug/l
RT: 16.648 min Scan# 1053
Delta R.T. 0.001 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

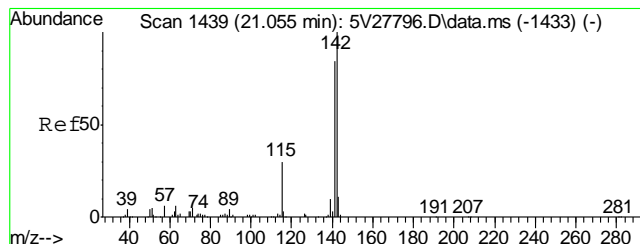
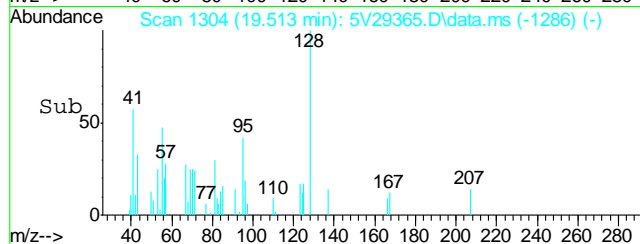
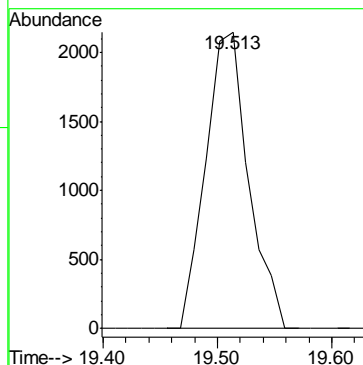
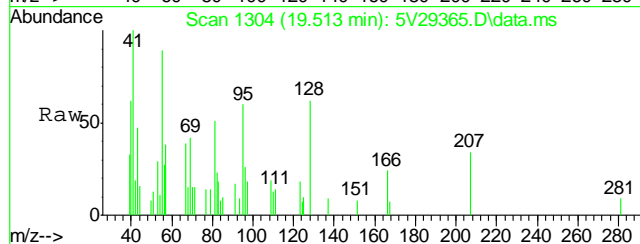
Tgt Ion:105 Resp: 4439
Ion Ratio Lower Upper
105 100
120 50.9 32.9 72.9





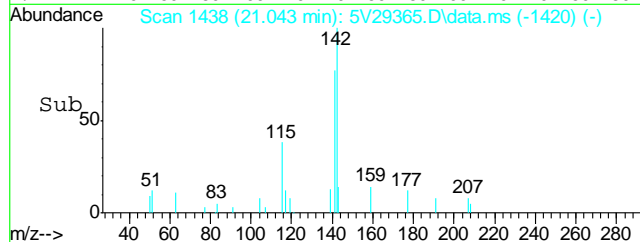
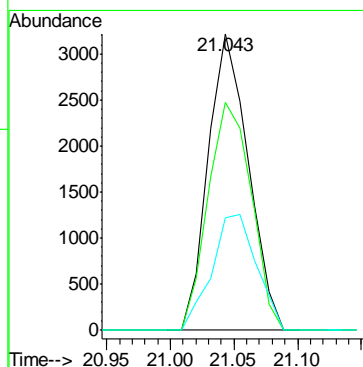
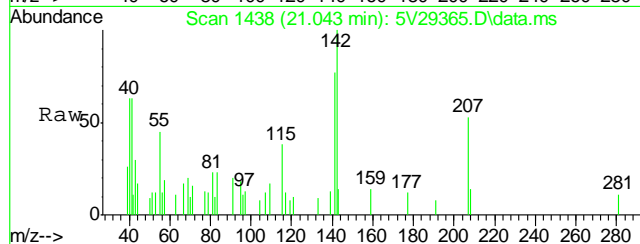
#94
Naphthalene
Concen: 1.57 ug/l
RT: 19.513 min Scan# 1304
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

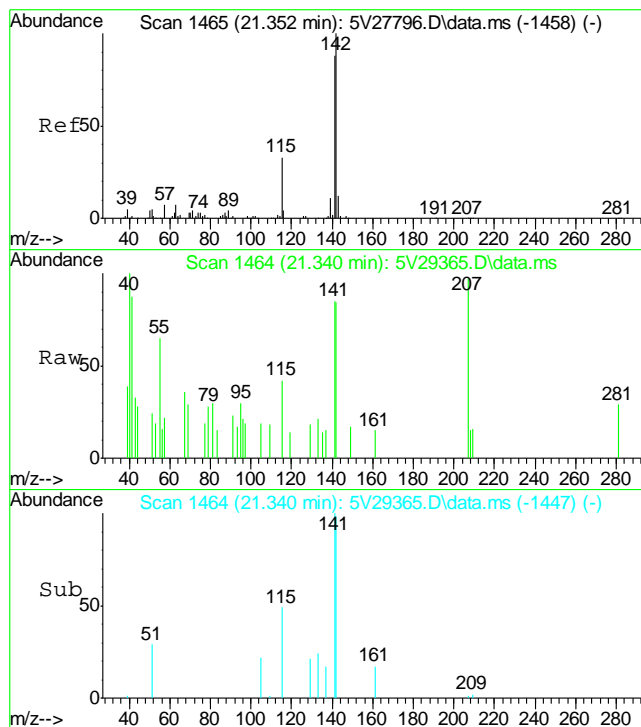
Tgt Ion:128 Resp: 5603



#97
2-Methylnaphthalene
Concen: 3.08 ug/l
RT: 21.043 min Scan# 1438
Delta R.T. 0.000 min
Lab File: 5V29365.D
Acq: 2 Oct 2013 8:24 pm

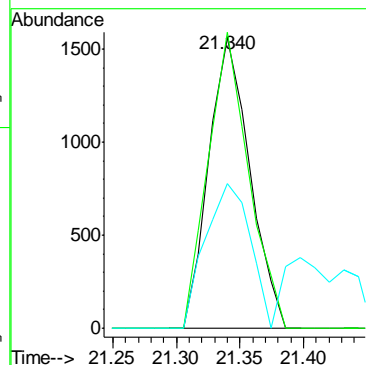
Tgt Ion:142 Resp: 7048
Ion Ratio Lower Upper
142 100
141 82.6 64.7 104.7
115 43.4 11.4 51.4





#98
 1-Methylnaphthalene
 Concen: 2.23 ug/l
 RT: 21.340 min Scan# 1464
 Delta R.T. -0.011 min
 Lab File: 5V29365.D
 Acq: 2 Oct 2013 8:24 pm

Tgt Ion:	142	Resp:	3489
Ion Ratio	Lower	Upper	
142	100		
141	100.5	68.1	108.1
115	54.5	13.1	53.1#



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

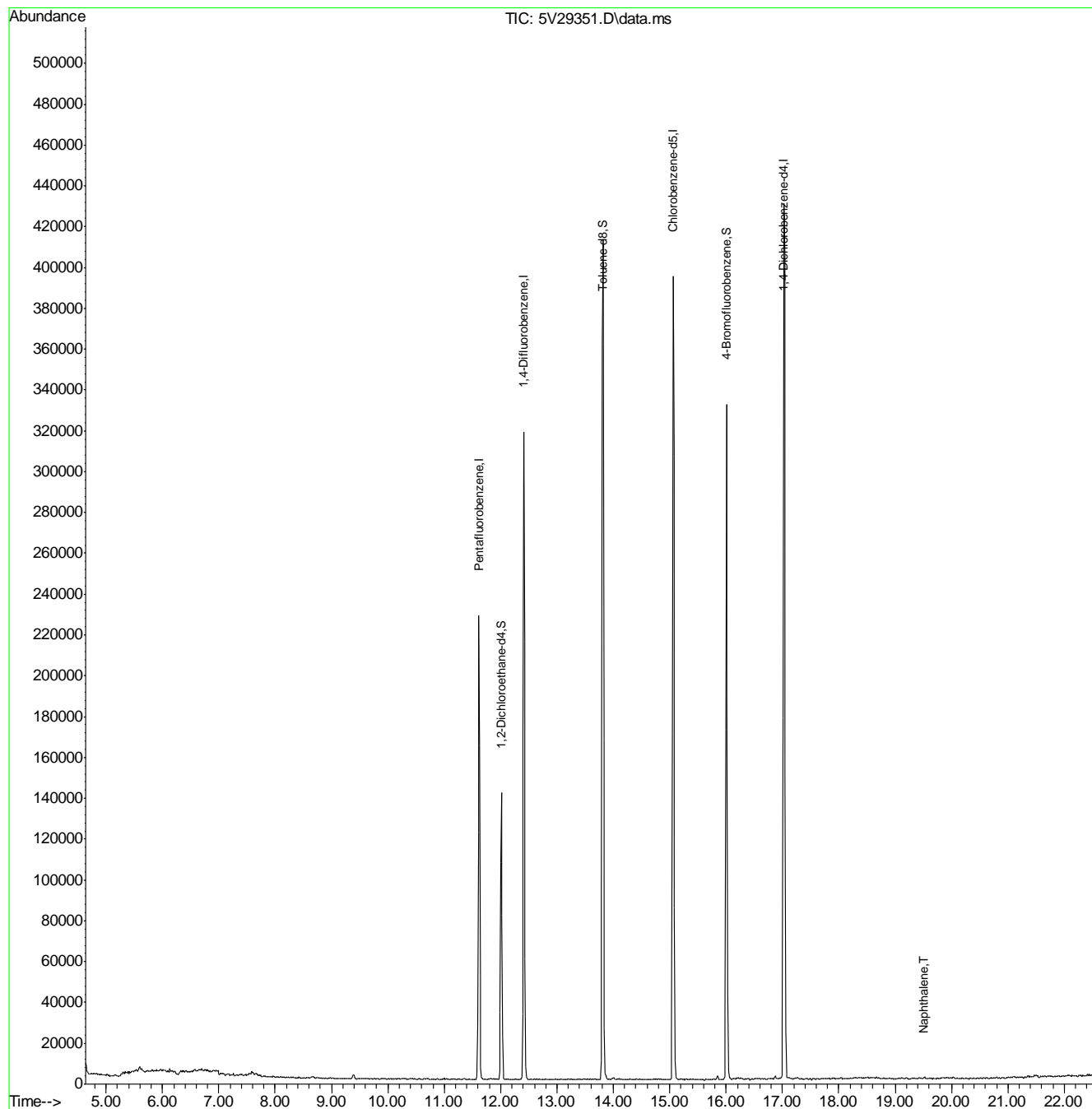
7.2.1

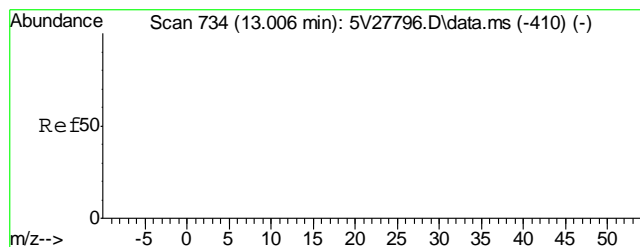
7

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

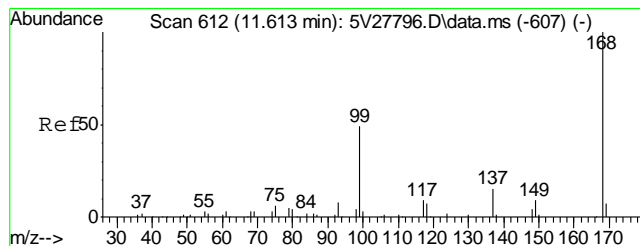
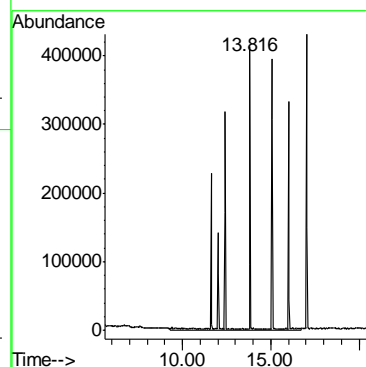
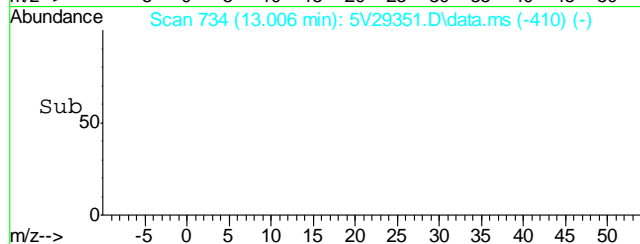
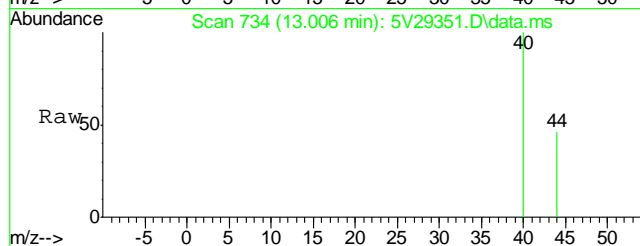
Quant Time: Oct 03 09:15:35 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration





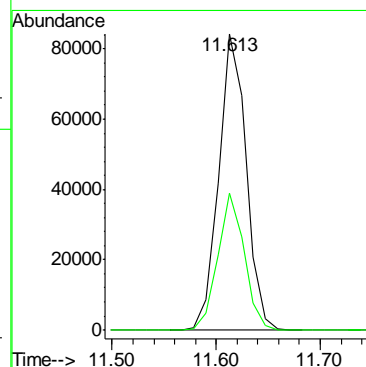
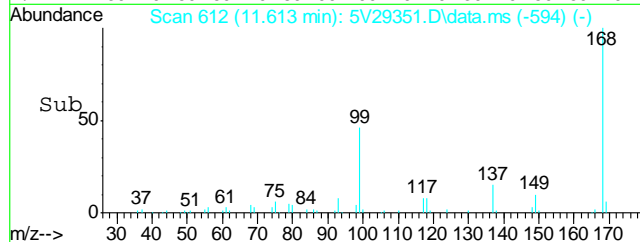
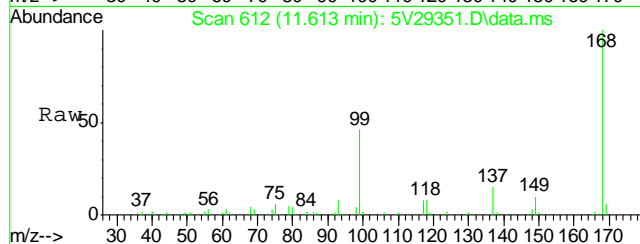
#1
TVH-Gasoline
Concen: 57.07 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

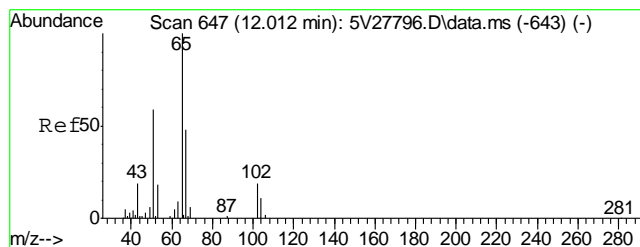
Tgt Ion:TIC Resp: -9922



#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

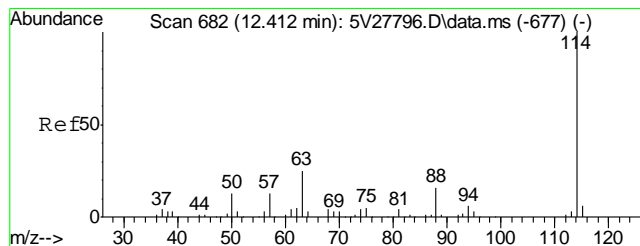
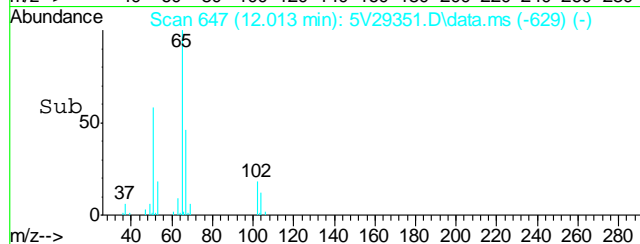
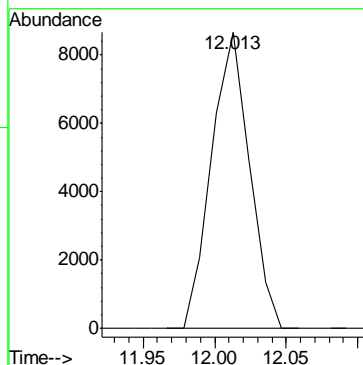
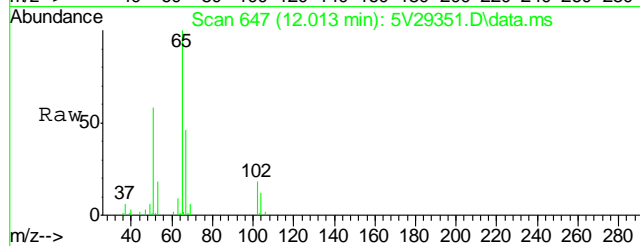
Tgt Ion:168 Resp: 155231
Ion Ratio Lower Upper
168 100
99 44.5 41.4 62.2





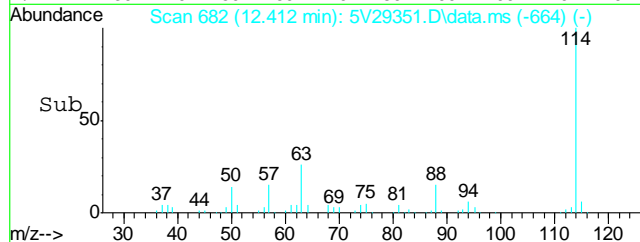
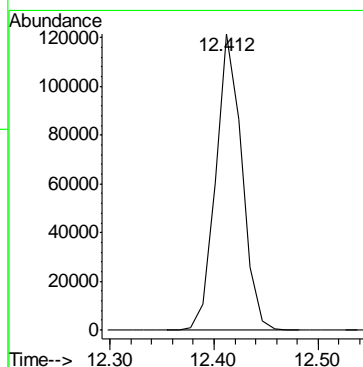
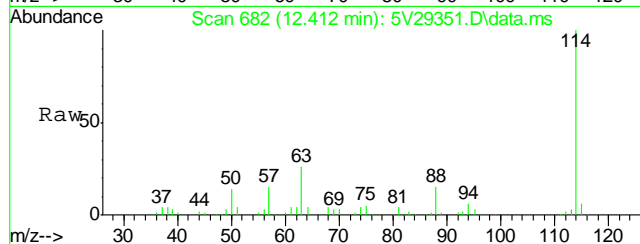
#35
1,2-Dichloroethane-d4
Concen: 50.63 ug/l
RT: 12.013 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

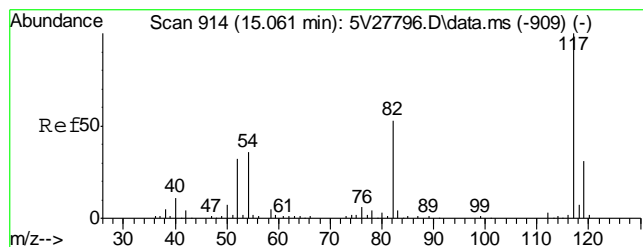
Tgt Ion:102 Resp: 15972



#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

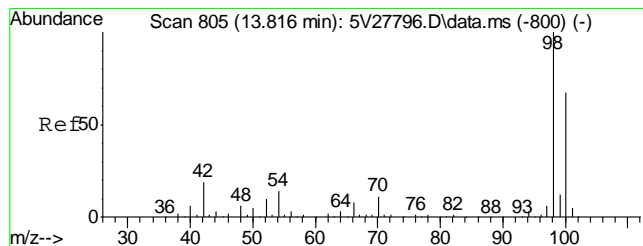
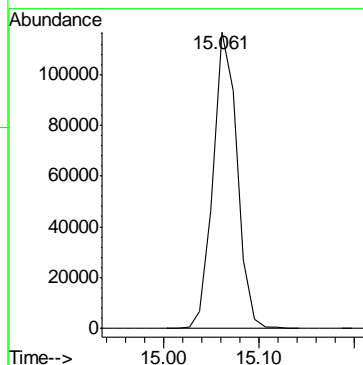
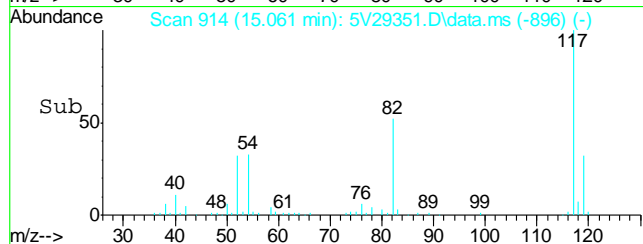
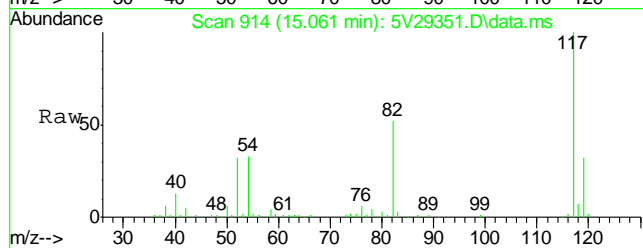
Tgt Ion:114 Resp: 212288





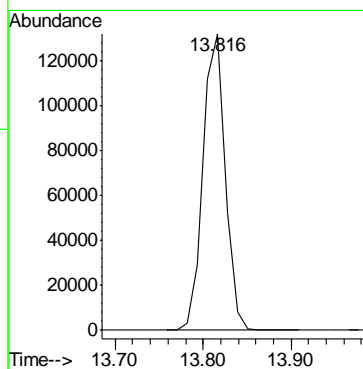
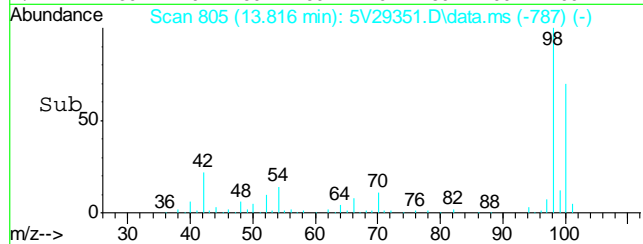
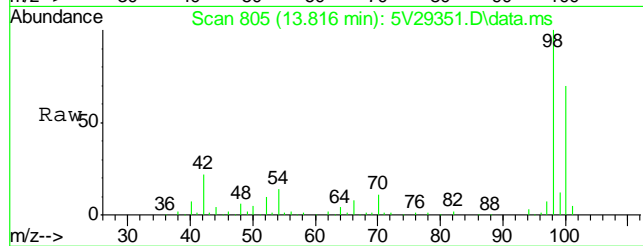
#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

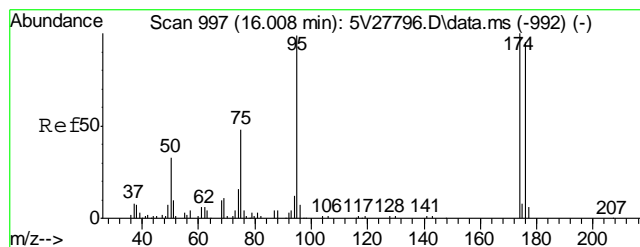
Tgt Ion:117 Resp: 202438



#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

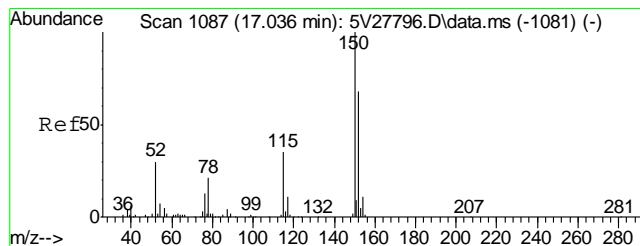
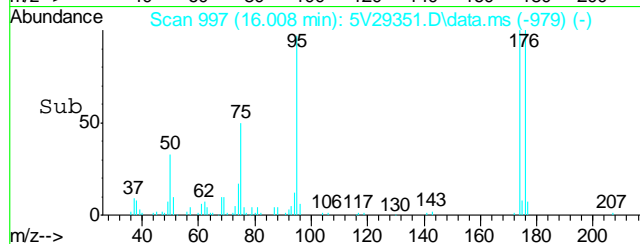
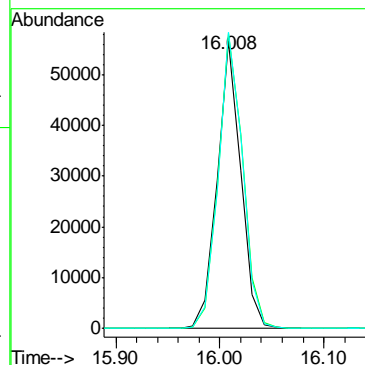
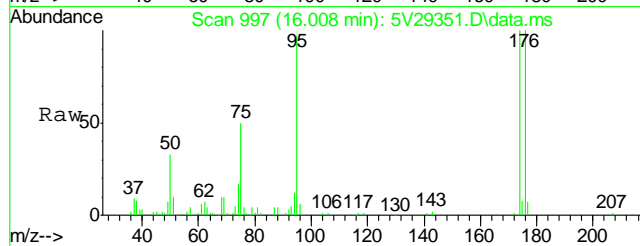
Tgt Ion: 98 Resp: 231512





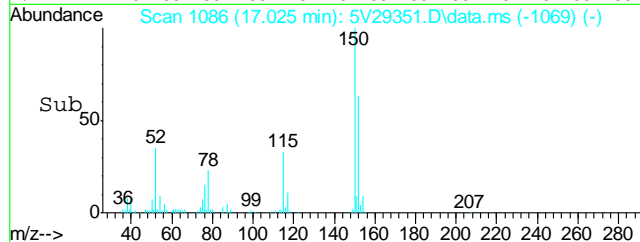
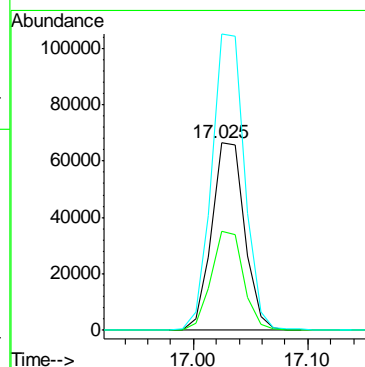
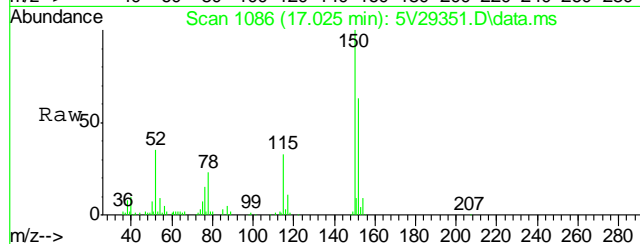
#72
4-Bromofluorobenzene
Concen: 41.89 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29351.D
Acq: 2 Oct 2013 1:07 pm

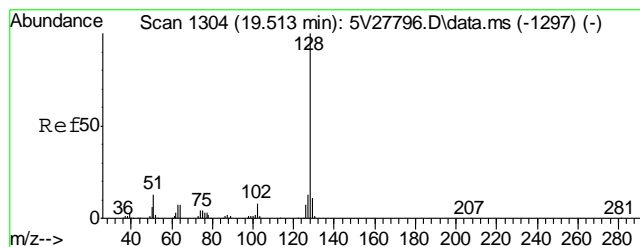
Tgt Ion	Resp	Lower	Upper
95	100		
174	106.7	85.4	125.4
176	105.8	80.6	120.6



#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

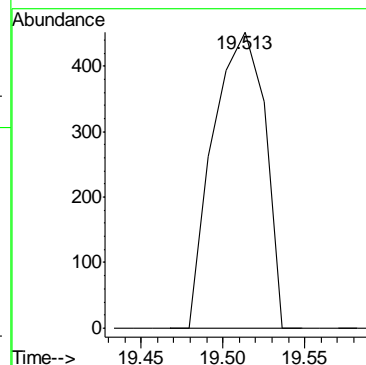
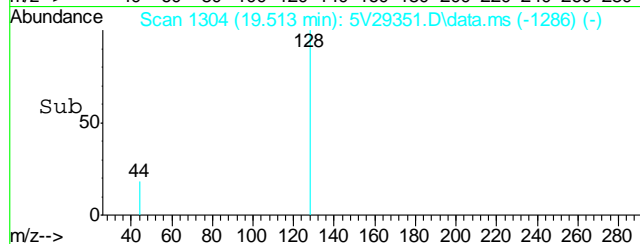
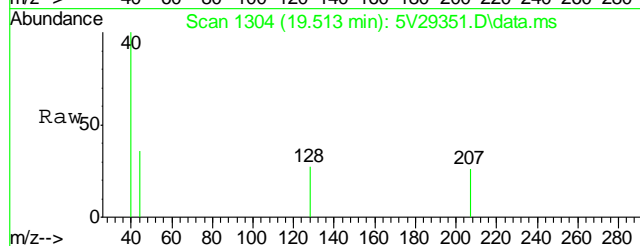
Tgt Ion	Resp	Lower	Upper
152	100		
115	51.6	43.4	65.2
150	158.5	142.9	214.3





#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: D51124
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

D51124-1

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: D51124
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

D51124-1

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: D51124
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

D51124-1

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 : 3g16535.D
 Acq On : 3 Oct 2013 8:08 pm
 Operator : DONC
 Sample : D51124-1
 Misc : OP8670,E3G817,30.02,,,1,1
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 04 15:00:48 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	203456	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	146057	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.873	188	211514	4.0000	ug/mL	0.00
19) Chrysene-d12	11.501	240	178399	4.0000	ug/mL	0.00
24) Perylene-d12	12.876	264	126689	4.0000	ug/mL	0.01

System Monitoring Compounds

2) Nitrobenzene-d5	4.996	82	636342	24.8650	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	49.72%		
7) 2-Fluorobiphenyl	6.736	172	1363449	23.9601	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	47.92%		
21) Terphenyl-d14	10.464	244	1497854	44.3757	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	88.76%		

Target Compounds

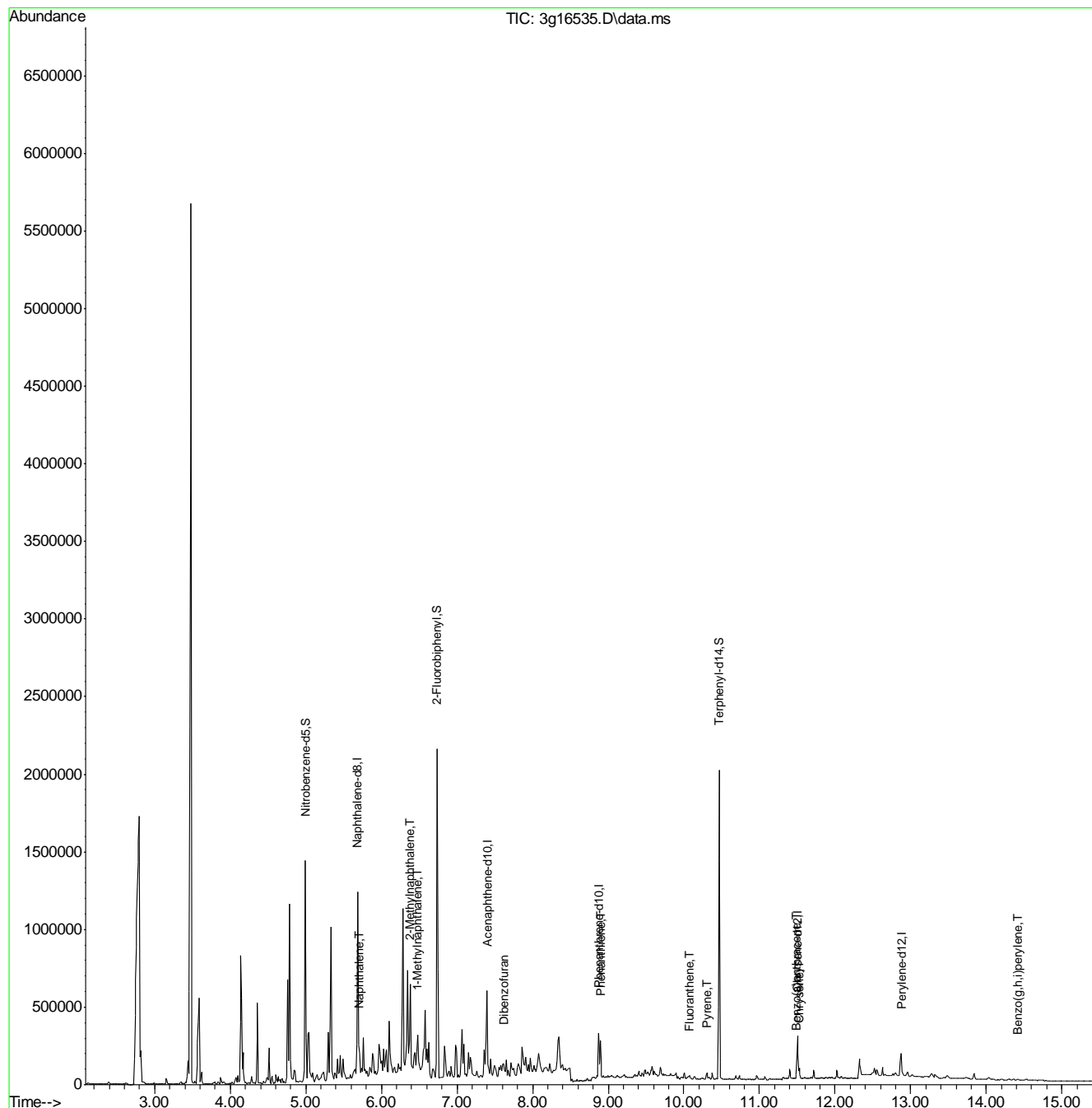
					Qvalue
3) N-Nitrosodimethylamine	2.414	74	28	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.707	128	99497	1.3518 ug/mL#	21
8) 2-Methylnaphthalene	6.380	142	203475	3.4686 ug/mL	92
9) 1-Methylnaphthalene	6.480	142	90420	1.8172 ug/mL#	87
10) Acenaphthylene	0.000	152	0	N.D. d	
11) Acenaphthene	0.000	154	0	N.D.	
12) Dibenzofuran	7.622	168	27121	0.4069 ug/mL	97
13) Fluorene	0.000	166	0	N.D. d	
14) Diphenylamine	0.000	169	0	N.D. d	
16) Phenanthrene	8.897	178	132510	1.5397 ug/mL	94
17) Anthracene	0.000	178	0	N.D. d	
18) Fluoranthene	10.076	202	15997	0.2080 ug/mL	84
20) Pyrene	10.306	202	24369	0.2923 ug/mL	96
22) Benzo(a)anthracene	11.488	228	5786	0.0795 ug/mL#	65
23) Chrysene	11.528	228	15055	0.1873 ug/mL	82
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	14.422	276	5506	0.1490 ug/mL	81

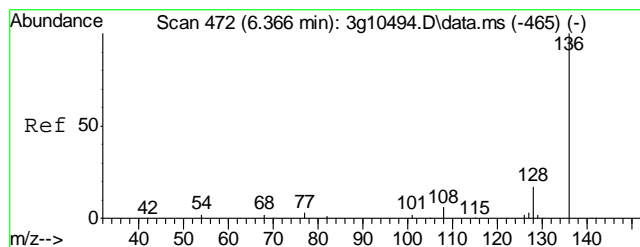
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
 Data File : 3g16535.D
 Acq On : 3 Oct 2013 8:08 pm
 Operator : DONC
 Sample : D51124-1
 Misc : OP8670,E3G817,30.02,,,1,1
 ALS Vial : 22 Sample Multiplier: 1

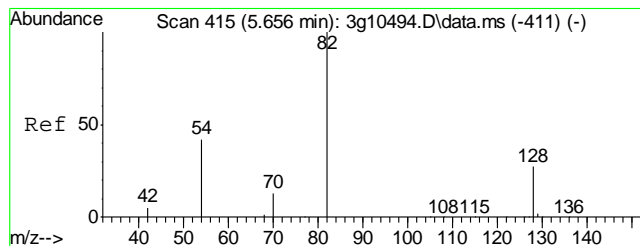
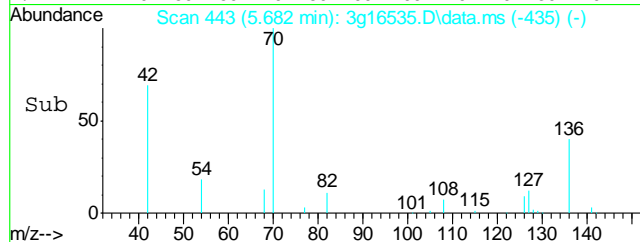
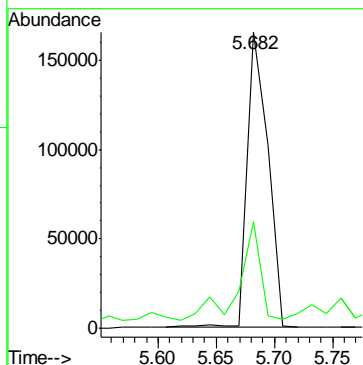
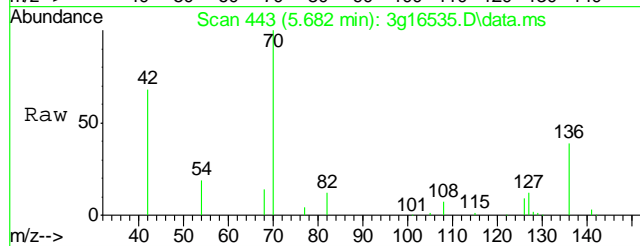
Quant Time: Oct 04 15:00:48 2013
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G810.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Sep 24 08:29:29 2013
 Response via : Initial Calibration





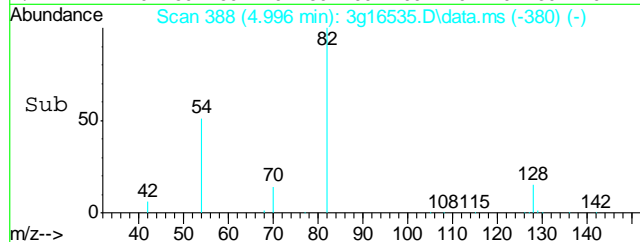
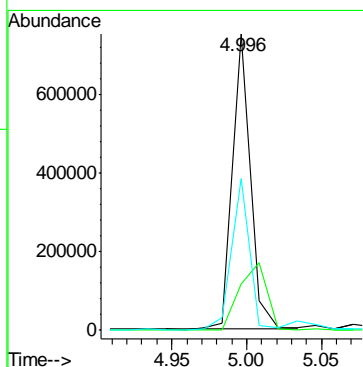
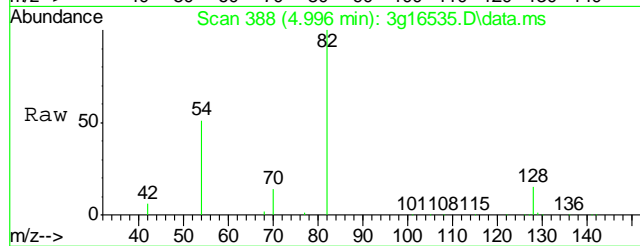
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

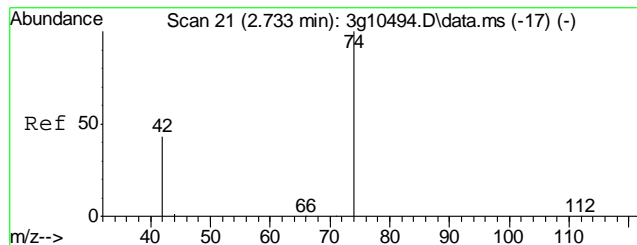
Tgt Ion	Ratio	Lower	Upper
136	100		
68	34.1	0.0	21.1#



#2
Nitrobenzene-d5
Concen: 24.8650 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

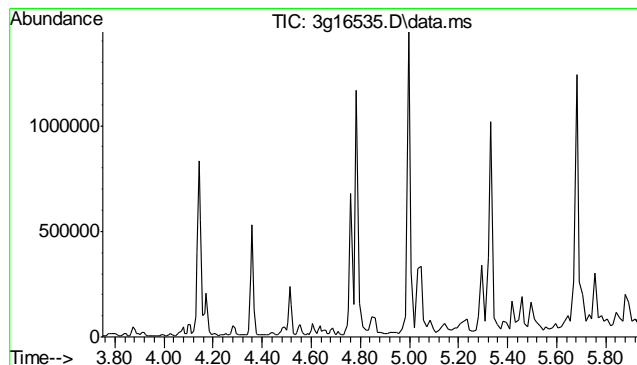
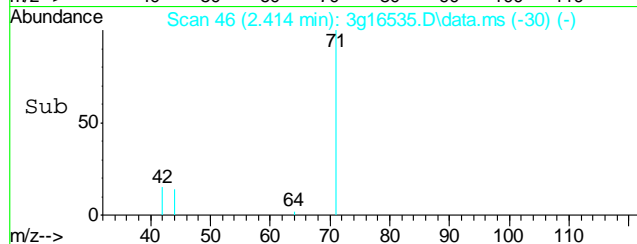
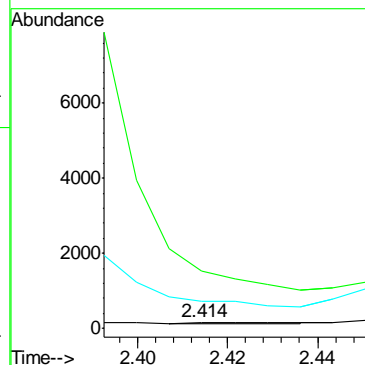
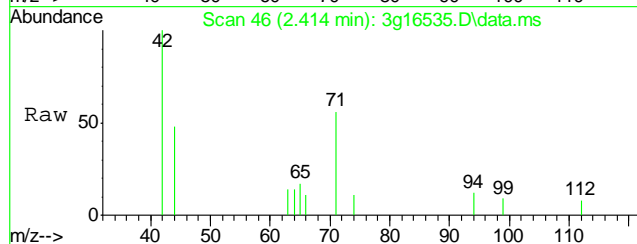
Tgt Ion	Ratio	Lower	Upper
82	100		
128	34.2	36.8	76.8#
54	50.6	40.5	80.5





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.414 min Scan# 46
Delta R.T. 0.015 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

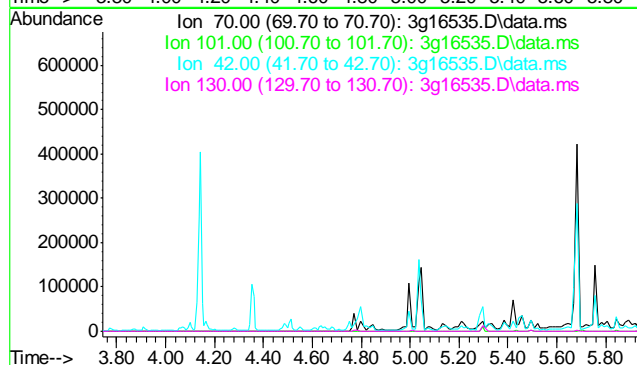
Tgt Ion: 74 Resp: 28
Ion Ratio Lower Upper
74 100
42 29014.3 58.5 98.5#
44 6285.7 0.0 24.0#

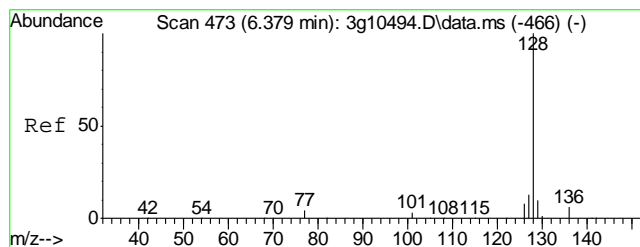


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

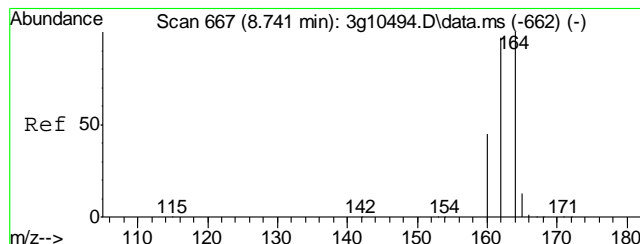
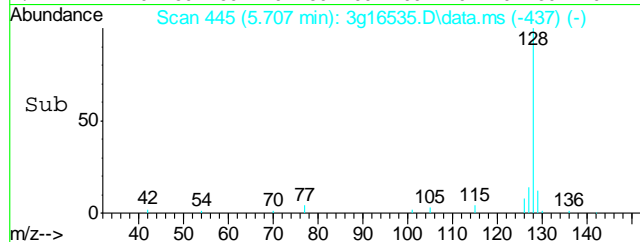
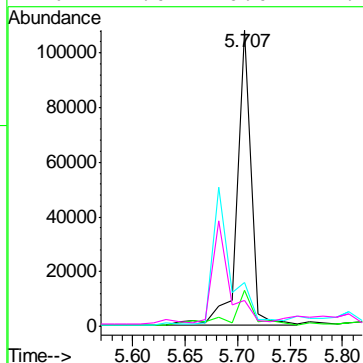
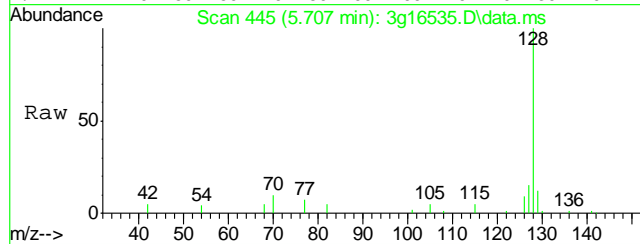
Tgt Ion: 70
Sig Exp Ratio
70 100
101 11.9
42 57.4
130 21.7





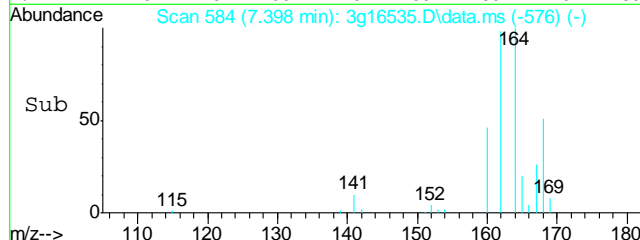
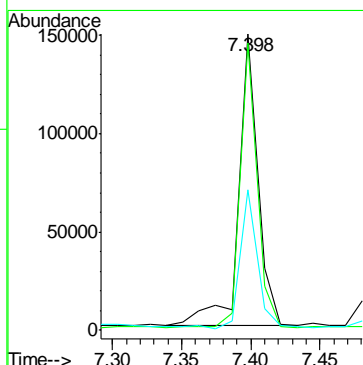
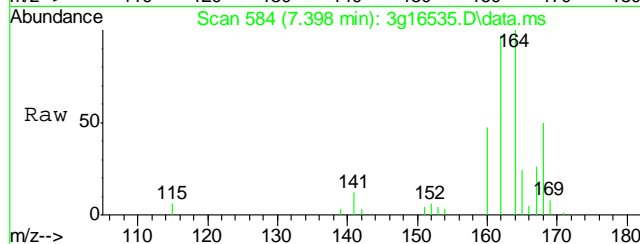
#5
Naphthalene
Concen: 1.3518 ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

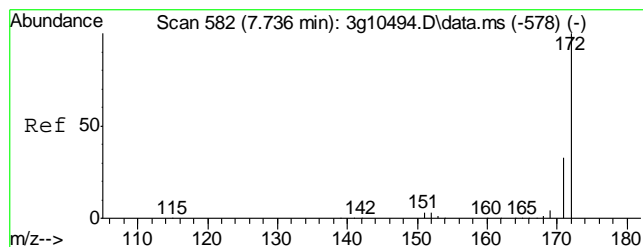
Tgt Ion:	128	Resp:	99497
Ion Ratio	Lower	Upper	
128	100		
129	18.0	0.0	31.2
127	60.9	0.0	32.4#
126	41.0	0.0	27.2#



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

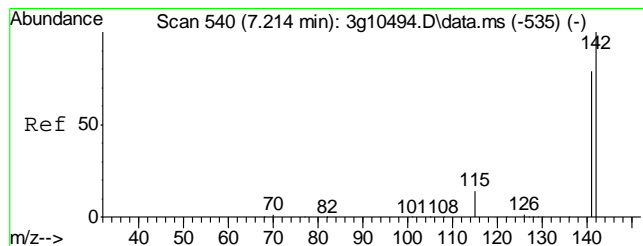
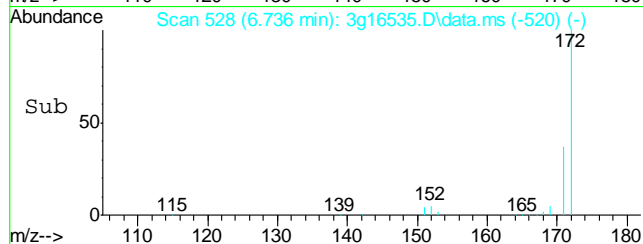
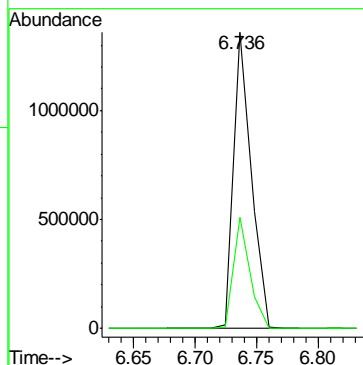
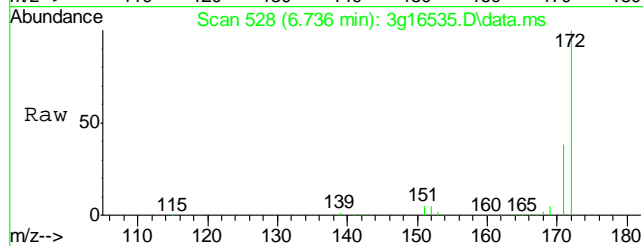
Tgt Ion:	164	Resp:	146057
Ion Ratio	Lower	Upper	
164	100		
162	85.7	83.7	123.7
160	41.5	31.9	71.9





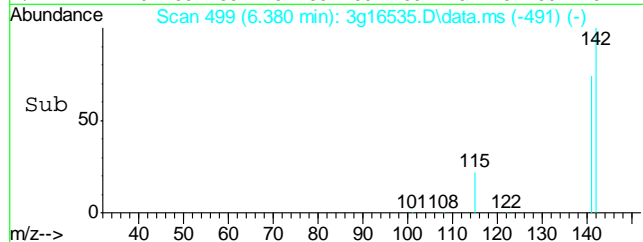
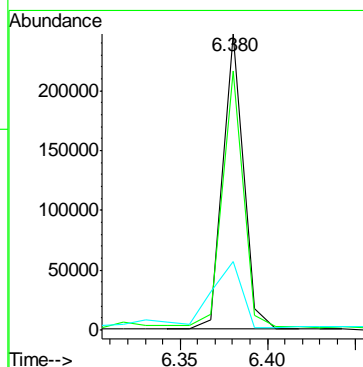
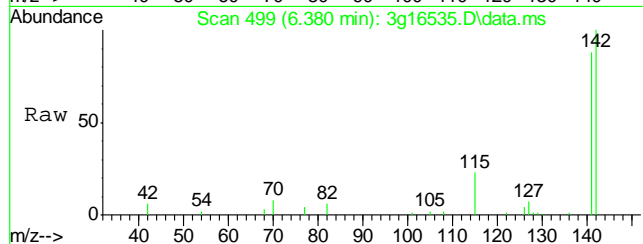
#7
2-Fluorobiphenyl
Concen: 23.9601 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

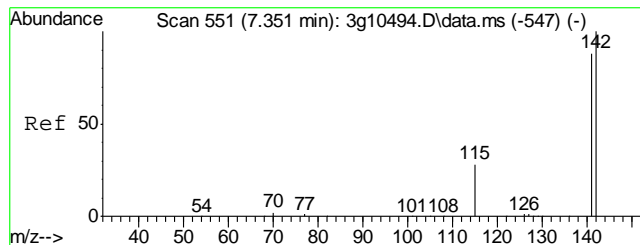
Tgt Ion	Ratio	Lower	Upper
172	100		
171	34.6	12.2	52.2



#8
2-Methylnaphthalene
Concen: 3.4686 ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

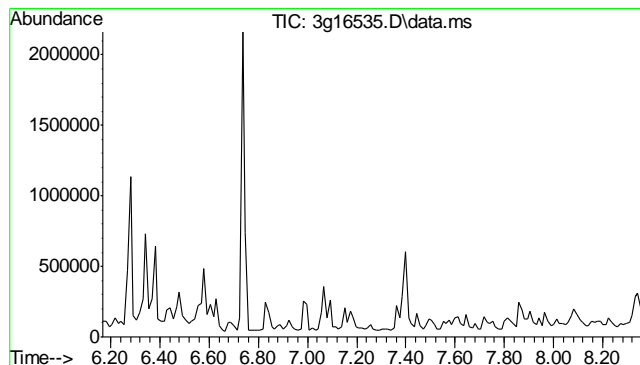
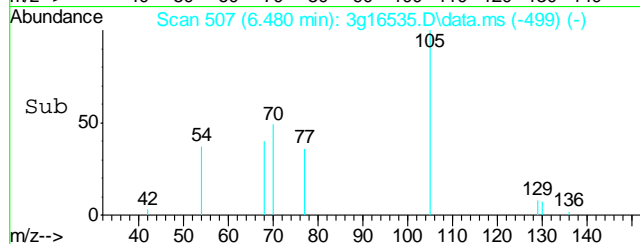
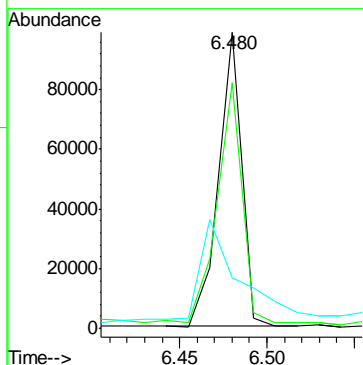
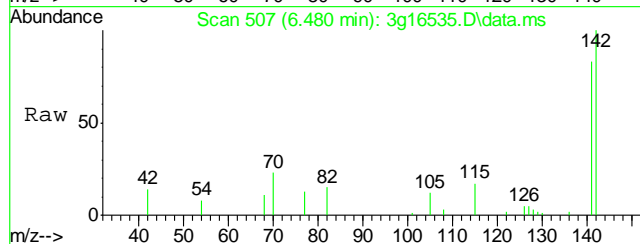
Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.1	62.0	102.0
115	38.1	11.3	51.3





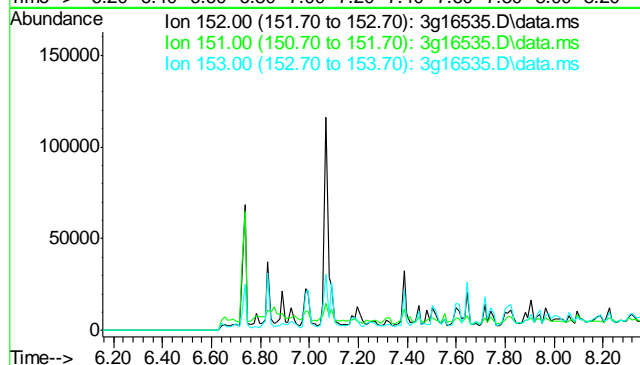
#9
1-Methylnaphthalene
Concen: 1.8172 ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

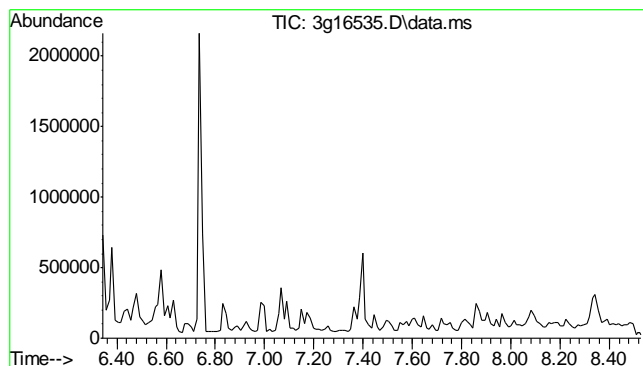
Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.2	67.5	107.5
115	65.0	19.4	59.4



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 7.26 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

Tgt Ion	Sig	Exp Ratio
152	100	
151	19.2	
153	12.9	

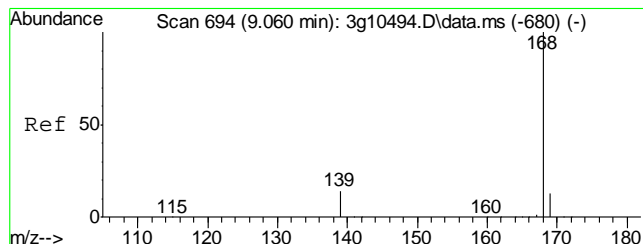
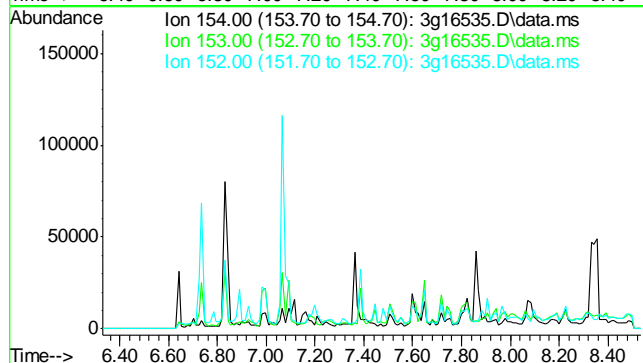




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 7.43 min

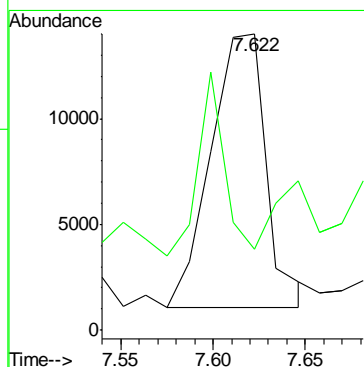
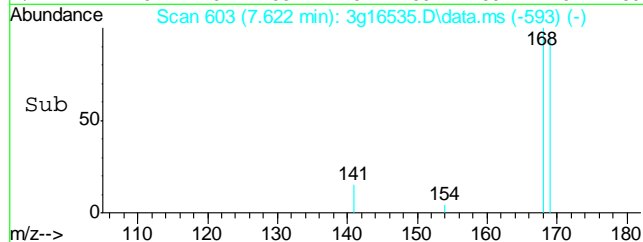
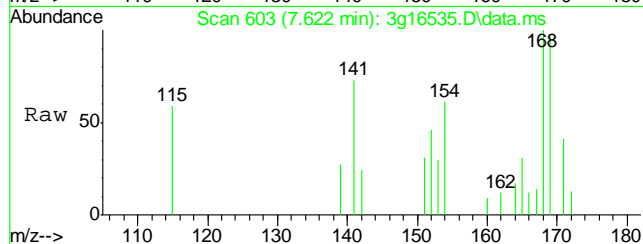
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

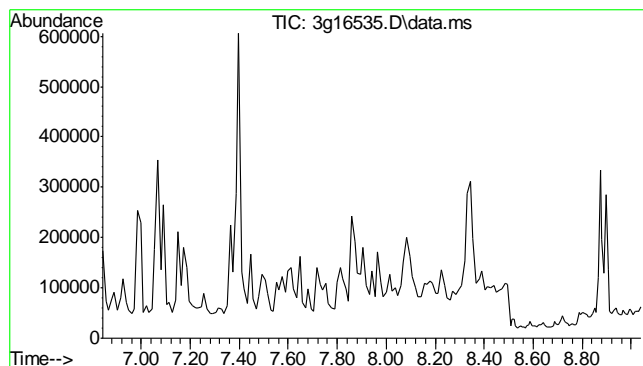
Tgt Ion: 154
Sig Exp Ratio
154 100
153 102.4
152 50.0



#12
Dibenzofuran
Concen: 0.4069 ug/mL
RT: 7.622 min Scan# 603
Delta R.T. 0.024 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

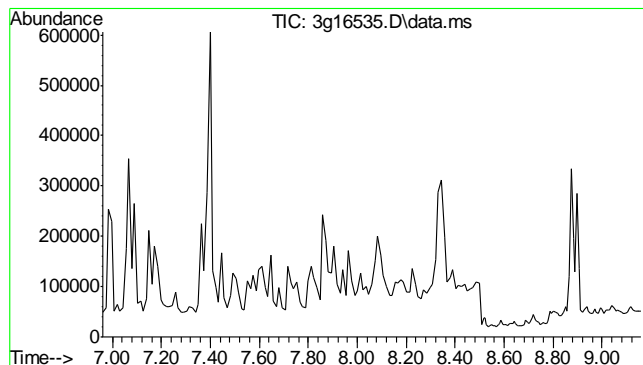
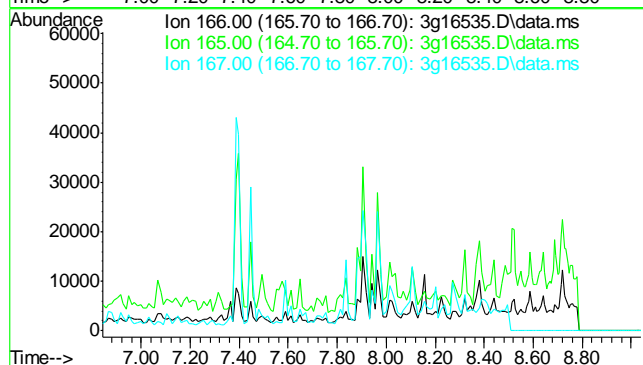
Tgt Ion: 168 Resp: 27121
Ion Ratio Lower Upper
168 100
139 32.0 13.4 53.4





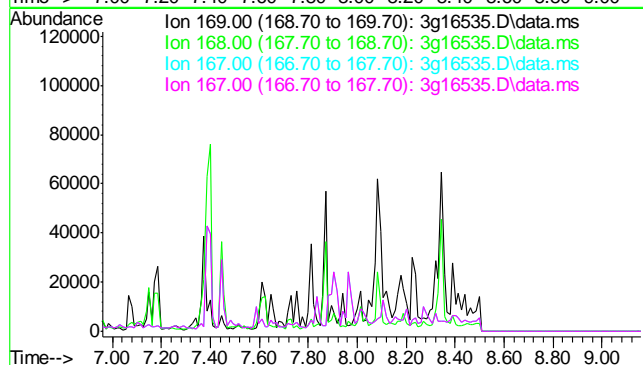
#13
 Fluorene
 Concen: N.D. ug/mL
 Expected RT: 7.94 min
 Lab File: 3g16535.D
 Acq: 3 Oct 13 8:08 pm

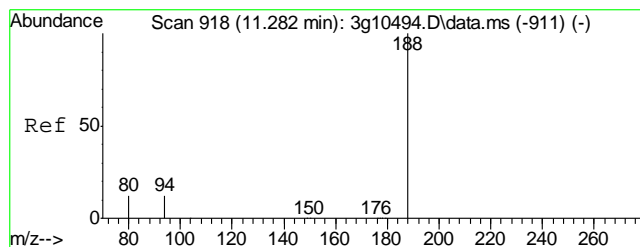
Tgt Ion	Exp Ratio
166	100
165	92.0
167	13.1



#14
 Diphenylamine
 Concen: N.D. ug/mL
 Expected RT: 8.06 min
 Lab File: 3g16535.D
 Acq: 3 Oct 13 8:08 pm

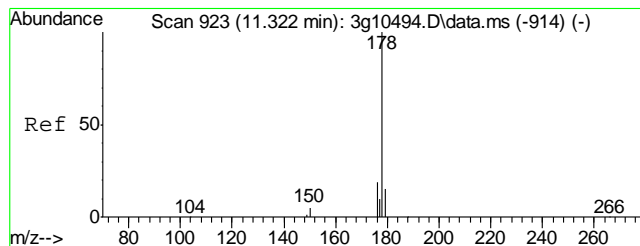
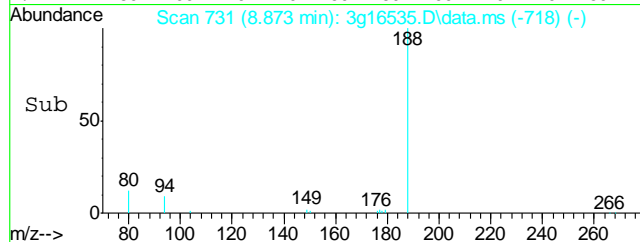
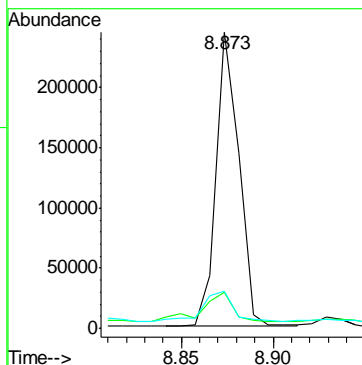
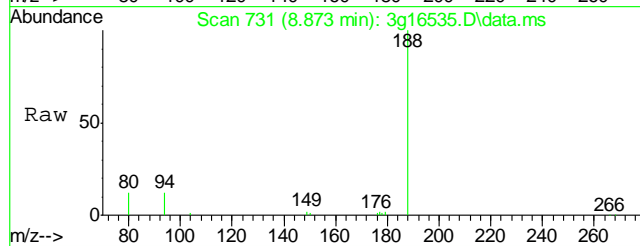
Tgt Ion	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1





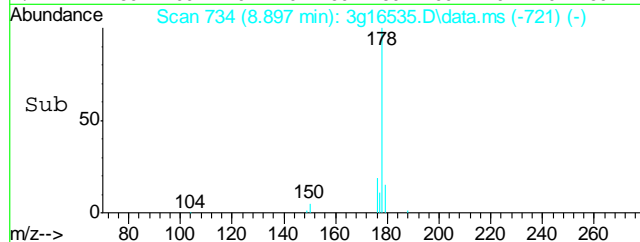
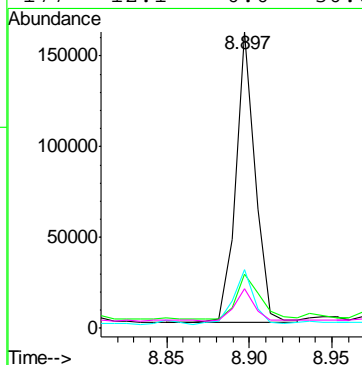
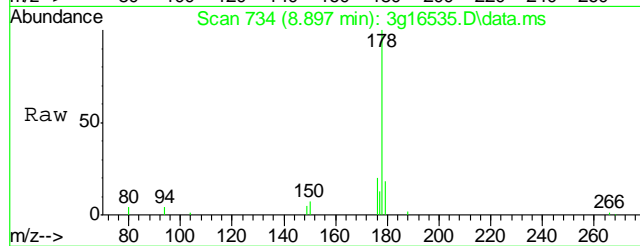
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.873 min Scan# 731
Delta R.T. 0.002 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

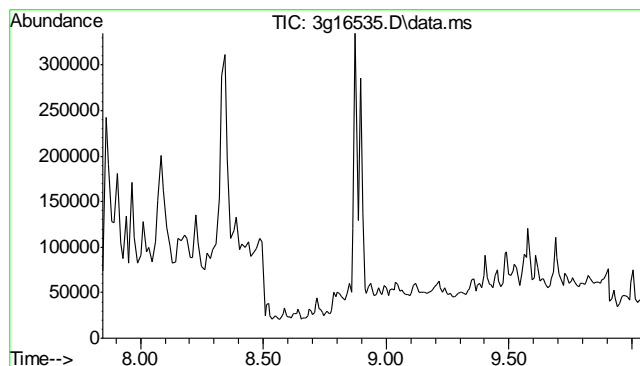
Tgt Ion:188	Resp:	211514
Ion Ratio	Lower	Upper
188	100	
94	13.1	0.0 28.3
80	13.2	0.0 27.8



#16
Phenanthrene
Concen: 1.5397 ug/mL
RT: 8.897 min Scan# 734
Delta R.T. 0.002 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

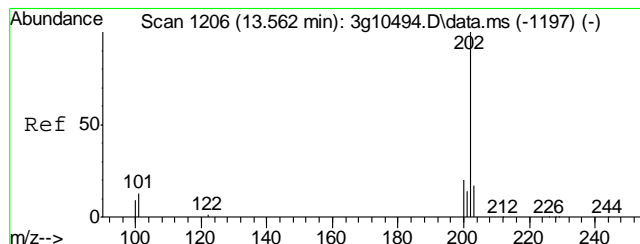
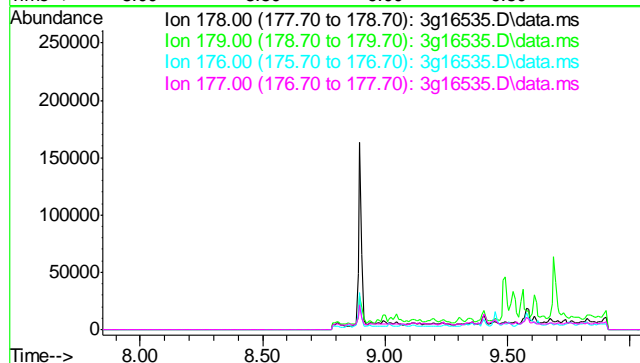
Tgt Ion:178	Resp:	132510
Ion Ratio	Lower	Upper
178	100	
179	19.6	0.0 35.2
176	19.7	0.0 38.6
177	12.1	0.0 30.0





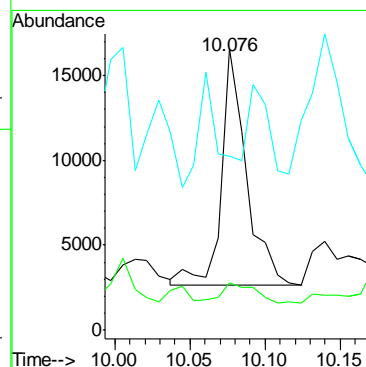
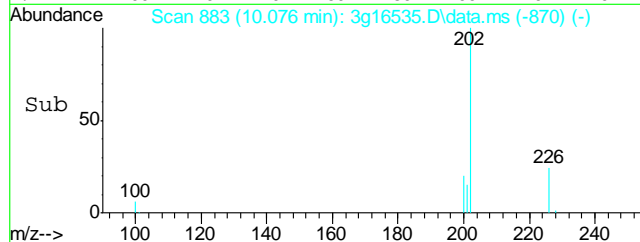
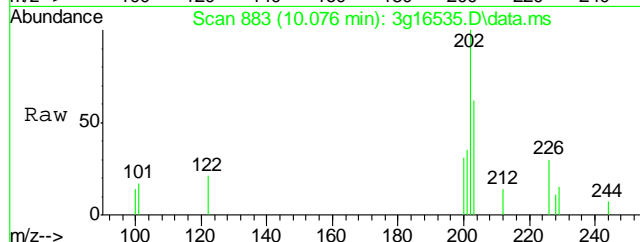
#17
 Anthracene
 Concen: N.D. ug/mL
 Expected RT: 8.94 min
 Lab File: 3g16535.D
 Acq: 3 Oct 13 8:08 pm

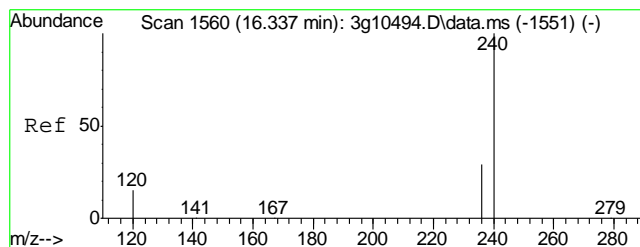
Tgt Ion: 178
 Sig Exp Ratio
 178 100
 179 15.1
 176 18.2
 177 8.7



#18
 Fluoranthene
 Concen: 0.2080 ug/mL
 RT: 10.076 min Scan# 883
 Delta R.T. 0.002 min
 Lab File: 3g16535.D
 Acq: 3 Oct 13 8:08 pm

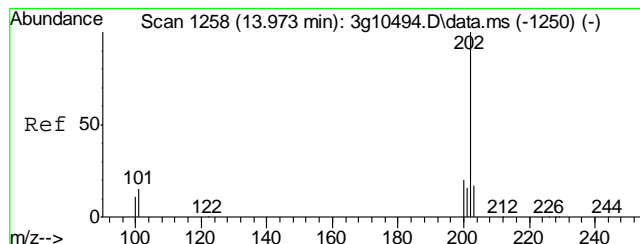
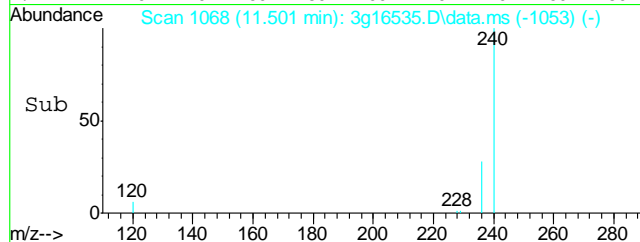
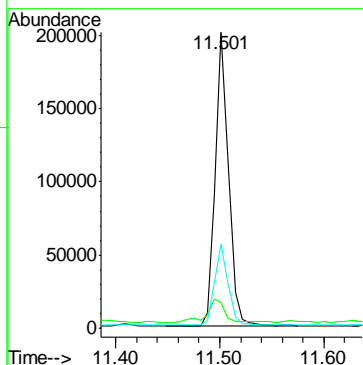
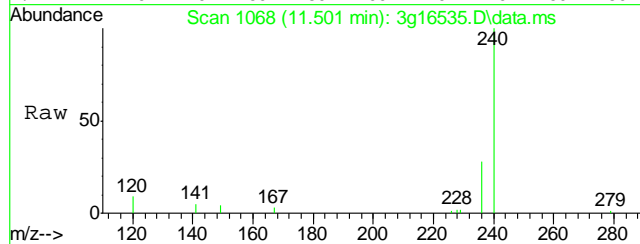
Tgt Ion: 202 Resp: 15997
 Ion Ratio Lower Upper
 202 100
 101 11.4 0.0 32.6
 203 28.8 0.0 37.4





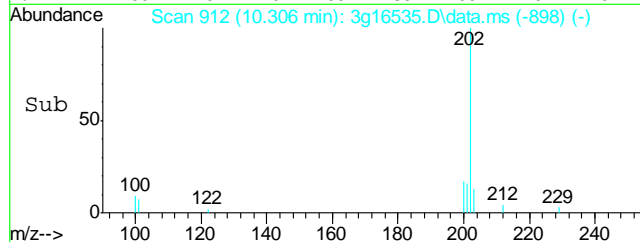
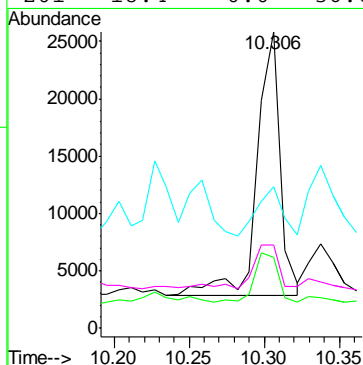
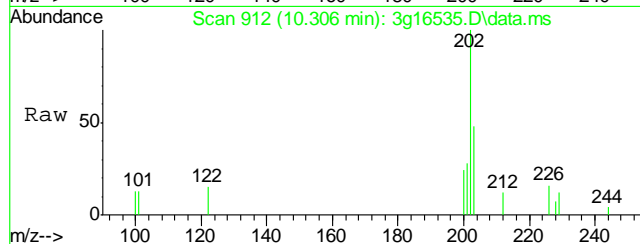
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.501 min Scan# 1068
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

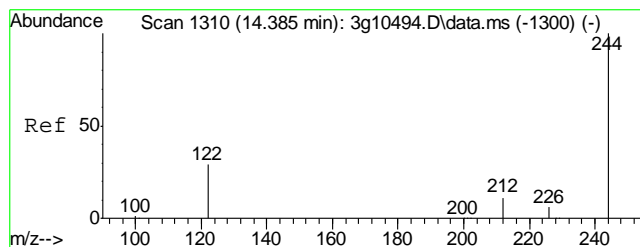
Tgt Ion	Ratio	Lower	Upper
240	100		
120	10.1	0.2	40.2
236	28.4	8.8	48.8



#20
Pyrene
Concen: 0.2923 ug/mL
RT: 10.306 min Scan# 912
Delta R.T. 0.009 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

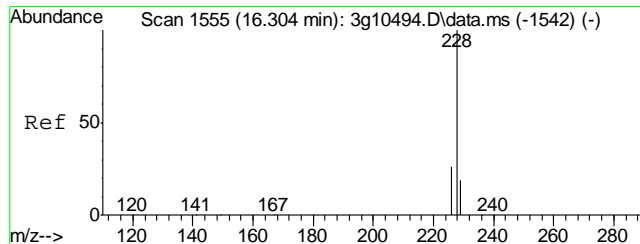
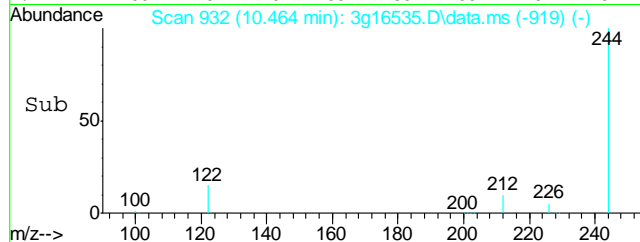
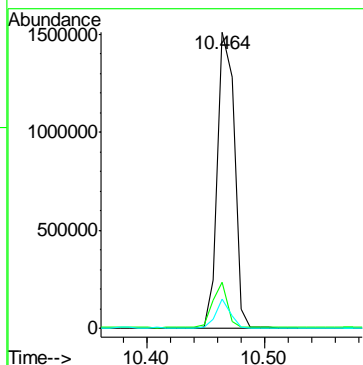
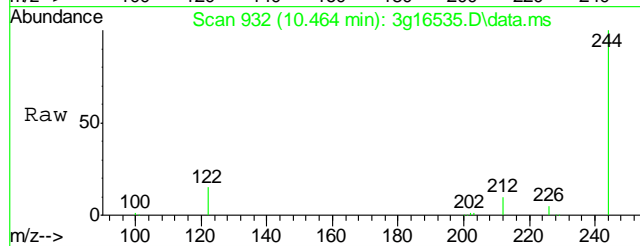
Tgt Ion	Ratio	Lower	Upper
202	100		
200	18.9	0.2	40.2
203	20.3	0.0	37.8
201	18.4	0.0	36.6





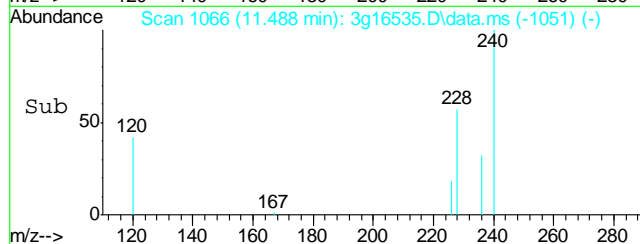
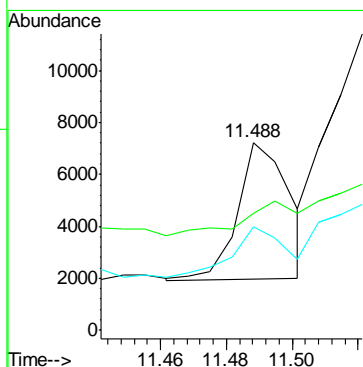
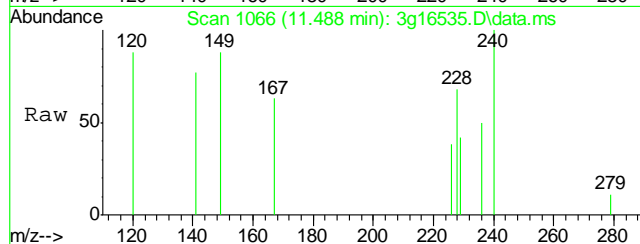
#21
Terphenyl-d14
Concen: 44.3757 ug/mL
RT: 10.464 min Scan# 932
Delta R.T. 0.002 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

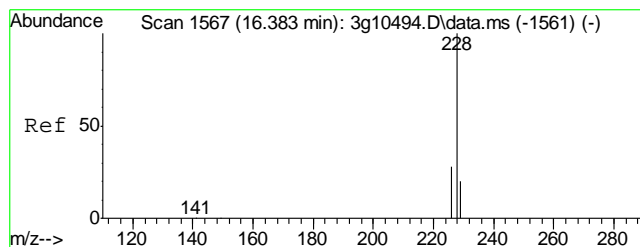
Tgt Ion	Ratio	Lower	Upper
244	100		
122	13.2	7.8	47.8
212	8.2	0.0	32.8



#22
Benzo(a)anthracene
Concen: 0.0795 ug/mL
RT: 11.488 min Scan# 1066
Delta R.T. 0.000 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

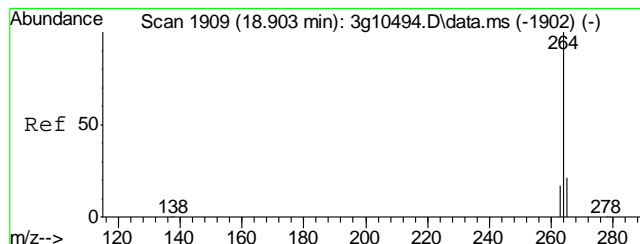
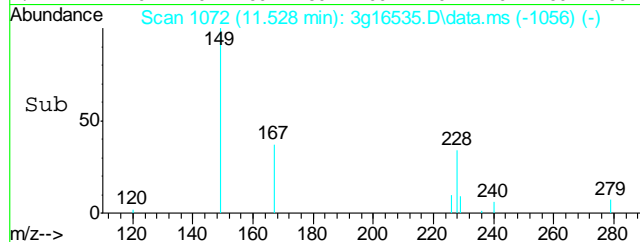
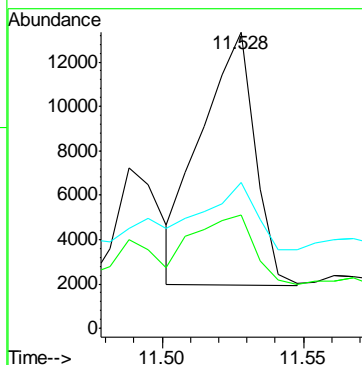
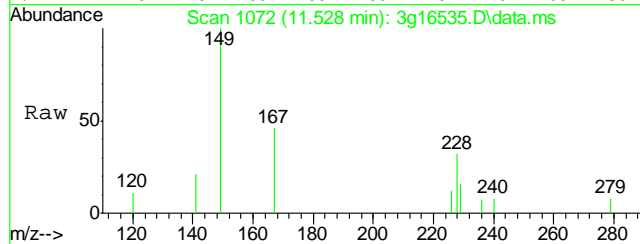
Tgt Ion	Ratio	Lower	Upper
228	100		
229	0.0	0.0	39.4
226	42.2	6.6	46.6





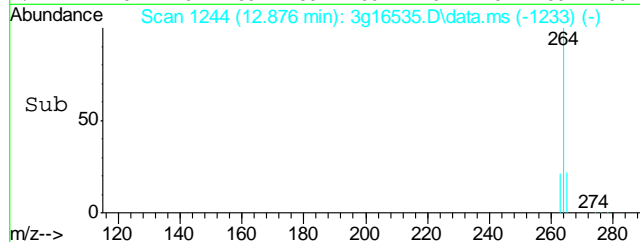
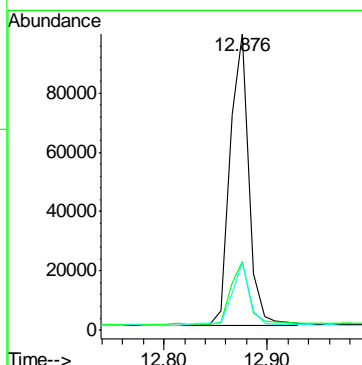
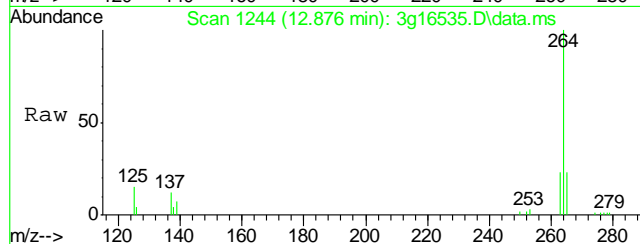
#23
Chrysene
Concen: 0.1873 ug/mL
RT: 11.528 min Scan# 1072
Delta R.T. 0.007 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

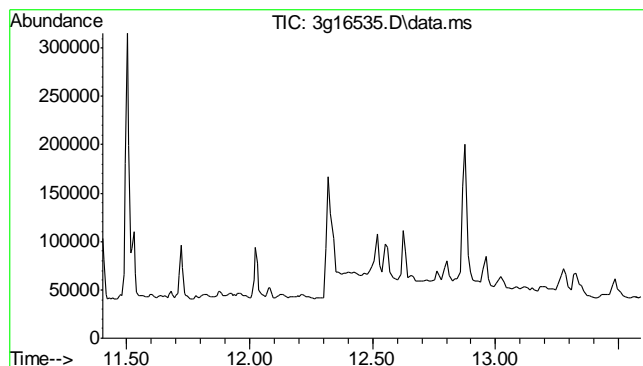
Tgt Ion:	228	Resp:	15055
Ion Ratio	Lower	Upper	
228	100		
226	31.2	8.6	48.6
229	36.4	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.876 min Scan# 1244
Delta R.T. 0.011 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

Tgt Ion:	264	Resp:	126689
Ion Ratio	Lower	Upper	
264	100		
265	22.0	1.2	41.2
263	20.3	0.7	40.7

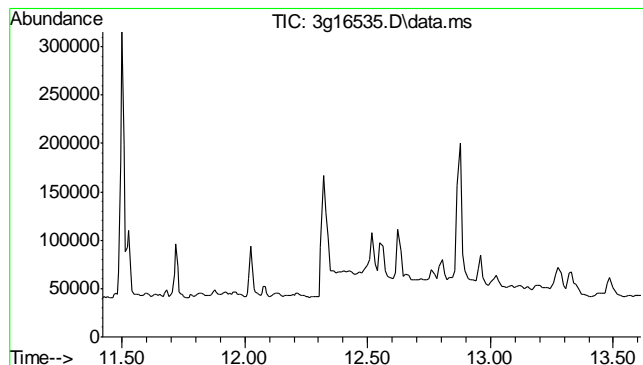
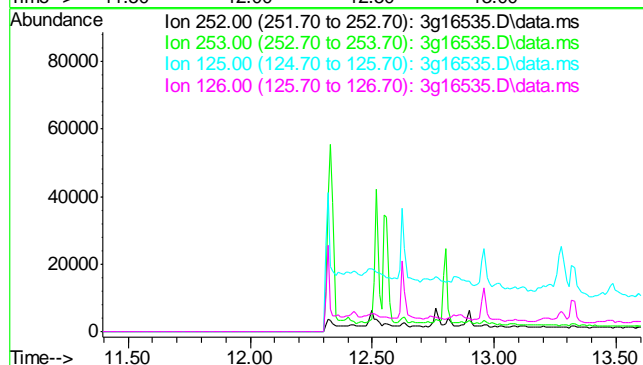




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

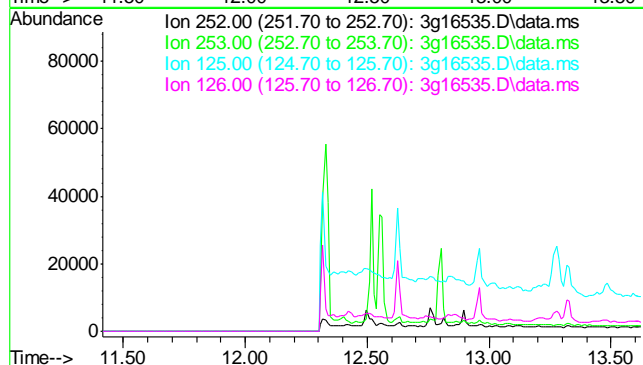
Tgt Ion	Sig	Exp Ratio
252	100	
253	51.5	
125	13.2	
126	46.9	

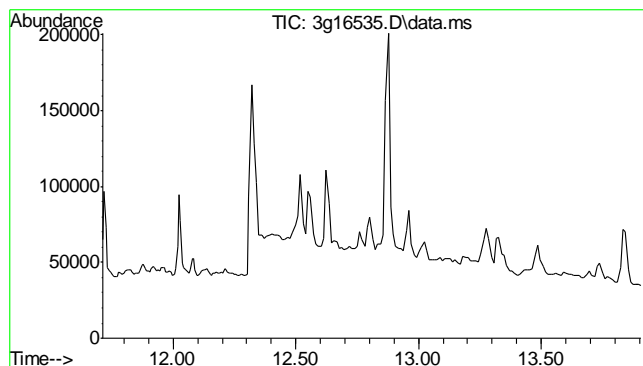


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

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

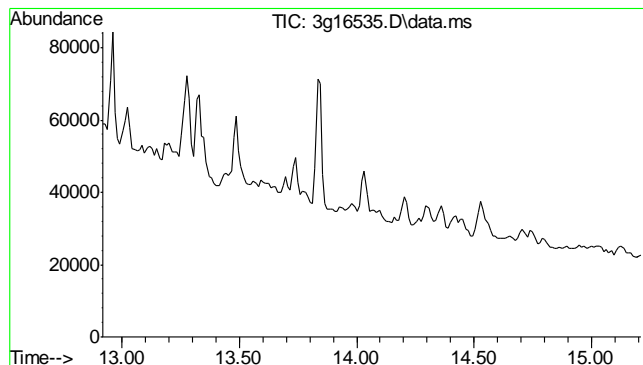
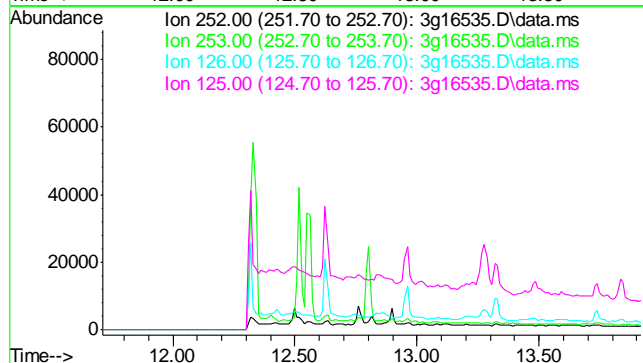




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

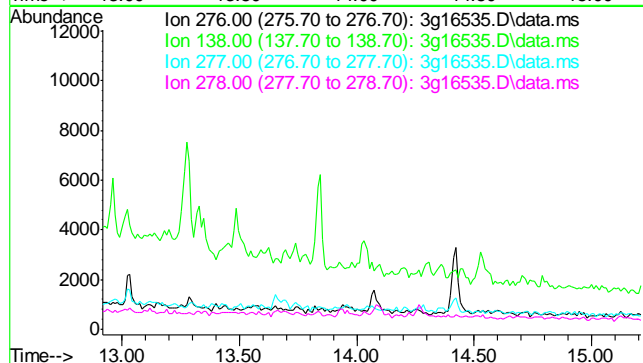
Tgt Ion	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5

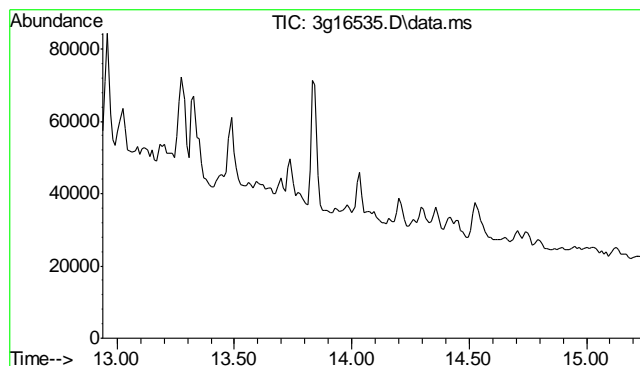


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

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

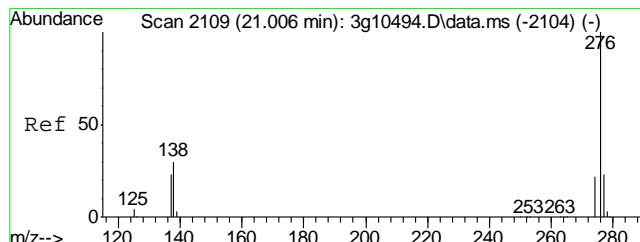
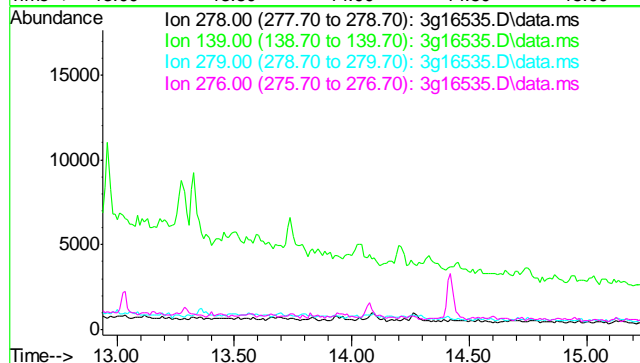




#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

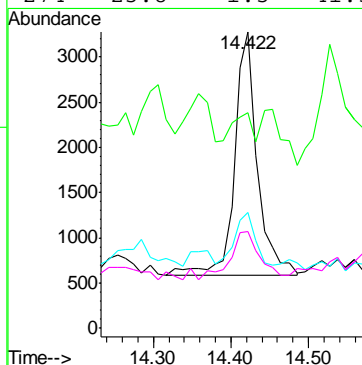
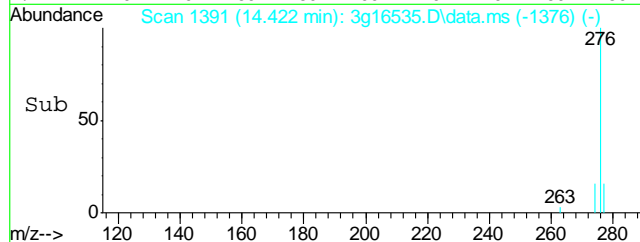
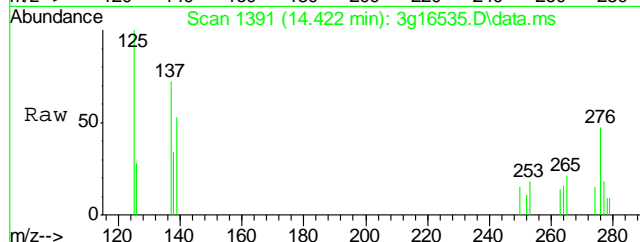
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

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



#30
Benzo(g,h,i)perylene
Concen: 0.1490 ug/mL
RT: 14.422 min Scan# 1391
Delta R.T. 0.011 min
Lab File: 3g16535.D
Acq: 3 Oct 13 8:08 pm

Tgt Ion: 276 Resp: 5506
Ion Ratio Lower Upper
276 100
138 15.2 15.1 55.1
277 20.1 3.3 43.3
274 25.8 1.5 41.5



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

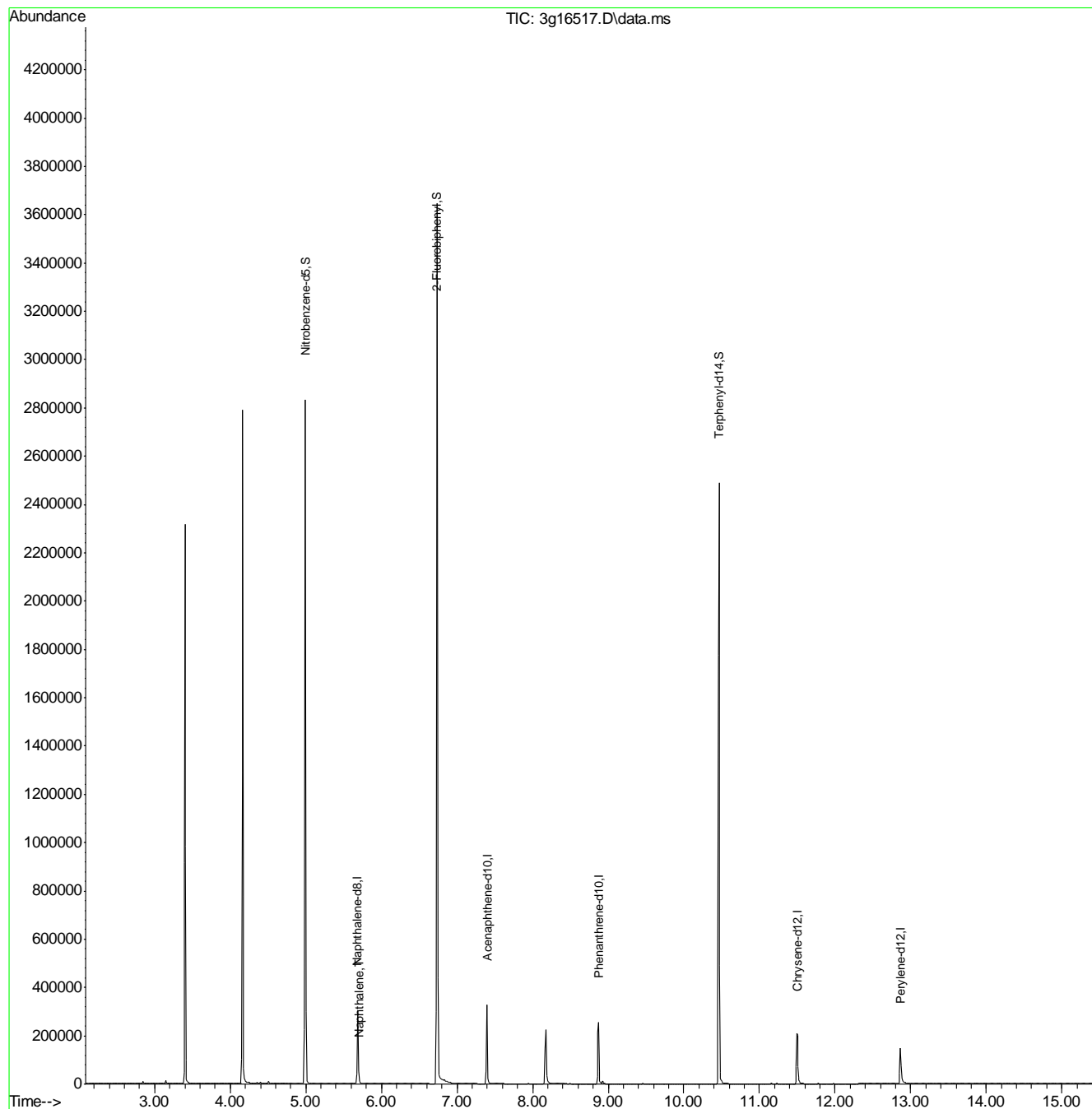
					Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.707	128	6089	0.0773	ug/mL 98
8) 2-Methylnaphthalene	6.380	142	1089	N.D.	
9) 1-Methylnaphthalene	6.480	142	479	N.D.	
10) Acenaphthylene	7.256	152	63	N.D.	
11) Acenaphthene	7.422	154	1060	N.D.	
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

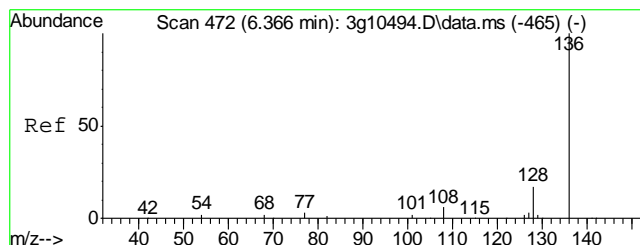
(#) = qualifier out of range (m) = manual integration (+) = signals summed

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

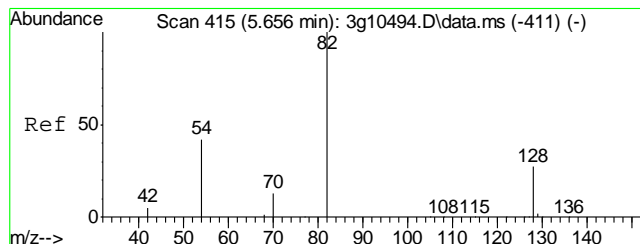
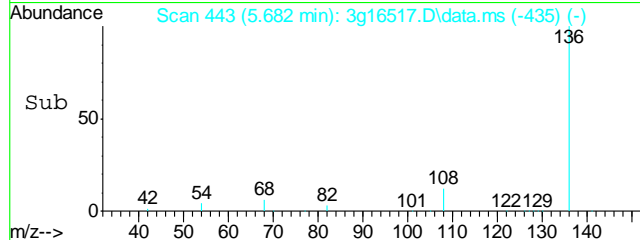
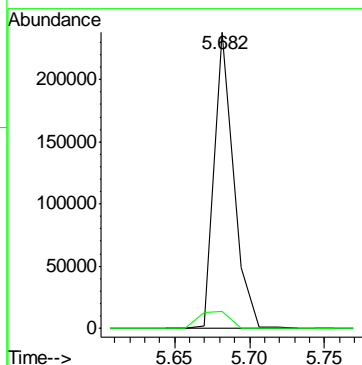
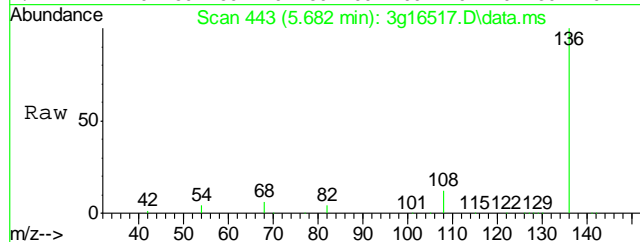
Quant Time: Oct 04 13:28:03 2013
Quant Method : C:\msdchem\1\METHODS\SIMPE3G810.M
Quant Title : PAHSIM BASE
QLast Update : Tue Sep 24 08:29:29 2013
Response via : Initial Calibration





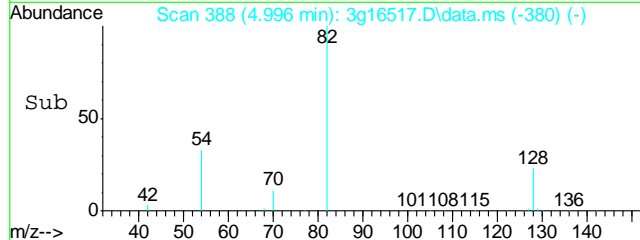
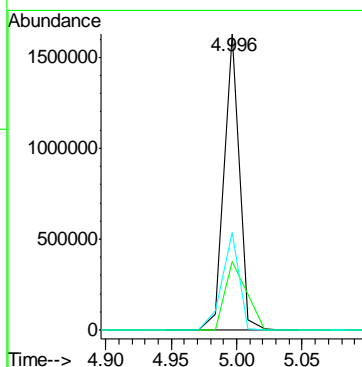
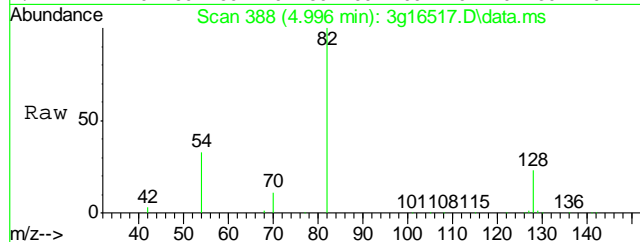
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

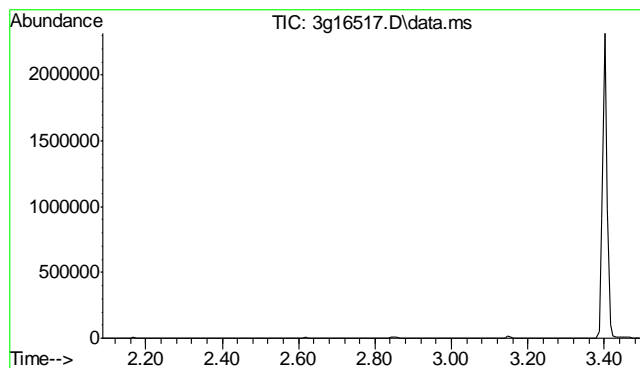
Tgt Ion:	136	Resp:	217864
Ion Ratio	Lower	Upper	
136	100		
68	8.8	0.0	21.1



#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#

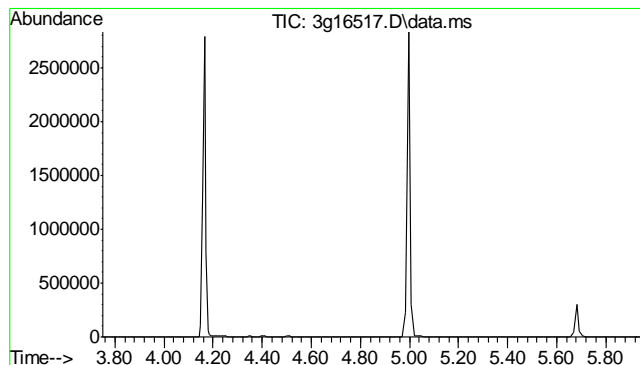
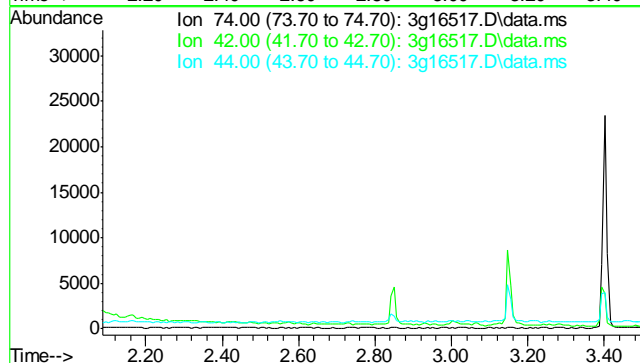




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.40 min

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

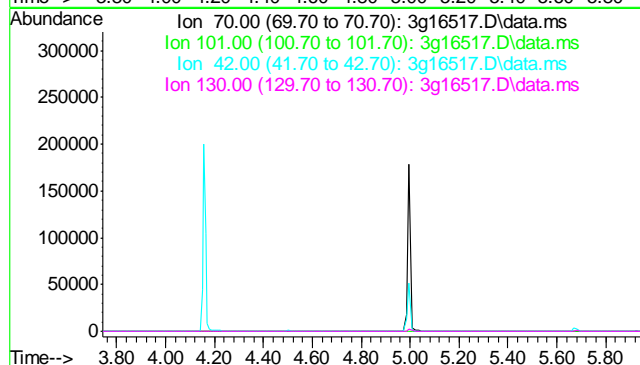
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	78.5
44	4.0

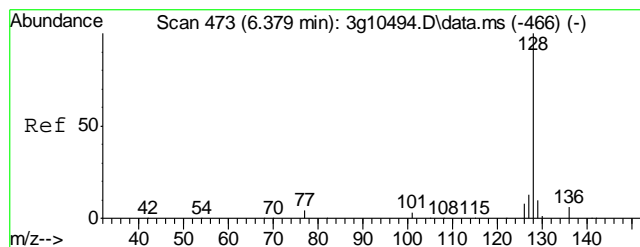


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

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

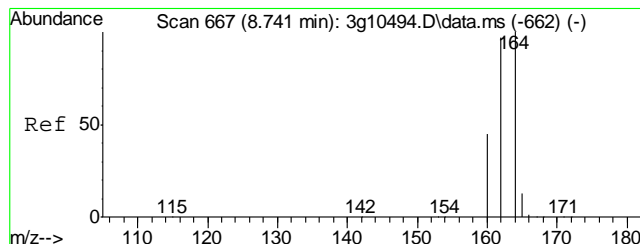
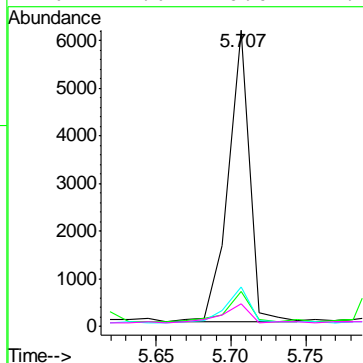
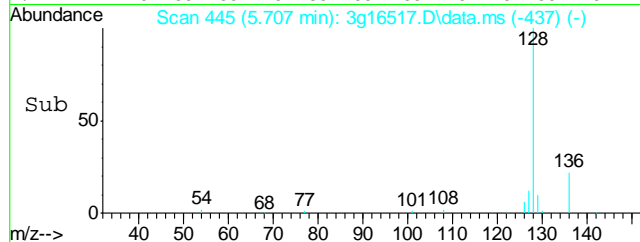
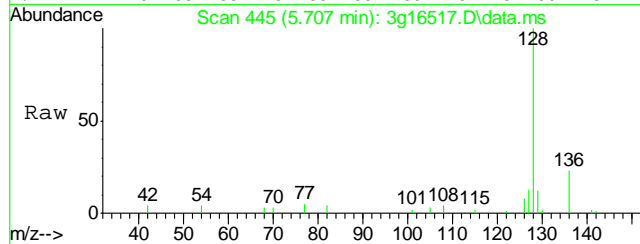
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7





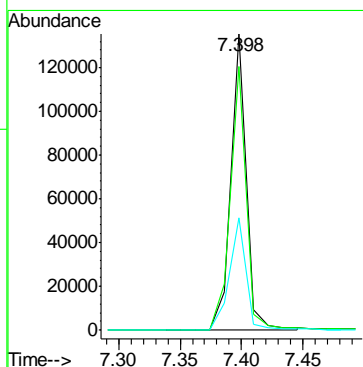
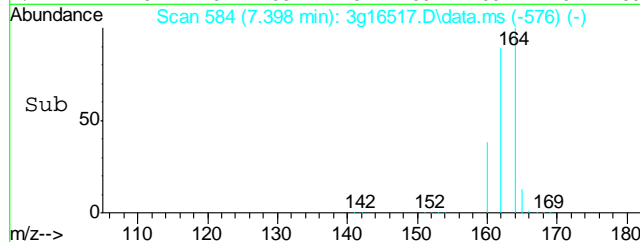
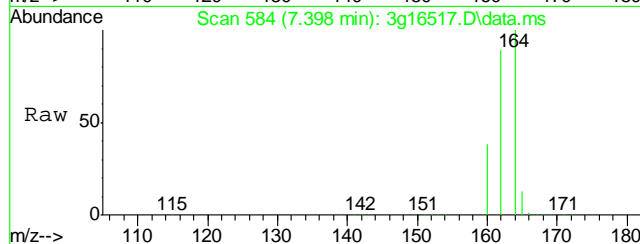
#5
Naphthalene
Concen: 0.0773 ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

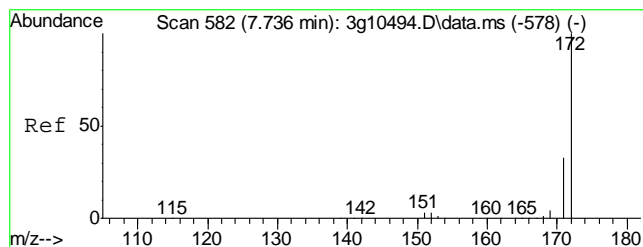
Tgt Ion	128	129	127	126
Resp	6089	10.9	13.6	7.6
Ratio	100			
Lower		0.0	0.0	0.0
Upper		31.2	32.4	27.2



#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

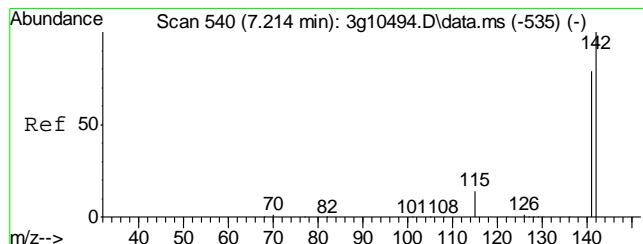
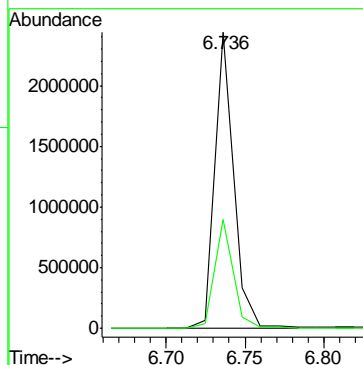
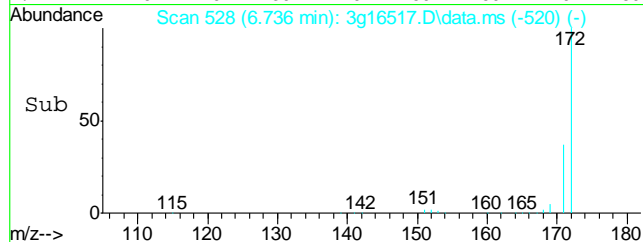
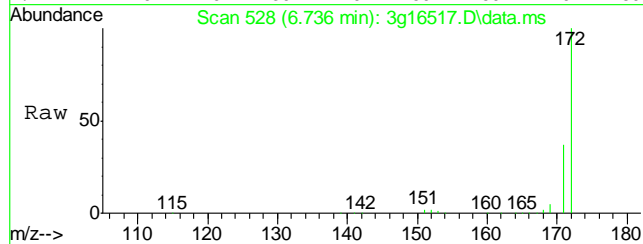
Tgt Ion	164	162	160
Resp	117785	92.1	40.9
Ratio	100		
Lower		83.7	31.9
Upper		123.7	71.9





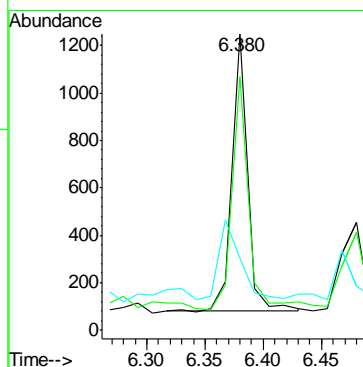
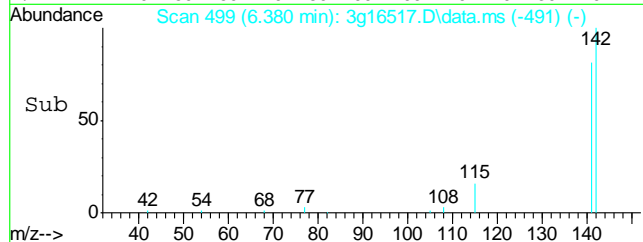
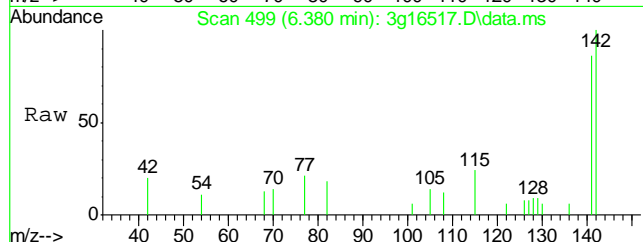
#7
2-Fluorobiphenyl
Concen: 44.6998 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

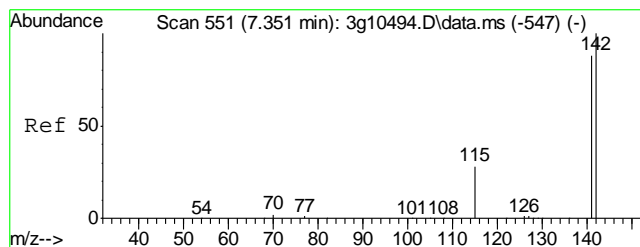
Tgt Ion:172 Resp: 2051275
Ion Ratio Lower Upper
172 100
171 36.0 12.2 52.2



#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

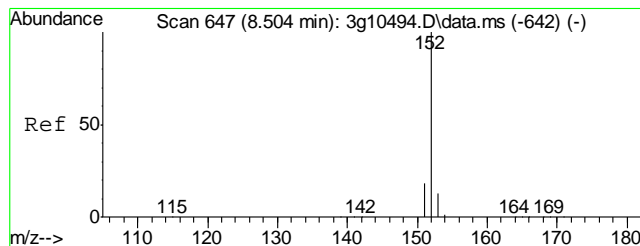
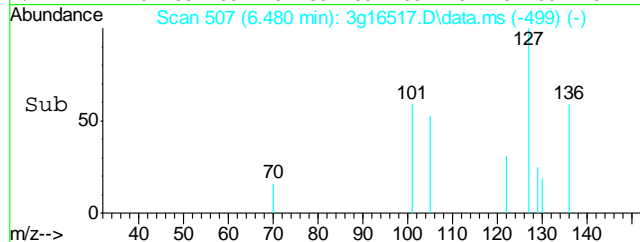
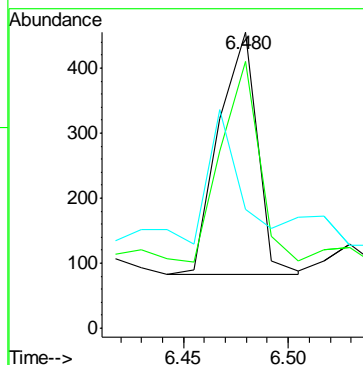
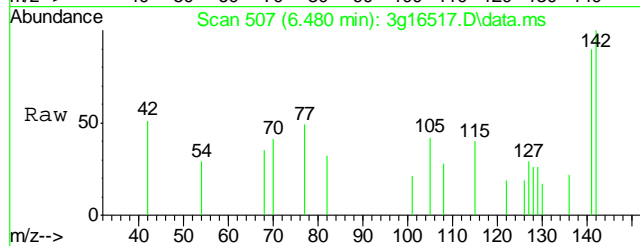
Tgt Ion:142 Resp: 1089
Ion Ratio Lower Upper
142 100
141 86.3 62.0 102.0
115 39.8 11.3 51.3





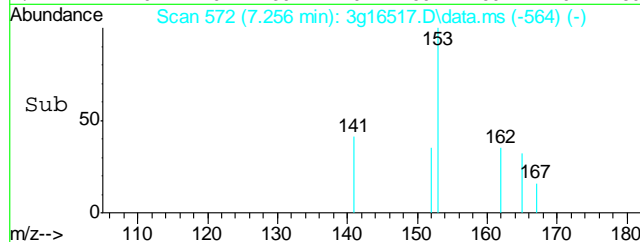
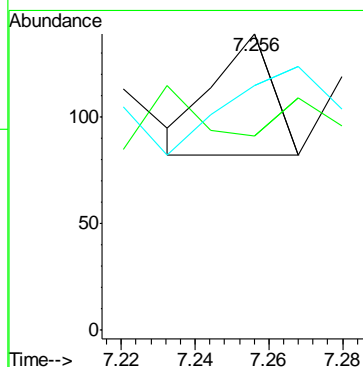
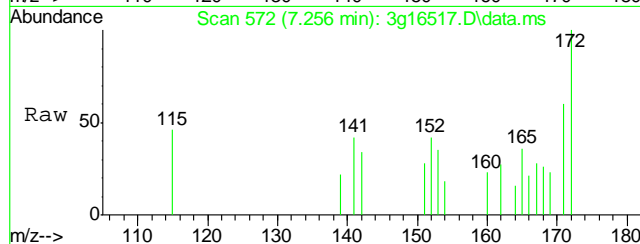
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

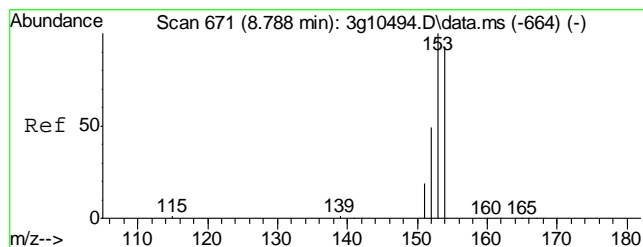
Tgt Ion	Ratio	Lower	Upper
142	100		
141	80.2	67.5	107.5
115	67.6	19.4	59.4



#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

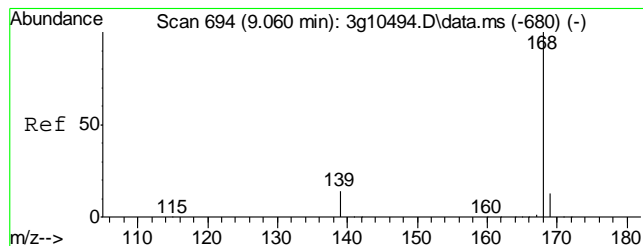
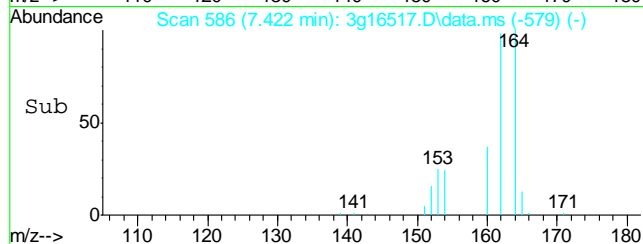
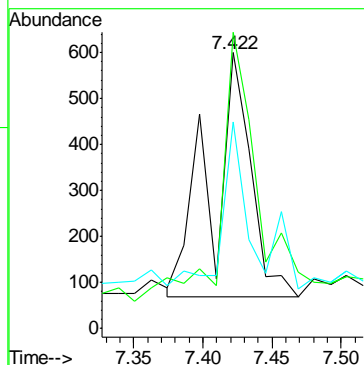
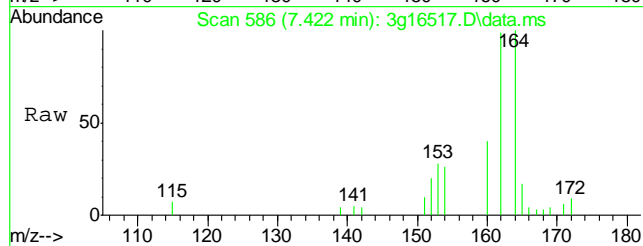
Tgt Ion	Ratio	Lower	Upper
152	100		
151	76.2	0.0	39.2
153	154.0	0.0	32.9





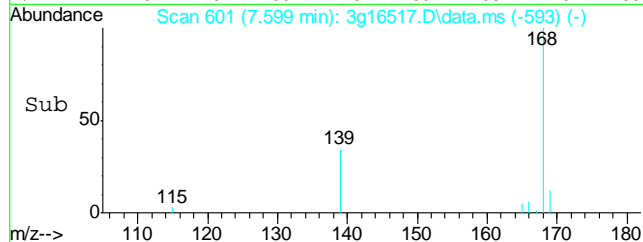
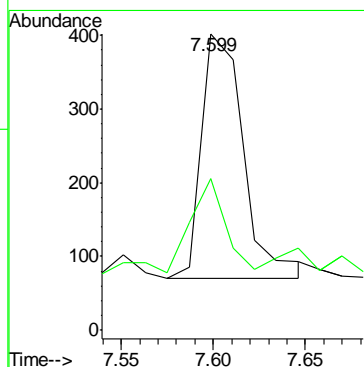
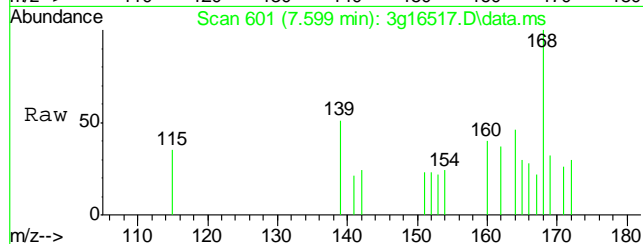
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.422 min Scan# 586
Delta R.T. -0.012 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

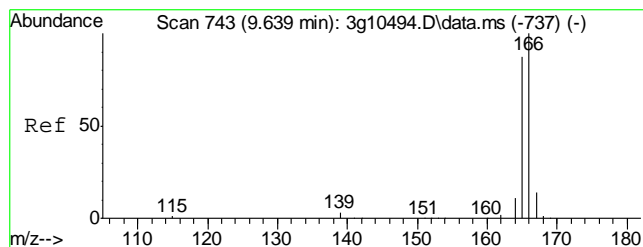
Tgt Ion	154	153	152
Resp:	1060	82.0	37.2
Ratio	100	82.4	30.0
Lower			
Upper		122.4#	70.0



#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

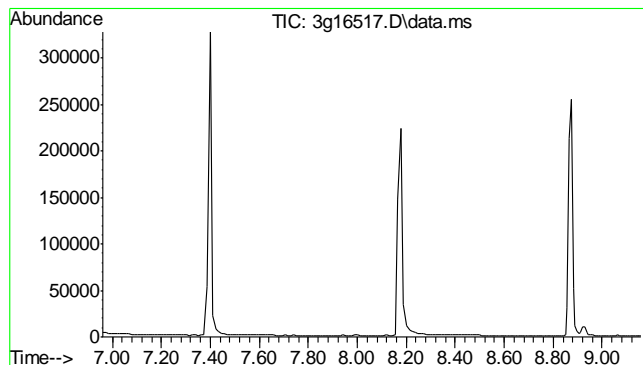
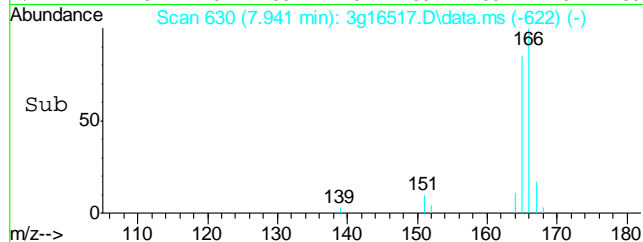
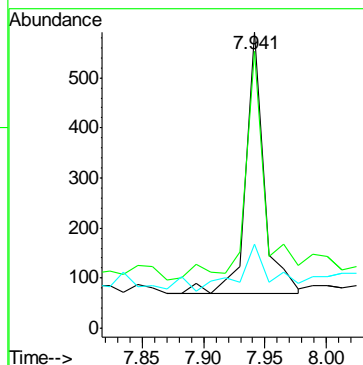
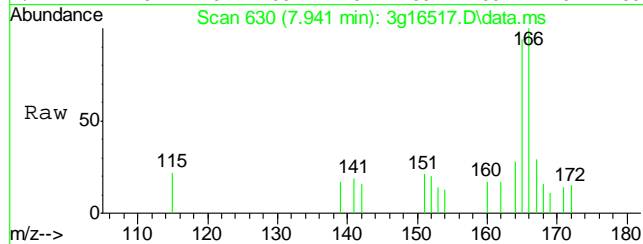
Tgt Ion	168	139
Resp:	528	36.7
Ratio	100	13.4
Lower		
Upper		53.4





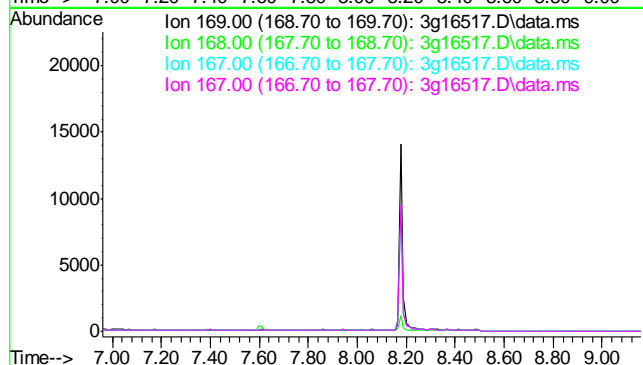
#13
Fluorene
Concen: Below ug/mL
RT: 7.941 min Scan# 630
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

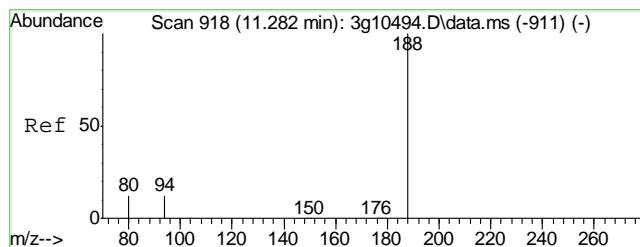
Tgt Ion:	166	Resp:	540
Ion Ratio	Lower	Upper	
166	100		
165	95.4	72.0	112.0
167	31.3	0.0	33.1



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

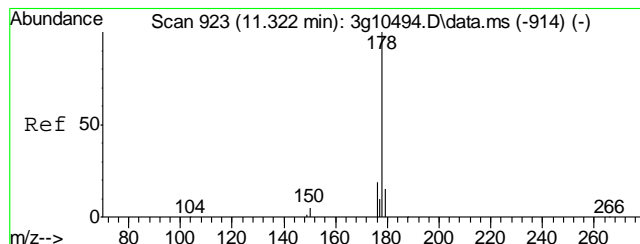
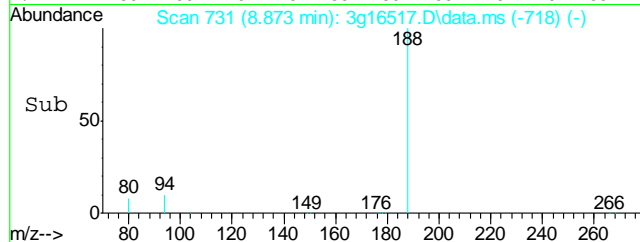
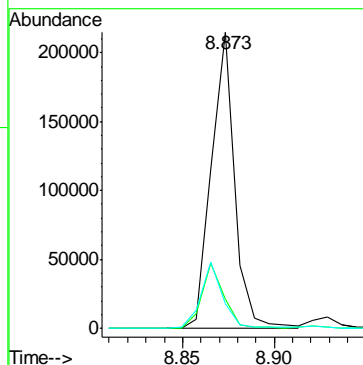
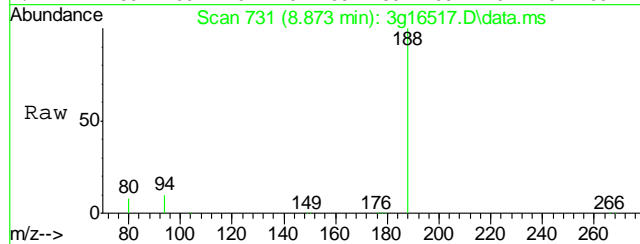
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1





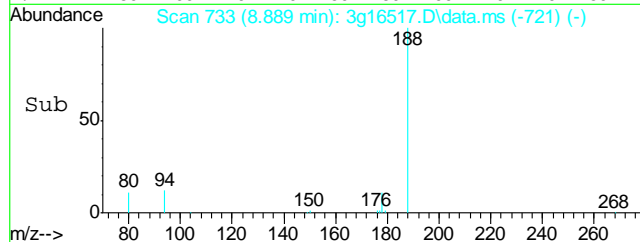
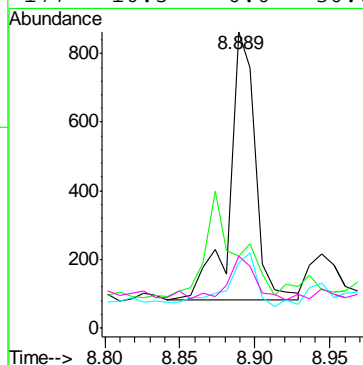
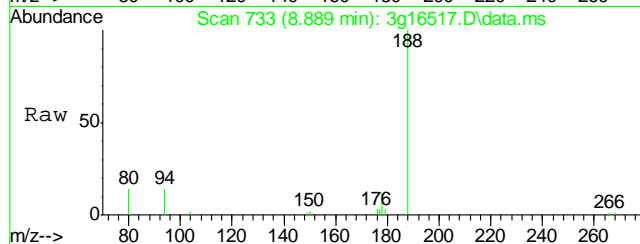
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.873 min Scan# 731
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

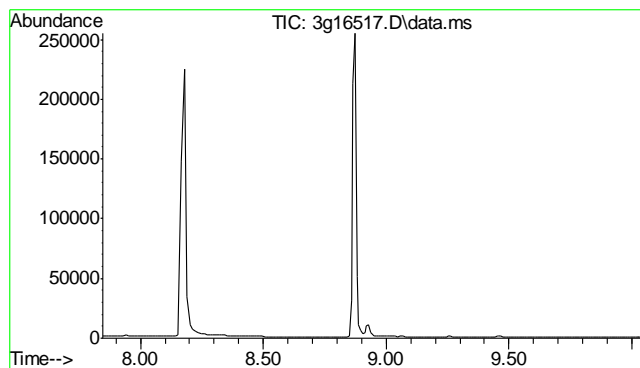
Tgt Ion	Ratio	Lower	Upper
188	100		
94	20.9	0.0	28.3
80	20.8	0.0	27.8



#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

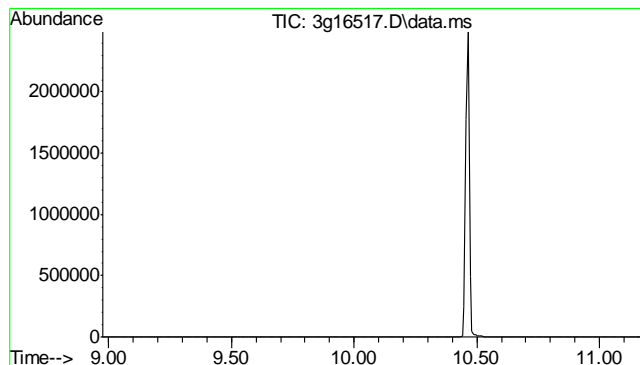
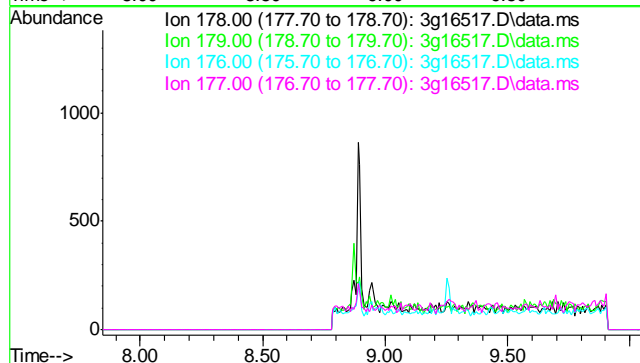




#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

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

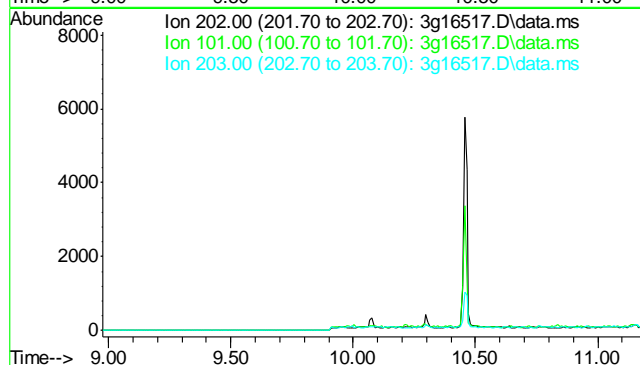
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7

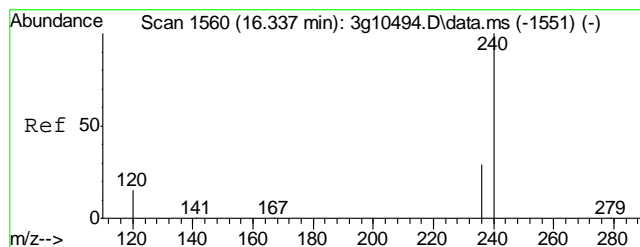


#18
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 10.07 min

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

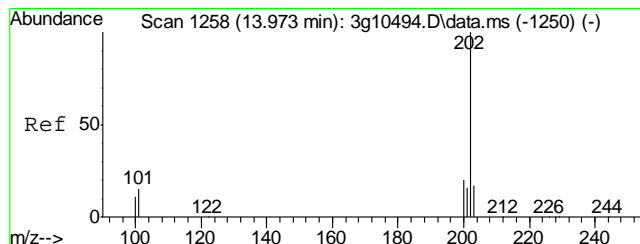
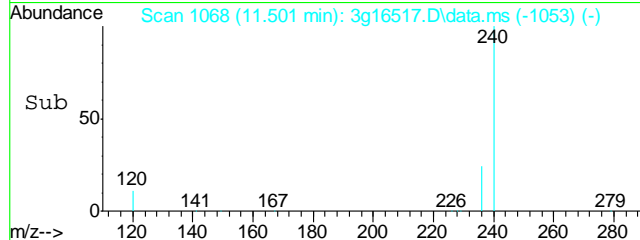
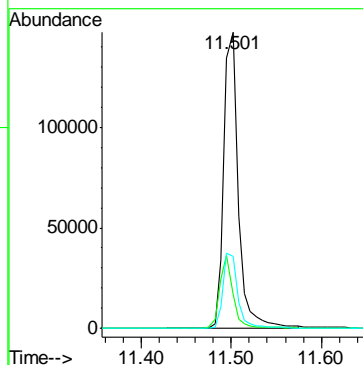
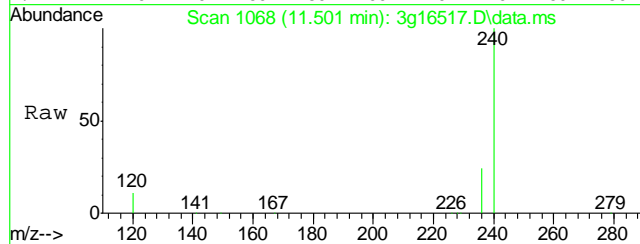
Tgt Ion:	202
Sig	Exp Ratio
202	100
101	12.6
203	17.4





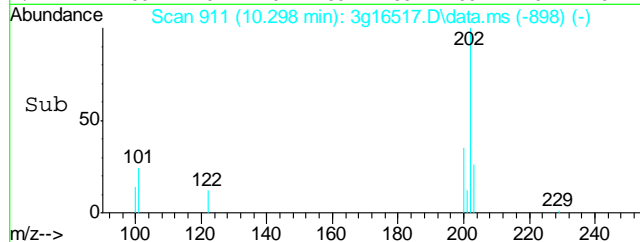
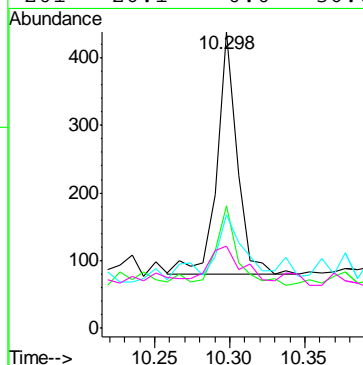
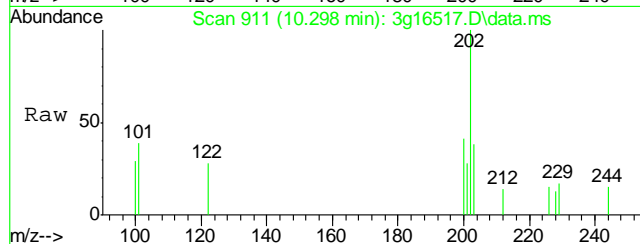
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.501 min Scan# 1068
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

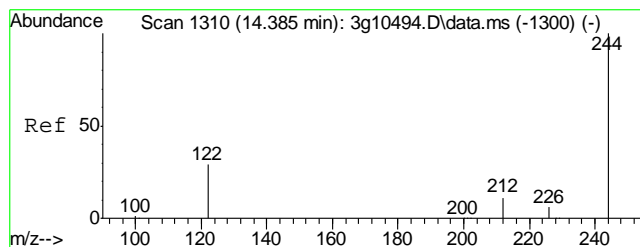
Tgt Ion:	240	Resp:	166287
Ion Ratio	Lower	Upper	
240	100		
120	22.3	0.2	40.2
236	25.7	8.8	48.8



#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

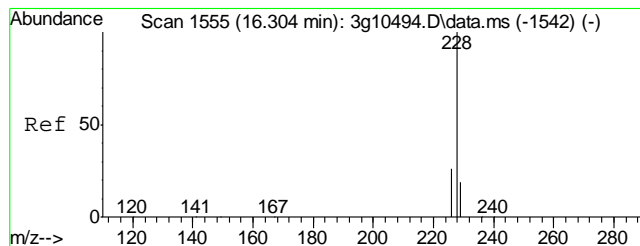
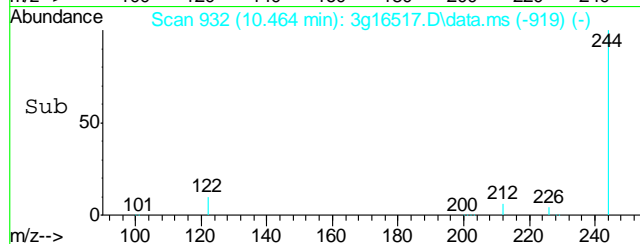
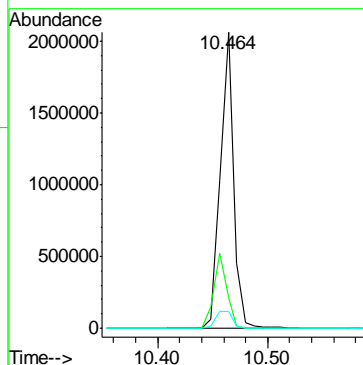
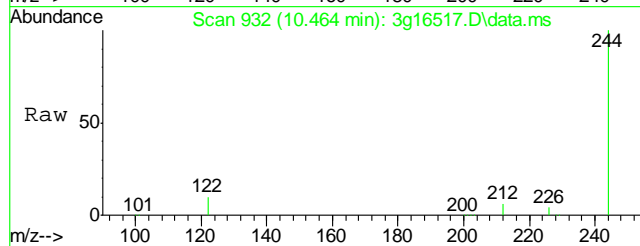
Tgt Ion:	202	Resp:	337
Ion Ratio	Lower	Upper	
202	100		
200	35.3	0.2	40.2
203	49.9	0.0	37.8#
201	26.1	0.0	36.6





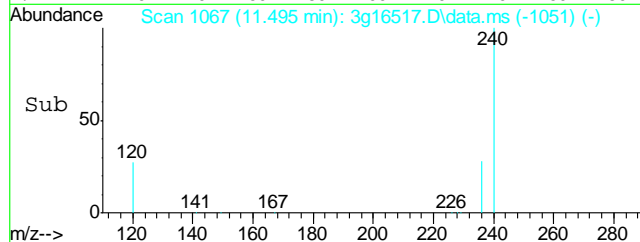
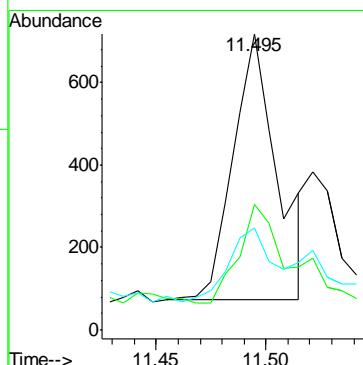
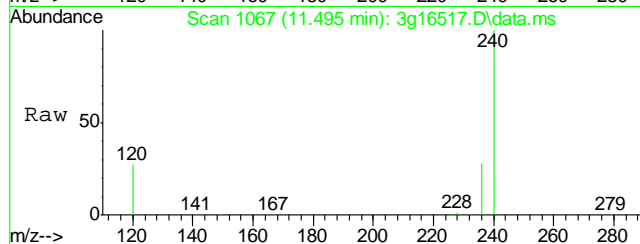
#21
Terphenyl-d14
Concen: 55.7722 ug/mL
RT: 10.464 min Scan# 932
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

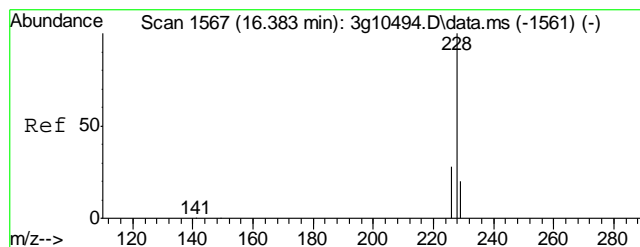
Tgt Ion:244 Resp: 1754721
Ion Ratio Lower Upper
244 100
122 24.9 7.8 47.8
212 7.3 0.0 32.8



#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

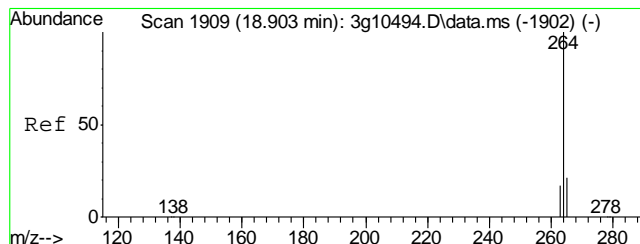
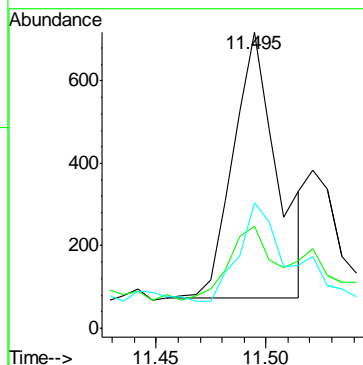
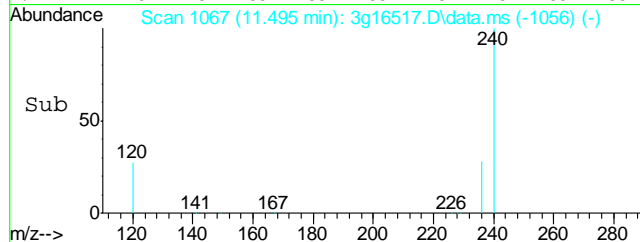
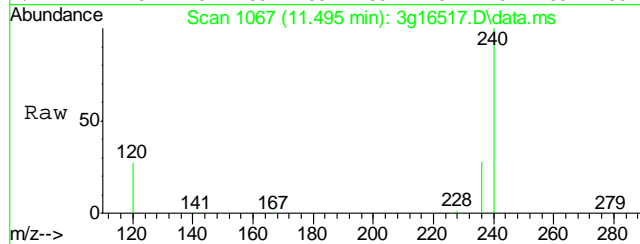
Tgt Ion:228 Resp: 896
Ion Ratio Lower Upper
228 100
229 43.1 0.0 39.4#
226 27.5 6.6 46.6





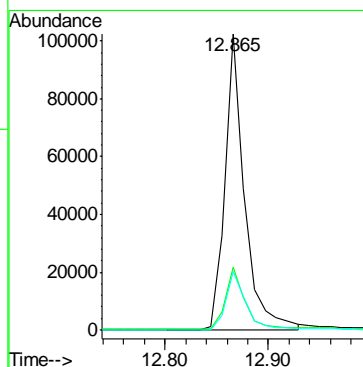
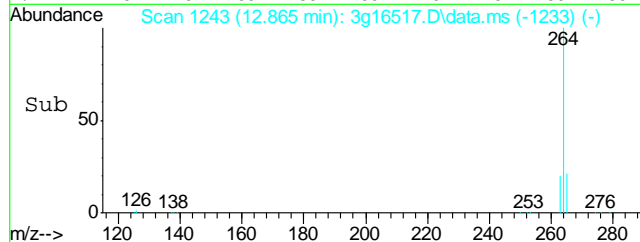
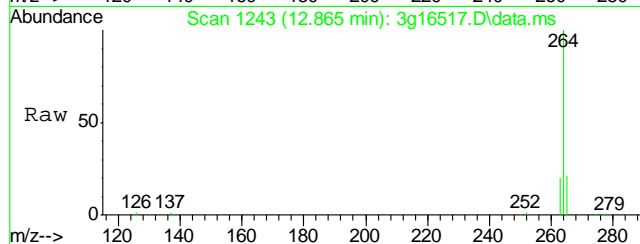
#23
Chrysene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. -0.026 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

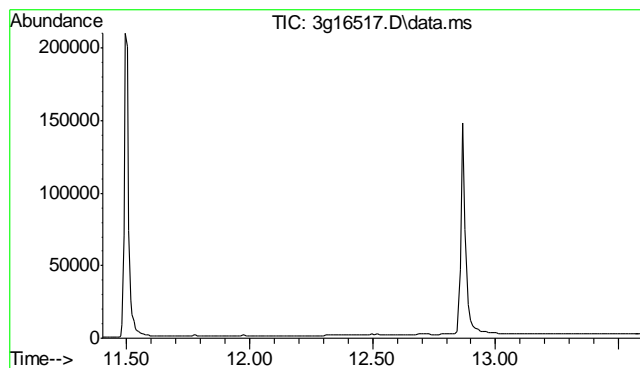
Tgt Ion	228	226	229
Resp	896		
Ratio	100	27.5	43.1
Lower		8.6	0.0
Upper		48.6	39.4



#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	265	263
Resp	135532		
Ratio	100	21.0	20.2
Lower		1.2	0.7
Upper		41.2	40.7

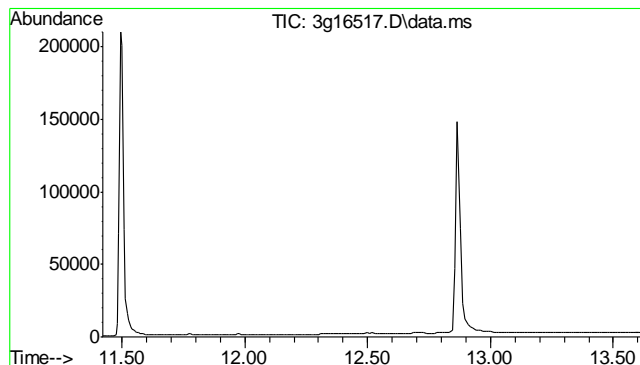
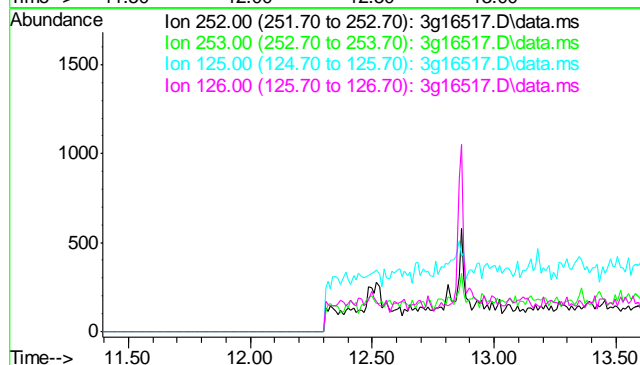




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

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

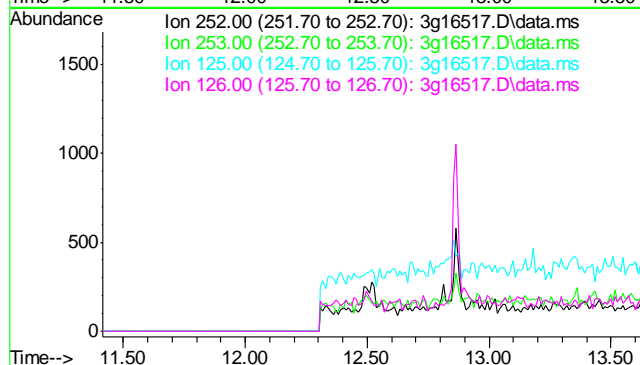
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9

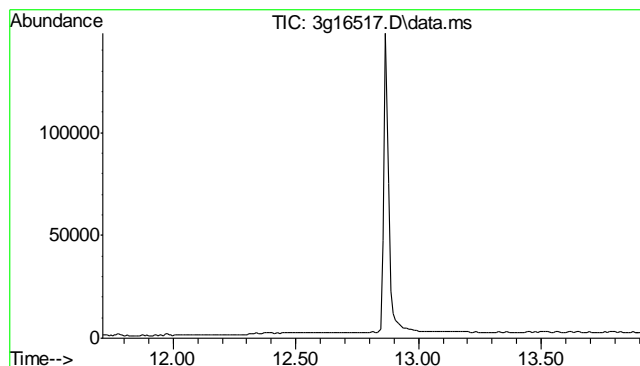


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

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

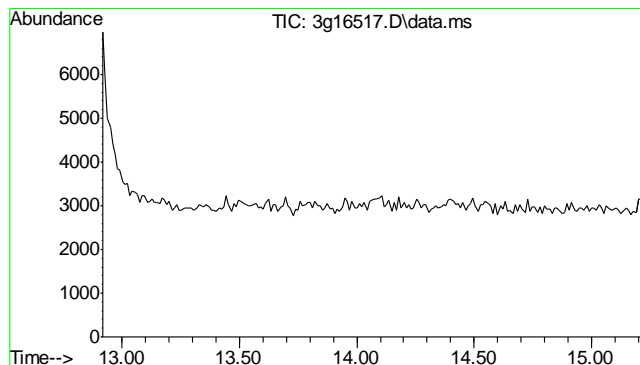
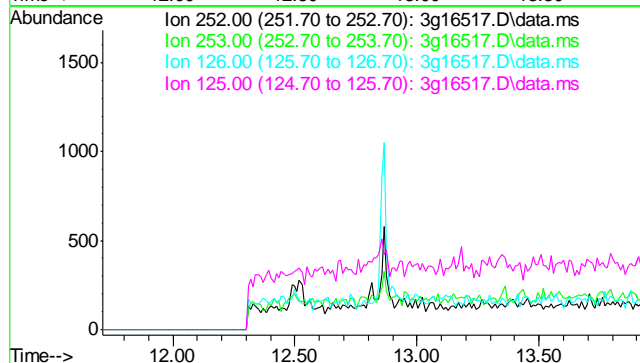




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

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

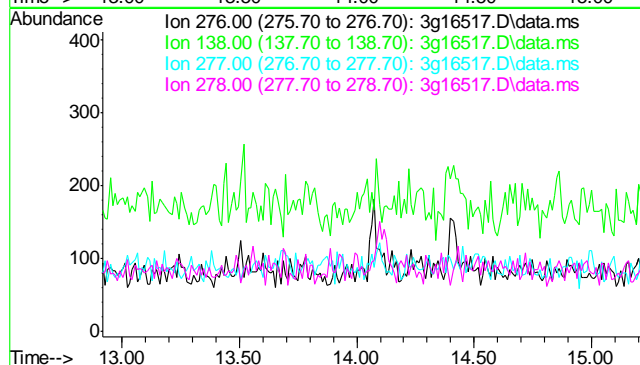
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5

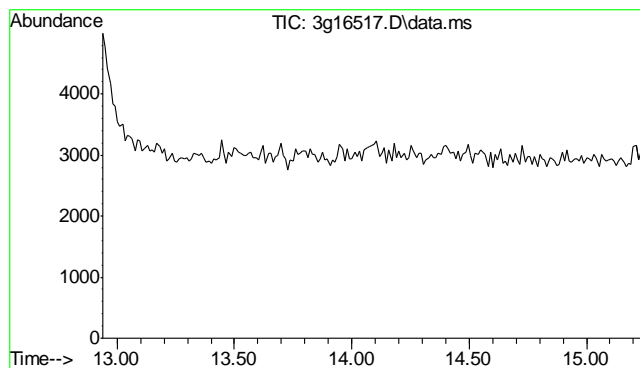


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

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

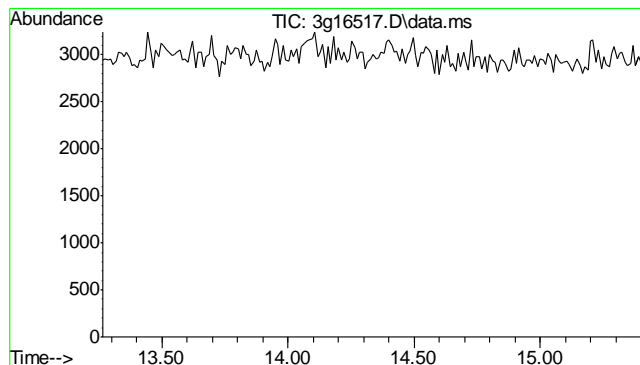
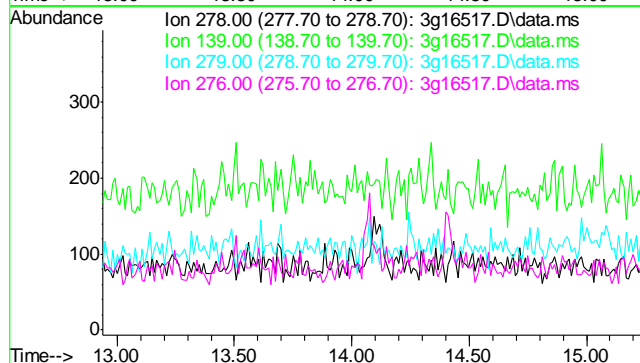




#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

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

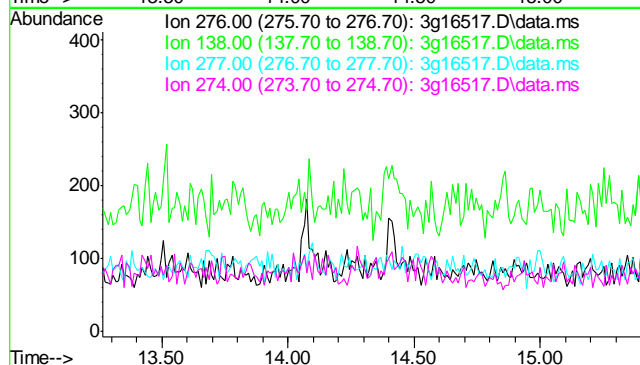
Tgt Ion:	278
Sig	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2



#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: D51124
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1230-MB	GB22358.D	1	10/01/13	EV	n/a	n/a	GGB1230

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

D51124-1

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: D51124
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1230-BS	GB22359.D	1	10/01/13	EV	n/a	n/a	GGB1230

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

D51124-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	112	102	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	94%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51124
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51008-1MS	GB22361.D	1	10/01/13	EV	n/a	n/a	GGB1230
D51008-1MSD	GB22362.D	1	10/01/13	EV	n/a	n/a	GGB1230
D51008-1	GB22360.D	1	10/01/13	EV	n/a	n/a	GGB1230

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

D51124-1

CAS No.	Compound	D51008-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		138	141	102	141	102	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D51008-1	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	94%	84%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100113\GB22384.D\FID1A.CH Vial: 30
Signal #2 : Y:\1\DATA\100113\GB22384.D\FID2B.CH
Acq On : 2 Oct 2013 2:19 am Operator: ELISEV
Sample : D51124-1 Inst : GC/MS Ins
Misc : GC3911,GGB1230,5.012,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 02 08:44:23 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Oct 02 08:35:36 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	2308031	76.397 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.35	11052178	83.697 %	m
Target Compounds					
1) H	TVH-Gasoline	7.31	16604619	0.237 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	114446	0.309 ug/L	m
7) T	Ethylbenzene	0.00	0	N.D. ug/L	d
8) T	m,p-Xylene	10.47	553875	1.467 ug/L	m
9) T	o-Xylene	10.96	100469	0.322 ug/L	m
11) T	Naphthalene	14.55	1320753	7.664 ug/L	m

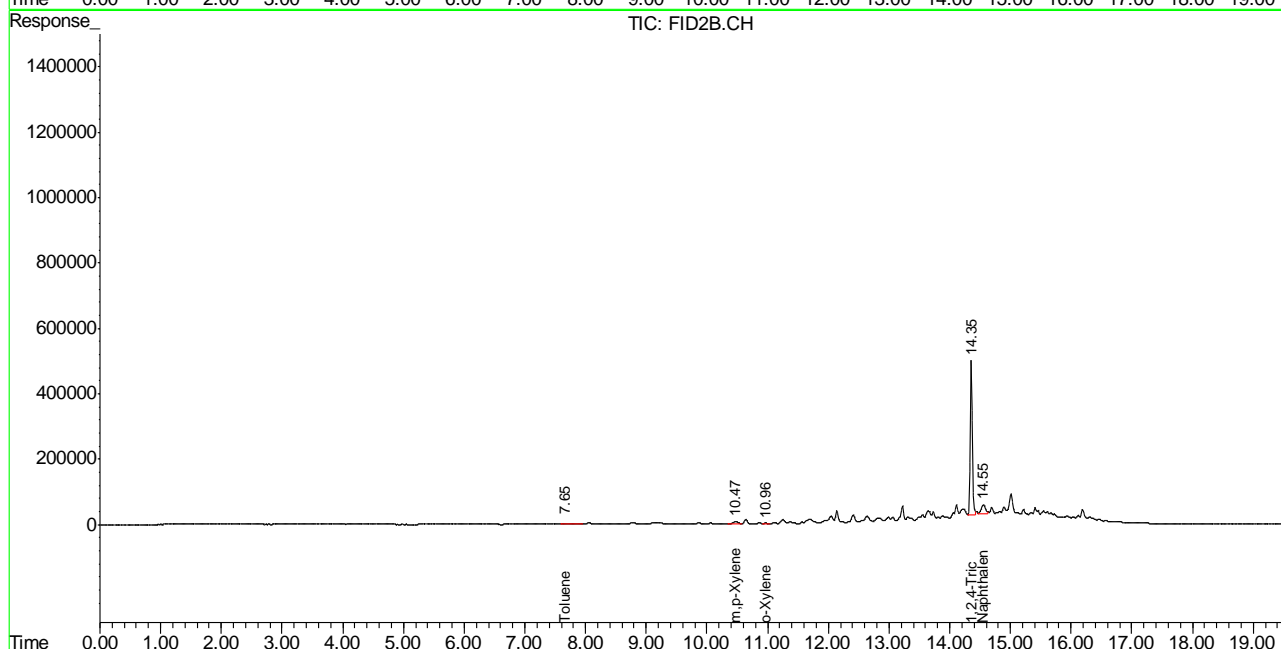
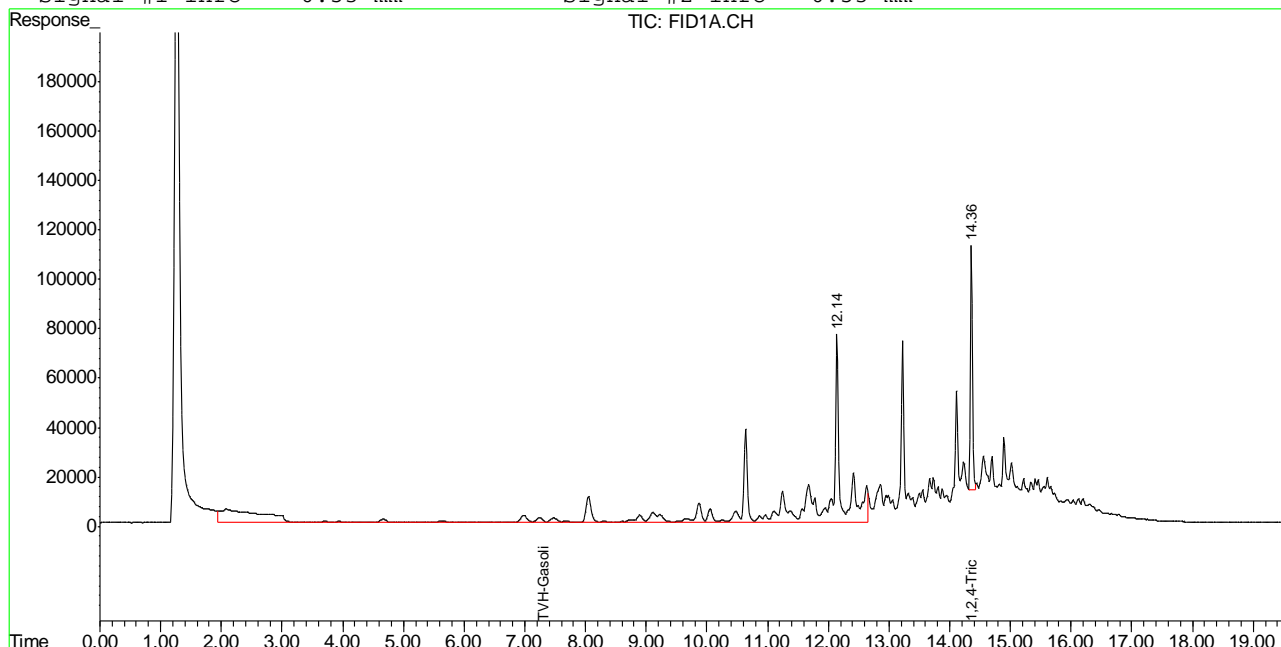
11.1.1
11

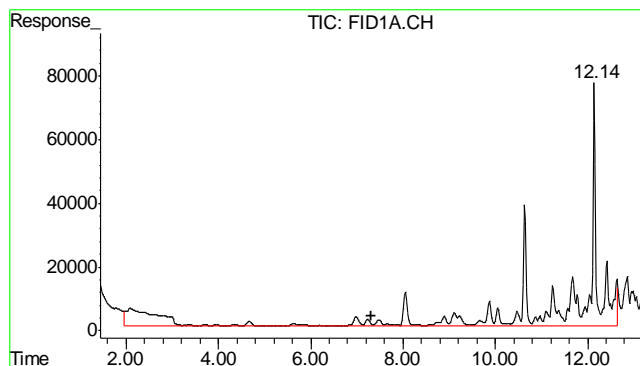
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100113\GB22384.D\FID1A.CH Vial: 30
 Signal #2 : Y:\1\DATA\100113\GB22384.D\FID2B.CH
 Acq On : 2 Oct 2013 2:19 am Operator: ELISEV
 Sample : D51124-1 Inst : GC/MS Ins
 Misc : GC3911,GGB1230,5.012,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Oct 2 9:24 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Oct 02 08:35:36 2013
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

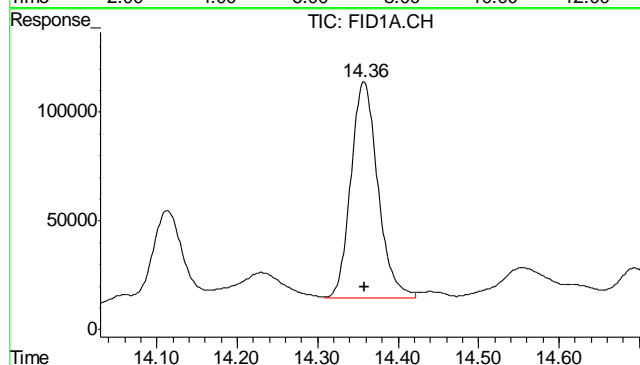
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





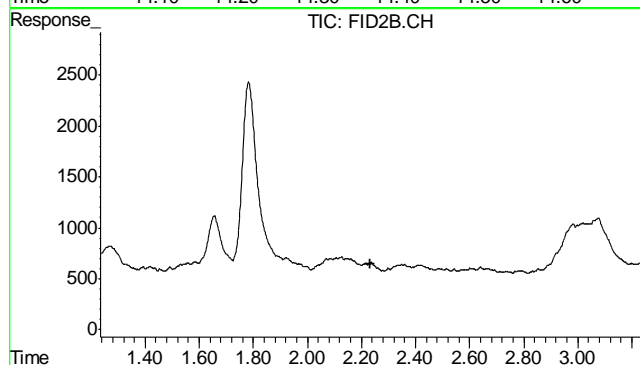
#1 TVH-Gasoline

R.T.: 7.310 min
Delta R.T.: 0.000 min
Response: 16604619
Conc: 0.24 mg/L m



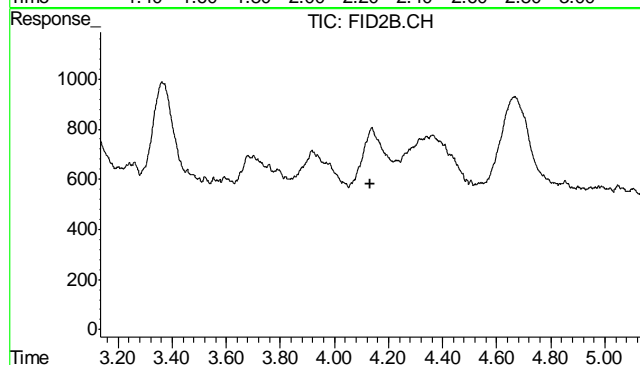
#2 1,2,4-Trichlorobenzene

R.T.: 14.357 min
Delta R.T.: -0.002 min
Response: 2308031
Conc: 76.40 % m



#4 Methyl-t-butyl-ether

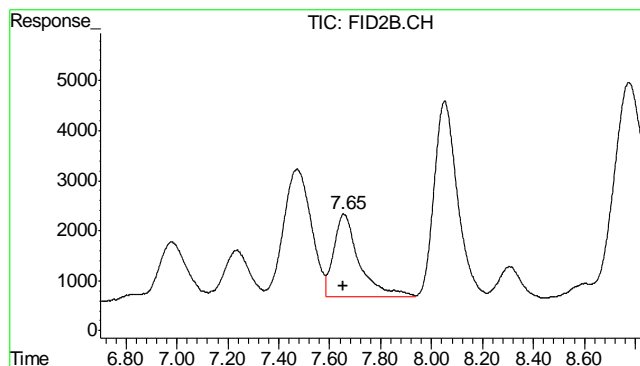
R.T.: 0.000 min
Exp R.T.: 2.234 min
Response: 0
Conc: N.D.



#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.134 min
Response: 0
Conc: N.D.

11.11



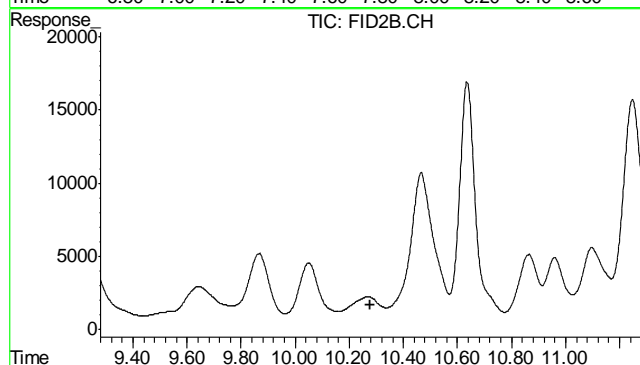
#6 Toluene

R.T.: 7.652 min

Delta R.T.: 0.000 min

Response: 114446

Conc: 0.31 ug/L m



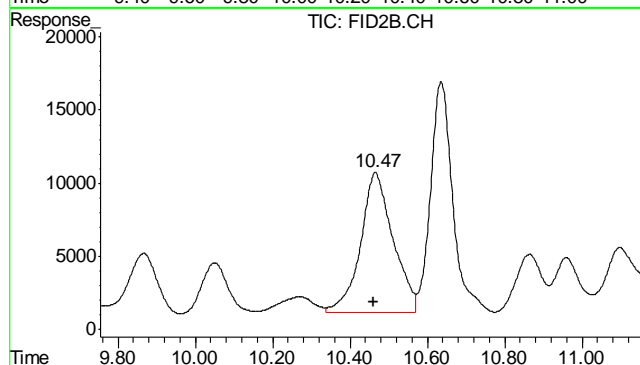
#7 Ethylbenzene

R.T.: 0.000 min

Exp R.T.: 10.279 min

Response: 0

Conc: N.D.



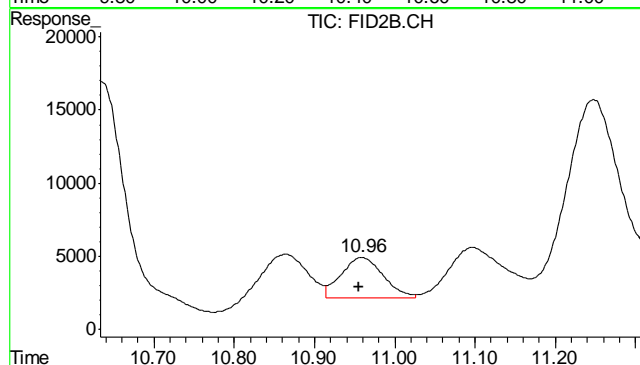
#8 m,p-Xylene

R.T.: 10.465 min

Delta R.T.: 0.006 min

Response: 553875

Conc: 1.47 ug/L m



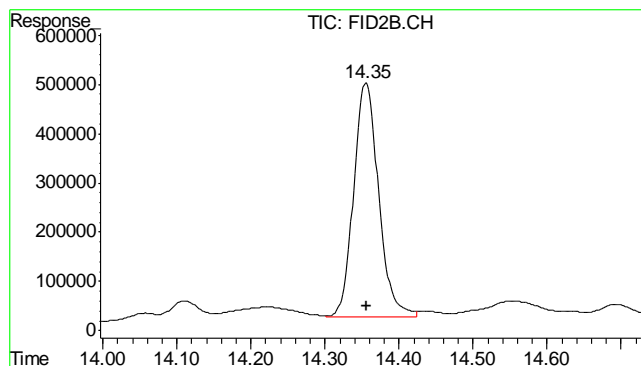
#9 o-Xylene

R.T.: 10.959 min

Delta R.T.: 0.003 min

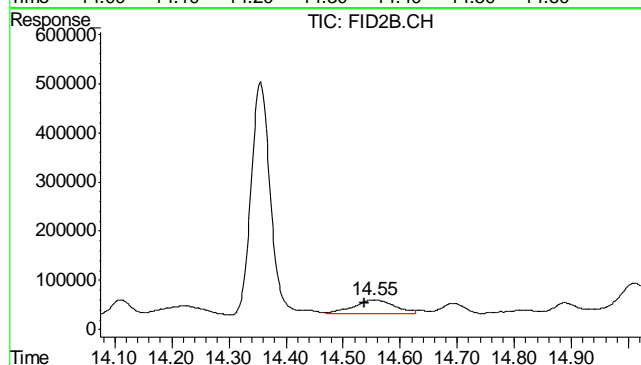
Response: 100469

Conc: 0.32 ug/L m



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

R.T.: 14.355 min
Delta R.T.: -0.002 min
Response: 11052178
Conc: 83.70 % m



#11 Naphthalene

R.T.: 14.552 min
Delta R.T.: 0.015 min
Response: 1320753
Conc: 7.66 ug/L m

11.1.1
11

Jennifer Laidlaw
10/02/13 14:07

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100113\GB22358.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\100113\GB22358.D\FID2B.CH
Acq On : 1 Oct 2013 10:44 am Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3911,GGB1230,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 02 08:42:47 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Oct 02 08:35:36 2013
Response via : Initial Calibration
DataAcq Meth : TVB4.M

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

Compound		R.T.	Response	Conc Units	

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.35	2552889	84.502 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.35	11821067	89.520 %	m
Target Compounds					
1) H	TVH-Gasoline	7.31	3539480	0.050	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.64	115021	0.311	ug/L m
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	10.46	136889	0.363	ug/L
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.53	259461	1.506	uq/L m

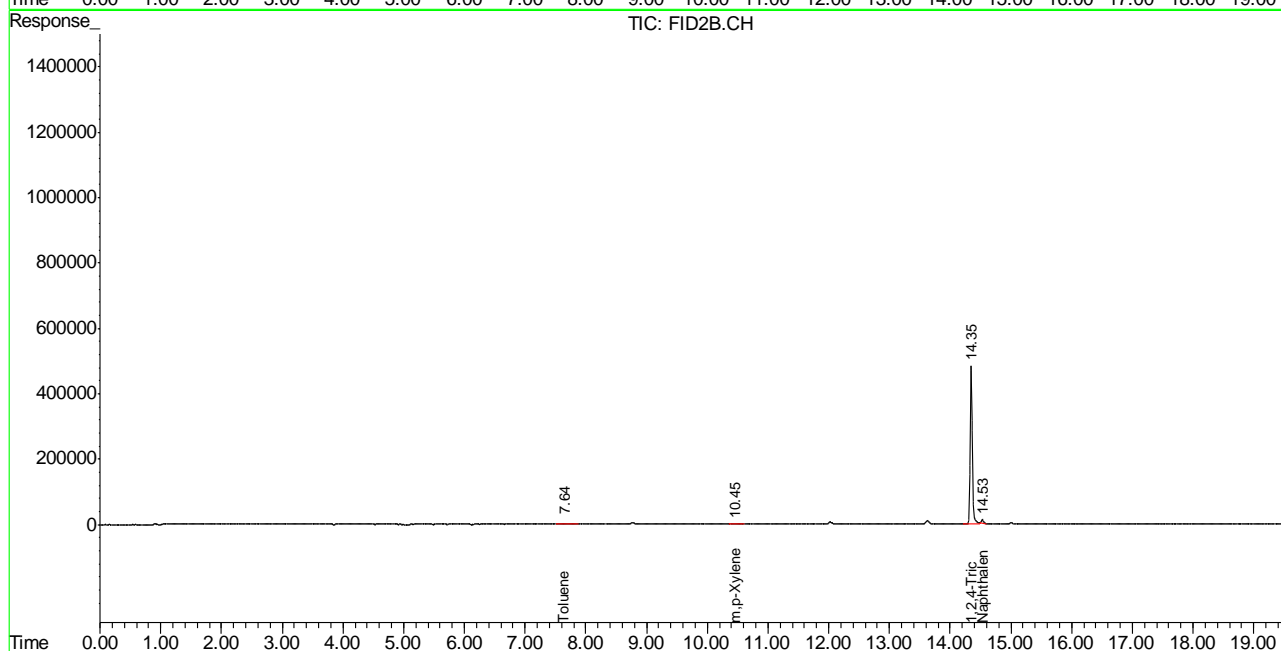
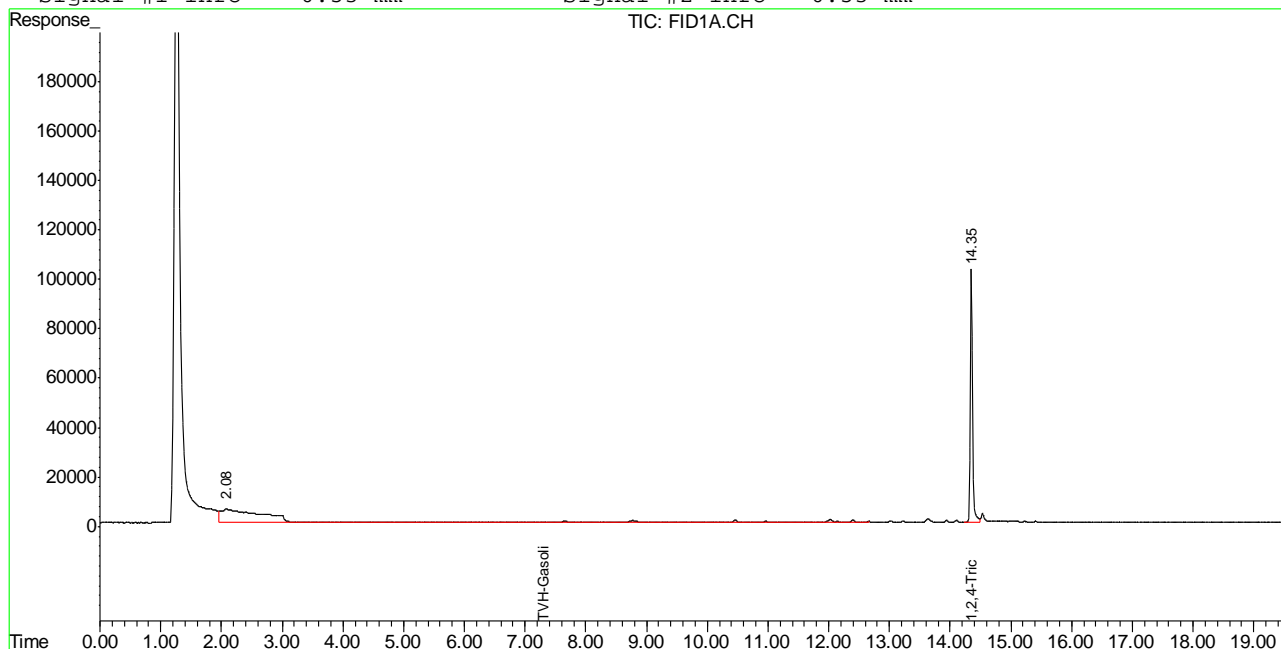
(f)=RT Delta > 1/2 Window (m)=manual int.
GB22358.D TB1125GB1125SOIL.M Wed Oct 02 09:23:22 2013 GC

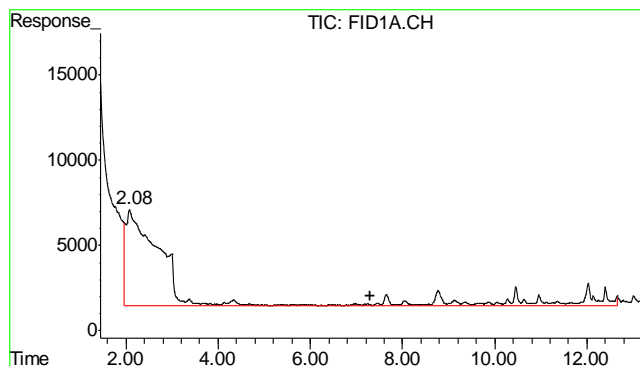
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100113\GB22358.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\100113\GB22358.D\FID2B.CH
Acq On : 1 Oct 2013 10:44 am Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3911,GGB1230,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 2 8:54 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Oct 02 08:35:36 2013
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

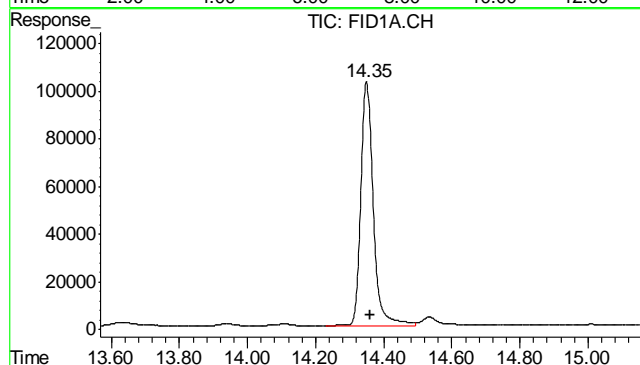
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





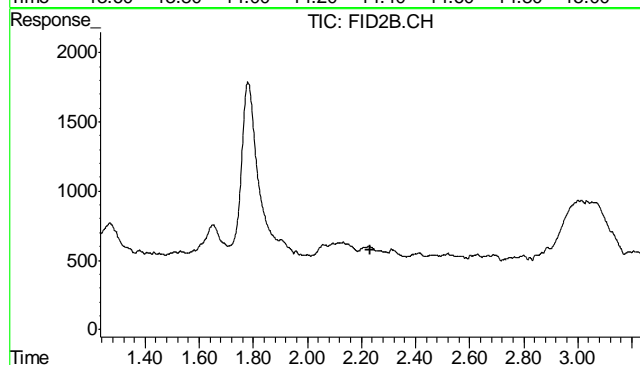
#1 TVH-Gasoline

R.T.: 7.310 min
Delta R.T.: 0.000 min
Response: 3539480
Conc: 0.05 mg/L m



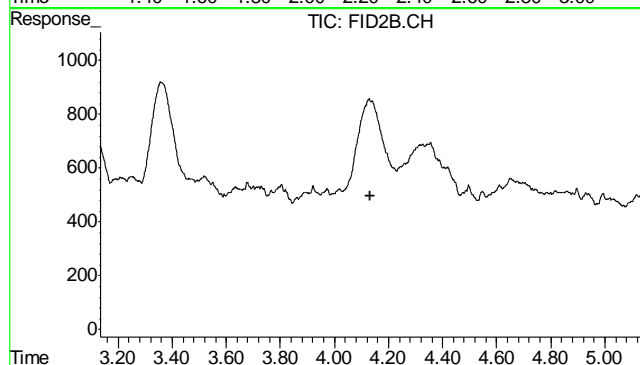
#2 1,2,4-Trichlorobenzene

R.T.: 14.349 min
Delta R.T.: -0.009 min
Response: 2552889
Conc: 84.50 % m



#4 Methyl-t-butyl-ether

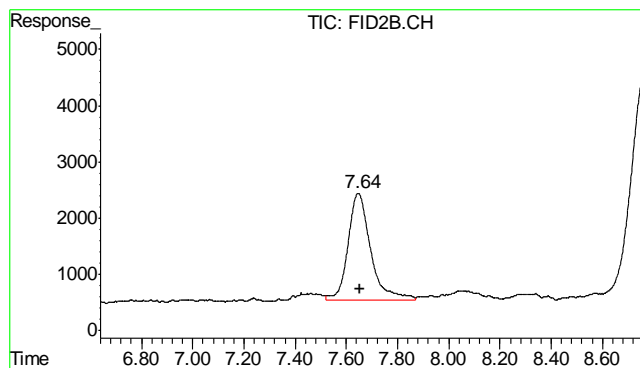
R.T.: 0.000 min
Exp R.T.: 2.234 min
Response: 0
Conc: N.D.



#5 Benzene

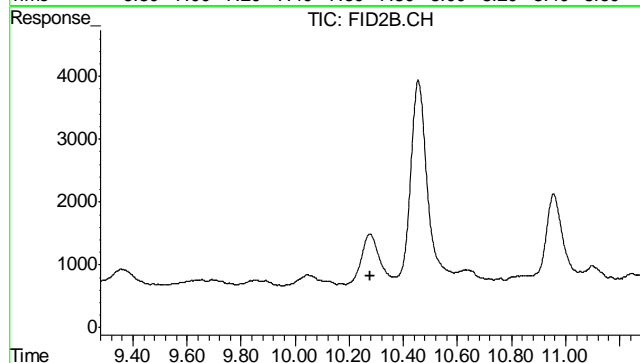
R.T.: 0.000 min
Exp R.T.: 4.134 min
Response: 0
Conc: N.D.

11.21
11



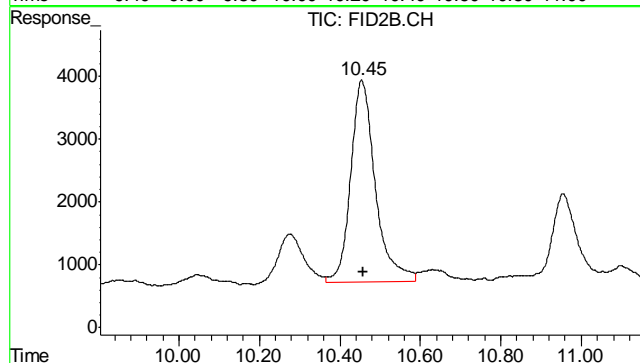
#6 Toluene

R.T.: 7.644 min
Delta R.T.: -0.008 min
Response: 115021
Conc: 0.31 ug/L m



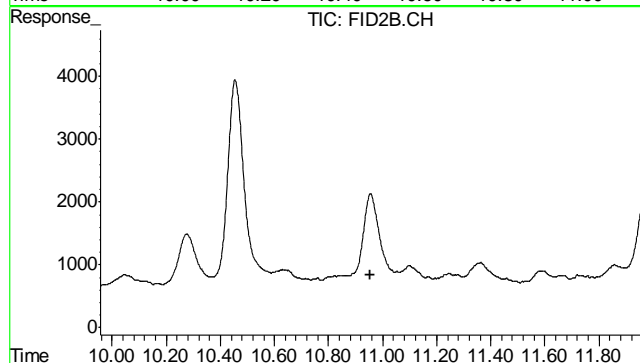
#7 Ethylbenzene

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



#8 m,p-Xylene

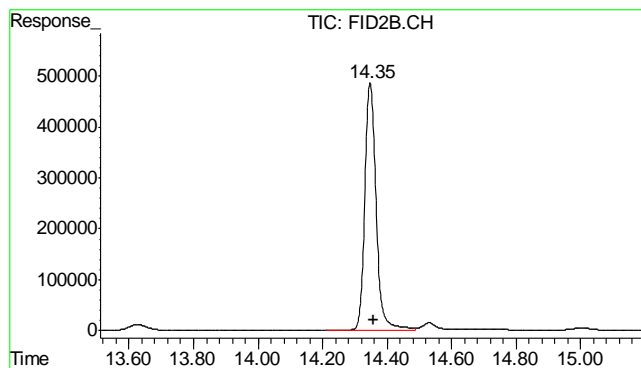
R.T.: 10.455 min
Delta R.T.: -0.004 min
Response: 136889
Conc: 0.36 ug/L



#9 o-Xylene

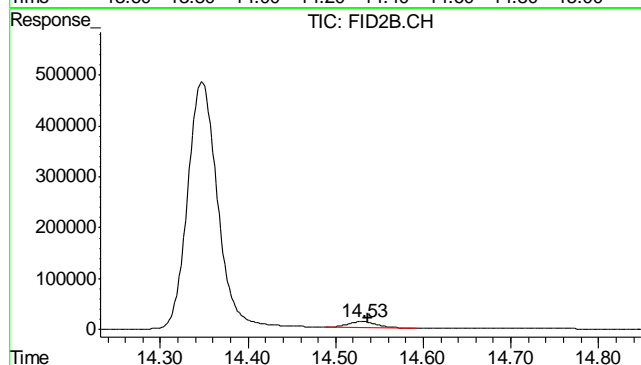
R.T.: 0.000 min
Exp R.T.: 10.956 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.347 min
Delta R.T.: -0.009 min
Response: 11821067
Conc: 89.52 % m



#11 Naphthalene

R.T.: 14.530 min
Delta R.T.: -0.007 min
Response: 259461
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: D51124
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8666-MB	FH013648.D	1	10/03/13	TU	10/02/13	OP8666	GFH720

The QC reported here applies to the following samples:

Method: SW846-8015B

D51124-1

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	71% 20-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D51124
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8666-BS	FH013650.D	1	10/03/13	TU	10/02/13	OP8666	GFH720

The QC reported here applies to the following samples:

Method: SW846-8015B

D51124-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	422	63	42-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	64%	20-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D51124
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8666-MS	FH013672.D	10	10/03/13	TU	10/02/13	OP8666	GFH722
OP8666-MSD	FH013673.D	10	10/03/13	TU	10/02/13	OP8666	GFH722
D51127-1	FH013674.D	10	10/03/13	TU	10/02/13	OP8666	GFH722

The QC reported here applies to the following samples:

Method: SW846-8015B

D51124-1

CAS No.	Compound	D51127-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	10500		727	11100	83	11800	179* a	6	20-150/30

CAS No.	Surrogate Recoveries	MS	MSD	D51127-1	Limits
84-15-1	o-Terphenyl	82%	92%	74%	20-130%

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

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\FID6_DATA\FI100313.SEC\FI09510.D Vial: 65
Acq On : 3 Oct 2013 9:42 pm Operator: TIMU
Sample : D51124-1 Inst : Fid6
Misc : OP8666,GFI637,30.02,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Oct 04 08:33:01 2013 Quant Results File: ORO-RR-GFI585.RES

Quant Method : C:\MSDCHEM\1...\ORO-RR-GFI585.M (Chemstation Integrator)
Title : 8015B TEH Front detector
Last Update : Thu Oct 03 11:49:33 2013
Response via : Initial Calibration
DataAcq Meth : DUAL_B2.M

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

Compound	R.T.	Response	Conc Units

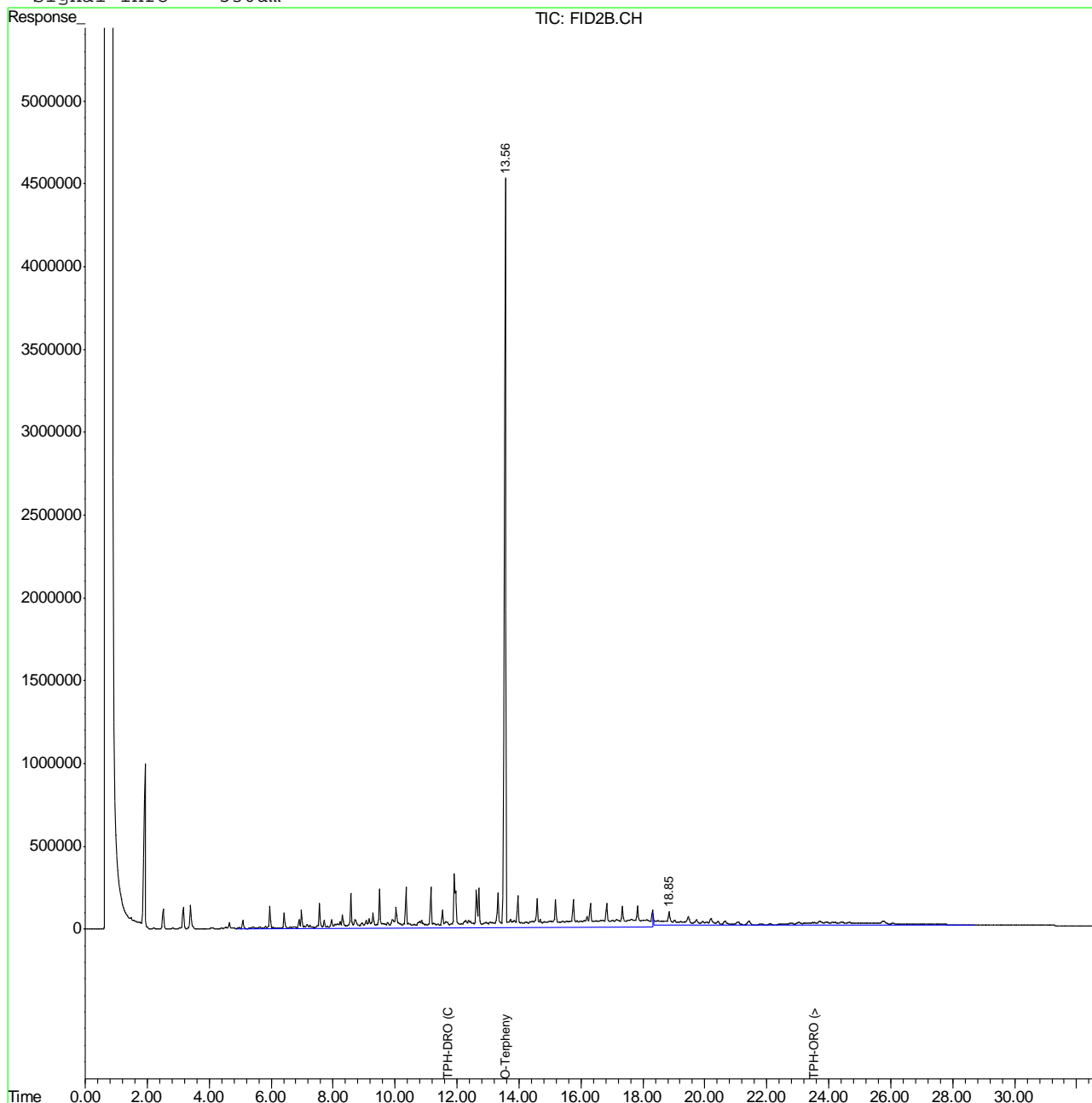
System Monitoring Compounds			
1) S O-Terphenyl	13.56	127420847	1757.958 mg/L
Target Compounds			
2) H TPH-DRO (C10-C28)	11.71	303446417	4734.856 mg/L
3) H TPH-ORO (>C28-C40)	23.52	73878660	1770.723 mg/L

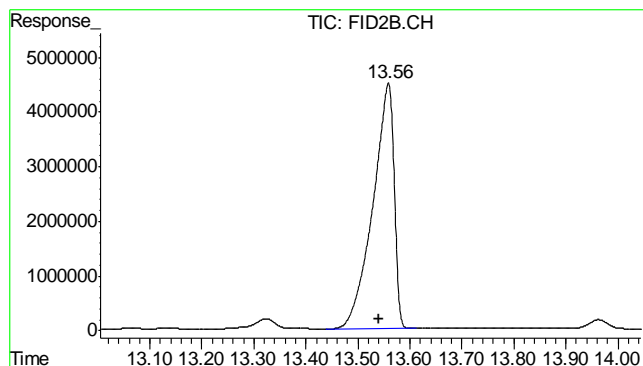
Quantitation Report (QT Reviewed)

Data File : C:\FID6_DATA\FI100313.SEC\FI09510.D Vial: 65
 Acq On : 3 Oct 2013 9:42 pm Operator: TIMU
 Sample : D51124-1 Inst : Fid6
 Misc : OP8666,GFI637,30.02,,,1,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Oct 4 8:37 2013 Quant Results File: ORO-RR-GFI585.RES

Quant Method : C:\MSDCHEM\1...\ORO-RR-GFI585.M (Chemstation Integrator)
 Title : 8015B TEH Front detector
 Last Update : Thu Oct 03 11:49:33 2013
 Response via : Multiple Level Calibration
 DataAcq Meth : DUAL_B2.M

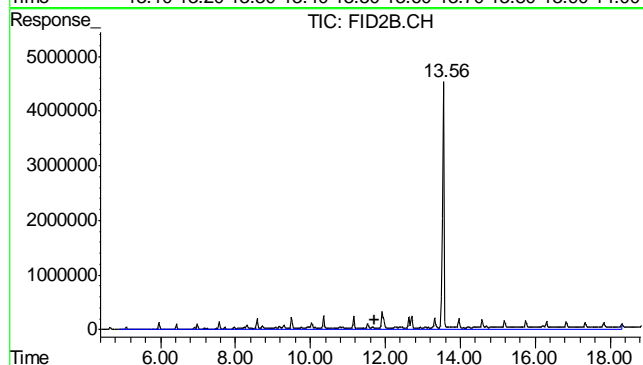
Volume Inj. : 1ul
 Signal Phase : RTX-5
 Signal Info : 530um





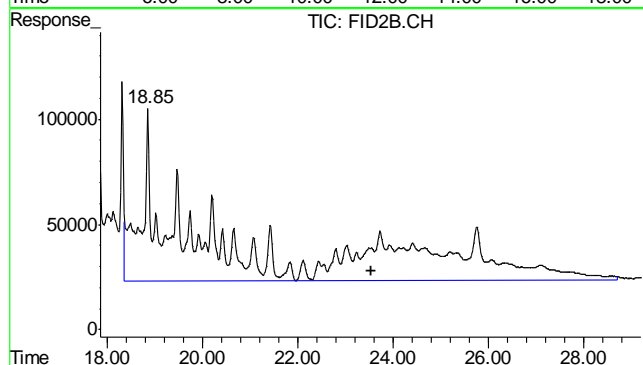
#1 O-Terphenyl

R.T.: 13.558 min
Delta R.T.: 0.018 min
Response: 127420847
Conc: 1757.96 mg/L



#2 TPH-DRO (C10-C28)

R.T.: 11.710 min
Delta R.T.: 0.000 min
Response: 303446417
Conc: 4734.86 mg/L m



#3 TPH-ORO (>C28-C40)

R.T.: 23.523 min
Delta R.T.: 0.000 min
Response: 73878660
Conc: 1770.72 mg/L m

13.1.1
13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH100213.SEC\
Data File : FH013648.D
Signal(s) : FID2B.ch
Acq On : 3 Oct 2013 4:58 am
Operator : TIMU
Sample : OP8666-MB
Misc : OP8666,GFH720,30.00,,,1,1
ALS Vial : 78 Sample Multiplier: 1

Integration File: events.e
Quant Time: Oct 03 08:21:13 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	12.169	2478226606	1428.275 ug/ml
Target Compounds			
2) H TPH-DRO (C10-C28)	9.818	150985896	107.343 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

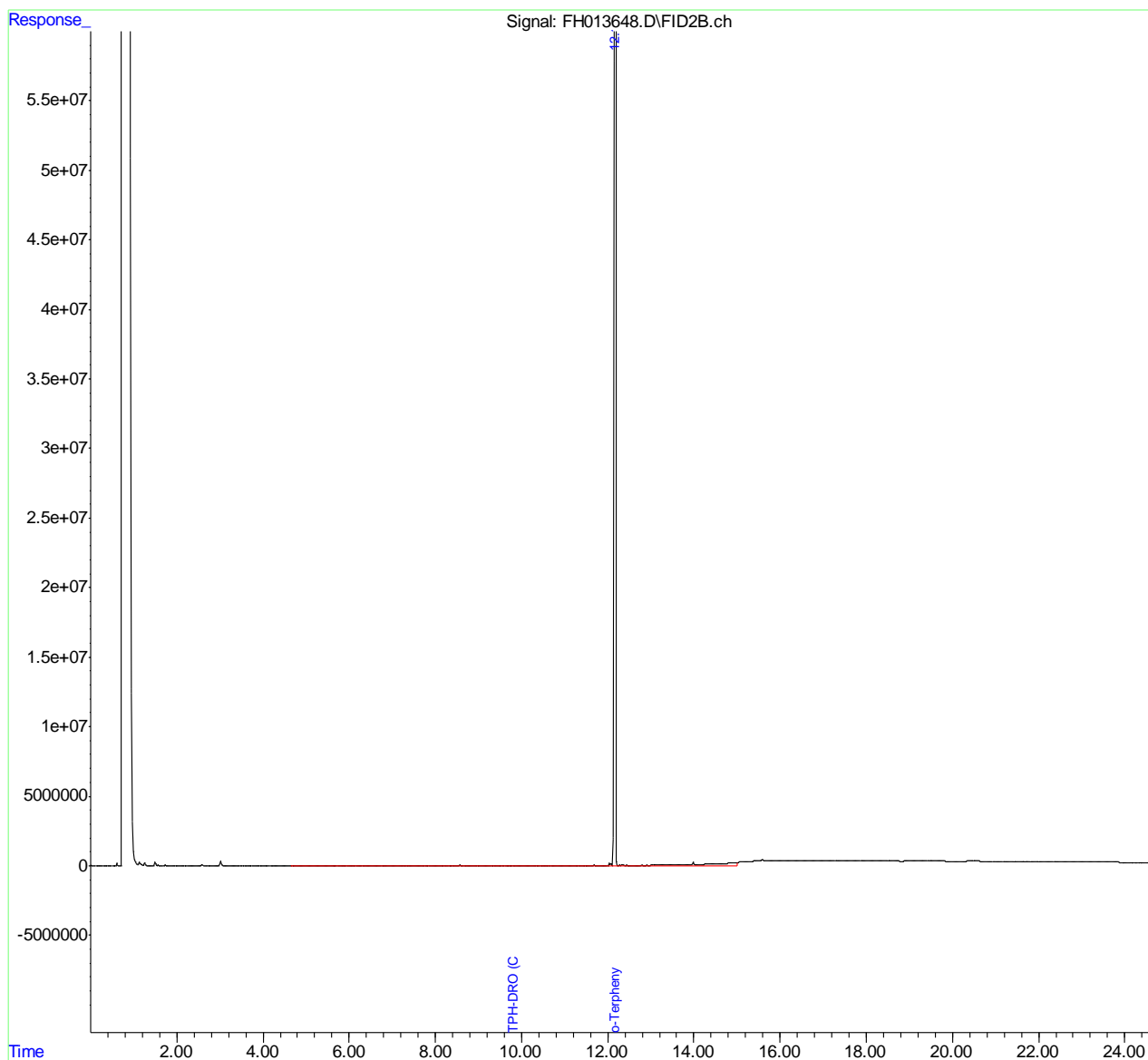
13.2.1
13

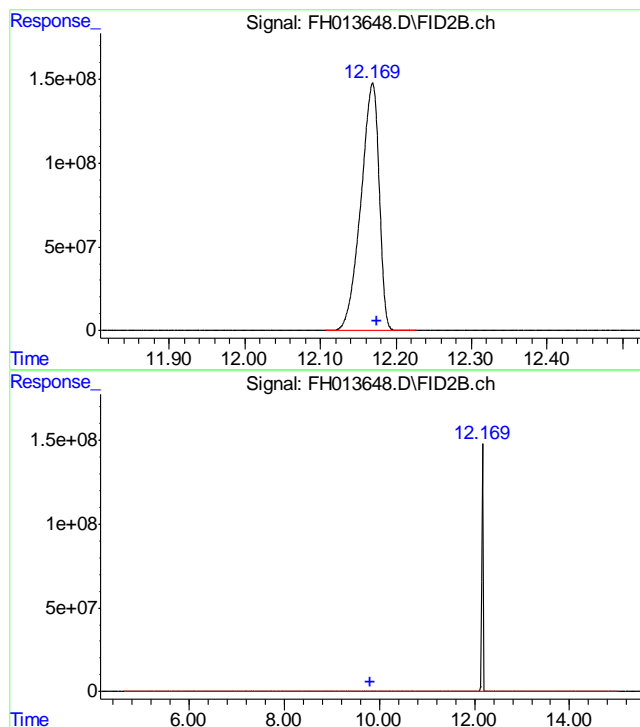
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH100213.SEC\
Data File : FH013648.D
Signal(s) : FID2B.ch
Acq On : 3 Oct 2013 4:58 am
Operator : TIMU
Sample : OP8666-MB
Misc : OP8666,GFH720,30.00,,,1,1
ALS Vial : 78 Sample Multiplier: 1

Integration File: events.e
Quant Time: Oct 03 08:21:13 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.: 12.169 min
Delta R.T.: -0.006 min
Response: 2478226606
Conc: 1428.27 ug/ml

#2 TPH-DRO (C10-C28)

R.T.: 9.818 min
Delta R.T.: 0.000 min
Response: 150985896
Conc: 107.34 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: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/02/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	1.1	1.8		
Antimony	3.0	.21	.5		
Arsenic	2.5	.38	.63		
Barium	1.0	.02	.36	0.040	<1.0
Beryllium	1.0	.09	.06		
Boron	5.0	.08	.16		
Cadmium	1.0	.02	.28	0.030	<1.0
Calcium	40	.24	6.8		
Chromium	1.0	.03	.03	0.040	<1.0
Cobalt	0.50	.05	.039		
Copper	1.0	.08	.13	-0.020	<1.0
Iron	7.0	.15	1.8		
Lead	5.0	.21	.25	0.080	<5.0
Lithium	0.50	.04	.13		
Magnesium	20	.68	1.8		
Manganese	0.50	.05	.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	-0.47	<5.0
Silicon	5.0	.47	1.1		
Silver	3.0	.03	.05	-0.030	<3.0
Sodium	40	.73	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	0.34	<3.0

Associated samples MP11267: D51124-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/02/13

Metal	D51122-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	2780	2690	248	-36.3(a)	75-125
Beryllium					
Boron					
Cadmium	1.0	51.4	62	81.2	75-125
Calcium					
Chromium	23.5	71.7	62	77.7	75-125
Cobalt					
Copper	30.0	87.0	62	91.9	75-125
Iron					
Lead	17.7	118	124	80.8	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	14.5	64.3	62	80.3	75-125
Phosphorus					
Potassium					
Selenium	2.8	115	124	90.4	75-125
Silicon					
Silver	0.036	23.0	24.8	92.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	50.9	101	62	80.8	75-125

Associated samples MP11267: D51124-1

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: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/02/13

Metal	D51122-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	2780	3100	251	127.7(a)	14.2	20
Beryllium						
Boron						
Cadmium	1.0	51.5	62.7	80.6	0.2	20
Calcium						
Chromium	23.5	75.6	62.7	83.1	5.3	20
Cobalt						
Copper	30.0	81.0	62.7	81.4	7.1	20
Iron						
Lead	17.7	117	125	79.2	0.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	14.5	63.0	62.7	77.4	2.0	20
Phosphorus						
Potassium						
Selenium	2.8	113	125	87.9	1.8	20
Silicon						
Silver	0.036	23.1	25.1	92.0	0.4	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	50.9	97.7	62.7	74.7N(b)	3.3	20

Associated samples MP11267: D51124-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/02/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	192	200	96.0	80-120
Beryllium				
Boron				
Cadmium	45.5	50	91.0	80-120
Calcium				
Chromium	48.8	50	97.6	80-120
Cobalt				
Copper	47.2	50	94.4	80-120
Iron				
Lead	94.1	100	94.1	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	46.7	50	93.4	80-120
Phosphorus				
Potassium				
Selenium	96.1	100	96.1	80-120
Silicon				
Silver	20.2	20	101.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	44.9	50	89.8	80-120

Associated samples MP11267: D51124-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/02/13

Metal	D51122-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	22800	24900	9.0	0-10
Beryllium				
Boron				
Cadmium	8.40	7.00	16.7 (a)	0-10
Calcium				
Chromium	193	207	7.3	0-10
Cobalt				
Copper	247	246	0.5	0-10
Iron				
Lead	146	160	9.5	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	119	134	12.4*(b)	0-10
Phosphorus				
Potassium				
Selenium	23.4	0.00	100.0(a)	0-10
Silicon				
Silver	0.300	3.50	1066.7(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	419	483	15.3*(b)	0-10

Associated samples MP11267: D51124-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

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

(b) Serial dilution indicates possible matrix interference.

14.1.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11268
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/02/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.55	.75		
Antimony	0.20	.0011	.029		
Arsenic	0.10	.0085	.024	0.0070	<0.10
Barium	1.0	.008	.16		
Beryllium	0.10	.008	.049		
Boron	20	.25	.07		
Cadmium	0.050	.018	.038		
Calcium	200	2.8	13		
Chromium	1.0	.027	.11		
Cobalt	0.10	.0025	.0085		
Copper	1.0	.03	.1		
Iron	5.0	1.8	1.8		
Lead	0.25	.004	.0075		
Magnesium	50	.65	.65		
Manganese	0.50	.06	.07		
Molybdenum	0.50	.025	.046		
Nickel	1.0	.0044	.17		
Phosphorus	30	1.3	4.9		
Potassium	100	1.5	2.5		
Selenium	0.20	.03	.13		
Silver	0.050	.00095	.01		
Sodium	250	2.5	5.5		
Strontium	10	.005	.027		
Thallium	0.10	.0012	.0075		
Tin	5.0	.032	2.3		
Titanium	1.0	.03	.085		
Uranium	0.25	.00085	.0015		
Vanadium	2.0	.019	.11		
Zinc	5.0	.11	1.4		

Associated samples MP11268: D51124-1

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: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11268
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/02/13

Metal	D51122-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	10.7	132	124	97.8
Barium				75-125
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11268: D51124-1

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

14.2.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11268
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/02/13

Metal	D51122-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	10.7	132	125	96.8	0.0	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP11268: D51124-1

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

14.2.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51124
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11268
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 10/02/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	94.6	100	94.6	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11268: D51124-1

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

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51124
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11268
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 10/02/13

Metal	D51122-1 Original SDL 5:25 %DIF			QC Limits
Aluminum				
Antimony				
Arsenic	88.0	82.1	6.6	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11268: D51124-1

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

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11269
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	-0.0011	<0.10

Associated samples MP11269: D51124-1

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: D51124
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11269
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/04/13

Metal	D51122-1		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.034	0.50	0.428	108.9	75-125

Associated samples MP11269: D51124-1

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: D51124
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11269
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/04/13

Metal	D51122-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.034	0.47	0.407	107.2	6.2	20

Associated samples MP11269: D51124-1

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: D51124
 Account: XTOKRWR - XTO Energy
 Project: FRU 197-31A

QC Batch ID: MP11269
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 10/04/13

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.42	0.4	105.0	80-120

Associated samples MP11269: D51124-1

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: D51124
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: D51124-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51124
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: D51124
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: D51124-1A

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: D51124
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: D51124
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: D51124-1A

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: D51124
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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51124
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: D51124-1A

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: D51124
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: D51124
 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 SDL 1:5		%DIF	QC 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: D51124-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51124
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: D51124
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	GP11063/GN22129	1.0	0.0	mg/kg	106	101	94.7	80-120%
Specific Conductivity	GP11068/GN22136			umhos/cm	9979	9840	98.6	90-110%
pH	GN22154			su	8.00	8.03	100.4	99.3-100.7%

Associated Samples:
Batch GN22154: D51124-1
Batch GP11063: D51124-1
Batch GP11068: D51124-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51124
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP11063/GN22129	D51041-1	mg/kg	0.12	0.0	47.2(a)	0-20%
Redox Potential Vs H2	GN22168	D51122-1	mv	133	130	2.3	0-20%

Associated Samples:

Batch GN22168: D51124-1

Batch GP11063: D51124-1

(*) Outside of QC limits

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

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51124
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	GP11063/GN22129	D51041-1	mg/kg	0.12	40.0	36.3	90.9	75-125%

Associated Samples:

Batch GP11063: D51124-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51124
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	GP11063/GN22129	D51041-1	mg/kg	0.12	40.0	37.6	3.5	20%

Associated Samples:
Batch GP11063: D51124-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits