Mountain States ACCUTEST LABORATORIES

10/07/13

Technical Report for

XTO Energy

FRU 197-31A

1111-02A Cut 1 Contents

Accutest Job Number: D51123

Sampling Date: 09/30/13

Report to:

KRW Consulting, Inc.
8000 West 14th Avenue
Lakewood, CO 80214
dknudson@krwconsulting.com; jhess@krwconsulting.com;
crachak@krwconsulting.com; rrasnic@krwconsulting.com;
ATTN: Dwayne Knudson

Total number of pages in report: **144**

ACCREDITED IN ACCORDANCE WITH nelac

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.

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)

Sections: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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Sections:

Table of Contents

Sample Summary

XTO Energy

Job No: D51123

FRU 197-31A
Project No: 1111-02A Cut 1 Contents

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D51123-1	09/30/13	12:25	DS	10/01/13	SO	Soil	CUT 1 CONTENTS
D51123-1A	09/30/13	12:25	DS	10/01/13	SO	Soil	CUT 1 CONTENTS

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	XTO Energy	**Job No**	D51123
Site:	FRU 197-31A	**Report Date**	10/7/2013 3:13:55 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 D51123 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:** V5V1763

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

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: SO **Batch ID:** OP8670

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

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** 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:	R18903

- The data for SW846 3060A/7196A M meets quality control requirements.
- D51123-1 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: D51123-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix:	SO	Batch ID:	MP11305

- D51123-1A for Sodium Adsorption Ratio: Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+(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: D51123
Account: XTO Energy
Project: FRU 197-31A
Collected: 09/30/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D51123-1	**CUT 1 CONTENTS**					
Toluene		0.0993 J	0.16	0.078	mg/kg	SW846 8260B
Ethylbenzene		0.117 J	0.16	0.030	mg/kg	SW846 8260B
Chrysene		0.0365	0.011	0.0055	mg/kg	SW846 8270C BY SIM
Fluoranthene		0.0148	0.011	0.0055	mg/kg	SW846 8270C BY SIM
Naphthalene		0.266	0.015	0.013	mg/kg	SW846 8270C BY SIM
Pyrene		0.0238	0.011	0.0055	mg/kg	SW846 8270C BY SIM
TPH-GRO (C6-C10)		29.3	16	7.8	mg/kg	SW846 8015B
TPH-DRO (C10-C28)		863	8.5	6.4	mg/kg	SW846-8015B
Arsenic		13.1	0.13		mg/kg	SW846 6020A
Barium		4070	6.4		mg/kg	SW846 6010C
Chromium		20.0	1.3		mg/kg	SW846 6010C
Copper		33.9	1.3		mg/kg	SW846 6010C
Lead		24.2	6.4		mg/kg	SW846 6010C
Nickel		16.6	3.9		mg/kg	SW846 6010C
Zinc		57.0	3.9		mg/kg	SW846 6010C
Specific Conductivity		17400	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent [a]		19.9	2.3		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2		233			mv	ASTM D1498-76M
pH		9.92			su	SW846 9045D
D51123-1A	**CUT 1 CONTENTS**					
Calcium		259	2.0		mg/l	SW846 6010C
Magnesium		10.4	1.0		mg/l	SW846 6010C
Sodium		3840	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio [b]		63.6			ratio	USDA HANDBOOK 60

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)
(b) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

Mountain States ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID: CUT 1 CONTENTS
Lab Sample ID: D51123-1
Matrix: SO - Soil
Method: SW846 8260B
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 77.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V29344.D	1	10/01/13	BD	n/a	n/a	V5V1763
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.04 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.078	0.039	mg/kg	
108-88-3	Toluene	0.0993	0.16	0.078	mg/kg	J
100-41-4	Ethylbenzene	0.117	0.16	0.030	mg/kg	J
1330-20-7	Xylene (total)	ND	0.31	0.16	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	99%		64-130%
460-00-4	4-Bromofluorobenzene	98%		62-131%
17060-07-0	1,2-Dichloroethane-D4	100%		70-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID: CUT 1 CONTENTS
Lab Sample ID: D51123-1
Matrix: SO - Soil
Method: SW846 8270C BY SIM SW846 3546
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 77.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G16541.D	1	10/03/13	DC	10/03/13	OP8670	E3G817
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.011	0.0055	mg/kg	
120-12-7	Anthracene	ND	0.011	0.0055	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.011	0.0055	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.011	0.0055	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.011	0.0055	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.011	0.0055	mg/kg	
218-01-9	Chrysene	0.0365	0.011	0.0055	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.011	0.0055	mg/kg	
206-44-0	Fluoranthene	0.0148	0.011	0.0055	mg/kg	
86-73-7	Fluorene	ND	0.011	0.0064	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.011	0.0055	mg/kg	
91-20-3	Naphthalene	0.266	0.015	0.013	mg/kg	
129-00-0	Pyrene	0.0238	0.011	0.0055	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	69%		10-175%
321-60-8	2-Fluorobiphenyl	75%		25-130%
1718-51-0	Terphenyl-d14	113%		41-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	CUT 1 CONTENTS		
Lab Sample ID:	D51123-1	**Date Sampled:**	09/30/13
Matrix:	SO - Soil	**Date Received:**	10/01/13
Method:	SW846 8015B	**Percent Solids:**	77.9
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB22383.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)	29.3	16	7.8	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

Accutest Laboratories

Report of Analysis

Client Sample ID: CUT 1 CONTENTS
Lab Sample ID: D51123-1
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 77.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI09508.D	1	10/03/13	TU	10/02/13	OP8666	GFI637
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	863	8.5	6.4	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		20-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: CUT 1 CONTENTS
Lab Sample ID: D51123-1
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 77.9

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	13.1	0.13	mg/kg	5	10/02/13	10/04/13	JB	SW846 6020A [3]	SW846 3050B [5]
Barium	4070	6.4	mg/kg	5	10/02/13	10/03/13	JM	SW846 6010C [1]	SW846 3050B [4]
Cadmium	< 1.3	1.3	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Chromium	20.0	1.3	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Copper	33.9	1.3	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Lead	24.2	6.4	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Mercury	< 0.11	0.11	mg/kg	1	10/04/13	10/04/13	JB	SW846 7471B [2]	SW846 7471B [6]
Nickel	16.6	3.9	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Selenium	< 6.4	6.4	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Silver	< 3.9	3.9	mg/kg	1	10/02/13	10/02/13	JM	SW846 6010C [1]	SW846 3050B [4]
Zinc	57.0	3.9	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: CUT 1 CONTENTS
Lab Sample ID: D51123-1
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 77.9

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	17400	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]	19.9	2.3	mg/kg	1	10/02/13 16:28	JM	SW846 3060A/7196A M
Redox Potential Vs H2	233		mv	1	10/04/13	AK	ASTM D1498-76M
Solids, Percent	77.9		%	1	10/01/13	SWT	SM2540B-2011 M
pH	9.92		su	1	10/03/13 12:30	AK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: CUT 1 CONTENTS
Lab Sample ID: D51123-1A
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/30/13
Date Received: 10/01/13
Percent Solids: 77.9

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	259	2.0	mg/l	1	10/04/13	10/04/13	JM	SW846 6010C [1]	SW846 3010A/M [2]
Magnesium	10.4	1.0	mg/l	1	10/04/13	10/04/13	JM	SW846 6010C [1]	SW846 3010A/M [2]
Sodium	3840	2.0	mg/l	1	10/04/13	10/04/13	JM	SW846 6010C [1]	SW846 3010A/M [2]

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT 1 CONTENTS		
Lab Sample ID:	D51123-1A	**Date Sampled:**	09/30/13
Matrix:	SO - Soil	**Date Received:**	10/01/13
		Percent Solids:	77.9
Project:	FRU 197-31A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	63.6		ratio	1	10/04/13 20:38	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

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ACCUTEST LABORATORIES
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 #: D51123

Client / Reporting Information

Company Name: KRW Consulting
Street Address: 8000 West 14th Street; Suite 200
City: Lakewood, CO 80214
Project Contact: Dwayne Knudson
Phone #: 970-488-1098
Sampler(s) Name(s): David Sanders 970-488-1098

Project Information

Project Name: XTO FRU 197-31A
Street:
City: State:
Project #: 1111-02A
Client Purchase Order #:
Project Manager: Joe Hess

Billing Information (If different from Report to)

Company Name: XTO Energy
Street Address: 21459 CR 5
City: Rifle, CO 81650
Attention: Jessica Dooling

Requested Analysis (see TEST CODE sheet)

Table 910

Matrix Codes

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
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	LAB USE ONLY
	Cut 1 Contents		9/30/13	1225	DS	SO	5					X					01

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [x] Std. 5 Business Days (By contract only)
- [ ] 3 Day Emergency
- [ ] 2 Day Emergency
- [ ] 1 Day Emergency
- [ ] Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] COMMBN
- [ ] COMMBN+
- [ ] State Forms Required
- [ ] Send Forms to State
- [ ] Report by Fax
- [x] Report by PDF ONLY
- [ ] EDD Format

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial BN = Results/QC/Narrative (+ = chromatograms)

Comments / Special Instructions

Please email to: KRW Piceance Team

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 9/30/13 1700	Received By: Pace Service Center	Relinquished By: 2	Date Time:	Received By: 2 10-1-13 1150
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # Co	Intact / Not Intact	Preserved where applicable: On Ice / Cooler Temp. 3.3

D51123: Chain of Custody
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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D51123 **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:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	Infared gun		
3. Cooler media:	Ice (bag)		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	
2. Trip Blank listed on COC:	☐		☐	
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume rec'd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(303) 425-6021
4036 Youngfield Street
F: (303) 425-6854
Wheat Ridge, CO
www/accutest.com

5.1

5

D51123: Chain of Custody

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Mountain States ACCUTEST LABORATORIES

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

Job Number: D51123
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1763-MB	5V29325.D	1	10/01/13	BD	n/a	n/a	V5V1763

The QC reported here applies to the following samples: **Method:** SW846 8260B

D51123-1

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	98%	64-130%
460-00-4	4-Bromofluorobenzene	87%	62-131%
17060-07-0	1,2-Dichloroethane-D4	105%	70-130%

Blank Spike Summary

Job Number: D51123
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1763-BS	5V29326.D	1	10/01/13	BD	n/a	n/a	V5V1763

The QC reported here applies to the following samples: **Method:** SW846 8260B

D51123-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2650	106	70-130
100-41-4	Ethylbenzene	2500	2840	114	70-130
108-88-3	Toluene	2500	2740	110	70-130
1330-20-7	Xylene (total)	7500	8900	119	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	103%	64-130%
460-00-4	4-Bromofluorobenzene	101%	62-131%
17060-07-0	1,2-Dichloroethane-D4	93%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51123
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51039-1MS	5V29328.D	1	10/01/13	BD	n/a	n/a	V5V1763
D51039-1MSD	5V29329.D	1	10/01/13	BD	n/a	n/a	V5V1763
D51039-1	5V29327.D	1	10/01/13	BD	n/a	n/a	V5V1763

The QC reported here applies to the following samples: **Method:** SW846 8260B

D51123-1

CAS No.	Compound	D51039-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3620	3780	104	3940	109	4	64-139/30
100-41-4	Ethylbenzene	ND		3620	3880	107	3890	107	0	68-136/30
108-88-3	Toluene	ND		3620	3640	101	3610	100	1	60-130/30
1330-20-7	Xylene (total)	ND		10900	12300	113	12400	114	1	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D51039-1	Limits
2037-26-5	Toluene-D8	95%	93%	97%	64-130%
460-00-4	4-Bromofluorobenzene	108%	107%	96%	62-131%
17060-07-0	1,2-Dichloroethane-D4	94%	94%	99%	70-130%

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100113.S\
Data File : 5V29344.D
Acq On : 1 Oct 2013 10:23 pm
Operator : BRETD
Sample : D51123-1
Misc : MS6474,V5V1763,5.035,,100,5,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 02 09:24:01 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

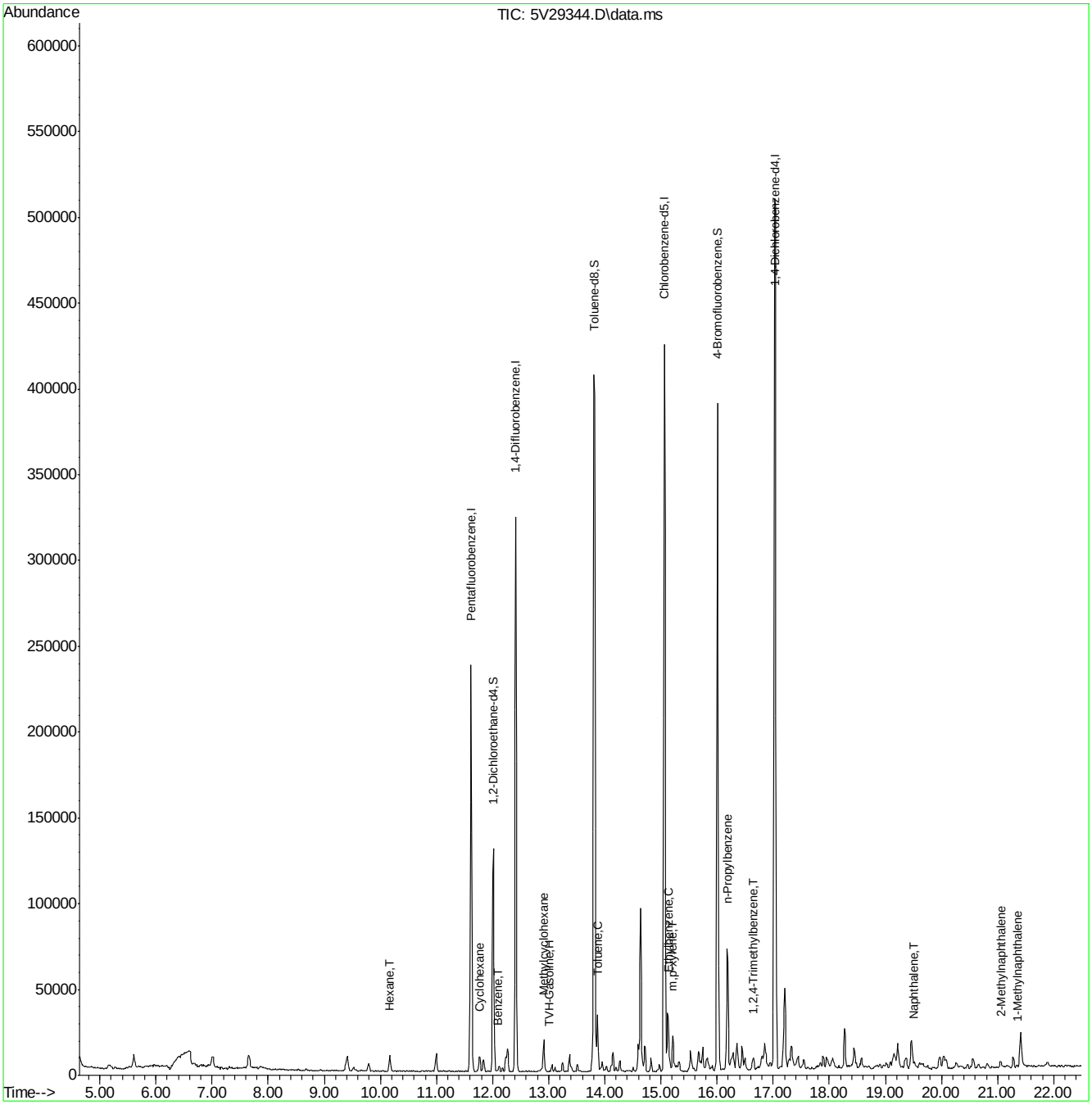
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	159687	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	216574	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	215985	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.036	152	163895	50.00	ug/l	0.00
System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.013	102	16153	49.78	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 99.56%			
64) Toluene-d8	13.805	98	242951	49.65	ug/l	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 99.30%			
72) 4-Bromofluorobenzene	16.009	95	111306	48.80	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 97.60%			
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	856963m	120.14	ug/l	
33) Cyclohexane	11.762	56	4727	15.81	ug/l	89
43) Hexane	10.163	57	3958	2.18	ug/l	100
47) Methylcyclohexane	12.915	83	4836	2.92	ug/l #	85
53) Benzene	12.093	78	763	0.16	ug/l	100
65) Toluene	13.874	92	5041	1.27	ug/l	98
69) Ethylbenzene	15.130	91	7995	1.50	ug/l	99
75) m,p-xylene	15.209	106	4953	1.97	ug/l	88
80) n-Propylbenzene	16.180	91	3408	0.47	ug/l	83
85) 1,2,4-Trimethylbenzene	16.648	105	1684	0.78	ug/l	91
94) Naphthalene	19.502	128	2884	1.20	ug/l	100
97) 2-Methylnaphthalene	21.055	142	1793	1.81	ug/l	89
98) 1-Methylnaphthalene	21.352	142	884	1.56	ug/l	95

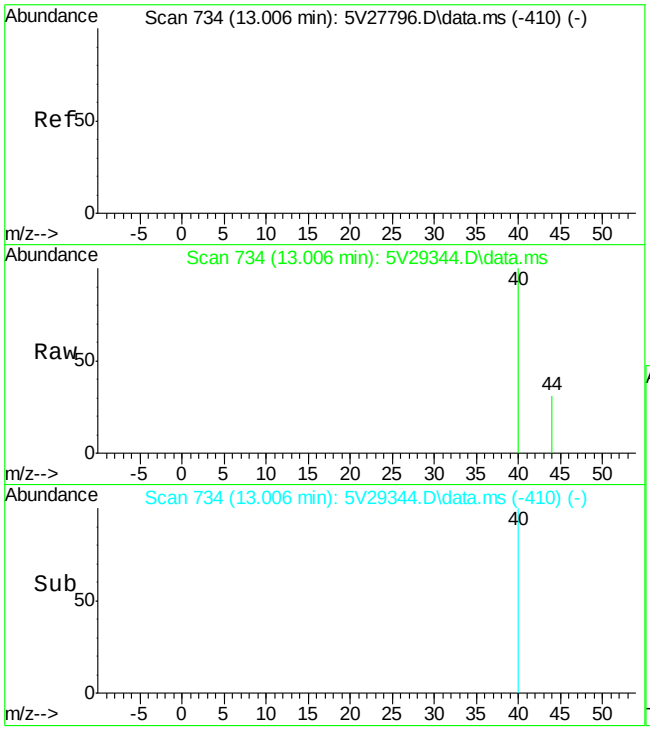
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100113.S\
Data File : 5V29344.D
Acq On : 1 Oct 2013 10:23 pm
Operator : BRETD
Sample : D51123-1
Misc : MS6474,V5V1763,5.035,,100,5,1
ALS Vial : 22 Sample Multiplier: 1

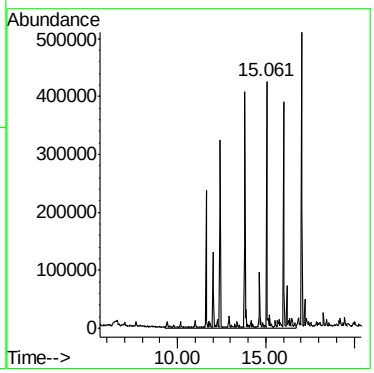
Quant Time: Oct 02 09:24:01 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration

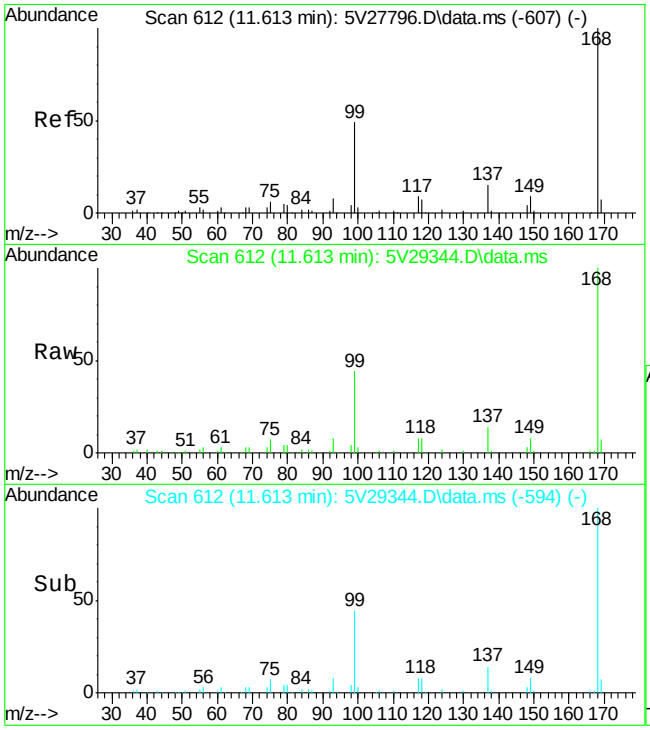




#1
TVH-Gasoline
Concen: 120.14 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:TIC Resp: 856963

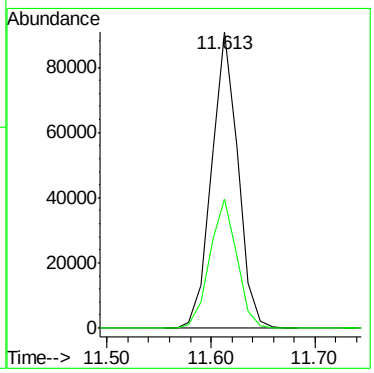


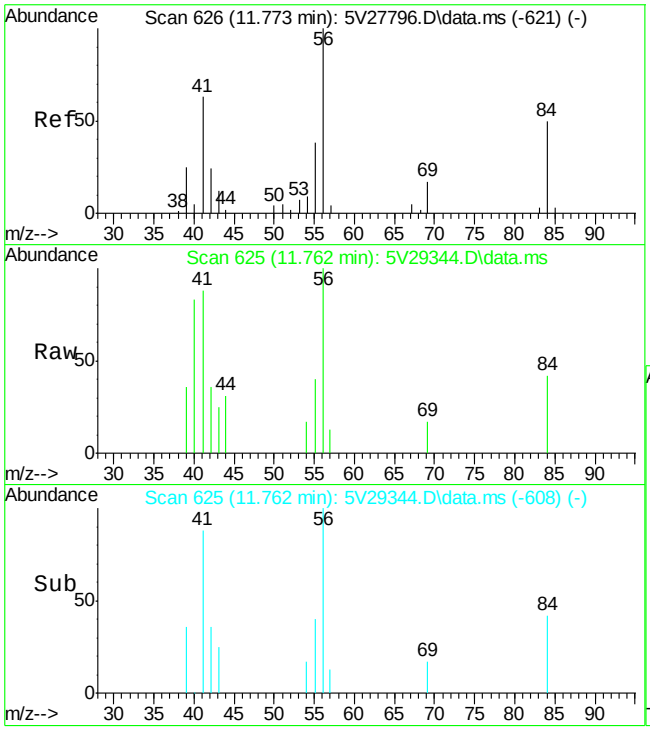


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:168 Resp: 159687

Ion	Ratio	Lower	Upper
168	100		
99	44.7	41.4	62.2

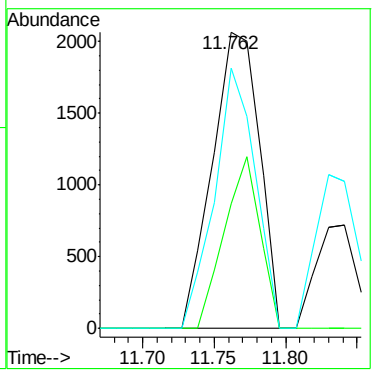


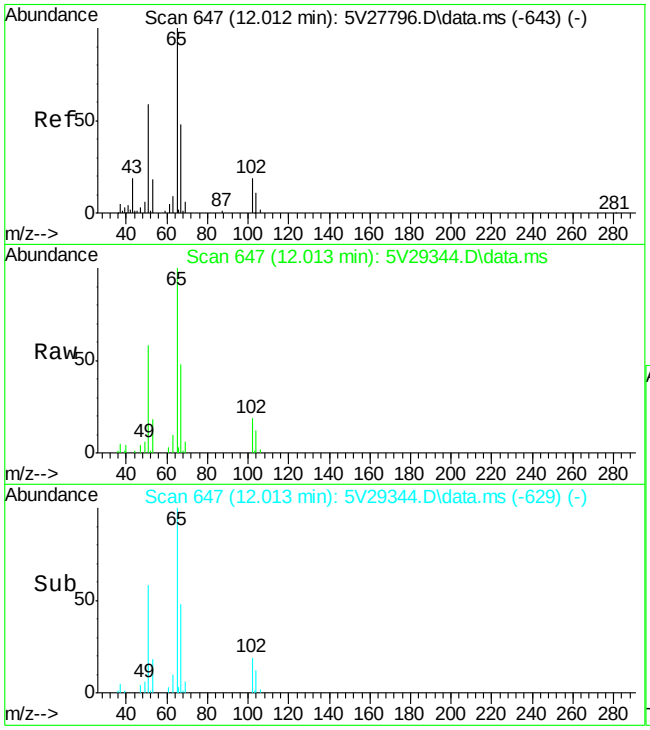


#33
Cyclohexane
Concen: 15.81 ug/l
RT: 11.762 min Scan# 625
Delta R.T. -0.011 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 56 Resp: 4727

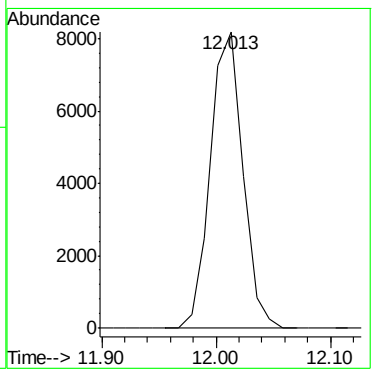
Ion	Ratio	Lower	Upper
56	100		
84	44.0	29.4	69.4
41	76.1	46.0	86.0

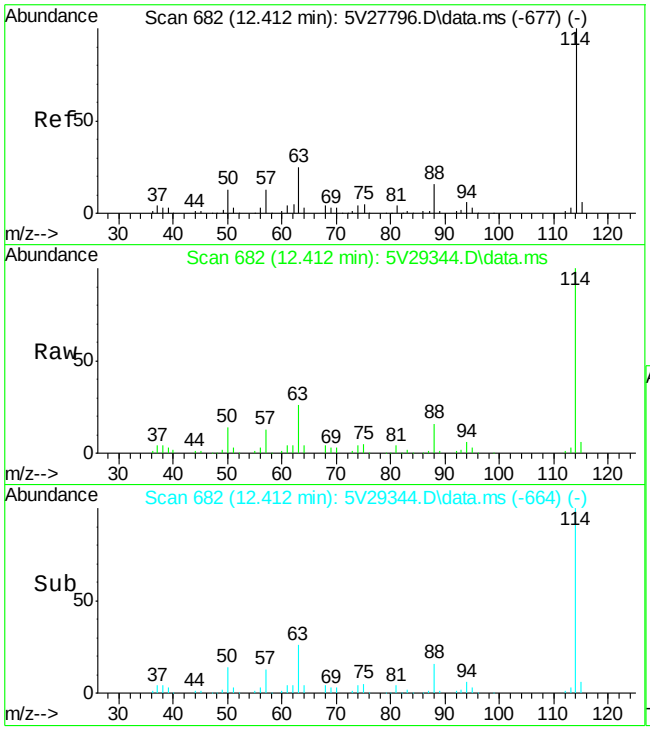




#35
1,2-Dichloroethane-d4
Concen: 49.78 ug/l
RT: 12.013 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

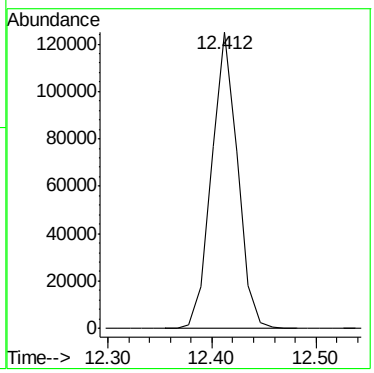
Tgt Ion:102 Resp: 16153

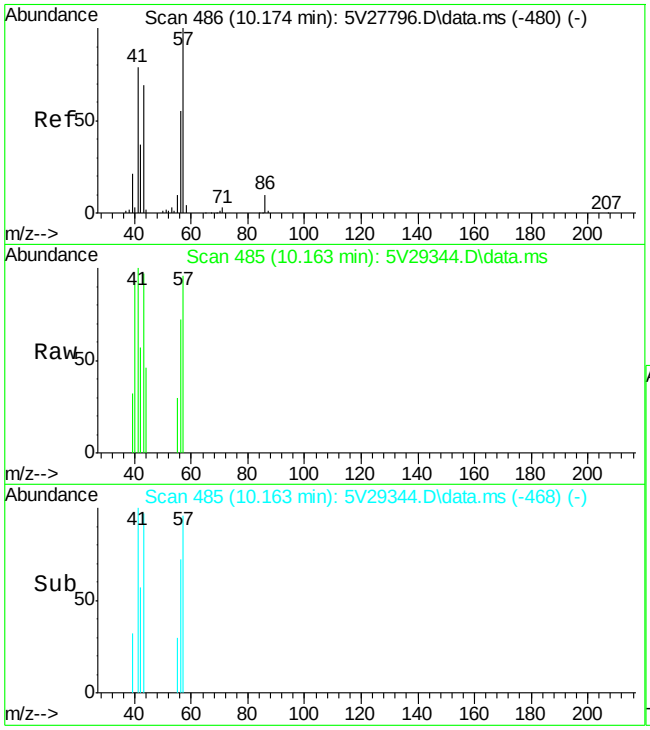




#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

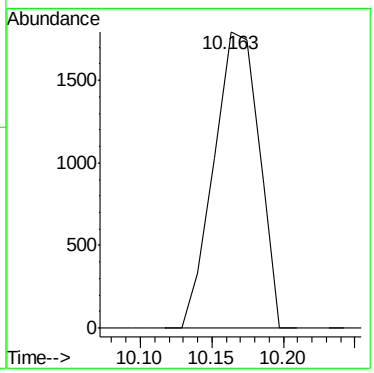
Tgt Ion:114 Resp: 216574

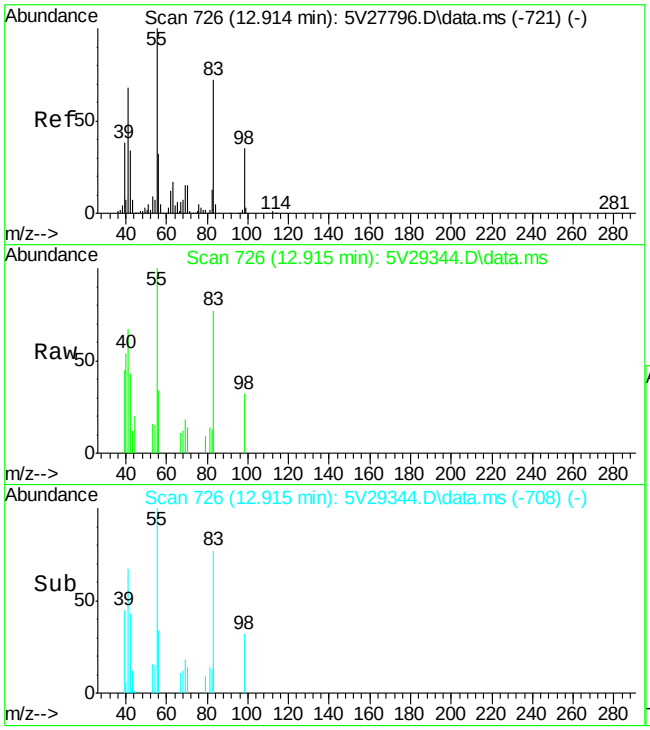




#43
Hexane
Concen: 2.18 ug/l
RT: 10.163 min Scan# 485
Delta R.T. -0.011 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 57 Resp: 3958

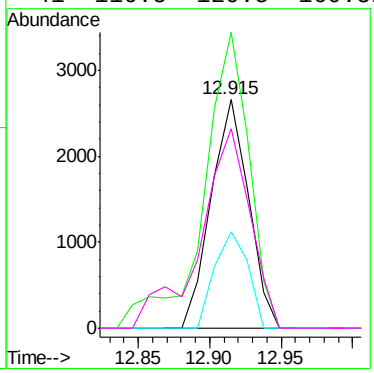


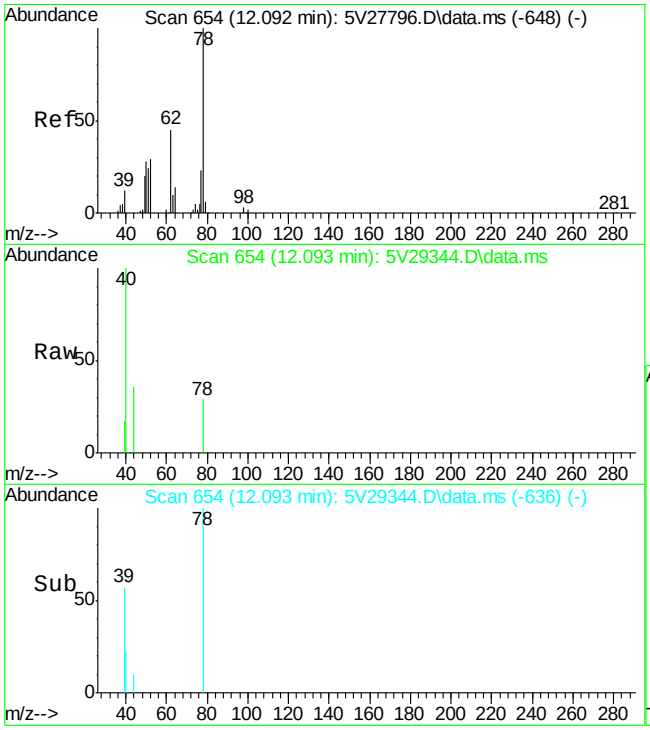


#47
Methylcyclohexane
Concen: 2.92 ug/l
RT: 12.915 min Scan# 726
Delta R.T. 0.001 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 83 Resp: 4836

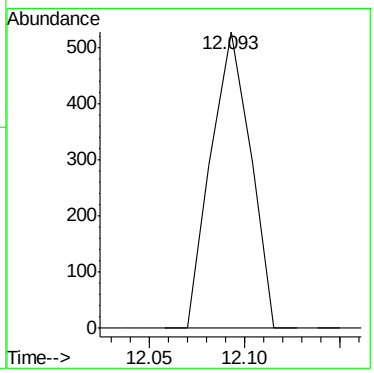
Ion	Ratio	Lower	Upper
83	100		
55	157.2	124.5	164.5
98	37.3	29.2	69.2
41	116.5	120.5	160.5#

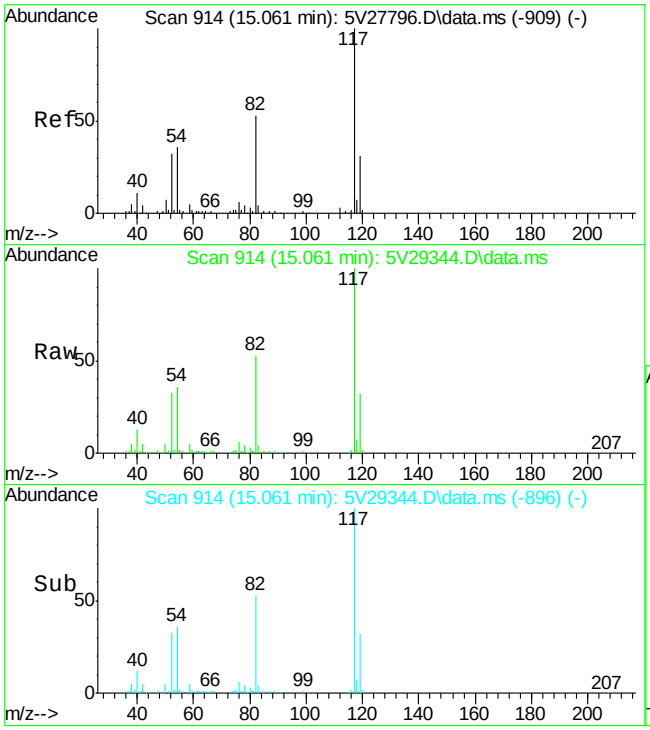




#53
Benzene
Concen: 0.16 ug/l
RT: 12.093 min Scan# 654
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

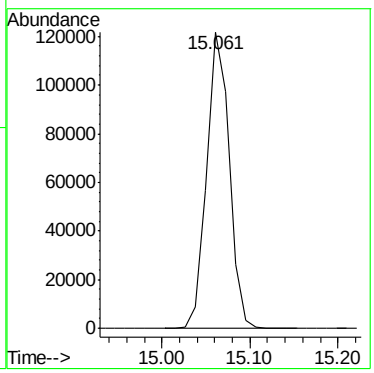
Tgt Ion: 78 Resp: 763

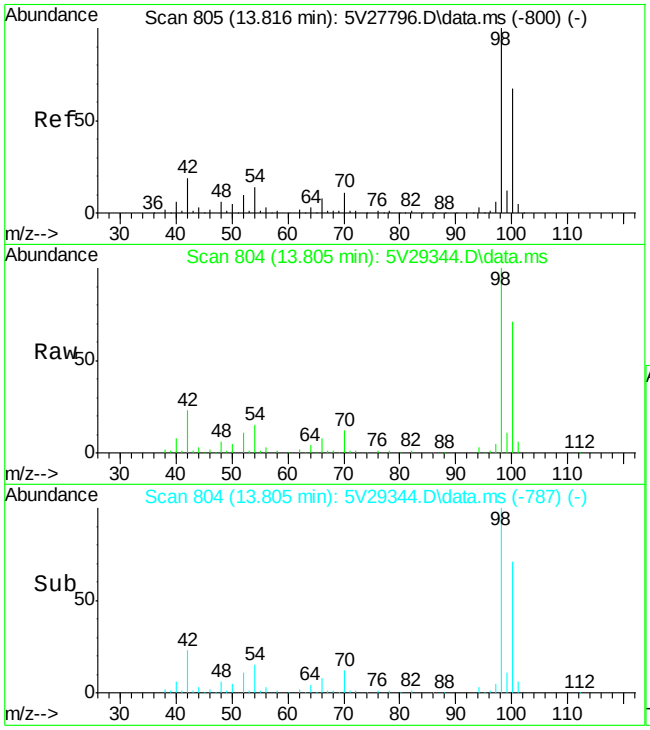




#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

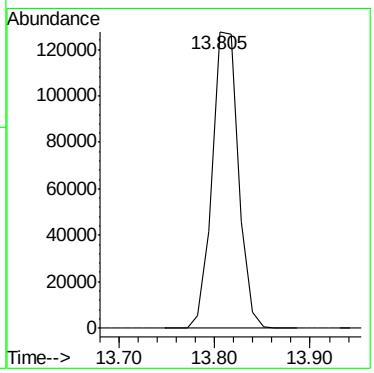
Tgt Ion:117 Resp: 215985

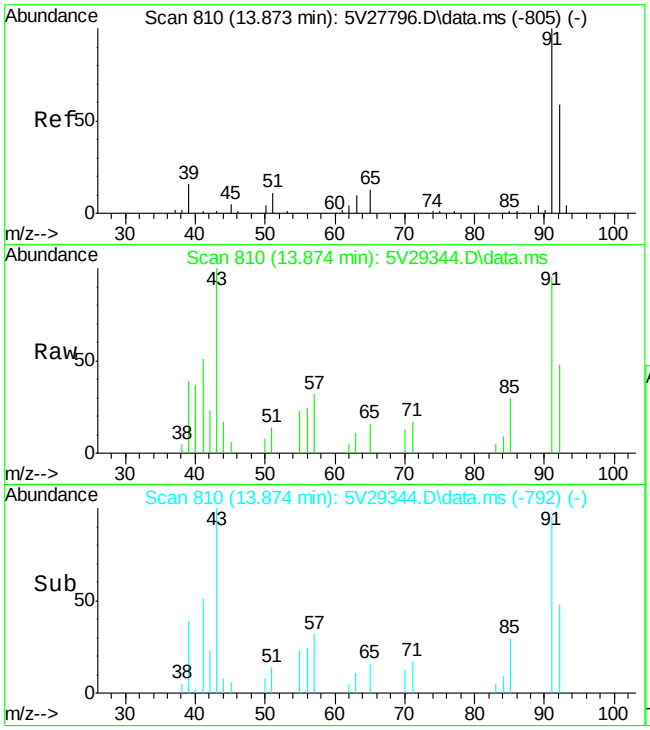




#64
Toluene-d8
Concen: 49.65 ug/l
RT: 13.805 min Scan# 804
Delta R.T. -0.011 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 98 Resp: 242951

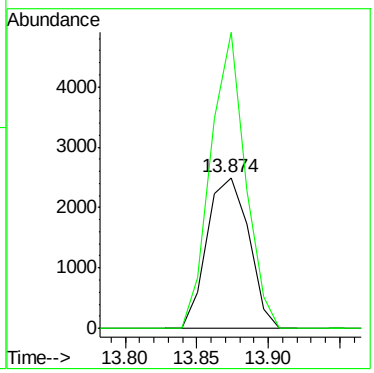


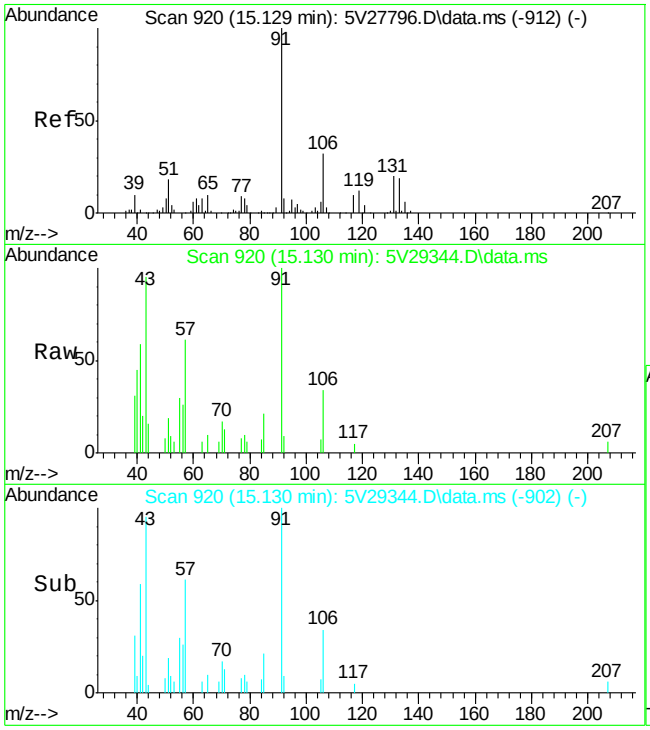


#65
Toluene
Concen: 1.27 ug/l
RT: 13.874 min Scan# 810
Delta R.T. 0.001 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 92 Resp: 5041

Ion	Ratio	Lower	Upper
92	100		
91	163.3	146.5	186.5

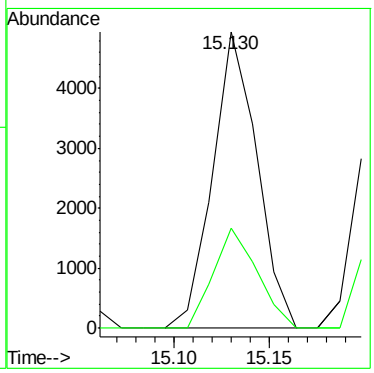


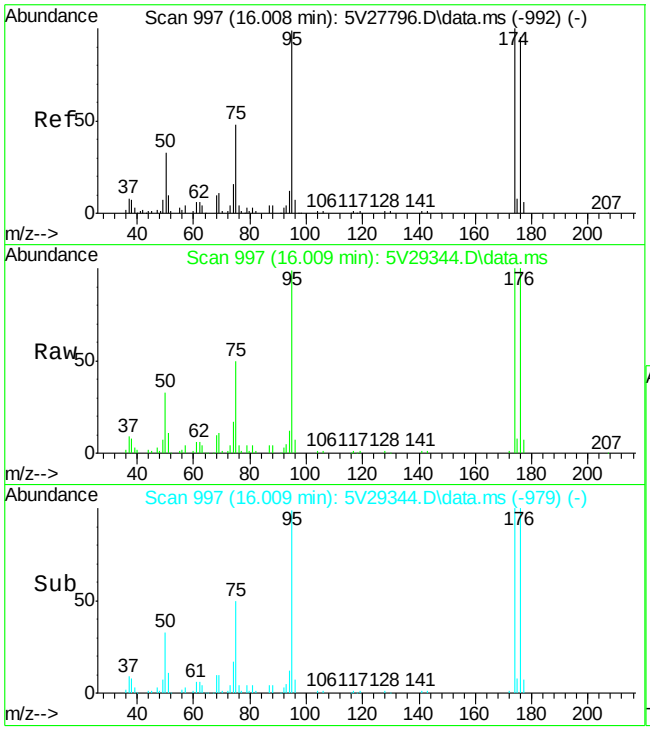


#69
Ethylbenzene
Concen: 1.50 ug/l
RT: 15.130 min Scan# 920
Delta R.T. 0.001 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 91 Resp: 7995

Ion	Ratio	Lower	Upper
91	100		
106	33.4	12.6	52.6

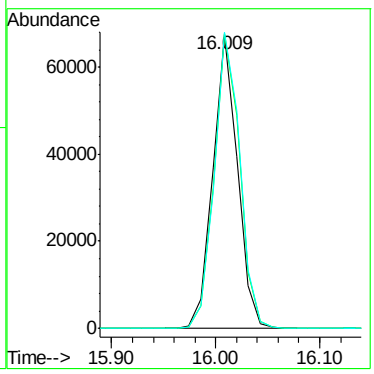


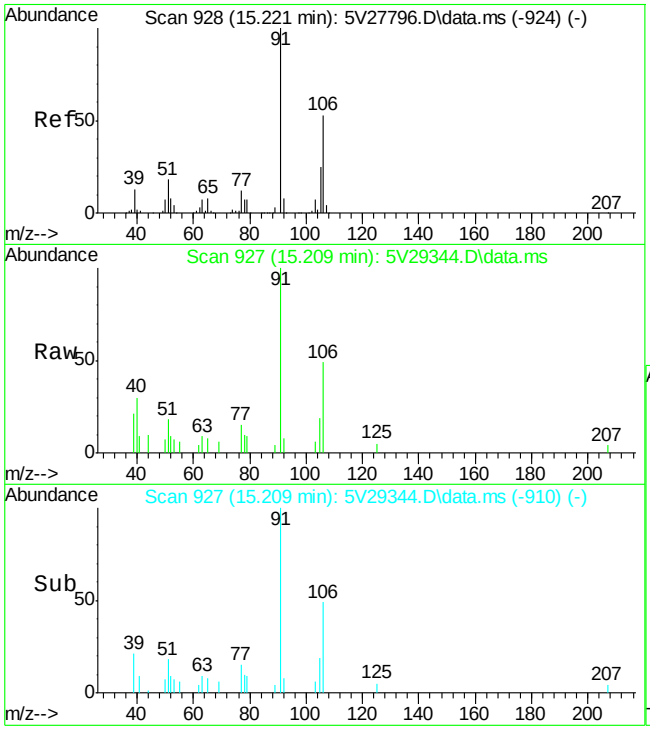


#72
4-Bromofluorobenzene
Concen: 48.80 ug/l
RT: 16.009 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 95 Resp: 111306

Ion	Ratio	Lower	Upper
95	100		
174	104.1	85.4	125.4
176	104.7	80.6	120.6

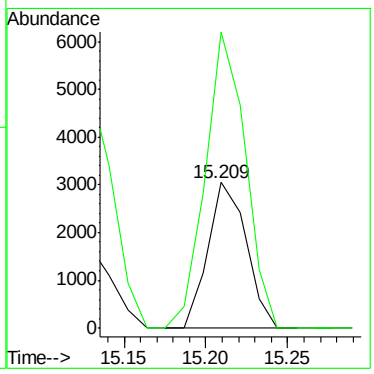


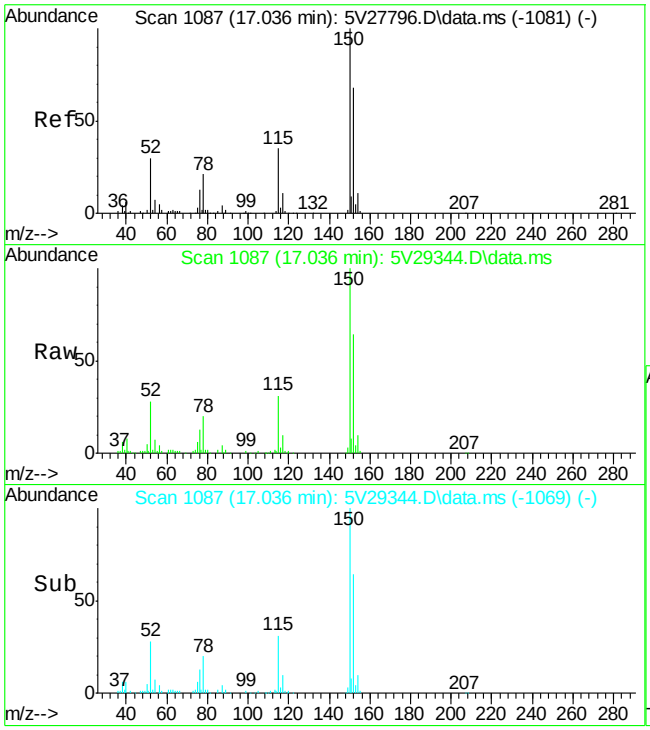


#75
m,p-xylene
Concen: 1.97 ug/l
RT: 15.209 min Scan# 927
Delta R.T. -0.011 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:106 Resp: 4953

Ion	Ratio	Lower	Upper
106	100		
91	212.7	174.8	214.8

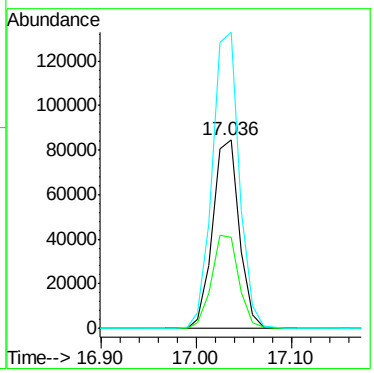


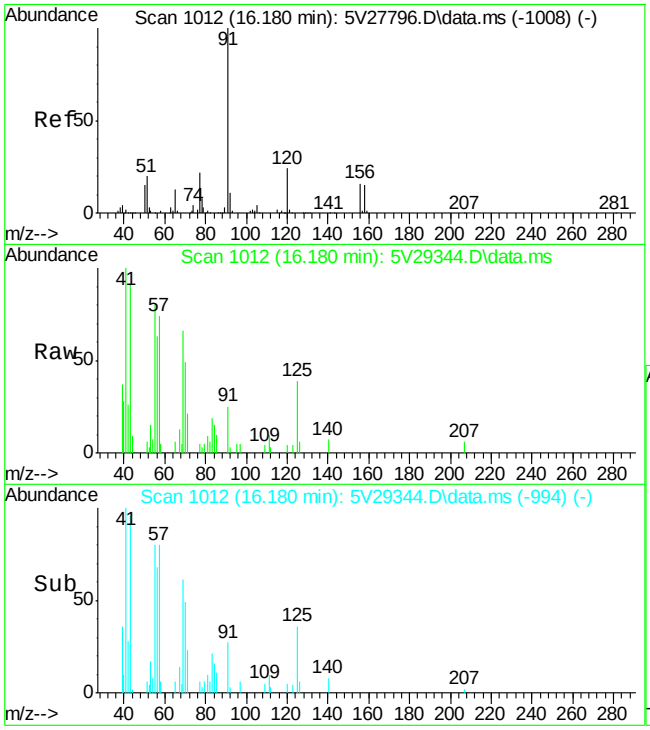


#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:152 Resp: 163895

Ion	Ratio	Lower	Upper
152	100		
115	50.2	43.4	65.2
150	159.0	142.9	214.3

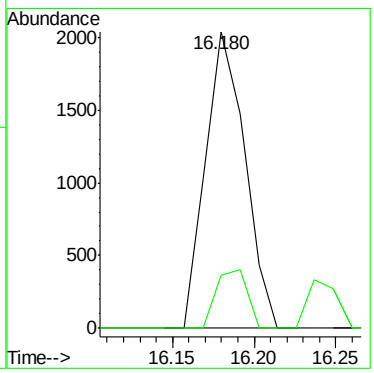


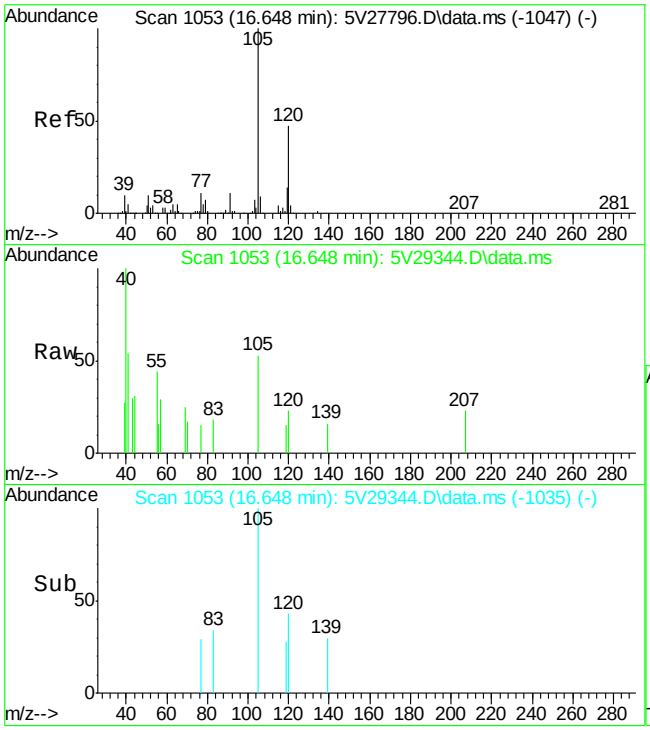


#80
n-Propylbenzene
Concen: 0.47 ug/l
RT: 16.180 min Scan# 1012
Delta R.T. 0.000 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion: 91 Resp: 3408

Ion	Ratio	Lower	Upper
91	100		
120	15.4	3.8	43.8

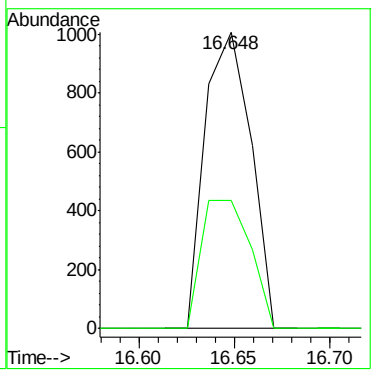


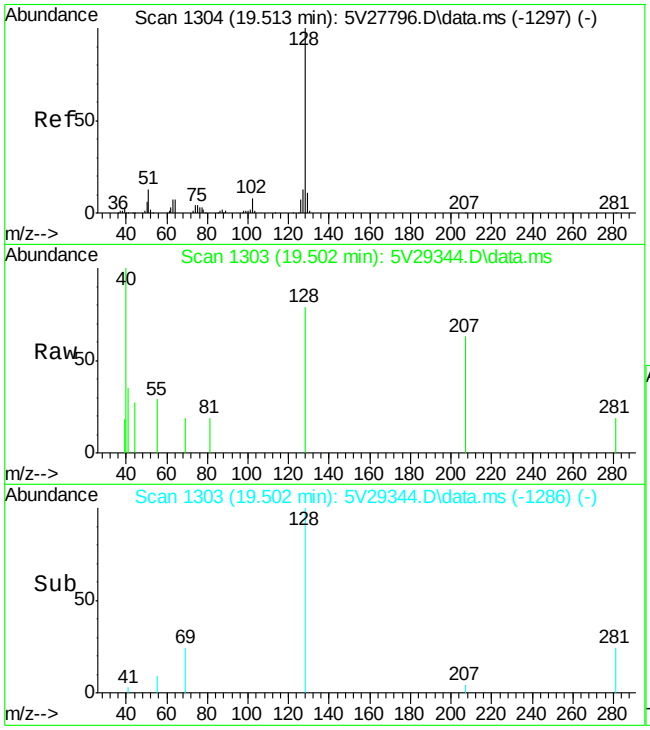


#85
1,2,4-Trimethylbenzene
Concen: 0.78 ug/l
RT: 16.648 min Scan# 1053
Delta R.T. 0.001 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:105 Resp: 1684

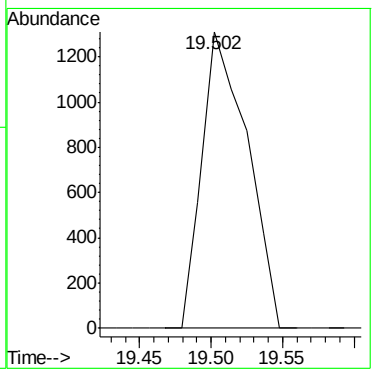
Ion	Ratio	Lower	Upper
105	100		
120	46.3	32.9	72.9

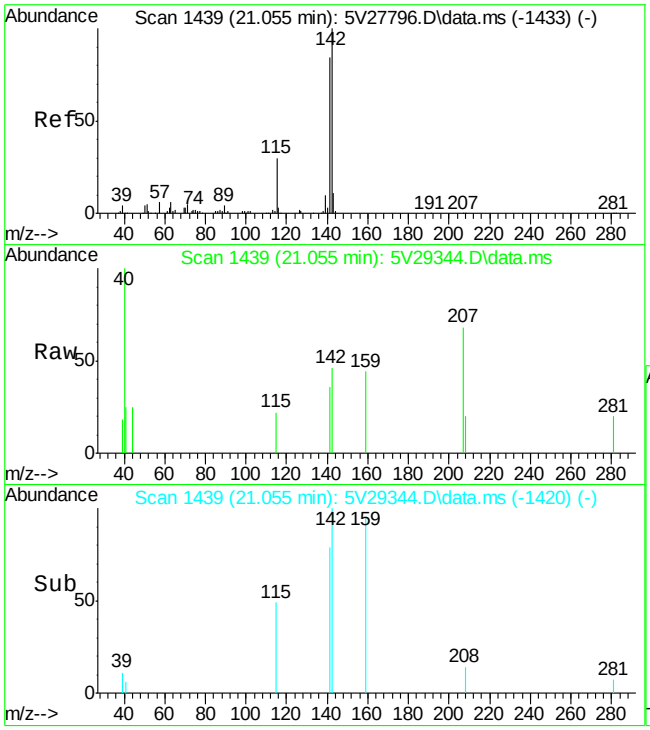




#94
Naphthalene
Concen: 1.20 ug/l
RT: 19.502 min Scan# 1303
Delta R.T. -0.011 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:128 Resp: 2884

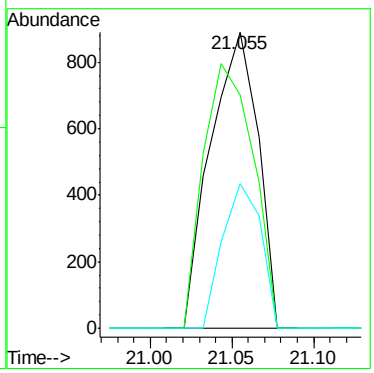


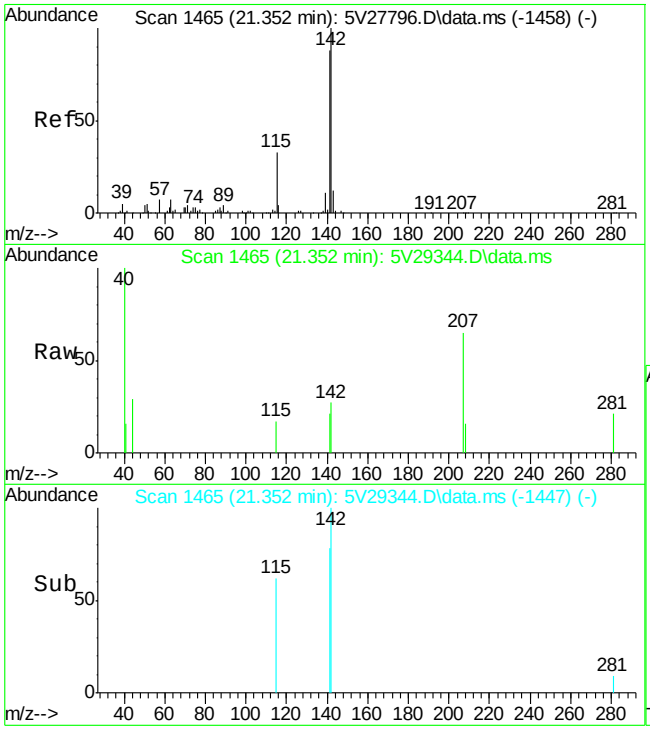


#97
2-Methylnaphthalene
Concen: 1.81 ug/l
RT: 21.055 min Scan# 1439
Delta R.T. 0.012 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:142 Resp: 1793

Ion	Ratio	Lower	Upper
142	100		
141	94.1	64.7	104.7
115	39.4	11.4	51.4

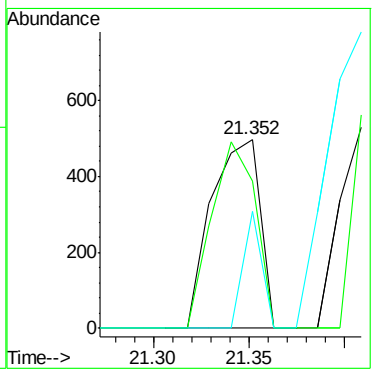




#98
1-Methylnaphthalene
Concen: 1.56 ug/l
RT: 21.352 min Scan# 1465
Delta R.T. 0.001 min
Lab File: 5V29344.D
Acq: 1 Oct 2013 10:23 pm

Tgt Ion:142 Resp: 884

Ion	Ratio	Lower	Upper
142	100		
141	88.9	68.1	108.1
115	23.9	13.1	53.1



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100113.S\
Data File : 5V29325.D
Acq On : 1 Oct 2013 12:31 pm
Operator : BRETD
Sample : MB
Misc : MS6474,V5V1763,5.000,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 02 08:53:24 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

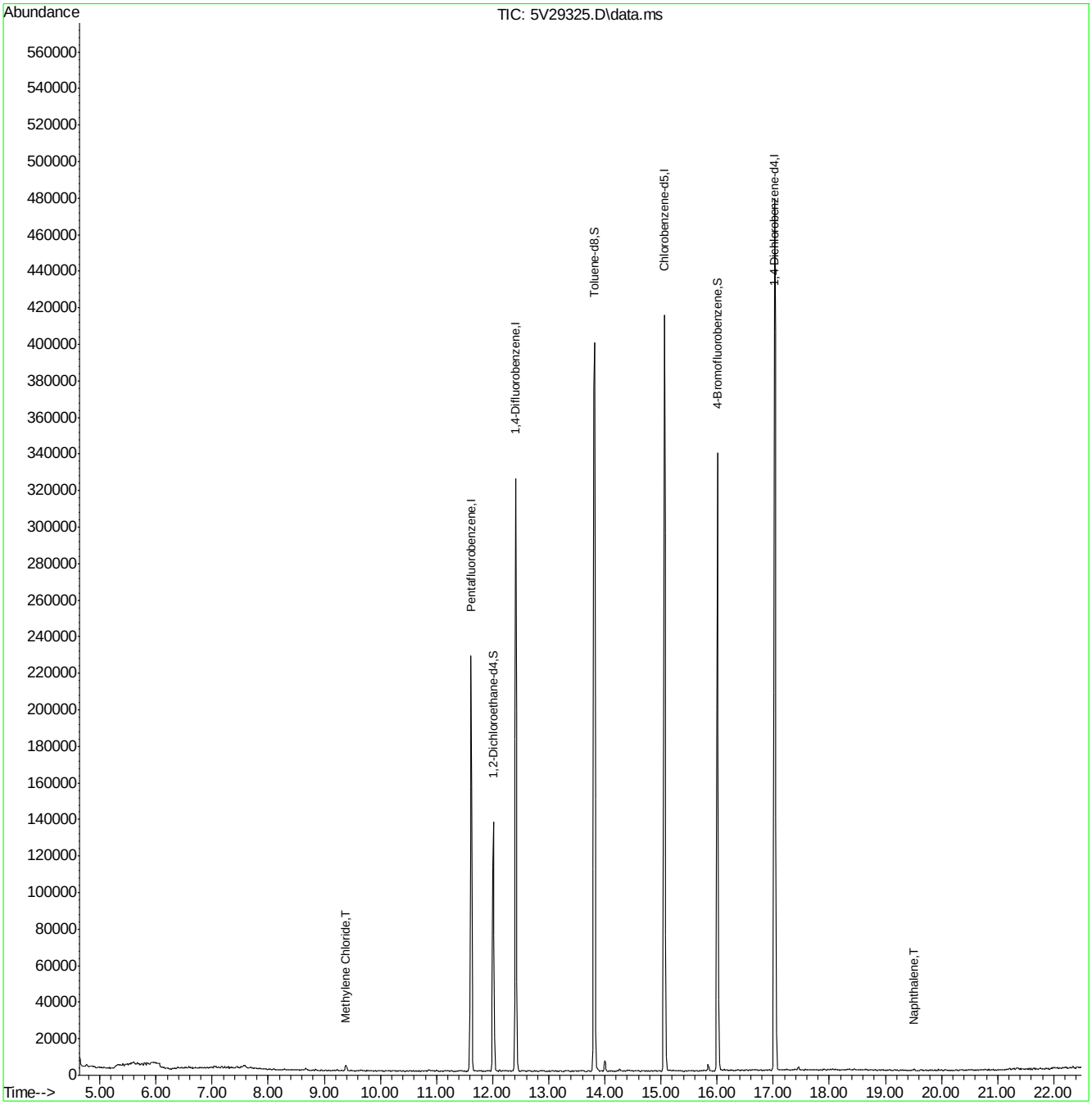
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	154496	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	212347	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	210906	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	145782	50.00	ug/l	-0.01
System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.012	102	16515	52.60	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 105.20%			
64) Toluene-d8	13.816	98	233743	48.92	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 97.84%			
72) 4-Bromofluorobenzene	16.008	95	96915	43.52	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 87.04%			
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	-5250m	57.41	ug/l	
18) Methylene Chloride	9.375	84	967	0.75	ug/l #	89
94) Naphthalene	19.502	128	671	0.91	ug/l	100

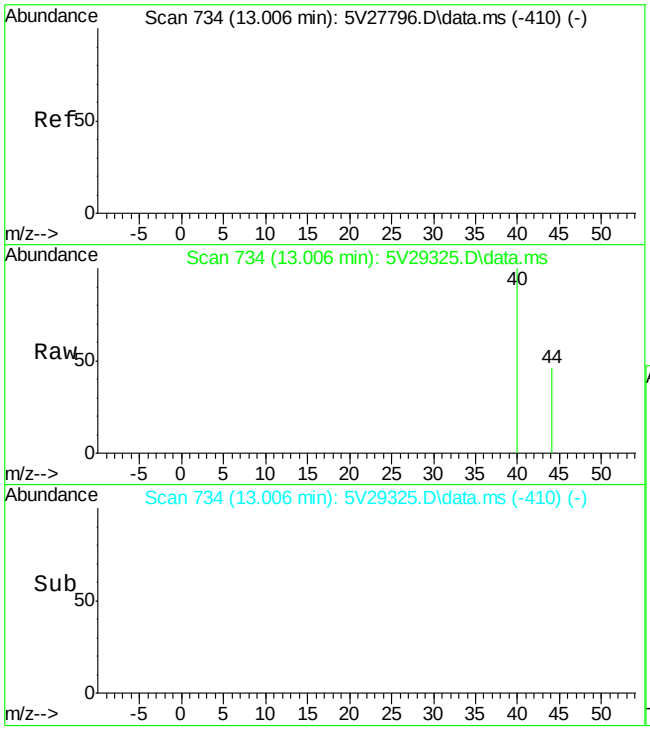
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100113.S\
Data File : 5V29325.D
Acq On : 1 Oct 2013 12:31 pm
Operator : BRETD
Sample : MB
Misc : MS6474,V5V1763,5.000,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

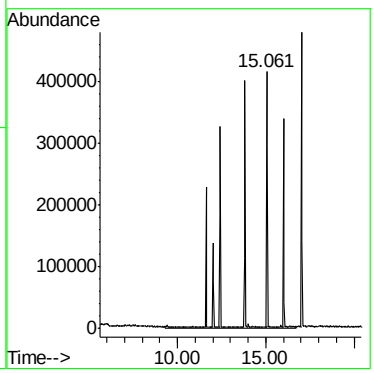
Quant Time: Oct 02 08:53:24 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration

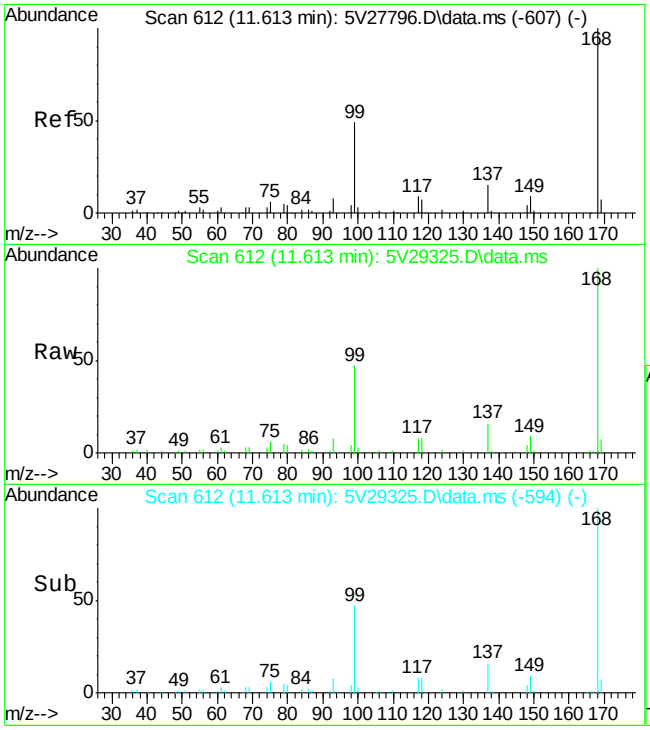




#1
TVH-Gasoline
Concen: 57.41 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion:TIC Resp: -5250

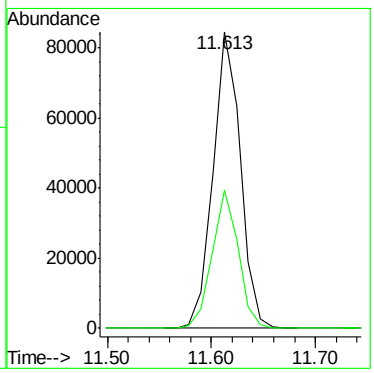


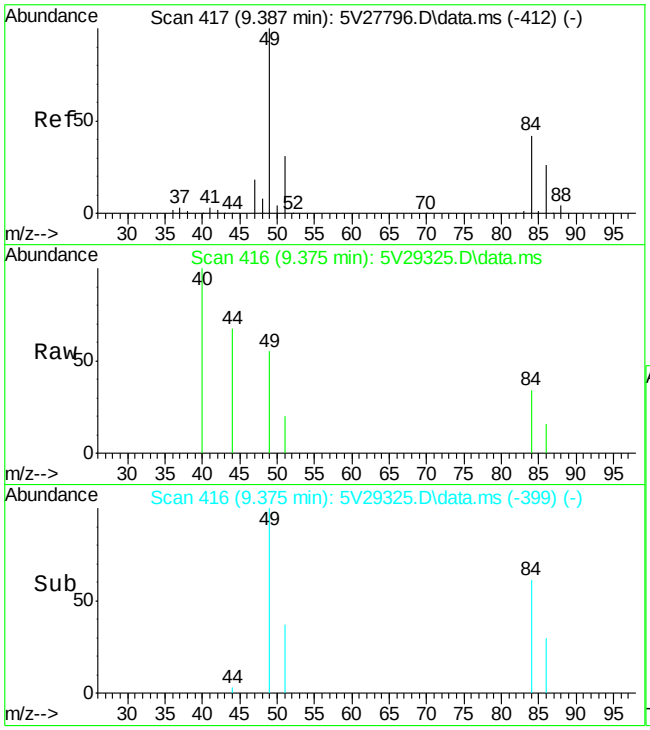


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion:168 Resp: 154496

Ion	Ratio	Lower	Upper
168	100		
99	44.7	41.4	62.2

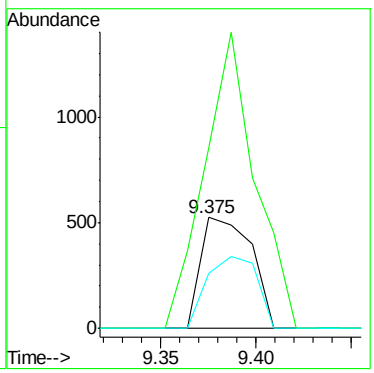


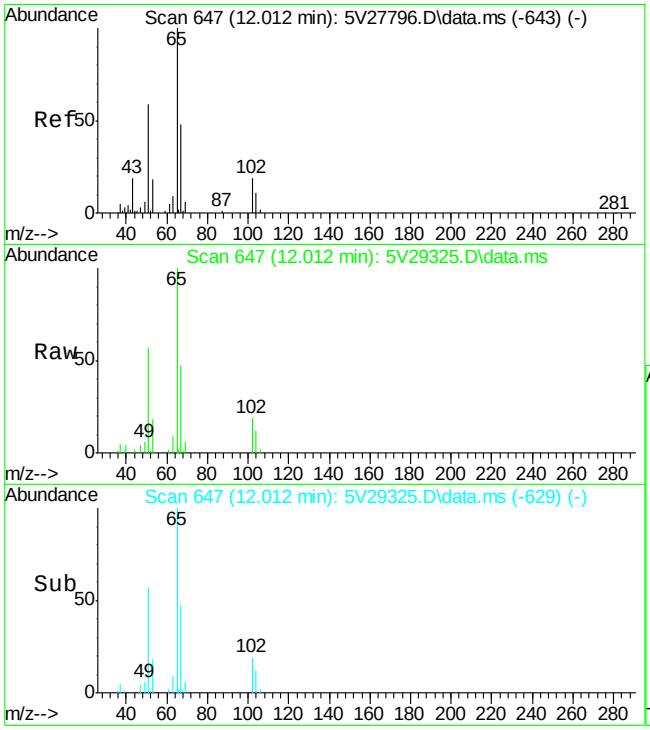


#18
Methylene Chloride
Concen: 0.75 ug/l
RT: 9.375 min Scan# 416
Delta R.T. -0.011 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion: 84 Resp: 967

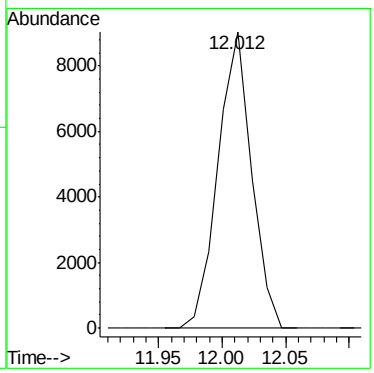
Ion	Ratio	Lower	Upper
84	100		
49	268.7	224.8	264.8#
86	64.2	44.5	84.5

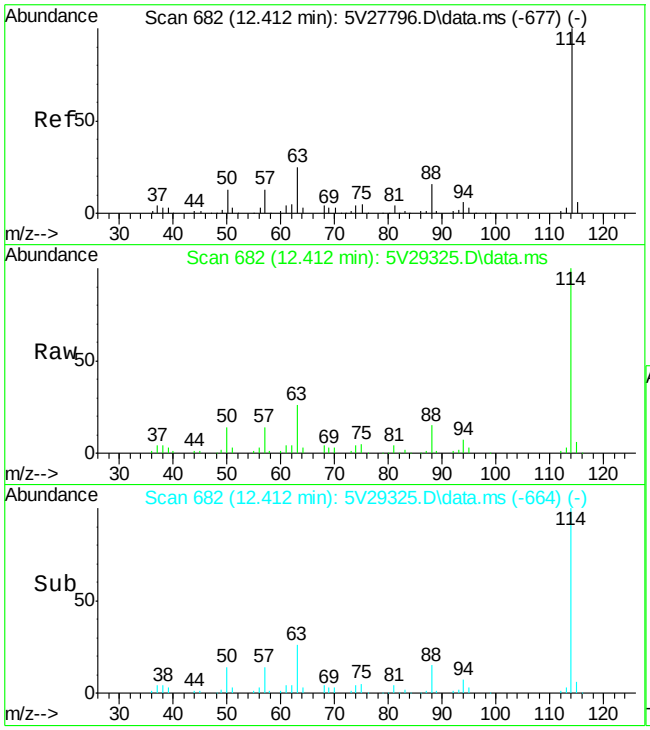




#35
1,2-Dichloroethane-d4
Concen: 52.60 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

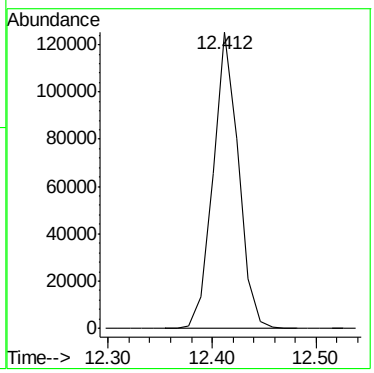
Tgt Ion:102 Resp: 16515

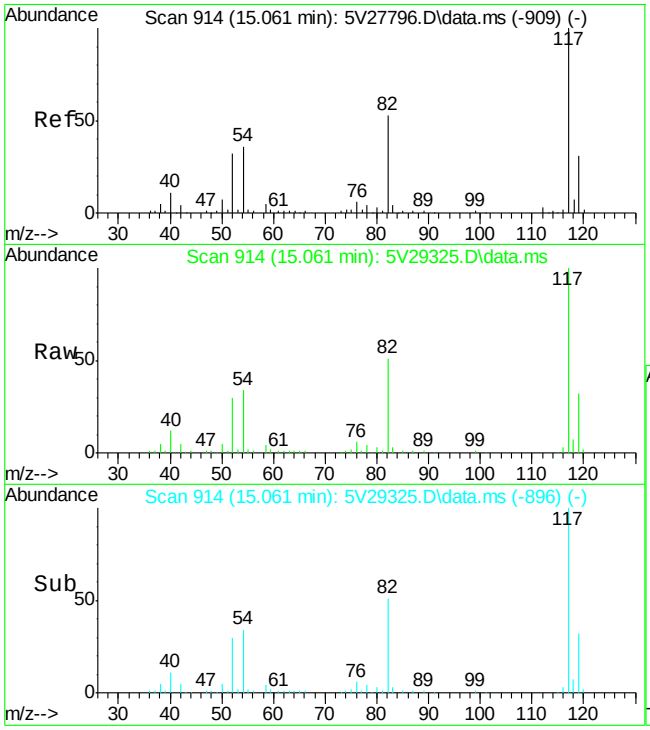




#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

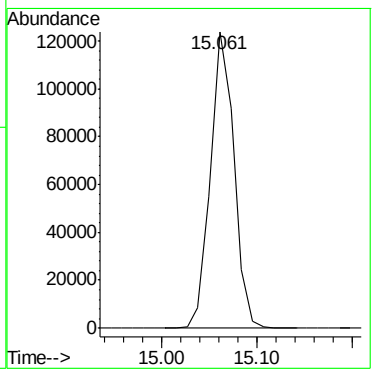
Tgt Ion:114 Resp: 212347

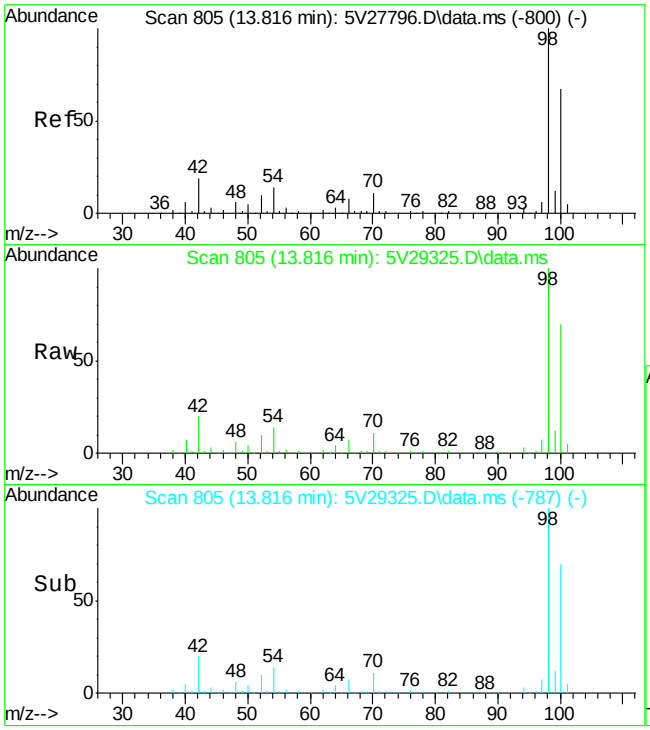




#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

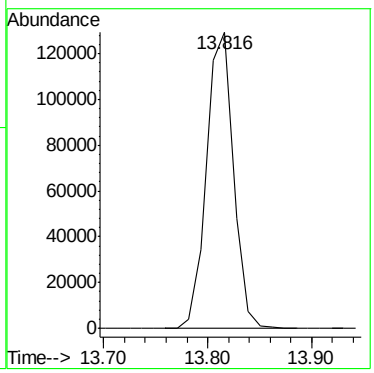
Tgt Ion:117 Resp: 210906

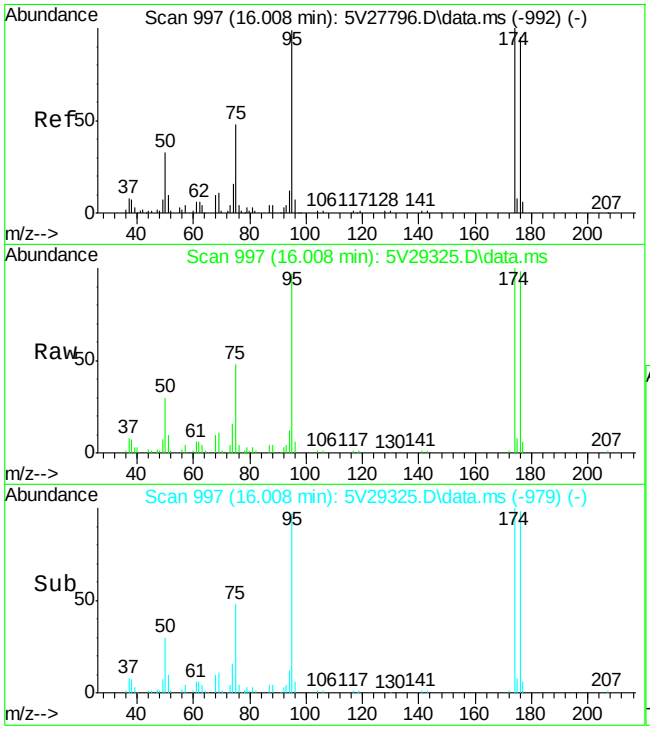




#64
Toluene-d8
Concen: 48.92 ug/l
RT: 13.816 min Scan# 805
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion: 98 Resp: 233743

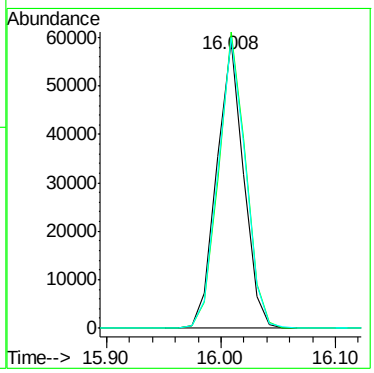


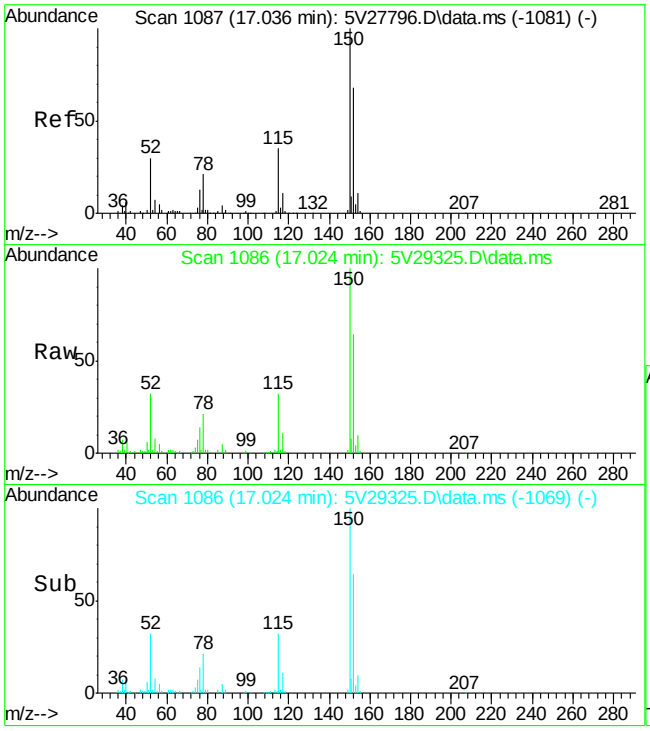


#72
4-Bromofluorobenzene
Concen: 43.52 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion: 95 Resp: 96915

Ion	Ratio	Lower	Upper
95	100		
174	103.7	85.4	125.4
176	103.5	80.6	120.6

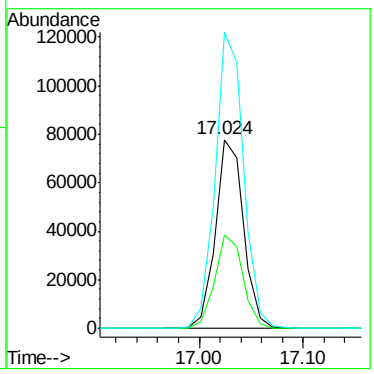


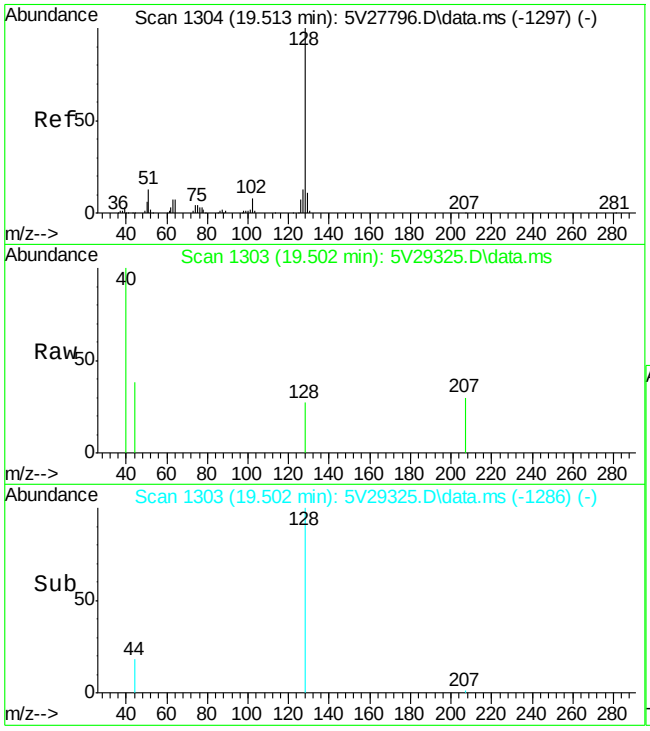


#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.024 min Scan# 1086
Delta R.T. -0.011 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion:152 Resp: 145782

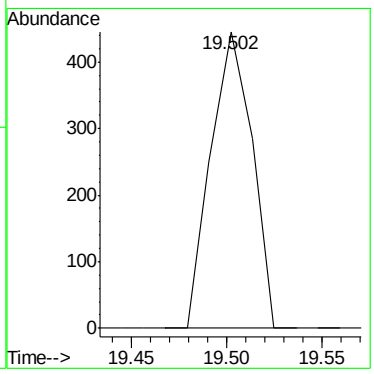
Ion	Ratio	Lower	Upper
152	100		
115	49.8	43.4	65.2
150	158.8	142.9	214.3





#94
Naphthalene
Concen: 0.91 ug/l
RT: 19.502 min Scan# 1303
Delta R.T. -0.011 min
Lab File: 5V29325.D
Acq: 1 Oct 2013 12:31 pm

Tgt Ion:128 Resp: 671



Mountain States ACCUTEST LABORATORIES

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

Job Number: D51123
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

D51123-1

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%

Blank Spike Summary

Job Number: D51123
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

D51123-1

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

Job Number: D51123
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

D51123-1

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.

Mountain States ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
Data File : 3g16541.D
Acq On : 3 Oct 2013 10:30 pm
Operator : DONC
Sample : D51123-1
Misc : OP8670,E3G817,30.11,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Oct 04 15:08:02 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

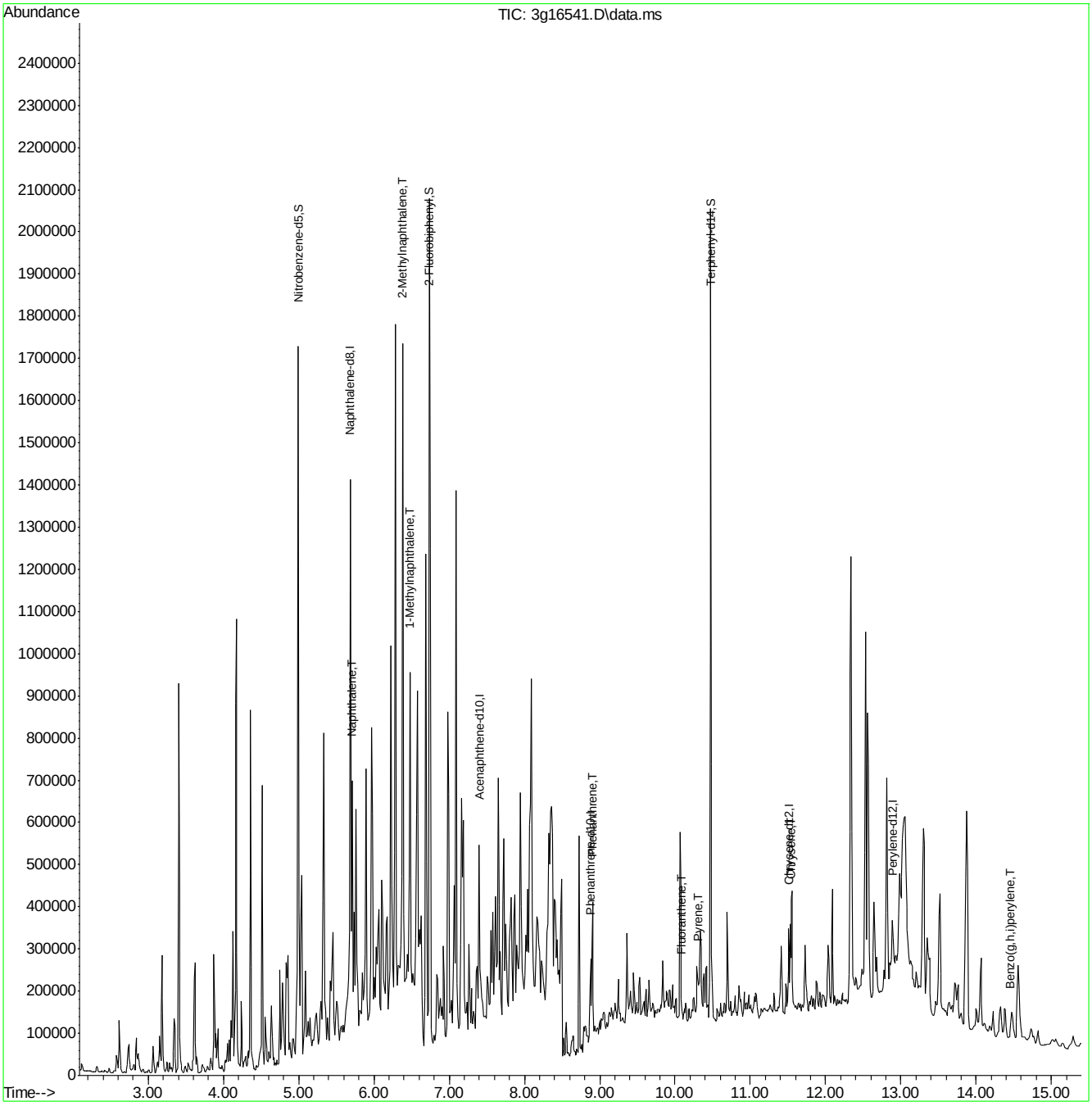
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.682	136	179046	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	103824	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.881	188	150047	4.0000	ug/mL	0.00
19) Chrysene-d12	11.508	240	117598	4.0000	ug/mL	0.00
24) Perylene-d12	12.887	264	89349	4.0000	ug/mL	0.02
System Monitoring Compounds						
2) Nitrobenzene-d5	4.996	82	775741	34.4445	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 68.88%			
7) 2-Fluorobiphenyl	6.736	172	1511248	37.3602	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 74.72%			
21) Terphenyl-d14	10.472	244	1261635	56.7024	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 113.40%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	2.414	74	74	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d		
5) Naphthalene	5.707	128	403589	6.2309	ug/mL	67
8) 2-Methylnaphthalene	6.380	142	589082	14.1266	ug/mL	93
9) 1-Methylnaphthalene	6.480	142	298917	8.4510	ug/mL	92
10) Acenaphthylene	0.000	152	0	N.D. d		
11) Acenaphthene	0.000	154	0	N.D. d		
12) Dibenzofuran	0.000	168	0	N.D. d		
13) Fluorene	0.000	166	0	N.D. d		
14) Diphenylamine	0.000	169	0	N.D. d		
16) Phenanthrene	8.905	178	212937	3.4878	ug/mL	70
17) Anthracene	0.000	178	0	N.D. d		
18) Fluoranthene	10.084	202	21135	0.3464	ug/mL#	37
20) Pyrene	10.306	202	30681	0.5583	ug/mL#	44
22) Benzo(a)anthracene	0.000	228	0	N.D. d		
23) Chrysene	11.535	228	45336	0.8558	ug/mL	70
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	14.453	276	9194	0.2656	ug/mL#	1

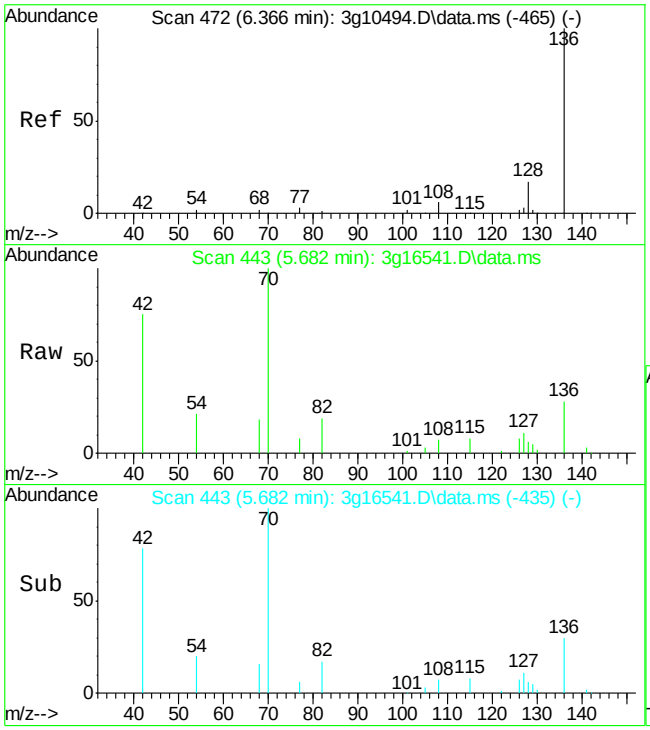
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100313\
Data File : 3g16541.D
Acq On : 3 Oct 2013 10:30 pm
Operator : DONC
Sample : D51123-1
Misc : OP8670,E3G817,30.11,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Oct 04 15:08:02 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

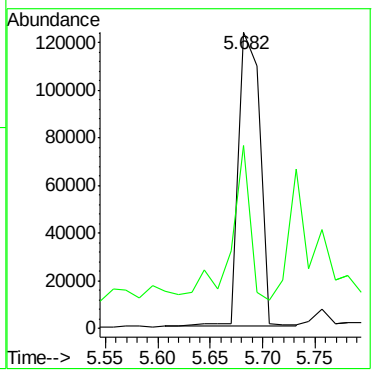


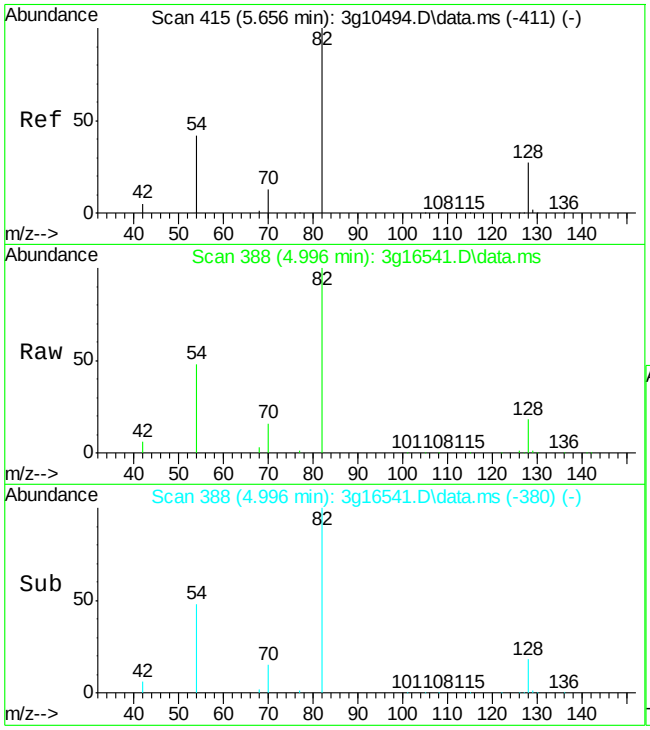


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:136 Resp: 179046

Ion	Ratio	Lower	Upper
136	100		
68	46.2	0.0	21.1#

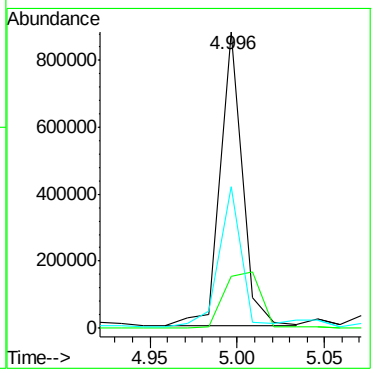


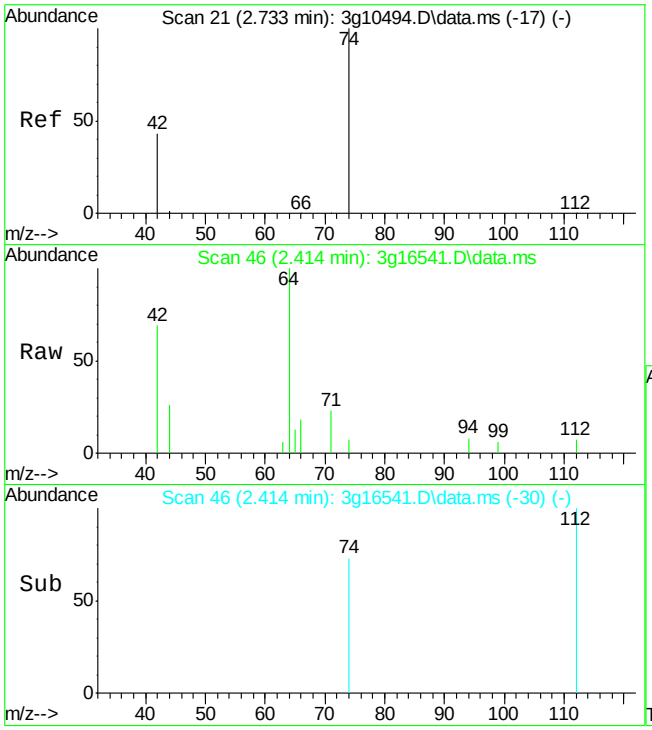


#2
Nitrobenzene-d5
Concen: 34.4445 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 82 Resp: 775741

Ion	Ratio	Lower	Upper
82	100		
128	32.1	36.8	76.8#
54	47.9	40.5	80.5

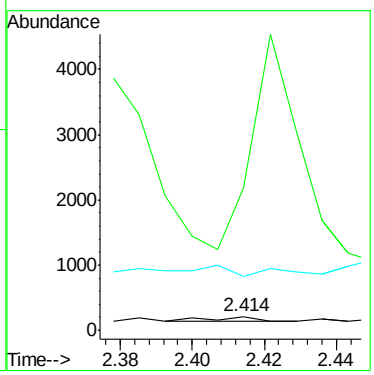


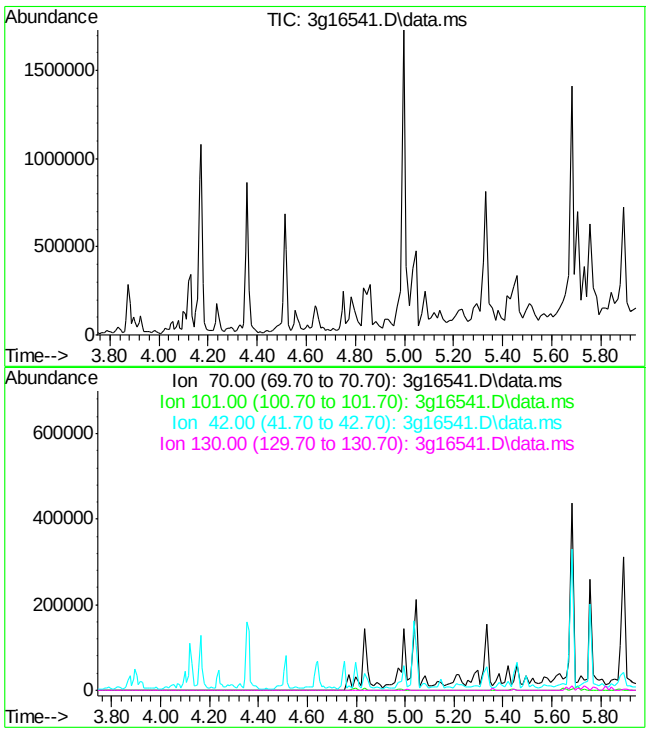


#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.414 min Scan# 46
Delta R.T. 0.015 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 74 Resp: 74

Ion	Ratio	Lower	Upper
74	100		
42	4523.0	58.5	98.5#
44	0.0	0.0	24.0



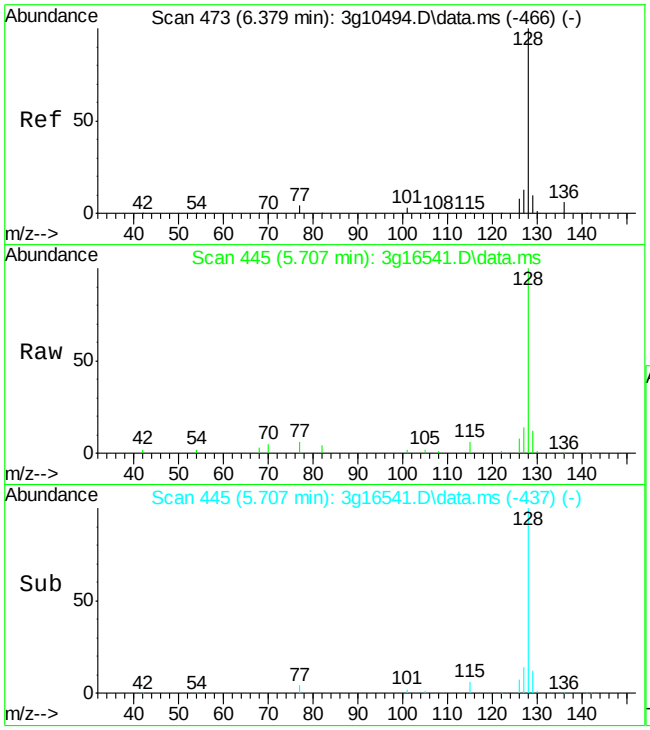


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 70

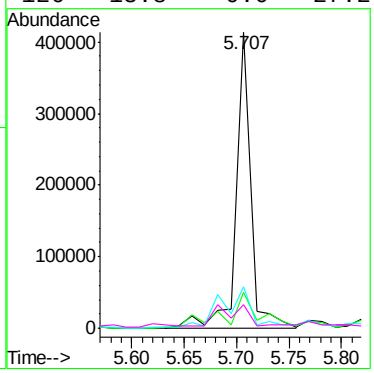
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7

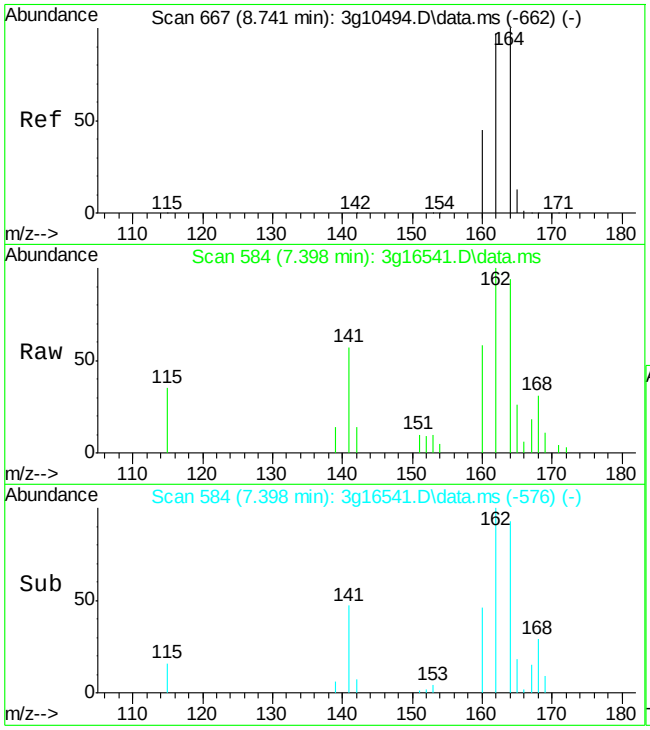


#5
Naphthalene
Concen: 6.2309 ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:128 Resp: 403589

Ion	Ratio	Lower	Upper
128	100		
129	25.6	0.0	31.2
127	27.2	0.0	32.4
126	13.8	0.0	27.2

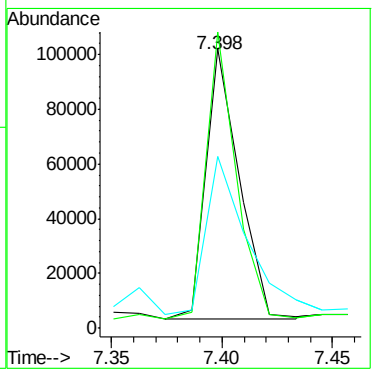


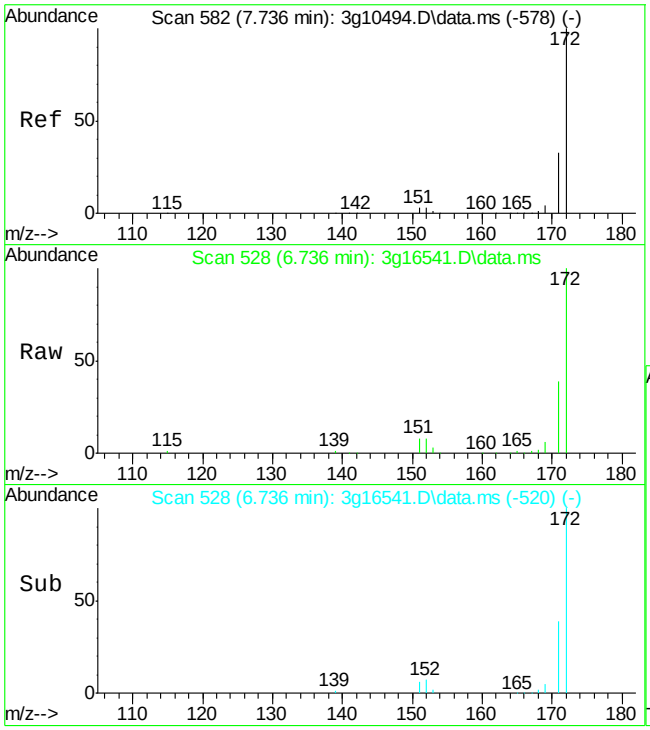


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:164 Resp: 103824

Ion	Ratio	Lower	Upper
164	100		
162	100.9	83.7	123.7
160	71.7	31.9	71.9

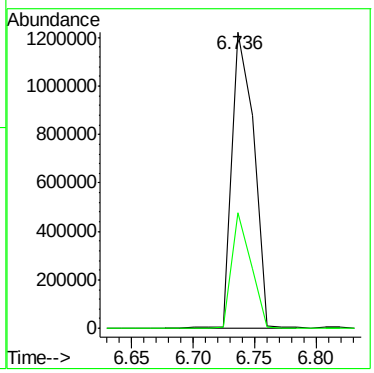


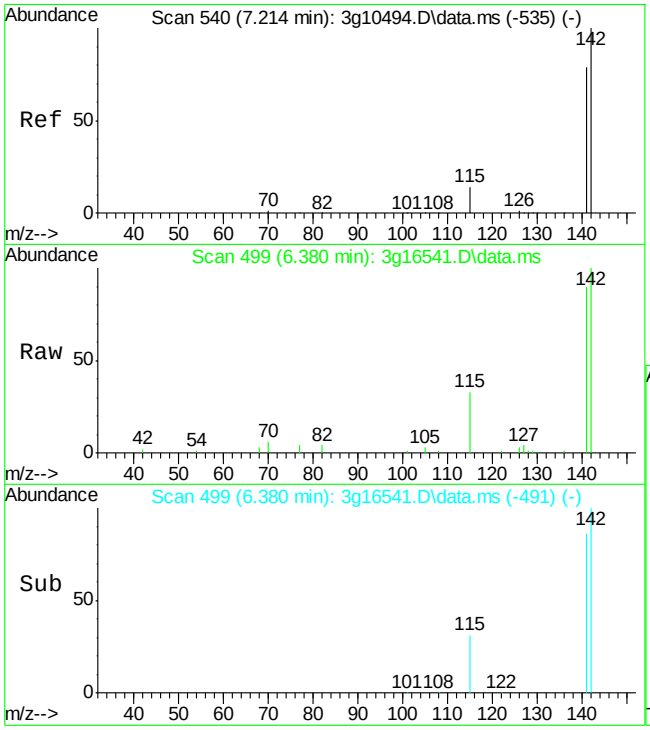


#7
2-Fluorobiphenyl
Concen: 37.3602 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:172 Resp: 1511248

Ion	Ratio	Lower	Upper
172	100		
171	34.4	12.2	52.2

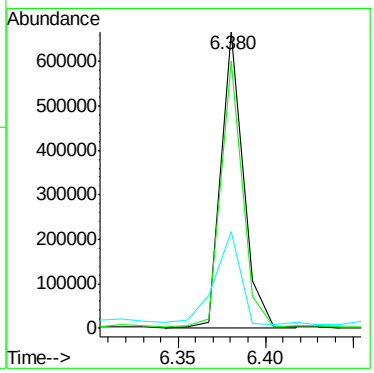


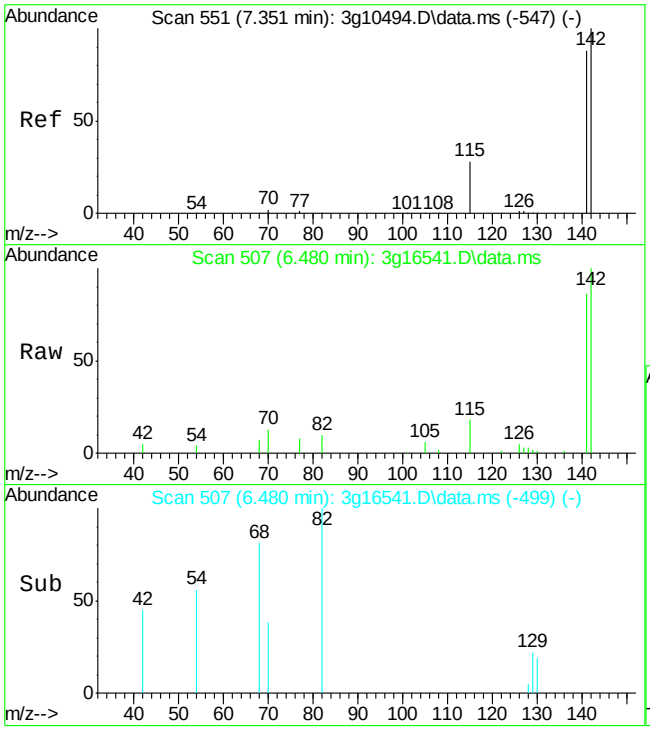


#8
2-Methylnaphthalene
Concen: 14.1266 ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:142 Resp: 589082

Ion	Ratio	Lower	Upper
142	100		
141	86.9	62.0	102.0
115	37.2	11.3	51.3

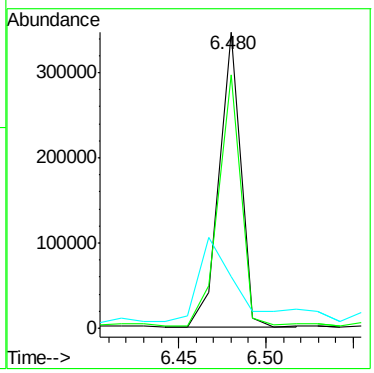


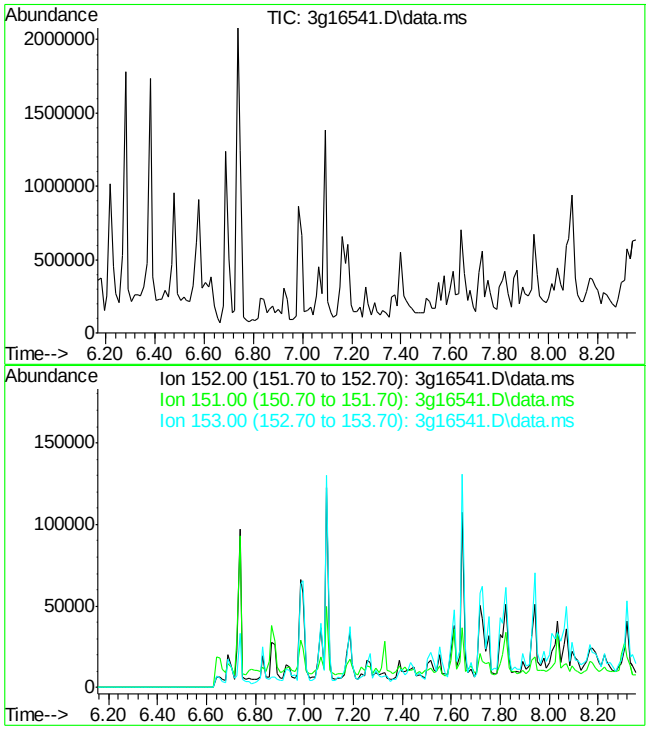


#9
1-Methylnaphthalene
Concen: 8.4510 ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:142 Resp: 298917

Ion	Ratio	Lower	Upper
142	100		
141	89.5	67.5	107.5
115	52.4	19.4	59.4



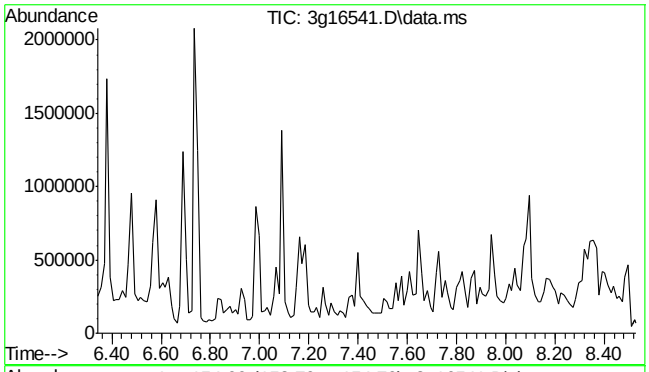


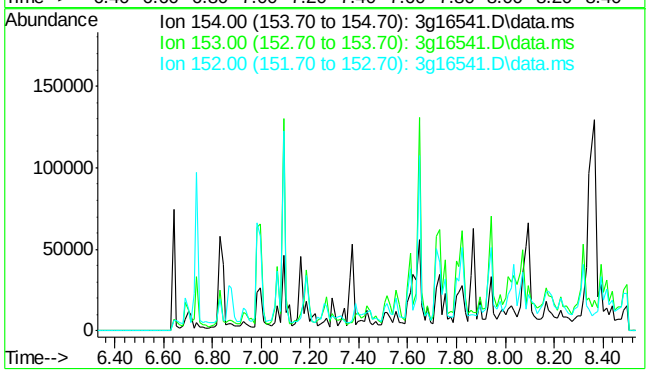
#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 7.26 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 152

Sig	Exp Ratio
152	100
151	19.2
153	12.9



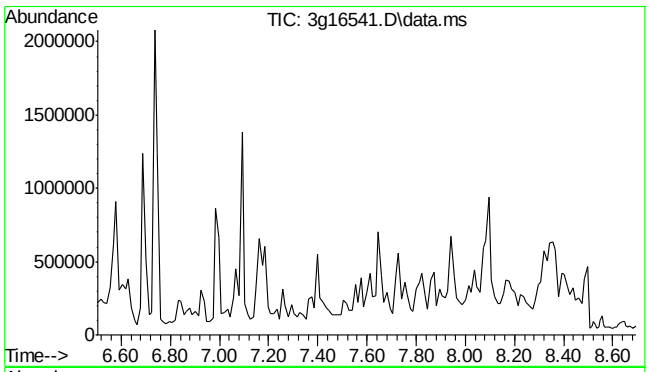


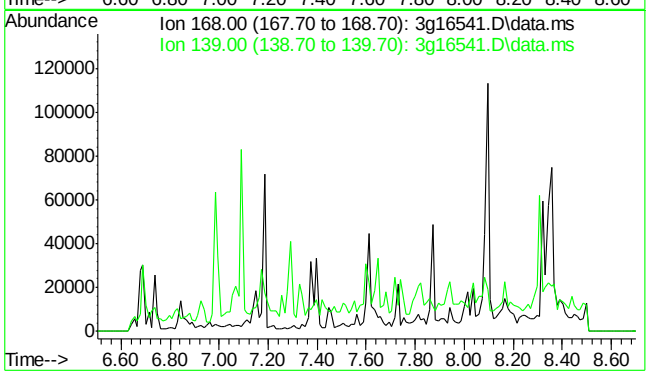
#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 7.43 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 154

Sig	Exp Ratio
154	100
153	102.4
152	50.0



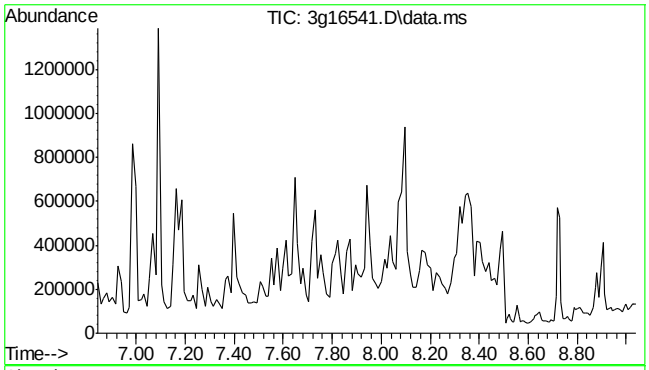


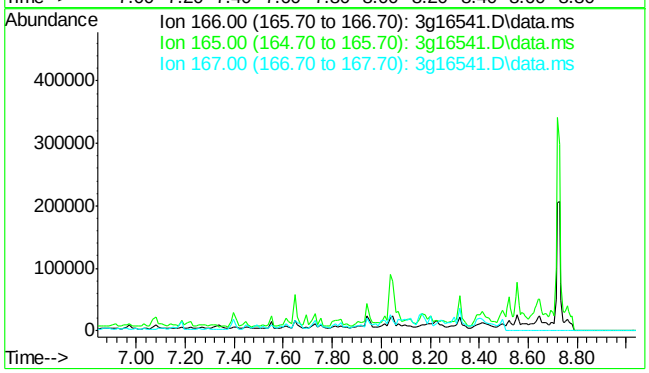
#12
Dibenzofuran
Concen: N.D. ug/mL
Expected RT: 7.60 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 168

Sig	Exp Ratio
168	100
139	33.4



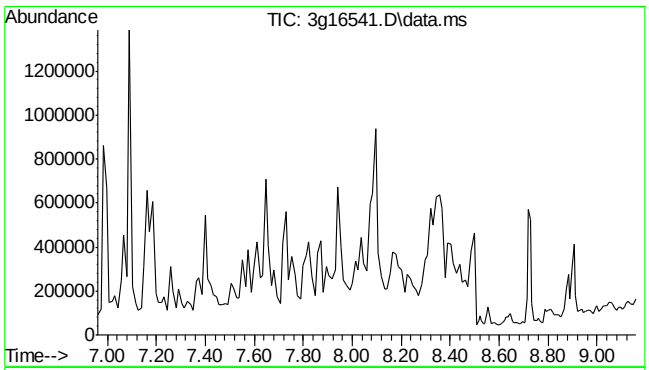


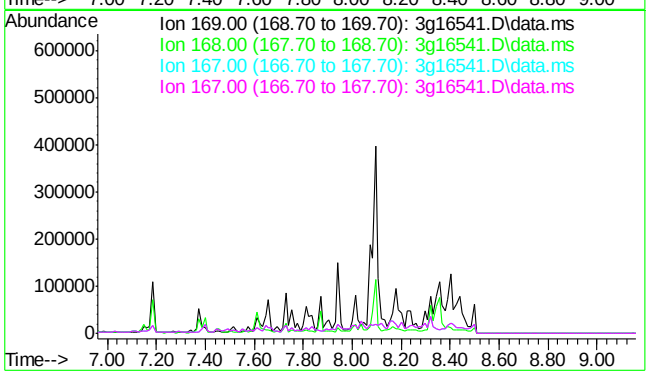
#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.94 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 166

Sig	Exp Ratio
166	100
165	92.0
167	13.1



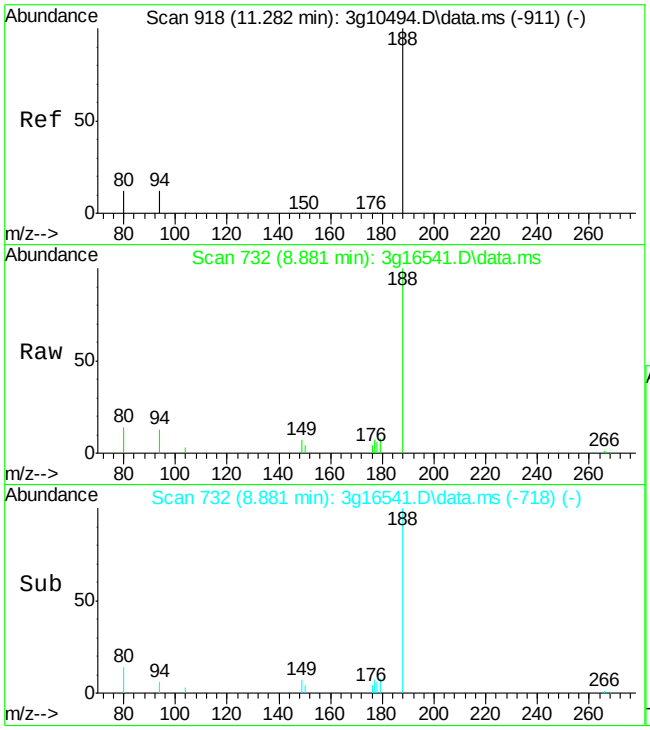


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 169

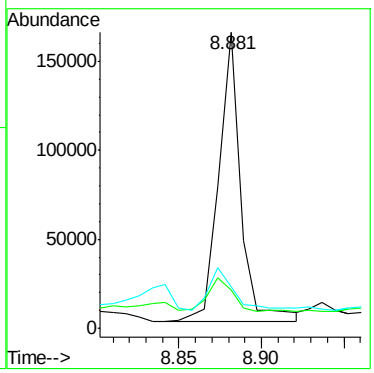
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1

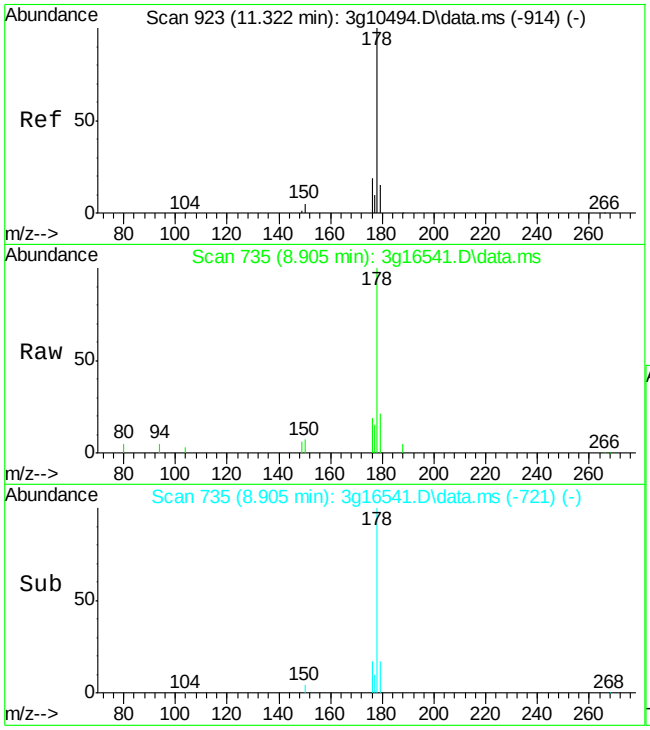


#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.881 min Scan# 732
Delta R.T. 0.009 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:188 Resp: 150047

Ion	Ratio	Lower	Upper
188	100		
94	11.5	0.0	28.3
80	18.4	0.0	27.8

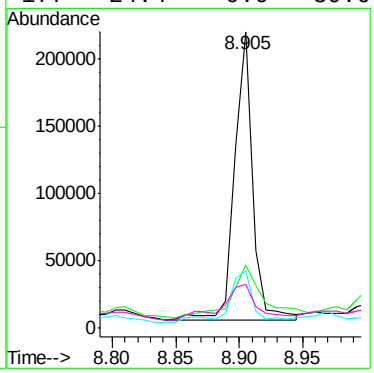


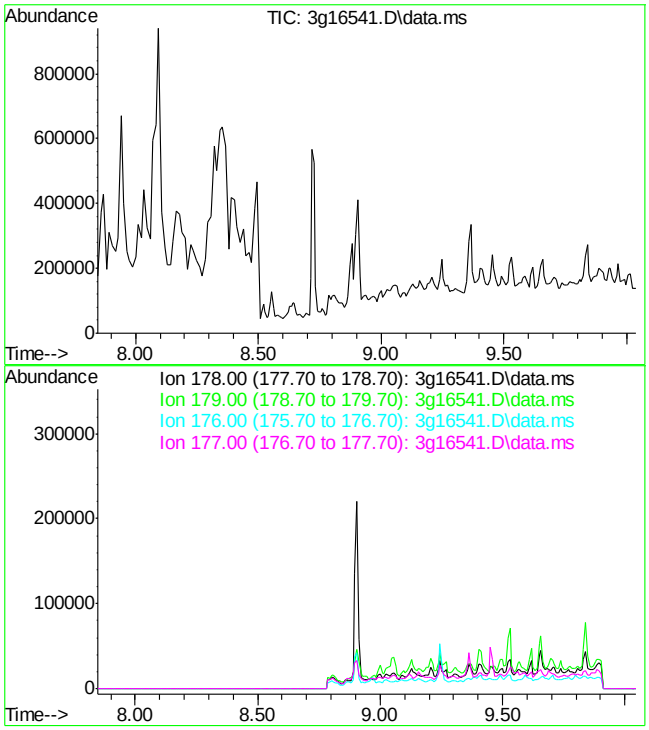


#16
Phenanthrene
Concen: 3.4878 ug/mL
RT: 8.905 min Scan# 735
Delta R.T. 0.009 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:178 Resp: 212937

Ion	Ratio	Lower	Upper
178	100		
179	33.4	0.0	35.2
176	24.6	0.0	38.6
177	24.4	0.0	30.0



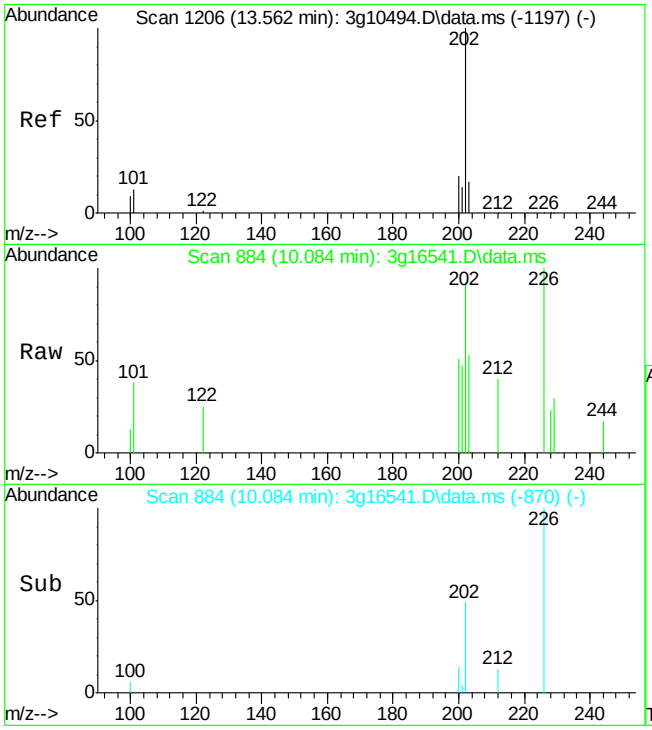


#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 178

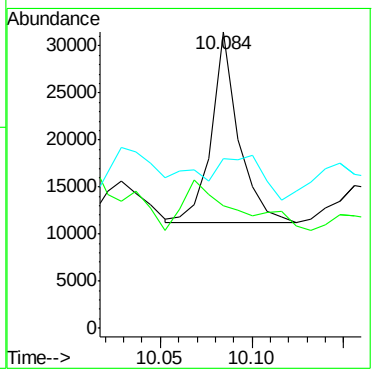
Sig	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7

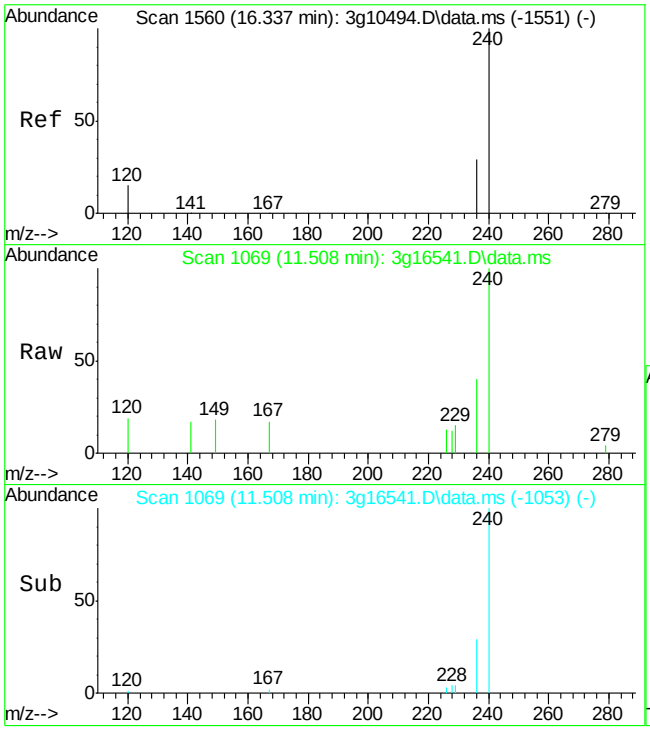


#18
Fluoranthene
Concen: 0.3464 ug/mL
RT: 10.084 min Scan# 884
Delta R.T. 0.010 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:202 Resp: 21135

Ion	Ratio	Lower	Upper
202	100		
101	50.5	0.0	32.6#
203	34.3	0.0	37.4

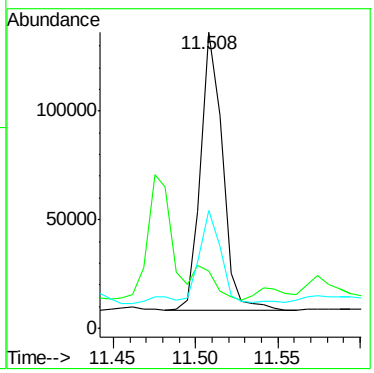


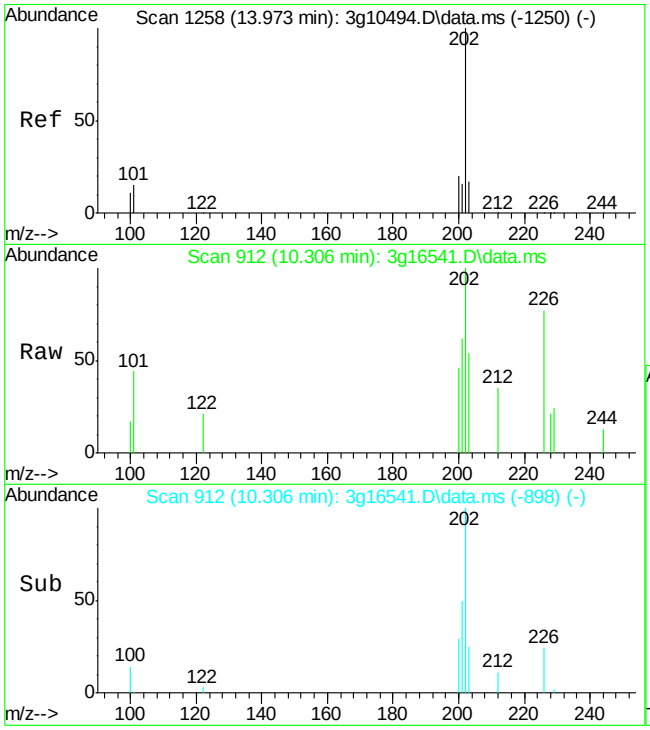


#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.508 min Scan# 1069
Delta R.T. 0.007 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:240 Resp: 117598

Ion	Ratio	Lower	Upper
240	100		
120	6.3	0.2	40.2
236	35.9	8.8	48.8

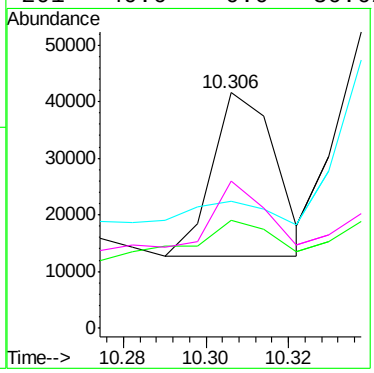


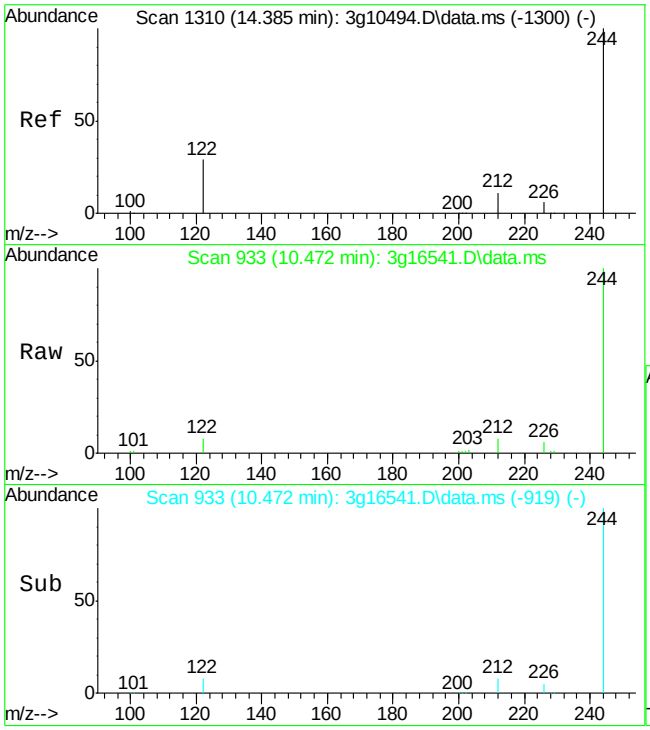


#20
Pyrene
Concen: 0.5583 ug/mL
RT: 10.306 min Scan# 912
Delta R.T. 0.009 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:202 Resp: 30681

Ion	Ratio	Lower	Upper
202	100		
200	32.7	0.2	40.2
203	57.3	0.0	37.8#
201	40.6	0.0	36.6#

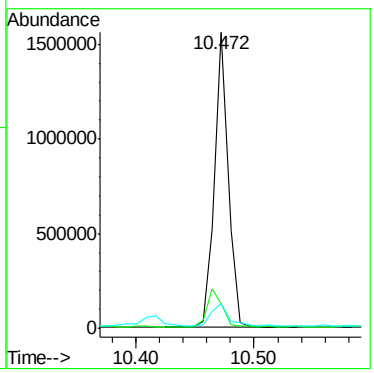


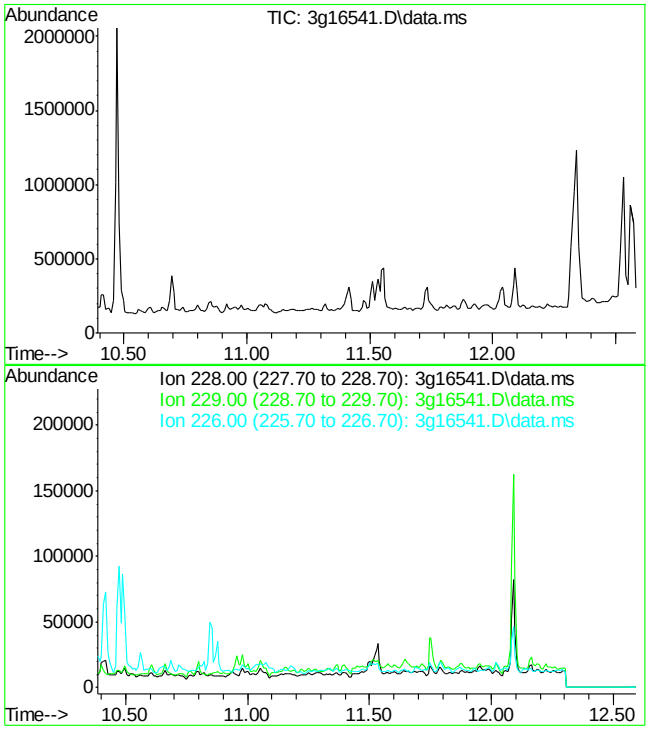


#21
Terphenyl-d14
Concen: 56.7024 ug/mL
RT: 10.472 min Scan# 933
Delta R.T. 0.009 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:244 Resp: 1261635

Ion	Ratio	Lower	Upper
244	100		
122	13.9	7.8	47.8
212	10.1	0.0	32.8



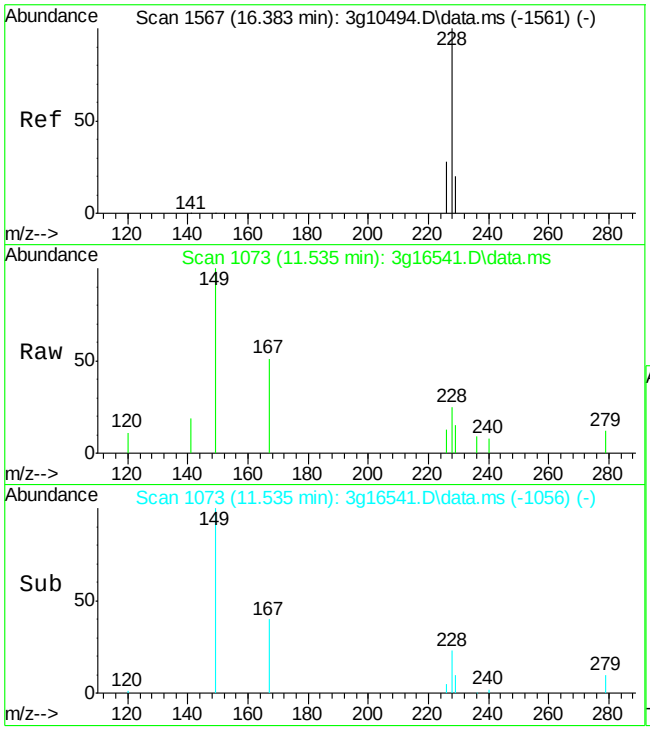


#22
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 11.49 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 228

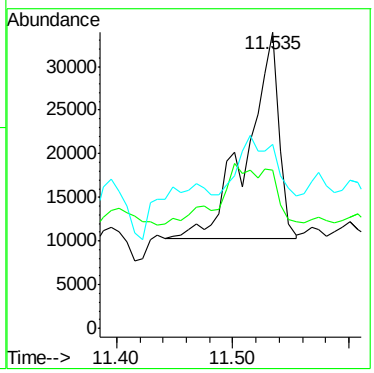
Sig	Exp Ratio
228	100
229	19.4
226	26.6

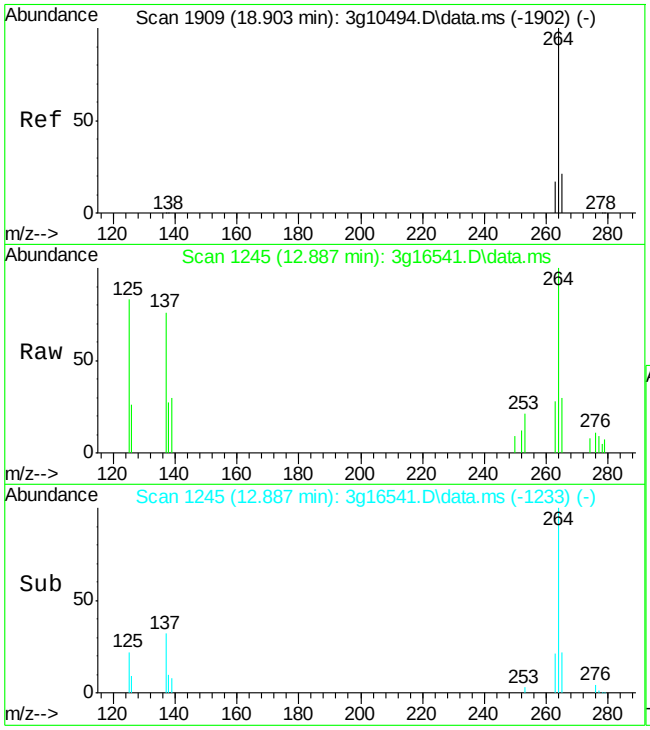


#23
Chrysene
Concen: 0.8558 ug/mL
RT: 11.535 min Scan# 1073
Delta R.T. 0.013 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:228 Resp: 45336

Ion	Ratio	Lower	Upper
228	100		
226	45.5	8.6	48.6
229	31.8	0.0	39.4

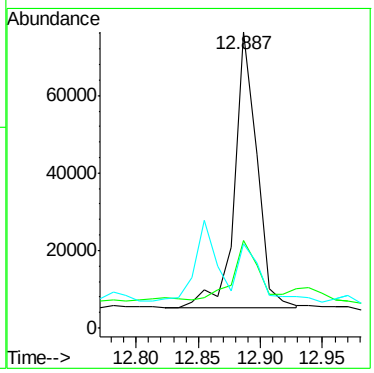


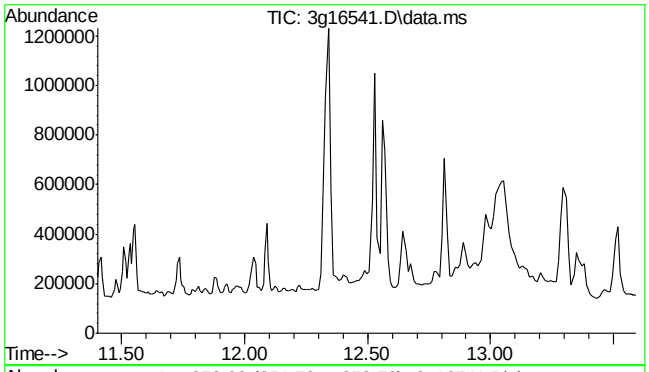


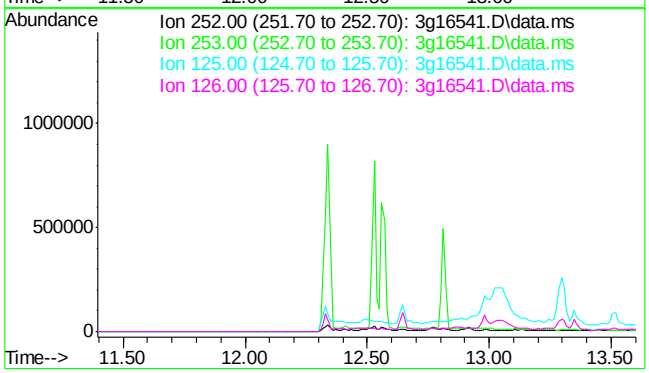
#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.887 min Scan# 1245
Delta R.T. 0.021 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:264 Resp: 89349

Ion	Ratio	Lower	Upper
264	100		
265	24.4	1.2	41.2
263	16.5	0.7	40.7





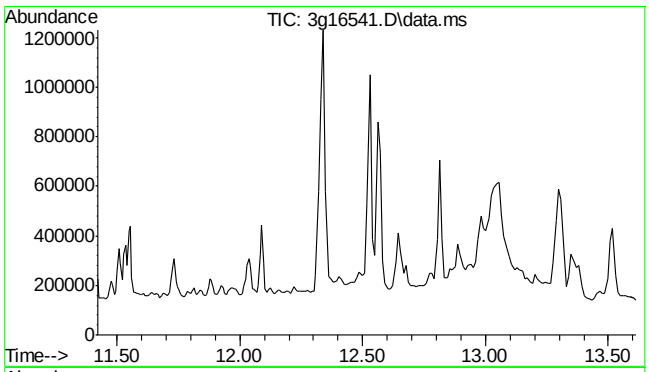


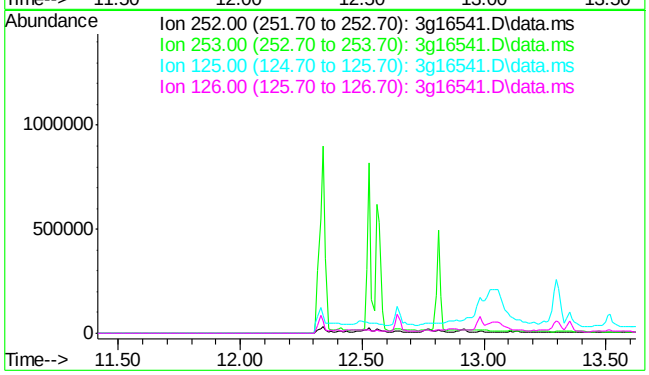
#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9



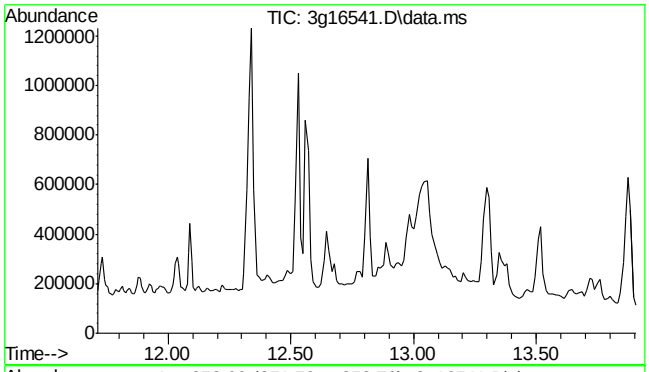


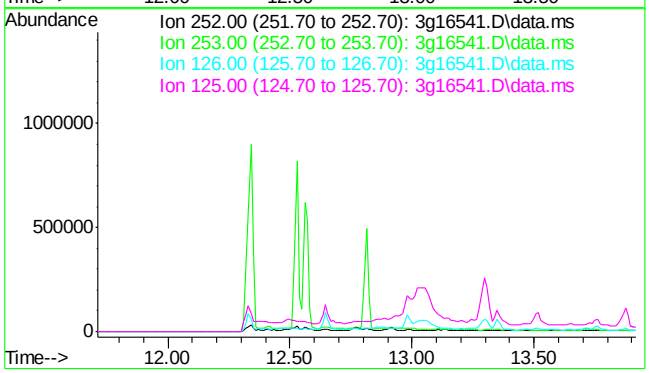
#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1



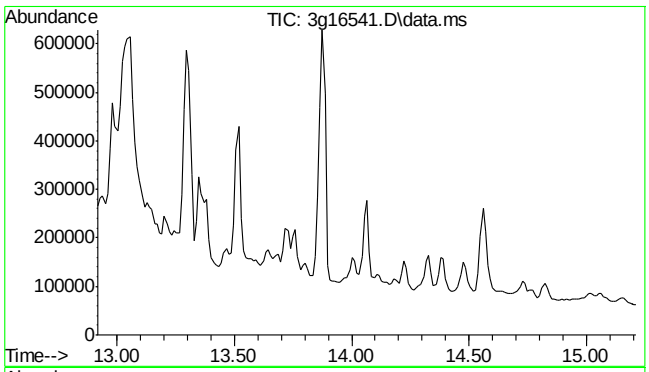


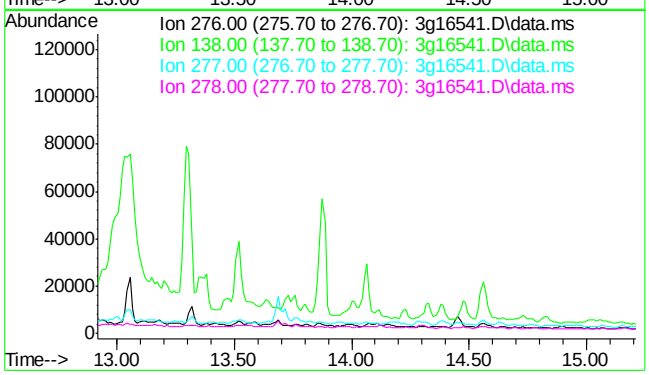
#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5



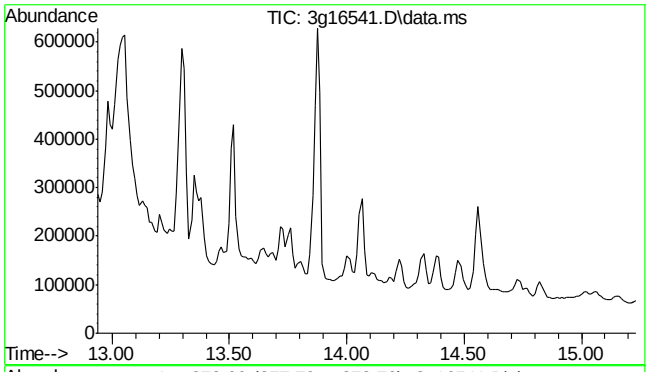


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	40.0
277	24.8
278	76.2

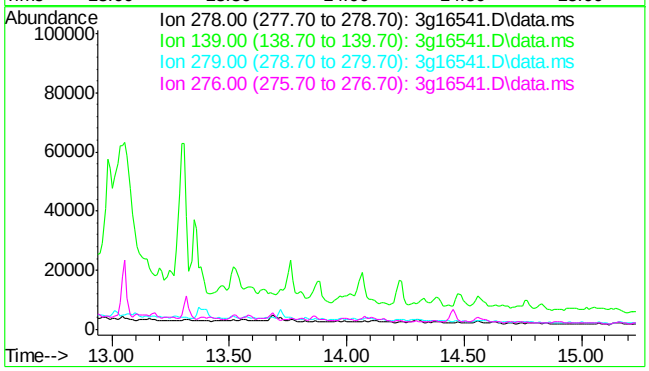


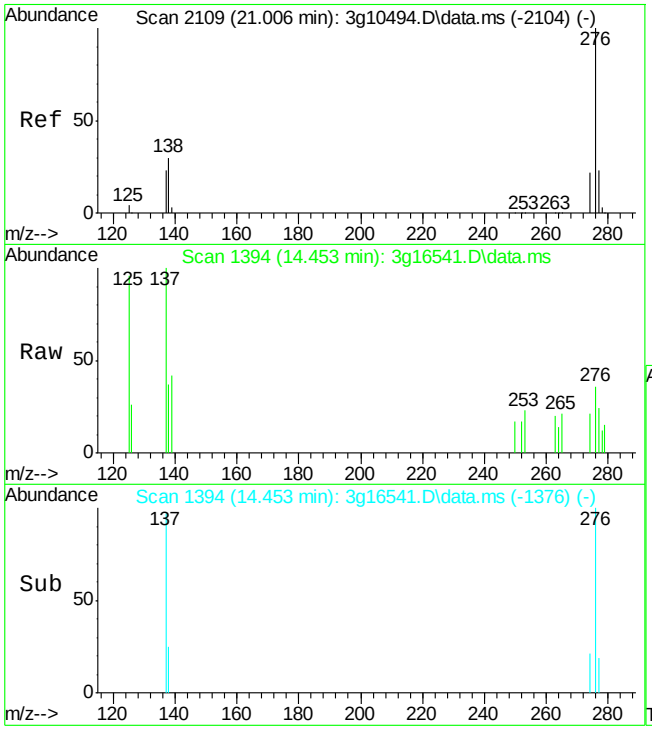
#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion: 278

Sig	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2

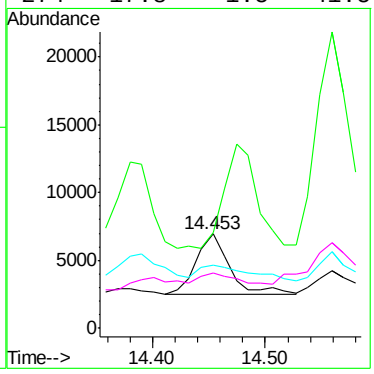




#30
Benzo(g,h,i)perylene
Concen: 0.2656 ug/mL
RT: 14.453 min Scan# 1394
Delta R.T. 0.042 min
Lab File: 3g16541.D
Acq: 3 Oct 13 10:30 pm

Tgt Ion:276 Resp: 9194

Ion	Ratio	Lower	Upper
276	100		
138	168.3	15.1	55.1#
277	39.4	3.3	43.3
274	17.8	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

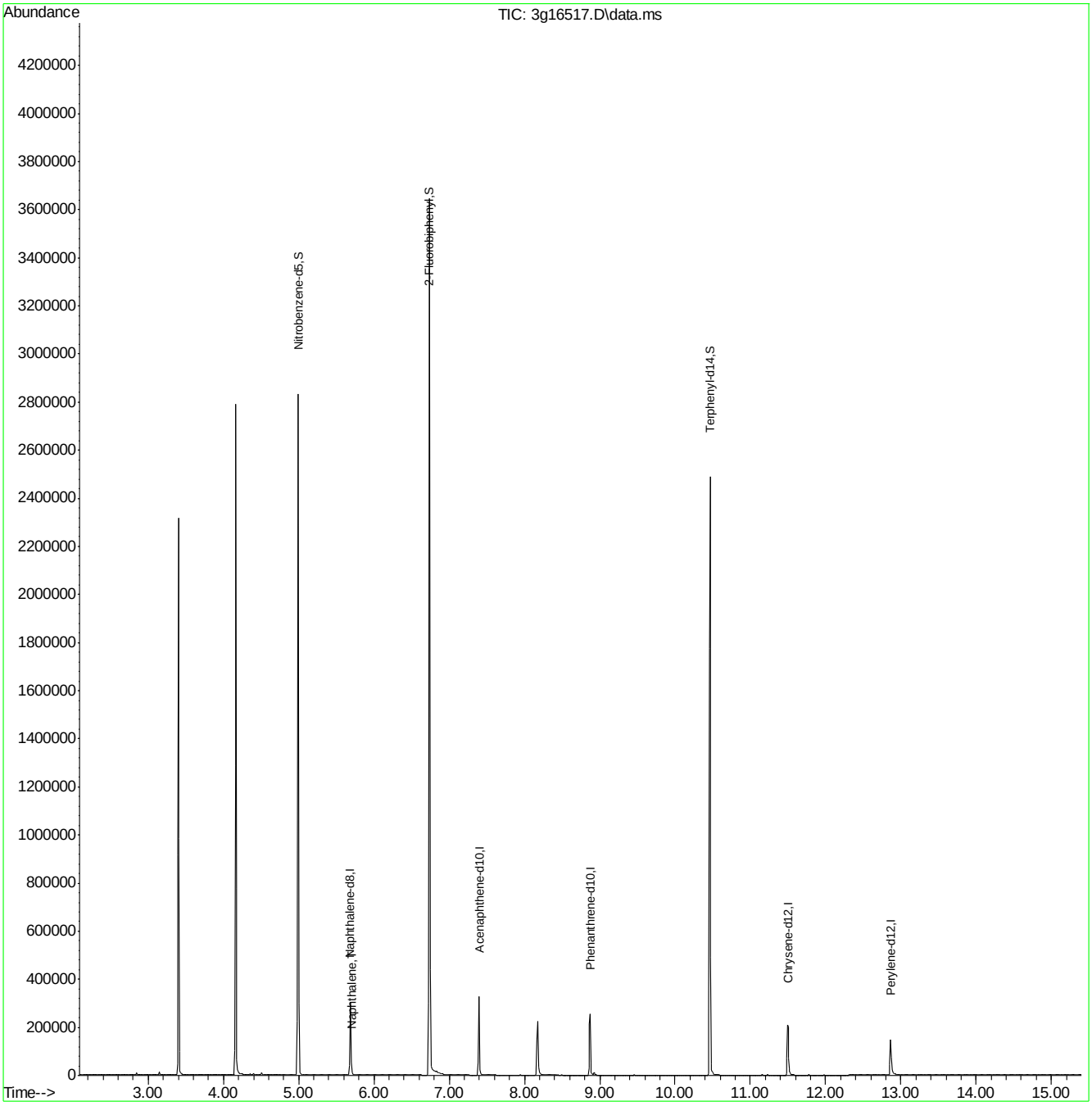
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.682	136	217864	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	117785	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.873	188	188996	4.0000	ug/mL	0.00
19) Chrysene-d12	11.501	240	166287	4.0000	ug/mL	0.00
24) Perylene-d12	12.865	264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

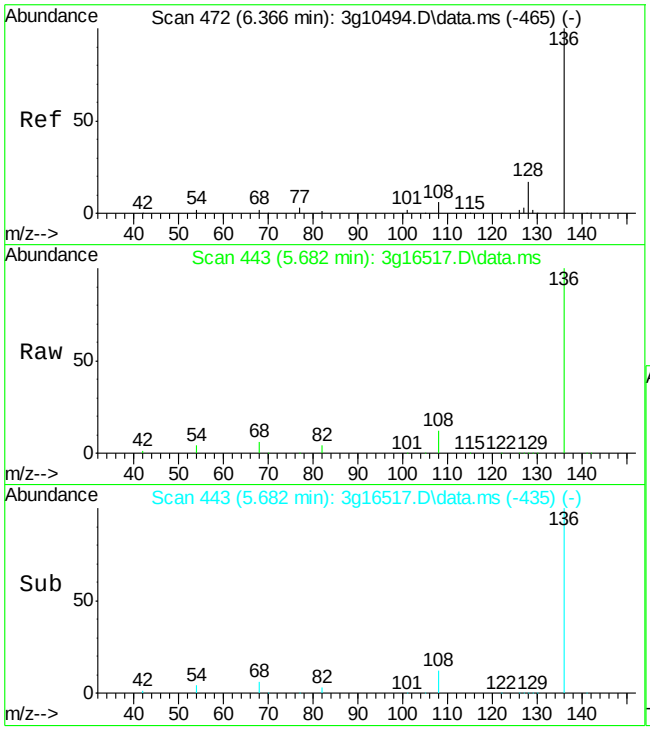
(#) = qualifier out of range (m) = manual integration (+) = signals summed

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

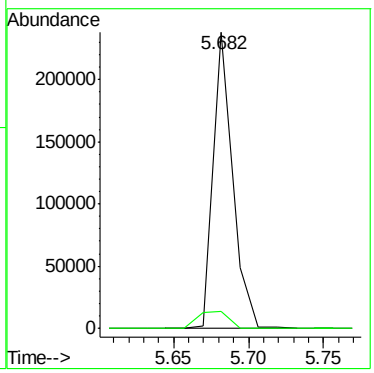


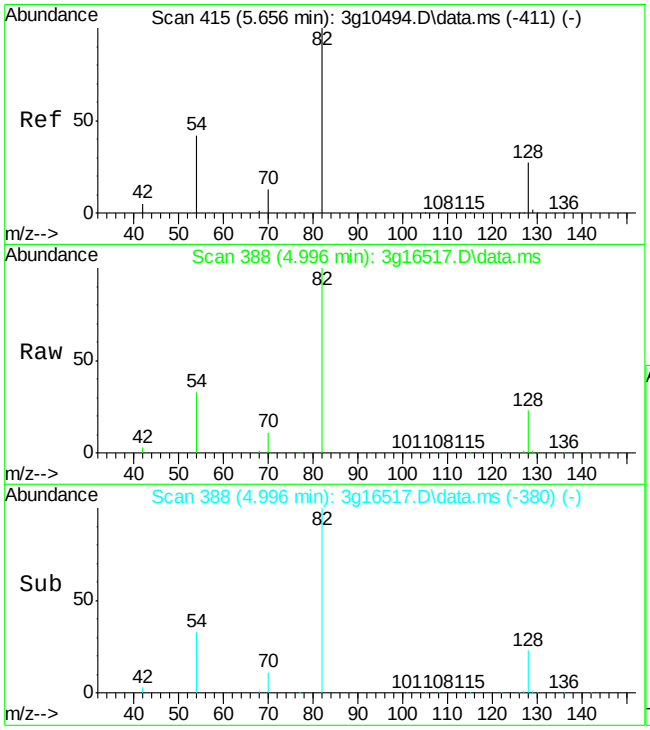


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:136 Resp: 217864

Ion	Ratio	Lower	Upper
136	100		
68	8.8	0.0	21.1

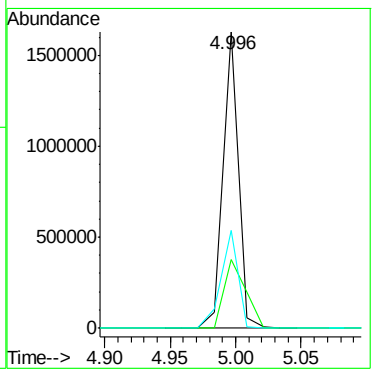


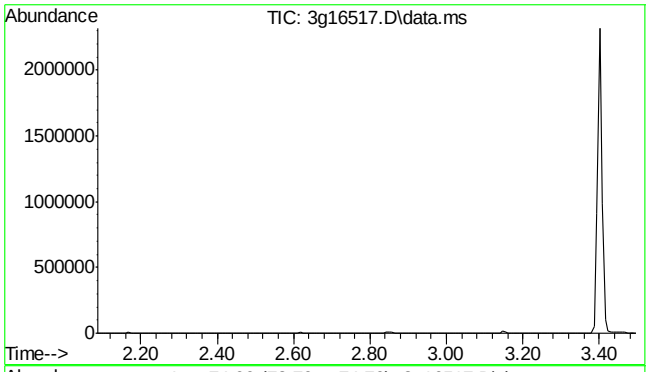


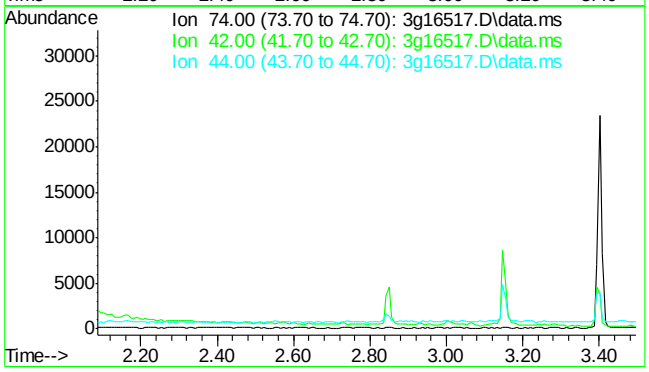
#2
Nitrobenzene-d5
Concen: 48.5730 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

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#





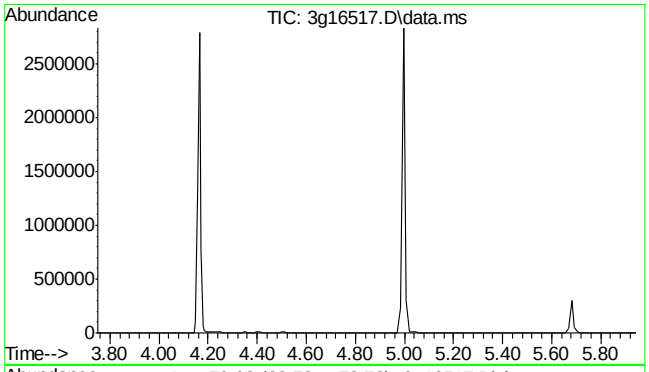


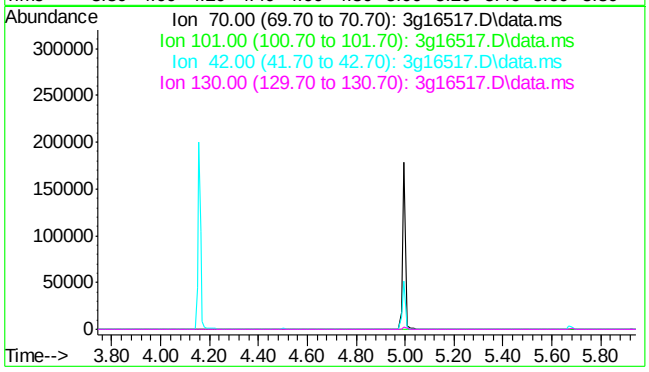
#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.40 min

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



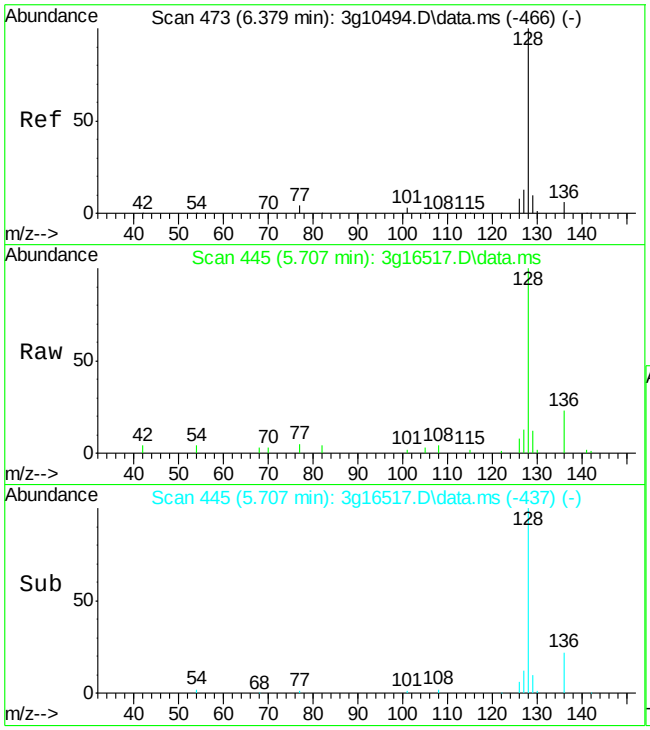


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

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

Tgt Ion: 70

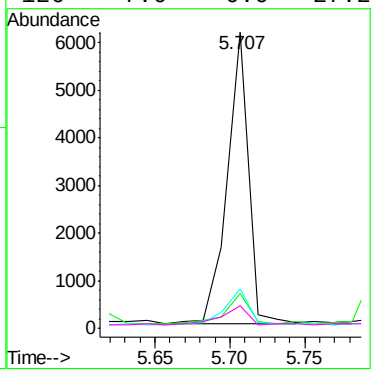
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7

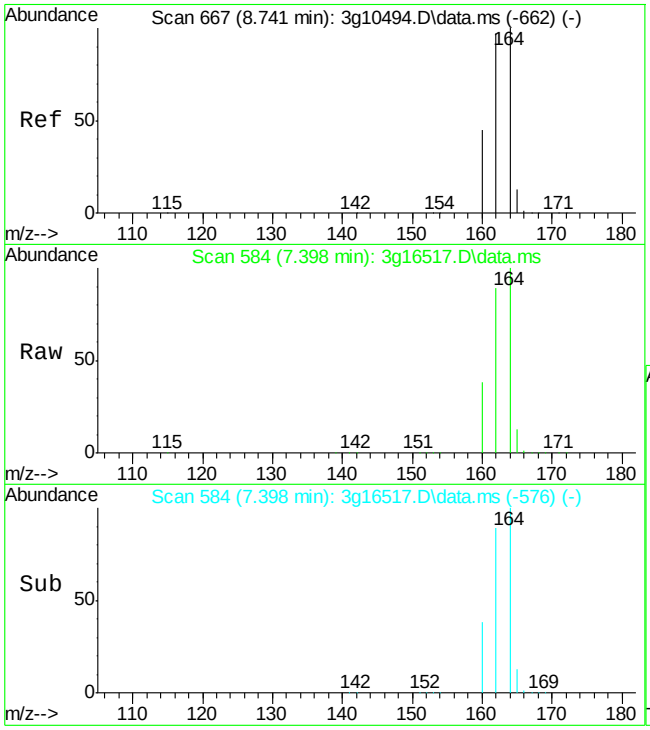


#5
Naphthalene
Concen: 0.0773 ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:128 Resp: 6089

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

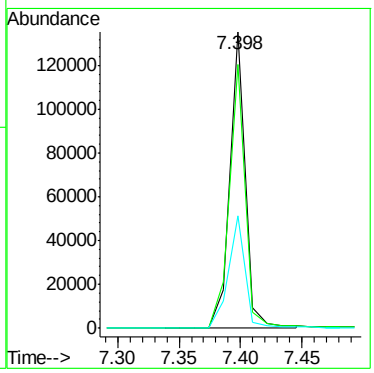


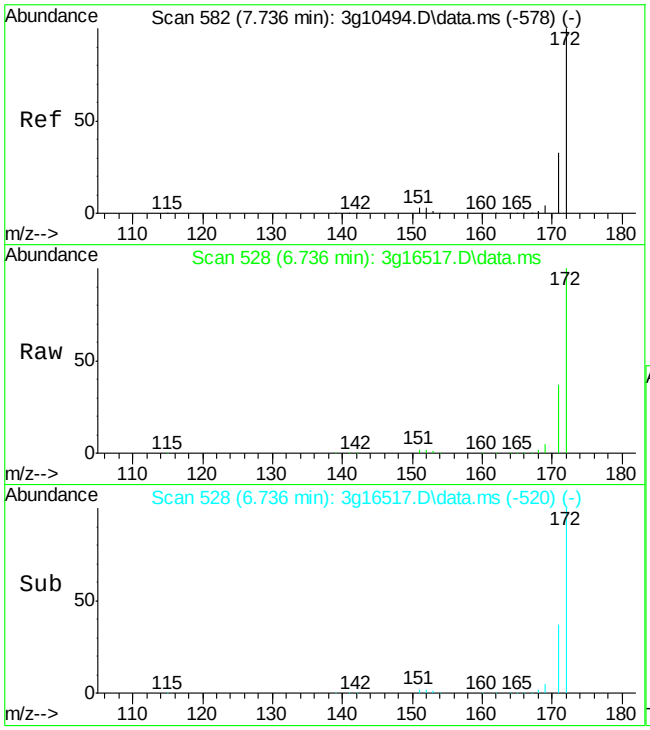


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:164 Resp: 117785

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

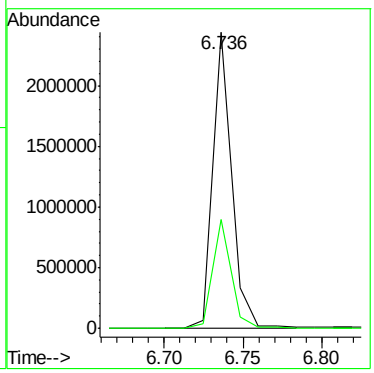


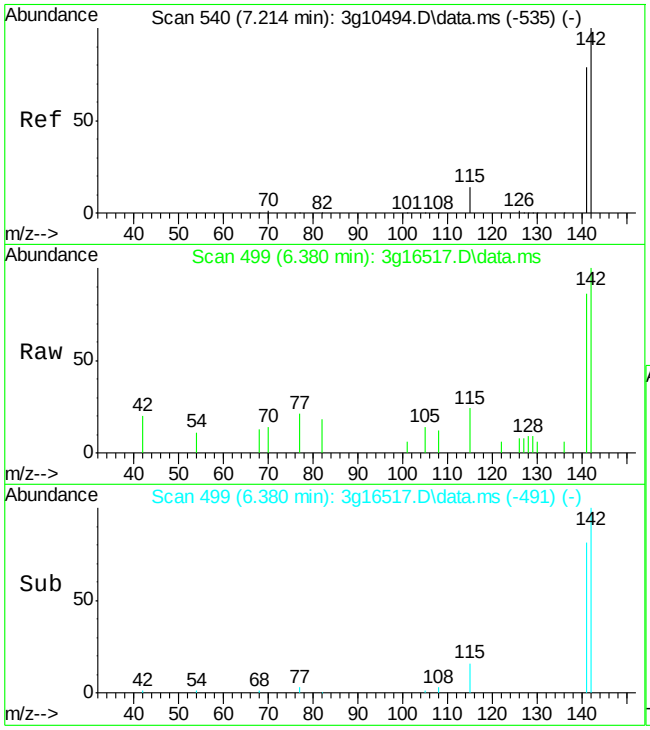


#7
2-Fluorobiphenyl
Concen: 44.6998 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:172 Resp: 2051275

Ion	Ratio	Lower	Upper
172	100		
171	36.0	12.2	52.2

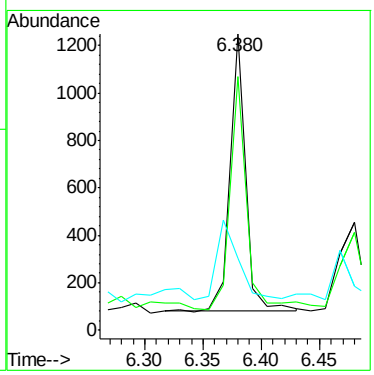


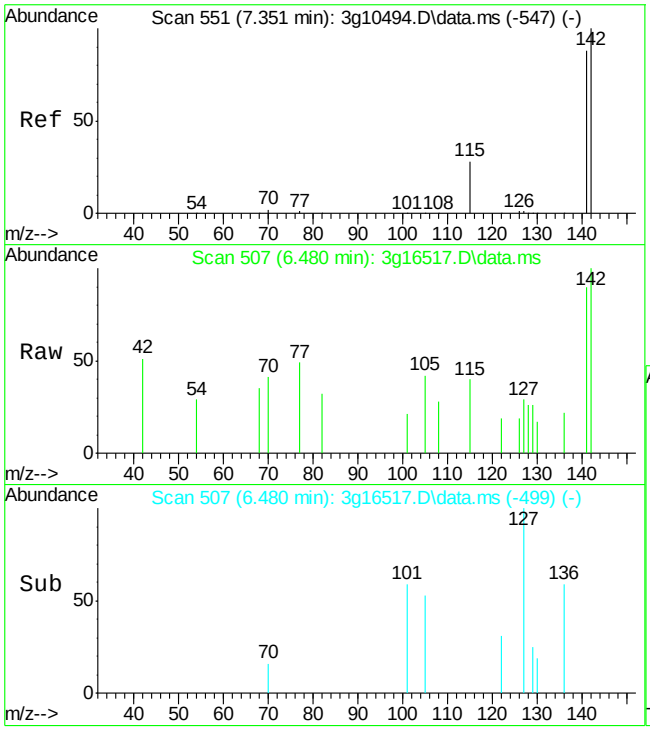


#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:142 Resp: 1089

Ion	Ratio	Lower	Upper
142	100		
141	86.3	62.0	102.0
115	39.8	11.3	51.3

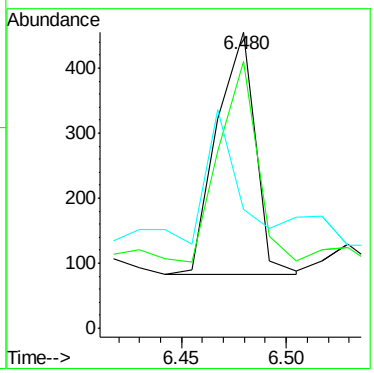


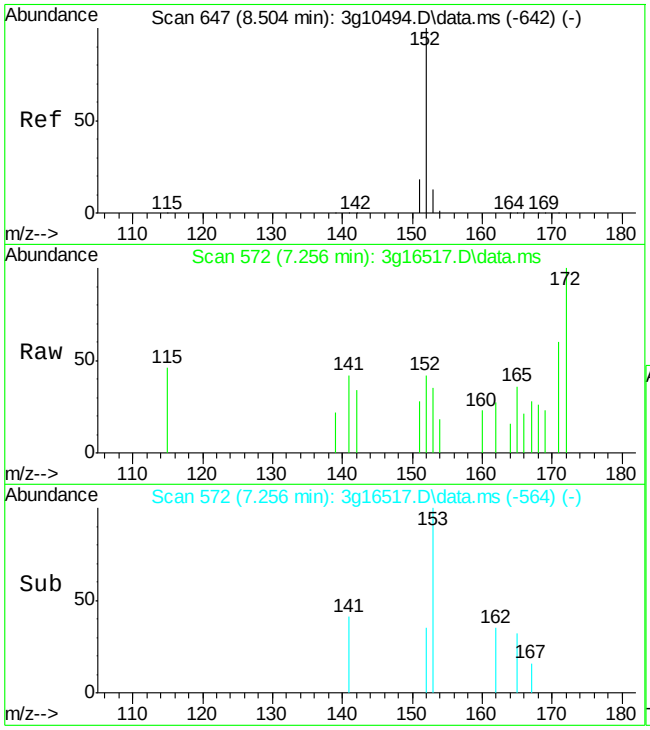


#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:142 Resp: 479

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

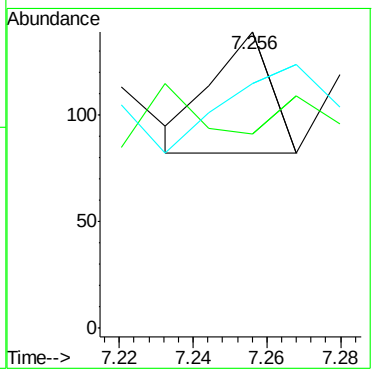


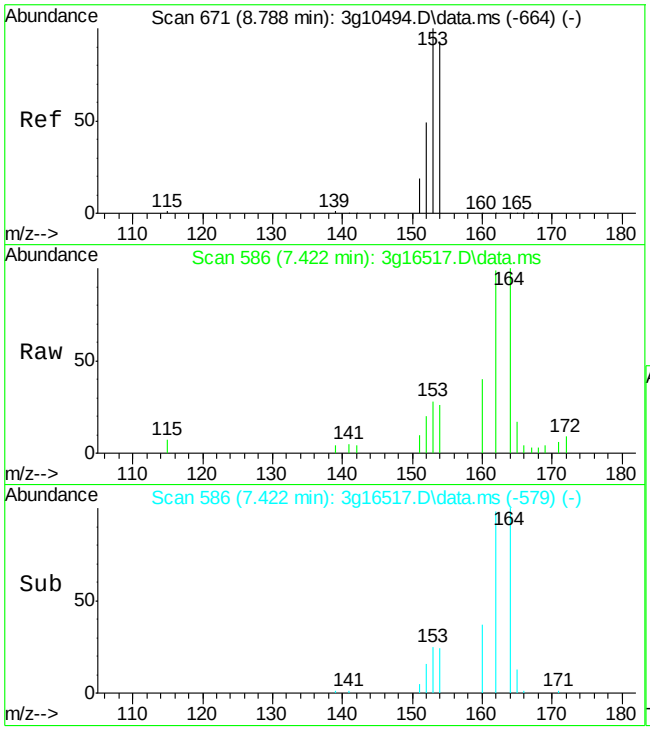


#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.256 min Scan# 572
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:152 Resp: 63

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

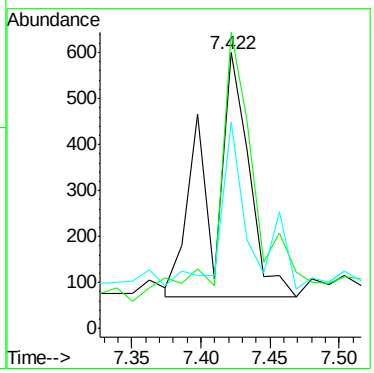


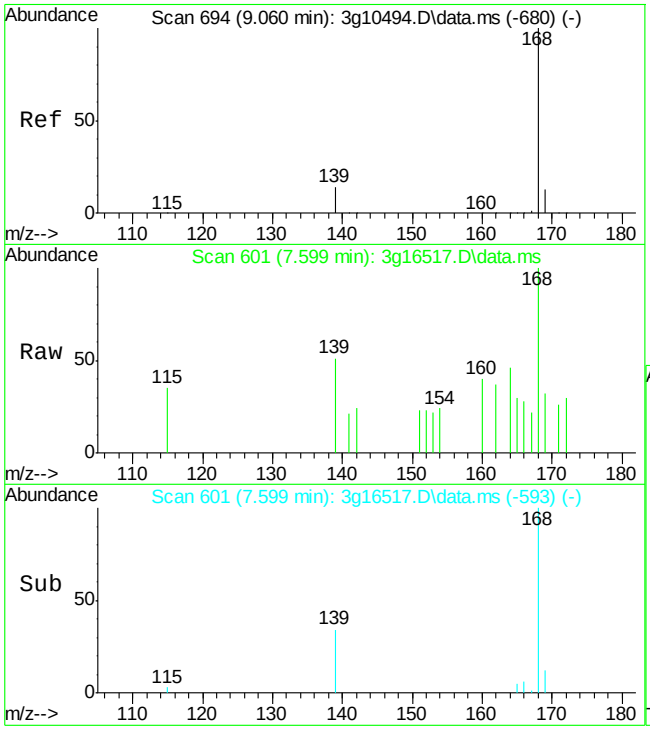


#11
Acenaphthene
Concen: Below ug/mL
RT: 7.422 min Scan# 586
Delta R.T. -0.012 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:154 Resp: 1060

Ion	Ratio	Lower	Upper
154	100		
153	82.0	82.4	122.4#
152	37.2	30.0	70.0

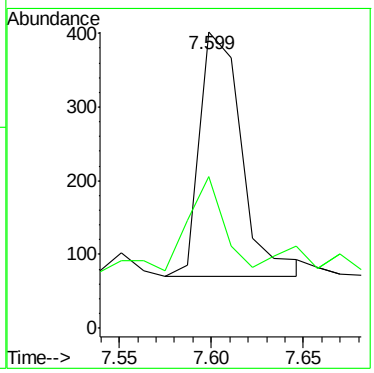


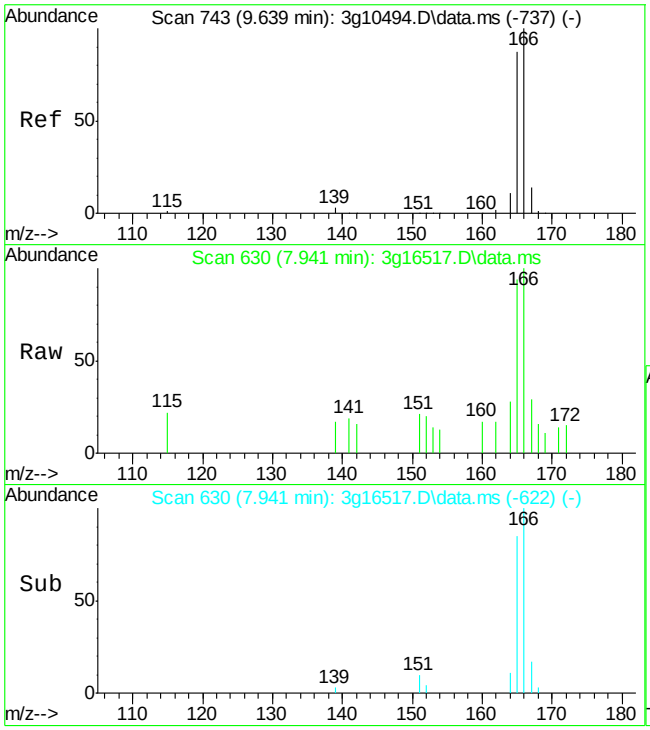


#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.599 min Scan# 601
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:168 Resp: 528

Ion	Ratio	Lower	Upper
168	100		
139	36.7	13.4	53.4

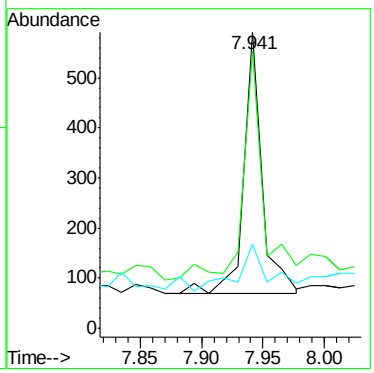


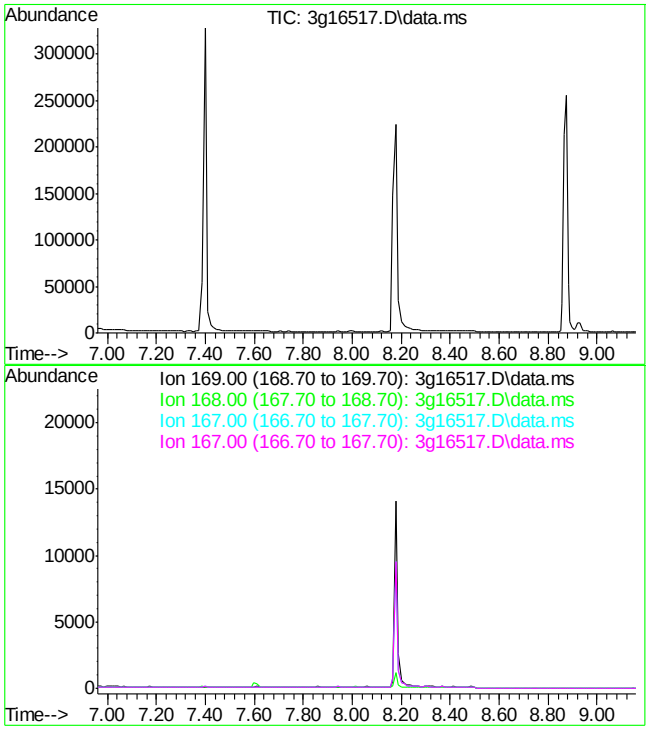


#13
Fluorene
Concen: Below ug/mL
RT: 7.941 min Scan# 630
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:166 Resp: 540

Ion	Ratio	Lower	Upper
166	100		
165	95.4	72.0	112.0
167	31.3	0.0	33.1



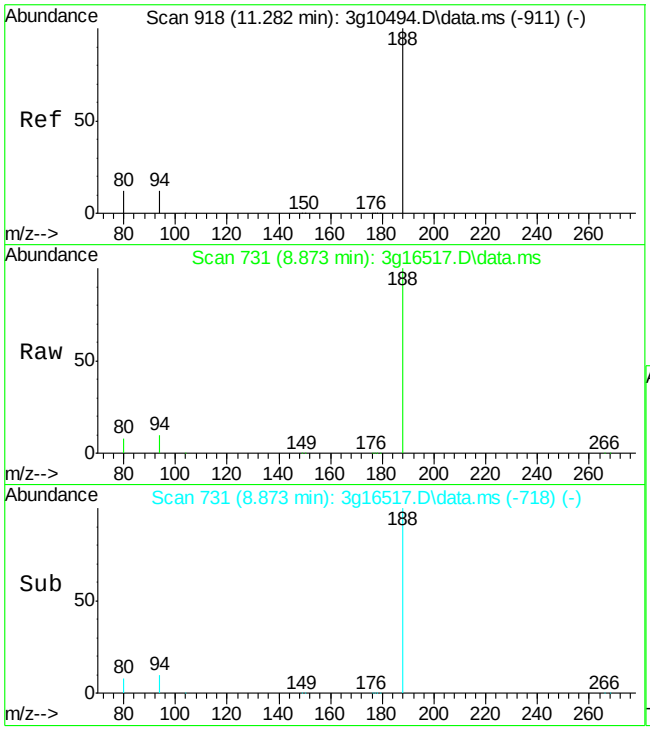


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

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

Tgt Ion: 169

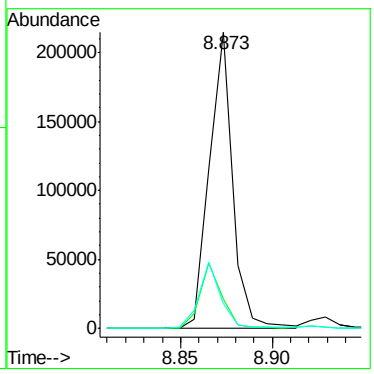
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1

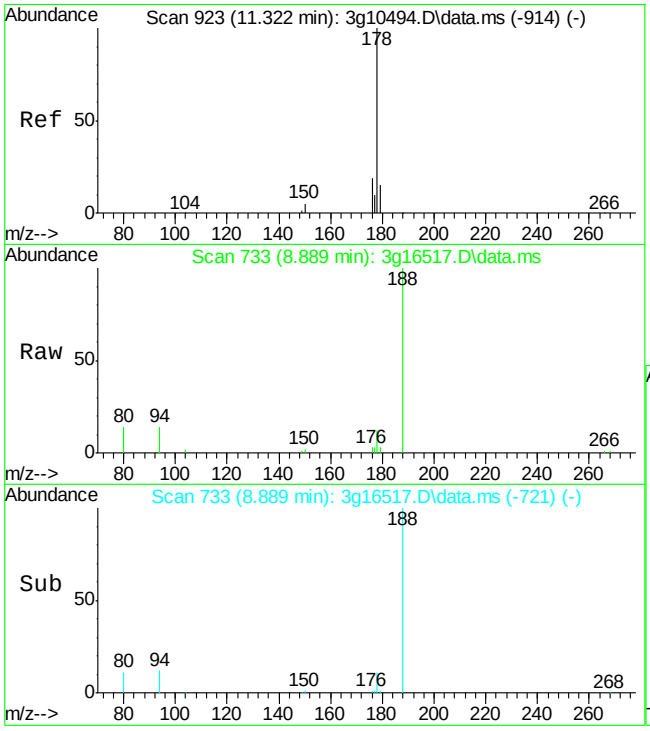


#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.873 min Scan# 731
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:188 Resp: 188996

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

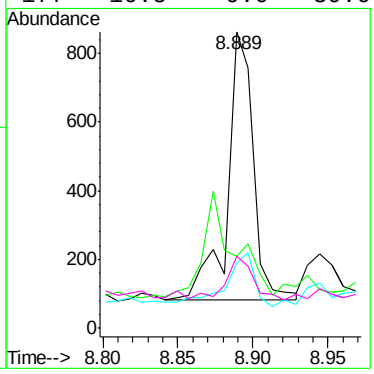


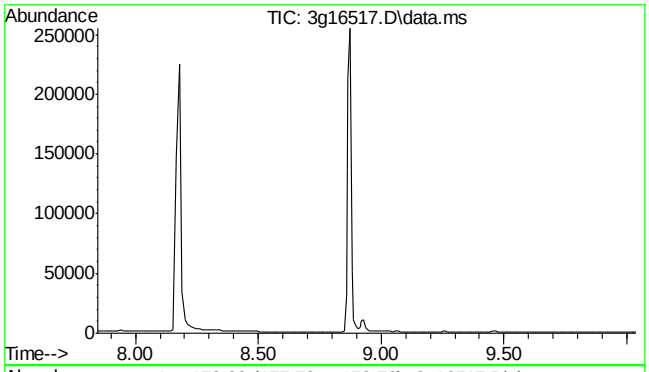


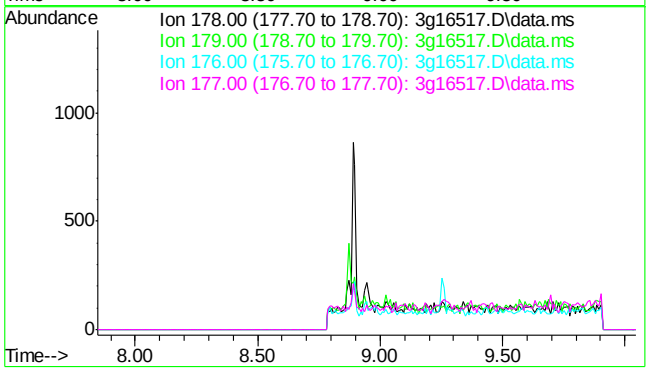
#16
Phenanthrene
Concen: Below ug/mL
RT: 8.889 min Scan# 733
Delta R.T. -0.007 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:178 Resp: 943

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





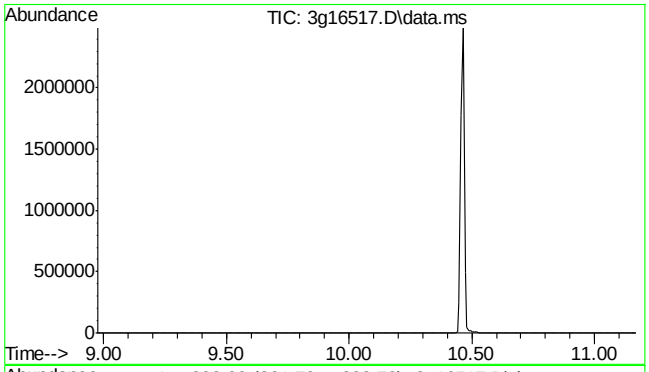


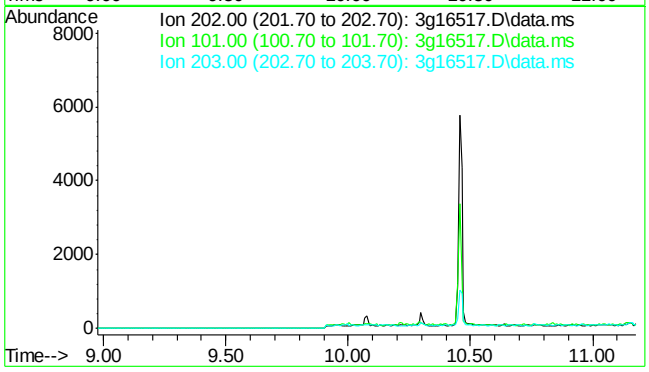
#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

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

Tgt Ion: 178

Sig	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7



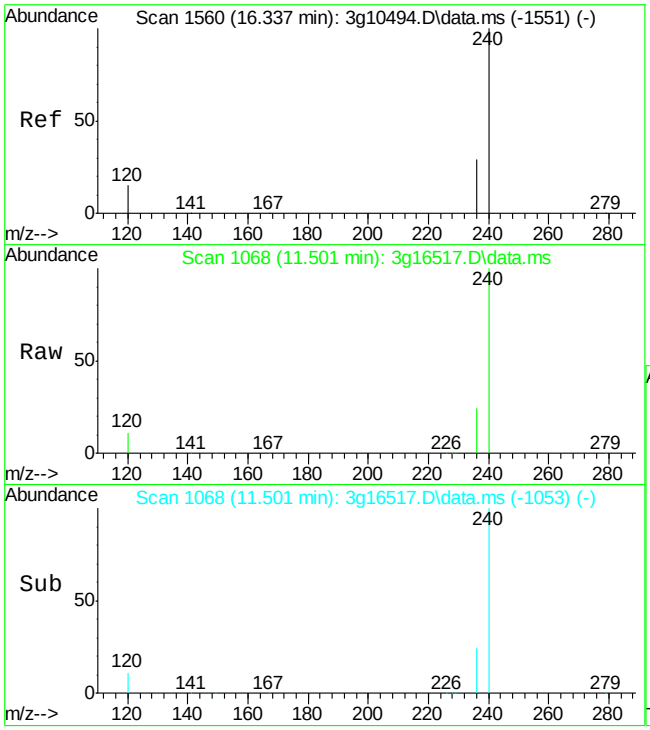


#18
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 10.07 min

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

Tgt Ion: 202

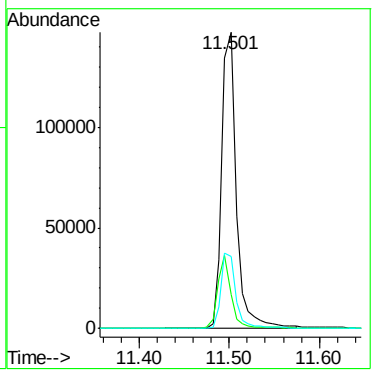
Sig	Exp Ratio
202	100
101	12.6
203	17.4

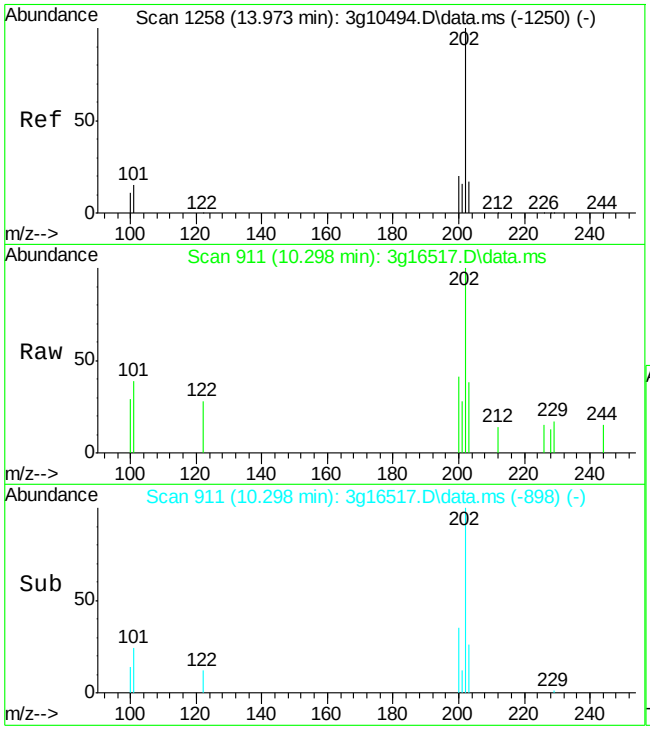


#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.501 min Scan# 1068
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:240 Resp: 166287

Ion	Ratio	Lower	Upper
240	100		
120	22.3	0.2	40.2
236	25.7	8.8	48.8

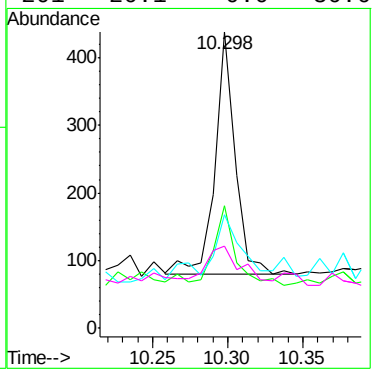


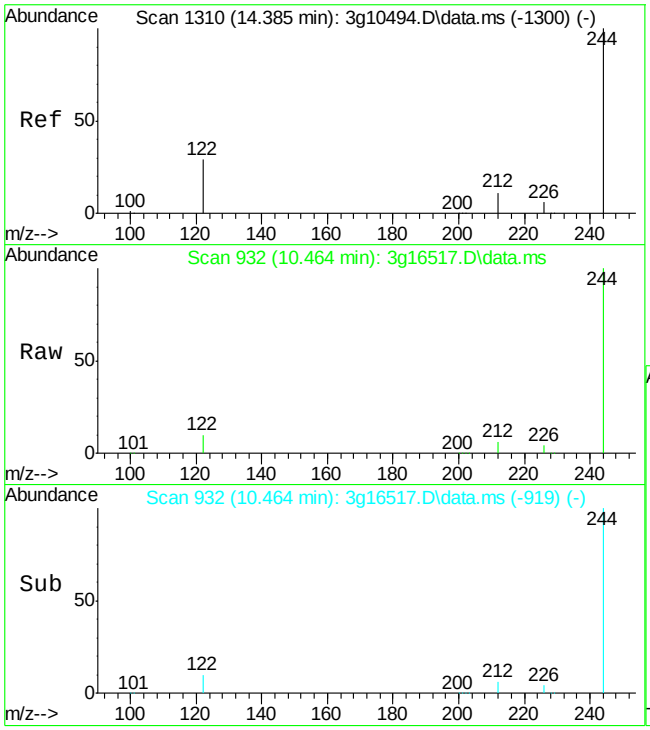


#20
Pyrene
Concen: Below ug/mL
RT: 10.298 min Scan# 911
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:202 Resp: 337

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

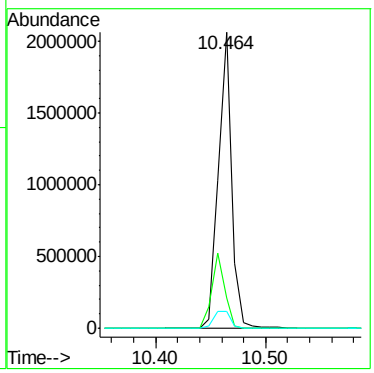


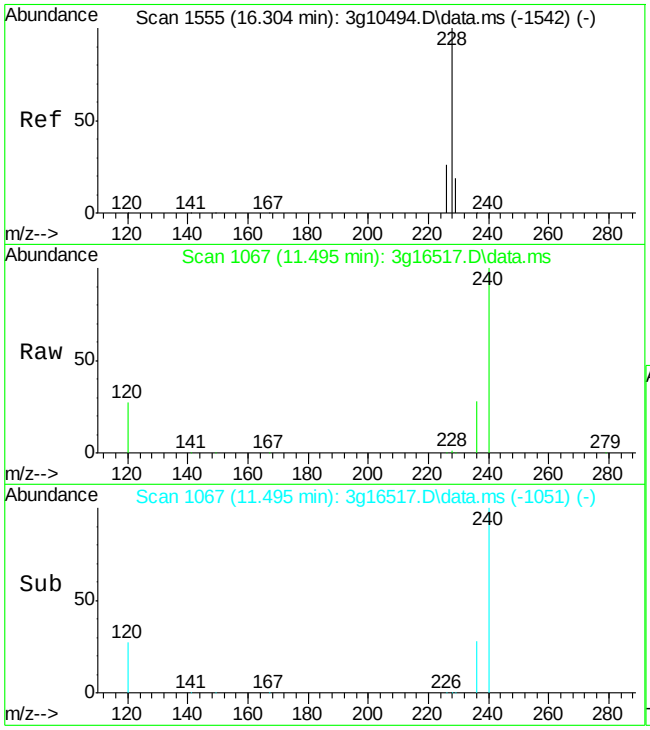


#21
Terphenyl-d14
Concen: 55.7722 ug/mL
RT: 10.464 min Scan# 932
Delta R.T. 0.001 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:244 Resp: 1754721

Ion	Ratio	Lower	Upper
244	100		
122	24.9	7.8	47.8
212	7.3	0.0	32.8

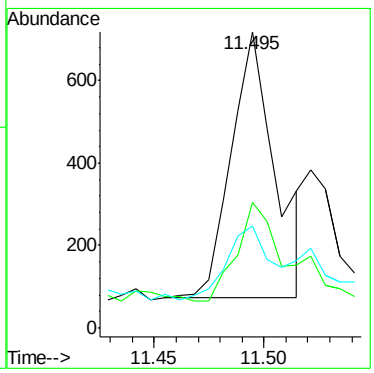


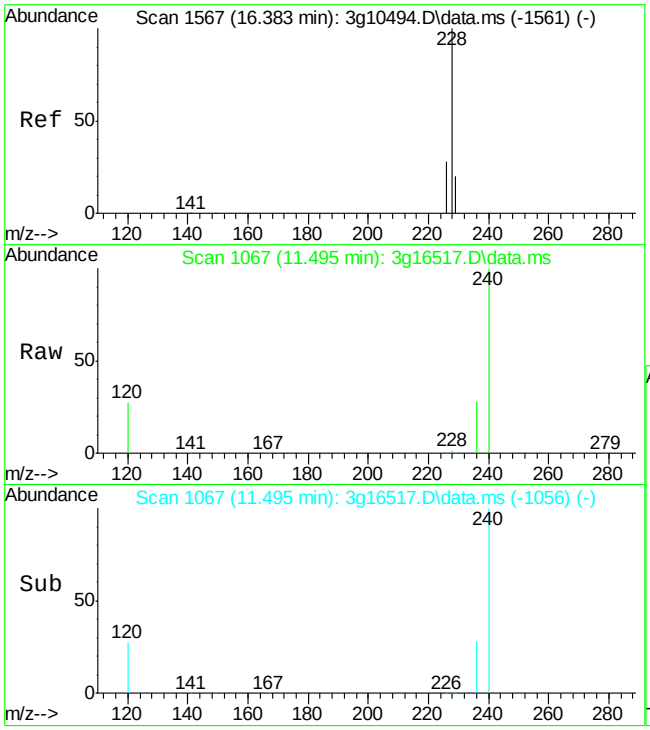


#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. 0.007 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:228 Resp: 896

Ion	Ratio	Lower	Upper
228	100		
229	43.1	0.0	39.4#
226	27.5	6.6	46.6

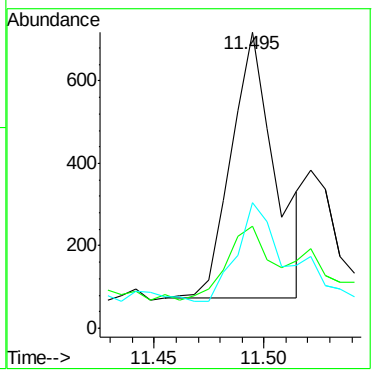


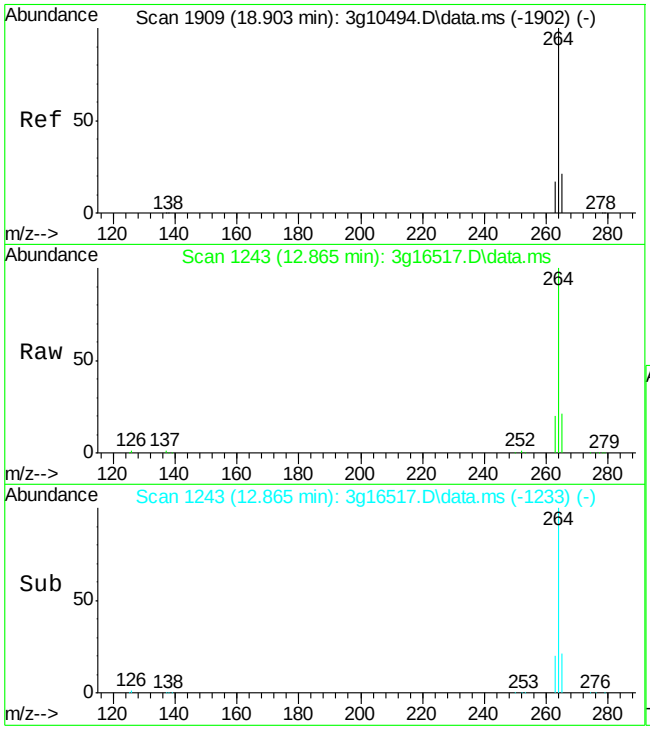


#23
Chrysene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. -0.026 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:228 Resp: 896

Ion	Ratio	Lower	Upper
228	100		
226	27.5	8.6	48.6
229	43.1	0.0	39.4#

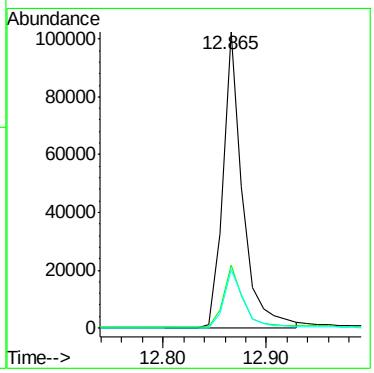


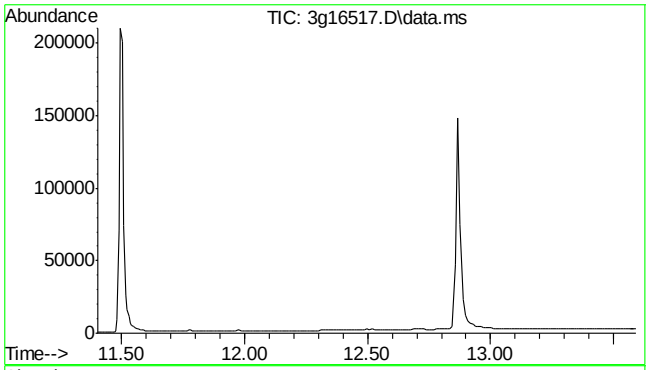


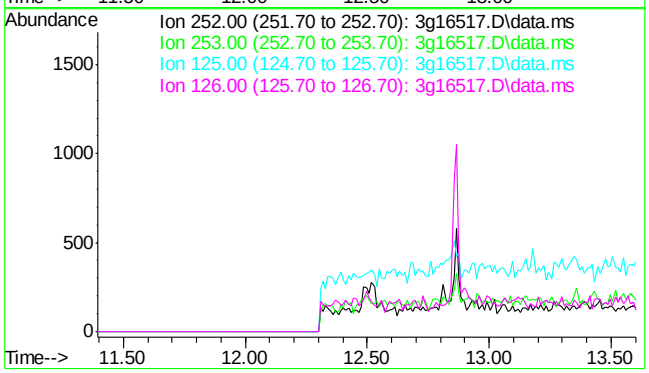
#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.865 min Scan# 1243
Delta R.T. 0.000 min
Lab File: 3g16517.D
Acq: 3 Oct 13 12:54 pm

Tgt Ion:264 Resp: 135532

Ion	Ratio	Lower	Upper
264	100		
265	21.0	1.2	41.2
263	20.2	0.7	40.7





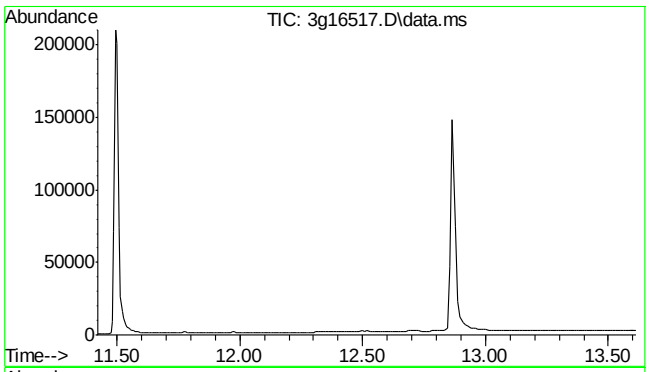


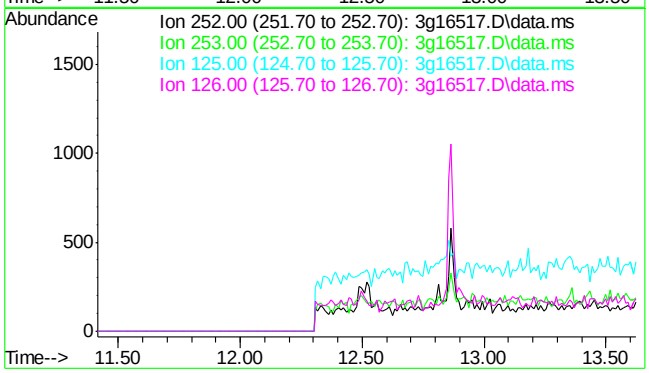
#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

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

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9



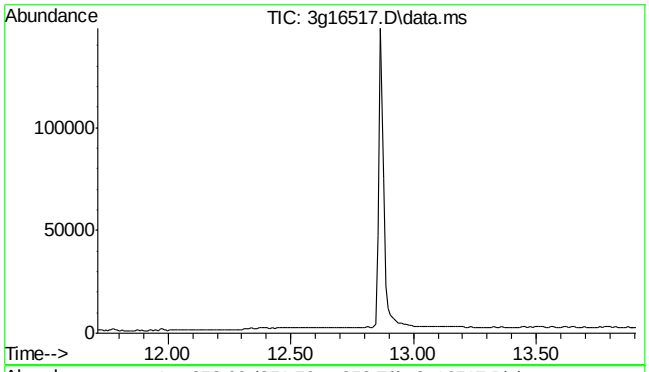


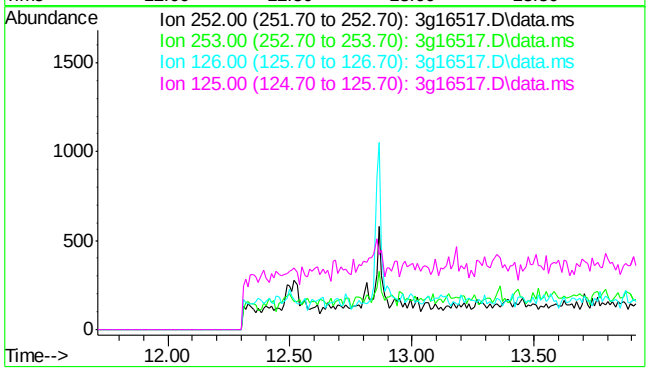
#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

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

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1



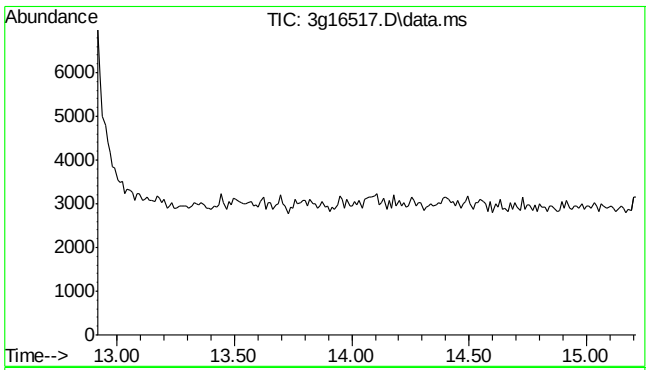


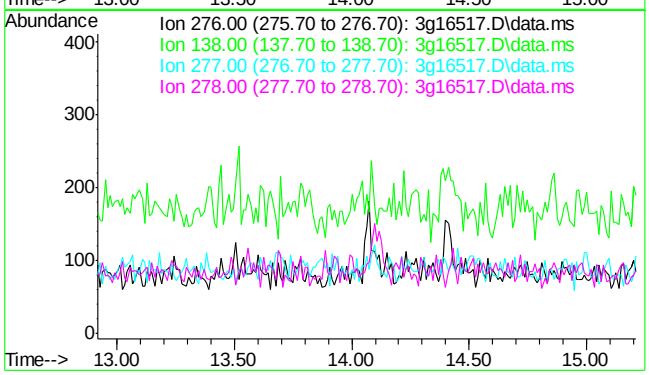
#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

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

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5



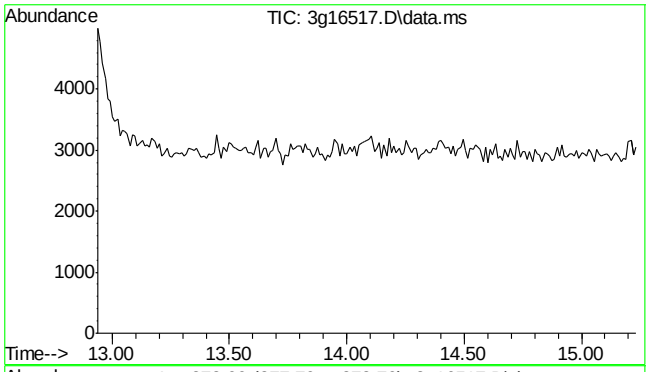


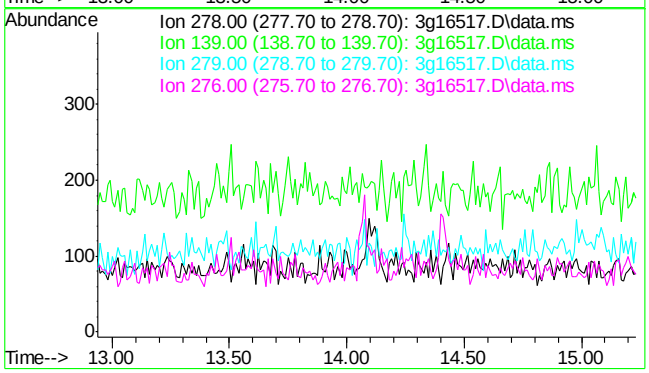
#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

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

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	40.0
277	24.8
278	76.2



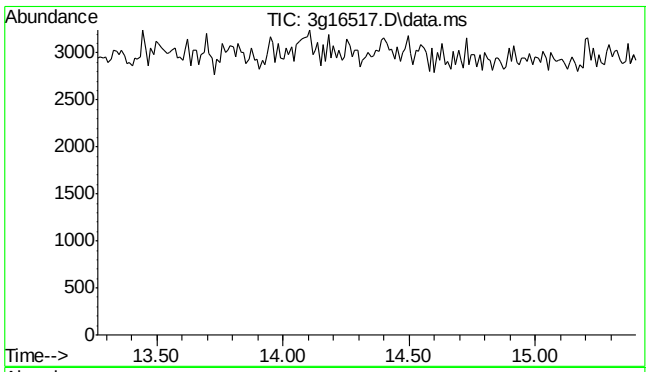


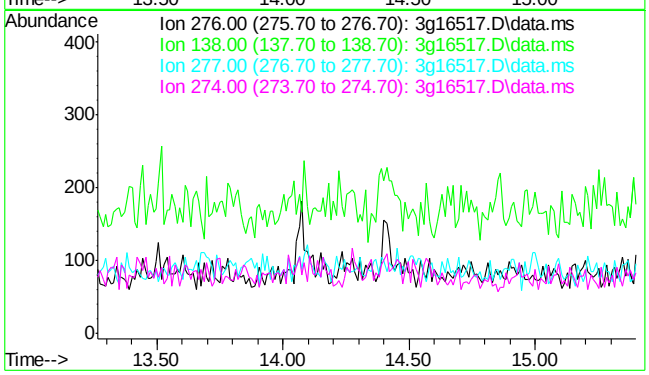
#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

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

Tgt Ion: 278

Sig	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2





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

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

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	35.1
277	23.3
274	21.5

Mountain States ACCUTEST LABORATORIES

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: D51123
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

D51123-1

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%

Blank Spike Summary

Job Number: D51123
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

D51123-1

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: D51123
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

D51123-1

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%

10.3.1
10

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC Volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Jennifer Laidlaw 10/02/13 14:07

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100113\GB22383.D\FID1A.CH Vial: 29
Signal #2 : Y:\1\DATA\100113\GB22383.D\FID2B.CH
Acq On : 2 Oct 2013 1:44 am Operator: ELISEV
Sample : D51123-1 Inst : GC/MS Ins
Misc : GC3911,GGB1230,5.035,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 02 08:44:19 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	2295629	75.986	%	m
10) S	1,2,4-Trichlorobenzene (P)	14.36	10893218	82.494	%	m
	Target Compounds					
1) H	TVH-Gasoline	7.31	26349645	0.376	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L	d
5) T	Benzene	4.14	109459	0.285	ug/L	m
6) T	Toluene	7.66	1110639	3.001	ug/L	m
7) T	Ethylbenzene	10.28	1041407	3.341	ug/L	m
8) T	m,p-Xylene	10.46	2397056	6.350	ug/L	m
9) T	o-Xylene	10.96	110918	0.355	ug/L	m
11) T	Naphthalene	14.55	72529	0.421	ug/L	m

11.1.1 11

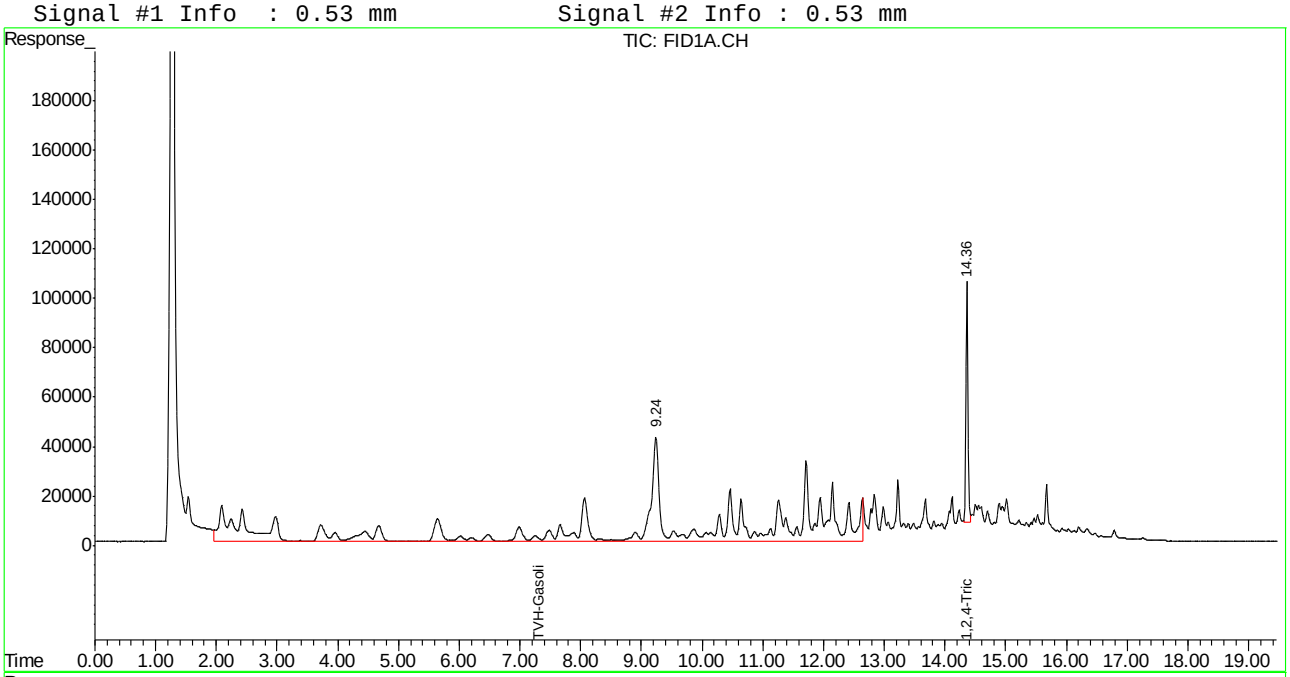
(f)=RT Delta > 1/2 Window (m)=manual int.
GB22383.D TB1125GB1125SOIL.M Wed Oct 02 09:24:31 2013 GC Page 1

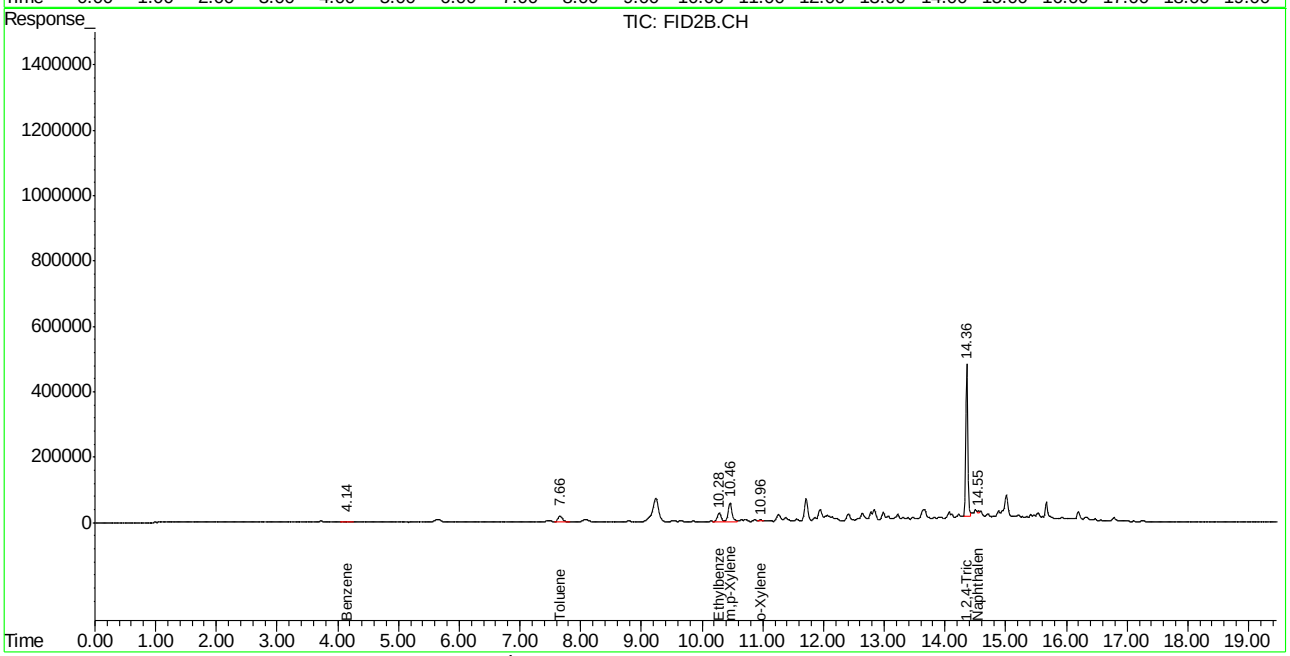
Quantitation Report (QT Reviewed)

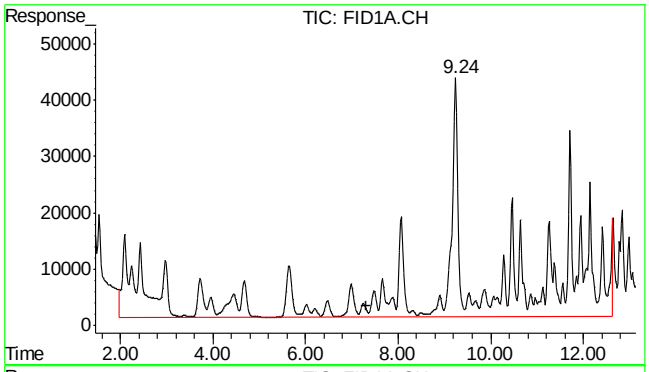
Signal #1 : Y:\1\DATA\100113\GB22383.D\FID1A.CH Vial: 29
Signal #2 : Y:\1\DATA\100113\GB22383.D\FID2B.CH
Acq On : 2 Oct 2013 1:44 am Operator: ELISEV
Sample : D51123-1 Inst : GC/MS Ins
Misc : GC3911,GGB1230,5.035,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 2 9:23 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 : 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

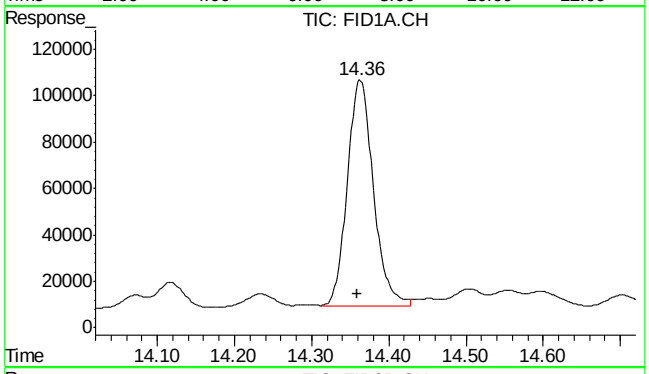






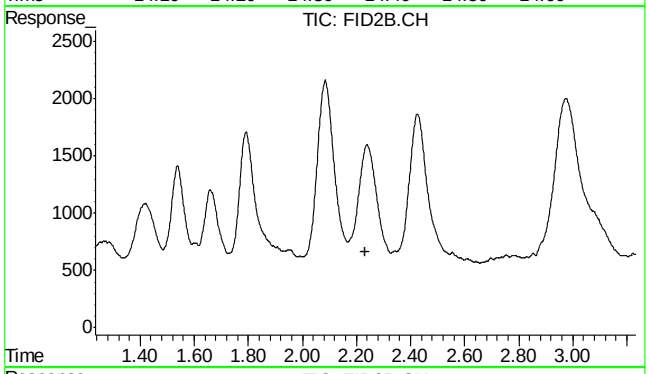
#1 TVH-Gasoline

R.T.: 7.310 min
Delta R.T.: 0.000 min
Response: 26349645
Conc: 0.38 mg/L m



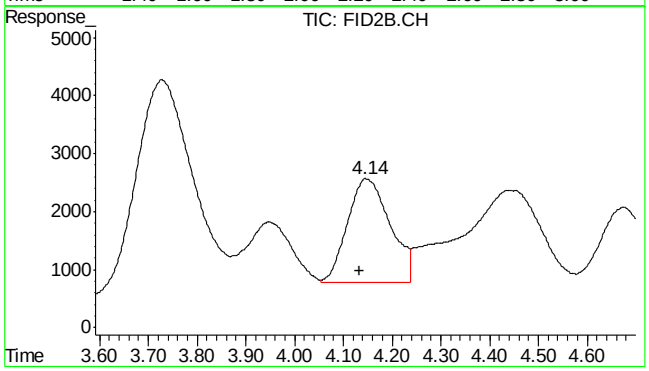
#2 1,2,4-Trichlorobenzene

R.T.: 14.362 min
Delta R.T.: 0.004 min
Response: 2295629
Conc: 75.99 % m



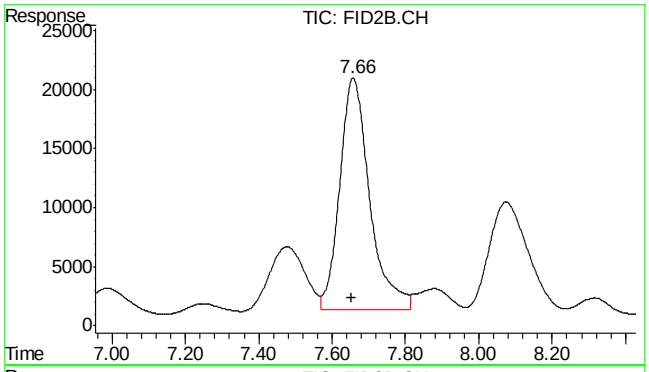
#4 Methyl-t-butyl-ether

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



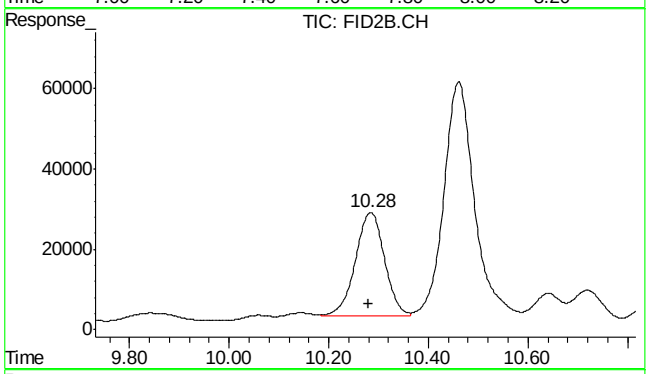
#5 Benzene

R.T.: 4.145 min
Delta R.T.: 0.011 min
Response: 109459
Conc: 0.29 ug/L m



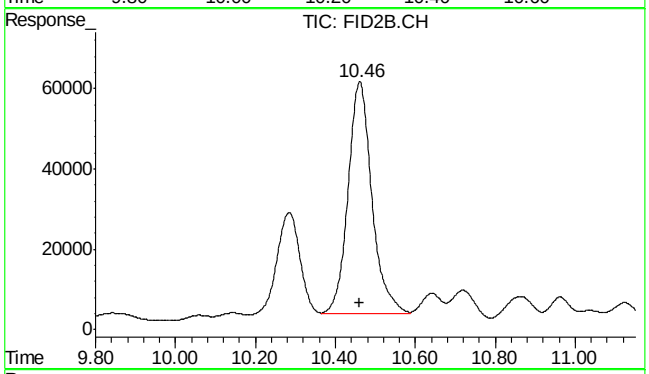
#6 Toluene

R.T.: 7.657 min
Delta R.T.: 0.004 min
Response: 1110639
Conc: 3.00 ug/L m



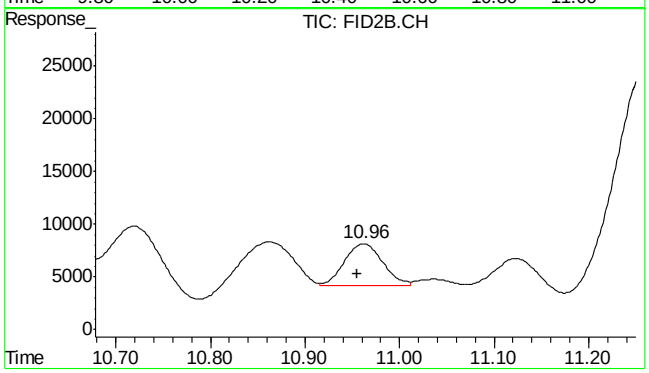
#7 Ethylbenzene

R.T.: 10.284 min
Delta R.T.: 0.005 min
Response: 1041407
Conc: 3.34 ug/L m



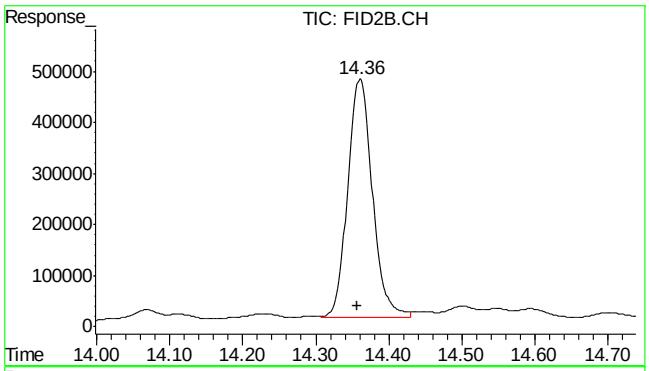
#8 m,p-Xylene

R.T.: 10.461 min
Delta R.T.: 0.002 min
Response: 2397056
Conc: 6.35 ug/L m



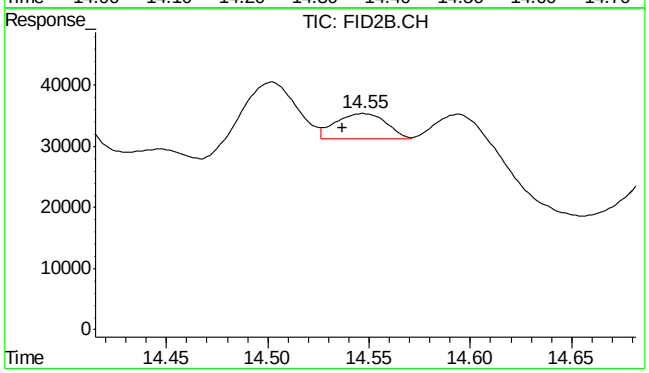
#9 o-Xylene

R.T.: 10.962 min
Delta R.T.: 0.006 min
Response: 110918
Conc: 0.36 ug/L m



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

R.T.: 14.360 min
Delta R.T.: 0.004 min
Response: 10893218
Conc: 82.49 % m



#11 Naphthalene

R.T.: 14.547 min
Delta R.T.: 0.010 min
Response: 72529
Conc: 0.42 ug/L m

Manual Integrations APPROVED (compounds with "m" flag)
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	ug/L	m

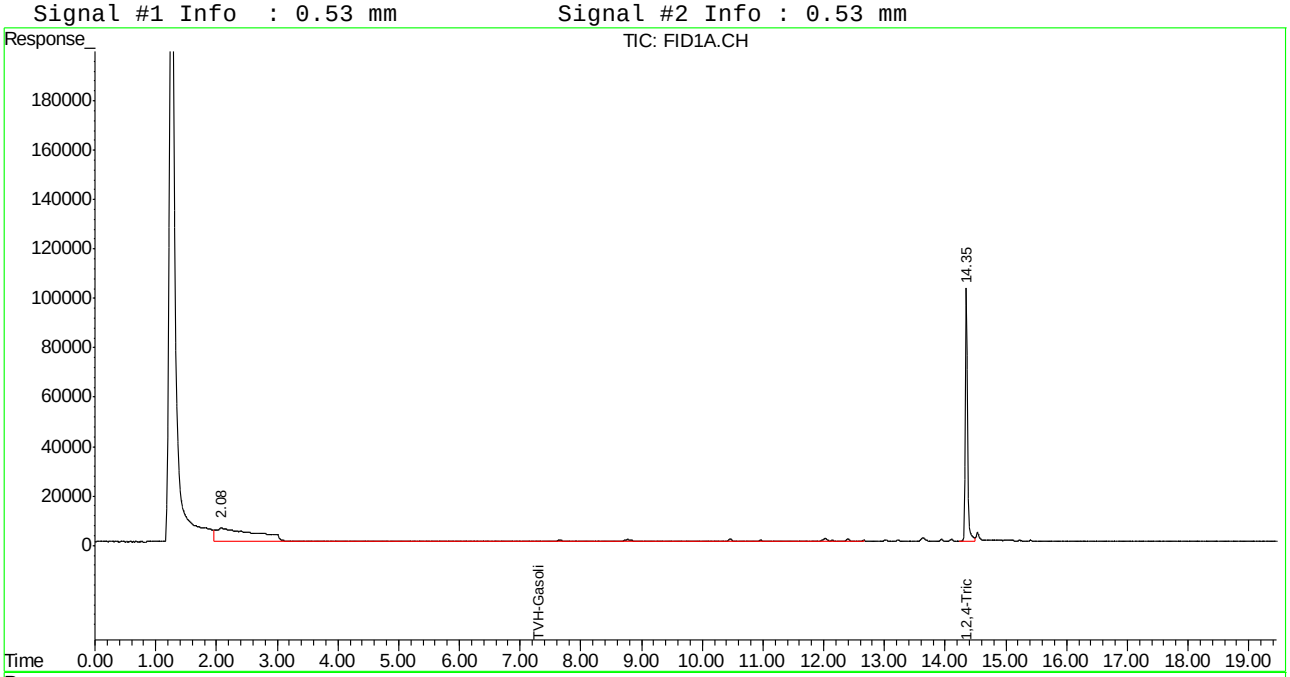
(f)=RT Delta > 1/2 Window (m)=manual int.
GB22358.D TB1125GB1125SOIL.M Wed Oct 02 09:23:22 2013 GC Page 1

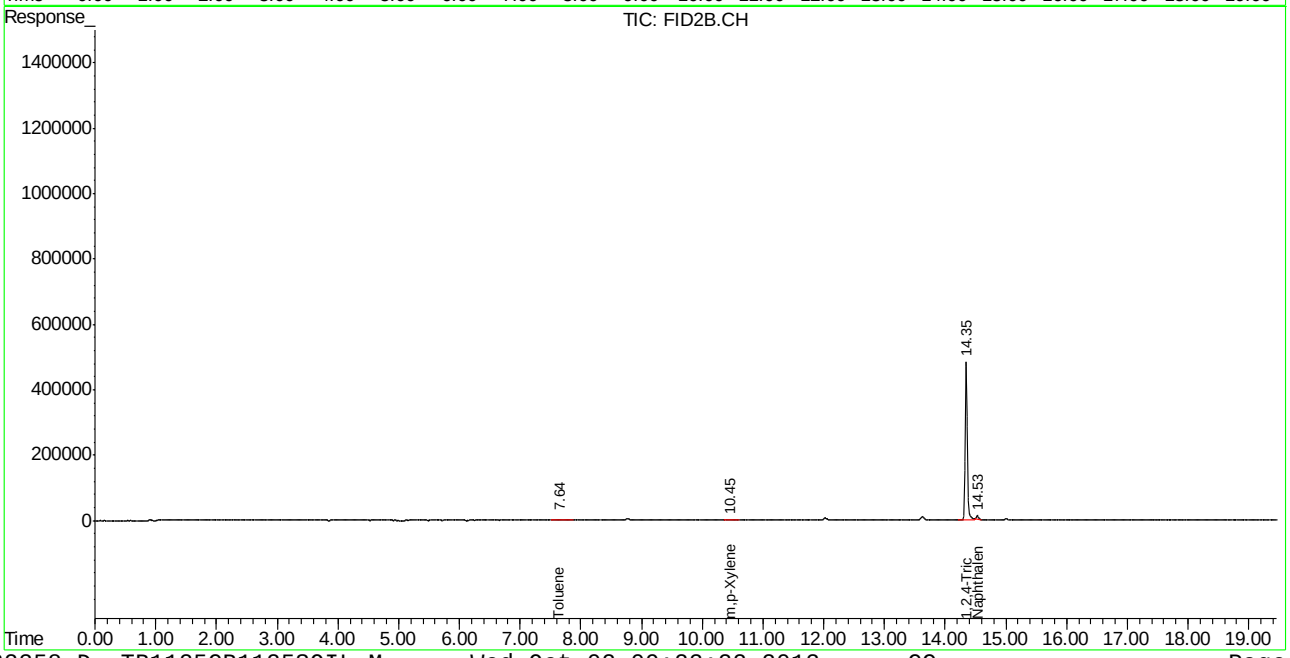
Quantitation Report (QT Reviewed)

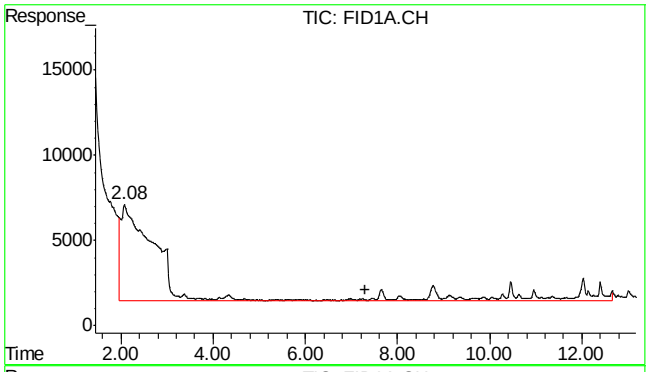
Signal #1 : Y:\1\DATA\100113\GB22358.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\100113\GB22358.D\FID2B.CH
Acq On : 1 Oct 2013 10:44 am Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3911,GGB1230,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct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

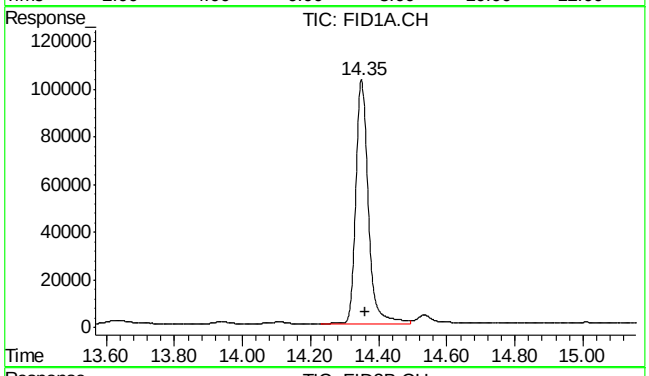






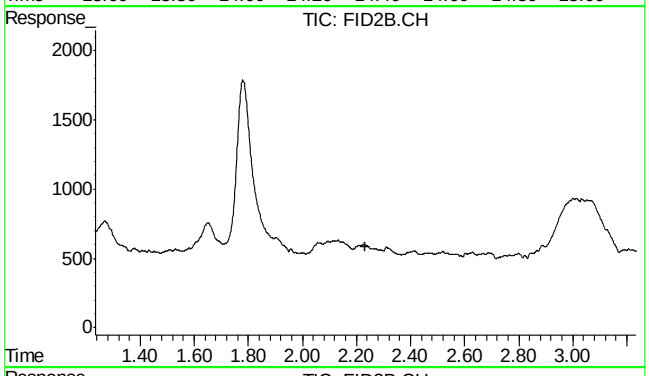
#1 TVH-Gasoline

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



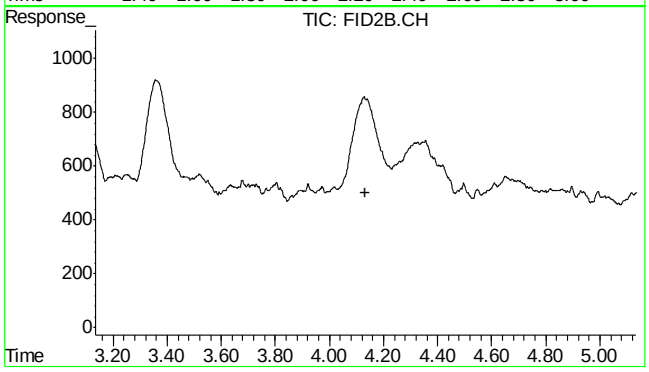
#2 1,2,4-Trichlorobenzene

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



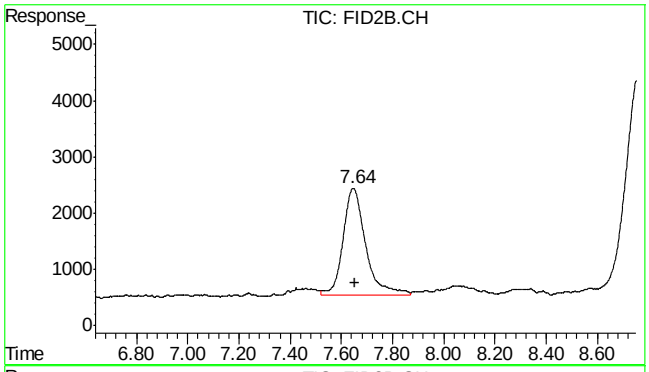
#4 Methyl-t-butyl-ether

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



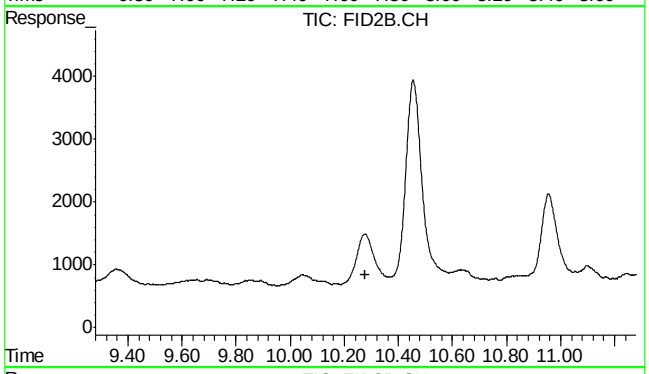
#5 Benzene

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



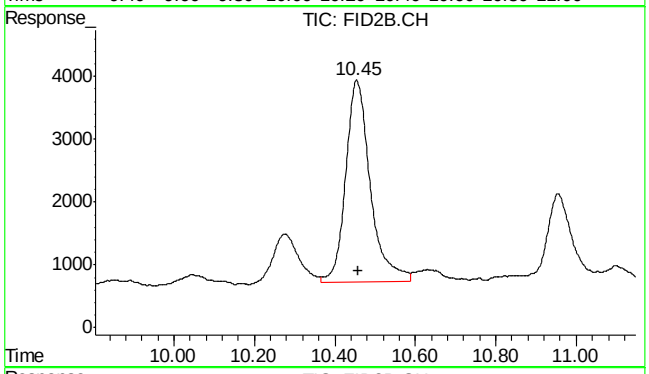
#6 Toluene

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



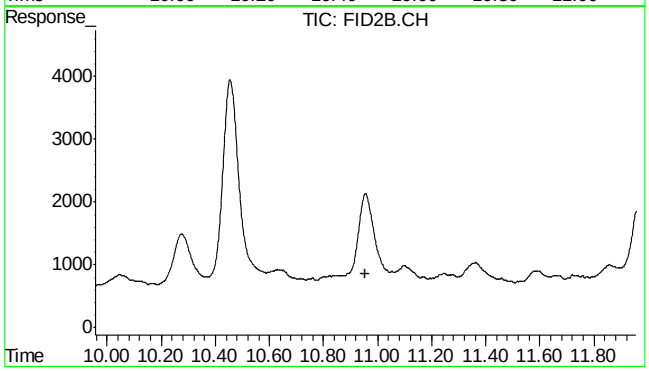
#7 Ethylbenzene

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



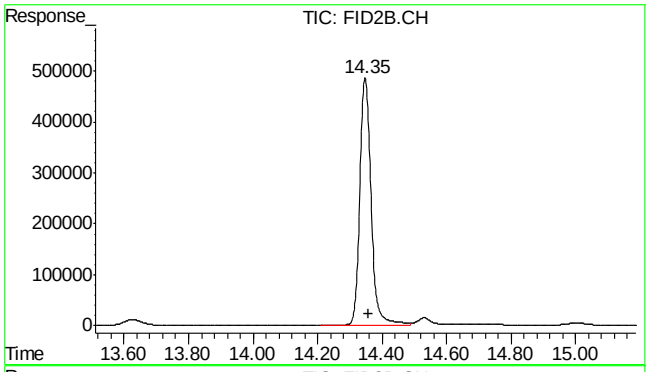
#8 m,p-Xylene

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



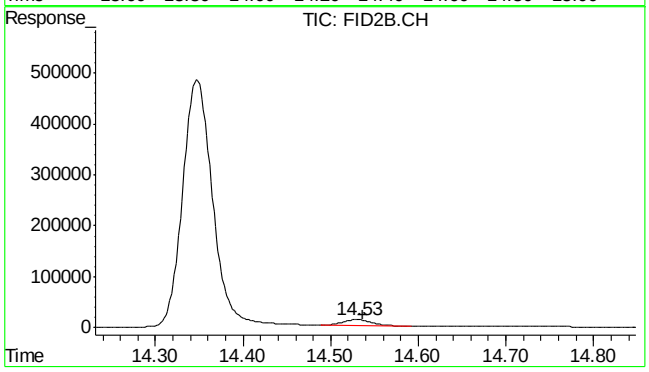
#9 o-Xylene

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



#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

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D51123
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

D51123-1

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%

Blank Spike Summary

Job Number: D51123
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

D51123-1

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

Job Number: D51123
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

D51123-1

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.

12.3.1 12

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\FID6_DATA\FI100313.SEC\FI09508.D Vial: 64
Acq On : 3 Oct 2013 9:02 pm Operator: TIMU
Sample : D51123-1 Inst : Fid6
Misc : OP8666,GFI637,30.10,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Oct 04 08:32:59 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	120979241	1669.086	mg/L
	Target Compounds				
2) H	TPH-DRO (C10-C28)	11.71	1296321928	20227.288	mg/L
3) H	TPH-ORO (>C28-C40)	23.52	753218054	18053.122	mg/L

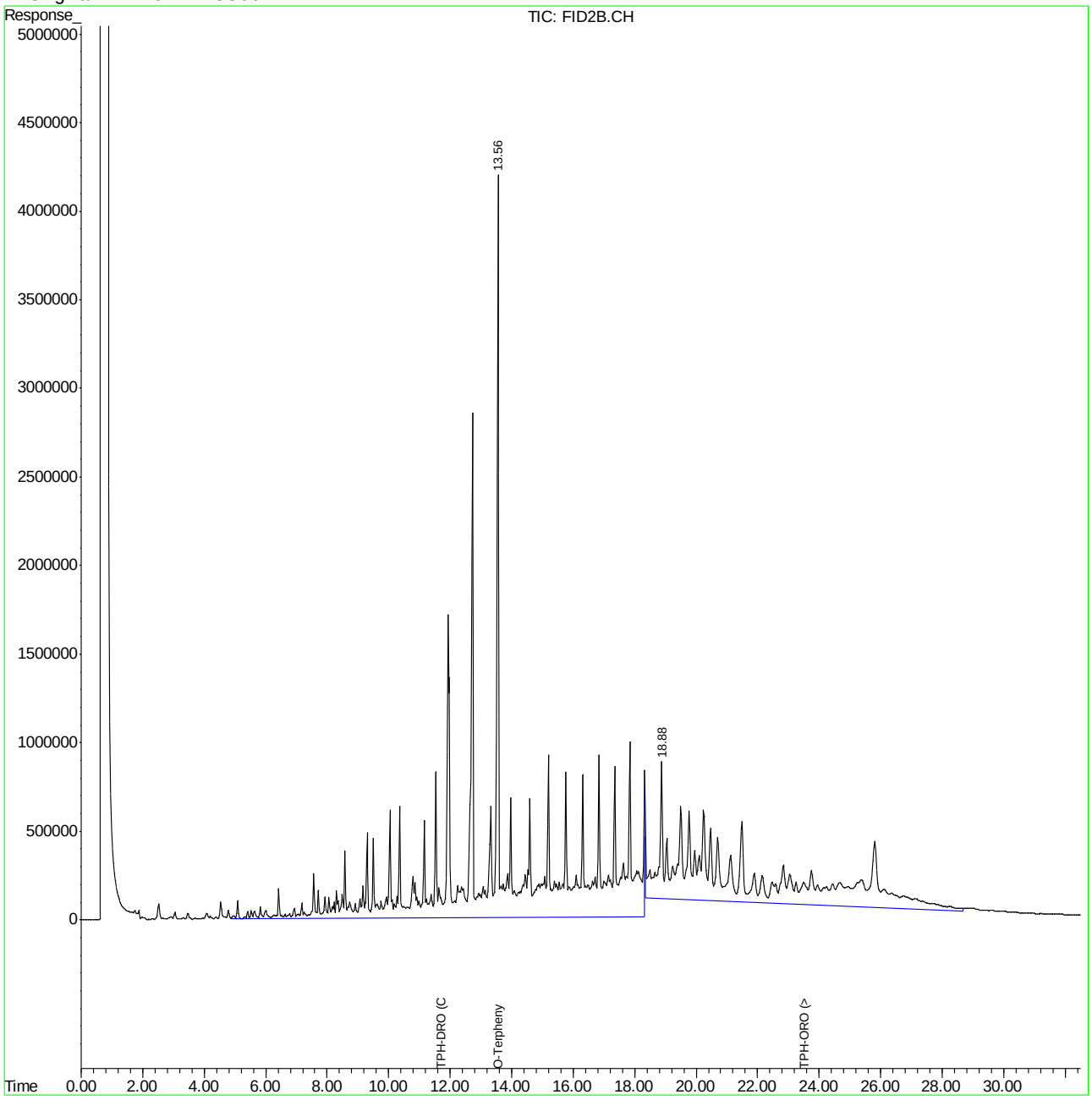
(f)=RT Delta > 1/2 Window (m)=manual int.
FI09508.D ORO-RR-GFI585.M Fri Oct 04 08:40:15 2013 TEH Page 1

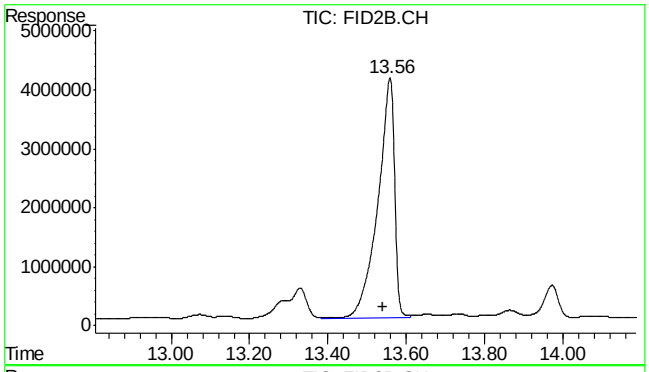
Quantitation Report (QT Reviewed)

Data File : C:\FID6_DATA\FI100313.SEC\FI09508.D Vial: 64
Acq On : 3 Oct 2013 9:02 pm Operator: TIMU
Sample : D51123-1 Inst : Fid6
Misc : OP8666,GFI637,30.10,,,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

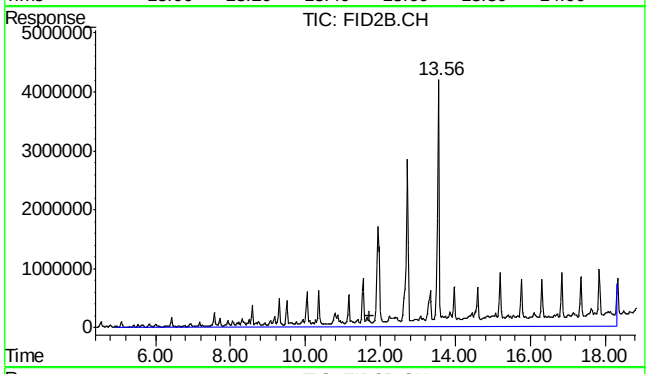
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





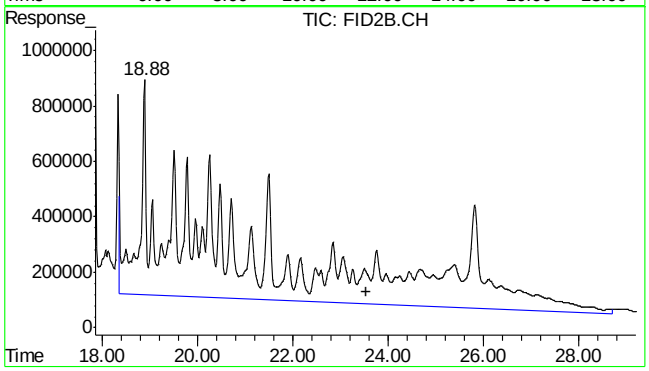
#1 O-Terphenyl

R.T.: 13.558 min
Delta R.T.: 0.018 min
Response: 120979241
Conc: 1669.09 mg/L



#2 TPH-DRO (C10-C28)

R.T.: 11.710 min
Delta R.T.: 0.000 min
Response: 1296321928
Conc: 20227.29 mg/L m



#3 TPH-ORO (>C28-C40)

R.T.: 23.523 min
Delta R.T.: 0.000 min
Response: 753218054
Conc: 18053.12 mg/L m

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

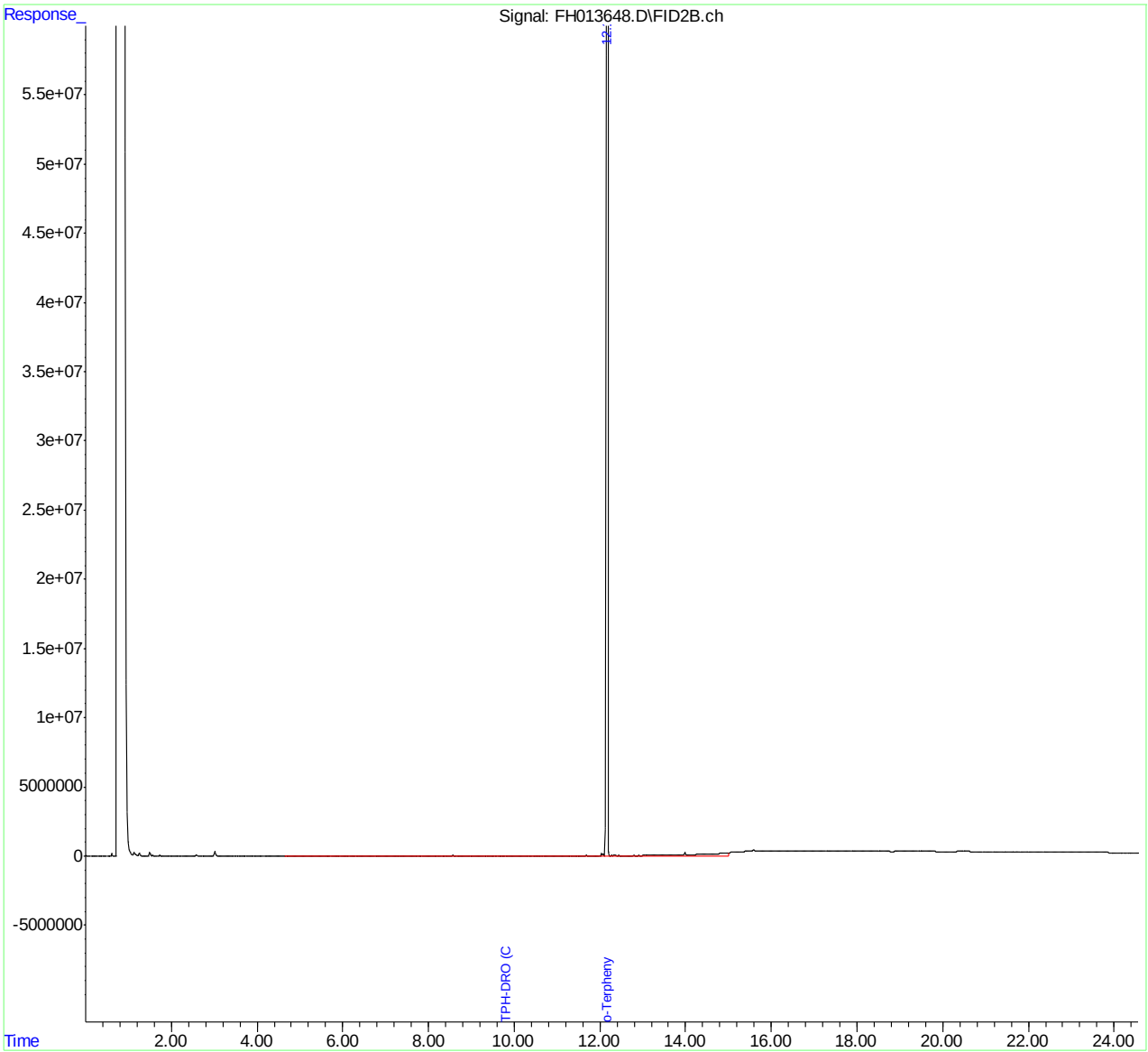
(f)=RT Delta > 1/2 Window (m)=manual int.

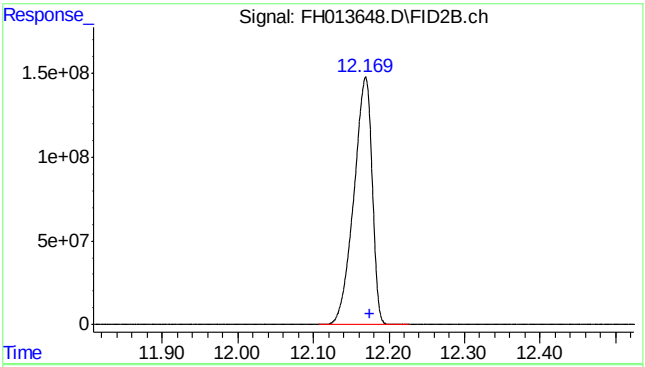
Quantitation Report (QT Reviewed)

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

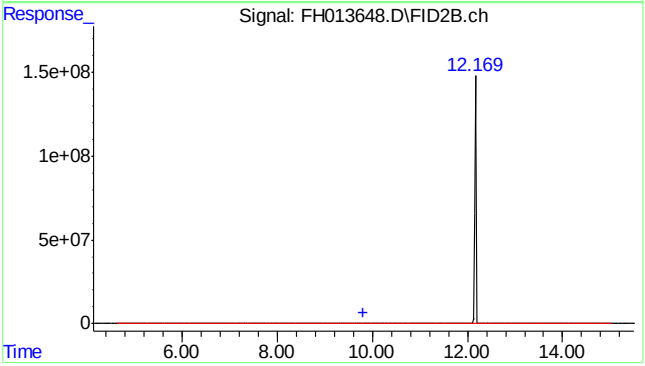
Volume Inj. :
Signal Phase :
Signal Info :





#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

Mountain States ACCUTEST LABORATORIES

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: D51123
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: D51123-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51123
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: D51123
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 ICPALL2	% 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: D51123-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51123
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.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51123
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11267 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/02/13

Metal	D51122-1 Original	MSD	Spikelot ICPALL2	% 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: D51123-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51123
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: D51123
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: D51123-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51123
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: D51123
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: D51123-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51123
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.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51123
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: D51123-1

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: D51123
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	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP11268: D51123-1

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: D51123
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: D51123-1

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: D51123
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: D51123-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51123
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: D51123-1

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: D51123
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11269 Methods: SW846 7471B
Matrix Type: SOLID 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: D51123-1

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: D51123
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	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.034	0.50	0.428	108.9	75-125

Associated samples MP11269: D51123-1

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: D51123
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11269 Methods: SW846 7471B
Matrix Type: SOLID 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: D51123-1

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: D51123
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: D51123-1

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: D51123
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: D51123-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51123
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: D51123
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 ICPALL2	% 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: D51123-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51123
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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51123
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: D51123-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51123
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11305
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51123
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: D51123-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51123
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: D51123
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: D51123-1A

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51123
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

Mountain States ACCUTEST LABORATORIES

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: D51123
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: D51123-1
Batch GP11063: D51123-1
Batch GP11068: D51123-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51123
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: D51123-1
Batch GP11063: D51123-1
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51123
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: D51123-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51123
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: D51123-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits