Mountain States ACCUTEST LABORATORIES

10/04/13

Technical Report for

XTO Energy

FRU 197-31A

1111-02A FW Subliner Comp.

Accutest Job Number: D51044

Sampling Date: 09/25/13

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: **140**

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)

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Sample Summary

XTO Energy

Job No: D51044

FRU 197-31A
Project No: 1111-02A FW Subliner Comp.

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D51044-1	09/25/13	14:30	DK	09/27/13	SO	Soil	FW SUBLINER COMP.
D51044-1A	09/25/13	14:30	DK	09/27/13	SO	Soil	FW SUBLINER COMP.

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	XTO Energy	**Job No**	D51044
Site:	FRU 197-31A	**Report Date**	10/4/2013 4:35:15 PM

On 09/27/2013, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D51044 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:** V5V1762

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51041-1MS, D51041-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: SO **Batch ID:** OP8644

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D50832-1RMS, D50832-1RMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8015B

Matrix: SO **Batch ID:** GGB1229

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

Extractables by GC By Method SW846-8015B

Matrix: SO **Batch ID:** OP8643

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D50939-1MS, D50939-1MSD 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:** MP11259

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51044-1AMS, D51044-1AMSD, D51044-1ASDL were used as the QC samples for the metals analysis.

Matrix: SO **Batch ID:** MP11248

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51041-1MS, D51041-1MSD, D51041-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Zinc are outside control limits. Spike recovery indicates possible 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 RPD(s) for the MS and MSD recoveries of Barium are outside control limits for sample MP11248-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Lead, Silver are outside control limits for sample MP11248-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 6020A

Matrix: SO **Batch ID:** MP11249

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51041-1MS, D51041-1MSD, D51041-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix: SO **Batch ID:** MP11247

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D51039-1MSD, D51039-1MS were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Mercury are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The RPD(s) for the MS and MSD recoveries of Mercury are outside control limits for sample MP11247-S2. High RPD due to possible sample matrix or nonhomogeneity.

Wet Chemistry By Method ASTM D1498-76M

Matrix: SO **Batch ID:** GN22093

- Sample(s) D50832-1RDUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM2540B-2011 M

Matrix: SO **Batch ID:** GN22079

- 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:** R18888

- The data for SW846 3060A/7196A M meets quality control requirements.
- D51044-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix: SO **Batch ID:** GN22085

- The following samples were run outside of holding time for method SW846 9045D: D51044-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix: SO **Batch ID:** MP11259

- D51044-1A 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: D51044
Account: XTO Energy
Project: FRU 197-31A
Collected: 09/25/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D51044-1	**FW SUBLINER COMP.**					
Chrysene		0.0068 J	0.010	0.0053	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)		321	8.1	6.1	mg/kg	SW846-8015B
Arsenic		3.6	0.12		mg/kg	SW846 6020A
Barium		556	1.2		mg/kg	SW846 6010C
Chromium		51.0	1.2		mg/kg	SW846 6010C
Copper		7.7	1.2		mg/kg	SW846 6010C
Lead		8.0	6.0		mg/kg	SW846 6010C
Nickel		16.1	3.6		mg/kg	SW846 6010C
Zinc		39.1	3.6		mg/kg	SW846 6010C
Specific Conductivity		197	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent [a]		50.7	2.2		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2		101			mv	ASTM D1498-76M
pH		9.51			su	SW846 9045D
D51044-1A	**FW SUBLINER COMP.**					
Calcium		2.62	2.0		mg/l	SW846 6010C
Magnesium		1.11	1.0		mg/l	SW846 6010C
Sodium		37.8	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio [b]		4.93			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:	FW SUBLINER COMP.		
Lab Sample ID:	D51044-1	**Date Sampled:**	09/25/13
Matrix:	SO - Soil	**Date Received:**	09/27/13
Method:	SW846 8260B	**Percent Solids:**	82.0
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V29307.D	1	09/30/13	BD	n/a	n/a	V5V1762
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.071	0.036	mg/kg	
108-88-3	Toluene	ND	0.14	0.071	mg/kg	
100-41-4	Ethylbenzene	ND	0.14	0.027	mg/kg	
1330-20-7	Xylene (total)	ND	0.28	0.14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	99%		64-130%
460-00-4	4-Bromofluorobenzene	92%		62-131%
17060-07-0	1,2-Dichloroethane-D4	103%		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:	FW SUBLINER COMP.		
Lab Sample ID:	D51044-1	**Date Sampled:**	09/25/13
Matrix:	SO - Soil	**Date Received:**	09/27/13
Method:	SW846 8270C BY SIM SW846 3546	**Percent Solids:**	82.0
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G16512.D	1	09/27/13	DC	09/27/13	OP8644	E3G816
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	0.010	0.0053	mg/kg	
120-12-7	Anthracene	ND	0.010	0.0053	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.010	0.0053	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.010	0.0053	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.010	0.0053	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.010	0.0053	mg/kg	
218-01-9	Chrysene	0.0068	0.010	0.0053	mg/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.010	0.0053	mg/kg	
206-44-0	Fluoranthene	ND	0.010	0.0053	mg/kg	
86-73-7	Fluorene	ND	0.010	0.0061	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.010	0.0053	mg/kg	
91-20-3	Naphthalene	ND	0.014	0.013	mg/kg	
129-00-0	Pyrene	ND	0.010	0.0053	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	52%		10-175%
321-60-8	2-Fluorobiphenyl	63%		25-130%
1718-51-0	Terphenyl-d14	73%		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:	FW SUBLINER COMP.		
Lab Sample ID:	D51044-1	**Date Sampled:**	09/25/13
Matrix:	SO - Soil	**Date Received:**	09/27/13
Method:	SW846 8015B	**Percent Solids:**	82.0
Project:	FRU 197-31A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB22350.D	1	09/30/13	EV	n/a	n/a	GGB1229
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	7.1	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	83%		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: FW SUBLINER COMP.
Lab Sample ID: D51044-1
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: FRU 197-31A

Date Sampled: 09/25/13
Date Received: 09/27/13
Percent Solids: 82.0

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH013496.D	1	09/27/13	TU	09/27/13	OP8643	GFH714
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)	321	8.1	6.1	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		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: FW SUBLINER COMP.
Lab Sample ID: D51044-1
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/25/13
Date Received: 09/27/13
Percent Solids: 82.0

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.6	0.12	mg/kg	5	10/01/13	10/04/13	JB	SW846 6020A [3]	SW846 3050B [6]
Barium	556	1.2	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Cadmium	< 1.2	1.2	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Chromium	51.0	1.2	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Copper	7.7	1.2	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Lead	8.0	6.0	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Mercury	< 0.10	0.10	mg/kg	1	10/01/13	10/01/13	JM	SW846 7471B [1]	SW846 7471B [4]
Nickel	16.1	3.6	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Selenium	< 6.0	6.0	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Silver	< 3.6	3.6	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]
Zinc	39.1	3.6	mg/kg	1	10/01/13	10/01/13	JM	SW846 6010C [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA4021
(2) Instrument QC Batch: MA4023
(3) Instrument QC Batch: MA4036
(4) Prep QC Batch: MP11247
(5) Prep QC Batch: MP11248
(6) Prep QC Batch: MP11249

RL = Reporting Limit

Report of Analysis

Client Sample ID: FW SUBLINER COMP.
Lab Sample ID: D51044-1
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/25/13
Date Received: 09/27/13
Percent Solids: 82.0

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	197	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]	50.7	2.2	mg/kg	1	10/02/13	JD	SW846 3060A/7196A M
Redox Potential Vs H2	101		mv	1	09/30/13	JD	ASTM D1498-76M
Solids, Percent	82		%	1	09/30/13	SWT	SM2540B-2011 M
pH	9.51		su	1	09/30/13 09:40	JD	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: FW SUBLINER COMP.
Lab Sample ID: D51044-1A
Matrix: SO - Soil
Project: FRU 197-31A

Date Sampled: 09/25/13
Date Received: 09/27/13
Percent Solids: 82.0

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	2.62	2.0	mg/l	1	10/01/13	10/01/13	JM	SW846 6010C [1]	SW846 3010A/M [2]
Magnesium	1.11	1.0	mg/l	1	10/01/13	10/01/13	JM	SW846 6010C [1]	SW846 3010A/M [2]
Sodium	37.8	2.0	mg/l	1	10/01/13	10/01/13	JM	SW846 6010C [1]	SW846 3010A/M [2]

(1) Instrument QC Batch: MA4023
(2) Prep QC Batch: MP11259

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FW SUBLINER COMP.		
Lab Sample ID:	D51044-1A	**Date Sampled:**	09/25/13
Matrix:	SO - Soil	**Date Received:**	09/27/13
		Percent Solids:	82.0
Project:	FRU 197-31A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	4.93		ratio	1	10/01/13 17:33	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

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

PAGE 1 OF 1

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

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: D51044

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): Dwayne Knudson 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 910-1

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	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	LAB USE ONLY
	FW Subliner Comp.		9-25-13	2:30	DK	SO	5					X					01

9/27/13

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:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Dwayne Knudson	9-26-13 1700	1 Rifle Service Center	2		2 JACOB PRATT 9/27/13 1040
3	Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal # HD1108 Intact / Not intact	Preserved where applicable	On Ice Cooler Temp. 2.2

D51044: Chain of Custody
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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D51044 **Client:** KRW CONSULTING **Immediate Client Services Action Required:** No

Date / Time Received: 9/27/2013 12:40:00 PM **No. Coolers:** 1 **Client Service Action Required at Login:** No

Project: XTO FRU 197-31A **Airbill #'s:** HD-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

D51044: 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: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1762-MB	5V29302.D	1	09/30/13	BD	n/a	n/a	V5V1762

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

D51044-1

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

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	101%	64-130%
460-00-4	4-Bromofluorobenzene	86%	62-131%
17060-07-0	1,2-Dichloroethane-D4	103%	70-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1762-BS	5V29303.D	1	09/30/13	BD	n/a	n/a	V5V1762

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

D51044-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2550	102	70-130
100-41-4	Ethylbenzene	2500	2710	108	70-130
108-88-3	Toluene	2500	2630	105	70-130
1330-20-7	Xylene (total)	7500	8570	114	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	102%	64-130%
460-00-4	4-Bromofluorobenzene	101%	62-131%
17060-07-0	1,2-Dichloroethane-D4	96%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51041-1MS	5V29305.D	1	09/30/13	BD	n/a	n/a	V5V1762
D51041-1MSD	5V29306.D	1	09/30/13	BD	n/a	n/a	V5V1762
D51041-1	5V29304.D	1	09/30/13	BD	n/a	n/a	V5V1762

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

D51044-1

CAS No.	Compound	D51041-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3480	3550	102	3790	109	7	64-139/30
100-41-4	Ethylbenzene	ND		3480	3690	106	3960	114	7	68-136/30
108-88-3	Toluene	ND		3480	3440	99	3690	106	7	60-130/30
1330-20-7	Xylene (total)	ND		10400	11800	113	12400	119	5	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D51041-1	Limits
2037-26-5	Toluene-D8	93%	96%	98%	64-130%
460-00-4	4-Bromofluorobenzene	105%	108%	96%	62-131%
17060-07-0	1,2-Dichloroethane-D4	96%	94%	101%	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\V5093013.S\
Data File : 5V29307.D
Acq On : 30 Sep 2013 3:33 pm
Operator : BRETD
Sample : D51044-1
Misc : MS6465,V5V1762,5.074,,100,5,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 01 08:43:59 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

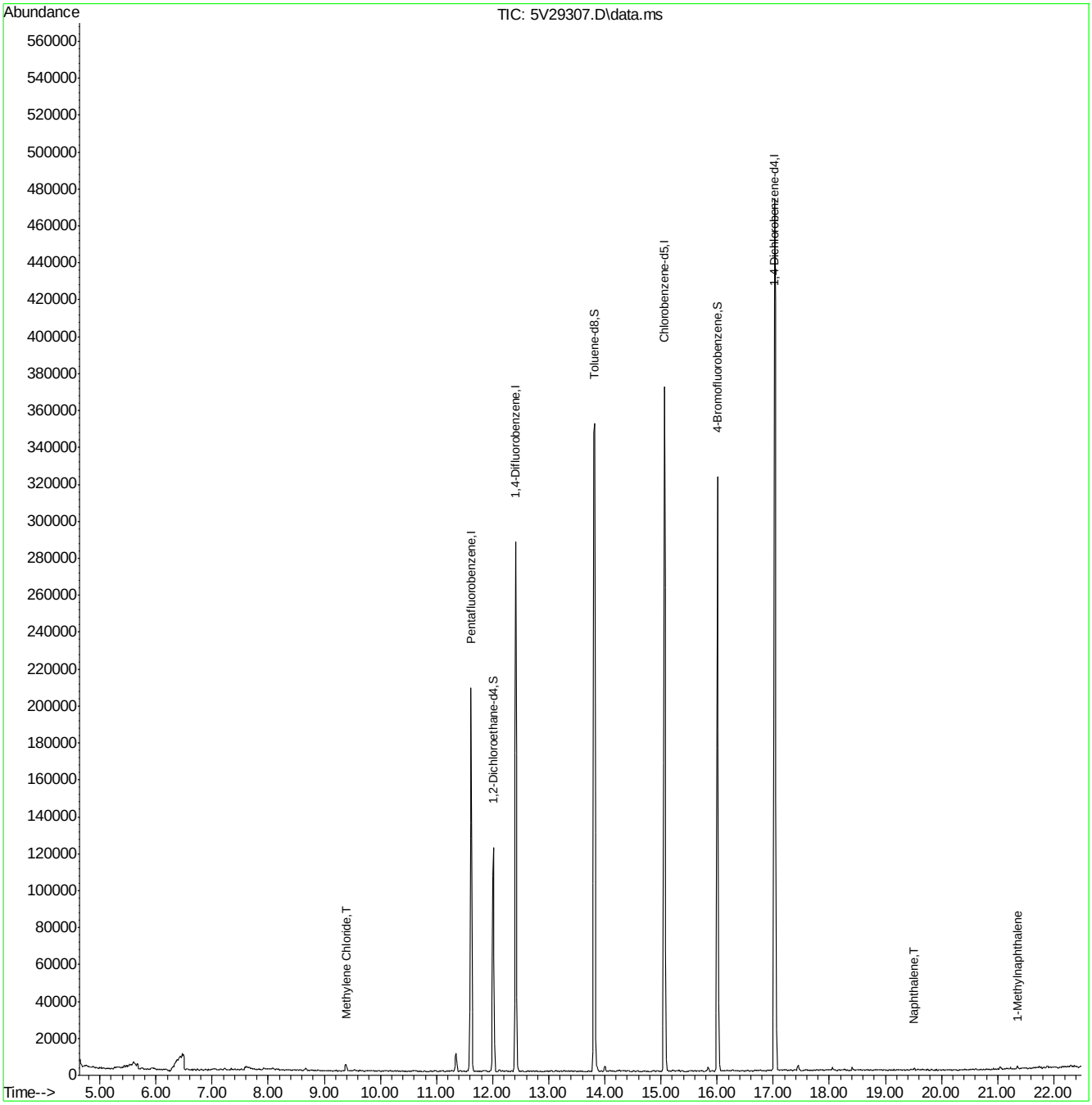
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	141746	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	189344	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	186172	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.025	152	143455	50.00	ug/l	-0.01
System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.013	102	14856	51.58	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 103.16%			
64) Toluene-d8	13.817	98	208726	49.49	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 98.98%			
72) 4-Bromofluorobenzene	16.009	95	90052	45.81	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 91.62%			
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	-16643m	56.58	ug/l	
18) Methylene Chloride	9.387	84	1000	0.85	ug/l #	64
94) Naphthalene	19.514	128	1196	1.00	ug/l	100
98) 1-Methylnaphthalene	21.352	142	1265	1.70	ug/l #	76

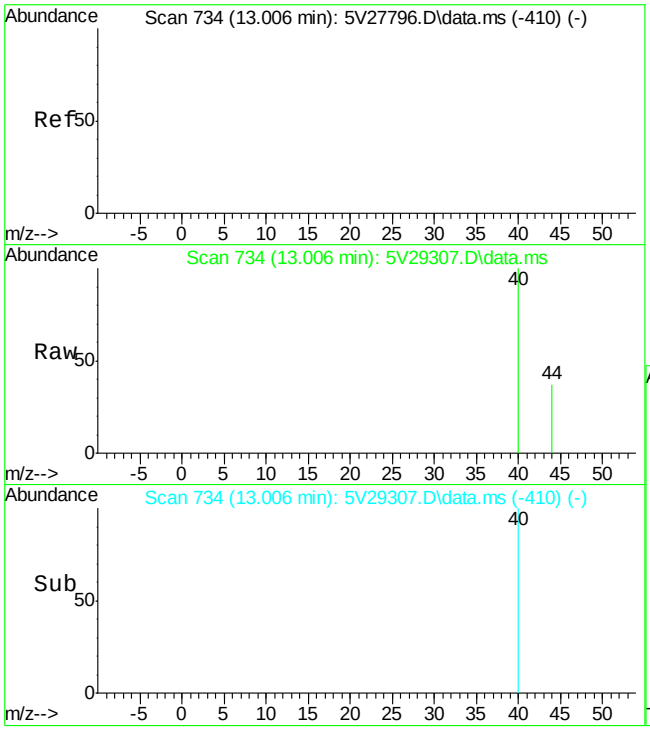
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5093013.S\
Data File : 5V29307.D
Acq On : 30 Sep 2013 3:33 pm
Operator : BRETD
Sample : D51044-1
Misc : MS6465,V5V1762,5.074,,100,5,1
ALS Vial : 9 Sample Multiplier: 1

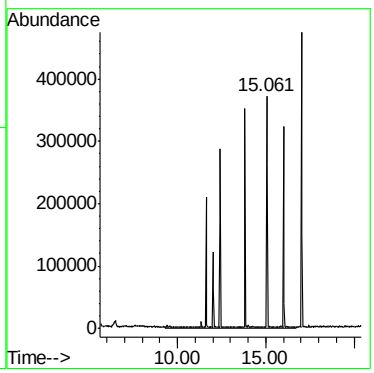
Quant Time: Oct 01 08:43:59 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration

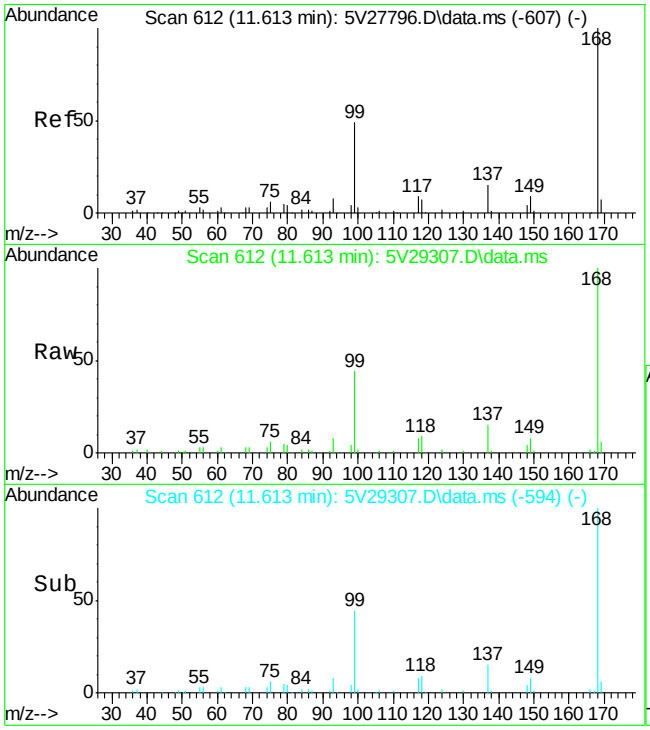




#1
TVH-Gasoline
Concen: 56.58 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion:TIC Resp: -16643

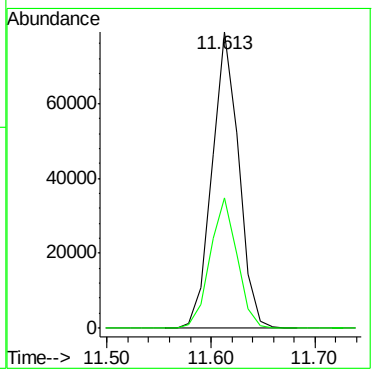


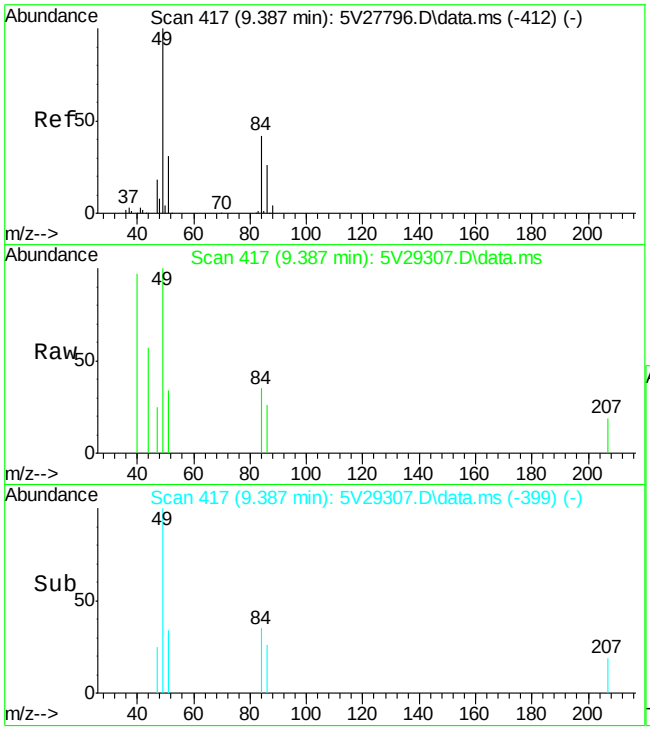


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion:168 Resp: 141746

Ion	Ratio	Lower	Upper
168	100		
99	44.4	41.4	62.2

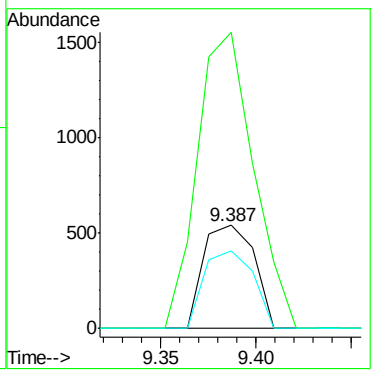


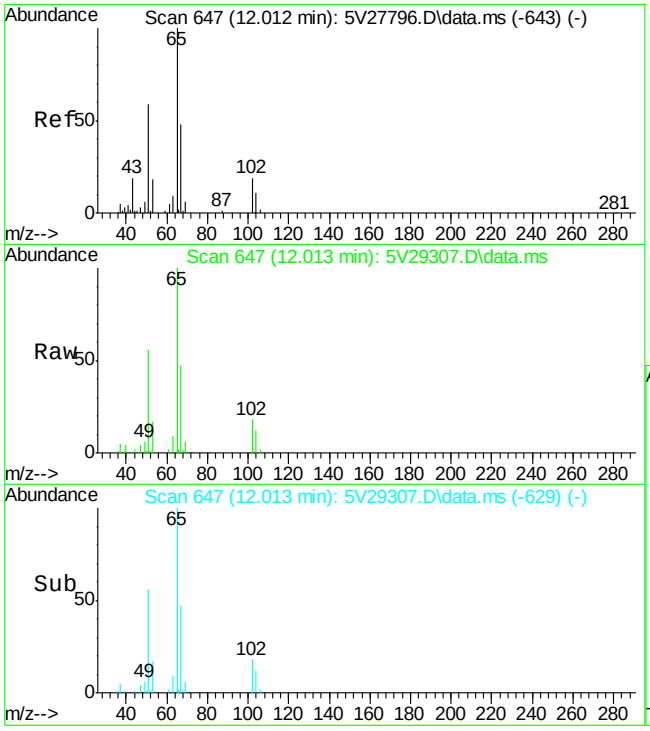


#18
Methylene Chloride
Concen: 0.85 ug/l
RT: 9.387 min Scan# 417
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion: 84 Resp: 1000

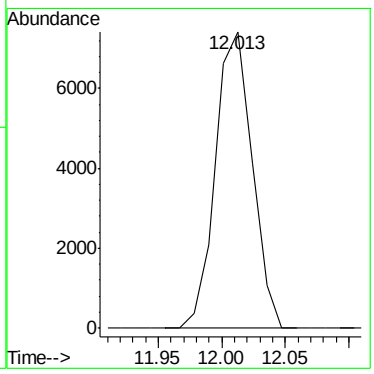
Ion	Ratio	Lower	Upper
84	100		
49	318.1	224.8	264.8#
86	72.6	44.5	84.5

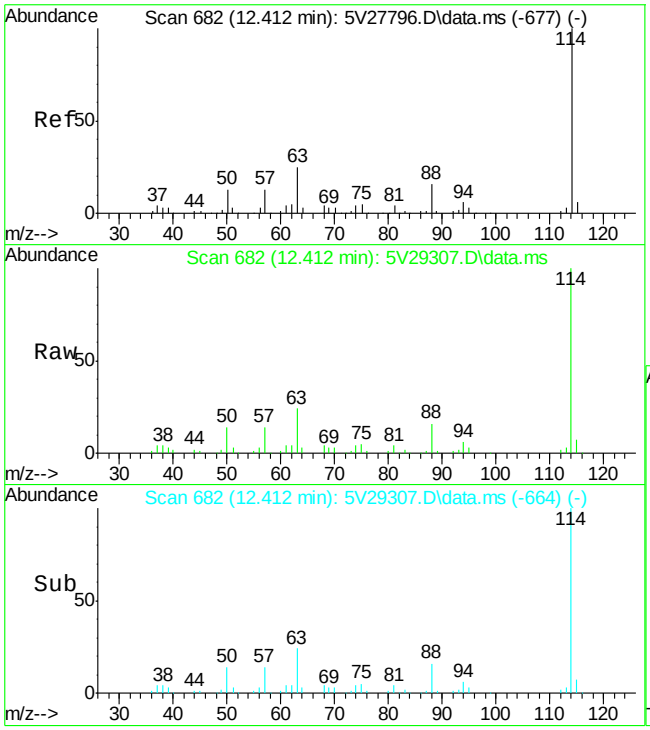




#35
1,2-Dichloroethane-d4
Concen: 51.58 ug/l
RT: 12.013 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

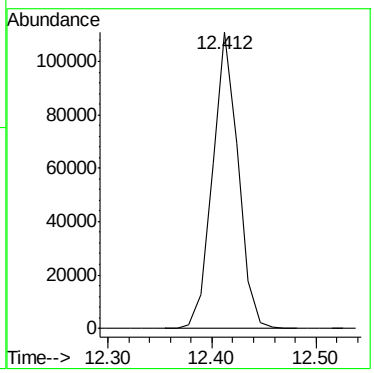
Tgt Ion:102 Resp: 14856

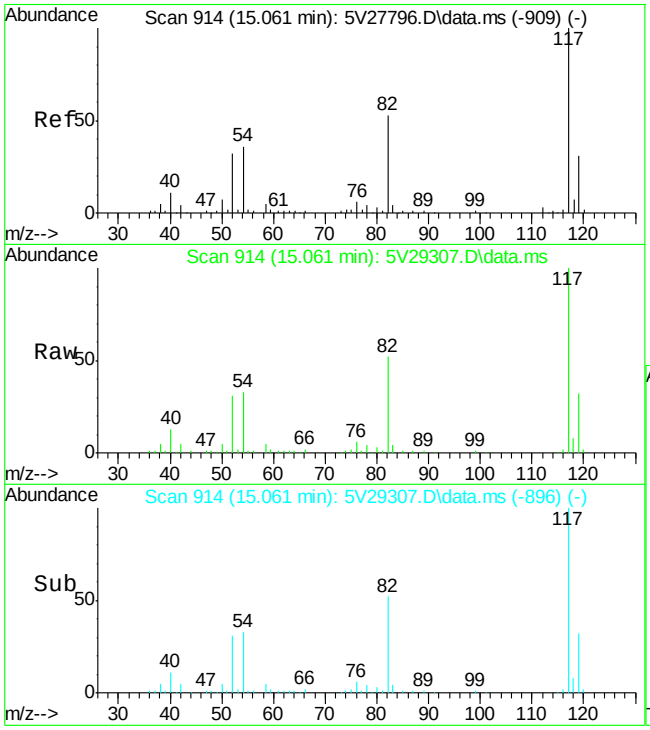




#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

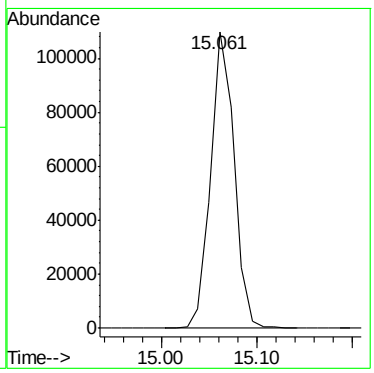
Tgt Ion:114 Resp: 189344

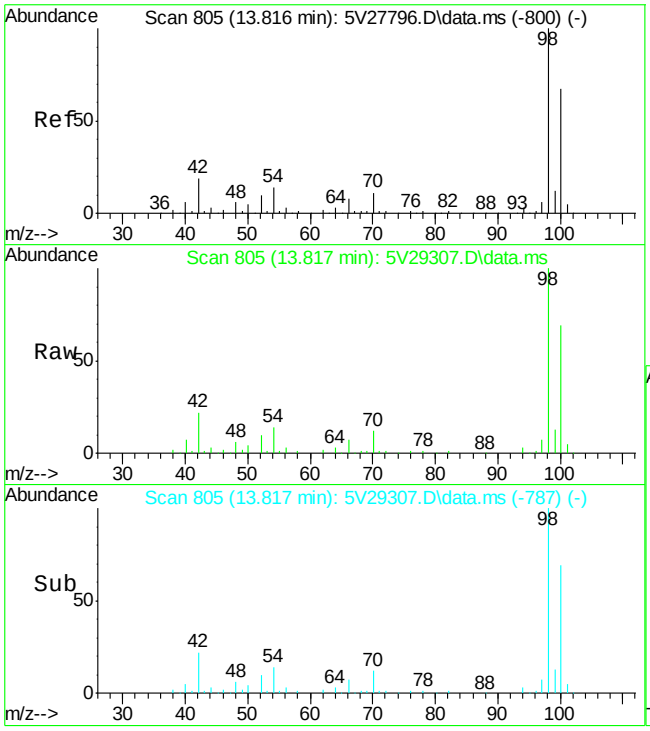




#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

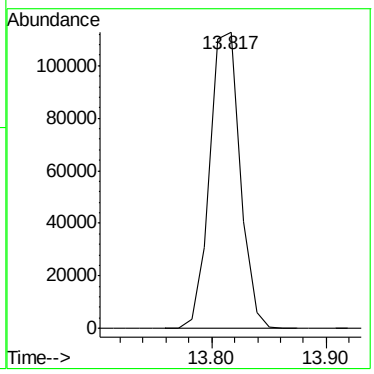
Tgt Ion:117 Resp: 186172

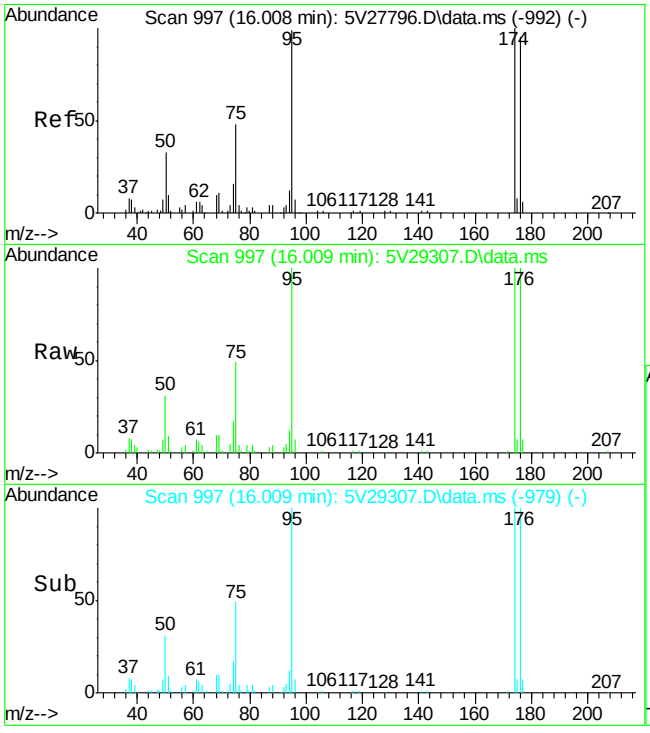




#64
Toluene-d8
Concen: 49.49 ug/l
RT: 13.817 min Scan# 805
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion: 98 Resp: 208726

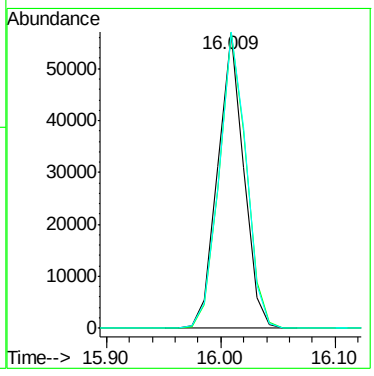


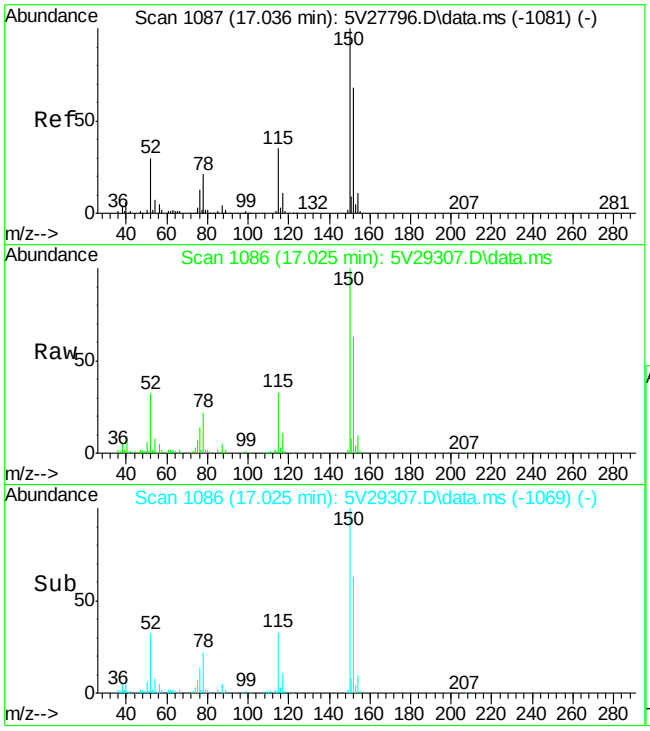


#72
4-Bromofluorobenzene
Concen: 45.81 ug/l
RT: 16.009 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion: 95 Resp: 90052

Ion	Ratio	Lower	Upper
95	100		
174	103.8	85.4	125.4
176	104.2	80.6	120.6

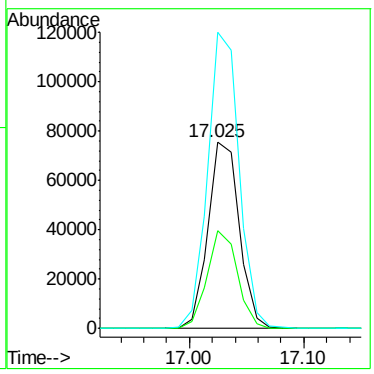


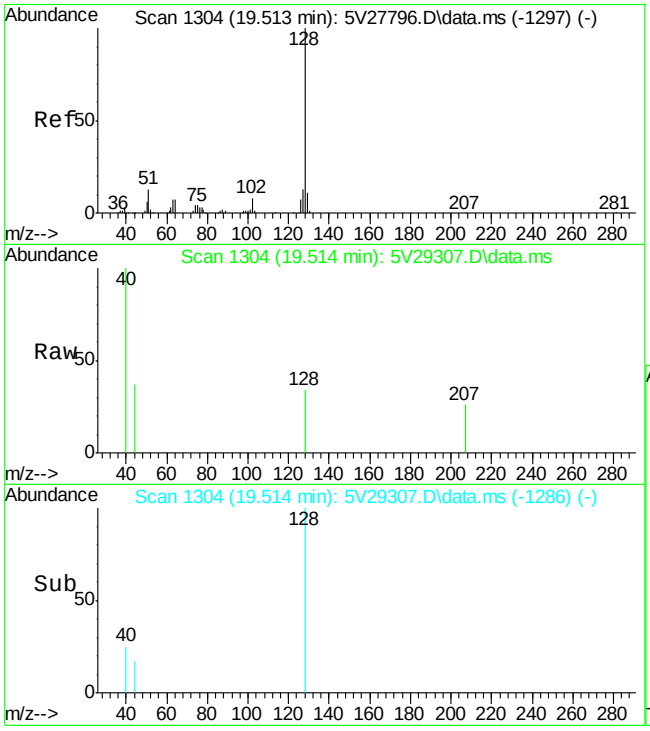


#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.025 min Scan# 1086
Delta R.T. -0.011 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion:152 Resp: 143455

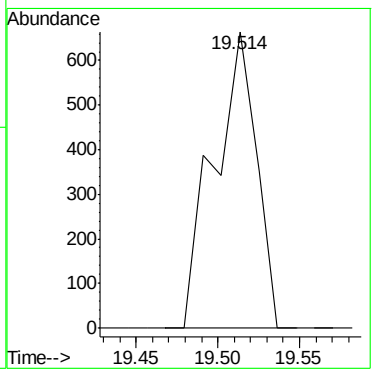
Ion	Ratio	Lower	Upper
152	100		
115	50.4	43.4	65.2
150	159.5	142.9	214.3

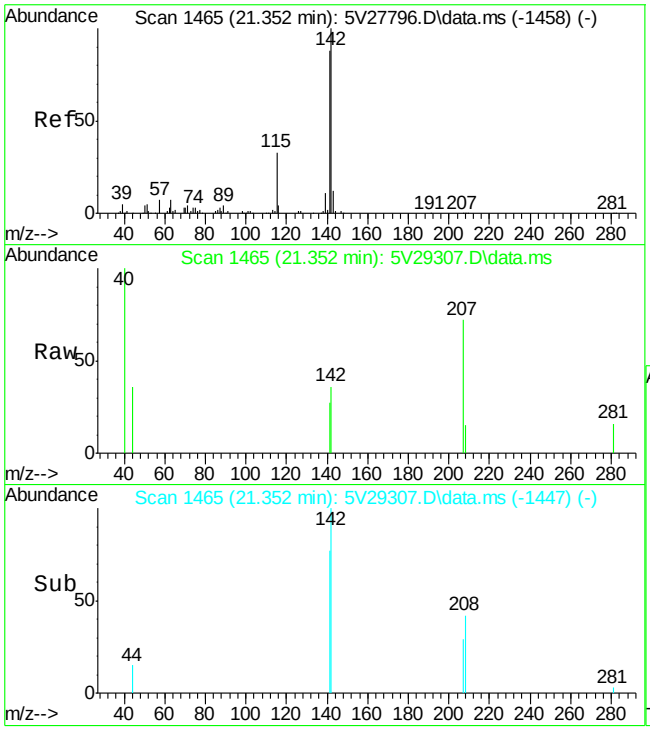




#94
Naphthalene
Concen: 1.00 ug/l
RT: 19.514 min Scan# 1304
Delta R.T. 0.001 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion:128 Resp: 1196

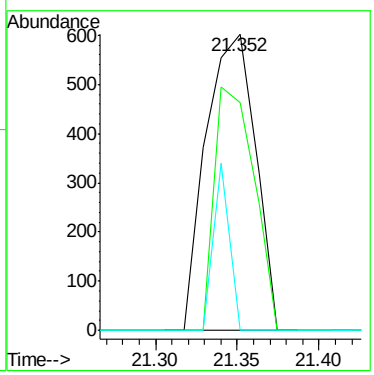




#98
1-Methylnaphthalene
Concen: 1.70 ug/l
RT: 21.352 min Scan# 1465
Delta R.T. 0.001 min
Lab File: 5V29307.D
Acq: 30 Sep 2013 3:33 pm

Tgt Ion:142 Resp: 1265

Ion	Ratio	Lower	Upper
142	100		
141	65.9	68.1	108.1#
115	18.5	13.1	53.1



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5093013.S\
Data File : 5V29302.D
Acq On : 30 Sep 2013 12:54 pm
Operator : BRETD
Sample : MB
Misc : MS6465,V5V1762,5.000,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 01 08:39:12 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

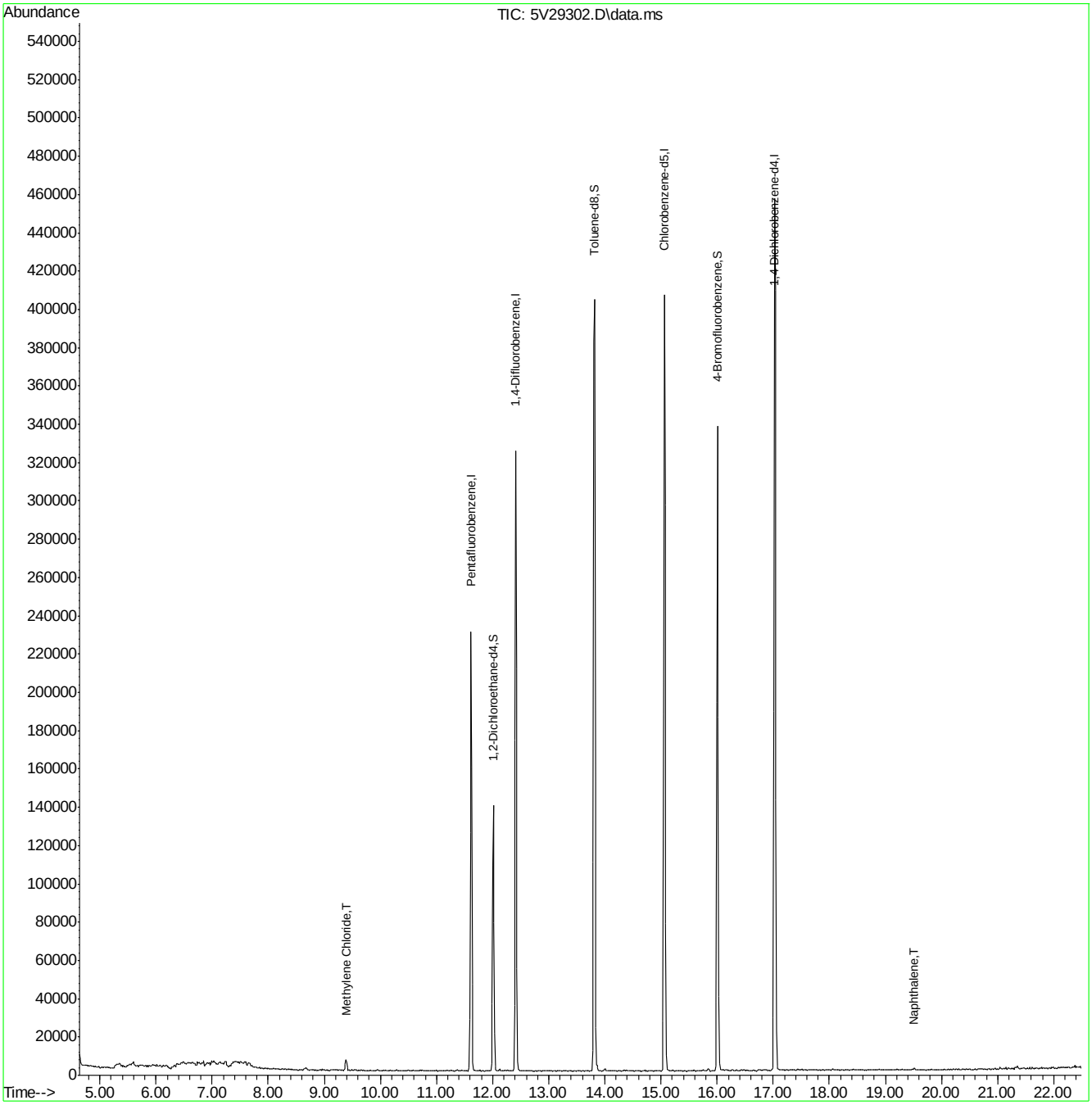
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	156020	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	216024	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	205874	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	139165	50.00	ug/l	-0.01
System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.012	102	16315	51.46	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 102.92%			
64) Toluene-d8	13.816	98	234627	50.31	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 100.62%			
72) 4-Bromofluorobenzene	16.008	95	93561	43.04	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 86.08%			
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	-34510m	55.28	ug/l	
18) Methylene Chloride	9.386	84	1736	1.34	ug/l #	82
94) Naphthalene	19.502	128	1038	0.98	ug/l	100

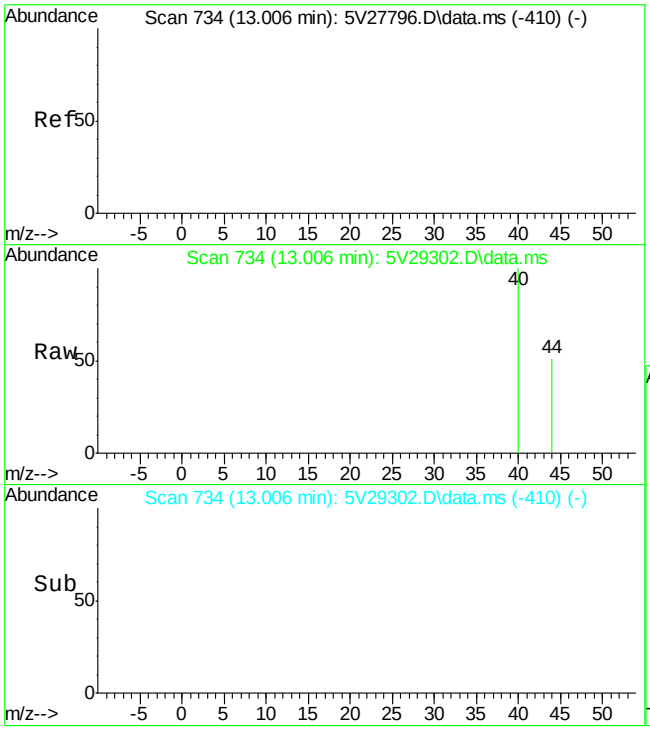
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5093013.S\
Data File : 5V29302.D
Acq On : 30 Sep 2013 12:54 pm
Operator : BRETD
Sample : MB
Misc : MS6465,V5V1762,5.000,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

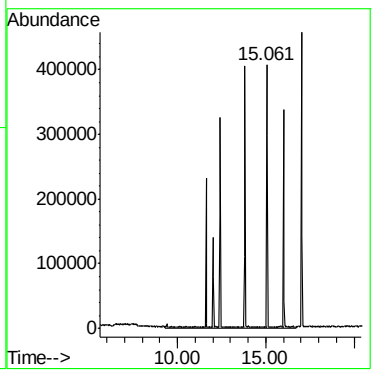
Quant Time: Oct 01 08:39:12 2013
Quant Method : C:\msdchem\1\METHODS\V5AP1728TVH1728.M
Quant Title : 8260
QLast Update : Tue Aug 20 09:59:22 2013
Response via : Initial Calibration

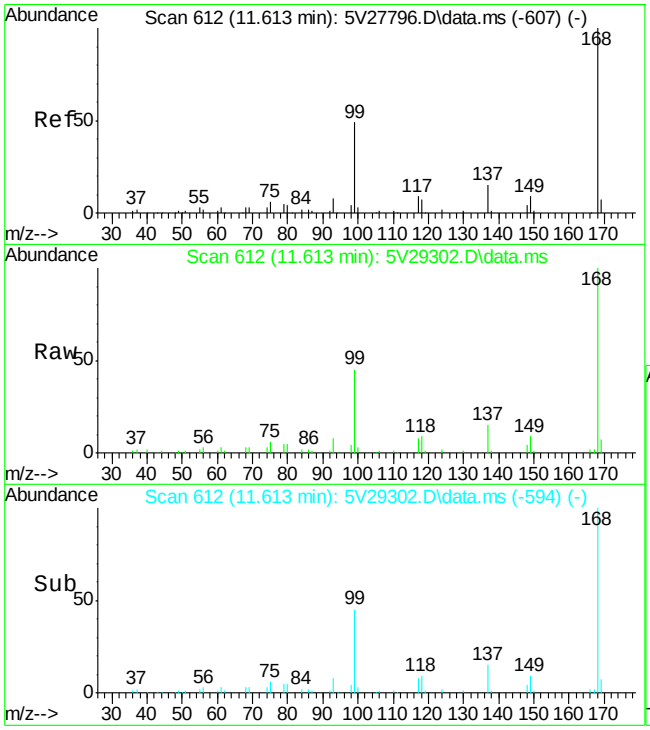




#1
TVH-Gasoline
Concen: 55.28 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion:TIC Resp: -34510

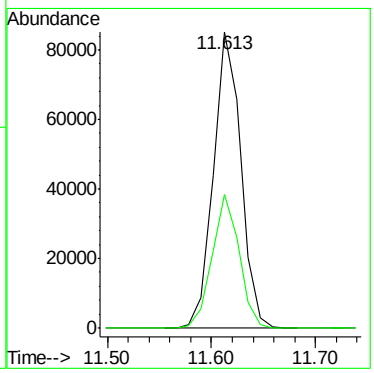


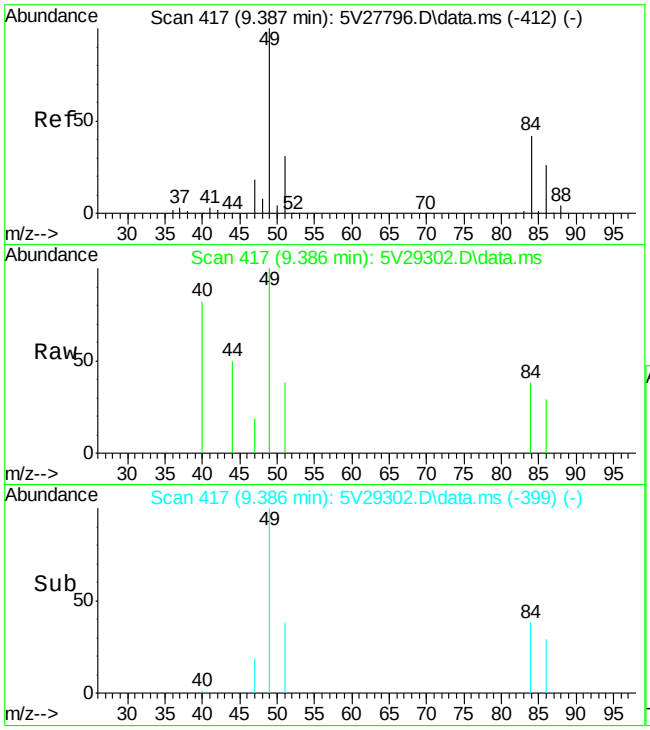


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion:168 Resp: 156020

Ion	Ratio	Lower	Upper
168	100		
99	44.4	41.4	62.2

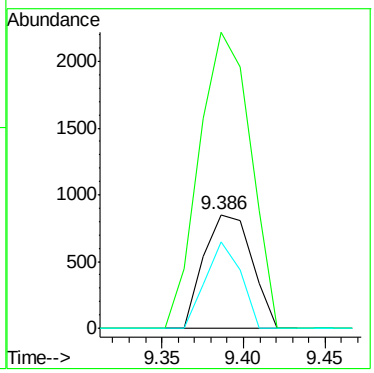


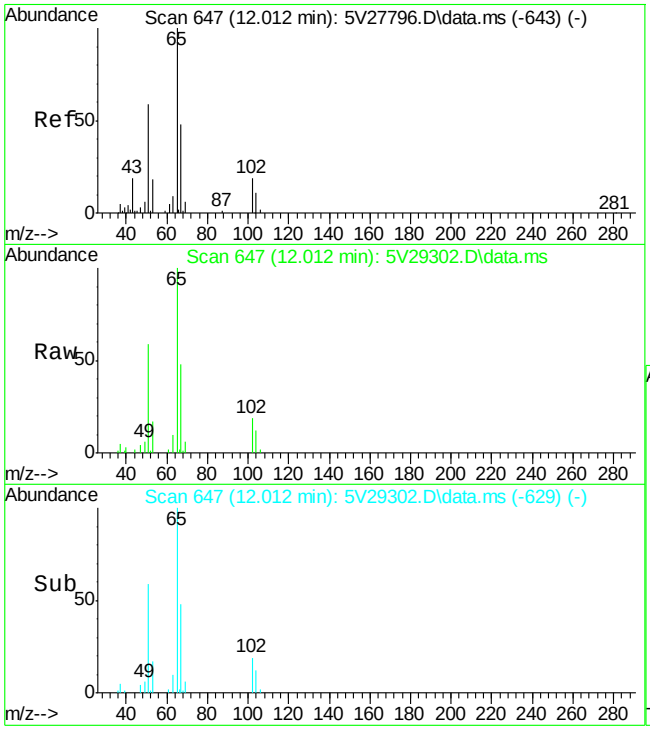


#18
Methylene Chloride
Concen: 1.34 ug/l
RT: 9.386 min Scan# 417
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion: 84 Resp: 1736

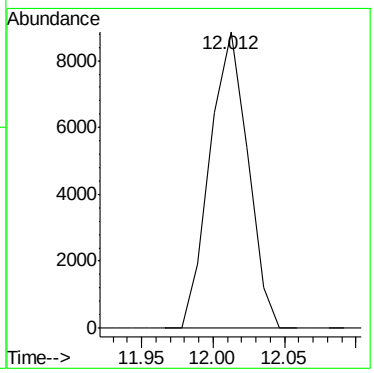
Ion	Ratio	Lower	Upper
84	100		
49	279.3	224.8	264.8#
86	55.9	44.5	84.5

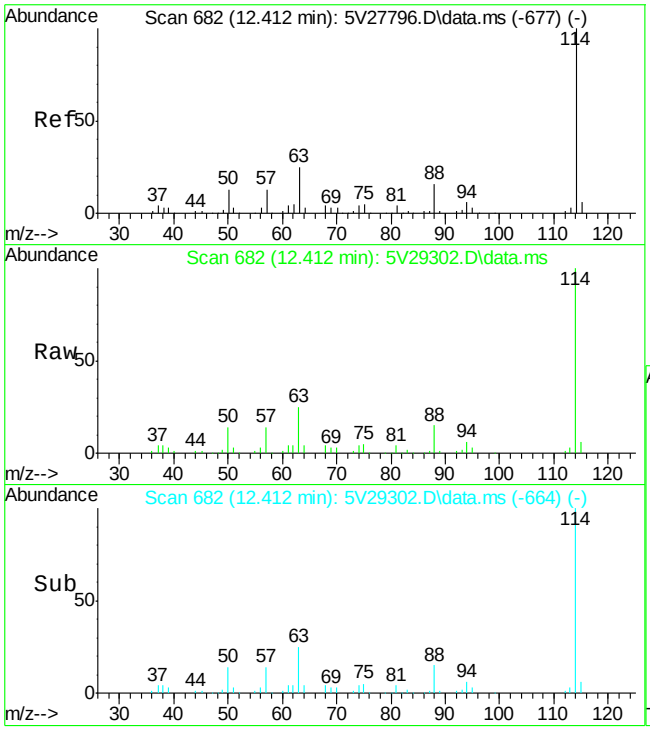




#35
1,2-Dichloroethane-d4
Concen: 51.46 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

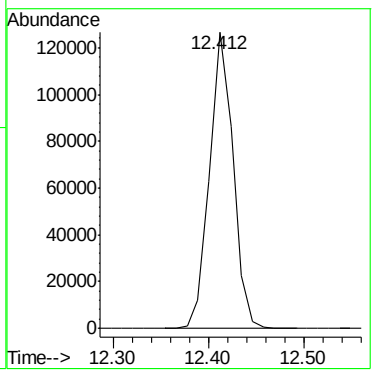
Tgt Ion:102 Resp: 16315

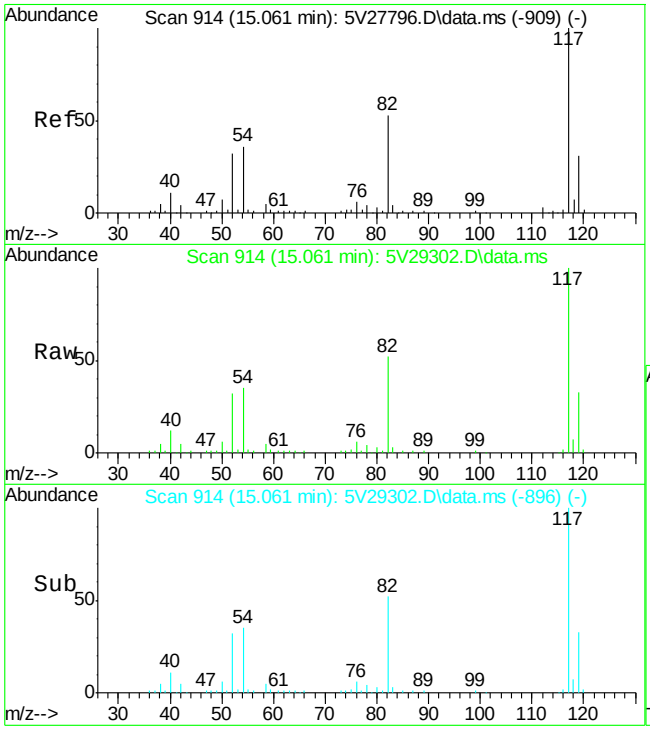




#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

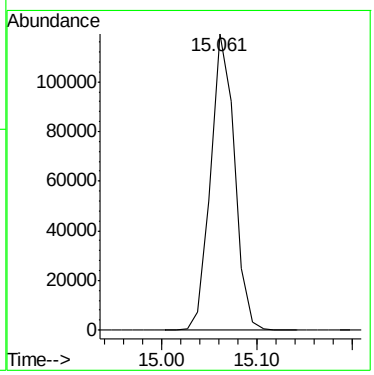
Tgt Ion:114 Resp: 216024

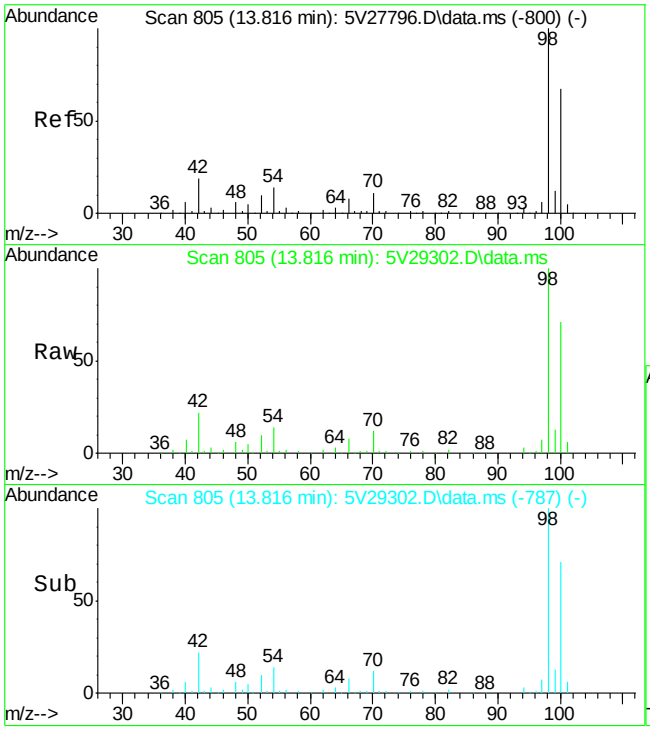




#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

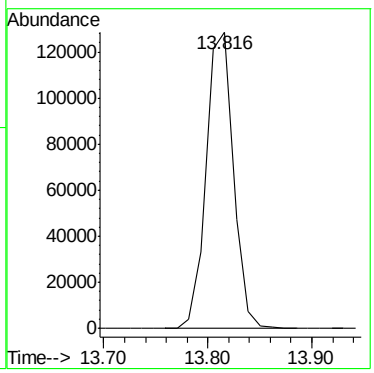
Tgt Ion:117 Resp: 205874

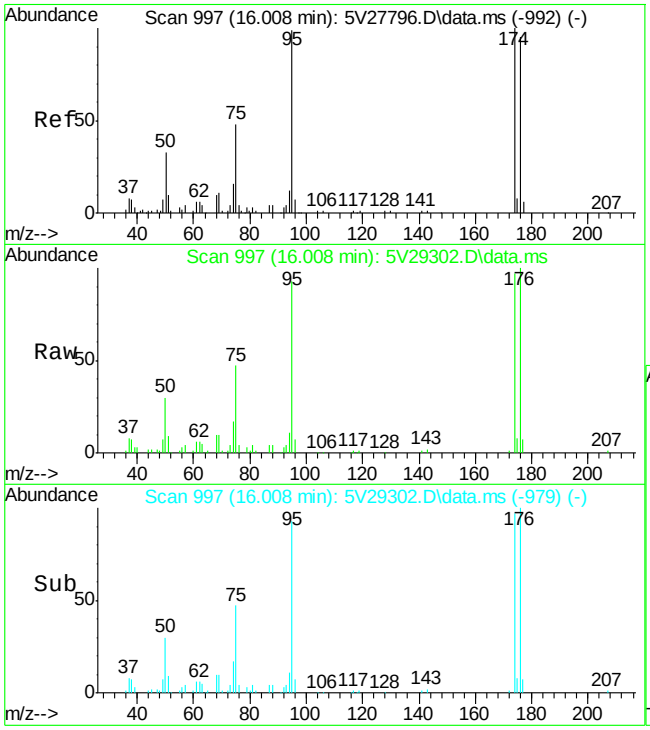




#64
Toluene-d8
Concen: 50.31 ug/l
RT: 13.816 min Scan# 805
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion: 98 Resp: 234627

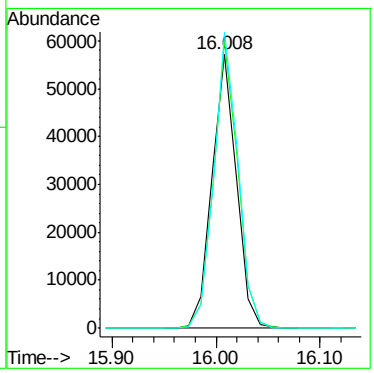


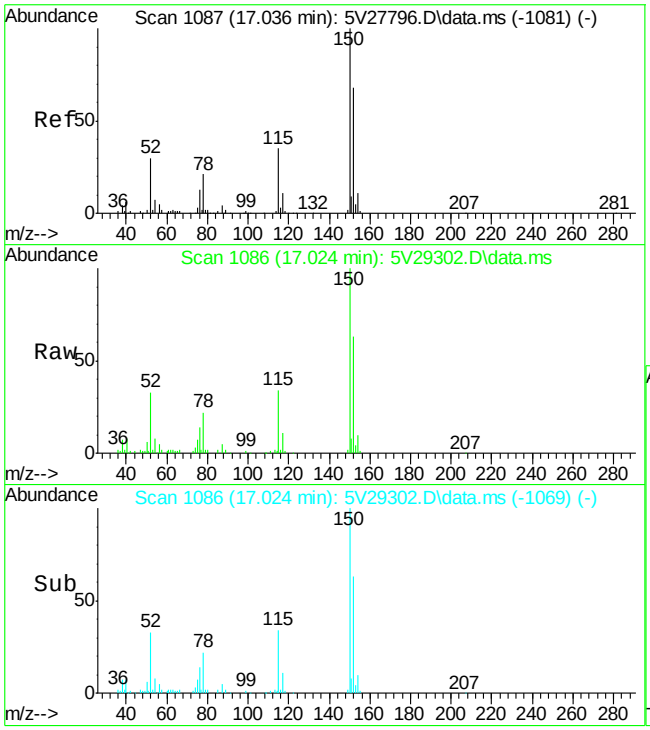


#72
4-Bromofluorobenzene
Concen: 43.04 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion: 95 Resp: 93561

Ion	Ratio	Lower	Upper
95	100		
174	104.2	85.4	125.4
176	106.6	80.6	120.6

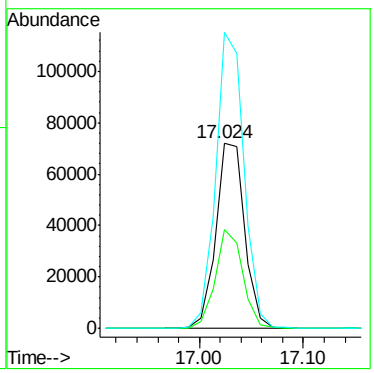


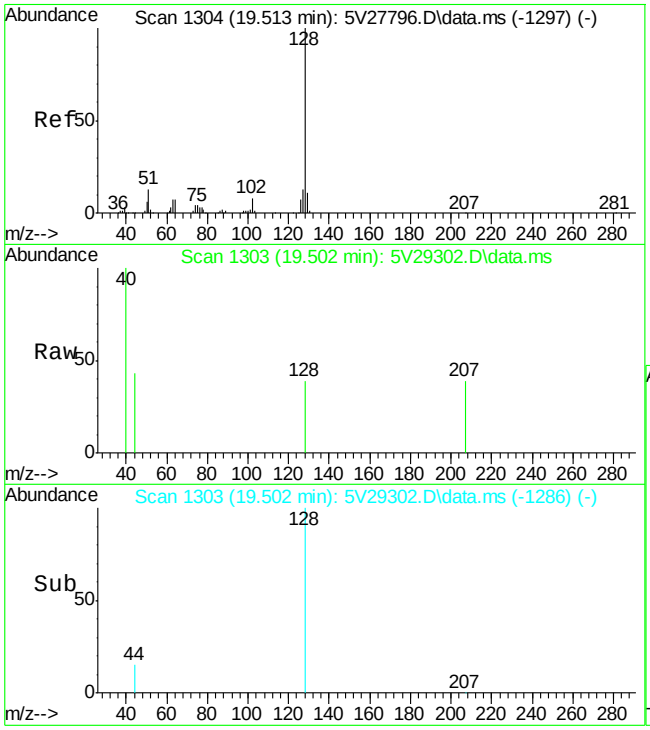


#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.024 min Scan# 1086
Delta R.T. -0.011 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion:152 Resp: 139165

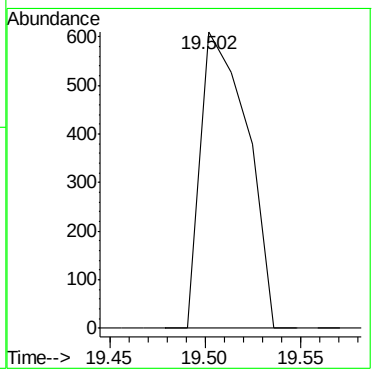
Ion	Ratio	Lower	Upper
152	100		
115	51.0	43.4	65.2
150	157.4	142.9	214.3





#94
Naphthalene
Concen: 0.98 ug/l
RT: 19.502 min Scan# 1303
Delta R.T. -0.011 min
Lab File: 5V29302.D
Acq: 30 Sep 2013 12:54 pm

Tgt Ion:128 Resp: 1038



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: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8644-MB	3G16501.D	1	09/27/13	DC	09/27/13	OP8644	E3G816

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

D51044-1

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	87%	10-175%
321-60-8	2-Fluorobiphenyl	84%	25-130%
1718-51-0	Terphenyl-d14	111%	41-133%

Blank Spike Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8644-BS	3G16502.D	1	09/27/13	DC	09/27/13	OP8644	E3G816

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

D51044-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	64.0	77	55-130
120-12-7	Anthracene	83.3	61.1	73	60-130
56-55-3	Benzo(a)anthracene	83.3	71.0	85	62-130
205-99-2	Benzo(b)fluoranthene	83.3	59.6	72	55-130
207-08-9	Benzo(k)fluoranthene	83.3	81.4	98	59-130
50-32-8	Benzo(a)pyrene	83.3	66.1	79	64-130
218-01-9	Chrysene	83.3	74.1	89	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	62.1	75	56-130
206-44-0	Fluoranthene	83.3	60.3	72	59-130
86-73-7	Fluorene	83.3	64.6	78	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	63.1	76	60-130
91-20-3	Naphthalene	83.3	53.4	64	56-130
129-00-0	Pyrene	83.3	73.0	88	65-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	78%	10-175%
321-60-8	2-Fluorobiphenyl	86%	25-130%
1718-51-0	Terphenyl-d14	102%	41-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8644-MS	3G16504.D	1	09/27/13	DC	09/27/13	OP8644	E3G816
OP8644-MSD	3G16505.D	1	09/27/13	DC	09/27/13	OP8644	E3G816
D50832-1R	3G16503.D	1	09/27/13	DC	09/27/13	OP8644	E3G816

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

D51044-1

CAS No.	Compound	D50832-1R ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		102	74.4	73	75.2	73	1	29-139/30
120-12-7	Anthracene	ND		102	74.3	72	78.7	77	6	10-182/30
56-55-3	Benzo(a)anthracene	ND		102	103	100	109	106	6	35-149/30
205-99-2	Benzo(b)fluoranthene	ND		102	111	108	114	111	3	22-174/30
207-08-9	Benzo(k)fluoranthene	ND		102	76.5	75	84.1	82	9	10-185/30
50-32-8	Benzo(a)pyrene	ND		102	88.9	87	94.2	92	6	10-168/30
218-01-9	Chrysene	15.0		102	97.4	80	103	86	6	10-168/30
53-70-3	Dibenzo(a,h)anthracene	ND		102	87.2	85	93.8	92	7	12-160/30
206-44-0	Fluoranthene	7.6	J	102	86.0	76	90.1	81	5	20-156/30
86-73-7	Fluorene	10.1		102	127	114	124	111	2	10-164/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		102	87.4	85	94.9	93	8	29-136/30
91-20-3	Naphthalene	29.3		102	98.5	68	91.6	61	7	10-258/30
129-00-0	Pyrene	7.9	J	102	104	94	110	100	6	10-196/30

CAS No.	Surrogate Recoveries	MS	MSD	D50832-1R	Limits
4165-60-0	Nitrobenzene-d5	62%	66%	68%	10-175%
321-60-8	2-Fluorobiphenyl	72%	74%	74%	25-130%
1718-51-0	Terphenyl-d14	90%	98%	87%	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\092713\
Data File : 3g16512.D
Acq On : 27 Sep 2013 5:20 pm
Operator : DONC
Sample : D51044-1
Misc : OP8644,E3G816,30.13,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Sep 30 09:25:45 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

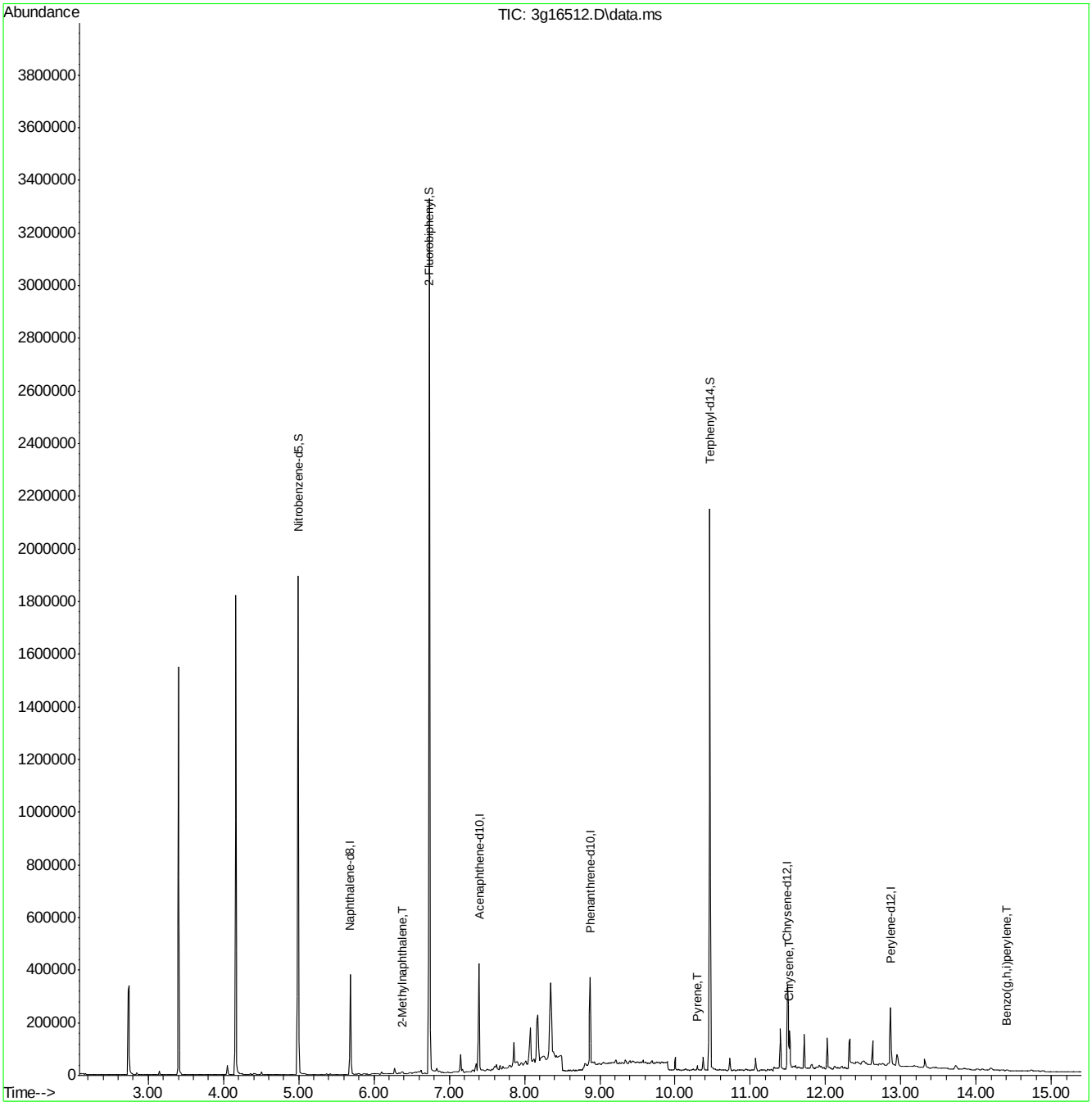
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.682	136	271223	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	152955	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.872	188	243632	4.0000	ug/mL	0.00
19) Chrysene-d12	11.495	240	215520	4.0000	ug/mL	0.00
24) Perylene-d12	12.865	264	173526	4.0000	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	4.996	82	888085	26.0313	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 52.06%			
7) 2-Fluorobiphenyl	6.736	172	1866395	31.3193	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 62.64%			
21) Terphenyl-d14	10.463	244	1490712	36.5573	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 73.12%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	2.421	74	53	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d		
5) Naphthalene	5.707	128	2855	N.D.		
8) 2-Methylnaphthalene	6.380	142	3877	0.0631	ug/mL	94
9) 1-Methylnaphthalene	6.467	142	1073	N.D.		
10) Acenaphthylene	7.268	152	1063	N.D.		
11) Acenaphthene	0.000	154	0	N.D. d		
12) Dibenzofuran	0.000	168	0	N.D. d		
13) Fluorene	7.941	166	1825	N.D.		
14) Diphenylamine	0.000	169	0	N.D. d		
16) Phenanthrene	0.000	178	0	N.D. d		
17) Anthracene	0.000	178	0	N.D. d		
18) Fluoranthene	0.000	202	0	N.D. d		
20) Pyrene	10.297	202	8201	0.0814	ug/mL	89
22) Benzo(a)anthracene	0.000	228	0	N.D. d		
23) Chrysene	11.508	228	16390	0.1688	ug/mL	81
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	14.401	276	895	0.0739	ug/mL	87

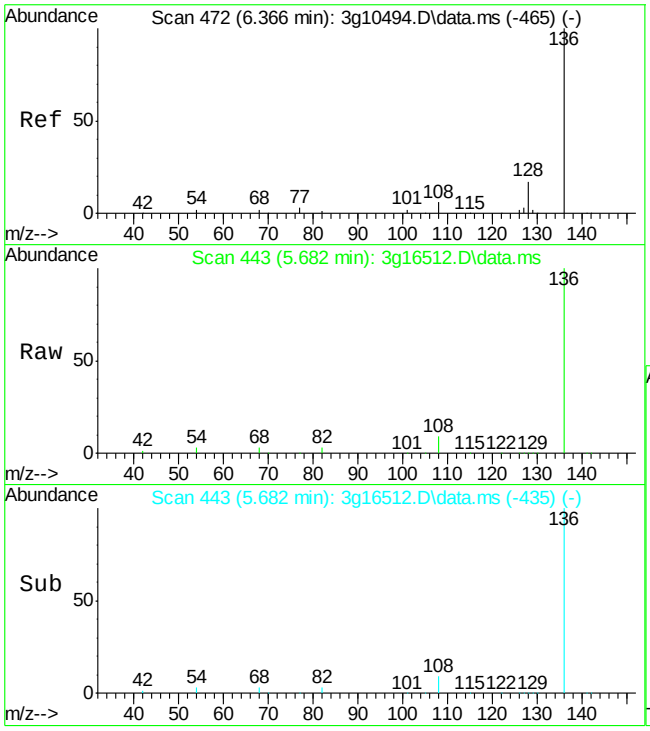
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092713\
Data File : 3g16512.D
Acq On : 27 Sep 2013 5:20 pm
Operator : DONC
Sample : D51044-1
Misc : OP8644,E3G816,30.13,,,1,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Sep 30 09:25:45 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

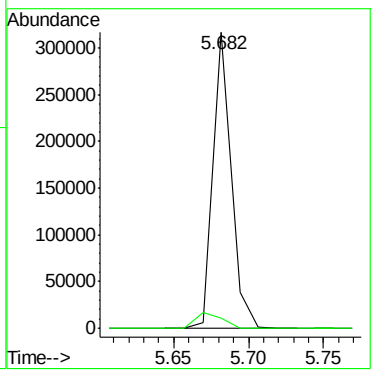


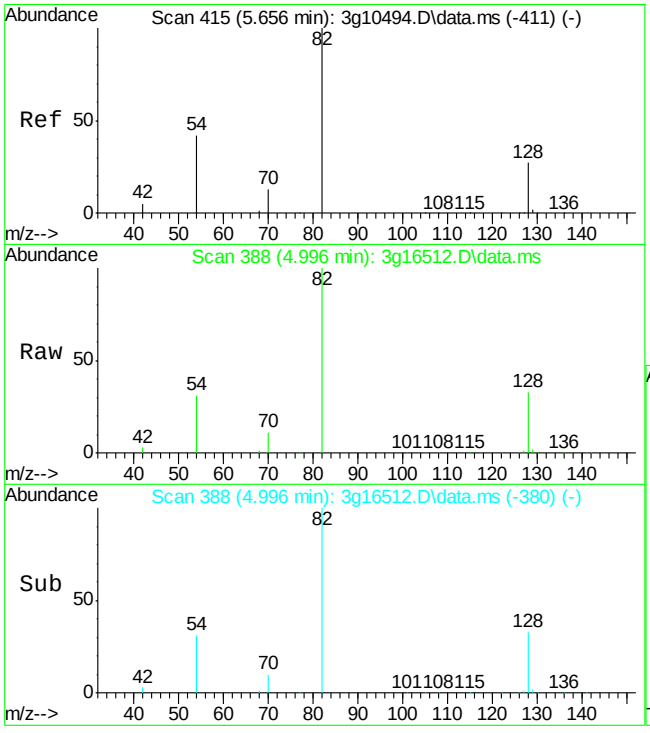


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:136 Resp: 271223

Ion	Ratio	Lower	Upper
136	100		
68	7.5	0.0	21.1

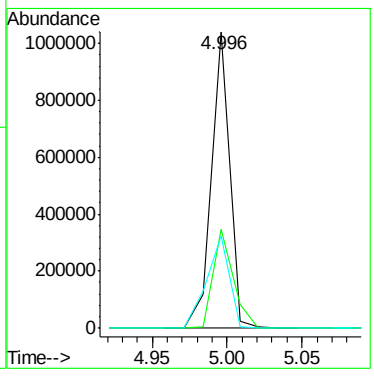


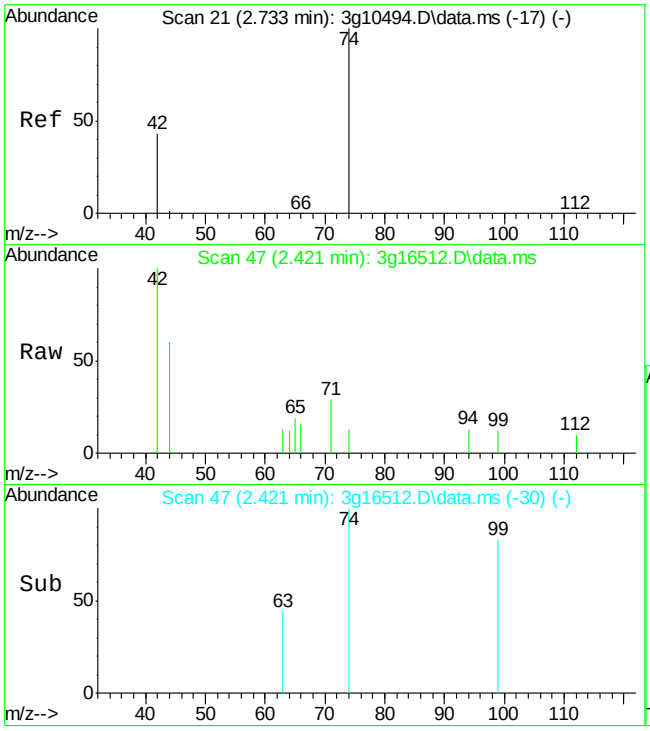


#2
Nitrobenzene-d5
Concen: 26.0313 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 82 Resp: 888085

Ion	Ratio	Lower	Upper
82	100		
128	36.7	36.8	76.8#
54	38.7	40.5	80.5#

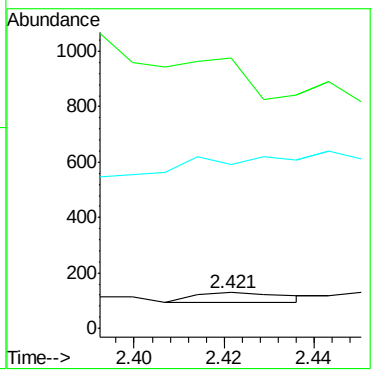


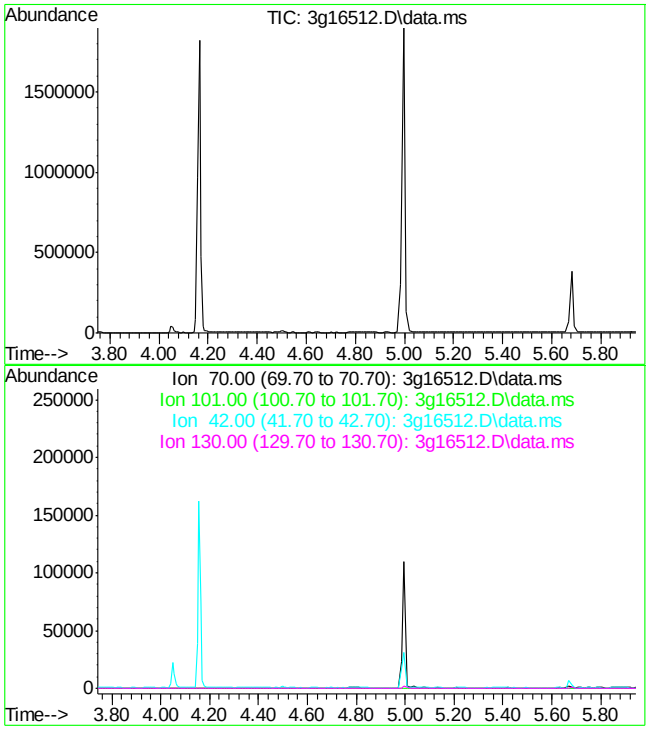


#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.421 min Scan# 47
Delta R.T. 0.022 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 74 Resp: 53

Ion	Ratio	Lower	Upper
74	100		
42	0.0	58.5	98.5#
44	403.8	0.0	24.0#



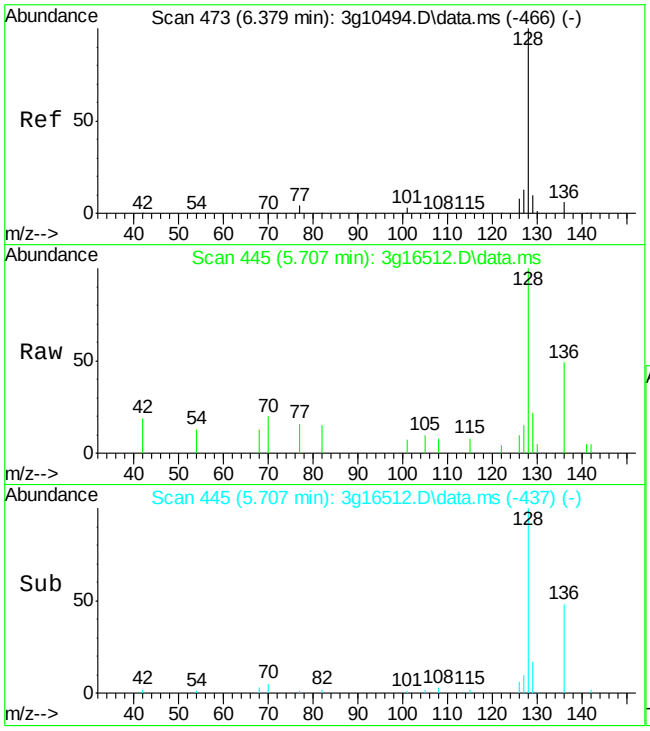


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 70

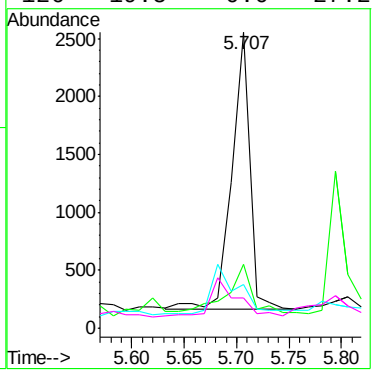
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7

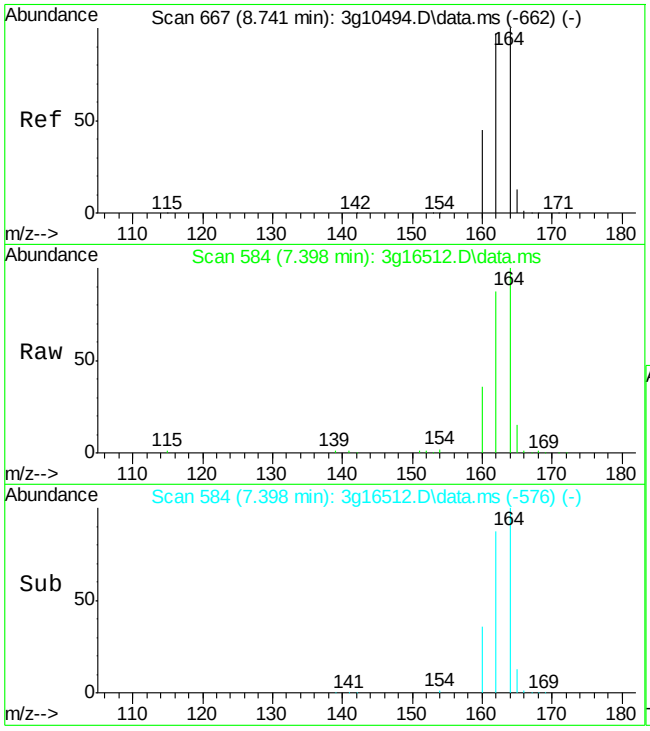


#5
Naphthalene
Concen: Below ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:128 Resp: 2855

Ion	Ratio	Lower	Upper
128	100		
129	22.8	0.0	31.2
127	26.8	0.0	32.4
126	19.5	0.0	27.2

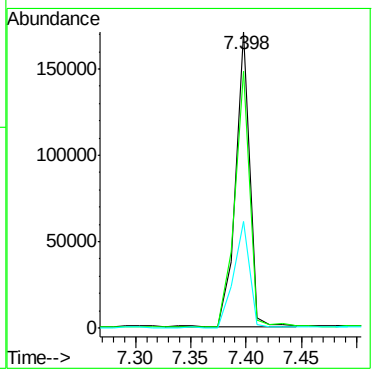


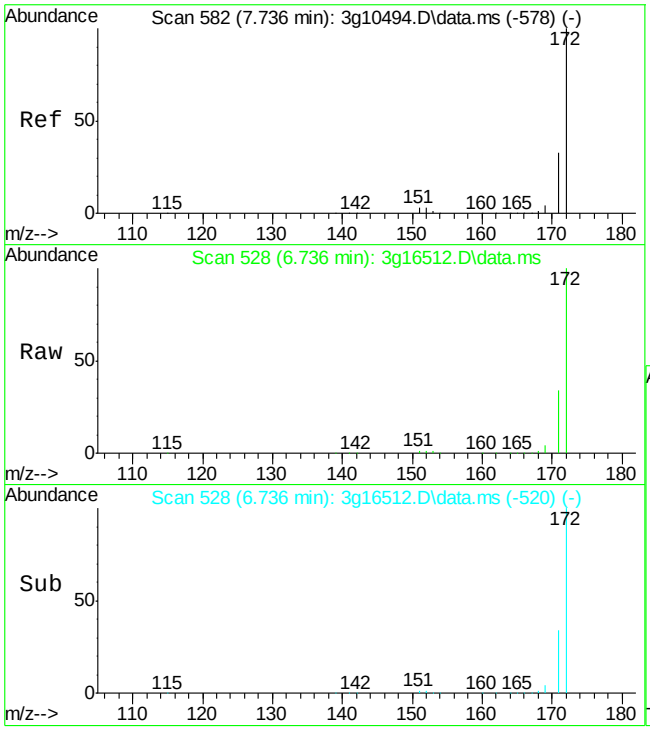


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:164 Resp: 152955

Ion	Ratio	Lower	Upper
164	100		
162	92.6	83.7	123.7
160	41.1	31.9	71.9

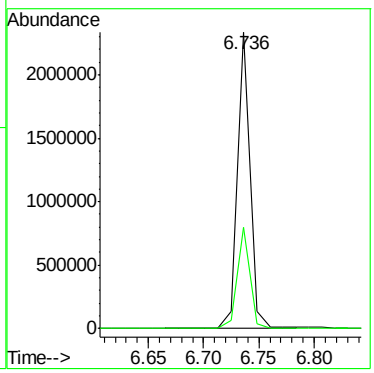


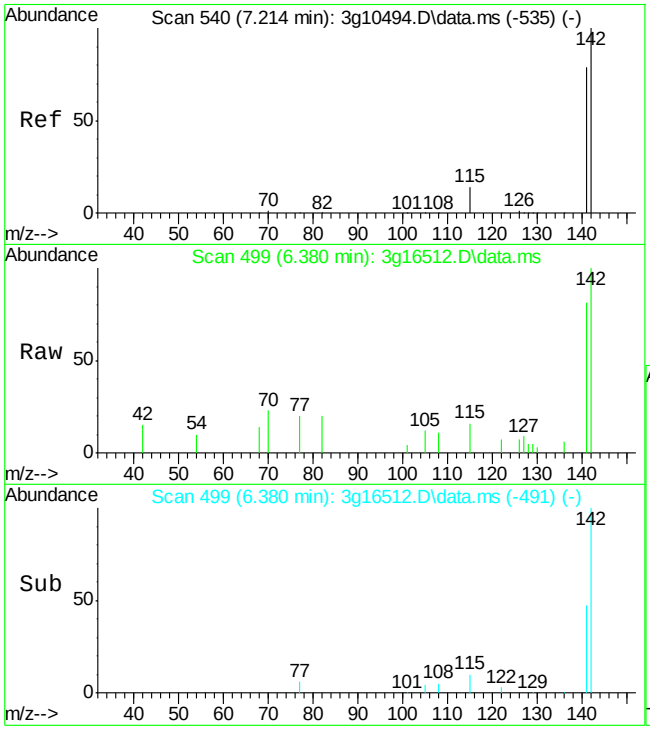


#7
2-Fluorobiphenyl
Concen: 31.3193 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:172 Resp: 1866395

Ion	Ratio	Lower	Upper
172	100		
171	34.2	12.2	52.2

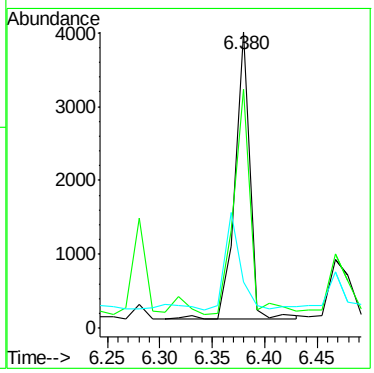


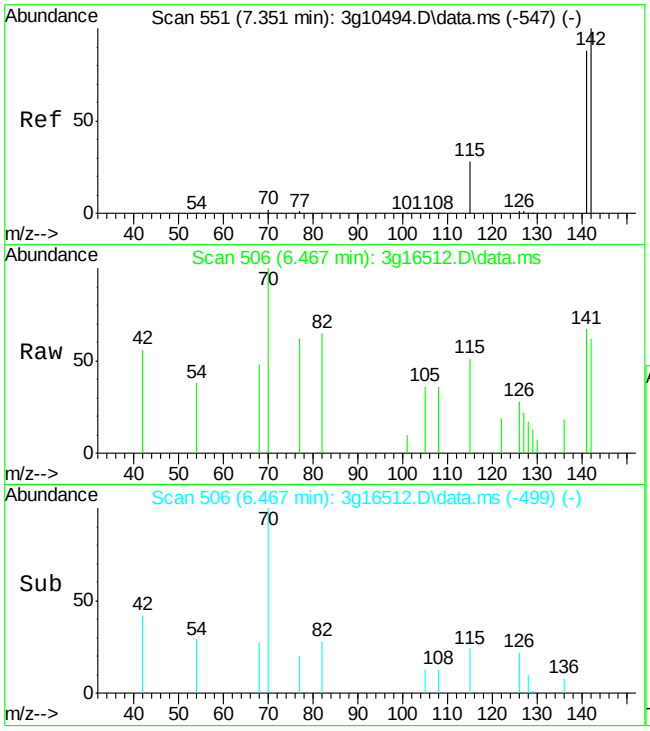


#8
2-Methylnaphthalene
Concen: 0.0631 ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:142 Resp: 3877

Ion	Ratio	Lower	Upper
142	100		
141	87.5	62.0	102.0
115	35.0	11.3	51.3

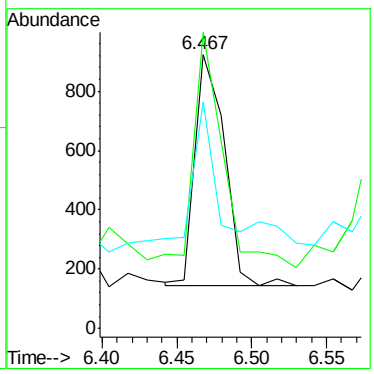


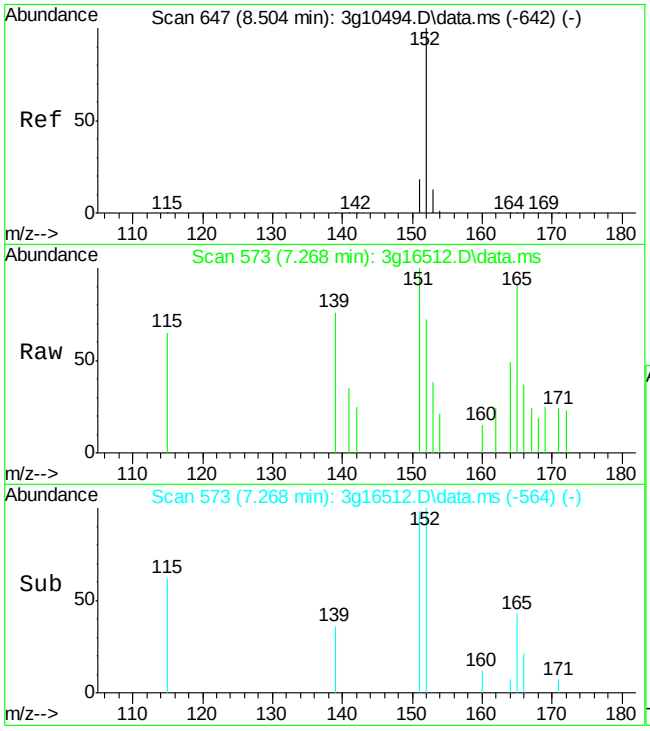


#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.467 min Scan# 506
Delta R.T. -0.012 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:142 Resp: 1073

Ion	Ratio	Lower	Upper
142	100		
141	102.1	67.5	107.5
115	57.8	19.4	59.4

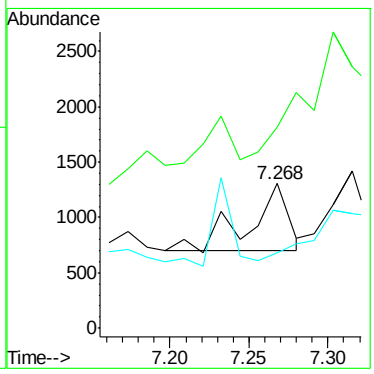


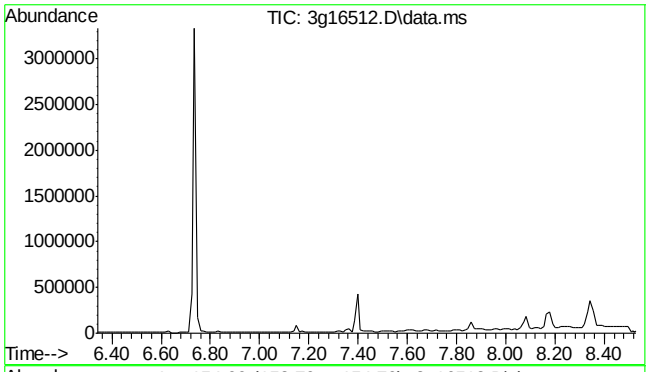


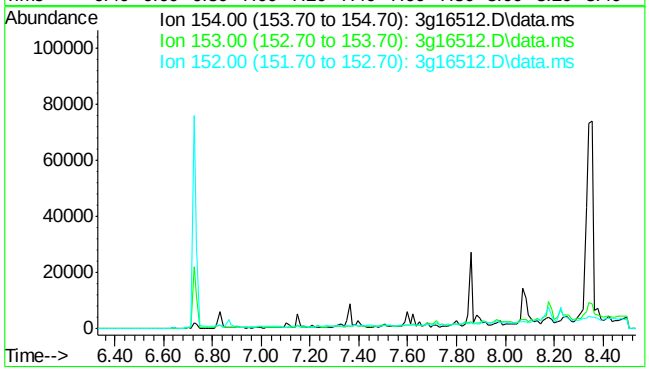
#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.268 min Scan# 573
Delta R.T. 0.012 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:152 Resp: 1063

Ion	Ratio	Lower	Upper
152	100		
151	45.7	0.0	39.2#
153	54.6	0.0	32.9#





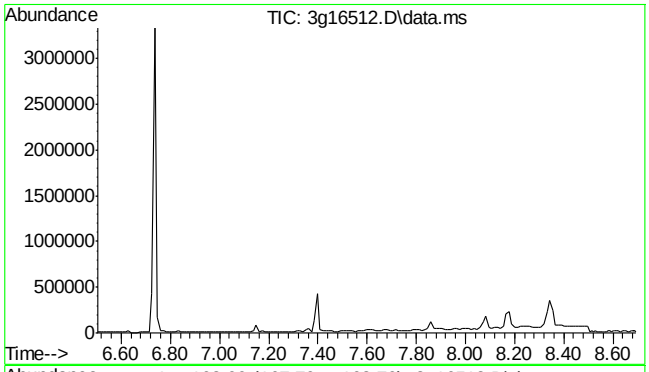


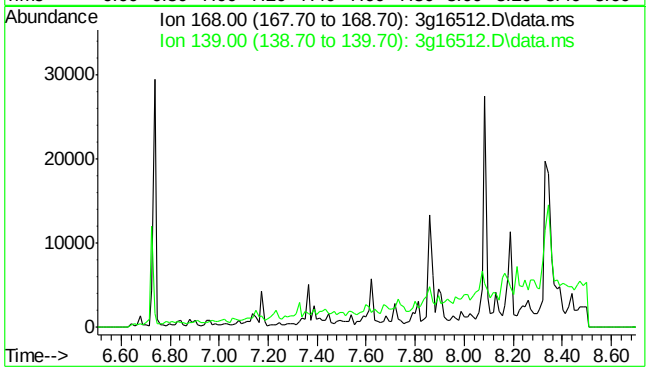
#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 7.43 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 154

Sig	Exp Ratio
154	100
153	102.4
152	50.0



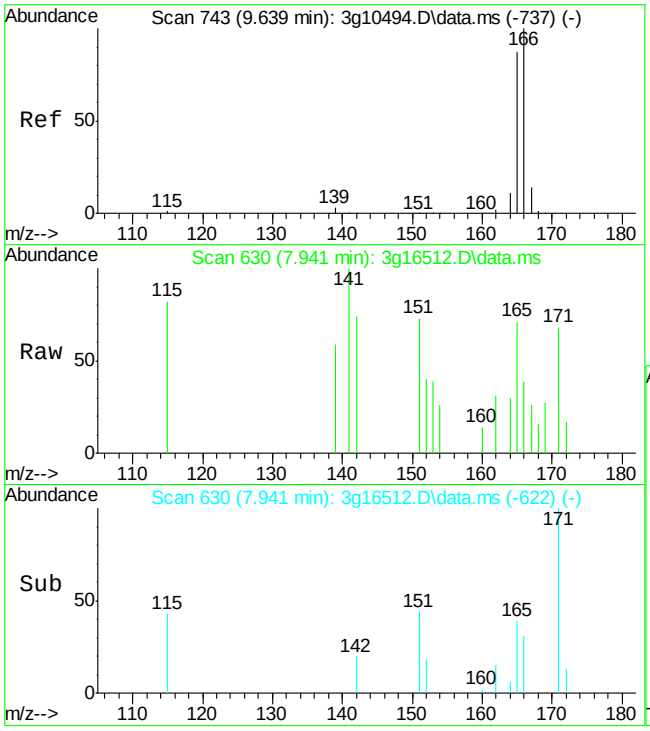


#12
Dibenzofuran
Concen: N.D. ug/mL
Expected RT: 7.60 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 168

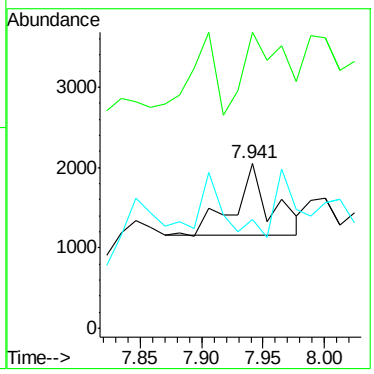
Sig	Exp Ratio
168	100
139	33.4

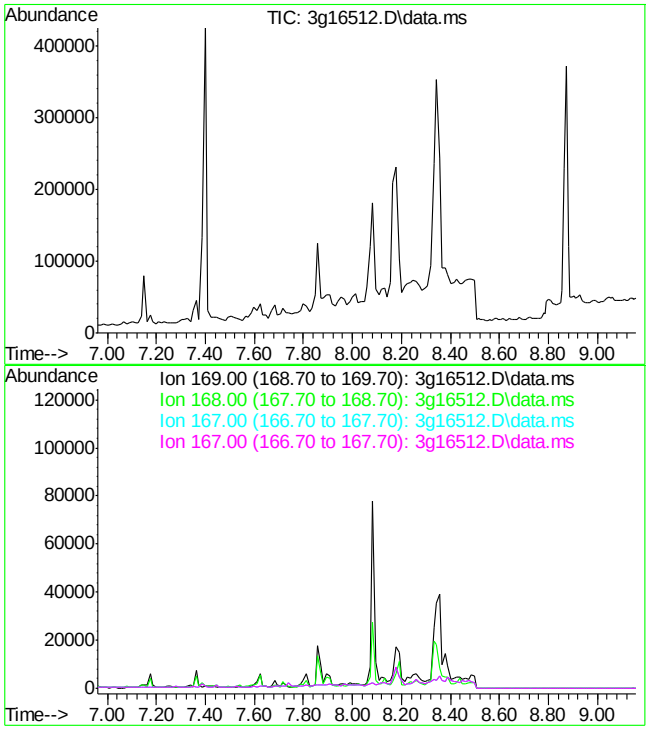


#13
Fluorene
Concen: Below ug/mL
RT: 7.941 min Scan# 630
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:166 Resp: 1825

Ion	Ratio	Lower	Upper
166	100		
165	127.5	72.0	112.0#
167	53.3	0.0	33.1#



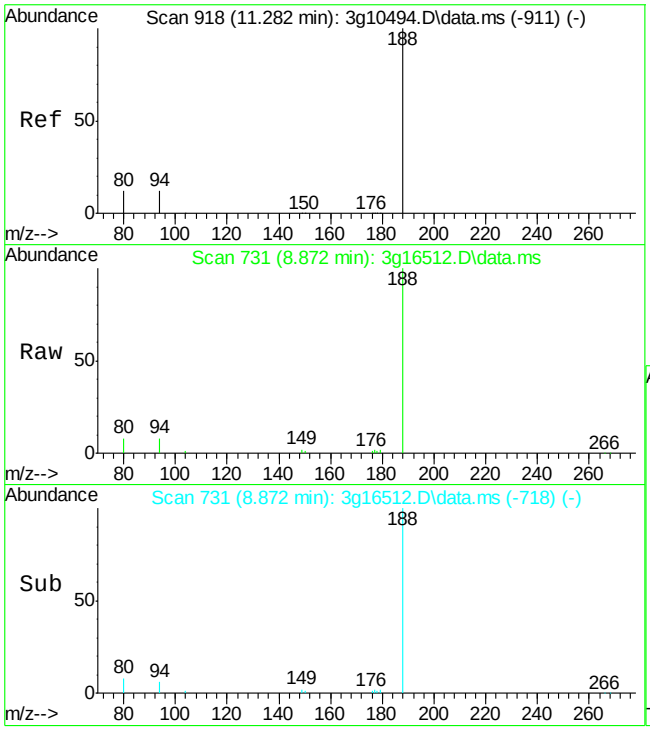


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 169

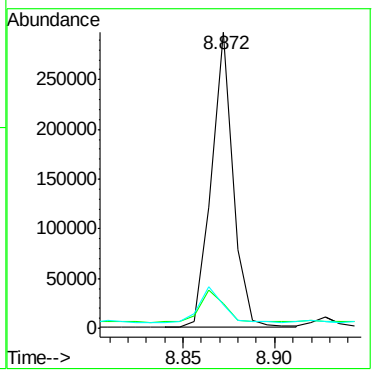
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1

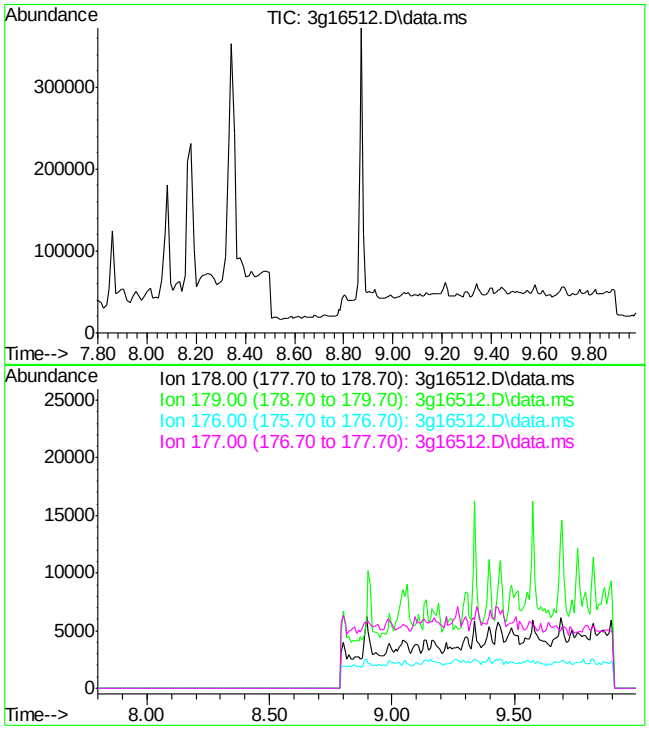


#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.872 min Scan# 731
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:188 Resp: 243632

Ion	Ratio	Lower	Upper
188	100		
94	11.8	0.0	28.3
80	15.8	0.0	27.8



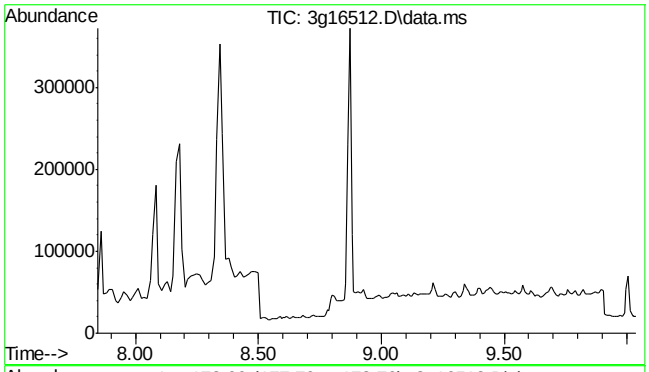


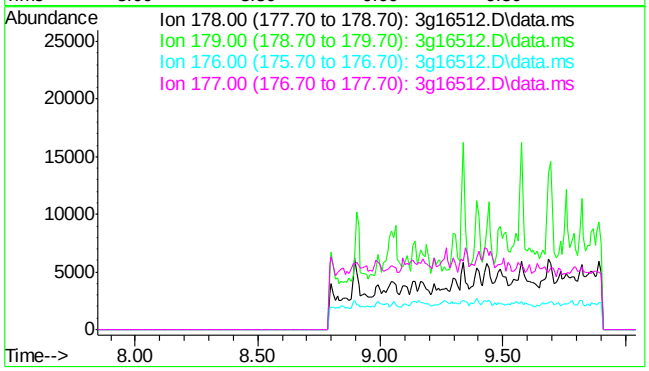
#16
Phenanthrene
Concen: N.D. ug/mL
Expected RT: 8.90 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 178

Sig	Exp Ratio
178	100
179	15.2
176	18.6
177	10.0



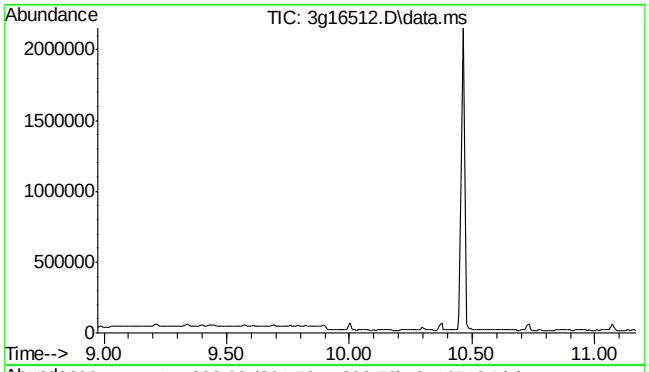


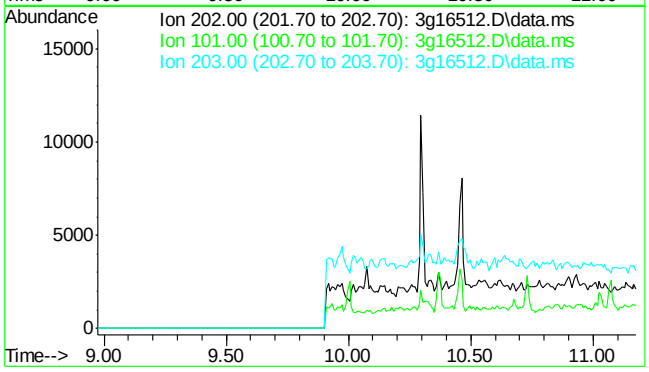
#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 178

Sig	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7



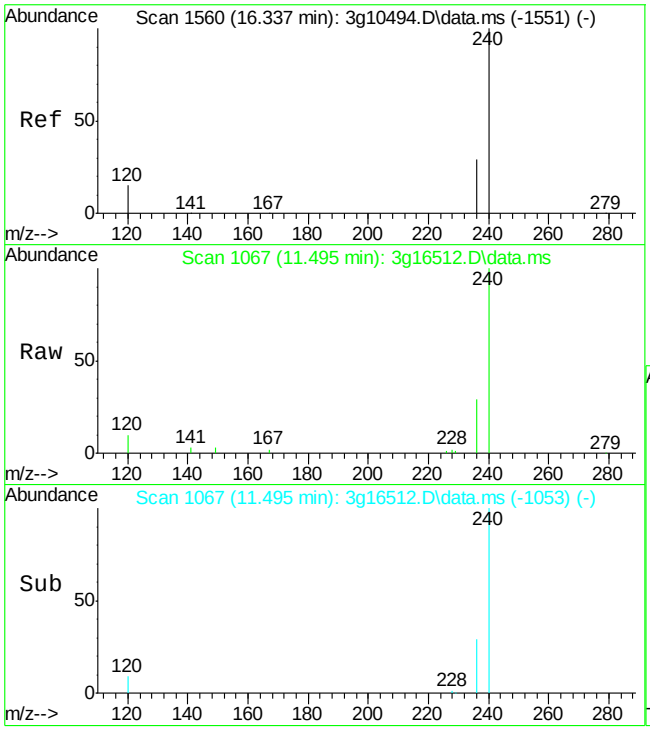


#18
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 10.07 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 202

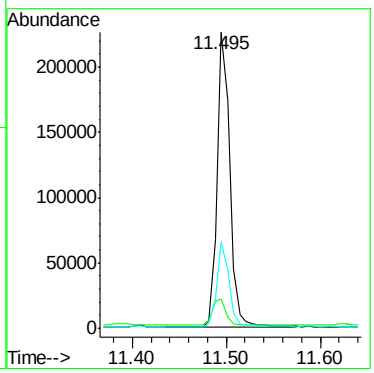
Sig	Exp Ratio
202	100
101	12.6
203	17.4

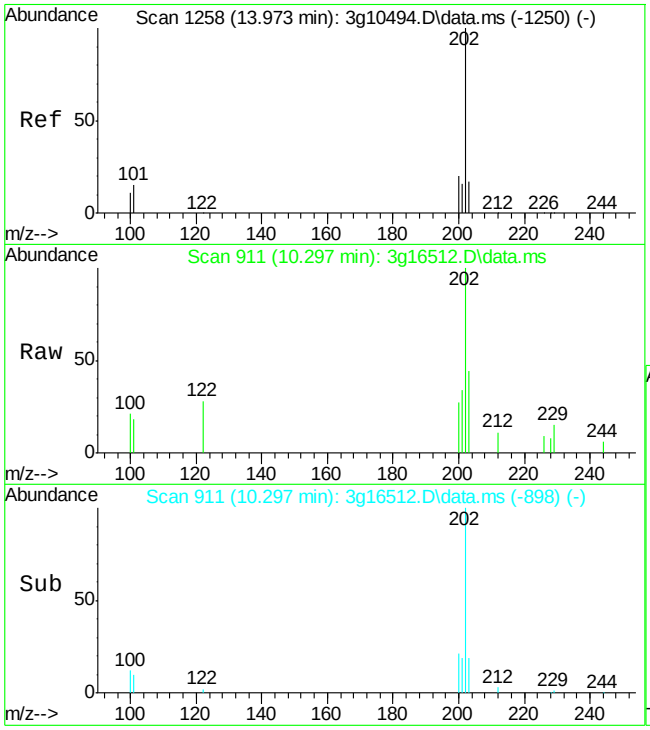


#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. -0.007 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:240 Resp: 215520

Ion	Ratio	Lower	Upper
240	100		
120	10.0	0.2	40.2
236	27.5	8.8	48.8

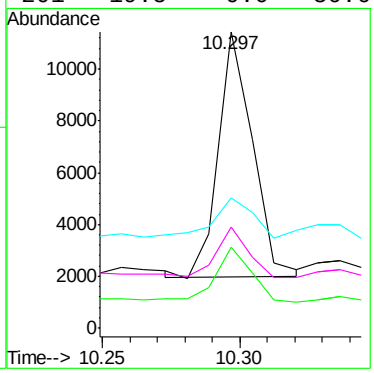


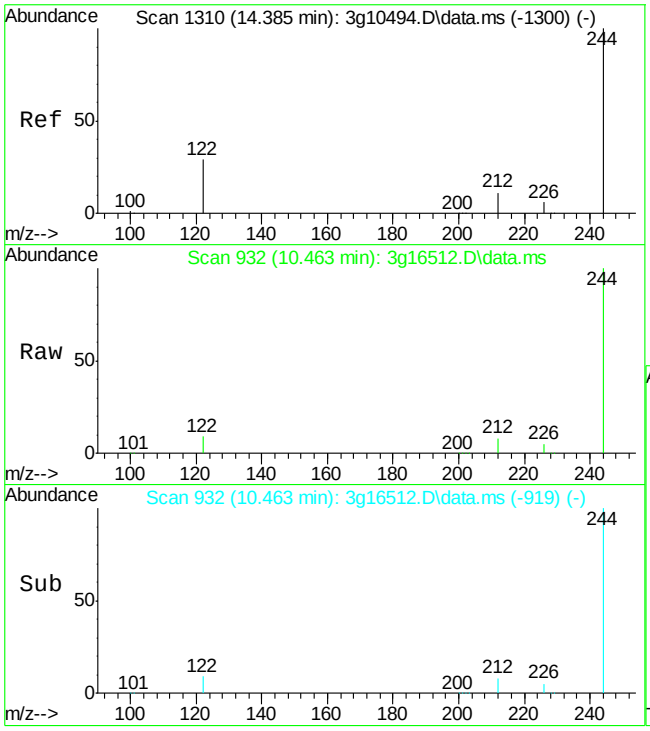


#20
Pyrene
Concen: 0.0814 ug/mL
RT: 10.297 min Scan# 911
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:202 Resp: 8201

Ion	Ratio	Lower	Upper
202	100		
200	23.4	0.2	40.2
203	26.0	0.0	37.8
201	19.5	0.0	36.6

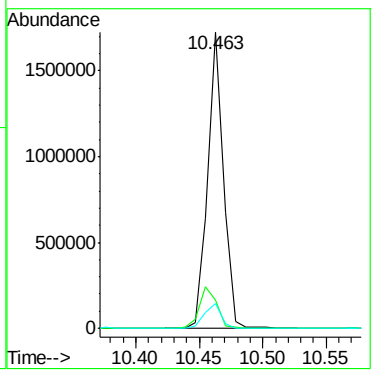


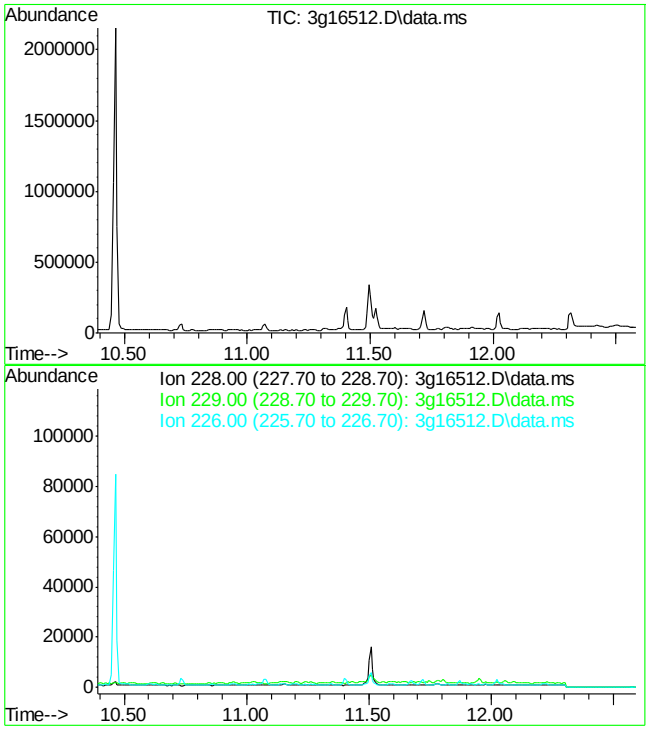


#21
Terphenyl-d14
Concen: 36.5573 ug/mL
RT: 10.463 min Scan# 932
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:244 Resp: 1490712

Ion	Ratio	Lower	Upper
244	100		
122	14.7	7.8	47.8
212	8.6	0.0	32.8



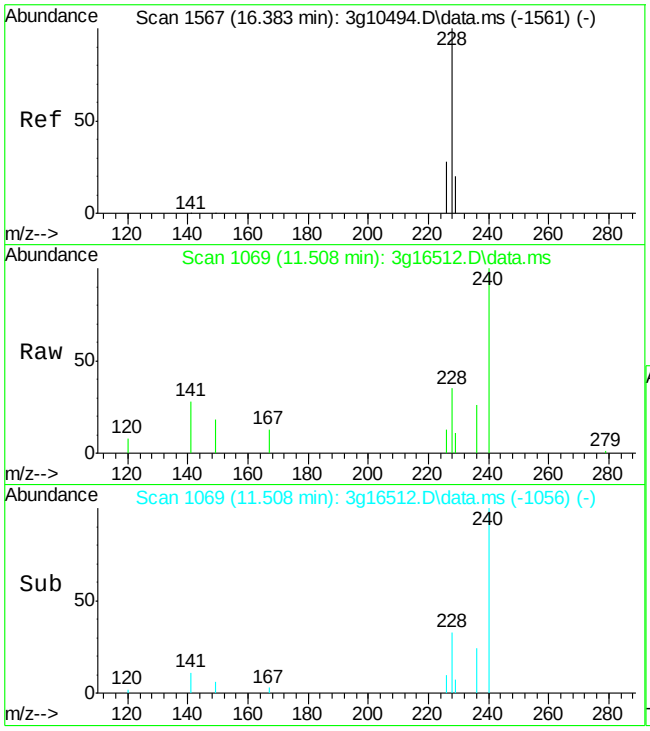


#22
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 11.49 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 228

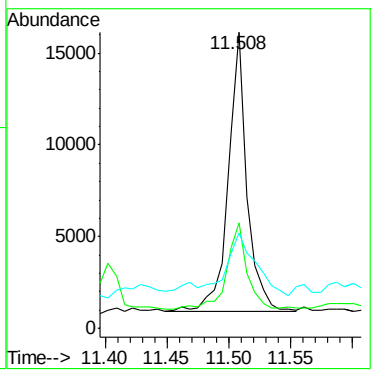
Sig	Exp Ratio
228	100
229	19.4
226	26.6

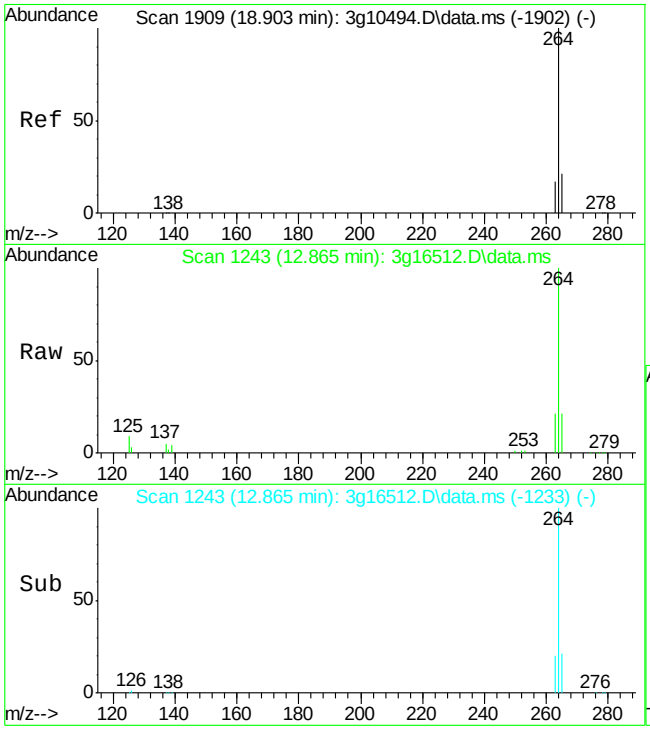


#23
Chrysene
Concen: 0.1688 ug/mL
RT: 11.508 min Scan# 1069
Delta R.T. -0.013 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:228 Resp: 16390

Ion	Ratio	Lower	Upper
228	100		
226	33.8	8.6	48.6
229	33.8	0.0	39.4

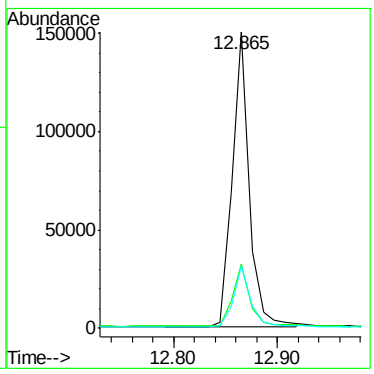


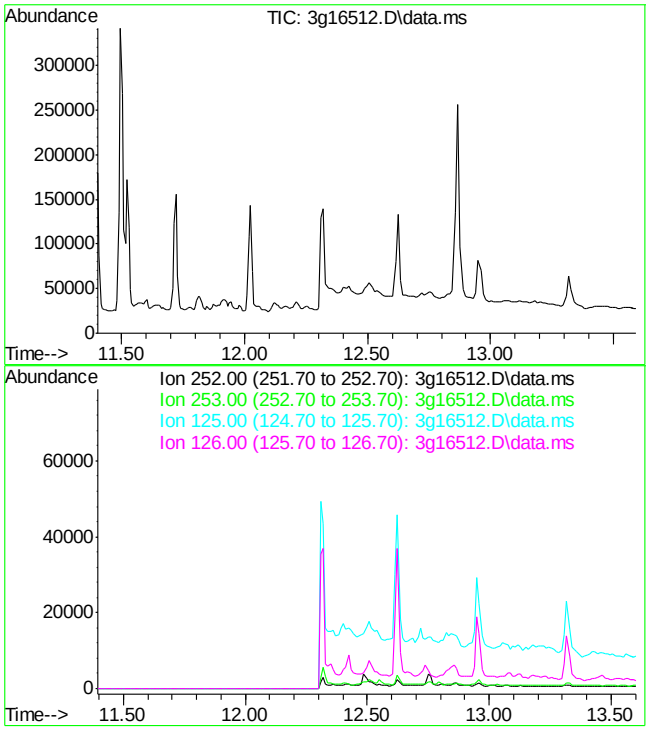


#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.865 min Scan# 1243
Delta R.T. 0.000 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:264 Resp: 173526

Ion	Ratio	Lower	Upper
264	100		
265	21.1	1.2	41.2
263	20.2	0.7	40.7



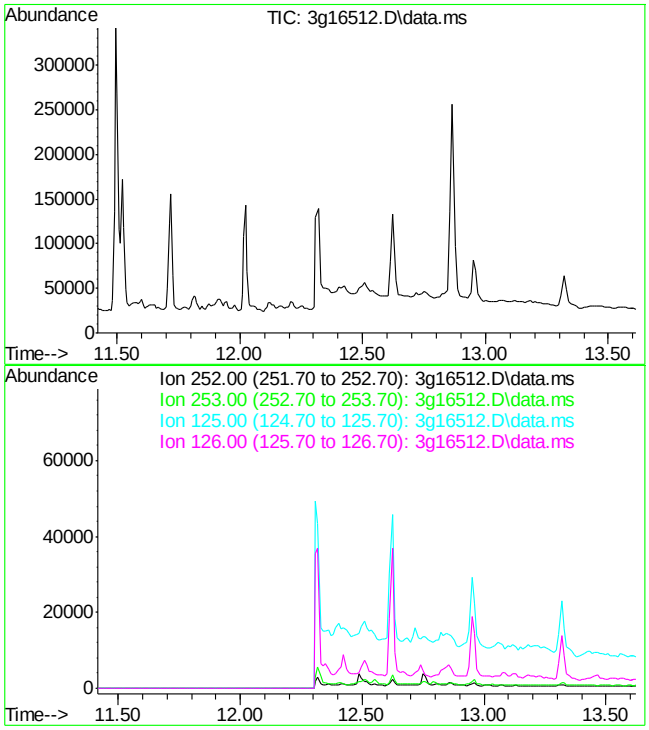


#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.50 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9

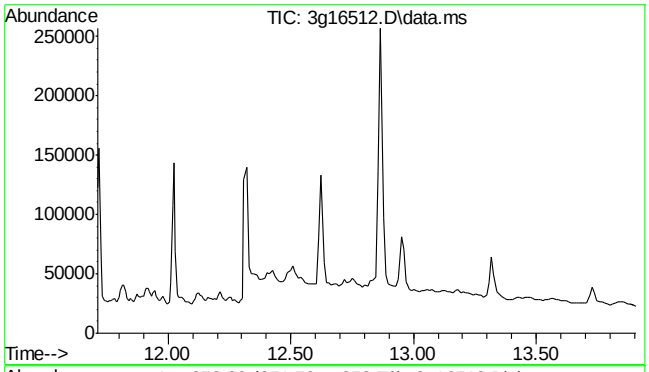


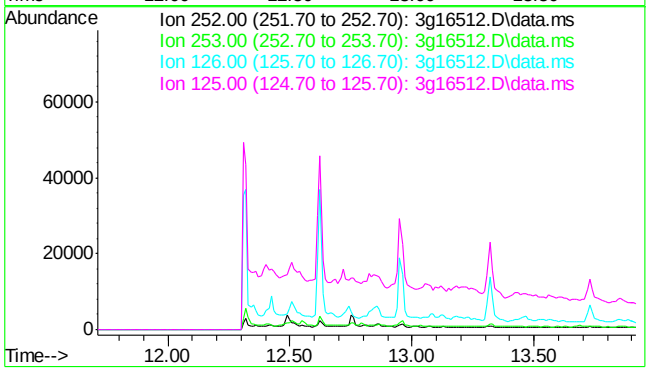
#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.52 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1



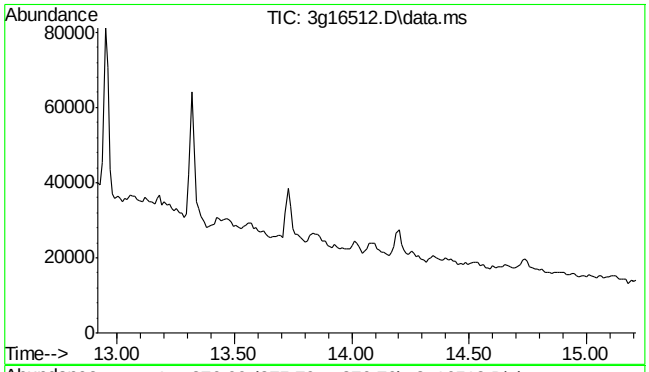


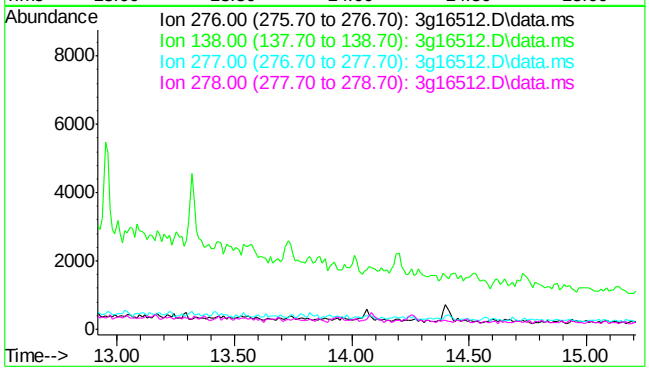
#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5



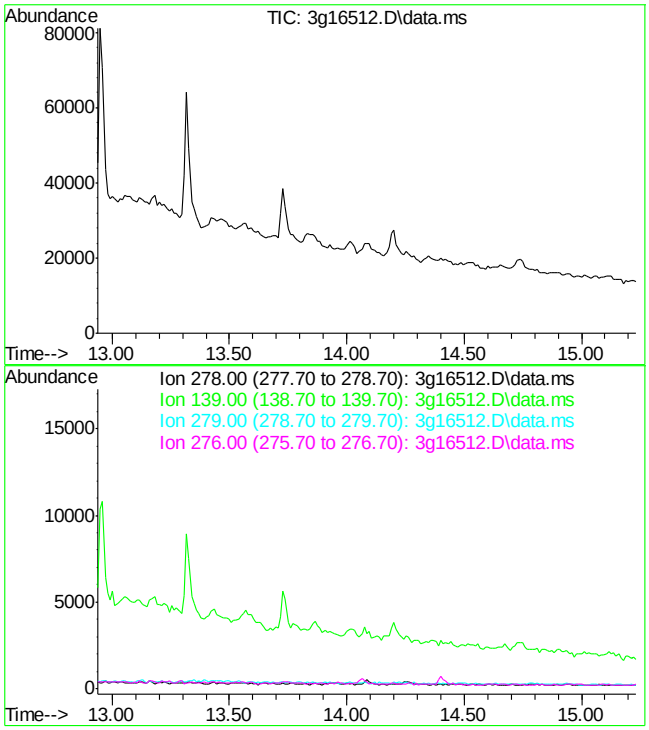


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	40.0
277	24.8
278	76.2

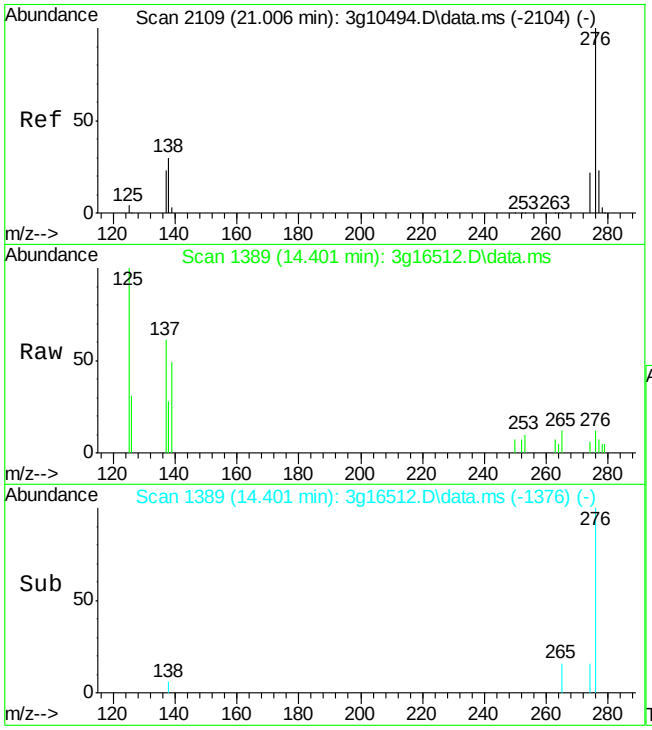


#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion: 278

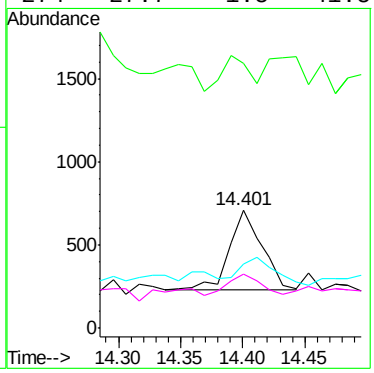
Sig	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2



#30
Benzo(g,h,i)perylene
Concen: 0.0739 ug/mL
RT: 14.401 min Scan# 1389
Delta R.T. -0.010 min
Lab File: 3g16512.D
Acq: 27 Sep 13 5:20 pm

Tgt Ion:276 Resp: 895

Ion	Ratio	Lower	Upper
276	100		
138	37.3	15.1	55.1
277	37.1	3.3	43.3
274	27.7	1.5	41.5



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092713\
Data File : 3g16501.D
Acq On : 27 Sep 2013 11:28 am
Operator : DONC
Sample : OP8644-MB
Misc : OP8644,E3G816,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 27 14:53:07 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

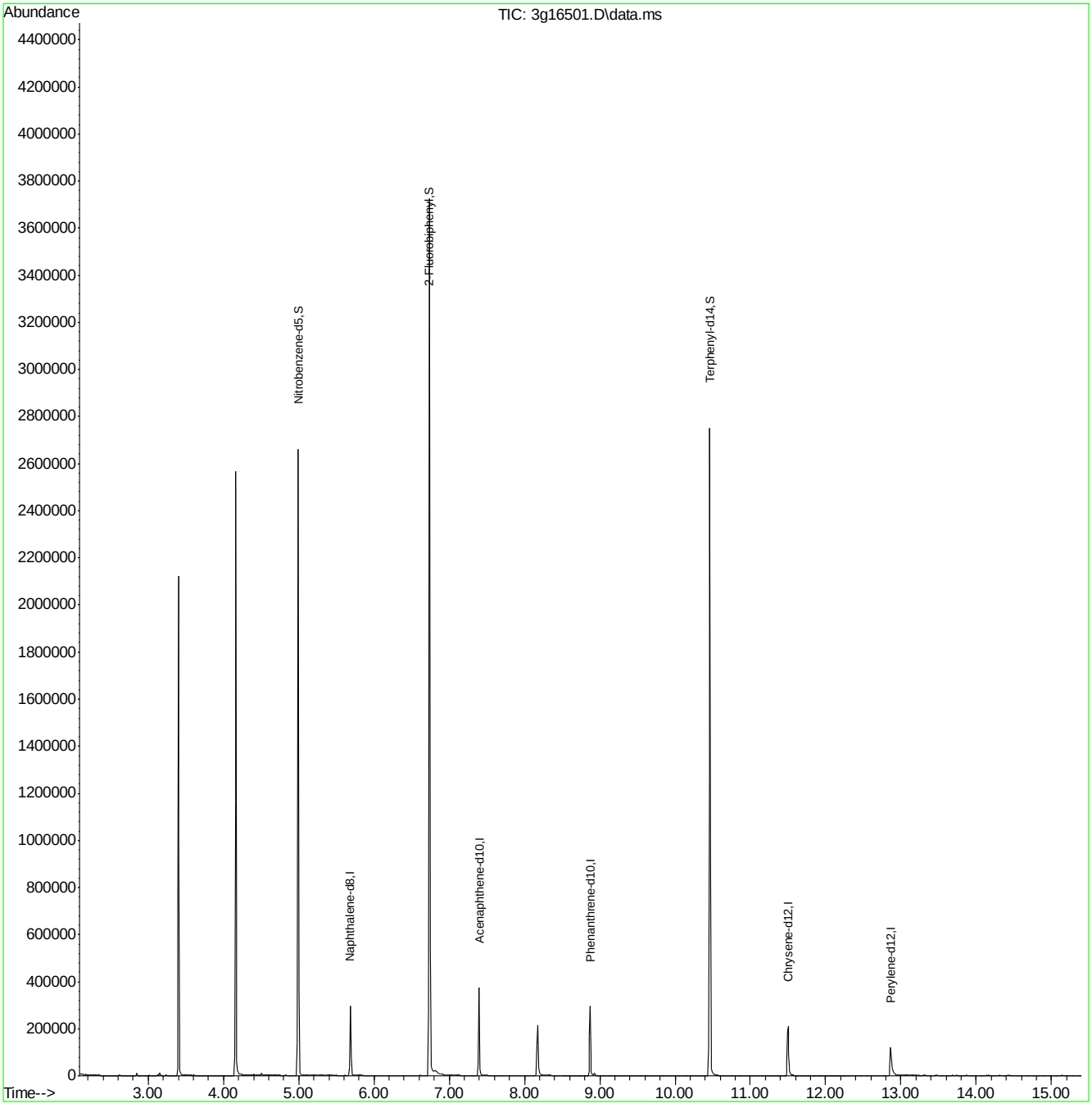
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.682	136	223400	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.398	164	130658	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.872	188	204820	4.0000	ug/mL	0.00
19) Chrysene-d12	11.501	240	171928	4.0000	ug/mL	0.00
24) Perylene-d12	12.865	264	129643	4.0000	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	4.996	82	1226794	43.6573	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 87.32%			
7) 2-Fluorobiphenyl	6.736	172	2141276	42.0638	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 84.12%			
21) Terphenyl-d14	10.463	244	1798791	55.2971	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 110.60%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	2.385	74	24	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.		d
5) Naphthalene	5.707	128	523	N.D.		
8) 2-Methylnaphthalene	6.380	142	189	N.D.		
9) 1-Methylnaphthalene	6.480	142	118	N.D.		
10) Acenaphthylene	7.256	152	133	N.D.		
11) Acenaphthene	7.398	154	526	N.D.		
12) Dibenzofuran	7.611	168	36	N.D.		
13) Fluorene	7.941	166	52	N.D.		
14) Diphenylamine	0.000	169	0	N.D.		d
16) Phenanthrene	8.872	178	141	N.D.		
17) Anthracene	0.000	178	0	N.D.		d
18) Fluoranthene	10.075	202	157	N.D.		
20) Pyrene	10.297	202	198	N.D.		
22) Benzo(a)anthracene	11.495	228	709	N.D.		
23) Chrysene	11.495	228	709	N.D.		
25) Benzo(b)fluoranthene	12.497	252	299	N.D.		
26) Benzo(k)fluoranthene	12.497	252	299	N.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

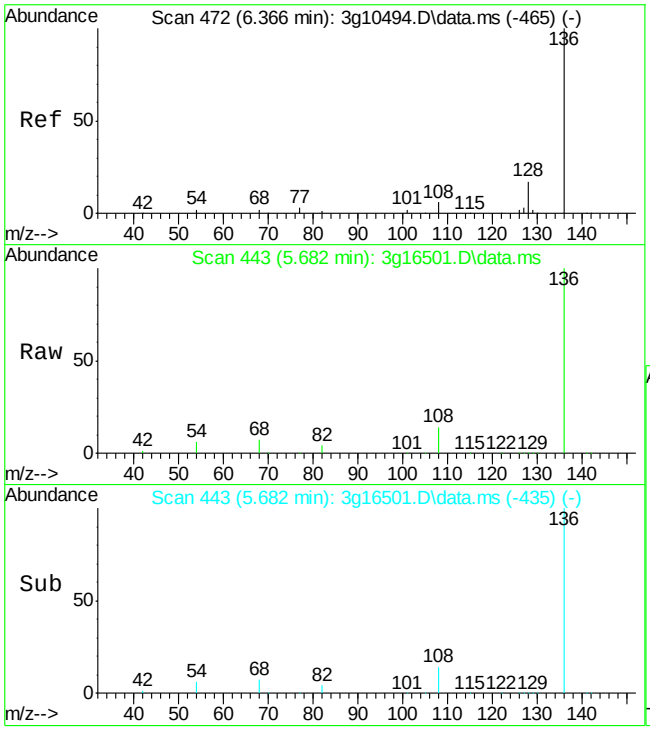
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092713\
Data File : 3g16501.D
Acq On : 27 Sep 2013 11:28 am
Operator : DONC
Sample : OP8644-MB
Misc : OP8644,E3G816,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 27 14:53:07 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

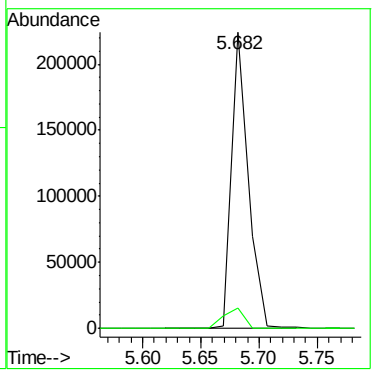


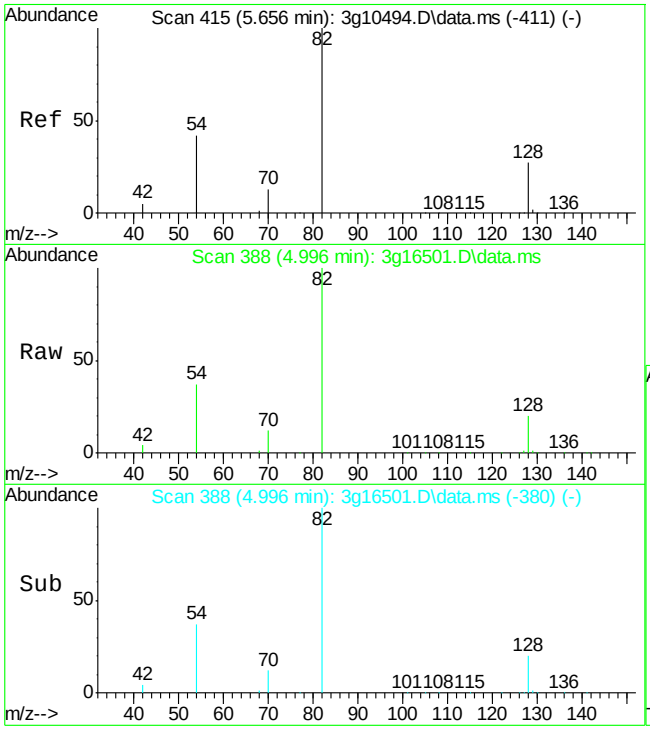


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:136 Resp: 223400

Ion	Ratio	Lower	Upper
136	100		
68	8.5	0.0	21.1

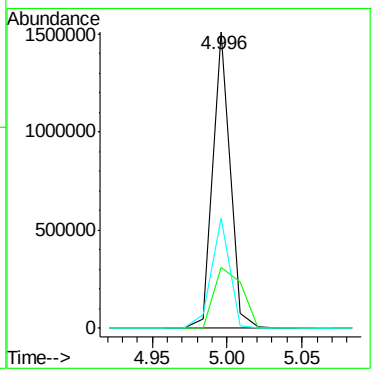


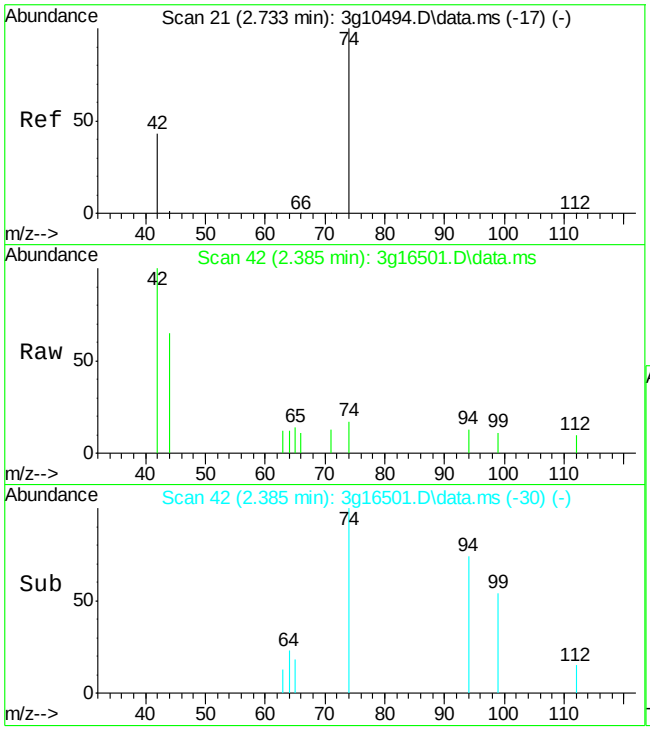


#2
Nitrobenzene-d5
Concen: 43.6573 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 82 Resp: 1226794

Ion	Ratio	Lower	Upper
82	100		
128	33.2	36.8	76.8#
54	39.2	40.5	80.5#

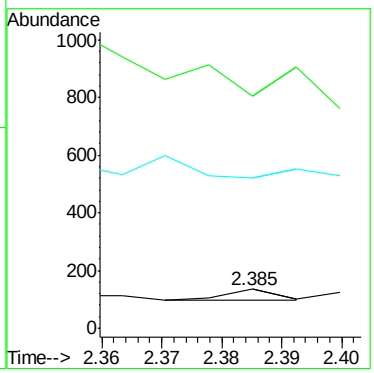


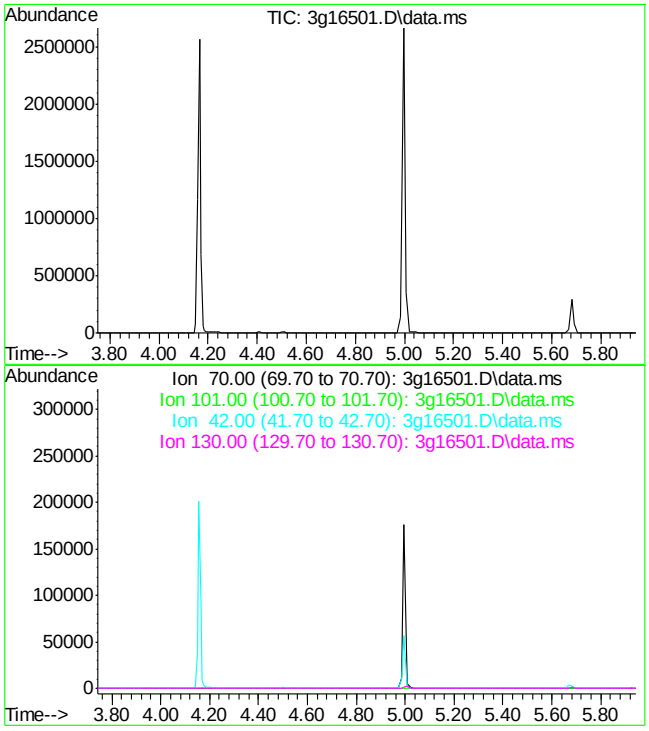


#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.385 min Scan# 42
Delta R.T. -0.014 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 74 Resp: 24

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



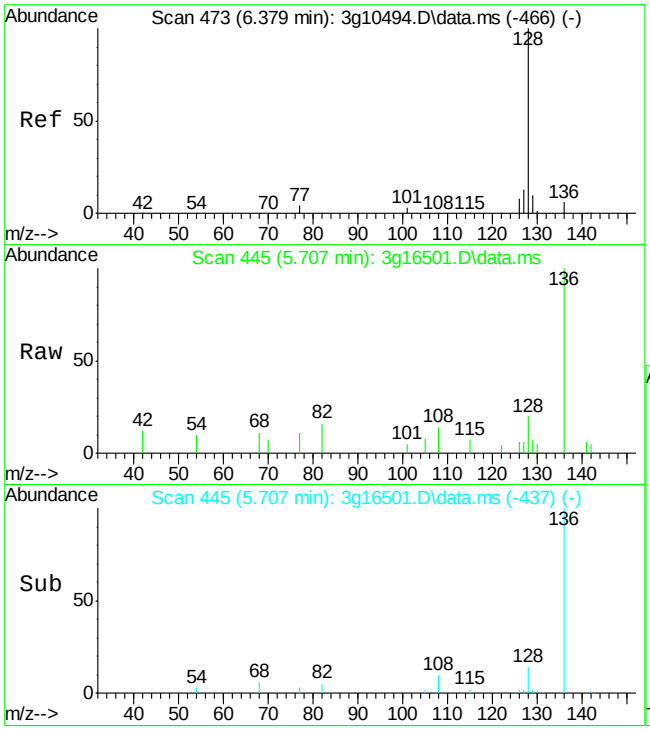


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 70

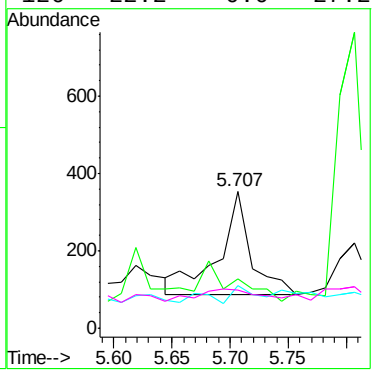
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7

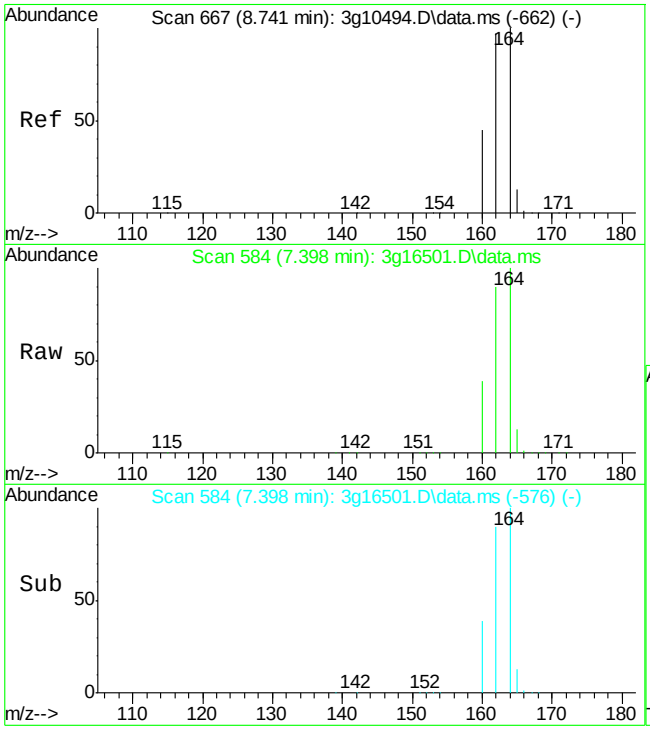


#5
Naphthalene
Concen: Below ug/mL
RT: 5.707 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:128 Resp: 523

Ion	Ratio	Lower	Upper
128	100		
129	44.2	0.0	31.2#
127	12.0	0.0	32.4
126	22.2	0.0	27.2

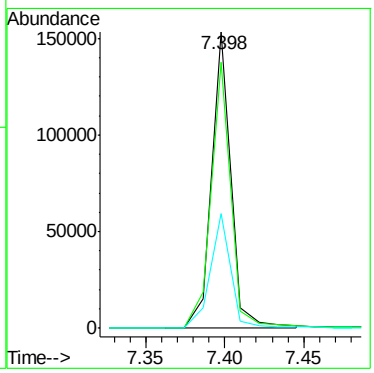


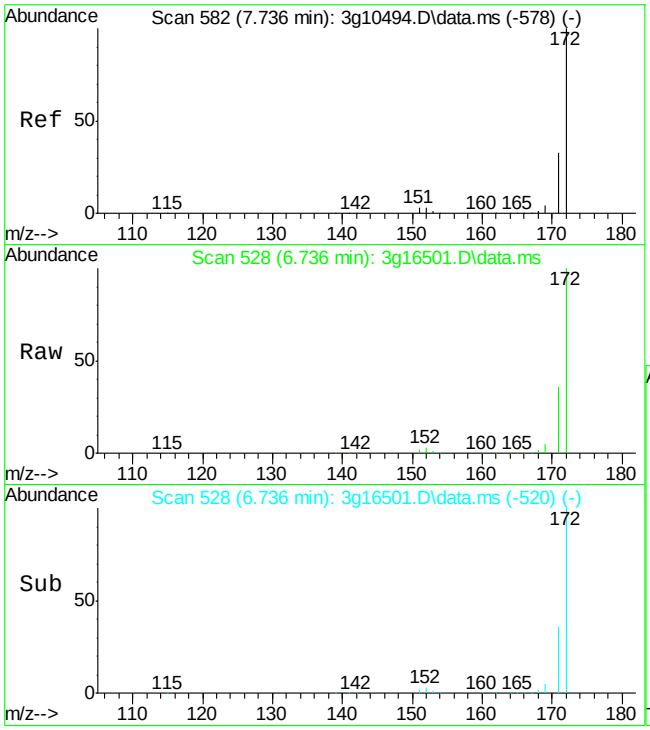


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.398 min Scan# 584
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:164 Resp: 130658

Ion	Ratio	Lower	Upper
164	100		
162	92.3	83.7	123.7
160	41.0	31.9	71.9

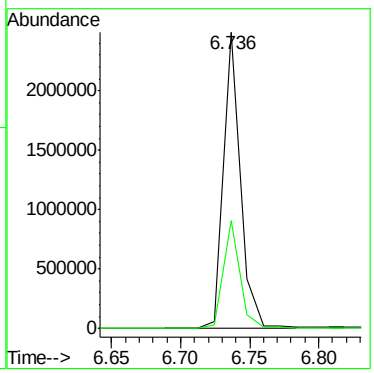


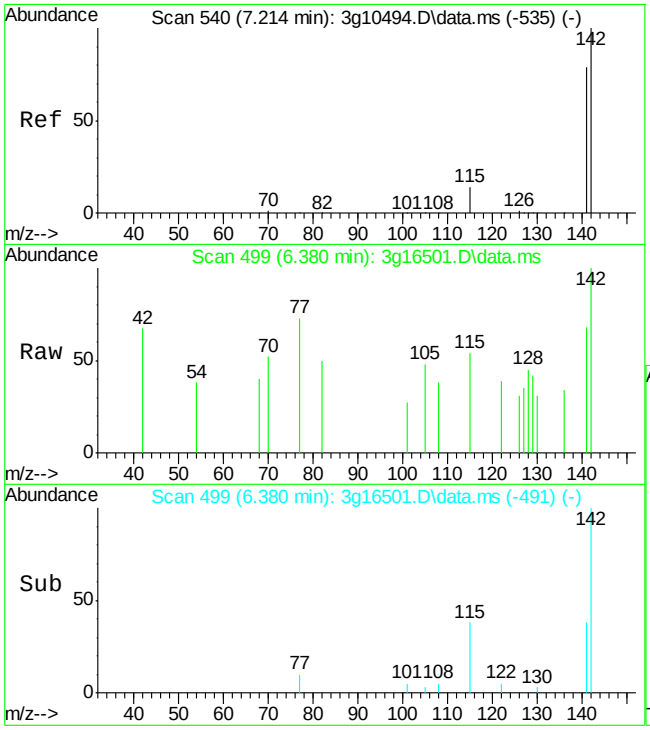


#7
2-Fluorobiphenyl
Concen: 42.0638 ug/mL
RT: 6.736 min Scan# 528
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:172 Resp: 2141276

Ion	Ratio	Lower	Upper
172	100		
171	35.3	12.2	52.2

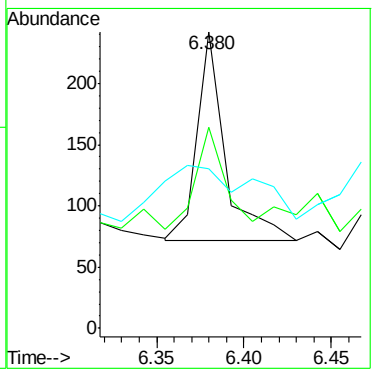


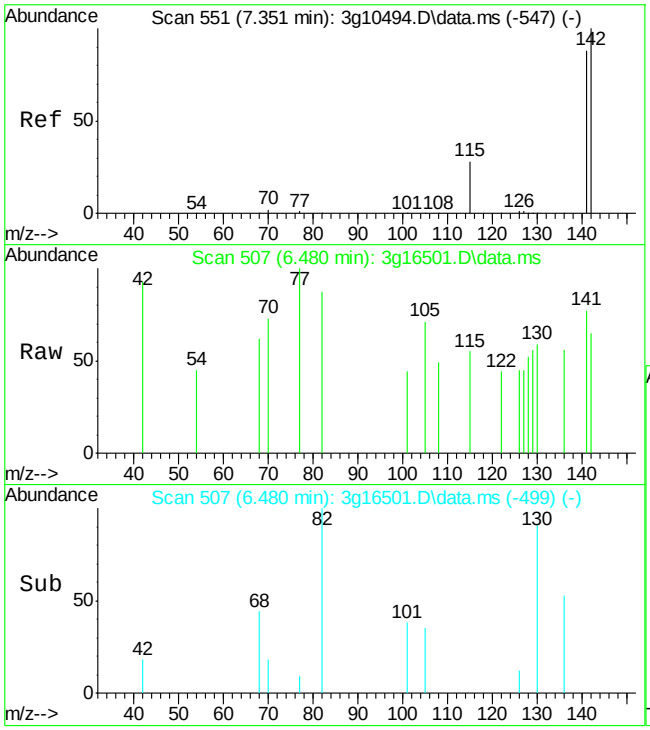


#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.380 min Scan# 499
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:142 Resp: 189

Ion	Ratio	Lower	Upper
142	100		
141	55.6	62.0	102.0#
115	90.5	11.3	51.3#

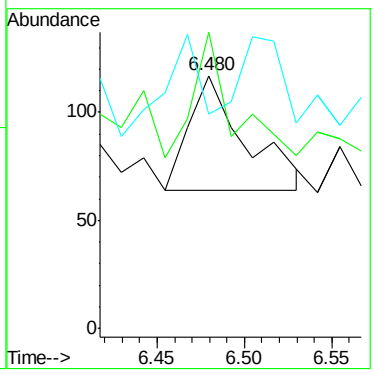


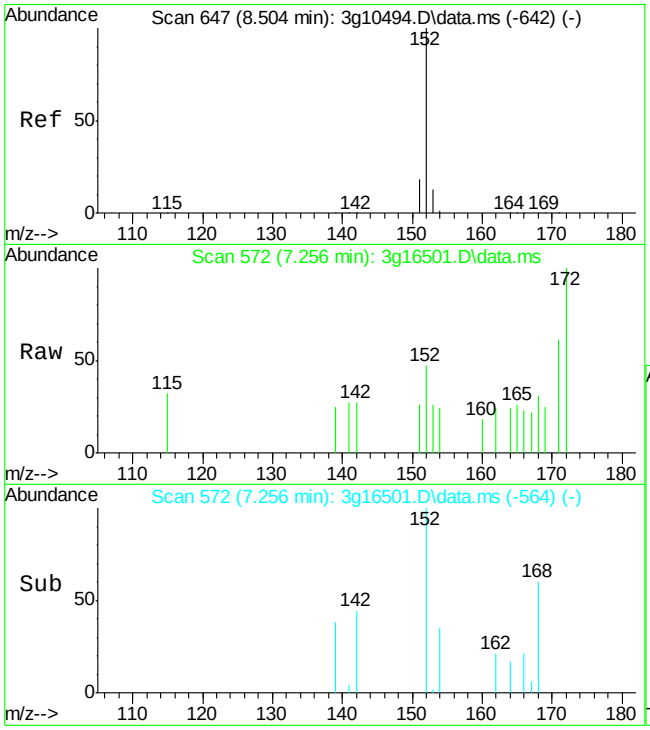


#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.480 min Scan# 507
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:142 Resp: 118

Ion	Ratio	Lower	Upper
142	100		
141	74.6	67.5	107.5
115	56.8	19.4	59.4

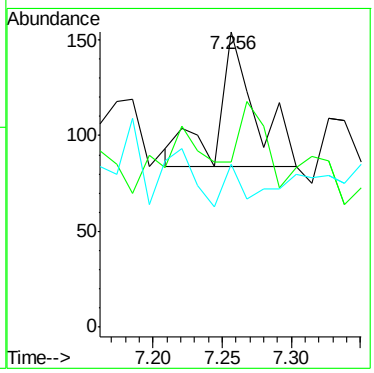


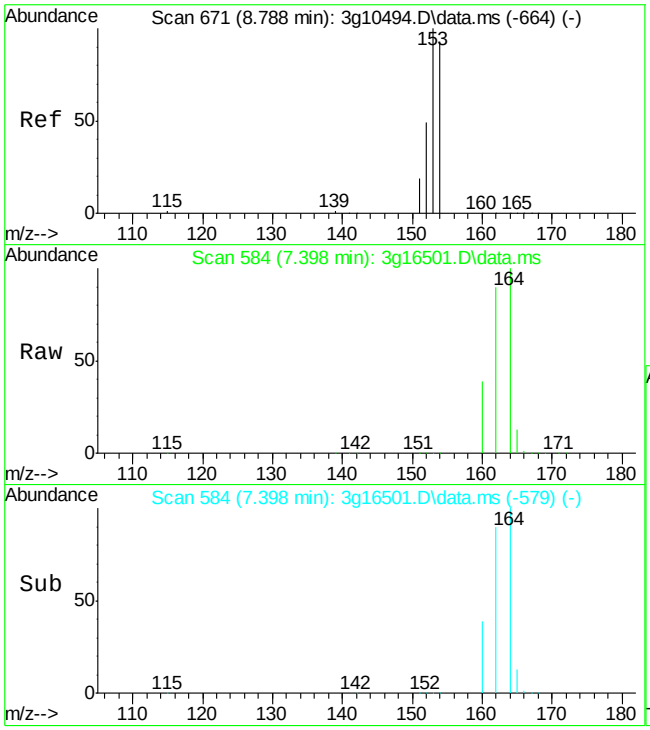


#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.256 min Scan# 572
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:152 Resp: 133

Ion	Ratio	Lower	Upper
152	100		
151	42.1	0.0	39.2#
153	18.8	0.0	32.9

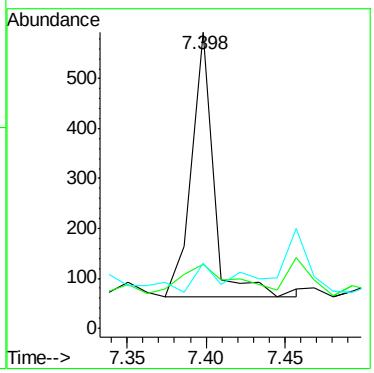


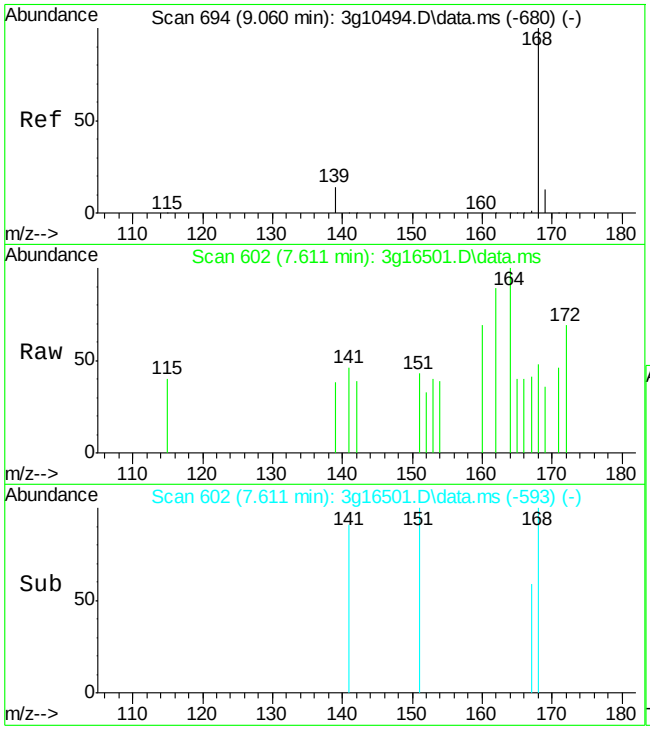


#11
Acenaphthene
Concen: Below ug/mL
RT: 7.398 min Scan# 584
Delta R.T. -0.035 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:154 Resp: 526

Ion	Ratio	Lower	Upper
154	100		
153	26.4	82.4	122.4#
152	14.1	30.0	70.0#

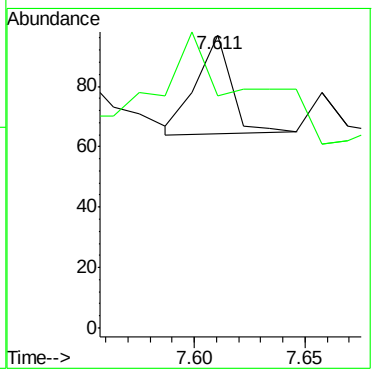


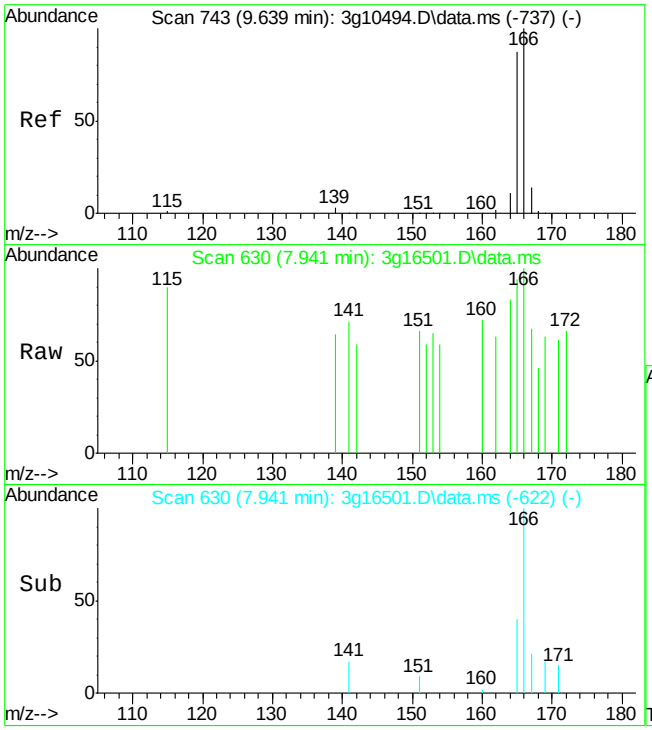


#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.611 min Scan# 602
Delta R.T. 0.012 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:168 Resp: 36

Ion	Ratio	Lower	Upper
168	100		
139	133.3	13.4	53.4#

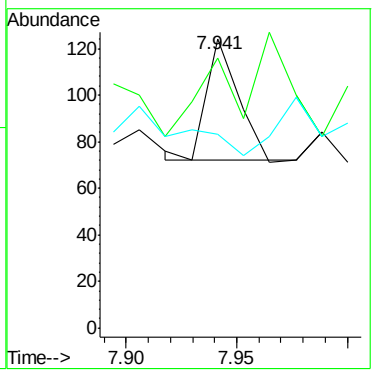


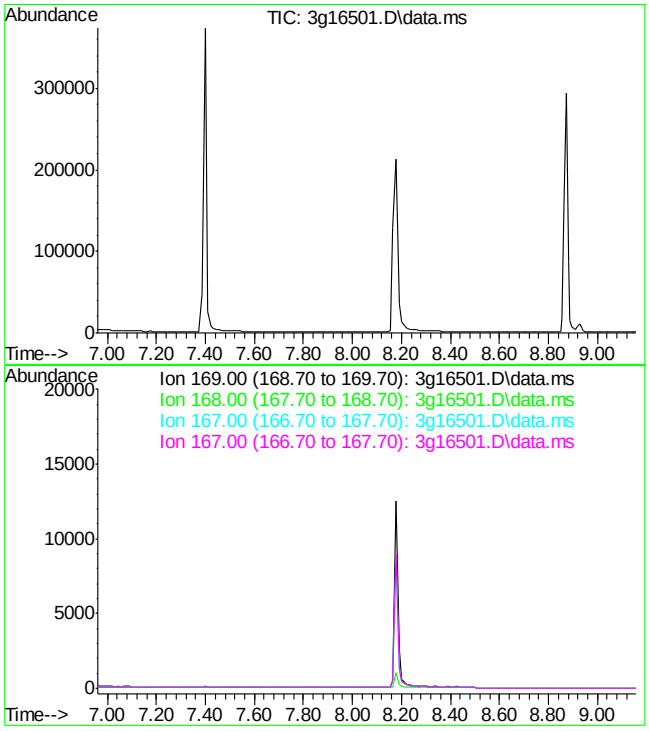


#13
Fluorene
Concen: Below ug/mL
RT: 7.941 min Scan# 630
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:166 Resp: 52

Ion	Ratio	Lower	Upper
166	100		
165	76.9	72.0	112.0
167	55.8	0.0	33.1#



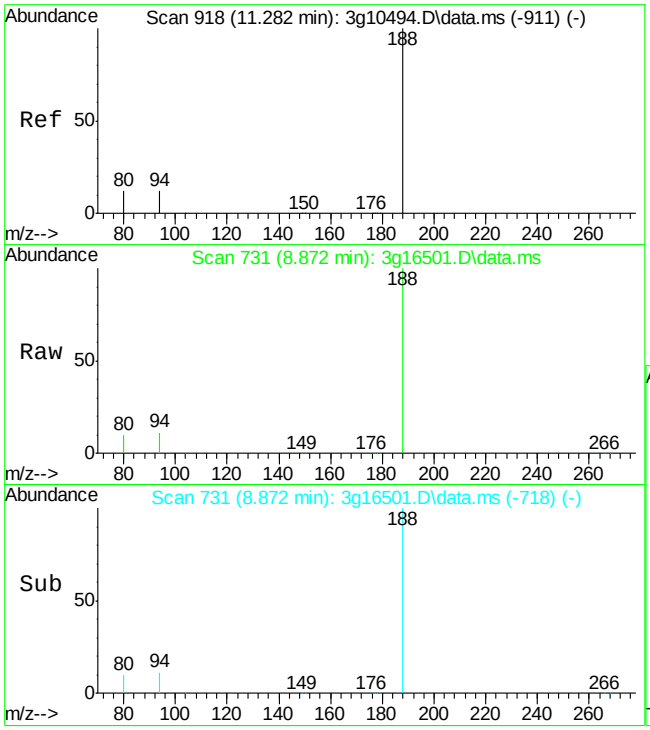


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 169

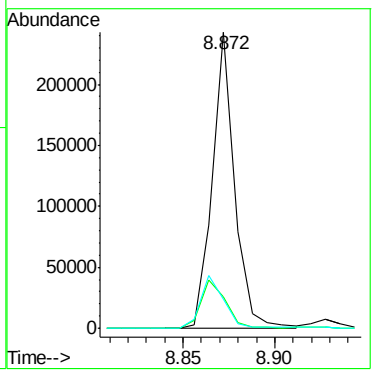
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1

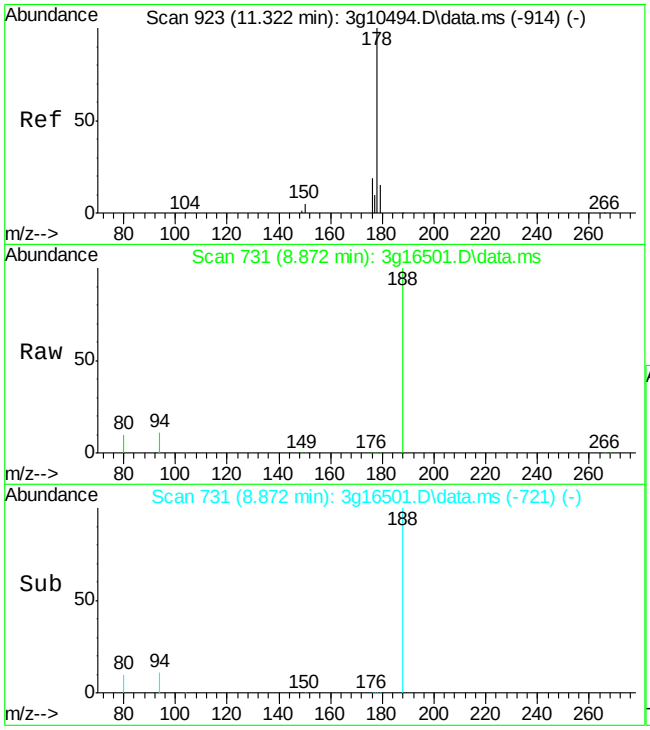


#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.872 min Scan# 731
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:188 Resp: 204820

Ion	Ratio	Lower	Upper
188	100		
94	18.1	0.0	28.3
80	18.6	0.0	27.8

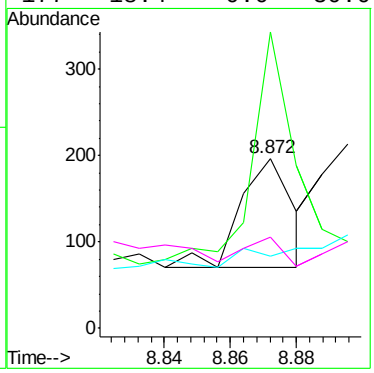


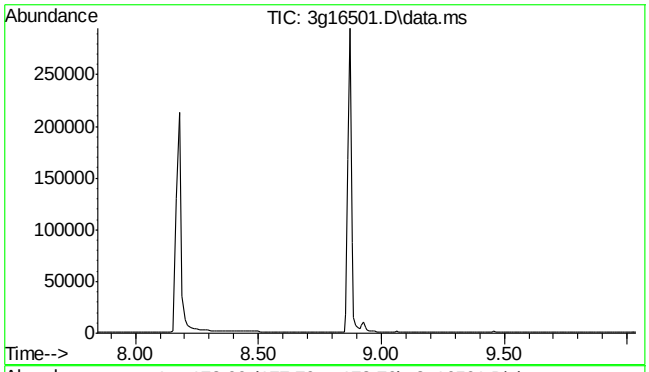


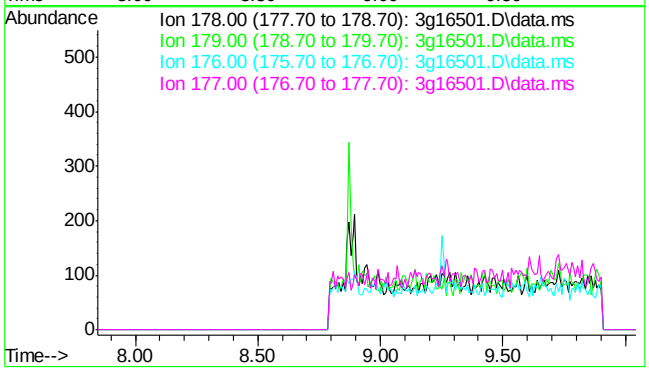
#16
Phenanthrene
Concen: Below ug/mL
RT: 8.872 min Scan# 731
Delta R.T. -0.024 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:178 Resp: 141

Ion	Ratio	Lower	Upper
178	100		
179	186.5	0.0	35.2#
176	0.0	0.0	38.6
177	18.4	0.0	30.0





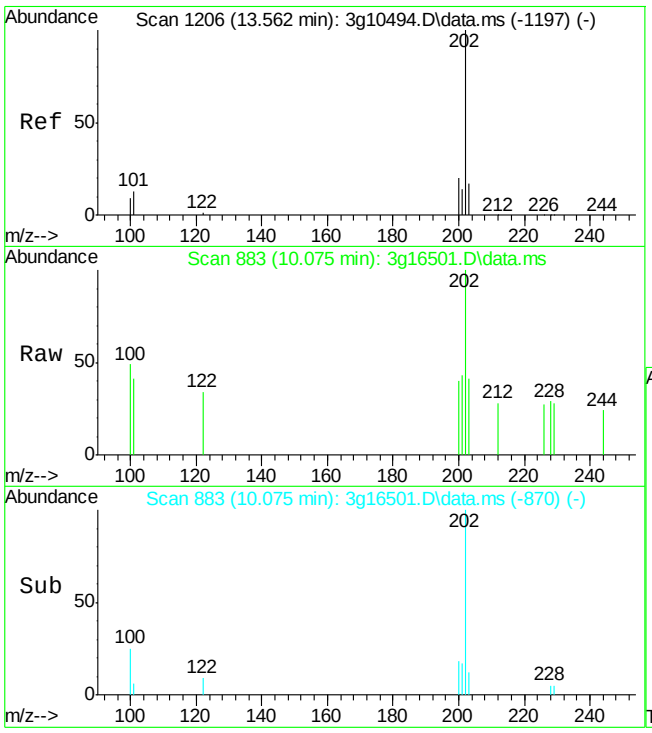


#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 178

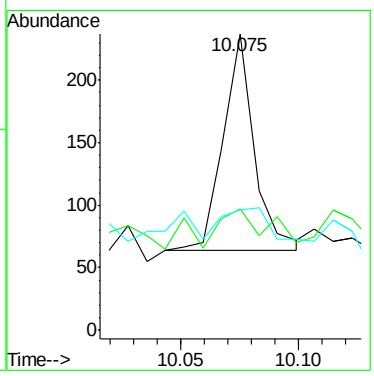
Sig	Exp Ratio
178	100
179	15.1
176	18.2
177	8.7

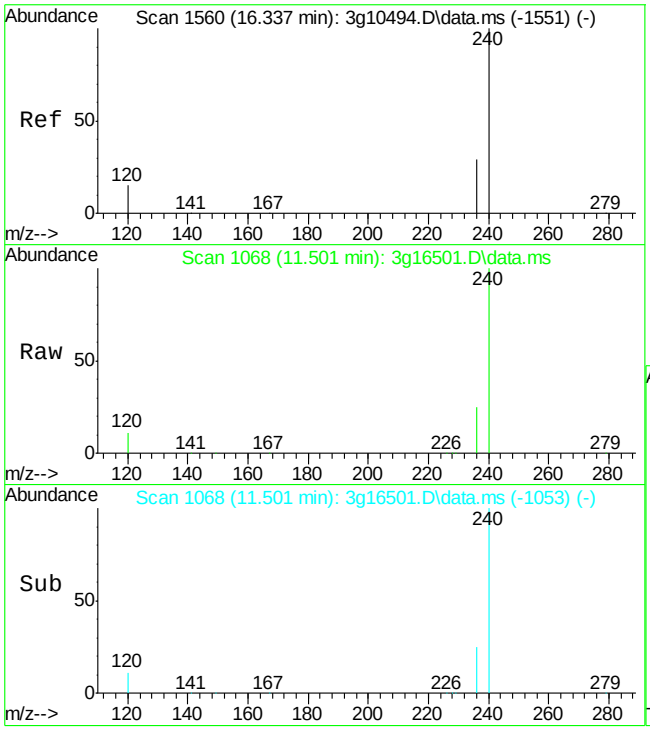


#18
Fluoranthene
Concen: Below ug/mL
RT: 10.075 min Scan# 883
Delta R.T. 0.001 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:202 Resp: 157

Ion	Ratio	Lower	Upper
202	100		
101	37.6	0.0	32.6#
203	46.5	0.0	37.4#

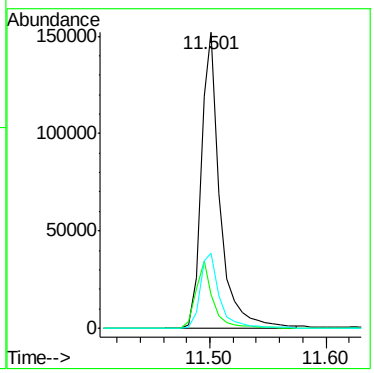


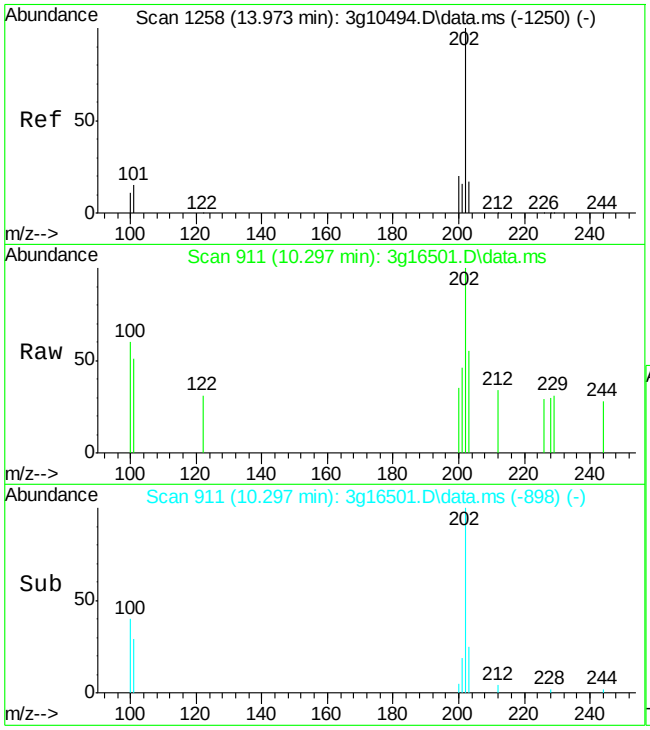


#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.501 min Scan# 1068
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:240 Resp: 171928

Ion	Ratio	Lower	Upper
240	100		
120	20.7	0.2	40.2
236	26.5	8.8	48.8

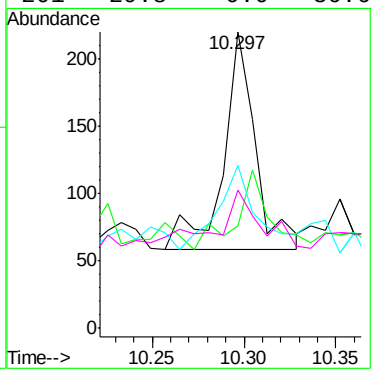


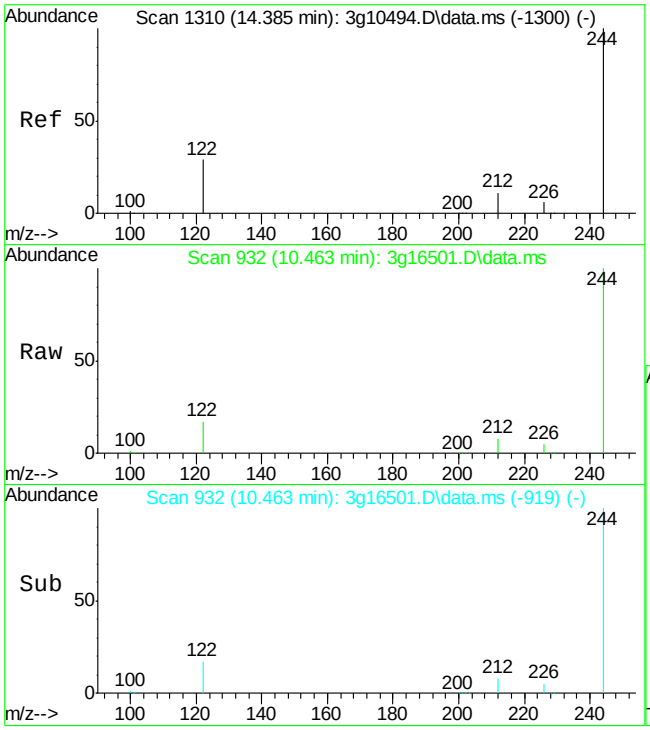


#20
Pyrene
Concen: Below ug/mL
RT: 10.297 min Scan# 911
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:202 Resp: 198

Ion	Ratio	Lower	Upper
202	100		
200	38.4	0.2	40.2
203	44.9	0.0	37.8#
201	29.8	0.0	36.6

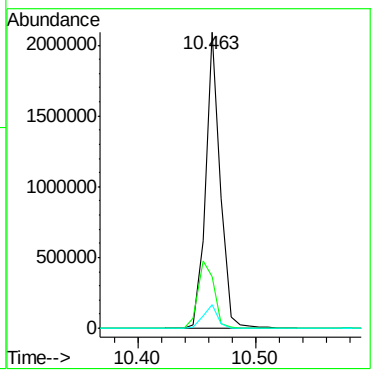


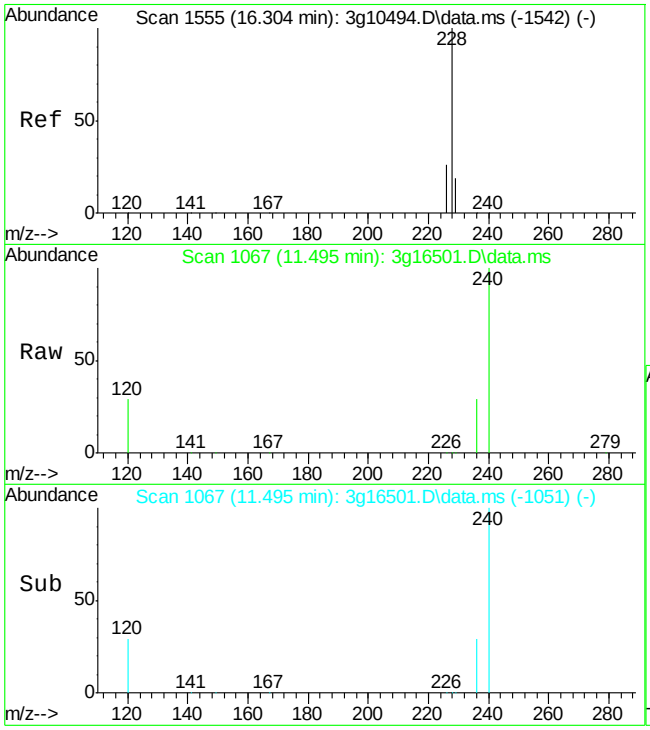


#21
Terphenyl-d14
Concen: 55.2971 ug/mL
RT: 10.463 min Scan# 932
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:244 Resp: 1798791

Ion	Ratio	Lower	Upper
244	100		
122	25.5	7.8	47.8
212	8.1	0.0	32.8

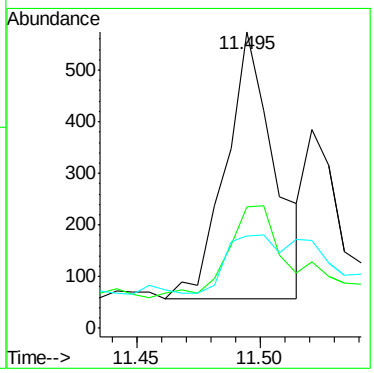


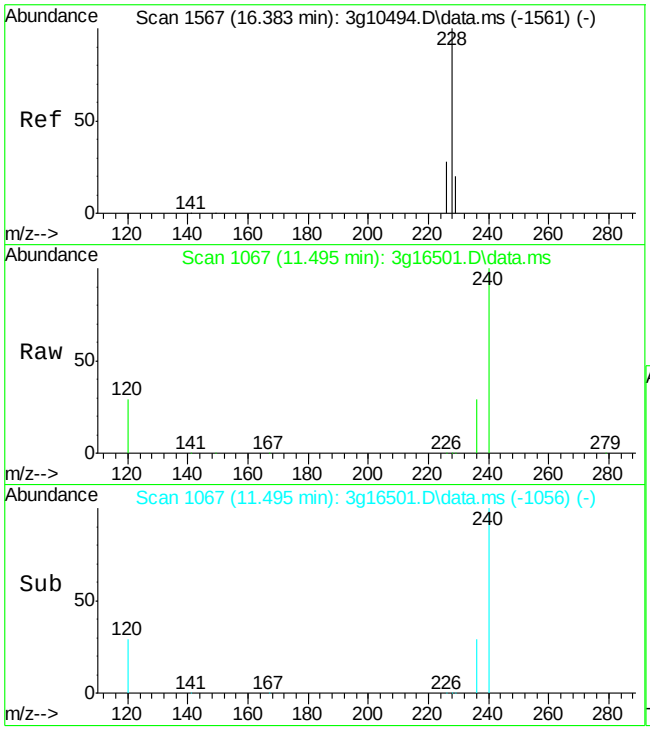


#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. 0.007 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:228 Resp: 709

Ion	Ratio	Lower	Upper
228	100		
229	47.7	0.0	39.4#
226	23.6	6.6	46.6

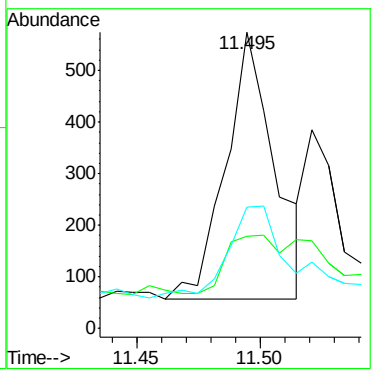


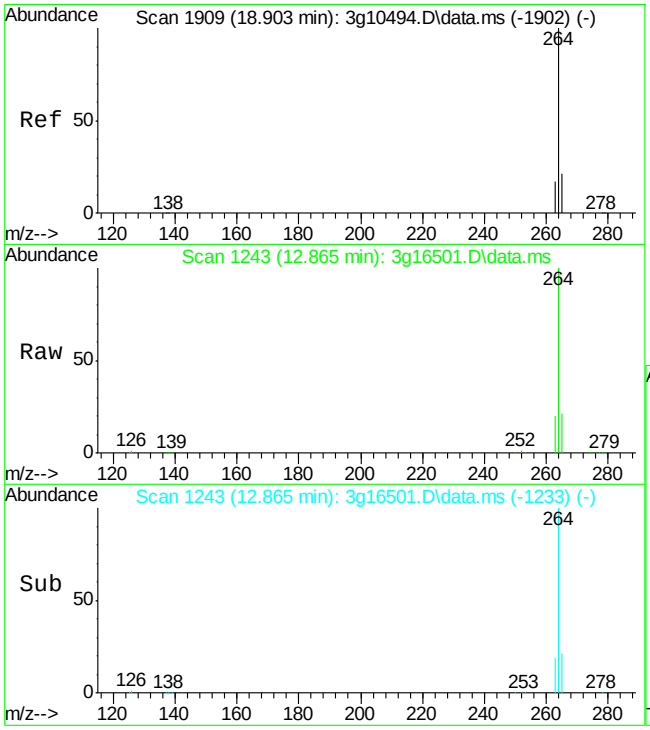


#23
Chrysene
Concen: Below ug/mL
RT: 11.495 min Scan# 1067
Delta R.T. -0.026 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:228 Resp: 709

Ion	Ratio	Lower	Upper
228	100		
226	23.6	8.6	48.6
229	48.0	0.0	39.4#

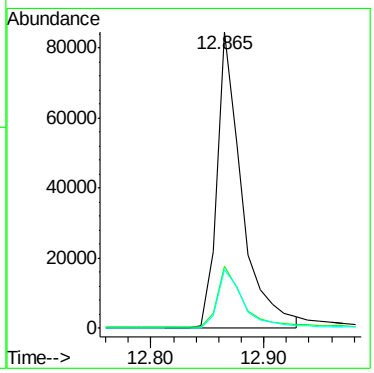


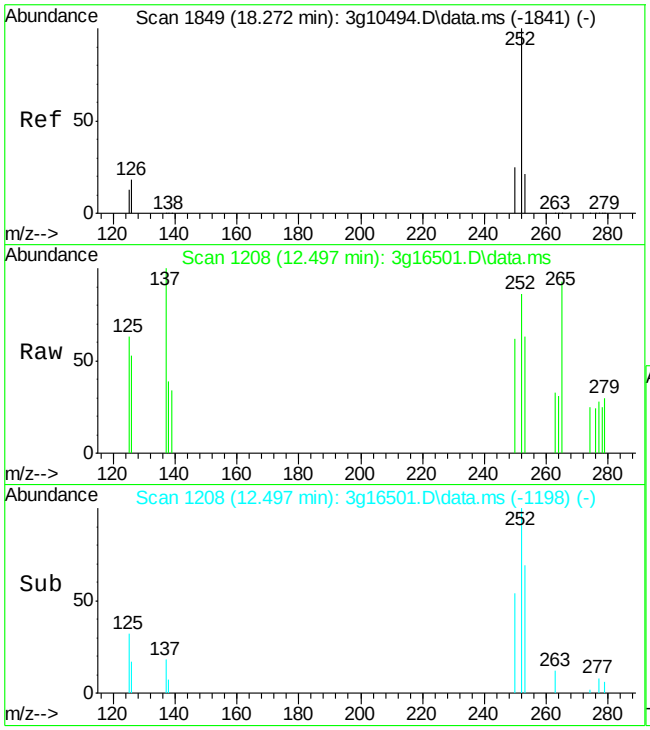


#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.865 min Scan# 1243
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:264 Resp: 129643

Ion	Ratio	Lower	Upper
264	100		
265	20.9	1.2	41.2
263	20.2	0.7	40.7

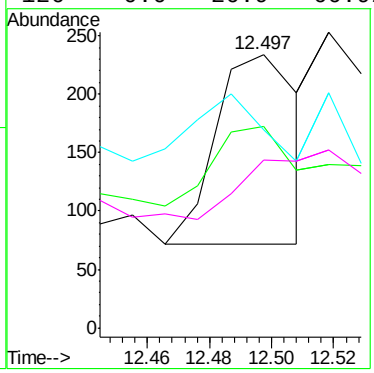


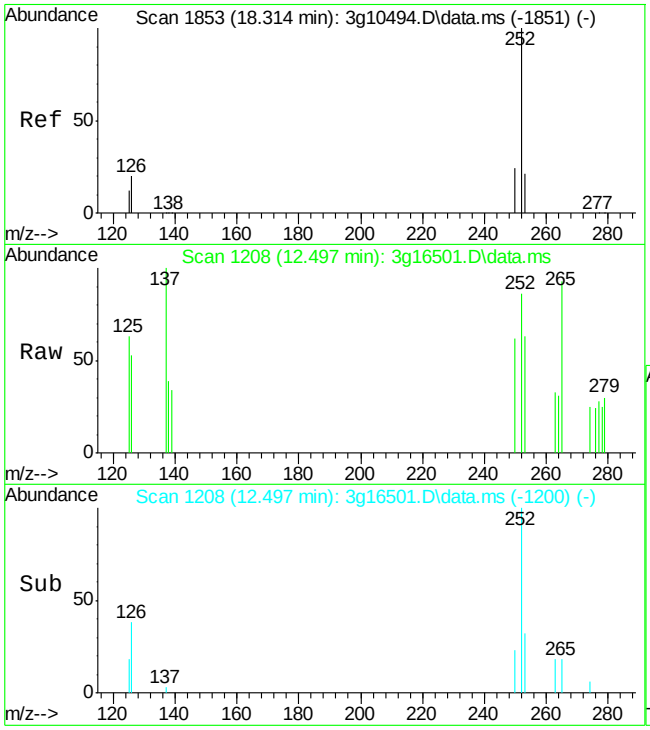


#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.497 min Scan# 1208
Delta R.T. 0.000 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:252 Resp: 299

Ion	Ratio	Lower	Upper
252	100		
253	60.5	31.5	71.5
125	28.8	0.0	33.2
126	0.0	26.9	66.9#

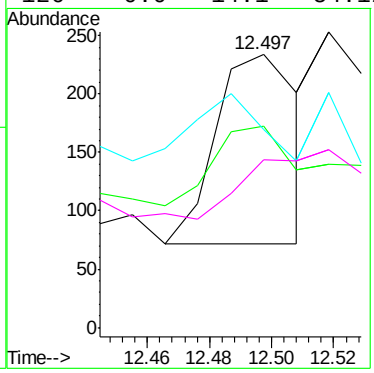


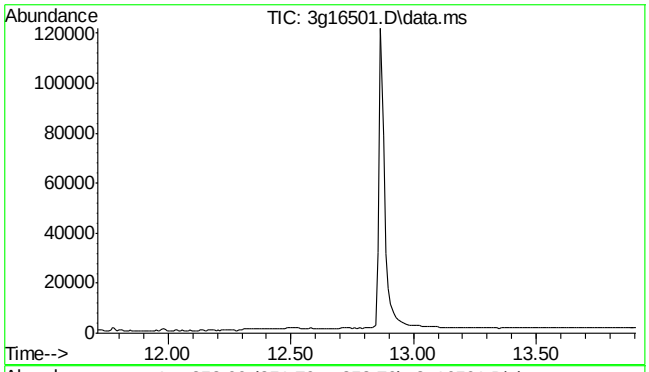


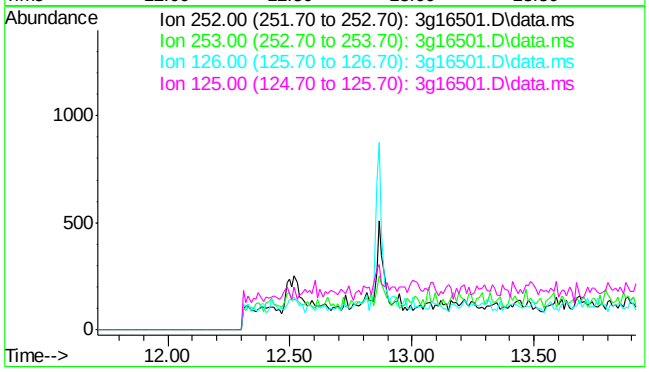
#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.497 min Scan# 1208
Delta R.T. -0.021 min
Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion:252 Resp: 299

Ion	Ratio	Lower	Upper
252	100		
253	60.5	17.3	57.3#
125	27.1	0.0	29.6
126	0.0	14.1	54.1#





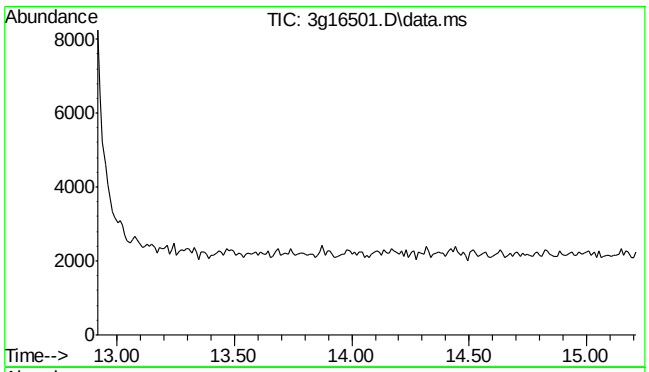


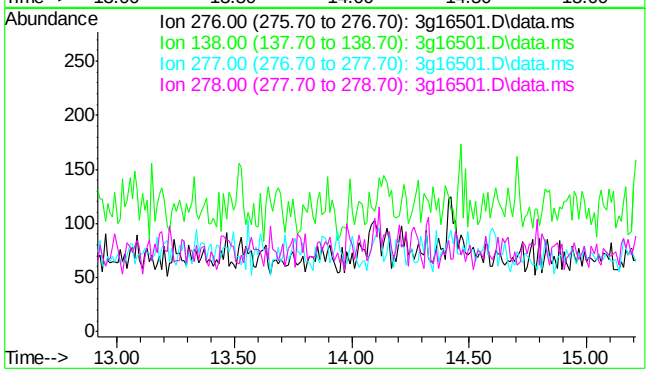
#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.81 min

Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.5
126	20.4
125	14.5



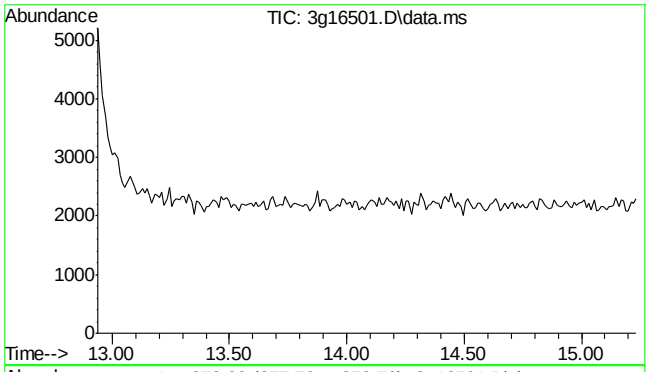


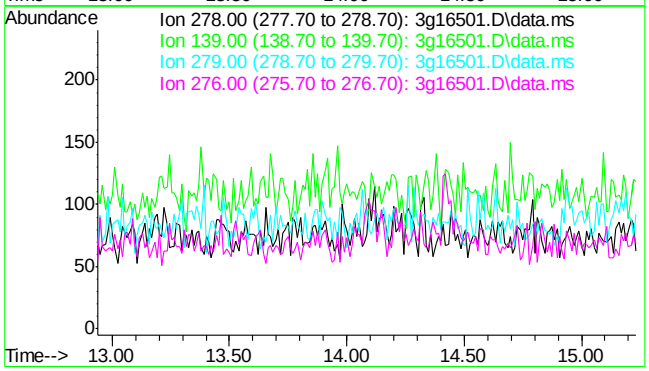
#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.06 min

Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	40.0
277	24.8
278	76.2



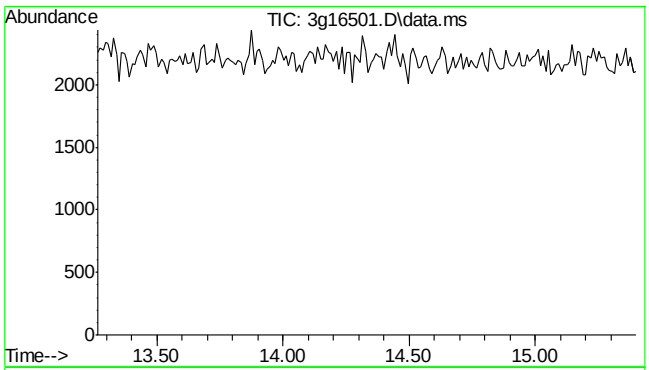


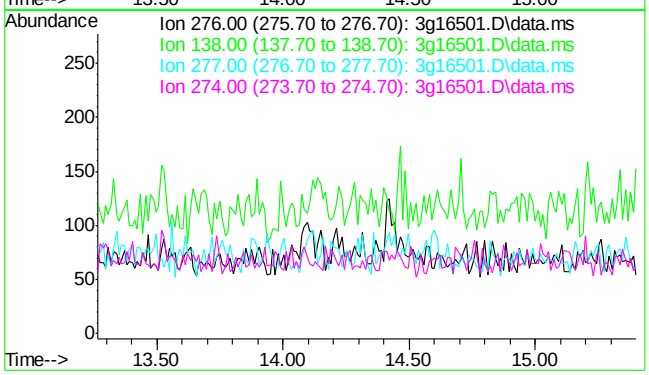
#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.09 min

Lab File: 3g16501.D
Acq: 27 Sep 13 11:28 am

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: 3g16501.D
Acq: 27 Sep 13 11:28 am

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: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1229-MB	GB22341.D	1	09/30/13	EV	n/a	n/a	GGB1229

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

D51044-1

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	83%	60-140%

Blank Spike Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1229-BS	GB22342.D	1	09/30/13	EV	n/a	n/a	GGB1229

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

D51044-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	109	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	91%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D51039-1MS	GB22344.D	1	09/30/13	EV	n/a	n/a	GGB1229
D51039-1MSD	GB22345.D	1	09/30/13	EV	n/a	n/a	GGB1229
D51039-1	GB22343.D	1	09/30/13	EV	n/a	n/a	GGB1229

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

D51044-1

CAS No.	Compound	D51039-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		159	156	98	149	94	5	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D51039-1	Limits
120-82-1	1,2,4-Trichlorobenzene	95%	94%	83%	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 10/01/13 15:20

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\2013\09.2013\093013\GB22350.D\FID1A.CH Vial: 13
Signal #2 : Y:\1\DATA\2013\09.2013\093013\GB22350.D\FID2B.CH
Acq On : 30 Sep 2013 4:12 pm Operator: ELISEV
Sample : D51044-1 Inst : GC/MS Ins
Misc : GC3909,GGB1229,5.074,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 01 09:48:55 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Tue Oct 01 09:47:55 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	2492544	82.504	%	m
10) S	1,2,4-Trichlorobenzene (P)	14.35	11471513	86.873	%	m
	Target Compounds					
1) H	TVH-Gasoline	7.29	3891970	0.055	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L	d
5) T	Benzene	0.00	0	N.D.	ug/L	d
6) T	Toluene	7.65	128664	0.348	ug/L	m
7) T	Ethylbenzene	0.00	0	N.D.	ug/L	d
8) T	m,p-Xylene	10.46	161936	0.429	ug/L	
9) T	o-Xylene	0.00	0	N.D.	ug/L	d
11) T	Naphthalene	14.54	19907	0.116	ug/L	m

11.1.1 11

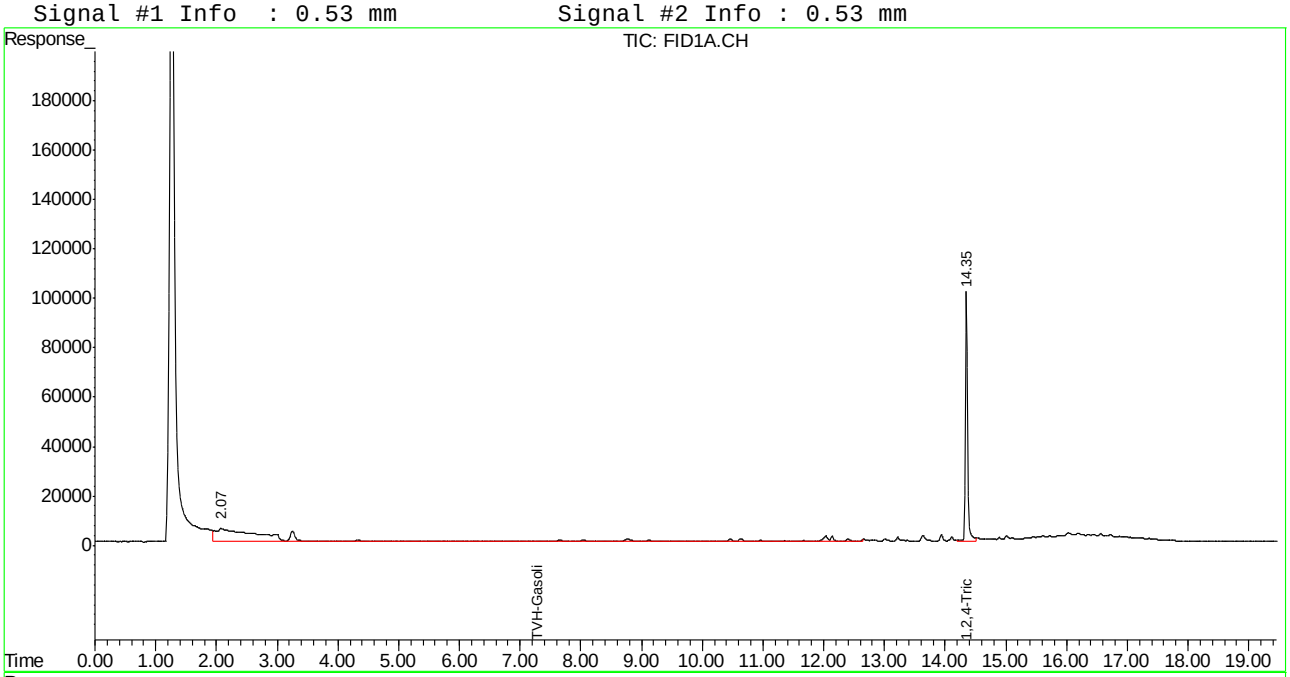
(f)=RT Delta > 1/2 Window (m)=manual int.

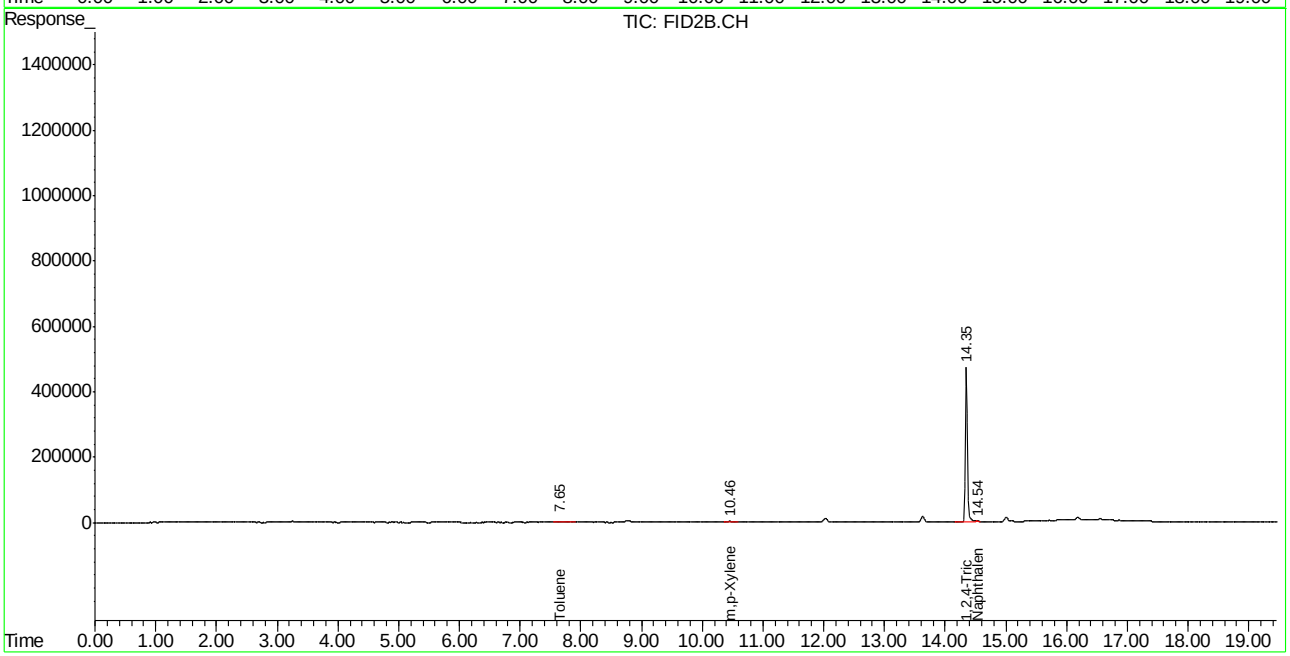
Quantitation Report (QT Reviewed)

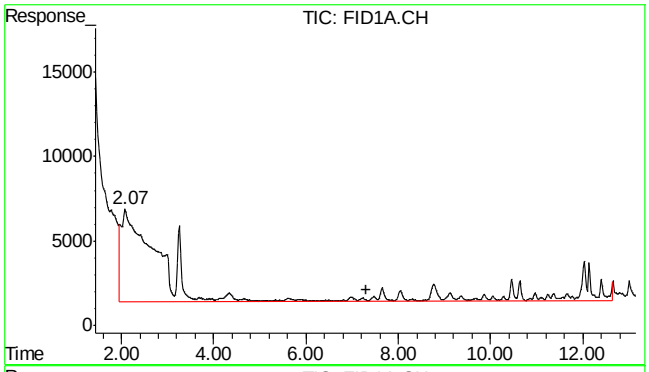
Signal #1 : Y:\1\DATA\2013\09.2013\093013\GB22350.D\FID1A.CH Vial: 13
Signal #2 : Y:\1\DATA\2013\09.2013\093013\GB22350.D\FID2B.CH
Acq On : 30 Sep 2013 4:12 pm Operator: ELISEV
Sample : D51044-1 Inst : GC/MS Ins
Misc : GC3909,GGB1229,5.074,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 1 10:06 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Tue Oct 01 09:47:55 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

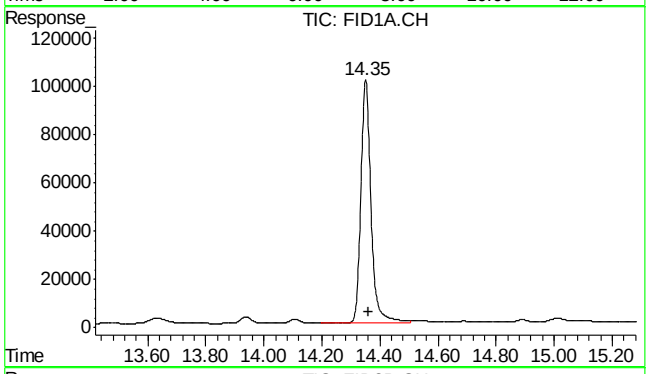






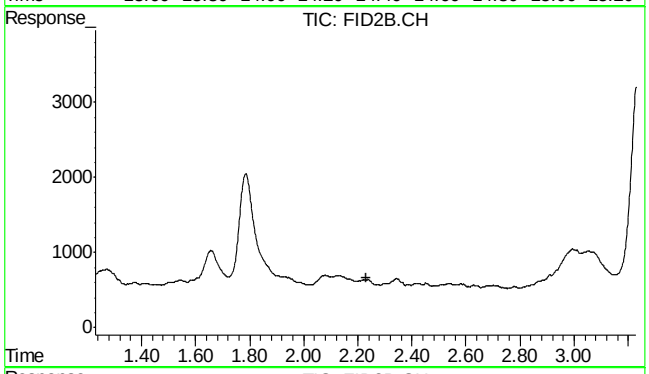
#1 TVH-Gasoline

R.T.: 7.295 min
Delta R.T.: 0.000 min
Response: 3891970
Conc: 0.06 mg/L m



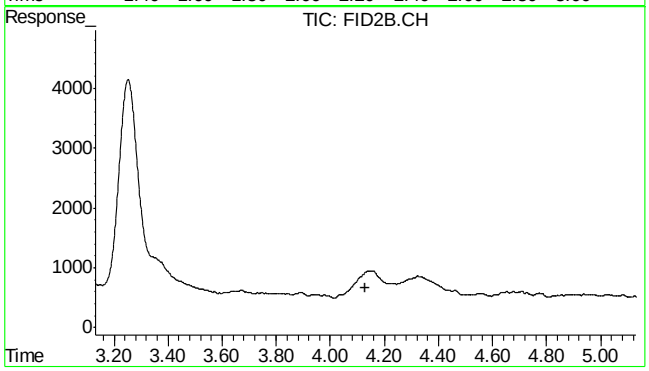
#2 1,2,4-Trichlorobenzene

R.T.: 14.350 min
Delta R.T.: -0.010 min
Response: 2492544
Conc: 82.50 % m



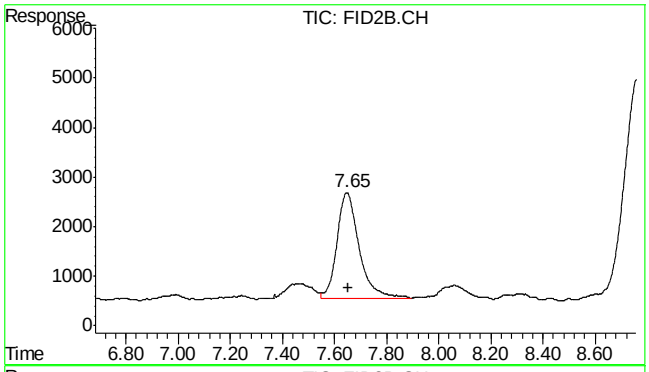
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T. : 2.229 min
Response: 0
Conc: N.D.



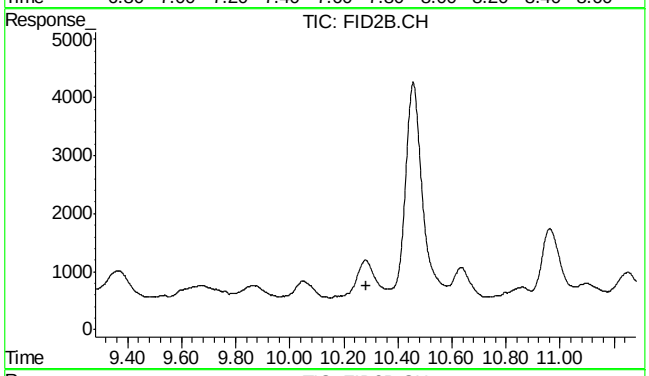
#5 Benzene

R.T.: 0.000 min
Exp R.T. : 4.131 min
Response: 0
Conc: N.D.



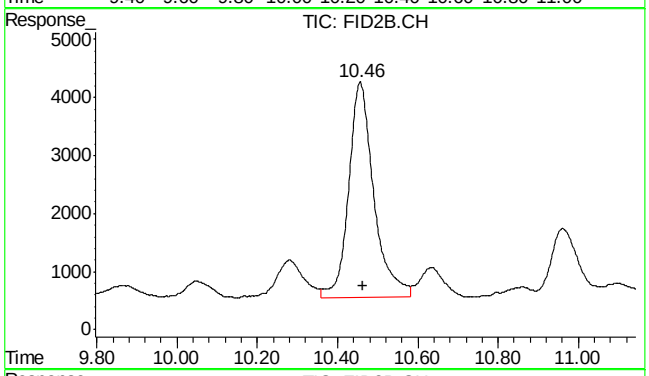
#6 Toluene

R.T.: 7.648 min
Delta R.T.: -0.007 min
Response: 128664
Conc: 0.35 ug/L m



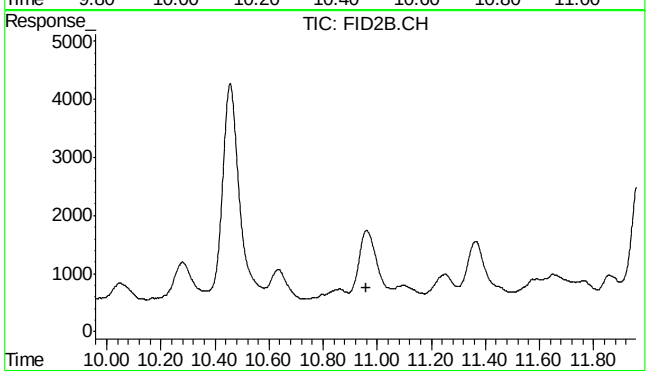
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.281 min
Response: 0
Conc: N.D.



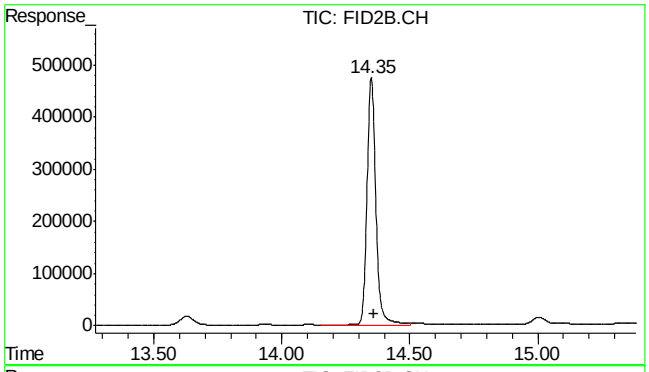
#8 m,p-Xylene

R.T.: 10.457 min
Delta R.T.: -0.006 min
Response: 161936
Conc: 0.43 ug/L



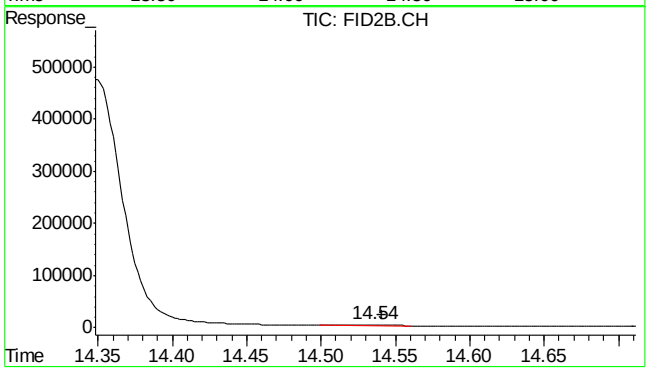
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.958 min
Response: 0
Conc: N.D.



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

R.T.: 14.349 min
Delta R.T.: -0.009 min
Response: 11471513
Conc: 86.87 % m



#11 Naphthalene

R.T.: 14.535 min
Delta R.T.: -0.006 min
Response: 19907
Conc: 0.12 ug/L m

Manual Integrations APPROVED (compounds with "m" flag)
Jennifer Laidlaw 10/01/13 15:20

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\2013\09.2013\093013\GB22341.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\2013\09.2013\093013\GB22341.D\FID2B.CH
Acq On : 30 Sep 2013 10:54 am Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3909,GGB1229,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 01 09:48:18 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Tue Oct 01 09:47:55 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

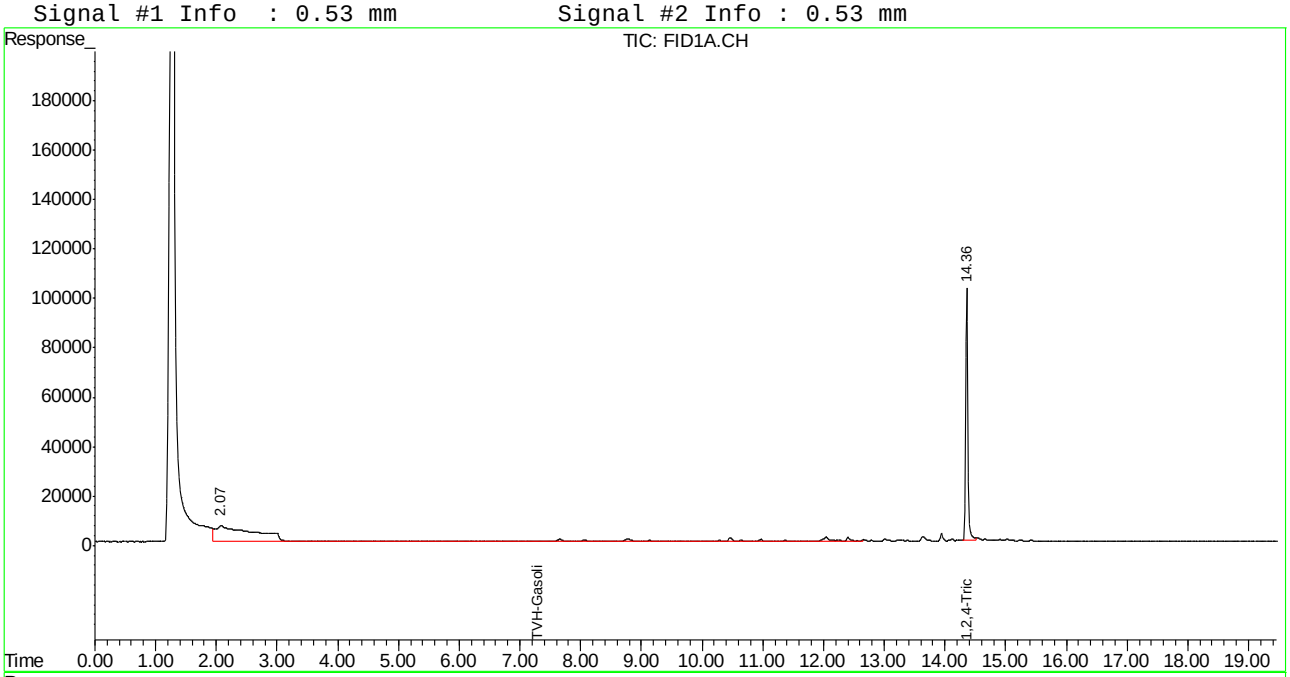
	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.36	2521538	83.464	%	m
10) S	1,2,4-Trichlorobenzene (P)	14.36	11592646	87.790	%	m
	Target Compounds					
1) H	TVH-Gasoline	7.29	4131480	0.059	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L	d
5) T	Benzene	0.00	0	N.D.	ug/L	d
6) T	Toluene	7.66	162804	0.440	ug/L	
7) T	Ethylbenzene	0.00	0	N.D.	ug/L	d
8) T	m,p-Xylene	10.47	205658	0.545	ug/L	
9) T	o-Xylene	0.00	0	N.D.	ug/L	d
11) T	Naphthalene	14.54	39026	0.226	ug/L	m

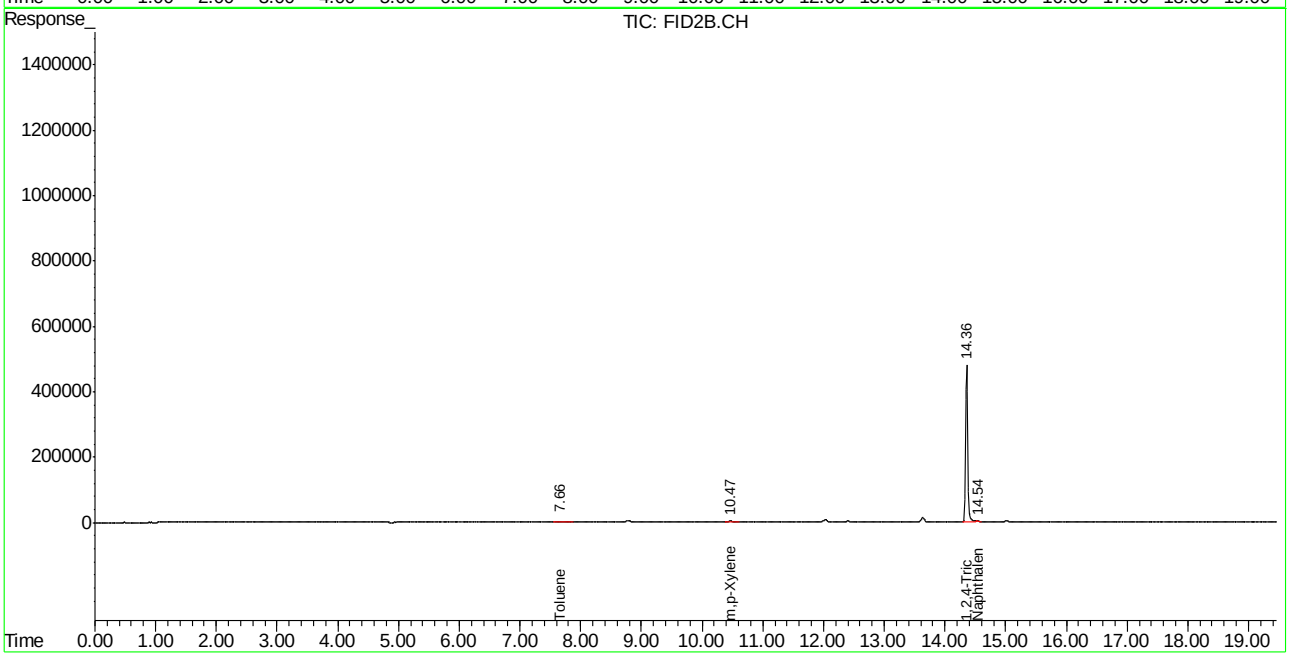
Quantitation Report (QT Reviewed)

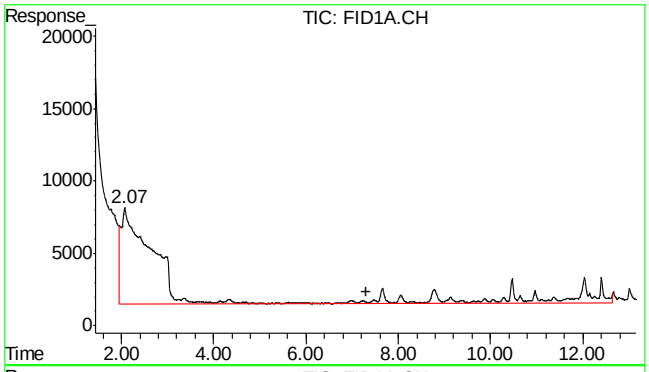
Signal #1 : Y:\1\DATA\2013\09.2013\093013\GB22341.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\2013\09.2013\093013\GB22341.D\FID2B.CH
Acq On : 30 Sep 2013 10:54 am Operator: ELISEV
Sample : MB, S Inst : GC/MS Ins
Misc : GC3909,GGB1229,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Oct 1 9:56 2013 Quant Results File: TB1125GB1125SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1125GB1125SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Tue Oct 01 09:47:55 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

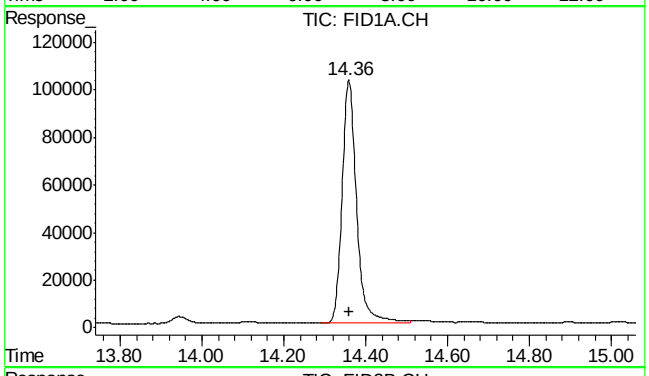






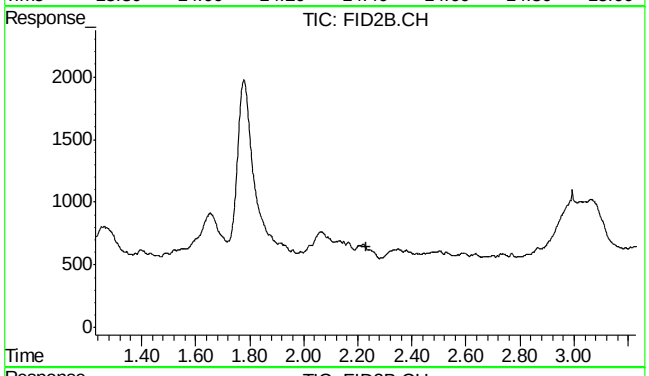
#1 TVH-Gasoline

R.T.: 7.295 min
Delta R.T.: 0.000 min
Response: 4131480
Conc: 0.06 mg/L m



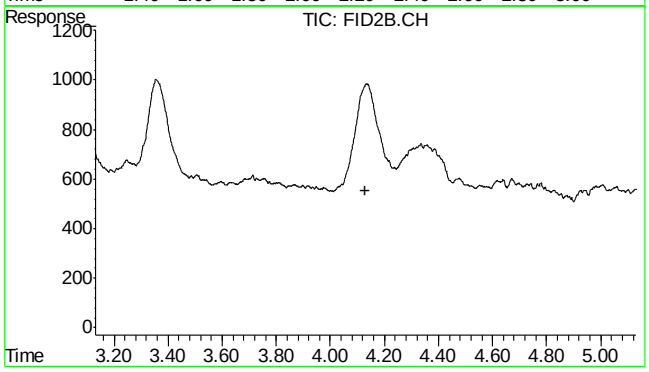
#2 1,2,4-Trichlorobenzene

R.T.: 14.358 min
Delta R.T.: -0.002 min
Response: 2521538
Conc: 83.46 % m



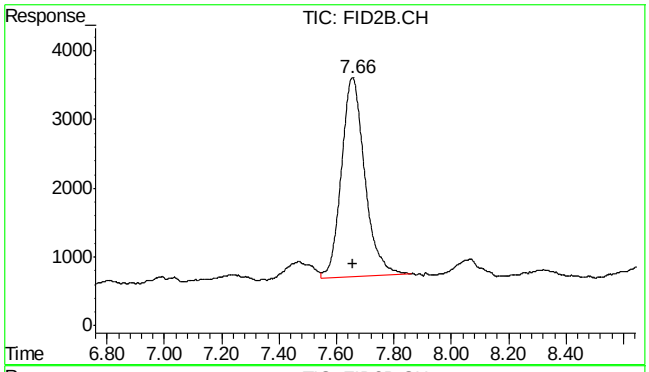
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T. : 2.229 min
Response: 0
Conc: N.D.



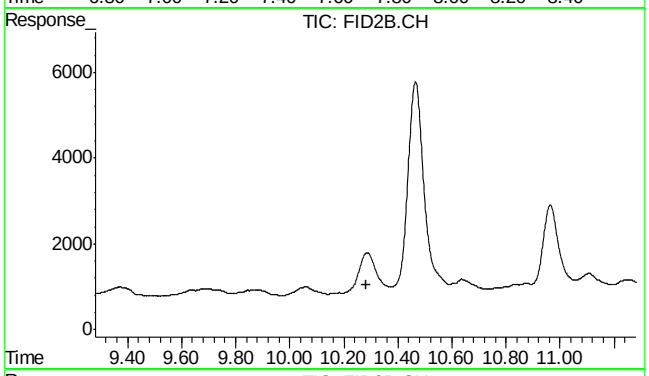
#5 Benzene

R.T.: 0.000 min
Exp R.T. : 4.131 min
Response: 0
Conc: N.D.



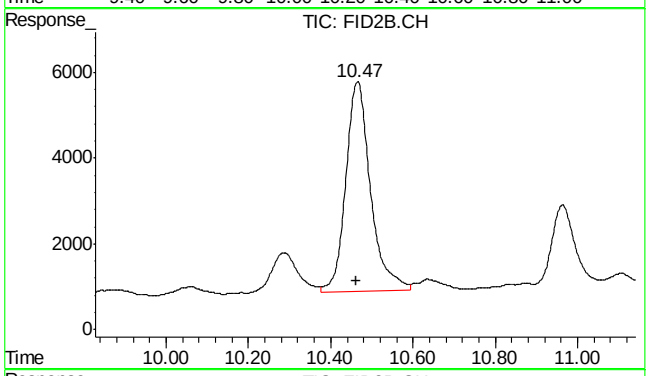
#6 Toluene

R.T.: 7.656 min
Delta R.T.: 0.000 min
Response: 162804
Conc: 0.44 ug/L



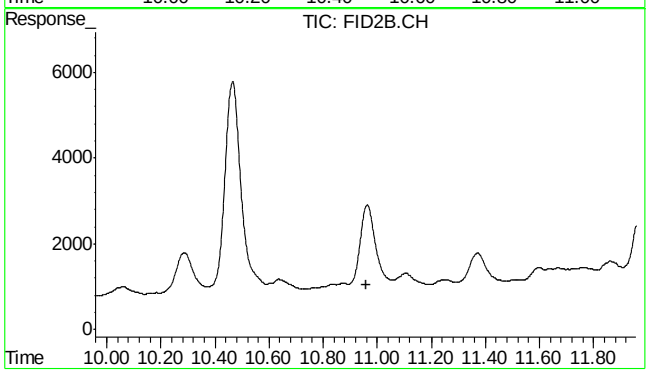
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.281 min
Response: 0
Conc: N.D.



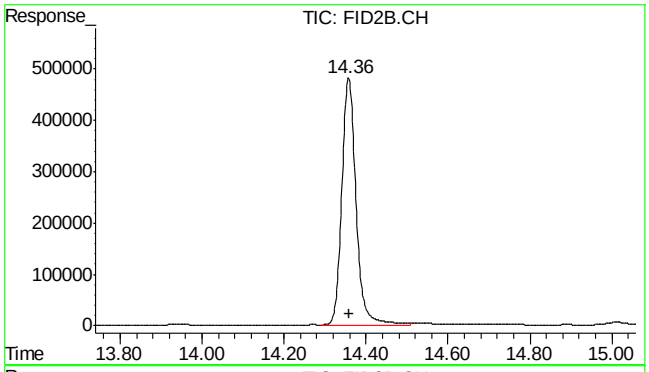
#8 m,p-Xylene

R.T.: 10.466 min
Delta R.T.: 0.003 min
Response: 205658
Conc: 0.54 ug/L



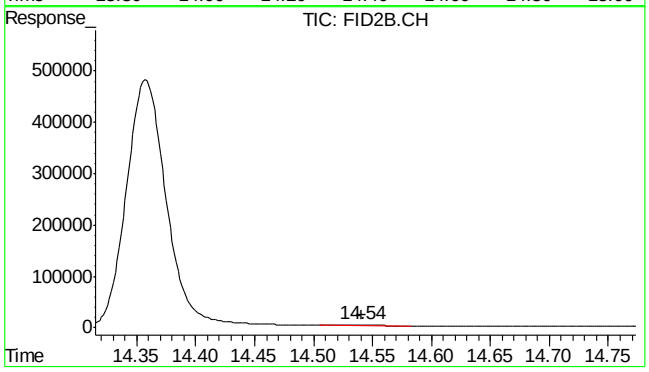
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.958 min
Response: 0
Conc: N.D.



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

R.T.:	14.357 min
Delta R.T.:	-0.001 min
Response:	11592646
Conc:	87.79 % m



#11 Naphthalene

R.T.:	14.540 min
Delta R.T.:	0.000 min
Response:	39026
Conc:	0.23 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: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8643-MB	FH013472.D	1	09/27/13	TU	09/27/13	OP8643	GFH714

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

D51044-1

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	84%	20-130%

Blank Spike Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8643-BS	FH013474.D	1	09/27/13	TU	09/27/13	OP8643	GFH714

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

D51044-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	477	72	42-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	74%	20-130%

12.2.1
12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D51044
Account: XTOKRWR XTO Energy
Project: FRU 197-31A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP8643-MS	FH013478.D	1	09/27/13	TU	09/27/13	OP8643	GFH714
OP8643-MSD	FH013480.D	1	09/27/13	TU	09/27/13	OP8643	GFH714
D50939-1	FH013482.D	1	09/27/13	TU	09/27/13	OP8643	GFH714

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

D51044-1

CAS No.	Compound	D50939-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	25.9		781	398	48	432	52	8	20-150/30

CAS No.	Surrogate Recoveries	MS	MSD	D50939-1	Limits
84-15-1	o-Terphenyl	54%	60%	68%	20-130%

12.3.1 12

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH092713.SEC\
Data File : FH013496.D
Signal(s) : FID2B.ch
Acq On : 27 Sep 2013 6:48 pm
Operator : TIMU
Sample : D51044-1
Misc : OP8643,GFH714,30.09,,,1,1
ALS Vial : 64 Sample Multiplier: 1

Integration File: events.e
Quant Time: Sep 30 08:43:40 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	12.184	2808043031	1618.357	ug/ml
Target Compounds					
2) H	TPH-DRO (C10-C28)	9.781	11137230464	7917.951	ug/ml

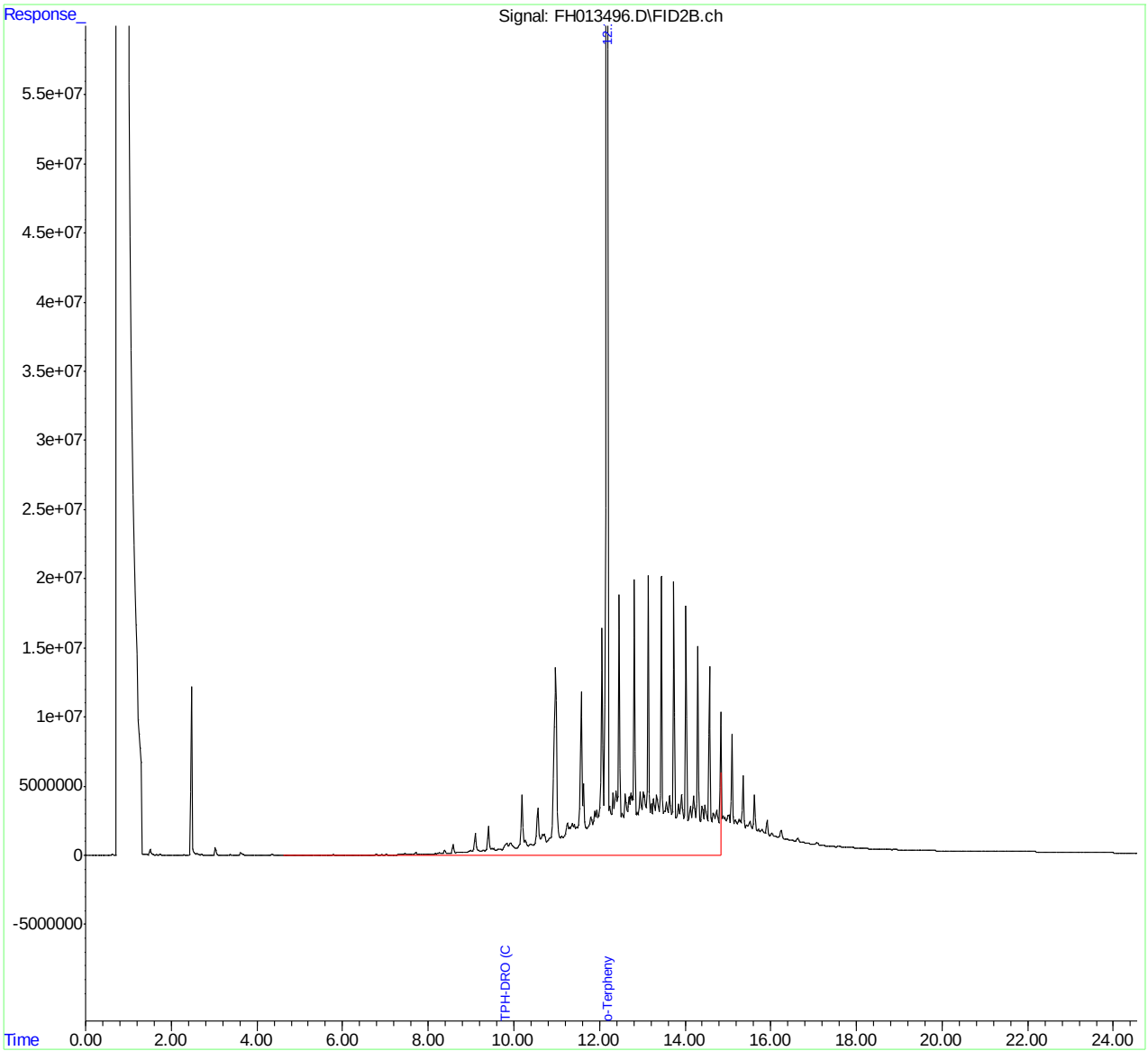
(f)=RT Delta > 1/2 Window (m)=manual int.

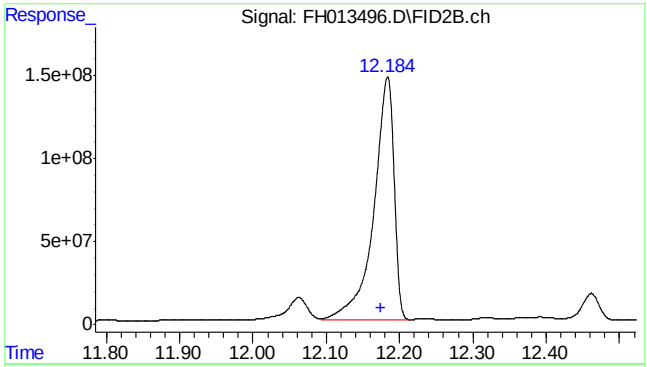
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH092713.SEC\
Data File : FH013496.D
Signal(s) : FID2B.ch
Acq On : 27 Sep 2013 6:48 pm
Operator : TIMU
Sample : D51044-1
Misc : OP8643,GFH714,30.09,,,1,1
ALS Vial : 64 Sample Multiplier: 1

Integration File: events.e
Quant Time: Sep 30 08:43:40 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

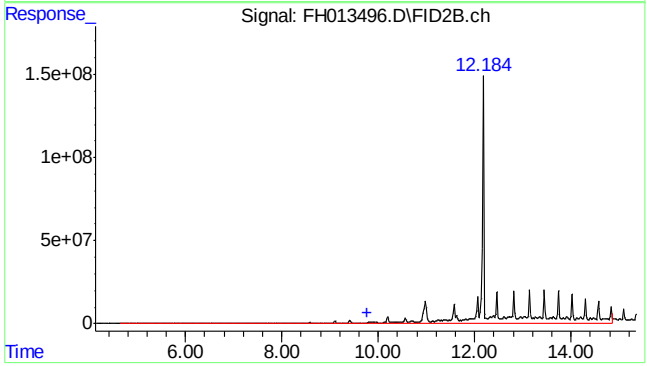
Volume Inj. :
Signal Phase :
Signal Info :





#1 o-Terphenyl

R.T.: 12.184 min
Delta R.T.: 0.009 min
Response: 2808043031
Conc: 1618.36 ug/ml



#2 TPH-DRO (C10-C28)

R.T.: 9.781 min
Delta R.T.: 0.000 min
Response: 11137230464
Conc: 7917.95 ug/ml m

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH092713.SEC\
Data File : FH013472.D
Signal(s) : FID2B.ch
Acq On : 27 Sep 2013 12:09 pm
Operator : TIMU
Sample : OP8643-MB
Misc : OP8643,GFH714,30.00,,,1,1
ALS Vial : 54 Sample Multiplier: 1

Integration File: events.e
Quant Time: Sep 30 09:07:51 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	12.185	2901254726	1672.078	ug/ml
Target Compounds					
2) H	TPH-DRO (C10-C28)	9.781	63731791	45.310	ug/ml

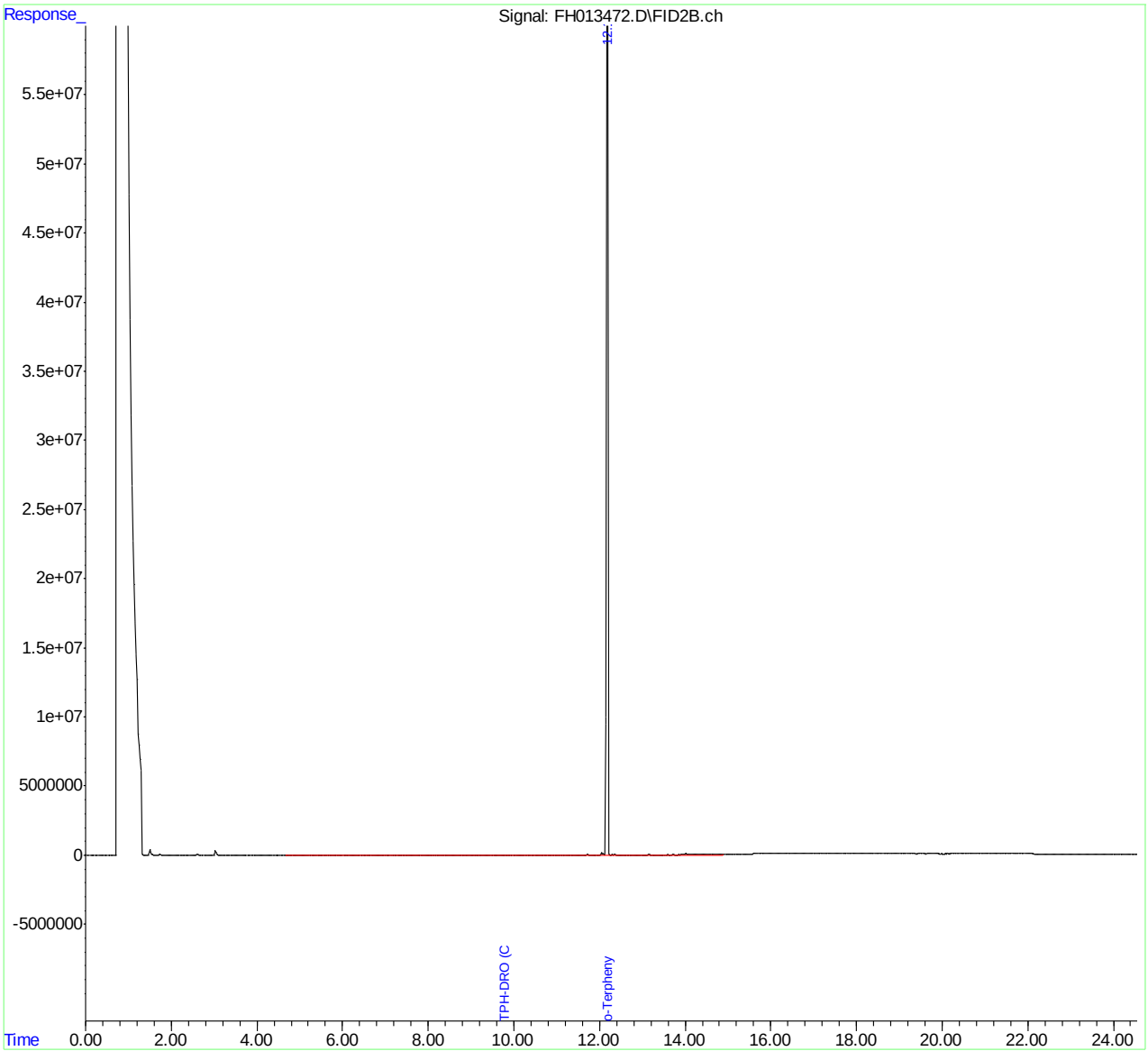
(f)=RT Delta > 1/2 Window (m)=manual int.

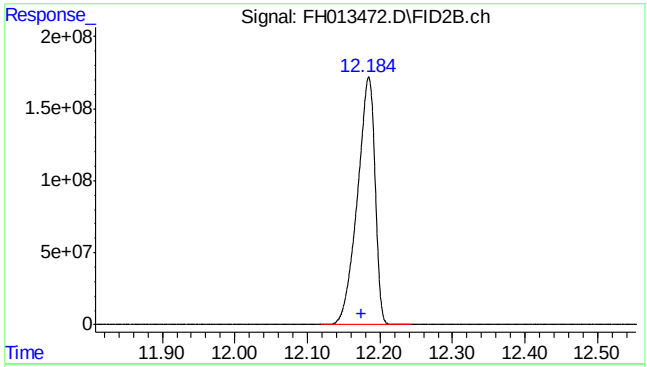
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH092713.SEC\
Data File : FH013472.D
Signal(s) : FID2B.ch
Acq On : 27 Sep 2013 12:09 pm
Operator : TIMU
Sample : OP8643-MB
Misc : OP8643,GFH714,30.00,,,1,1
ALS Vial : 54 Sample Multiplier: 1

Integration File: events.e
Quant Time: Sep 30 09:07:51 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

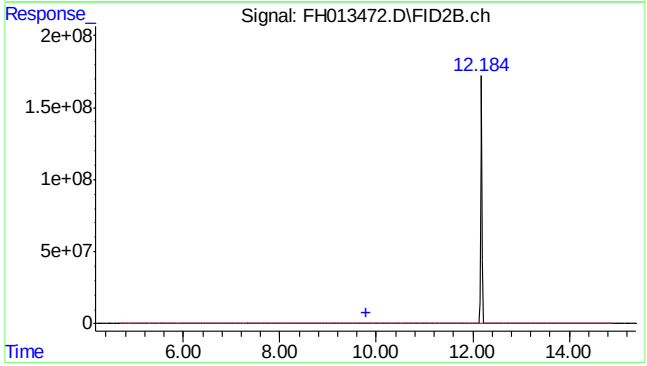
Volume Inj. :
Signal Phase :
Signal Info :





#1 o-Terphenyl

R.T.: 12.185 min
Delta R.T.: 0.010 min
Response: 2901254726
Conc: 1672.08 ug/ml



#2 TPH-DRO (C10-C28)

R.T.: 9.781 min
Delta R.T.: 0.000 min
Response: 63731791
Conc: 45.31 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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11247 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/01/13

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.083	.00088	.0067	0.0012	<0.083

Associated samples MP11247: D51044-1

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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11247 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/01/13

Metal	D51039-1 Original	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.19	0.47	0.431	65.0N(a)	75-125

Associated samples MP11247: D51044-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11247 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/01/13

Metal	D51039-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.19	0.63	0.403	109.2	29.1 (a)	20

Associated samples MP11247: D51044-1

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
(a) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11247
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 10/01/13

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.35	0.333	105.0	80-120

Associated samples MP11247: D51044-1

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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/01/13

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	0.050	<1.0
Beryllium	1.0	.09	.06		
Boron	5.0	.08	.16		
Cadmium	1.0	.02	.28	0.0	<1.0
Calcium	40	.24	6.8		
Chromium	1.0	.03	.03	0.030	<1.0
Cobalt	0.50	.05	.039		
Copper	1.0	.08	.13	0.030	<1.0
Iron	7.0	.15	1.8		
Lead	5.0	.21	.25	-0.66	<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	-0.070	<3.0
Phosphorus	10	1.5	1.2		
Potassium	200	9.9	12		
Selenium	5.0	.71	1.1	-0.080	<5.0
Silicon	5.0	.47	1.1		
Silver	3.0	.03	.05	0.040	<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	-0.20	<3.0

Associated samples MP11248: D51044-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/01/13

Metal	D51041-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	1970	2430	242	190.4(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	49.4	60.4	81.8	75-125
Calcium					
Chromium	47.2	96.2	60.4	81.1	75-125
Cobalt					
Copper	8.9	61.0	60.4	86.2	75-125
Iron					
Lead	9.5	110	121	83.2	75-125
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	15.4	63.1	60.4	79.0	75-125
Phosphorus					
Potassium					
Selenium	0.0	105	121	86.9	75-125
Silicon					
Silver	0.21	22.3	24.2	91.4	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	40.6	83.6	60.4	71.2N(b)	75-125

Associated samples MP11248: D51044-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
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.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/01/13

Metal	D51041-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	1970	1550	237	-177.3(a	44.2 (b)	20
Beryllium						
Boron						
Cadmium	0.0	48.5	59.2	81.9	1.8	20
Calcium						
Chromium	47.2	94.6	59.2	80.0	1.7	20
Cobalt						
Copper	8.9	58.9	59.2	84.4	3.5	20
Iron						
Lead	9.5	107	118	82.3	2.8	20
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	15.4	61.4	59.2	77.7	2.7	20
Phosphorus						
Potassium						
Selenium	0.0	105	118	88.7	0.0	20
Silicon						
Silver	0.21	21.9	23.7	91.6	1.8	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	40.6	84.3	59.2	73.8N(c)	0.8	20

Associated samples MP11248: D51044-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
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) High RPD due to possible sample matrix or nonhomogeneity.
(c) Spike recovery indicates possible matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 10/01/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	197	200	98.5	80-120
Beryllium				
Boron				
Cadmium	44.7	50	89.4	80-120
Calcium				
Chromium	48.4	50	96.8	80-120
Cobalt				
Copper	45.9	50	91.8	80-120
Iron				
Lead	94.8	100	94.8	80-120
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	46.6	50	93.2	80-120
Phosphorus				
Potassium				
Selenium	97.4	100	97.4	80-120
Silicon				
Silver	19.9	20	99.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	44.1	50	88.2	80-120

Associated samples MP11248: D51044-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/01/13

Metal	D51041-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	16600	17800	7.2	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	398	426	6.9	0-10
Cobalt				
Copper	75.5	69.0	8.6	0-10
Iron				
Lead	79.9	59.5	25.5 (a)	0-10
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	130	143	10.0	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	1.80	6.00	233.3(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	342	374	9.2	0-10

Associated samples MP11248: D51044-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11248
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).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11249
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/01/13

Metal	RL	IDL	MDL	MB raw	MB final
Aluminum	25	.55	.75		
Antimony	0.20	.0011	.029		
Arsenic	0.10	.0085	.024	0.011	<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 MP11249: D51044-1

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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11249
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/01/13

Metal	D51041-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	3.2	118	121	94.8	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 MP11249: D51044-1

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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11249 Methods: SW846 6020A
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/01/13

Metal	D51041-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	3.2	113	118	92.5	10.1	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 MP11249: D51044-1

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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11249
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 10/01/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	94.9	100	94.9	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11249: D51044-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11249
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 10/01/13

Metal	D51041-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	26.9	27.3	4.5	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11249: D51044-1

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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
Matrix Type: AQUEOUS

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

Prep Date: 10/01/13

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	-4.5	<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	3.0	<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	-110	<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 MP11259: D51044-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
Matrix Type: AQUEOUS

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

Prep Date: 10/01/13

Metal	D51044-1A Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	2620	131000	125000	102.7	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	1110	121000	125000	95.9	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	37800	163000	125000	100.2	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP11259: D51044-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
Matrix Type: AQUEOUS

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

Prep Date: 10/01/13

Metal	D51044-1A Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	2620	131000	125000	102.7	0.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	1110	121000	125000	95.9	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	37800	166000	125000	102.6	1.8	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP11259: D51044-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
Matrix Type: AQUEOUS

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

Prep Date: 10/01/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	127000	125000	101.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	118000	125000	94.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	123000	125000	98.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11259: D51044-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
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: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
Matrix Type: AQUEOUS

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

Prep Date: 10/01/13

Metal	D51044-1A Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	524	514	1.9	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	222	232	4.1	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	7550	7710	2.1	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP11259: D51044-1A

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D51044
Account: XTOKRWR - XTO Energy
Project: FRU 197-31A

QC Batch ID: MP11259
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: D51044
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	106.4mg/kg	101	94.7	80-120%
Specific Conductivity	GP11068/GN22136			umhos/cm	9979	9840	98.6	90-110%
pH	GN22085			su	8.00	8.01	100.1	99.3-100.7%

Associated Samples:
Batch GN22085: D51044-1
Batch GP11063: D51044-1
Batch GP11068: D51044-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51044
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	GN22093	D50832-1R	mv	113	113	0.0	0-20%

Associated Samples:
Batch GN22093: D51044-1
Batch GP11063: D51044-1
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51044
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: D51044-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D51044
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: D51044-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits