Mountain States ACCUTEST LABORATORIES

03/20/14

Technical Report for

XTO Energy

XTO Love Ranch 8

1108-07

Accutest Job Number: D55961

Sampling Date: 03/13/14

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: **143**

NELAP ACCREDITED TNI LABORATORY

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

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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Sections:

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Accutest Laboratories

Sample Summary

XTO Energy

Job No: D55961

XTO Love Ranch 8
Project No: 1108-07

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D55961-1	03/13/14	08:15	DA	03/14/14	SO	Soil	NORTH CUTTING PIT CONTENTS COMPOSITE
D55961-1A	03/13/14	08:15	DA	03/14/14	SO	Soil	NORTH CUTTING PIT CONTENTS COMPOSITE

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	XTO Energy	**Job No**	D55961
Site:	XTO Love Ranch 8	**Report Date**	3/20/2014 12:34:54 PM

On 03/14/2014, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D55961 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:** V5V1865

- All samples were analyzed within the recommended method holding time.
- Sample(s) D55851-13MS, D55919-1DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO **Batch ID:** OP9573

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D55961-1MS, D55961-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) recovery(s) of Anthracene are outside control limits. Probable cause due to matrix interference.

Volatiles by GC By Method SW846 8015B

Matrix SO **Batch ID:** GGB1323

- All samples were analyzed within the recommended method holding time.
- Sample(s) D55973-12MS, D55973-12MSD 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:** OP9574

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55973-12MS, D55973-12MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix AQ **Batch ID:** MP12524

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55961-1AMS, D55961-1AMSD, D55961-1ASDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Matrix SO **Batch ID:** MP12498

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55961-1MSD, D55961-1MS, D55961-1MSD, D55961-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s), and matrix spike duplicate (MSD) recovery(s) of Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Selenium, Cadmium, Lead, Barium, Nickel, Chromium, Zinc are outside control limits for sample MP12498-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP12498-SD1 for Chromium, Zinc, Nickel, Barium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO **Batch ID:** MP12499

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55961-1MS, D55961-1MSD, D55961-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO **Batch ID:** MP12526

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55996-13MS, D55996-13MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO **Batch ID:** GN23993

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

Wet Chemistry By Method SM2540G-2011 M

Matrix SO **Batch ID:** GN23976

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix	SO	Batch ID:	GP12156

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

Wet Chemistry By Method SW846 3060A/7196A M

Matrix	SO	Batch ID:	R20737

- The data for SW846 3060A/7196A M meets quality control requirements.
- D55961-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix	SO	Batch ID:	GN23996

- The following samples were run outside of holding time for method SW846 9045D: D55961-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix	SO	Batch ID:	MP12524

- D55961-1A 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: D55961
Account: XTO Energy
Project: XTO Love Ranch 8
Collected: 03/13/14

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D55961-1	**NORTH CUTTING PIT CONTENTS COMPOSITE**					
Chrysene		0.0093	0.0051	0.0025	mg/kg	SW846 8270C BY SIM
Naphthalene		0.0718	0.0051	0.0030	mg/kg	SW846 8270C BY SIM
Pyrene		0.0119	0.0051	0.0030	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)		119	16	12	mg/kg	SW846-8015B
Arsenic		7.7	0.12		mg/kg	SW846 6020A
Barium		7440	24		mg/kg	SW846 6010C
Chromium		22.6	1.2		mg/kg	SW846 6010C
Copper		15.3	1.2		mg/kg	SW846 6010C
Lead		14.9	5.9		mg/kg	SW846 6010C
Nickel		15.5	3.6		mg/kg	SW846 6010C
Zinc		41.5	3.6		mg/kg	SW846 6010C
Specific Conductivity		5680	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent [a]		22.6	2.2		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2		344			mv	ASTM D1498-76M
pH		10.25			su	SW846 9045D
D55961-1A	**NORTH CUTTING PIT CONTENTS COMPOSITE**					
Calcium		226	2.0		mg/l	SW846 6010C
Magnesium		3.28	1.0		mg/l	SW846 6010C
Sodium		1170	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio [b]		21.2			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:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
Method:	SW846 8260B	**Percent Solids:**	85.1
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V31018.D	1	03/17/14	JL	n/a	n/a	V5V1865
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.067	0.025	mg/kg	
108-88-3	Toluene	ND	0.13	0.067	mg/kg	
100-41-4	Ethylbenzene	ND	0.13	0.025	mg/kg	
1330-20-7	Xylene (total)	ND	0.27	0.13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	90%		64-130%
460-00-4	4-Bromofluorobenzene	100%		62-131%
17060-07-0	1,2-Dichloroethane-D4	107%		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:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
Method:	SW846 8270C BY SIM SW846 3546	**Percent Solids:**	85.1
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G18515.D	1	03/18/14	DC	03/17/14	OP9573	E3G920
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	0.0051	0.0039	mg/kg	
120-12-7	Anthracene	ND	0.0051	0.0035	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0051	0.0025	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0051	0.0031	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0051	0.0025	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0051	0.0025	mg/kg	
218-01-9	Chrysene	0.0093	0.0051	0.0025	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0051	0.0025	mg/kg	
206-44-0	Fluoranthene	ND	0.0051	0.0028	mg/kg	
86-73-7	Fluorene	ND	0.0051	0.0036	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0051	0.0025	mg/kg	
91-20-3	Naphthalene	0.0718	0.0051	0.0030	mg/kg	
129-00-0	Pyrene	0.0119	0.0051	0.0030	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	74%		10-175%
321-60-8	2-Fluorobiphenyl	86%		25-130%
1718-51-0	Terphenyl-d14	105%		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:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
Method:	SW846 8015B	**Percent Solids:**	85.1
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB24098.D	1	03/18/14	AR	n/a	n/a	GGB1323
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	13	6.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	97%		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:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
Method:	SW846-8015B SW846 3546	**Percent Solids:**	85.1
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH019533.D	2	03/20/14	JJ	03/17/14	OP9574	GFH936
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	119	16	12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	70%		20-130%

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

Report of Analysis

Client Sample ID:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
		Percent Solids:	85.1
Project:	XTO Love Ranch 8		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	7.7	0.12	mg/kg	5	03/15/14	03/18/14	NT	SW846 6020A [3]	SW846 3050B [6]
Barium	7440	24	mg/kg	20	03/15/14	03/17/14	KV	SW846 6010C [2]	SW846 3050B [5]
Cadmium	< 1.2	1.2	mg/kg	1	03/15/14	03/15/14	KV	SW846 6010C [1]	SW846 3050B [5]
Chromium	22.6	1.2	mg/kg	1	03/15/14	03/15/14	KV	SW846 6010C [1]	SW846 3050B [5]
Copper	15.3	1.2	mg/kg	1	03/15/14	03/15/14	KV	SW846 6010C [1]	SW846 3050B [5]
Lead	14.9	5.9	mg/kg	1	03/15/14	03/15/14	KV	SW846 6010C [1]	SW846 3050B [5]
Mercury	< 0.096	0.096	mg/kg	1	03/19/14	03/19/14	JB	SW846 7471B [4]	SW846 7471B [7]
Nickel	15.5	3.6	mg/kg	1	03/15/14	03/17/14	KV	SW846 6010C [2]	SW846 3050B [5]
Selenium	< 5.9	5.9	mg/kg	1	03/15/14	03/17/14	KV	SW846 6010C [2]	SW846 3050B [5]
Silver	< 3.6	3.6	mg/kg	1	03/15/14	03/15/14	KV	SW846 6010C [1]	SW846 3050B [5]
Zinc	41.5	3.6	mg/kg	1	03/15/14	03/15/14	KV	SW846 6010C [1]	SW846 3050B [5]

(1) Instrument QC Batch: MA4554
(2) Instrument QC Batch: MA4557
(3) Instrument QC Batch: MA4559
(4) Instrument QC Batch: MA4563
(5) Prep QC Batch: MP12498
(6) Prep QC Batch: MP12499
(7) Prep QC Batch: MP12526

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
		Percent Solids:	85.1
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	85.1		%	1	03/17/14	SWT	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	5680	1.0	umhos/cm	1	03/19/14	AK	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	03/17/14	RW	SW846 3060A/7196A
Chromium, Trivalent [a]	22.6	2.2	mg/kg	1	03/17/14	RW	SW846 3060A/7196A M
Redox Potential Vs H2	344		mv	1	03/17/14	JD	ASTM D1498-76M
pH	10.25		su	1	03/17/14 12:15	JD	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1A	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
		Percent Solids:	85.1
Project:	XTO Love Ranch 8		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	226	2.0	mg/l	1	03/18/14	03/18/14	KV	SW846 6010C [1]	SW846 3010A/M [2]
Magnesium	3.28	1.0	mg/l	1	03/18/14	03/18/14	KV	SW846 6010C [1]	SW846 3010A/M [2]
Sodium	1170	2.0	mg/l	1	03/18/14	03/18/14	KV	SW846 6010C [1]	SW846 3010A/M [2]

(1) Instrument QC Batch: MA4560
(2) Prep QC Batch: MP12524

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NORTH CUTTING PIT CONTENTS COMPOSITE		
Lab Sample ID:	D55961-1A	**Date Sampled:**	03/13/14
Matrix:	SO - Soil	**Date Received:**	03/14/14
		Percent Solids:	85.1
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	21.2		ratio	1	03/18/14 19:12	KV	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

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 #: D55961

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): Dan Allen 970-488-1098

Project Information

Project Name: XTO Love Ranch 8
Street:
City: State:
Project #: 1104-07
Client Purchase Order #:
Project Manager: Joe Hess

Billing Information (if different from Report to)

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

Requested Analysis (see TEST CODE sheet)

Table 910

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	LAB USE ONLY
	North Cuttings Pit Contents Composite		3/13/14	0815	DA	SO	5					X					X 01

2/18/13

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] Std. 5 Business Days (By contract only)
- [X] 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		3/13/14 1145	1 Service Center	2		2 3/14/14
3	Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4 1440
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	[X] Intact [ ] Not Intact	Preserved where applicable: On Ice: Cooler Temp. 2.9

D55961: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D55961 **Client:** KRW **Immediate Client Services Action Required:** No

Date / Time Received: 3/14/2014 2:40:00 PM **No. Coolers:** 1 **Client Service Action Required at Login:** No

Project: XTO **Airbill #'s:** CO

Cooler Security

	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	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
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4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www/accutest.com

5.1

5

D55961: Chain of Custody
Page 2 of 2

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: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1865-MB	5V31003.D	1	03/17/14	JL	n/a	n/a	V5V1865

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

D55961-1

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

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	94%	64-130%
460-00-4	4-Bromofluorobenzene	90%	62-131%
17060-07-0	1,2-Dichloroethane-D4	98%	70-130%

Blank Spike Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1865-BS	5V31004.D	1	03/17/14	JL	n/a	n/a	V5V1865

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

D55961-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2520	101	70-130
100-41-4	Ethylbenzene	2500	2410	96	70-130
108-88-3	Toluene	2500	2450	98	70-130
1330-20-7	Xylene (total)	7500	7440	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	64-130%
460-00-4	4-Bromofluorobenzene	104%	62-131%
17060-07-0	1,2-Dichloroethane-D4	90%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D55851-13MS	5V31005.D	1	03/17/14	JL	n/a	n/a	V5V1865
D55851-13	5V31006.D	1	03/17/14	JL	n/a	n/a	V5V1865

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

D55961-1

CAS No.	Compound	D55851-13 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		3830	3520	92	64-139
100-41-4	Ethylbenzene	ND		3830	3140	82	68-136
108-88-3	Toluene	ND		3830	3140	82	60-130
1330-20-7	Xylene (total)	ND		11500	9910	86	58-142

CAS No.	Surrogate Recoveries	MS	D55851-13	Limits
2037-26-5	Toluene-D8	94%	93%	64-130%
460-00-4	4-Bromofluorobenzene	108%	99%	62-131%
17060-07-0	1,2-Dichloroethane-D4	86%	95%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D55919-1DUP	5V31008.D	1	03/17/14	JL	n/a	n/a	V5V1865
D55919-1	5V31007.D	1	03/17/14	JL	n/a	n/a	V5V1865

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

D55961-1

CAS No.	Compound	D55919-1 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	30

CAS No.	Surrogate Recoveries	DUP	D55919-1	Limits
2037-26-5	Toluene-D8	91%	92%	64-130%
460-00-4	4-Bromofluorobenzene	98%	102%	62-131%
17060-07-0	1,2-Dichloroethane-D4	98%	94%	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\V5031714.S\
Data File : 5V31018.D
Acq On : 17 Mar 2014 6:45 pm
Operator : Jessica1
Sample : D55961-1
Misc : MS7184,V5V1865,5.054,,100,5,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Mar 18 13:00:36 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration

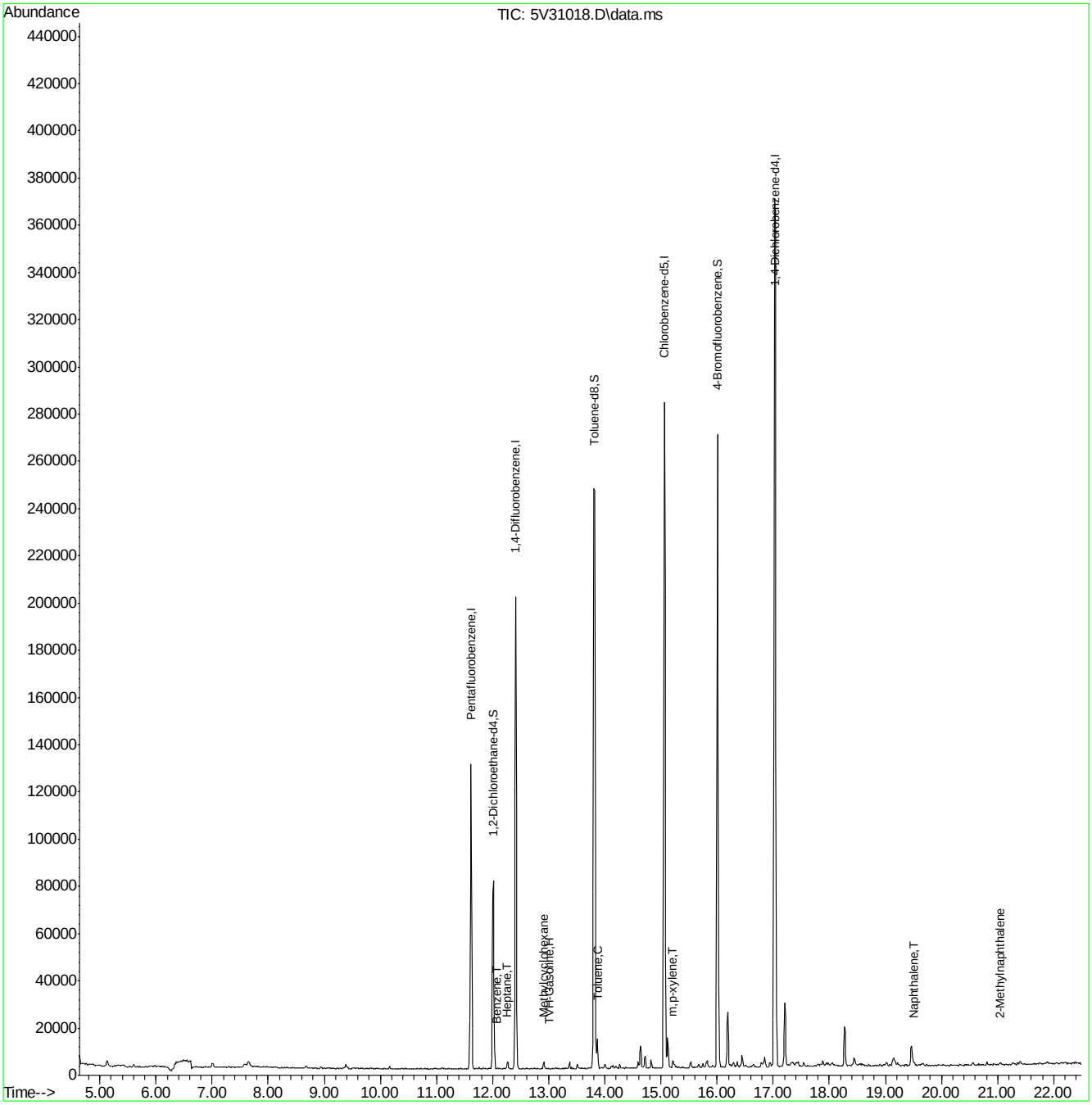
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	83945	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	132226	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	142603	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.036	152	121491	50.00	ug/l	0.01
System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.012	102	9704	53.39	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 106.78%			
64) Toluene-d8	13.816	98	151807	45.16	ug/l	0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 90.32%			
72) 4-Bromofluorobenzene	16.008	95	76122	49.98	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 99.96%			
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	73192m	59.25	ug/l	
45) Heptane	12.263	43	1226	1.40	ug/l #	71
47) Methylcyclohexane	12.914	83	876	1.84	ug/l #	75
53) Benzene	12.081	78	390	0.12	ug/l	100
65) Toluene	13.873	92	1299	0.52	ug/l	90
75) m,p-xylene	15.209	106	1162	1.64	ug/l	89
94) Naphthalene	19.502	128	718	1.44	ug/l	100
97) 2-Methylnaphthalene	21.043	142	791	3.01	ug/l #	78

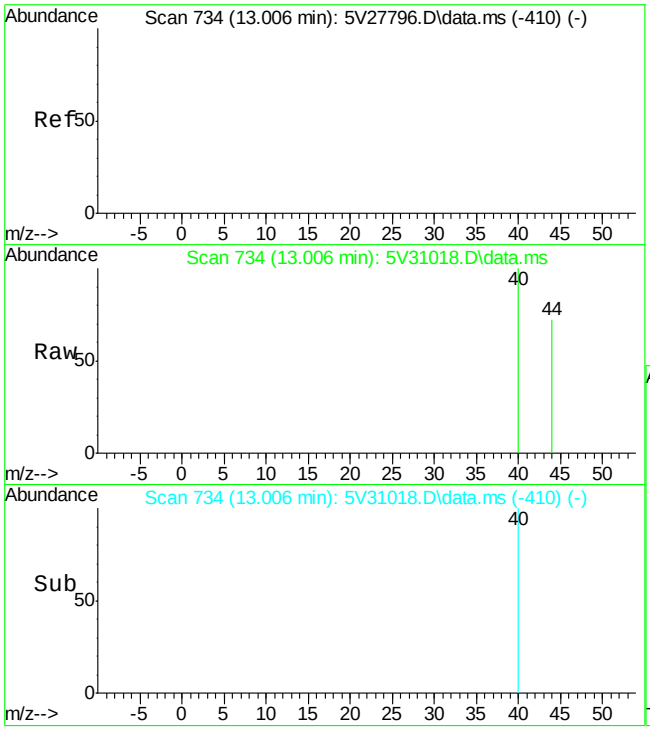
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031714.S\
Data File : 5V31018.D
Acq On : 17 Mar 2014 6:45 pm
Operator : Jessica1
Sample : D55961-1
Misc : MS7184,V5V1865,5.054,,100,5,1
ALS Vial : 19 Sample Multiplier: 1

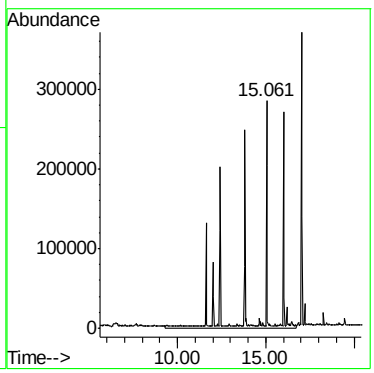
Quant Time: Mar 18 13:00:36 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration

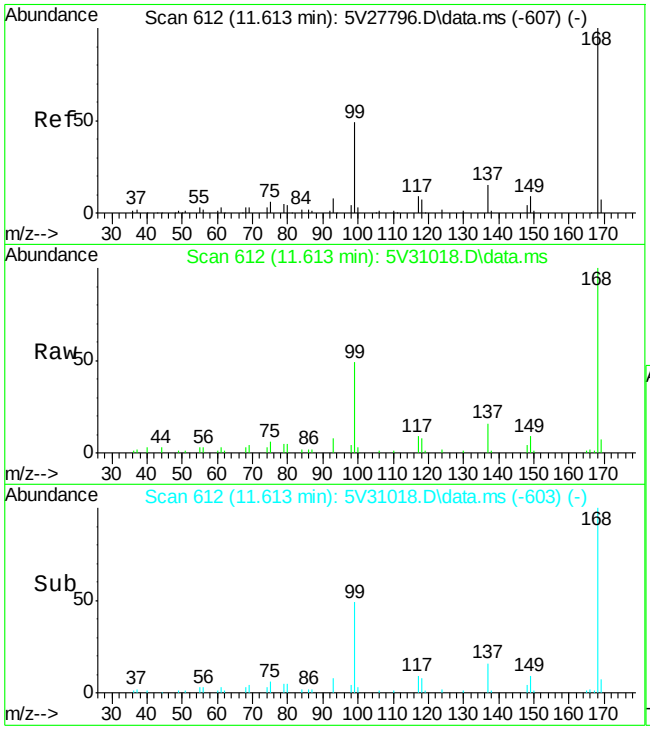




#1
TVH-Gasoline
Concen: 59.25 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:TIC Resp: 73192

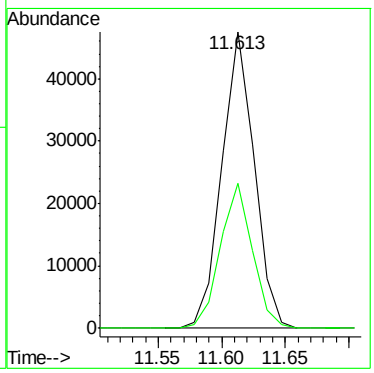


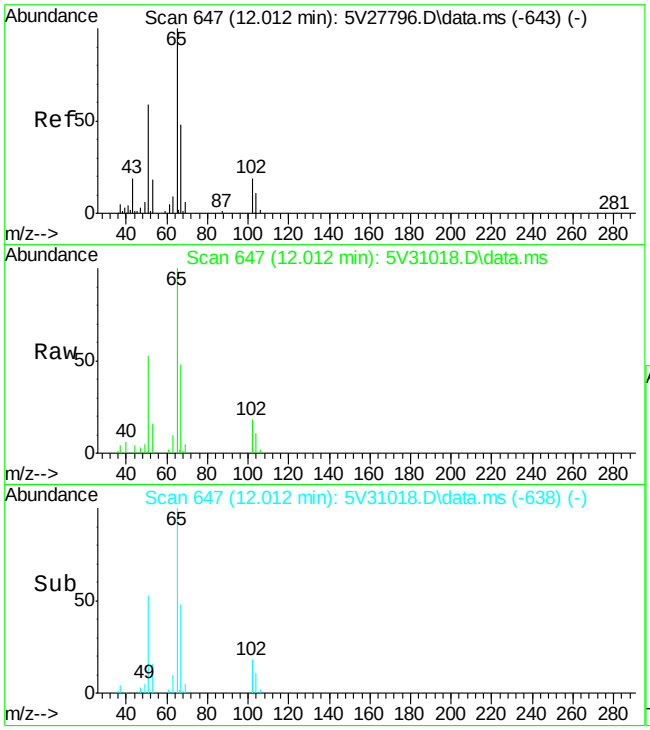


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.001 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:168 Resp: 83945

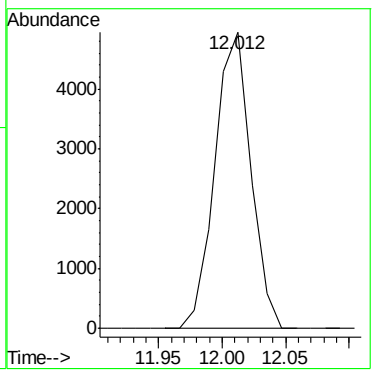
Ion	Ratio	Lower	Upper
168	100		
99	48.4	41.4	62.2

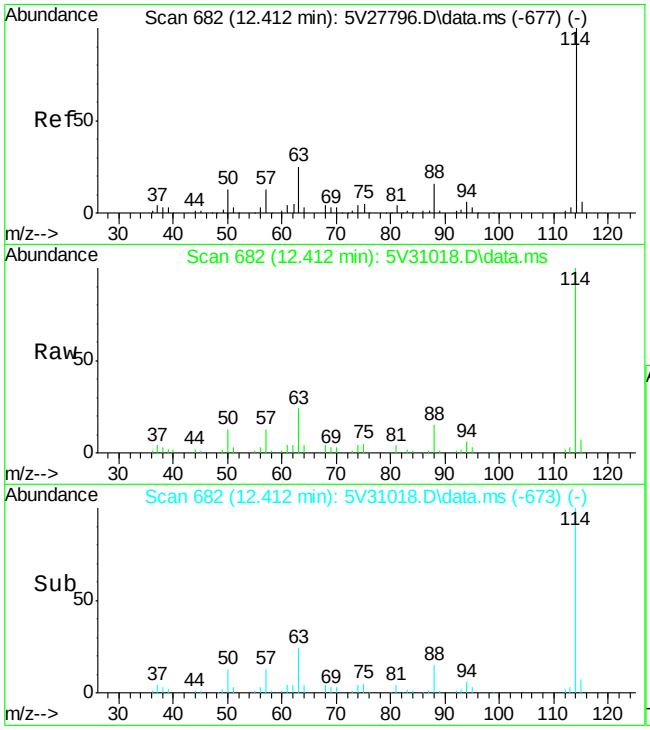




#35
1,2-Dichloroethane-d4
Concen: 53.39 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

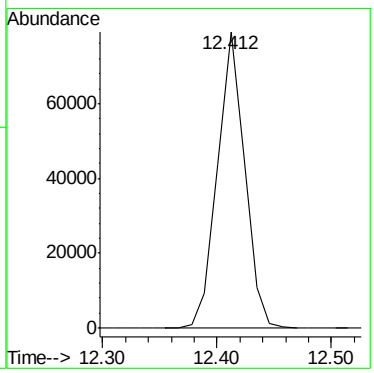
Tgt Ion:102 Resp: 9704

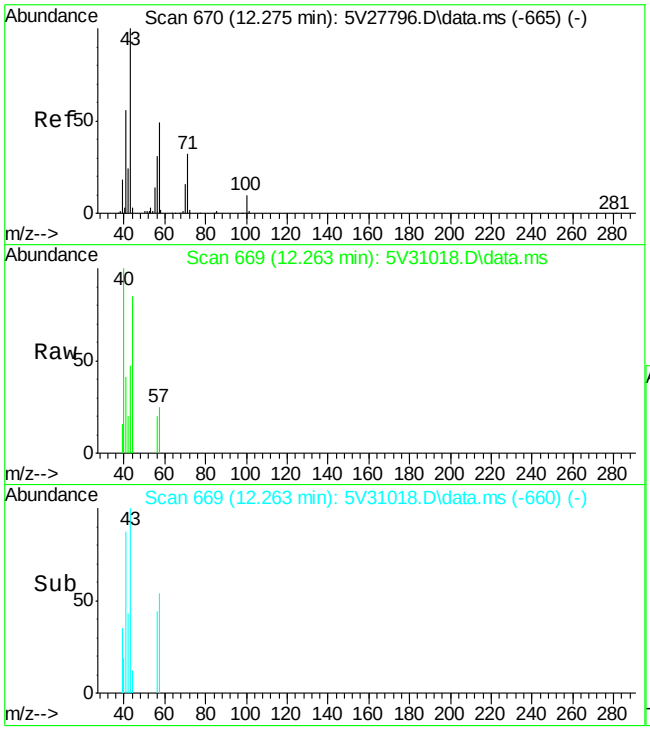




#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. -0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:114 Resp: 132226

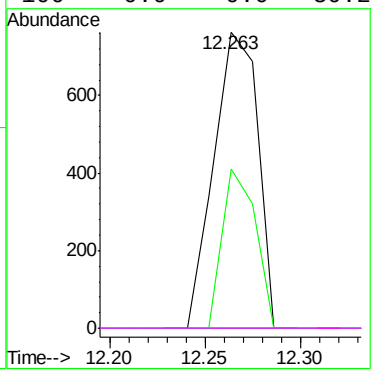


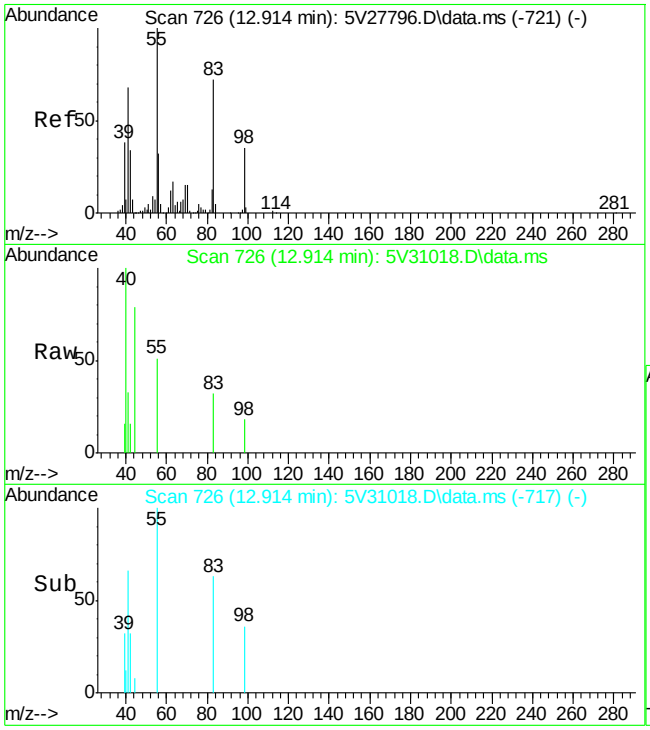


#45
Heptane
Concen: 1.40 ug/l
RT: 12.263 min Scan# 669
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion: 43 Resp: 1226

Ion	Ratio	Lower	Upper
43	100		
57	40.8	28.7	68.7
71	0.0	11.3	51.3#
100	0.0	0.0	30.2

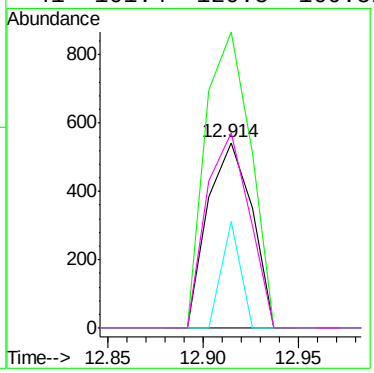


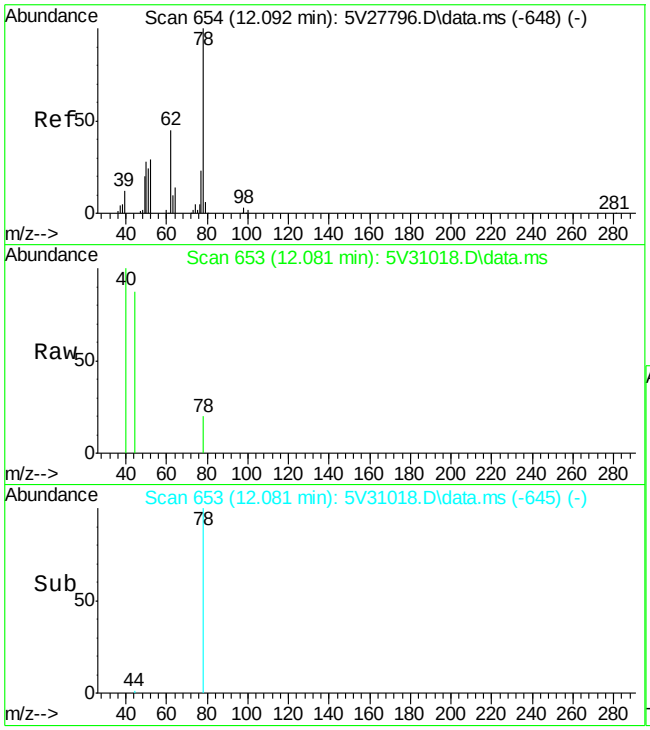


#47
Methylcyclohexane
Concen: 1.84 ug/l
RT: 12.914 min Scan# 726
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion: 83 Resp: 876

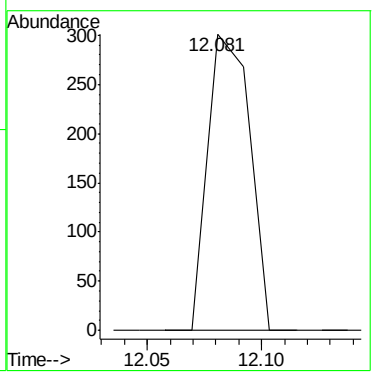
Ion	Ratio	Lower	Upper
83	100		
55	162.2	124.5	164.5
98	24.3	29.2	69.2#
41	101.4	120.5	160.5#

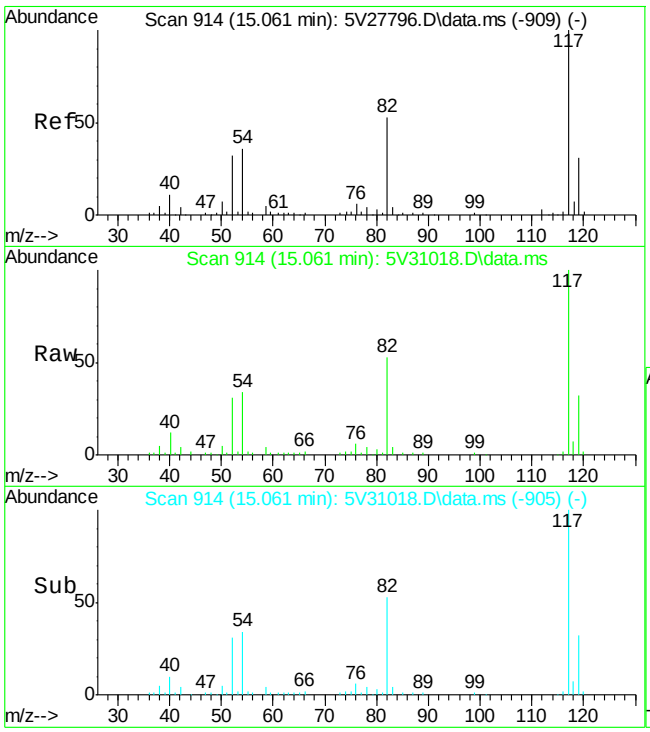




#53
Benzene
Concen: 0.12 ug/l
RT: 12.081 min Scan# 653
Delta R.T. -0.011 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

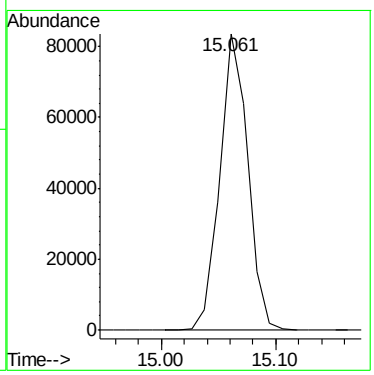
Tgt Ion: 78 Resp: 390

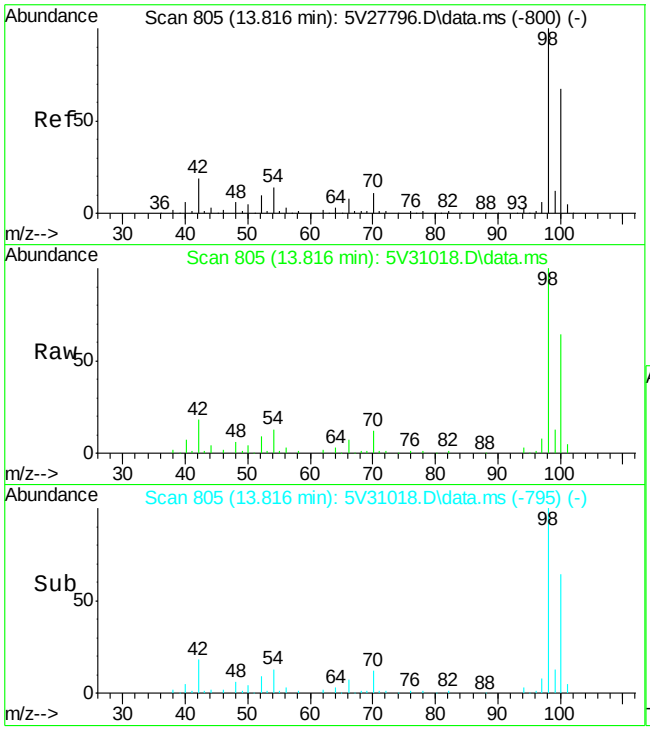




#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.001 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

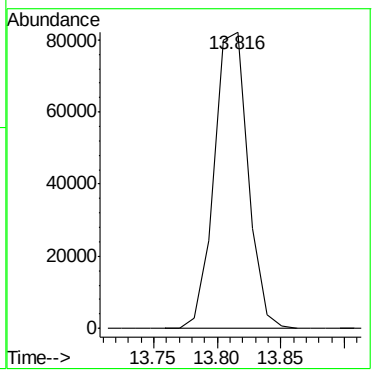
Tgt Ion:117 Resp: 142603

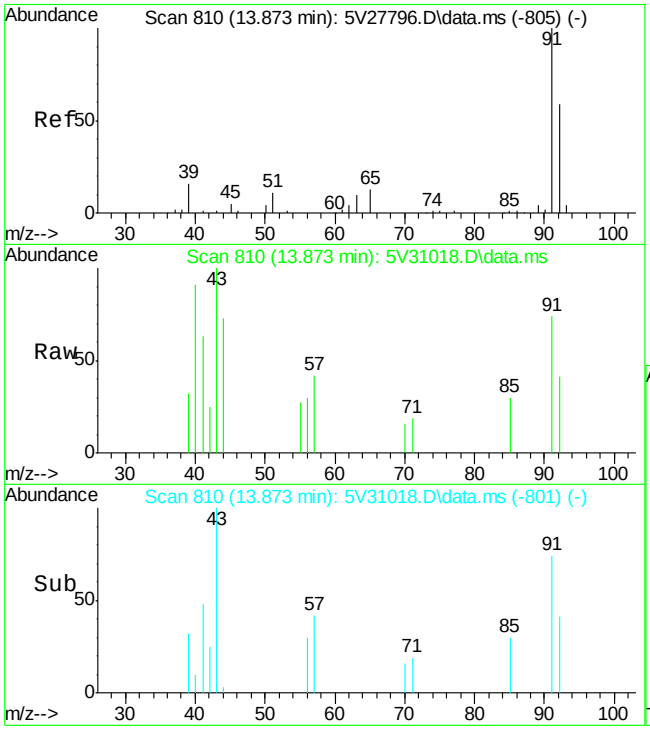




#64
Toluene-d8
Concen: 45.16 ug/l
RT: 13.816 min Scan# 805
Delta R.T. 0.012 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion: 98 Resp: 151807

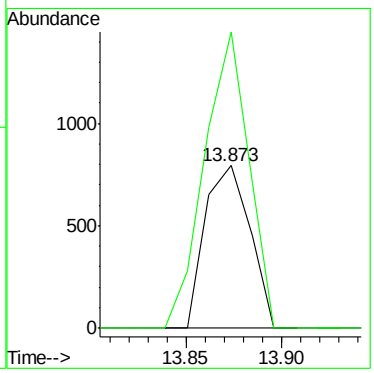


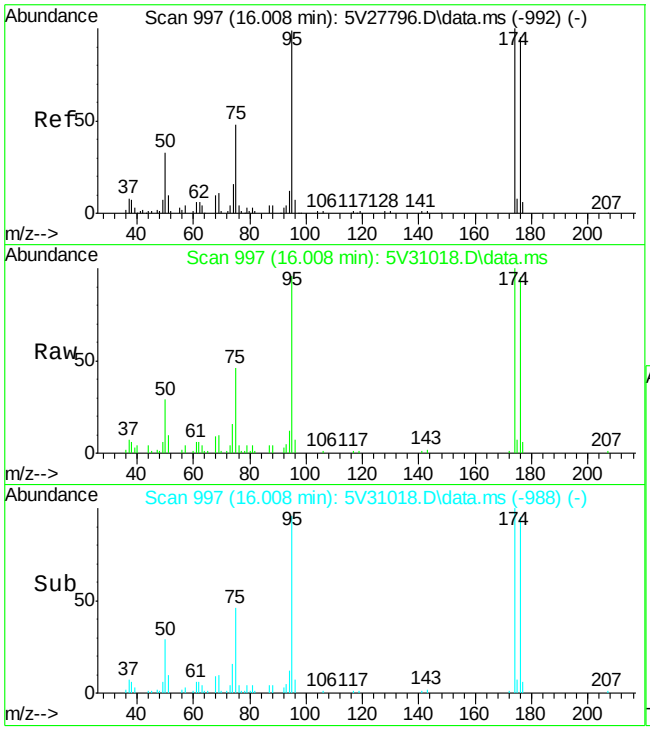


#65
Toluene
Concen: 0.52 ug/l
RT: 13.873 min Scan# 810
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion: 92 Resp: 1299

Ion	Ratio	Lower	Upper
92	100		
91	180.0	146.5	186.5

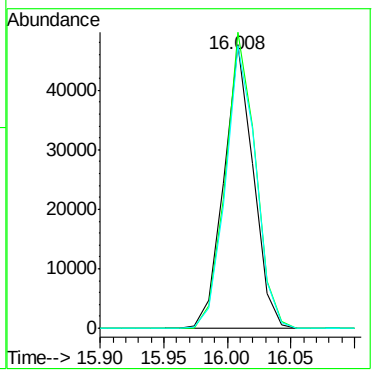


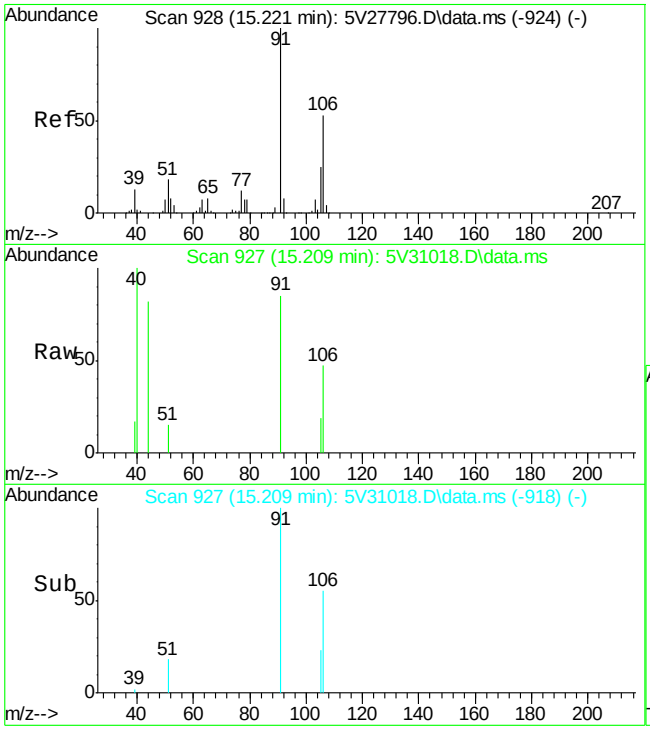


#72
4-Bromofluorobenzene
Concen: 49.98 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion: 95 Resp: 76122

Ion	Ratio	Lower	Upper
95	100		
174	106.4	85.4	125.4
176	102.5	80.6	120.6

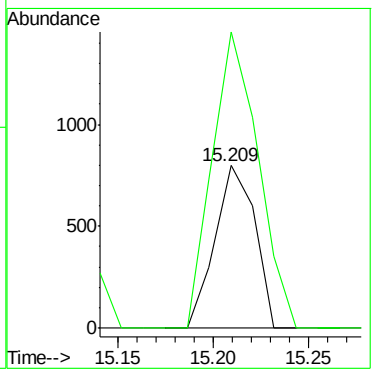


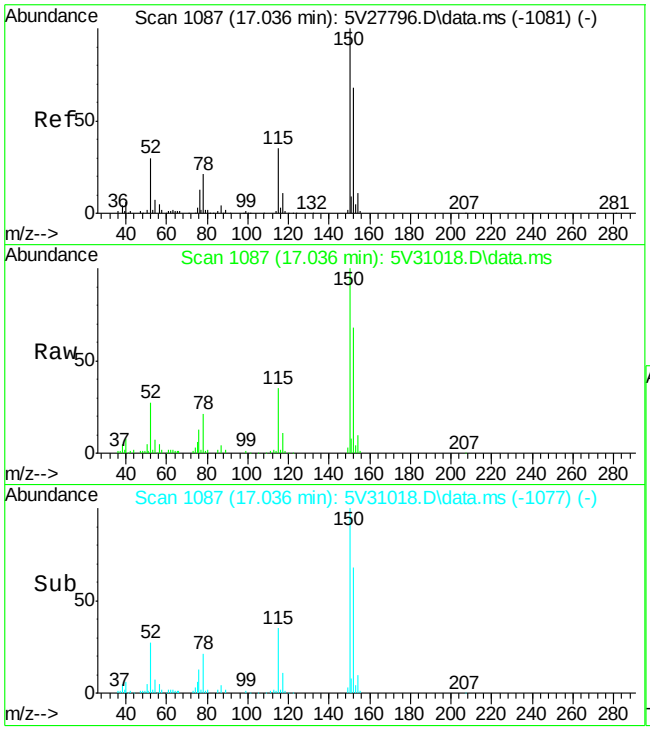


#75
m,p-xylene
Concen: 1.64 ug/l
RT: 15.209 min Scan# 927
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:106 Resp: 1162

Ion	Ratio	Lower	Upper
106	100		
91	210.6	174.8	214.8

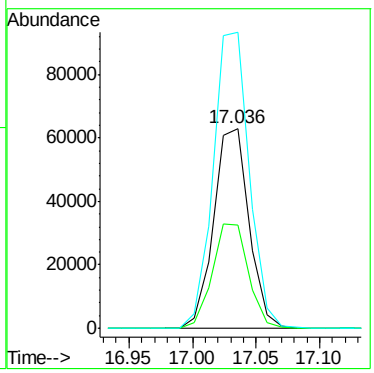


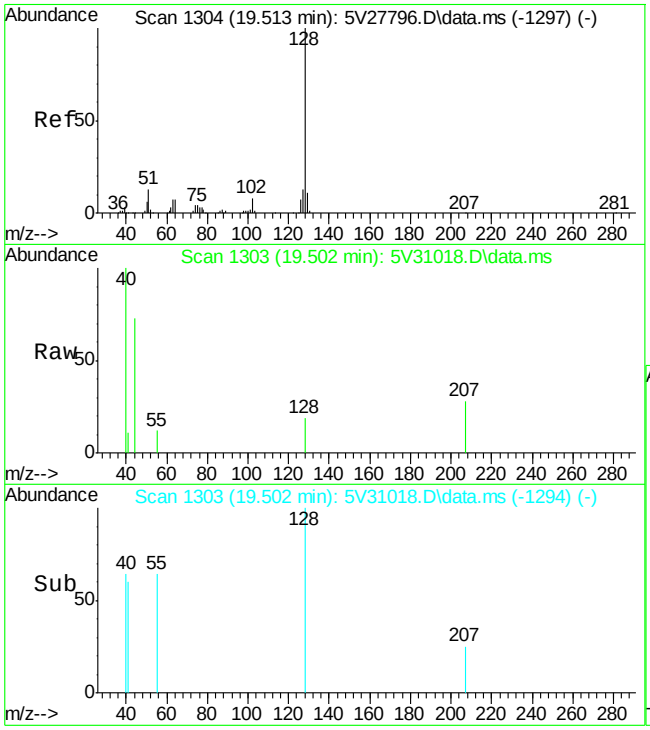


#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. 0.012 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:152 Resp: 121491

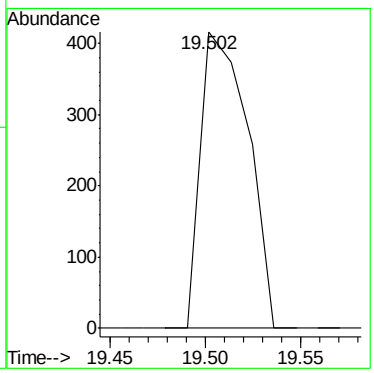
Ion	Ratio	Lower	Upper
152	100		
115	53.1	43.4	65.2
150	150.5	142.9	214.3

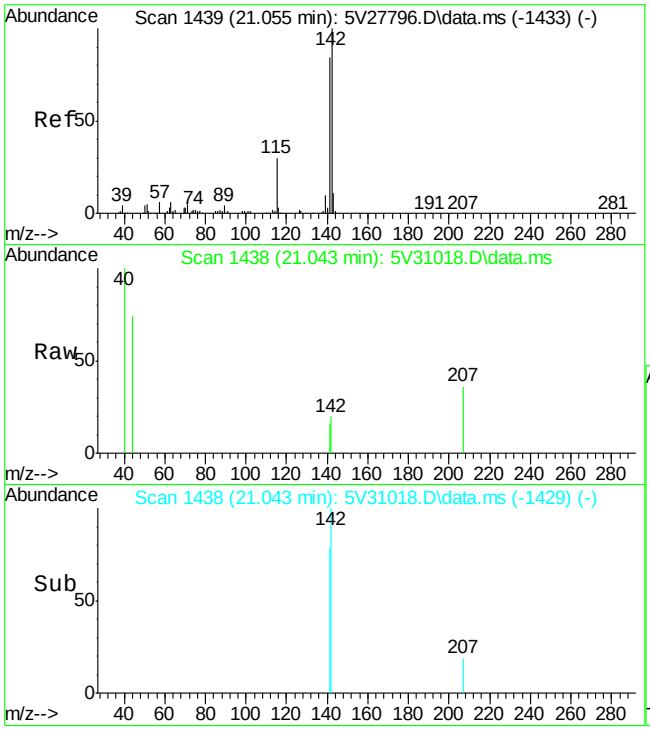




#94
Naphthalene
Concen: 1.44 ug/l
RT: 19.502 min Scan# 1303
Delta R.T. -0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:128 Resp: 718

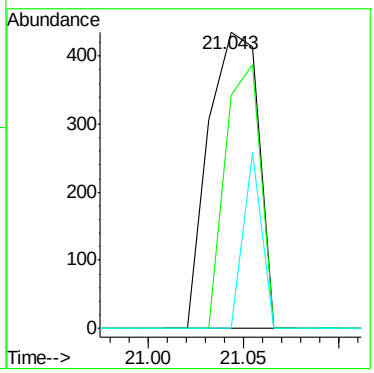




#97
2-Methylnaphthalene
Concen: 3.01 ug/l
RT: 21.043 min Scan# 1438
Delta R.T. 0.000 min
Lab File: 5V31018.D
Acq: 17 Mar 2014 6:45 pm

Tgt Ion:142 Resp: 791

Ion	Ratio	Lower	Upper
142	100		
141	63.2	64.7	104.7#
115	22.4	11.4	51.4



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031714.S\
Data File : 5V31003.D
Acq On : 17 Mar 2014 10:11 am
Operator : Jessica1
Sample : MB
Misc : MS7184,V5V1865,5.0,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 18 13:15:39 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration

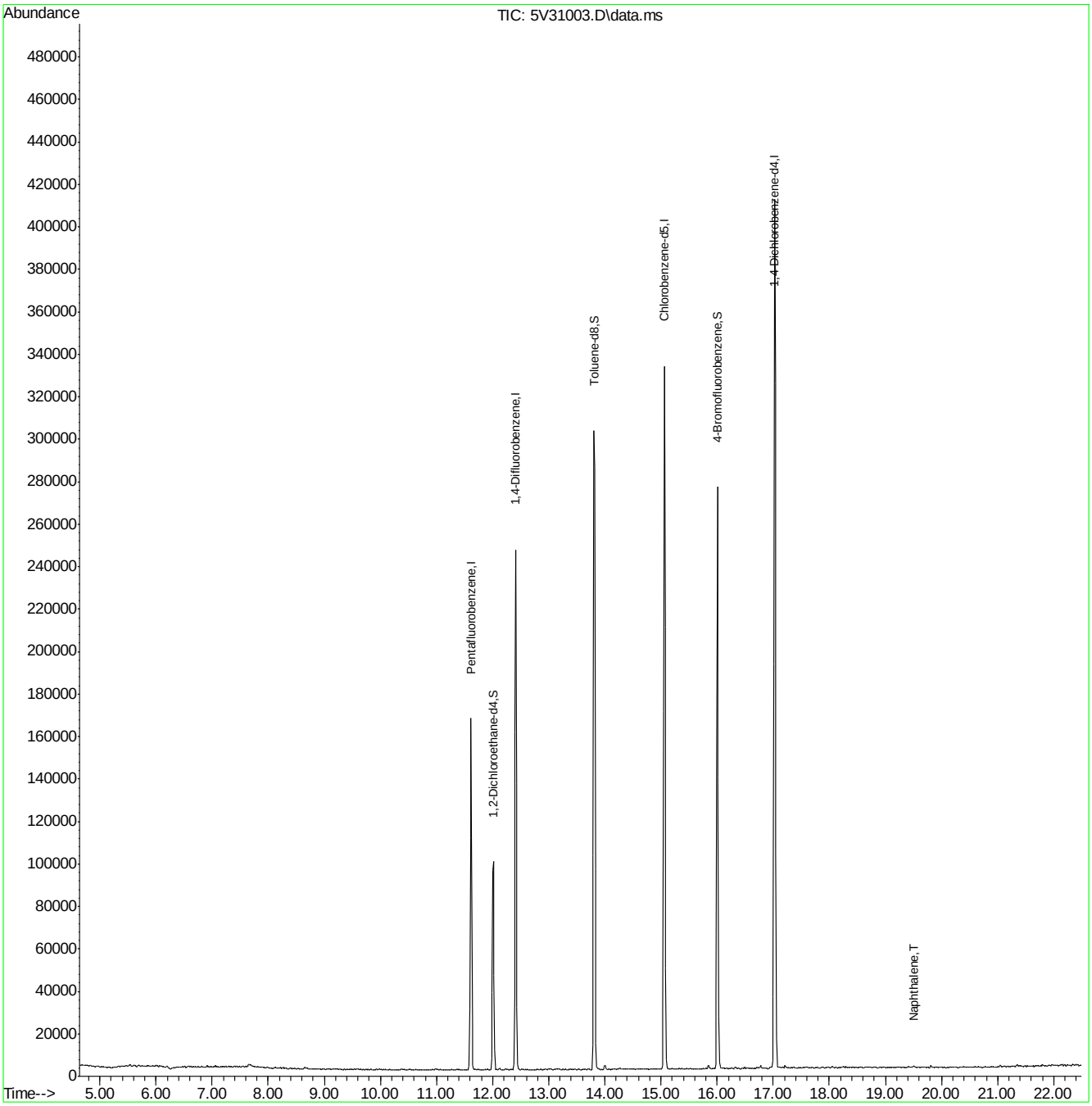
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	109614	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	168561	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	165795	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	126199	50.00	ug/l	0.00
System Monitoring Compounds						
35) 1,2-Dichloroethane-d4	12.012	102	11638	49.04	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 98.08%			
64) Toluene-d8	13.805	98	184516	47.22	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.44%			
72) 4-Bromofluorobenzene	16.008	95	79248	44.75	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 89.50%			
Target Compounds						Qvalue
1) TVH-Gasoline	13.006	TIC	-24884m	50.26	ug/l	
94) Naphthalene	19.502	128	1231	1.54	ug/l	100

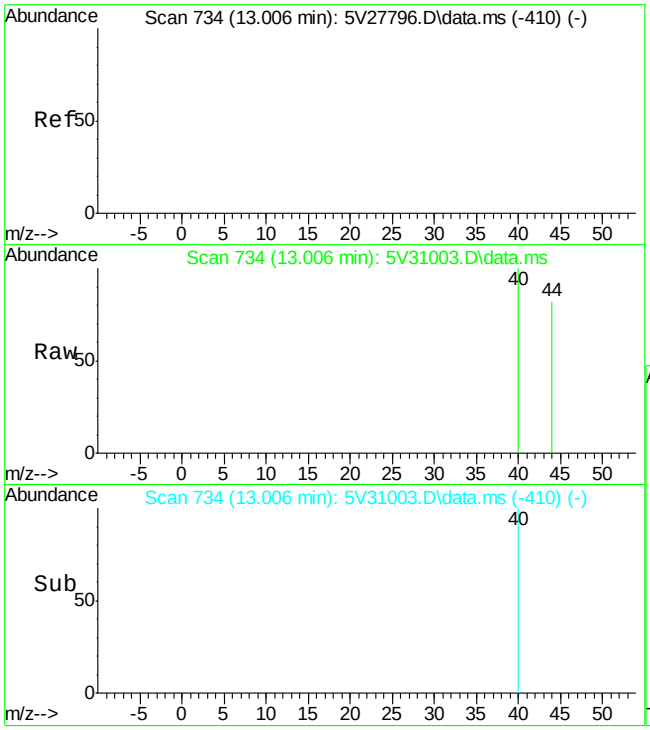
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5031714.S\
Data File : 5V31003.D
Acq On : 17 Mar 2014 10:11 am
Operator : Jessica1
Sample : MB
Misc : MS7184,V5V1865,5.0,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

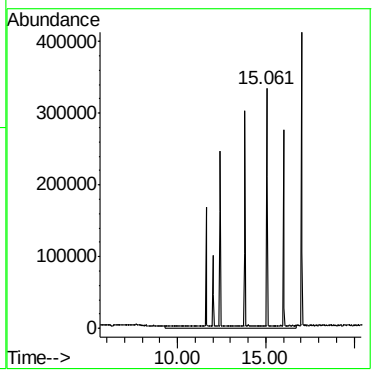
Quant Time: Mar 18 13:15:39 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1860TVH1860.M
Quant Title : 8260
QLast Update : Tue Mar 11 09:35:09 2014
Response via : Initial Calibration

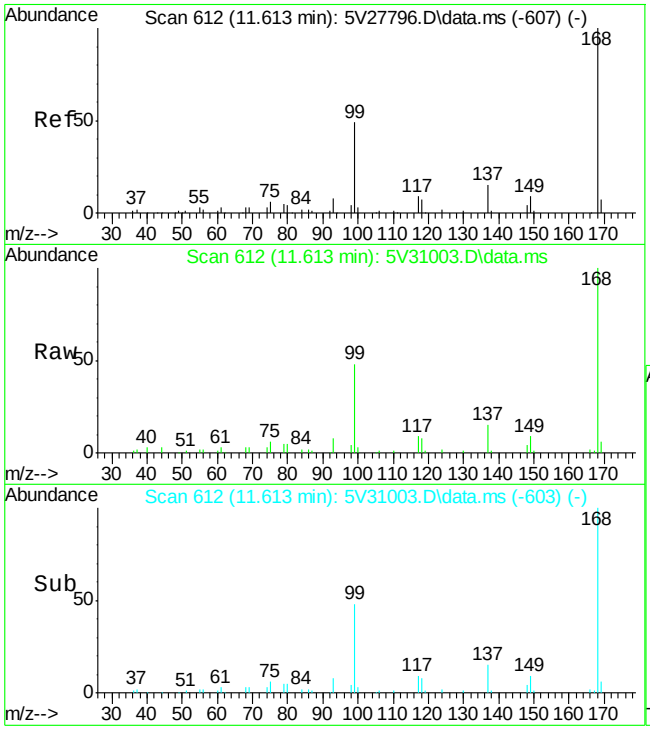




#1
TVH-Gasoline
Concen: 50.26 ug/l m
RT: 13.006 min Scan# 734
Delta R.T. 0.000 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

Tgt Ion:TIC Resp: -24884

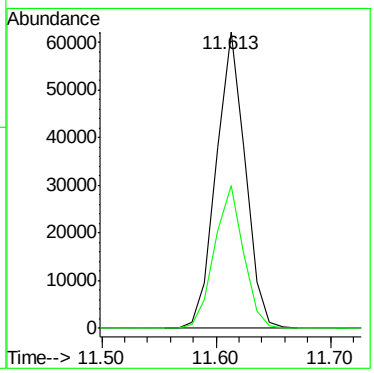


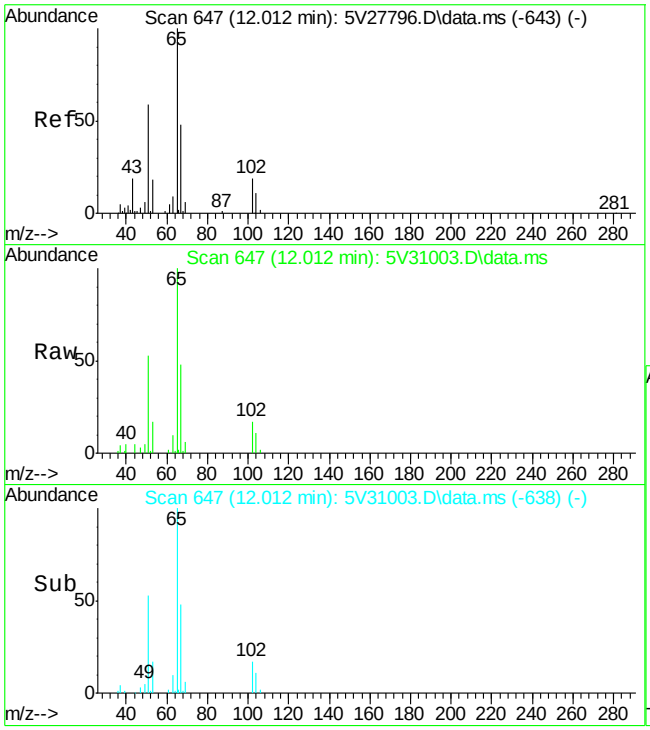


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.613 min Scan# 612
Delta R.T. 0.001 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

Tgt Ion:168 Resp: 109614

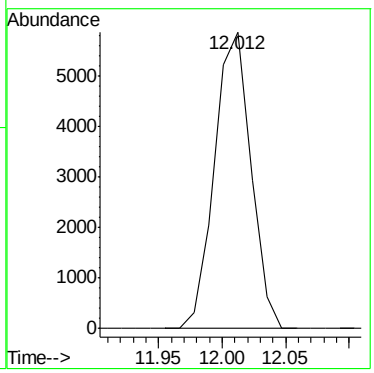
Ion	Ratio	Lower	Upper
168	100		
99	48.1	41.4	62.2

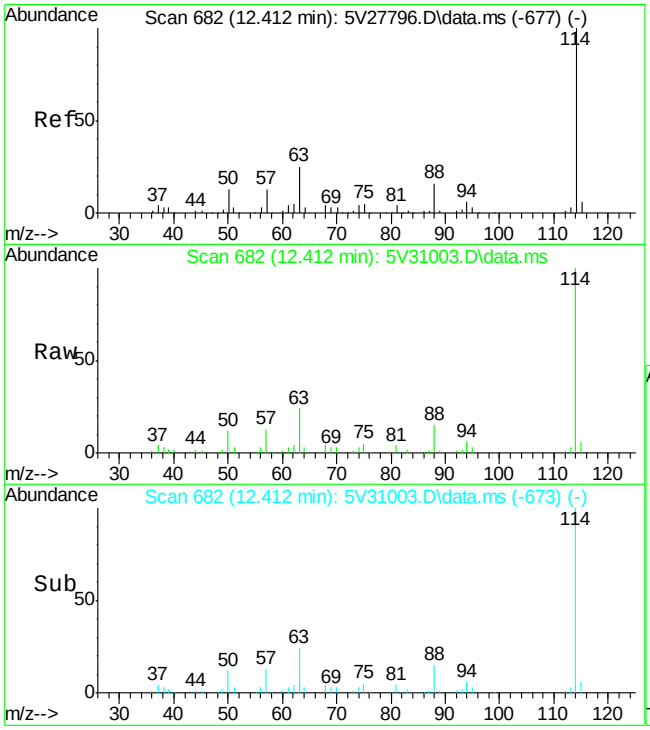




#35
1,2-Dichloroethane-d4
Concen: 49.04 ug/l
RT: 12.012 min Scan# 647
Delta R.T. 0.000 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

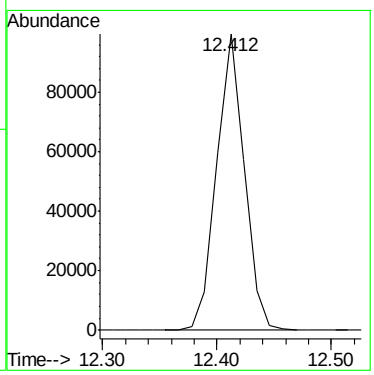
Tgt Ion:102 Resp: 11638

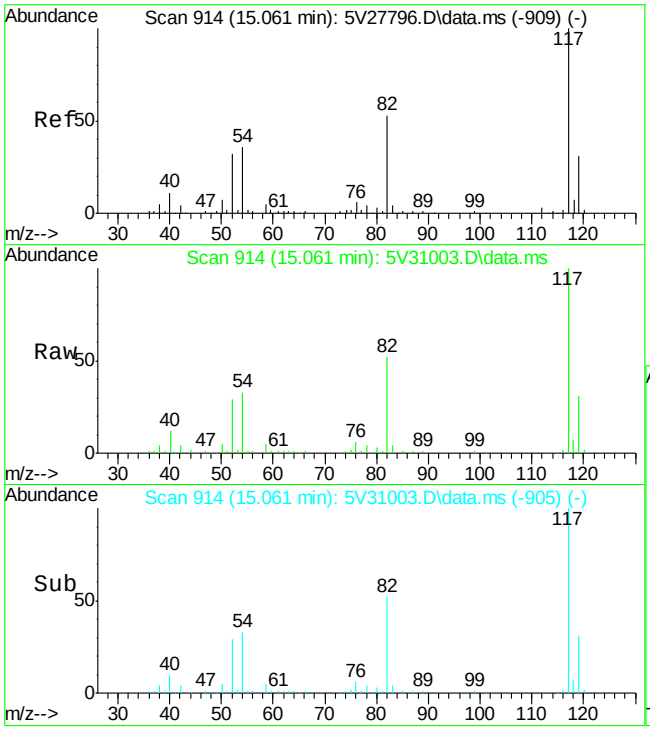




#37
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.412 min Scan# 682
Delta R.T. -0.000 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

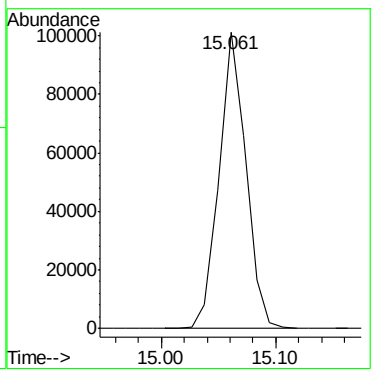
Tgt Ion:114 Resp: 168561

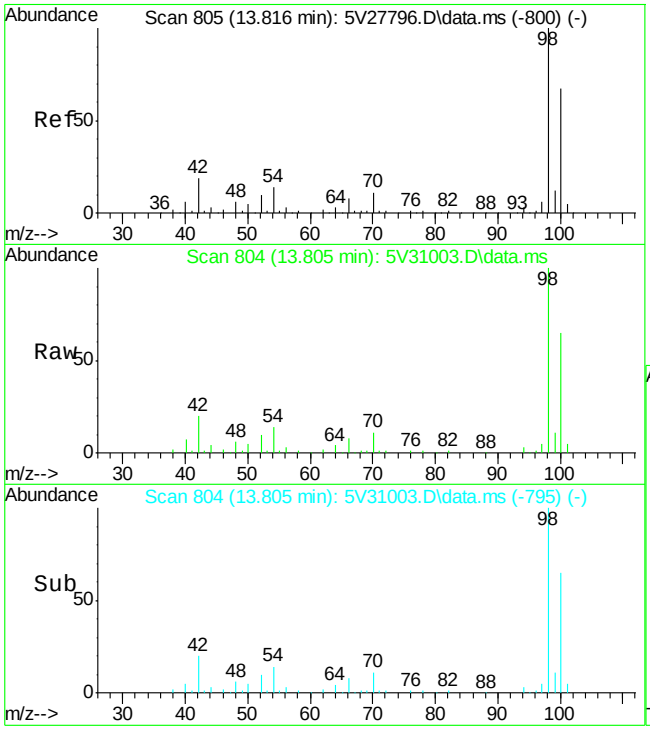




#56
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.061 min Scan# 914
Delta R.T. 0.001 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

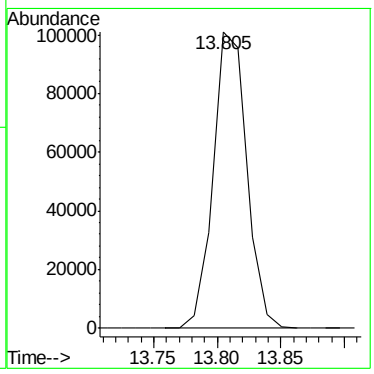
Tgt Ion:117 Resp: 165795

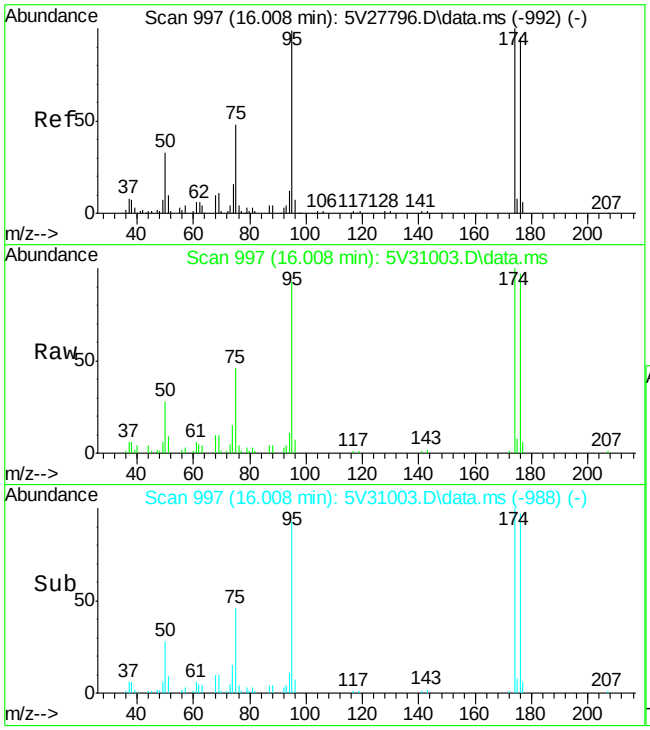




#64
Toluene-d8
Concen: 47.22 ug/l
RT: 13.805 min Scan# 804
Delta R.T. 0.001 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

Tgt Ion: 98 Resp: 184516

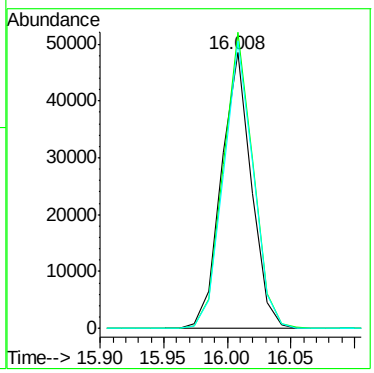


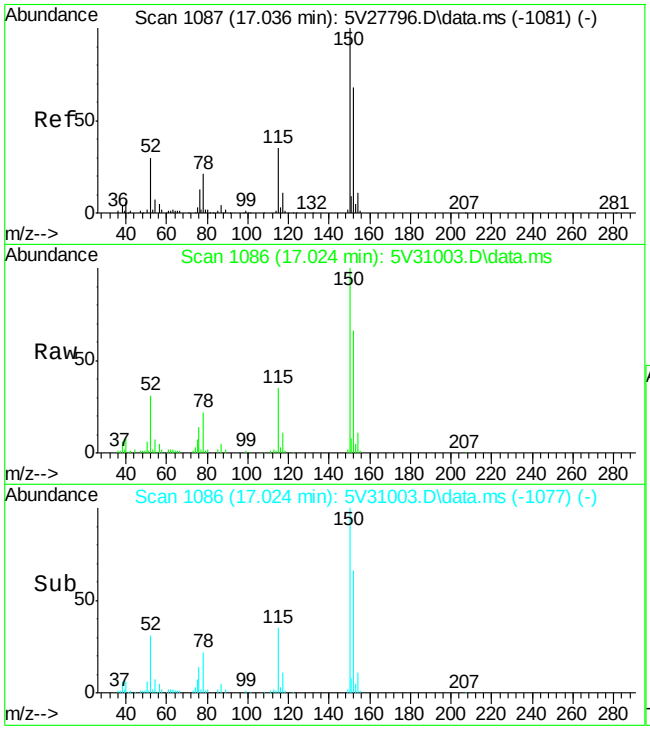


#72
4-Bromofluorobenzene
Concen: 44.75 ug/l
RT: 16.008 min Scan# 997
Delta R.T. 0.000 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

Tgt Ion: 95 Resp: 79248

Ion	Ratio	Lower	Upper
95	100		
174	106.7	85.4	125.4
176	102.7	80.6	120.6

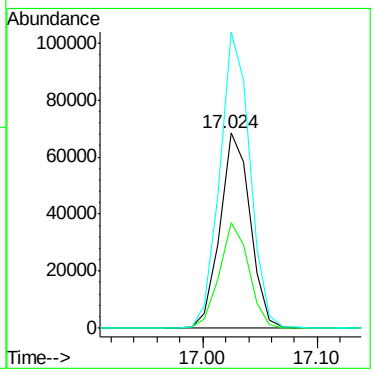


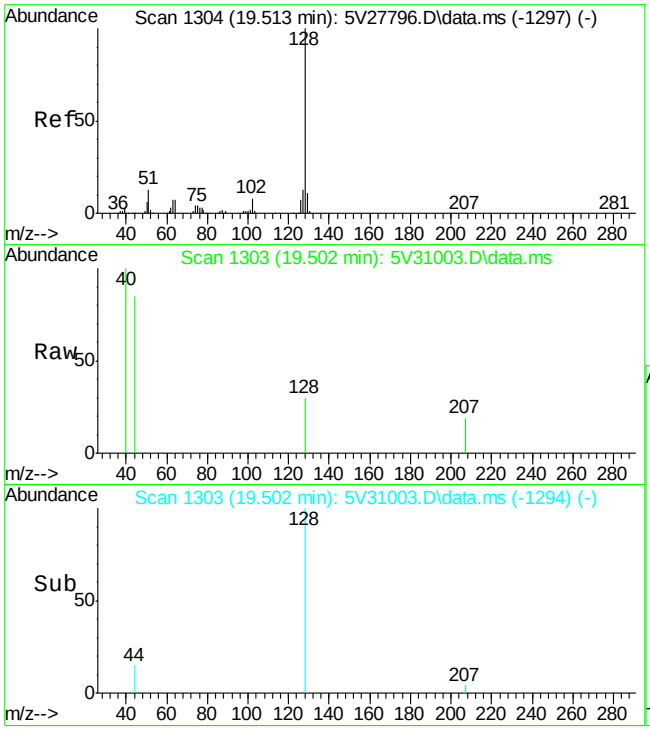


#77
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.024 min Scan# 1086
Delta R.T. 0.000 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

Tgt Ion:152 Resp: 126199

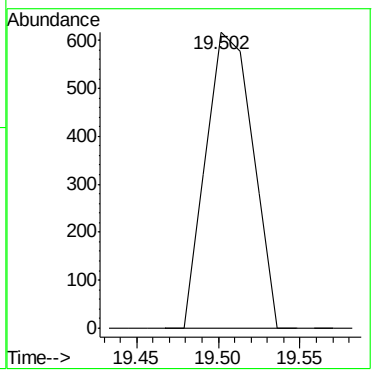
Ion	Ratio	Lower	Upper
152	100		
115	52.3	43.4	65.2
150	151.2	142.9	214.3





#94
Naphthalene
Concen: 1.54 ug/l
RT: 19.502 min Scan# 1303
Delta R.T. -0.000 min
Lab File: 5V31003.D
Acq: 17 Mar 2014 10:11 am

Tgt Ion:128 Resp: 1231



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: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9573-MB	3G18511.D	1	03/18/14	DC	03/17/14	OP9573	E3G920

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

D55961-1

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

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	98%	10-175%
321-60-8	2-Fluorobiphenyl	119%	25-130%
1718-51-0	Terphenyl-d14	123%	41-133%

Blank Spike Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9573-BS	3G18512.D	1	03/18/14	DC	03/17/14	OP9573	E3G920

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

D55961-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	85.6	103	55-130
120-12-7	Anthracene	83.3	85.5	103	60-130
56-55-3	Benzo(a)anthracene	83.3	97.5	117	62-130
205-99-2	Benzo(b)fluoranthene	83.3	108	130	55-130
207-08-9	Benzo(k)fluoranthene	83.3	74.3	89	59-130
50-32-8	Benzo(a)pyrene	83.3	89.6	108	64-130
218-01-9	Chrysene	83.3	85.4	102	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	79.1	95	56-130
206-44-0	Fluoranthene	83.3	81.9	98	59-130
86-73-7	Fluorene	83.3	90.3	108	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	73.0	88	60-130
91-20-3	Naphthalene	83.3	63.1	76	56-130
129-00-0	Pyrene	83.3	89.2	107	65-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	89%	10-175%
321-60-8	2-Fluorobiphenyl	105%	25-130%
1718-51-0	Terphenyl-d14	113%	41-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9573-MS	3G18513.D	1	03/18/14	DC	03/17/14	OP9573	E3G920
OP9573-MSD	3G18514.D	1	03/18/14	DC	03/17/14	OP9573	E3G920
D55961-1	3G18515.D	1	03/18/14	DC	03/17/14	OP9573	E3G920

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

D55961-1

CAS No.	Compound	D55961-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		97.5	90.2	85	90.3	85	0	29-139/30
120-12-7	Anthracene	ND		97.5	89.1	2*	98.6	12	10	10-182/30
56-55-3	Benzo(a)anthracene	ND		97.5	97.4	97	111	111	13	35-149/30
205-99-2	Benzo(b)fluoranthene	ND		97.5	96.8	94	106	104	9	22-174/30
207-08-9	Benzo(k)fluoranthene	ND		97.5	73.4	72	81.0	80	10	10-185/30
50-32-8	Benzo(a)pyrene	ND		97.5	81.5	80	90.6	89	11	10-168/30
218-01-9	Chrysene	9.3		97.5	87.0	80	97.0	90	11	10-168/30
53-70-3	Dibenzo(a,h)anthracene	ND		97.5	68.8	68	79.2	78	14	12-160/30
206-44-0	Fluoranthene	ND		97.5	91.4	86	105	100	14	20-156/30
86-73-7	Fluorene	ND		97.5	119	95	134	110	12	10-164/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		97.5	64.4	62	73.0	71	13	29-136/30
91-20-3	Naphthalene	71.8		97.5	118	47	115	44	3	10-258/30
129-00-0	Pyrene	11.9		97.5	101	91	113	103	11	10-196/30

CAS No.	Surrogate Recoveries	MS	MSD	D55961-1	Limits
4165-60-0	Nitrobenzene-d5	74%	77%	74%	10-175%
321-60-8	2-Fluorobiphenyl	91%	91%	86%	25-130%
1718-51-0	Terphenyl-d14	99%	115%	105%	41-133%

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Judy Melson
03/19/14 15:00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031814\
Data File : 3g18515.D
Acq On : 18 Mar 2014 7:36 pm
Operator : DONC
Sample : D55961-1
Misc : OP9573,E3G920,30.13,,,1,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 19 14:36:52 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
Quant Title : PAHSIM BASE
QLast Update : Mon Mar 17 10:02:08 2014
Response via : Initial Calibration

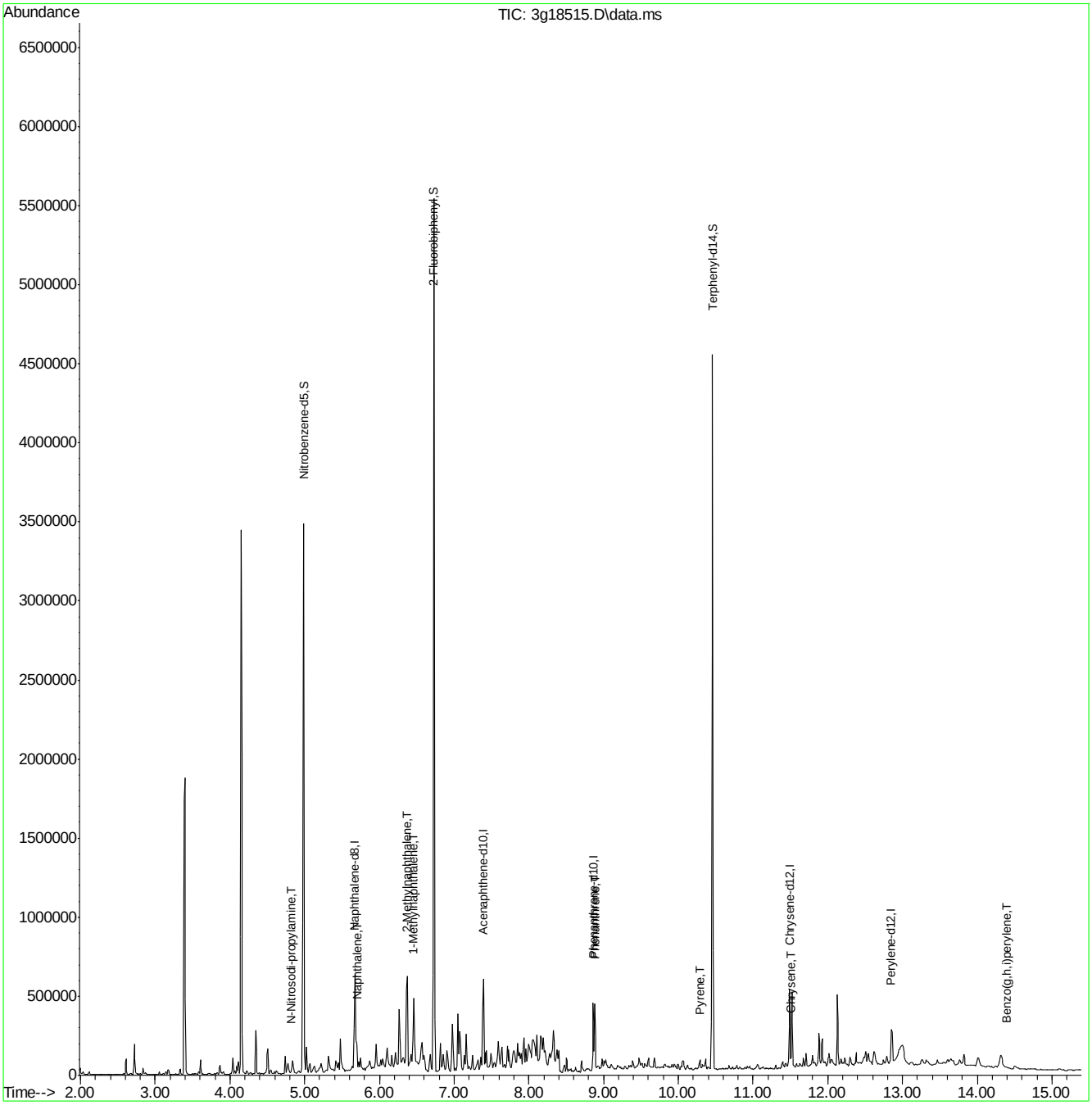
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.674	136	309315	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.390	164	191069	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.859	188	323090	4.0000	ug/mL	0.00
19) Chrysene-d12	11.488	240	317354	4.0000	ug/mL	0.00
24) Perylene-d12	12.850	264	209216	4.0000	ug/mL	-0.01
System Monitoring Compounds						
2) Nitrobenzene-d5	4.989	82	1999759	36.7886	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 73.58%			
7) 2-Fluorobiphenyl	6.728	172	3027110	43.1585	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 86.32%			
21) Terphenyl-d14	10.458	244	3219111	52.3134	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 104.62%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	4.826	70	15725m	0.4981	ug/mL	
5) Naphthalene	5.699	128	175152	1.8398	ug/mL	79
8) 2-Methylnaphthalene	6.372	142	309882	5.2601	ug/mL	96
9) 1-Methylnaphthalene	6.460	142	152362	3.1044	ug/mL#	82
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Dibenzofuran	0.000	168	0	N.D.	d	
13) Fluorene	0.000	166	0	N.D.	d	
14) Diphenylamine	0.000	169	0	N.D.	d	
16) Phenanthrene	8.883	178	240506	2.1452	ug/mL	94
17) Anthracene	0.000	178	0	N.D.	d	
18) Fluoranthene	0.000	202	0	N.D.	d	
20) Pyrene	10.292	202	32941m	0.3059	ug/mL	
22) Benzo(a)anthracene	0.000	228	0	N.D.	d	
23) Chrysene	11.508	228	25142m	0.2376	ug/mL	
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	14.396	276	4287m	0.1041	ug/mL	

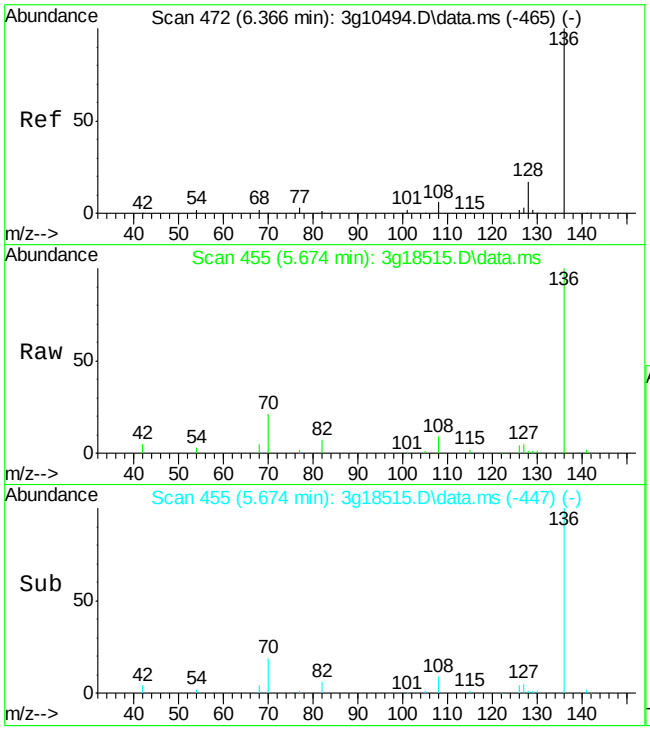
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031814\
Data File : 3g18515.D
Acq On : 18 Mar 2014 7:36 pm
Operator : DONC
Sample : D55961-1
Misc : OP9573,E3G920,30.13,,,1,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 19 14:36:52 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
Quant Title : PAHSIM BASE
QLast Update : Mon Mar 17 10:02:08 2014
Response via : Initial Calibration

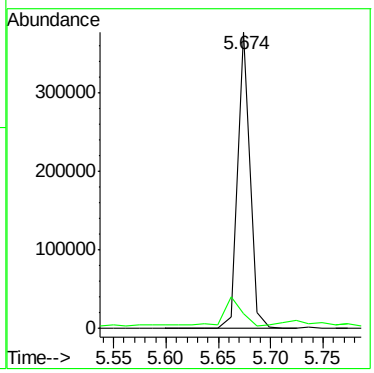


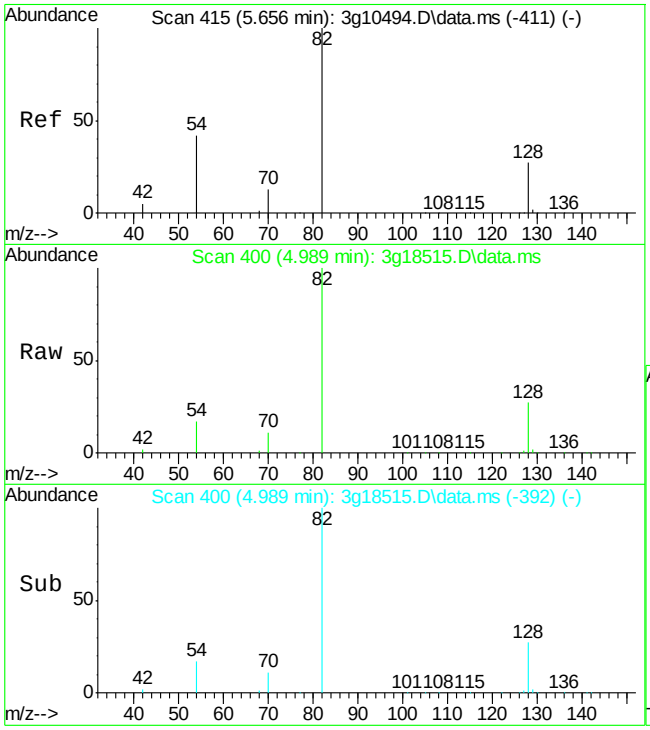


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.674 min Scan# 455
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:136 Resp: 309315

Ion	Ratio	Lower	Upper
136	100		
68	12.8	0.0	28.2

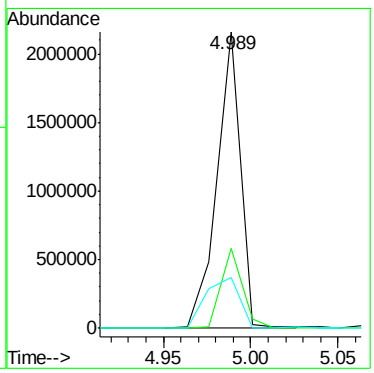


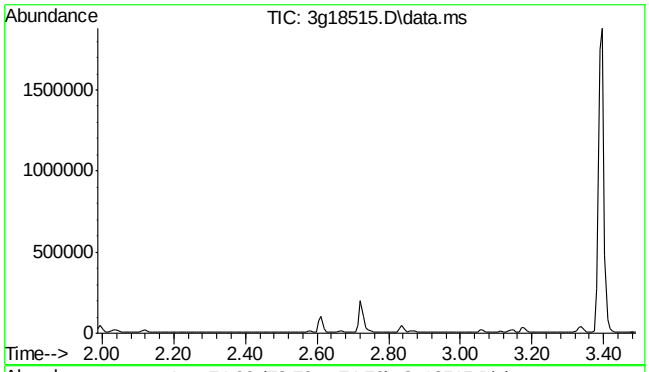


#2
Nitrobenzene-d5
Concen: 36.7886 ug/mL
RT: 4.989 min Scan# 400
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 82 Resp: 1999759

Ion	Ratio	Lower	Upper
82	100		
128	24.7	6.9	46.9
54	24.5	11.0	51.0



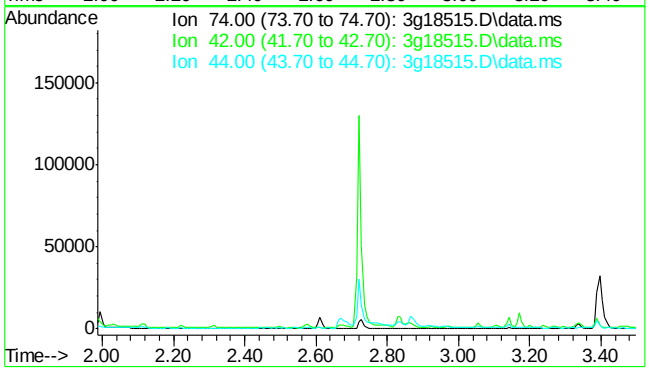


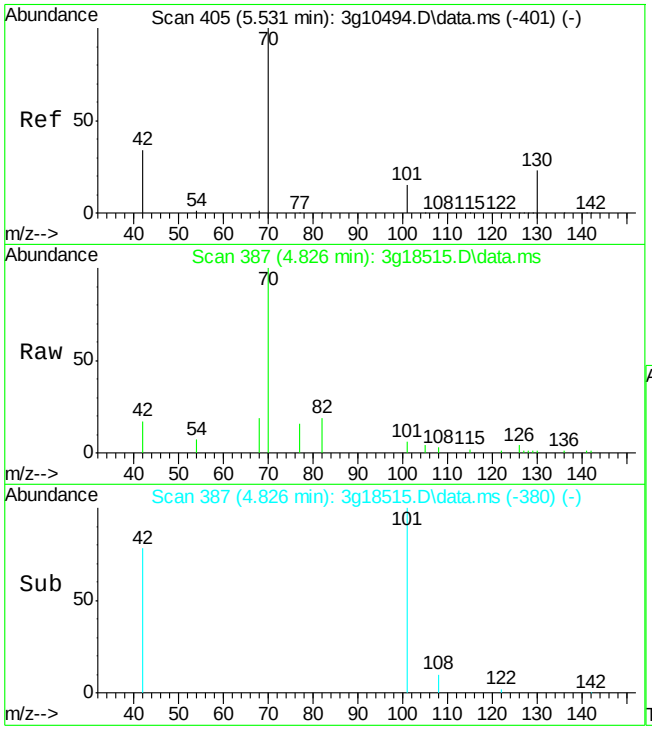
#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.39 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 74

Sig	Exp Ratio
74	100
42	36.2
44	1.5

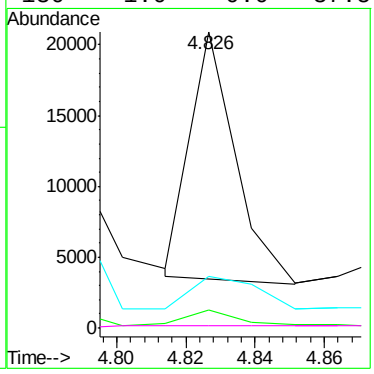


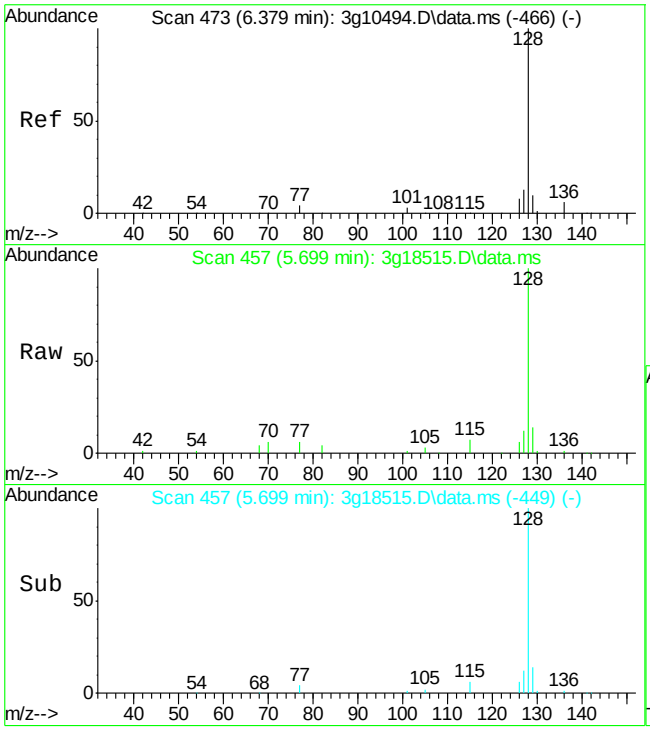


#4
N-Nitrosodi-propylamine
Concen: 0.4981 ug/mL m
RT: 4.826 min Scan# 387
Delta R.T. -0.012 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 70 Resp: 15725

Ion	Ratio	Lower	Upper
70	100		
101	6.8	0.0	31.6
42	28.7	2.8	42.8
130	1.0	0.0	37.5

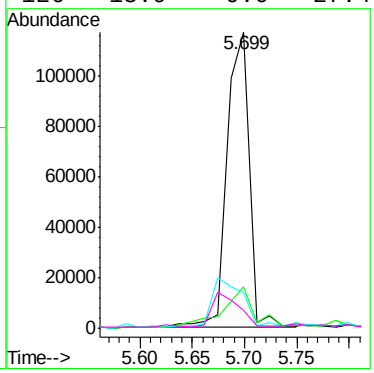


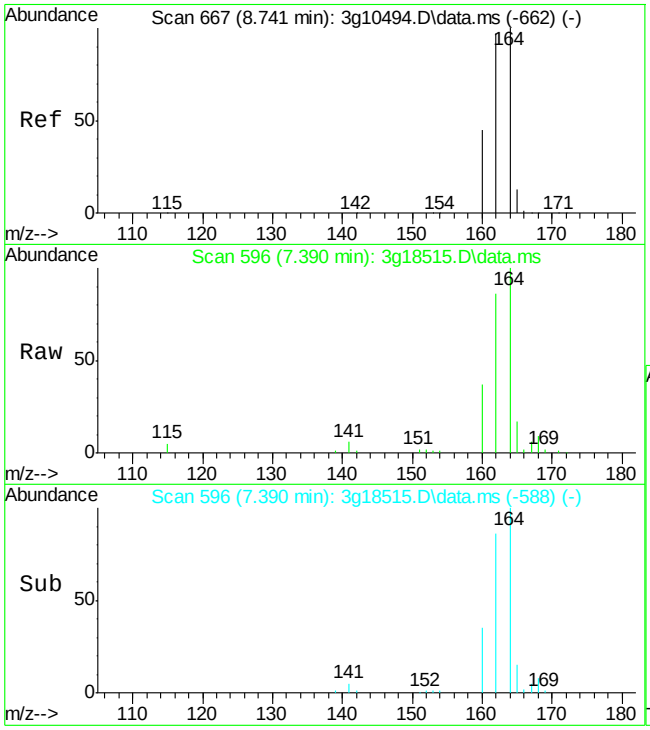


#5
Naphthalene
Concen: 1.8398 ug/mL
RT: 5.699 min Scan# 457
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:128 Resp: 175152

Ion	Ratio	Lower	Upper
128	100		
129	18.5	0.0	31.0
127	22.8	0.0	33.5
126	13.9	0.0	27.4

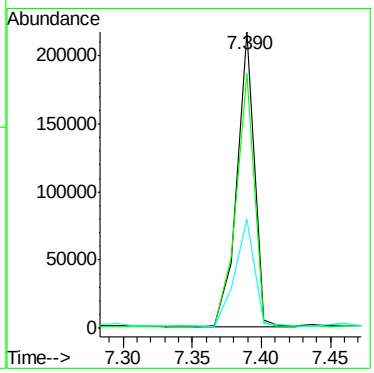


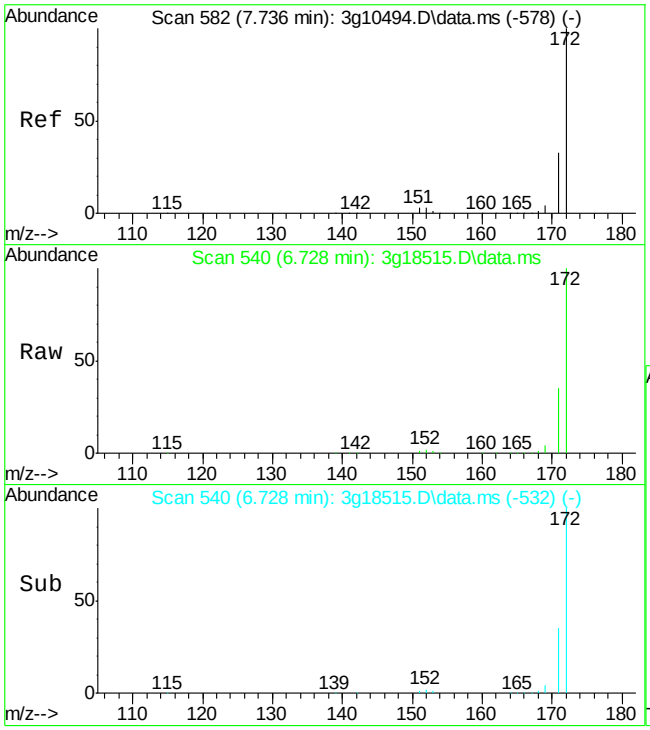


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.390 min Scan# 596
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:164 Resp: 191069

Ion	Ratio	Lower	Upper
164	100		
162	90.1	65.6	105.6
160	41.3	15.8	55.8

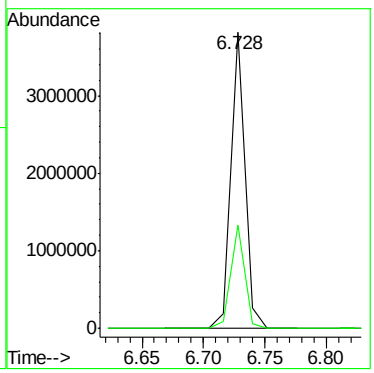


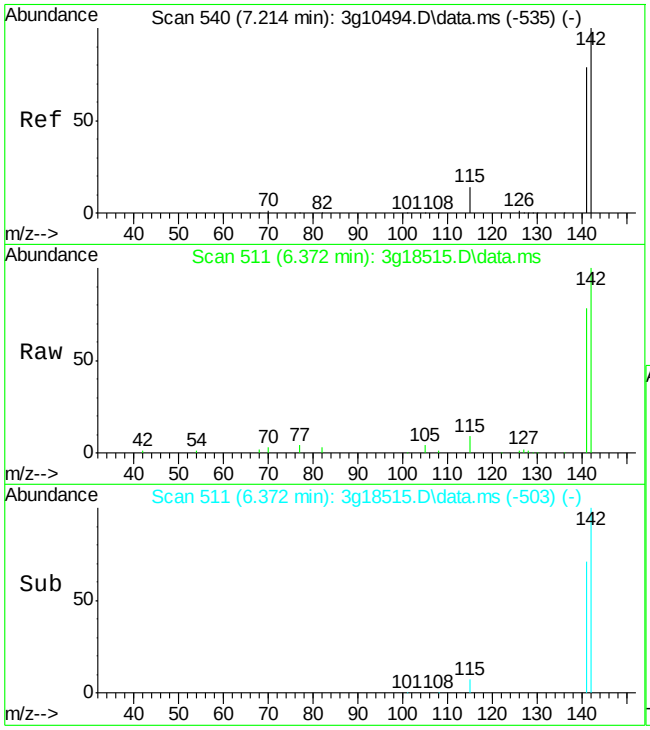


#7
2-Fluorobiphenyl
Concen: 43.1585 ug/mL
RT: 6.728 min Scan# 540
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:172 Resp: 3027110

Ion	Ratio	Lower	Upper
172	100		
171	34.9	14.1	54.1

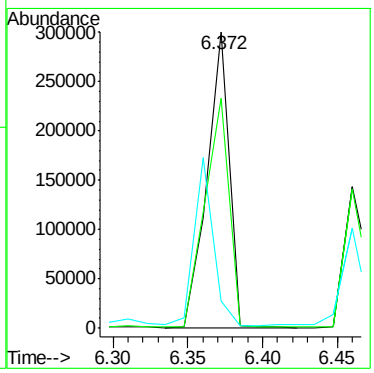


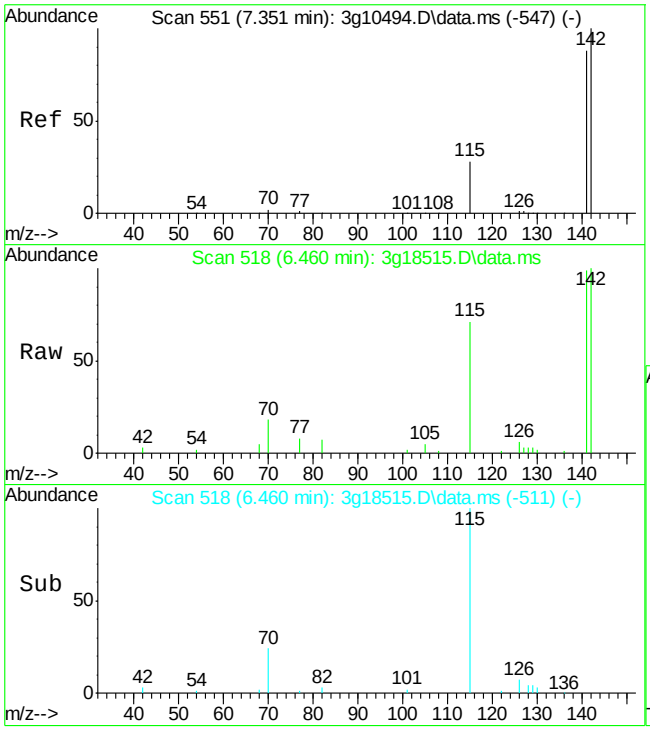


#8
2-Methylnaphthalene
Concen: 5.2601 ug/mL
RT: 6.372 min Scan# 511
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:142 Resp: 309882

Ion	Ratio	Lower	Upper
142	100		
141	84.8	61.4	101.4
115	49.3	26.9	66.9

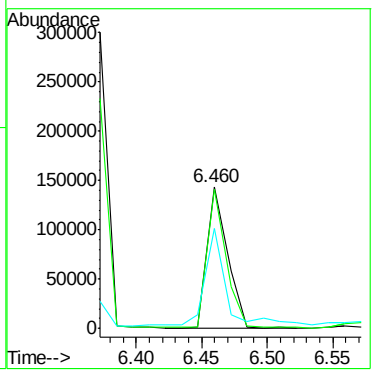


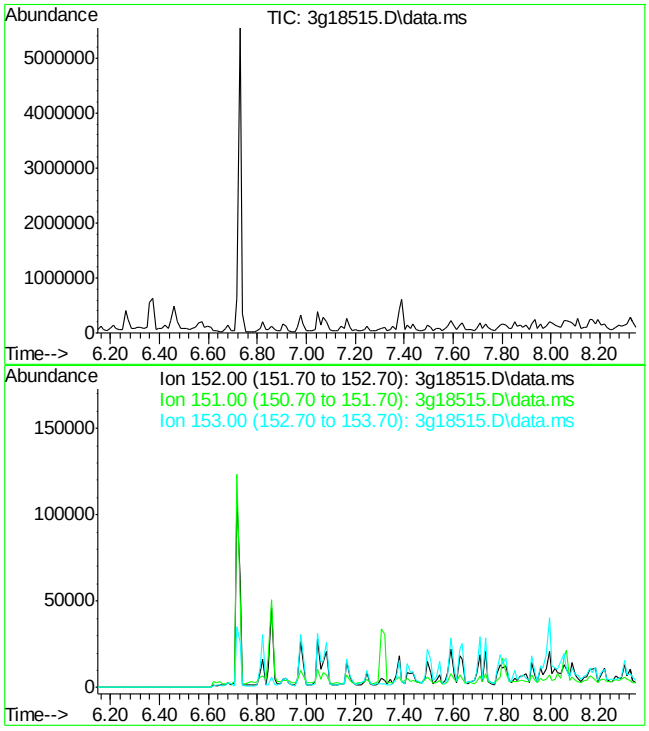


#9
1-Methylnaphthalene
Concen: 3.1044 ug/mL
RT: 6.460 min Scan# 518
Delta R.T. -0.012 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:142 Resp: 152362

Ion	Ratio	Lower	Upper
142	100		
141	91.6	67.1	107.1
115	72.4	24.0	64.0#



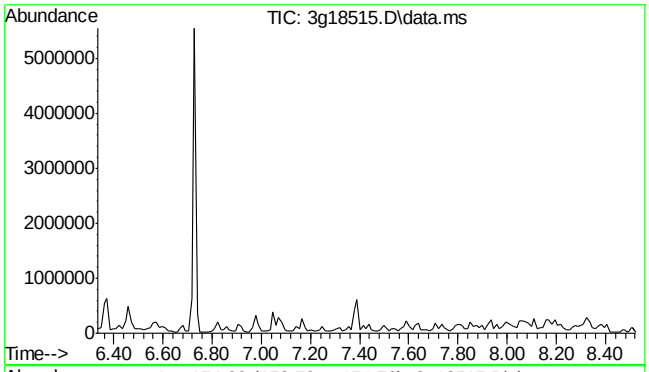


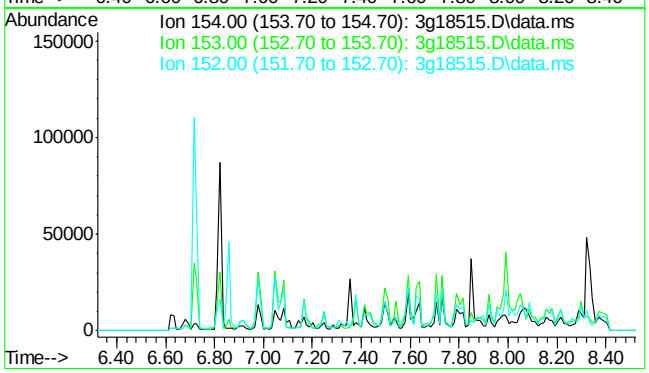
#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 7.25 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 152

Sig	Exp Ratio
152	100
151	20.9
153	13.8



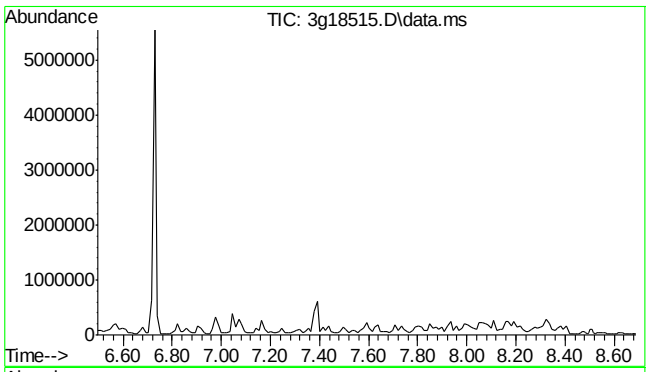


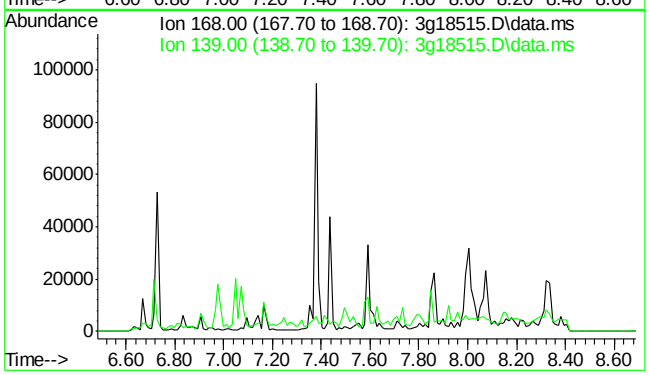
#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 7.42 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 154

Sig	Exp Ratio
154	100
153	102.9
152	43.8



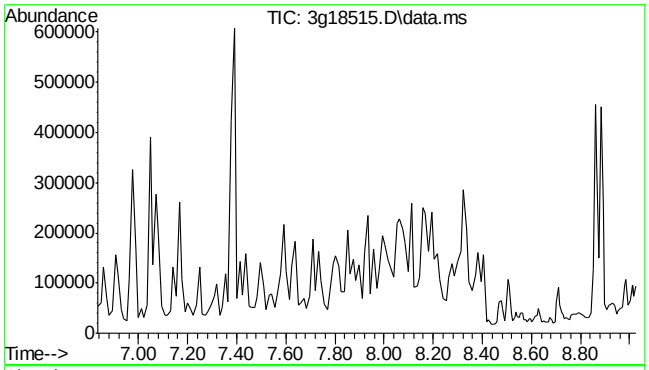


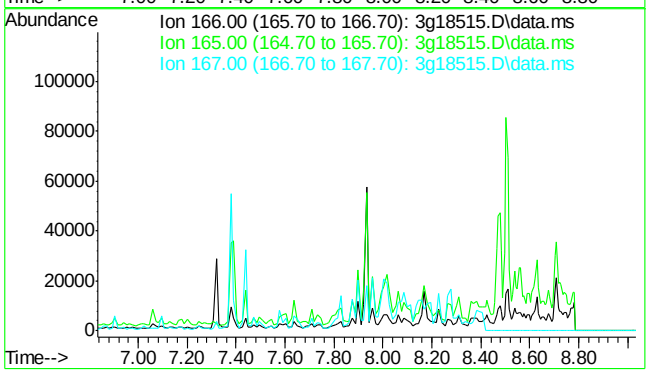
#12
Dibenzofuran
Concen: N.D. ug/mL
Expected RT: 7.59 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 168

Sig	Exp Ratio
168	100
139	31.7



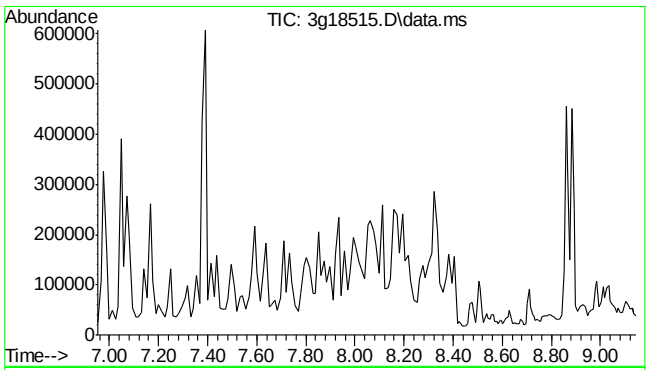


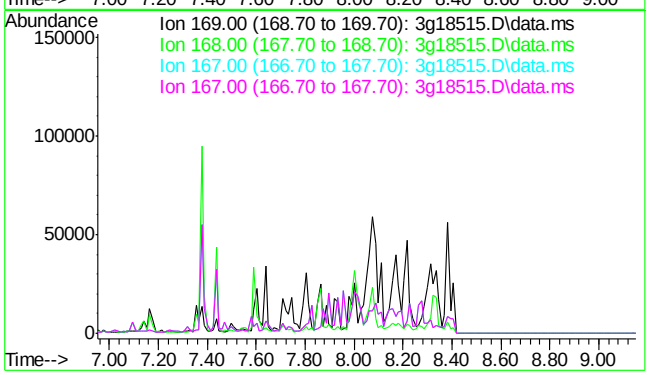
#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.93 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 166

Sig	Exp Ratio
166	100
165	91.7
167	13.0



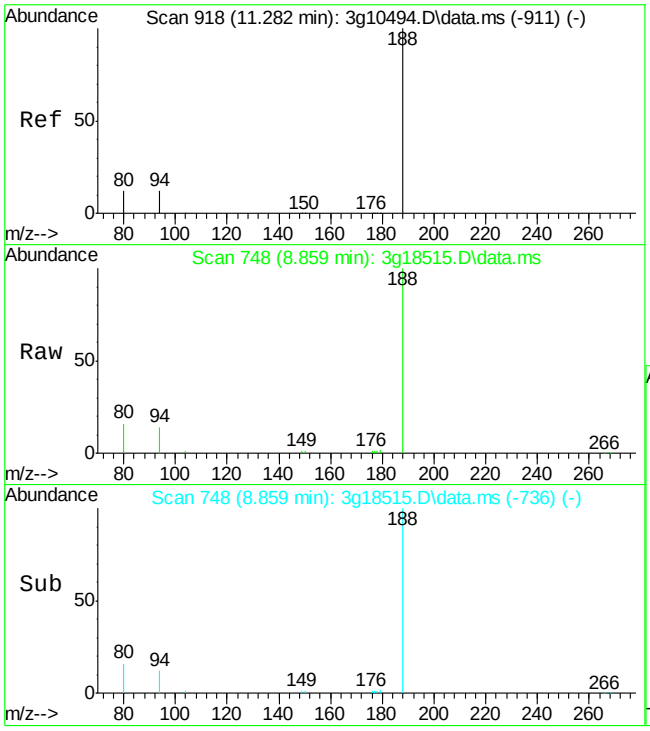


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.05 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 169

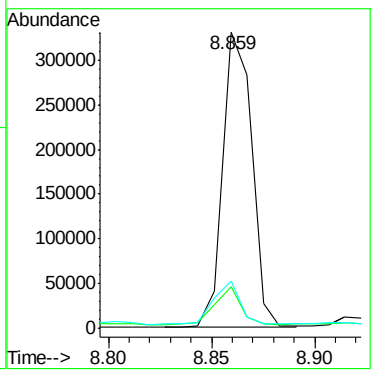
Sig	Exp Ratio
169	100
168	60.6
167	31.8
167	31.8

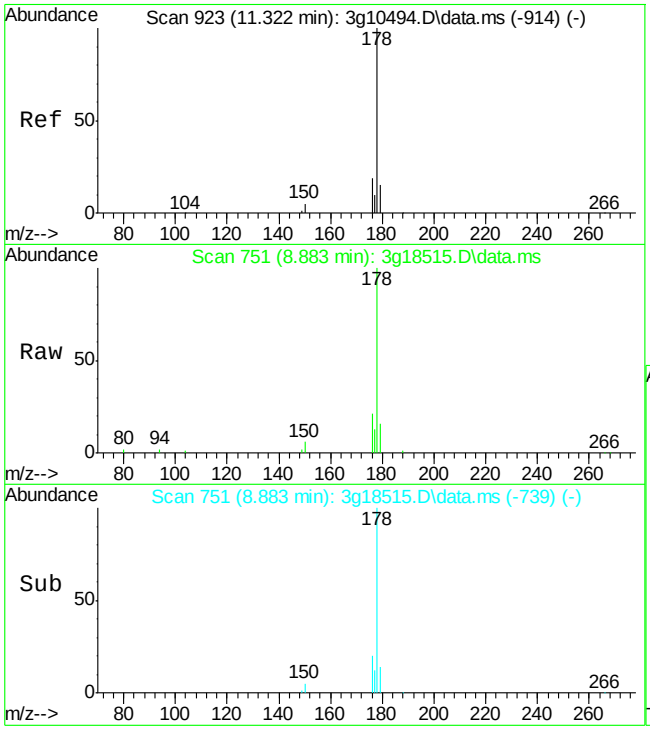


#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.859 min Scan# 748
Delta R.T. -0.008 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:188 Resp: 323090

Ion	Ratio	Lower	Upper
188	100		
94	11.1	0.0	32.7
80	14.6	0.0	33.0

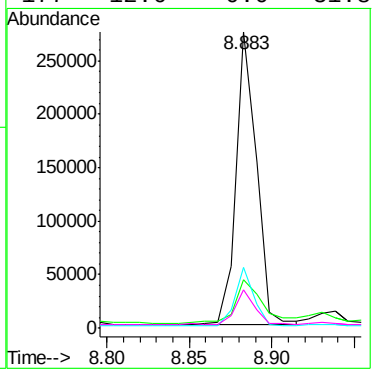


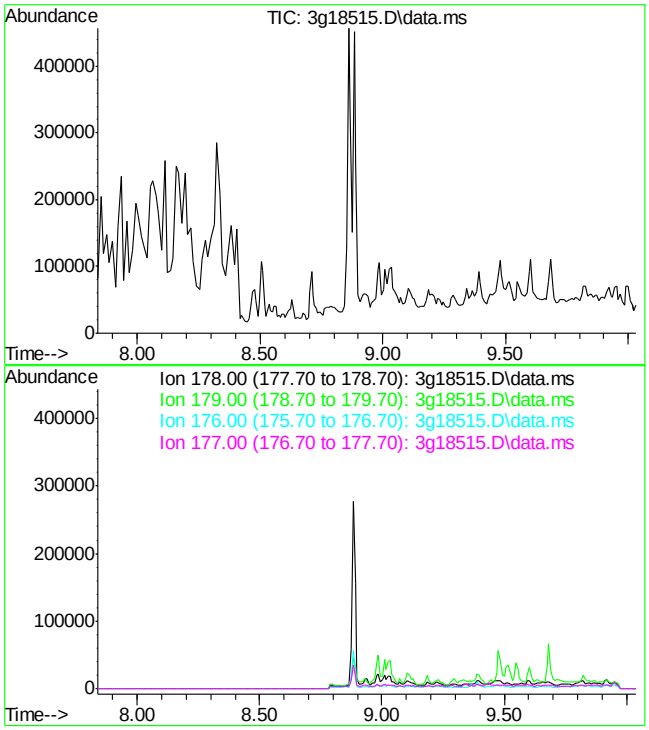


#16
Phenanthrene
Concen: 2.1452 ug/mL
RT: 8.883 min Scan# 751
Delta R.T. -0.008 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:178 Resp: 240506

Ion	Ratio	Lower	Upper
178	100		
179	20.6	0.0	34.9
176	18.9	0.0	38.2
177	12.6	0.0	31.8



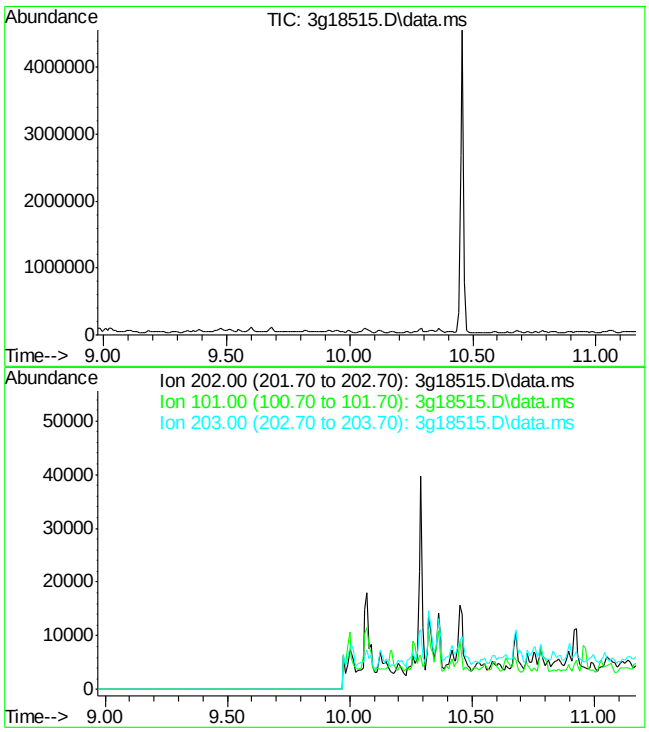


#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 8.94 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 178

Sig	Exp Ratio
178	100
179	14.9
176	18.0
177	10.5

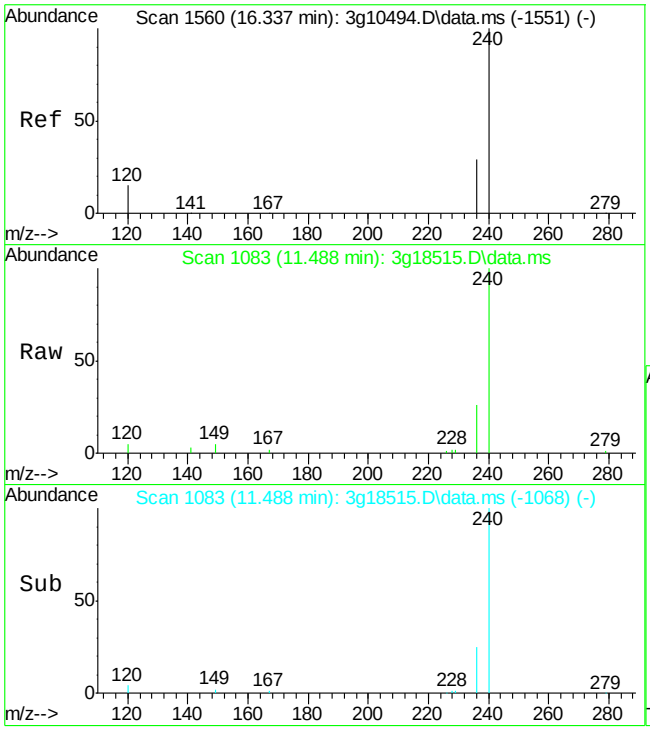


#18
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 10.07 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 202

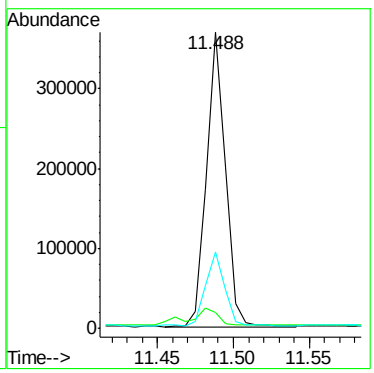
Sig	Exp Ratio
202	100
101	14.2
203	17.3

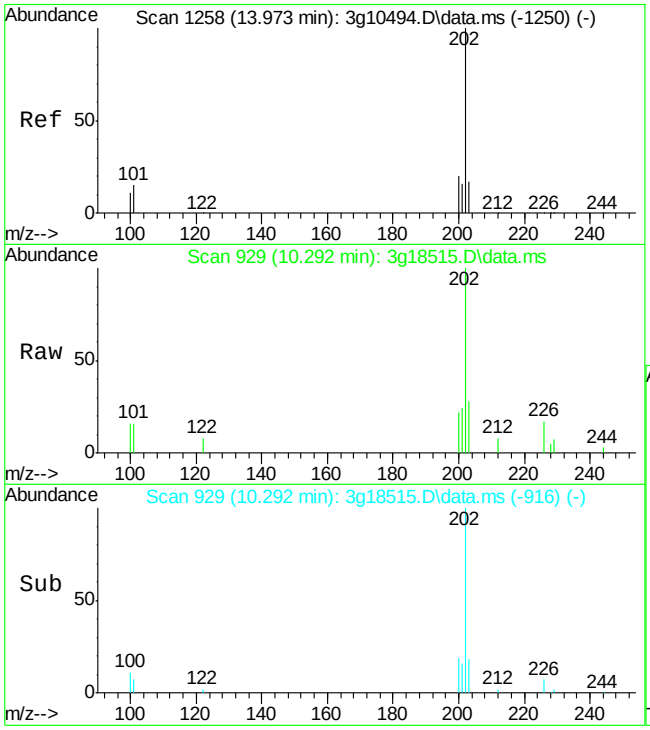


#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.488 min Scan# 1083
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:240 Resp: 317354

Ion	Ratio	Lower	Upper
240	100		
120	9.4	0.0	27.8
236	25.5	7.4	47.4

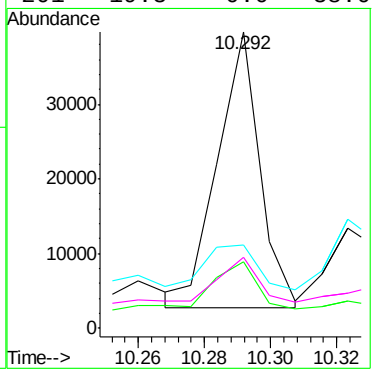


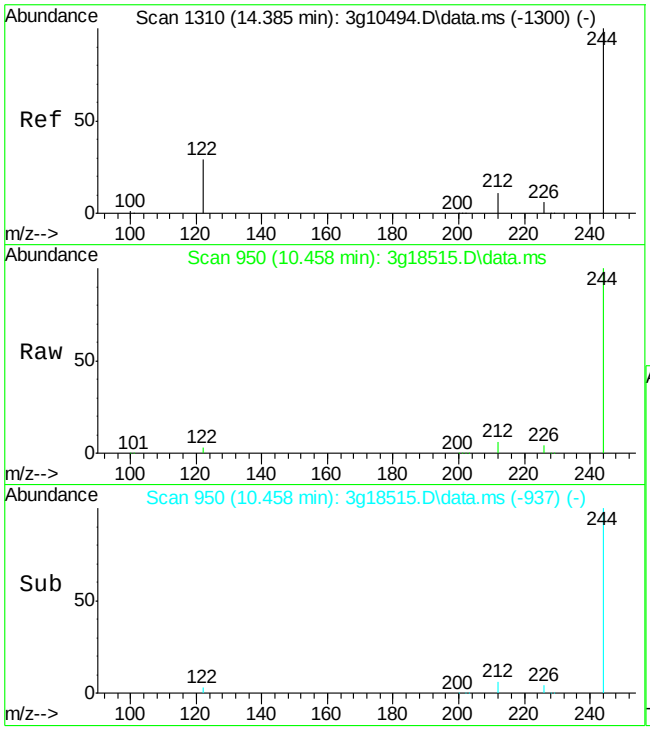


#20
Pyrene
Concen: 0.3059 ug/mL m
RT: 10.292 min Scan# 929
Delta R.T. 0.001 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:202 Resp: 32941

Ion	Ratio	Lower	Upper
202	100		
200	24.5	0.1	40.1
203	40.8	0.0	37.6#
201	19.3	0.0	38.0

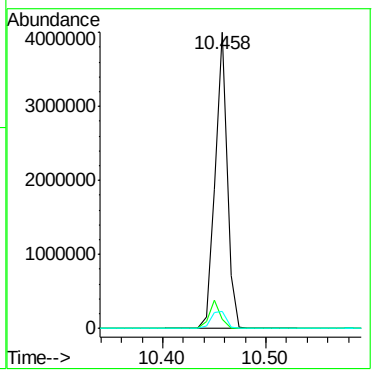


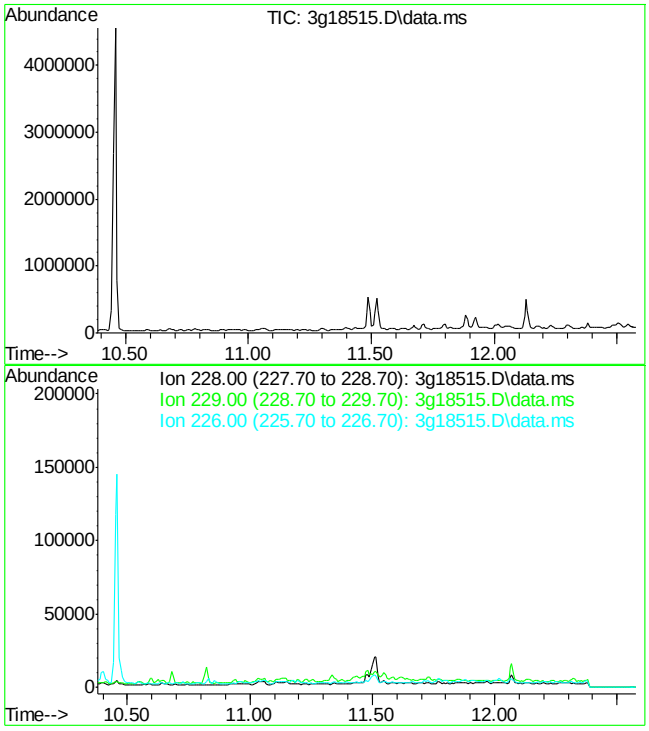


#21
Terphenyl-d14
Concen: 52.3134 ug/mL
RT: 10.458 min Scan# 950
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:244 Resp: 3219111

Ion	Ratio	Lower	Upper
244	100		
122	8.9	0.0	34.7
212	7.2	0.0	27.2



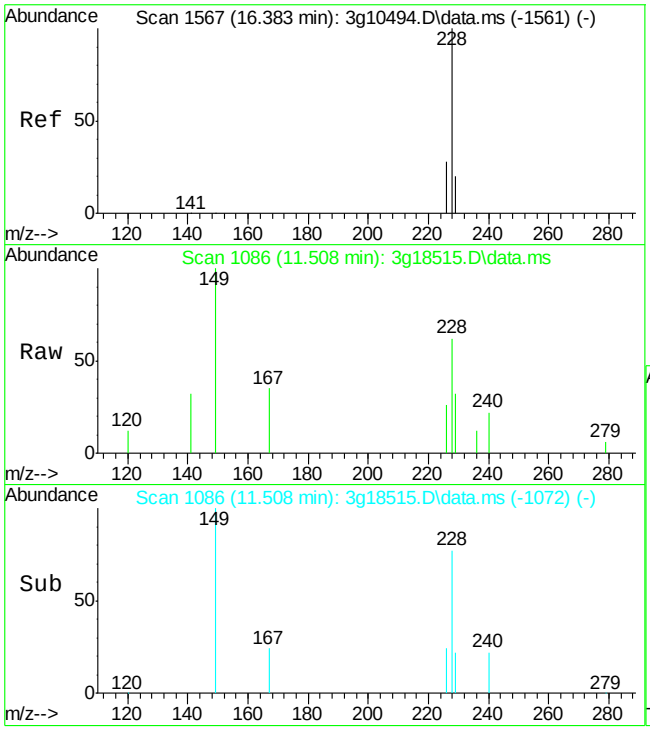


#22
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 11.48 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 228

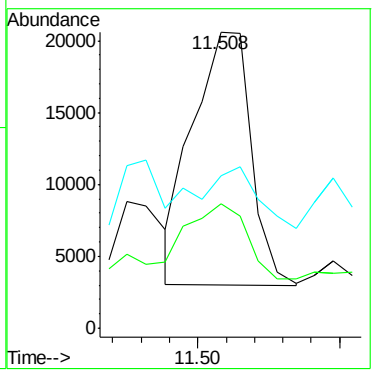
Sig	Exp Ratio
228	100
229	19.5
226	25.9

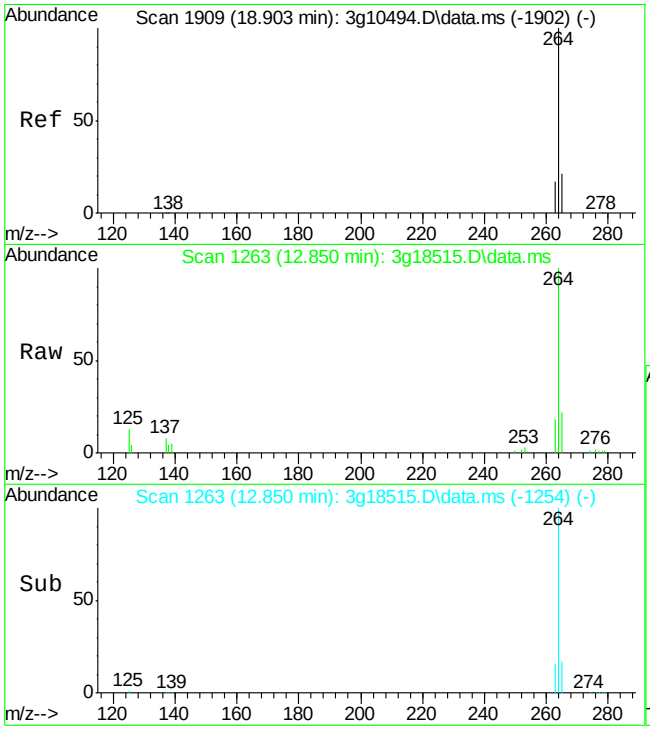


#23
Chrysene
Concen: 0.2376 ug/mL m
RT: 11.508 min Scan# 1086
Delta R.T. -0.007 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:228 Resp: 25142

Ion	Ratio	Lower	Upper
228	100		
226	37.2	8.0	48.0
229	21.0	0.0	39.4

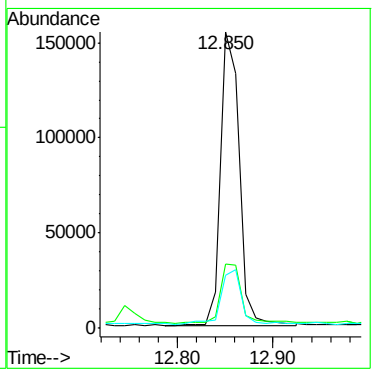


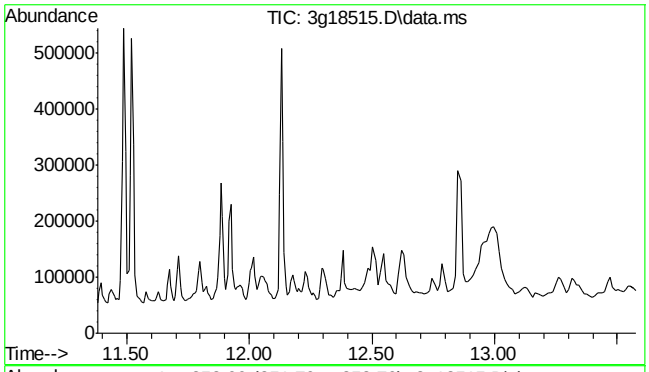


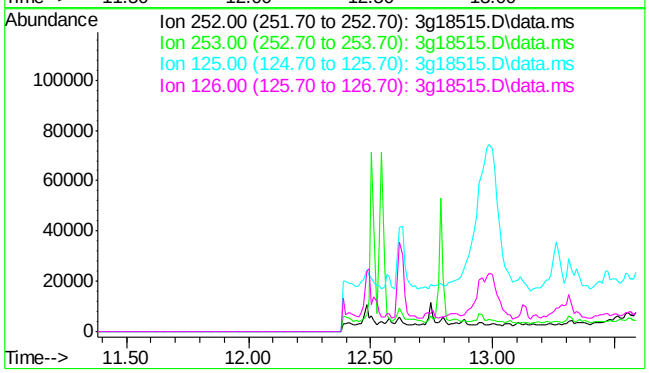
#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.850 min Scan# 1263
Delta R.T. -0.010 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:264 Resp: 209216

Ion	Ratio	Lower	Upper
264	100		
265	22.5	2.2	42.2
263	21.2	0.0	39.4





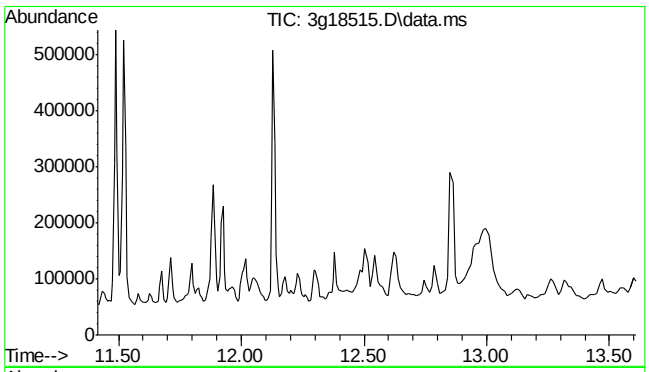


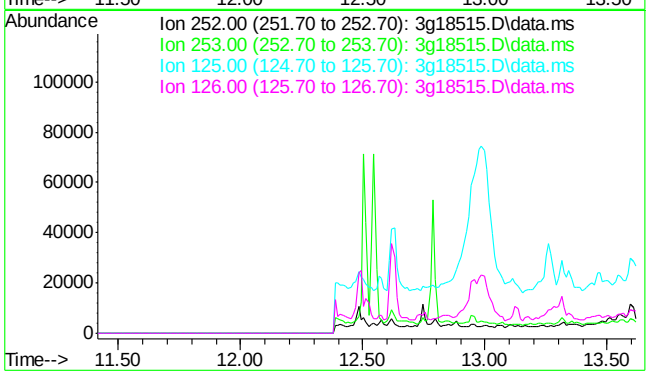
#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.48 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	45.6
125	18.9
126	10.9



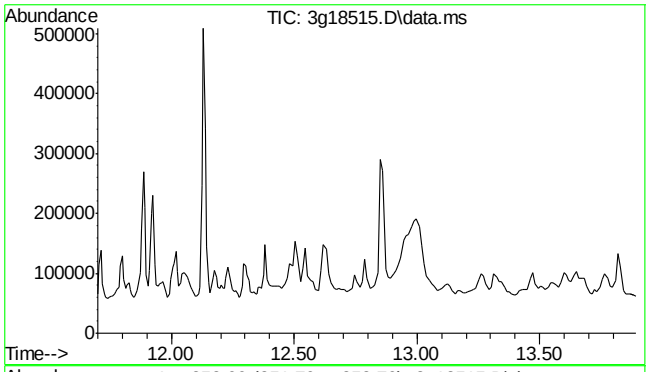


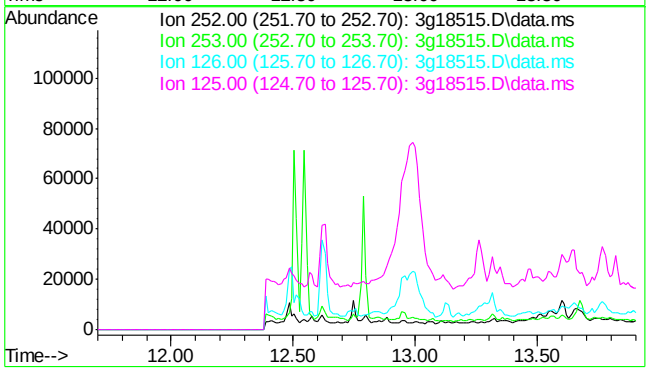
#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.51 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	41.1
125	17.0
126	9.8



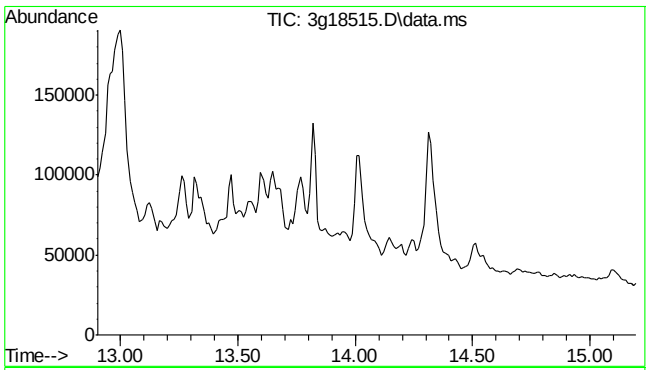


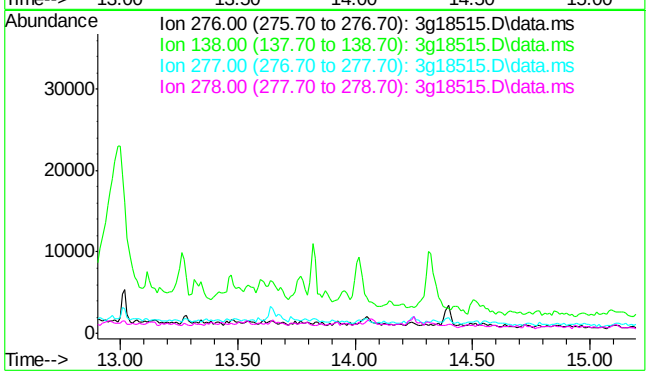
#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.80 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.6
126	10.6
125	9.4



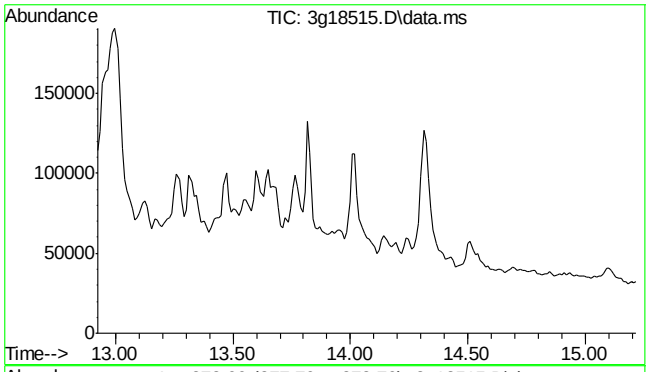


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.05 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	19.6
277	25.4
278	82.8

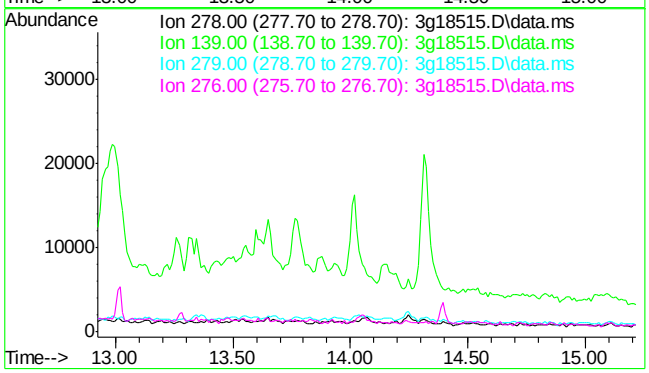


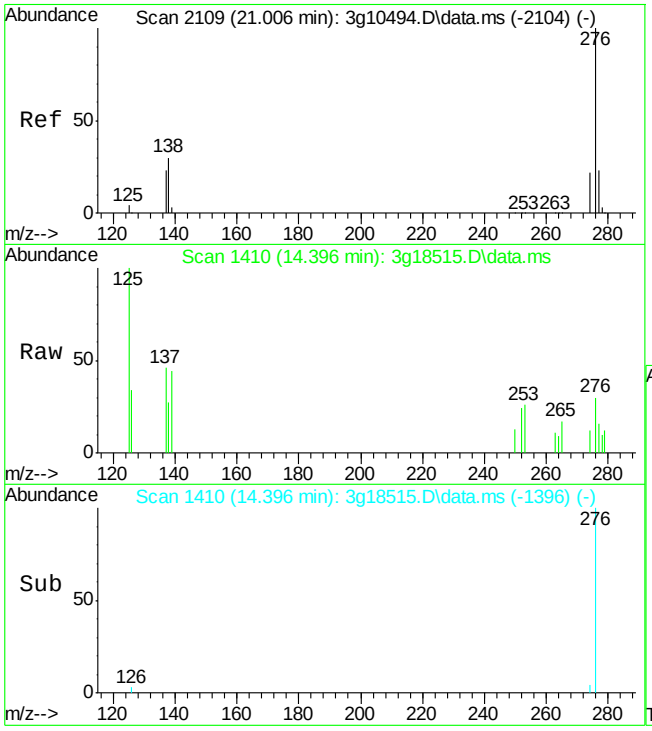
#29
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 14.07 min

Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion: 278

Sig	Exp Ratio
278	100
139	12.8
279	23.4
276	120.6

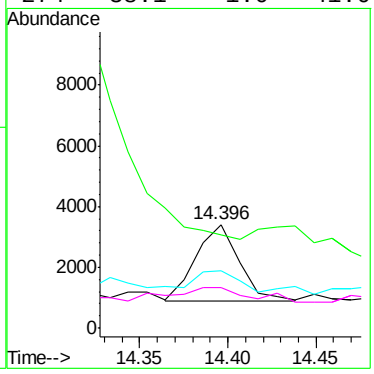




#30
Benzo(g,h,i)perylene
Concen: 0.1041 ug/mL m
RT: 14.396 min Scan# 1410
Delta R.T. 0.000 min
Lab File: 3g18515.D
Acq: 18 Mar 14 7:36 pm

Tgt Ion:276 Resp: 4287

Ion	Ratio	Lower	Upper
276	100		
138	22.5	0.0	35.9
277	44.3	3.6	43.6#
274	38.1	1.0	41.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031814\
Data File : 3g18511.D
Acq On : 18 Mar 2014 6:00 pm
Operator : DONC
Sample : OP9573-MB
Misc : OP9573,E3G920,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 19 08:57:48 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
Quant Title : PAHSIM BASE
QLast Update : Mon Mar 17 10:02:08 2014
Response via : Initial Calibration

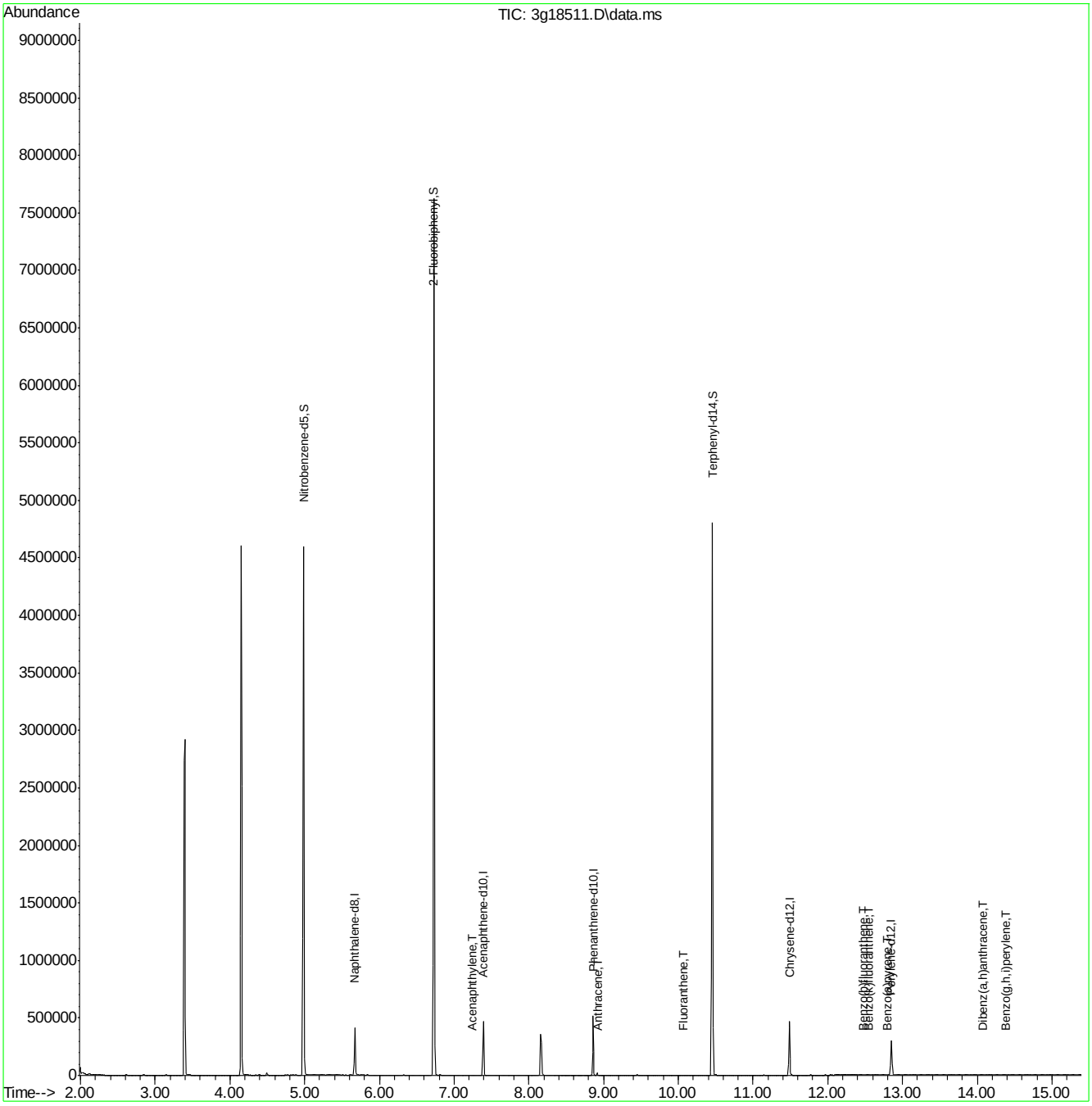
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.674	136	301866	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.390	164	191276	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.859	188	353685	4.0000	ug/mL	0.00
19) Chrysene-d12	11.488	240	340352	4.0000	ug/mL	0.00
24) Perylene-d12	12.850	264	226074	4.0000	ug/mL	-0.01
System Monitoring Compounds						
2) Nitrobenzene-d5	4.988	82	2611996	49.2374	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 98.48%			
7) 2-Fluorobiphenyl	6.728	172	4176597	59.4827	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 118.96%			
21) Terphenyl-d14	10.458	244	4047575	61.3321	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 122.66%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	2.394	74	110	N.D.		
4) N-Nitrosodi-propylamine	4.839	70	114	N.D.		
5) Naphthalene	5.687	128	343	N.D.		
8) 2-Methylnaphthalene	6.372	142	283	N.D.		
9) 1-Methylnaphthalene	6.460	142	144	N.D.		
10) Acenaphthylene	7.236	152	162	0.0423	ug/mL#	1
11) Acenaphthene	7.390	154	770	N.D.		
12) Dibenzofuran	7.590	168	291	N.D.		
13) Fluorene	7.933	166	256	N.D.		
14) Diphenylamine	8.051	169	192	N.D.		
16) Phenanthrene	8.883	178	616	N.D.		
17) Anthracene	8.930	178	383	0.0428	ug/mL#	50
18) Fluoranthene	10.062	202	673	0.0463	ug/mL#	45
20) Pyrene	10.284	202	503	N.D.		
22) Benzo(a)anthracene	11.482	228	1510	N.D.		
23) Chrysene	11.508	228	391	N.D.		
25) Benzo(b)fluoranthene	12.472	252	989	0.0302	ug/mL#	73
26) Benzo(k)fluoranthene	12.545	252	84	0.0448	ug/mL#	1
27) Benzo(a)pyrene	12.798	252	297	0.0490	ug/mL#	1
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D. d		
29) Dibenz(a,h)anthracene	14.070	278	620	0.0529	ug/mL#	3
30) Benzo(g,h,i)perylene	14.386	276	521	0.0570	ug/mL#	42

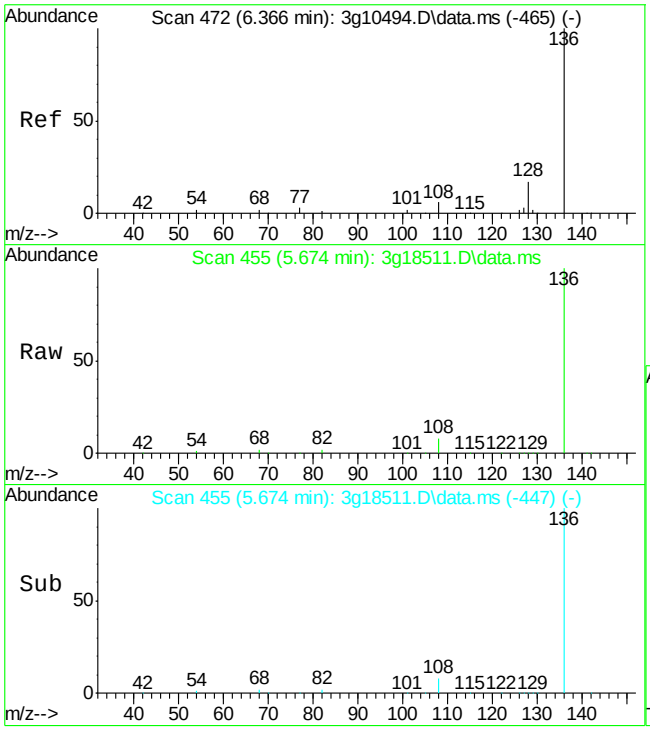
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031814\
Data File : 3g18511.D
Acq On : 18 Mar 2014 6:00 pm
Operator : DONC
Sample : OP9573-MB
Misc : OP9573,E3G920,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 19 08:57:48 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G918.M
Quant Title : PAHSIM BASE
QLast Update : Mon Mar 17 10:02:08 2014
Response via : Initial Calibration

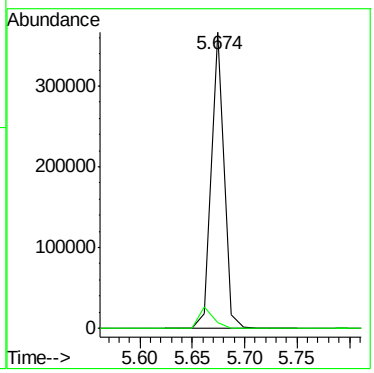


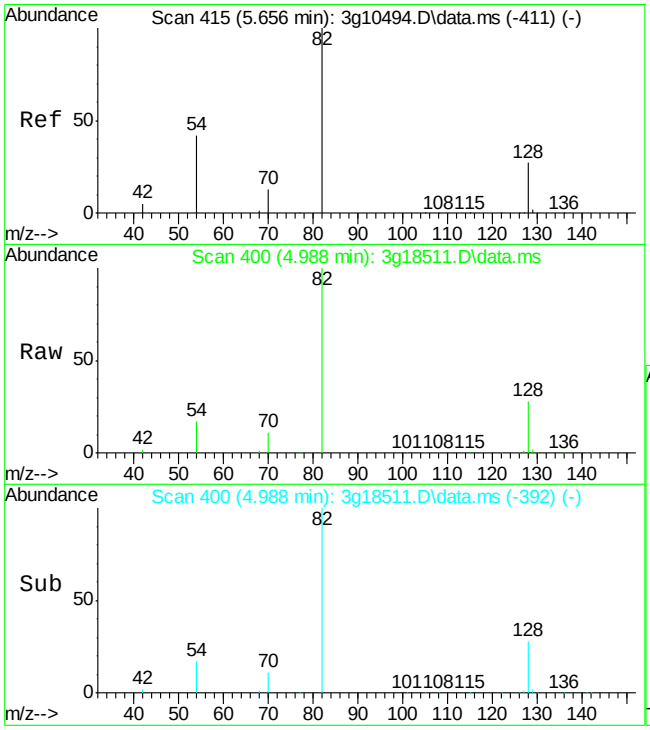


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.674 min Scan# 455
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:136 Resp: 301866

Ion	Ratio	Lower	Upper
136	100		
68	8.4	0.0	28.2

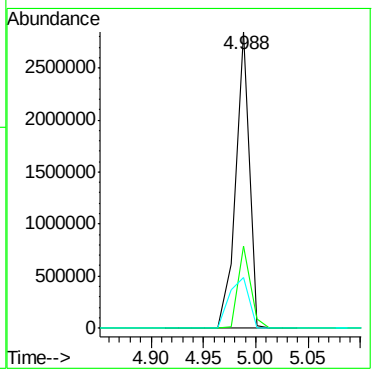


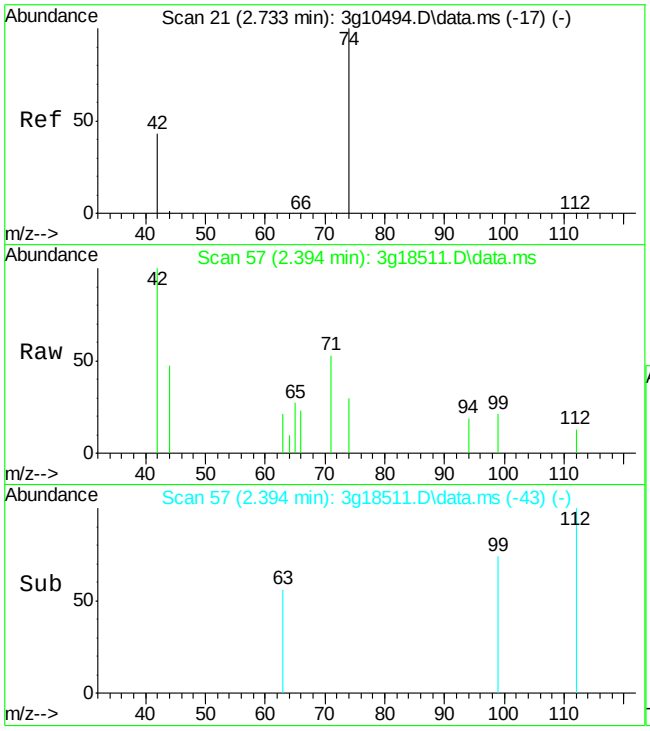


#2
Nitrobenzene-d5
Concen: 49.2374 ug/mL
RT: 4.988 min Scan# 400
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion: 82 Resp: 2611996

Ion	Ratio	Lower	Upper
82	100		
128	25.6	6.9	46.9
54	24.6	11.0	51.0

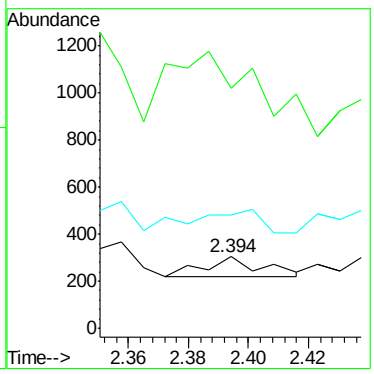


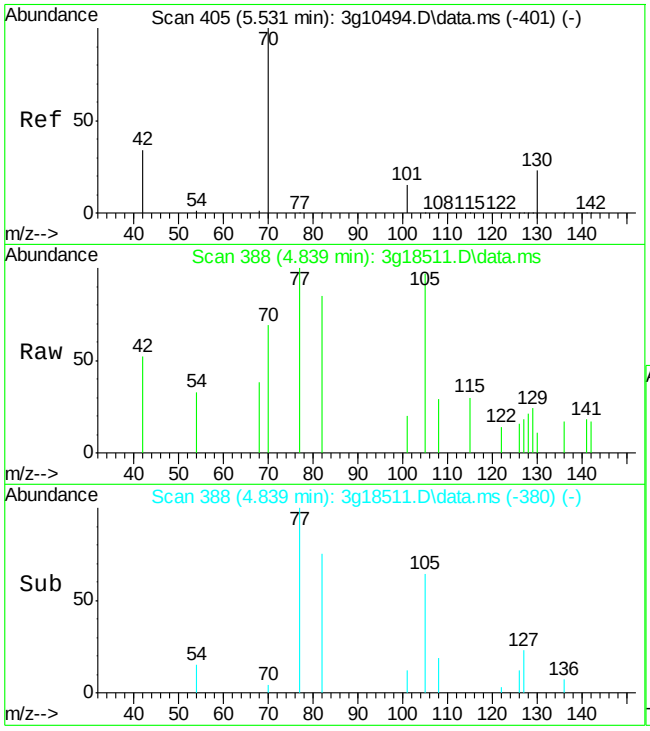


#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.394 min Scan# 57
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion: 74 Resp: 110

Ion	Ratio	Lower	Upper
74	100		
42	688.2	16.2	56.2#
44	99.1	0.0	21.5#

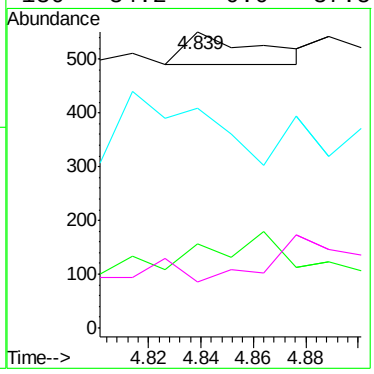


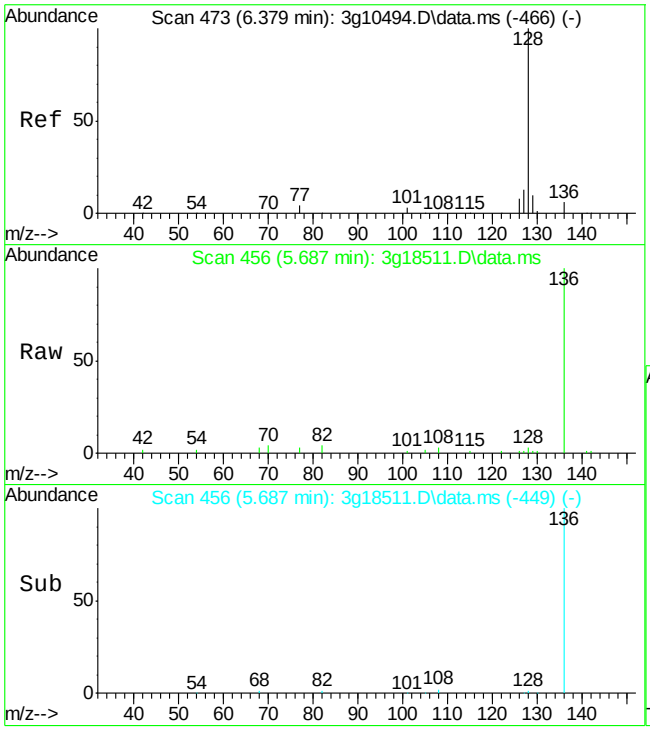


#4
N-Nitrosodi-propylamine
Concen: Below ug/mL
RT: 4.839 min Scan# 388
Delta R.T. 0.001 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion: 70 Resp: 114

Ion	Ratio	Lower	Upper
70	100		
101	0.0	0.0	31.6
42	257.9	2.8	42.8#
130	34.2	0.0	37.5

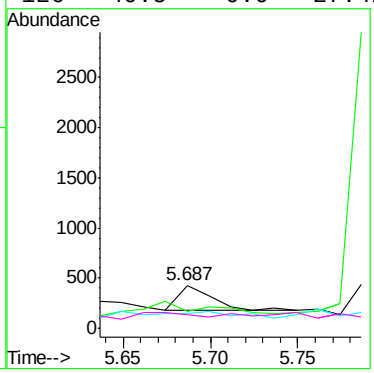


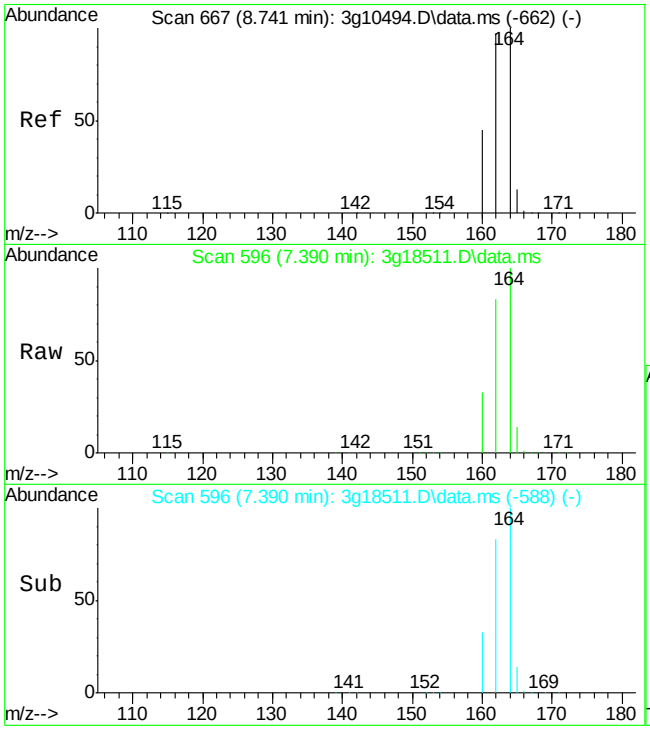


#5
Naphthalene
Concen: Below ug/mL
RT: 5.687 min Scan# 456
Delta R.T. -0.012 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:128 Resp: 343

Ion	Ratio	Lower	Upper
128	100		
129	113.7	0.0	31.0#
127	0.0	0.0	33.5
126	40.5	0.0	27.4#

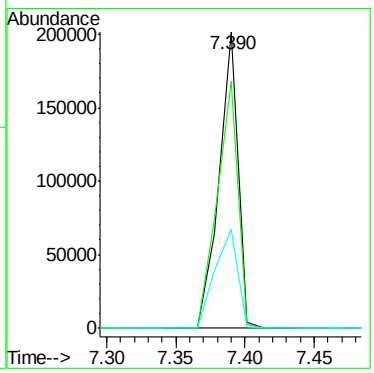


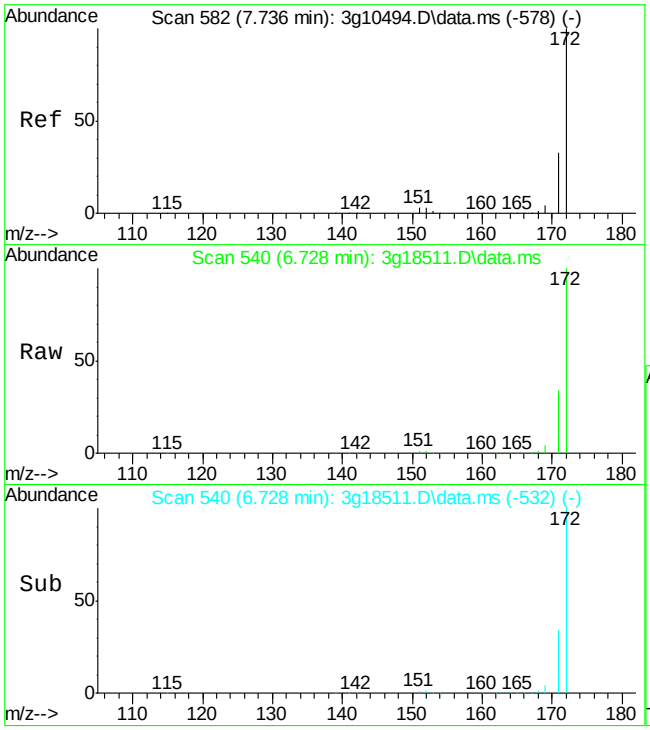


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.390 min Scan# 596
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:164 Resp: 191276

Ion	Ratio	Lower	Upper
164	100		
162	90.6	65.6	105.6
160	39.8	15.8	55.8

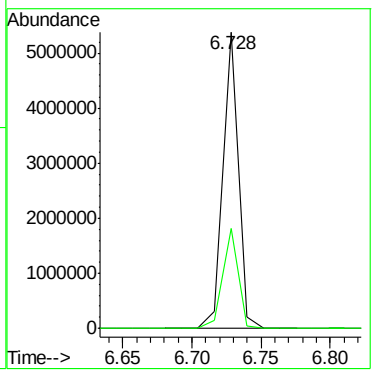


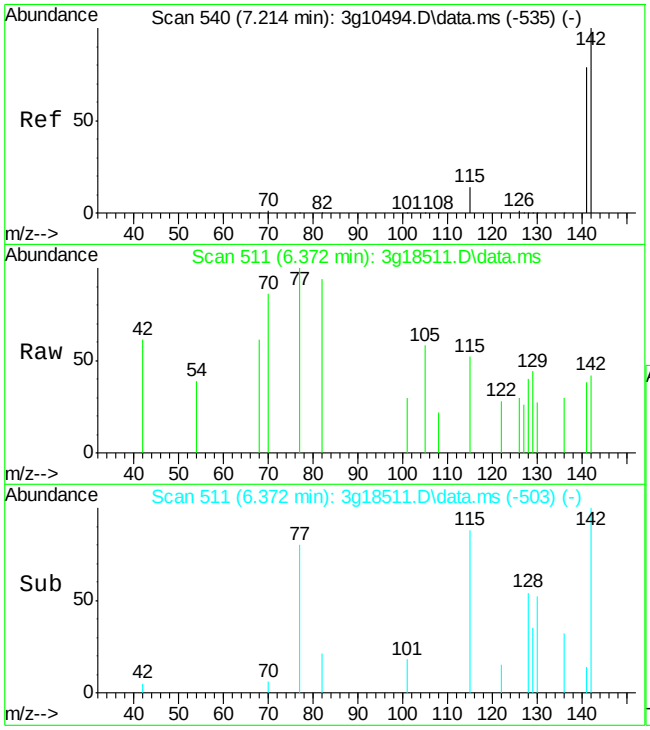


#7
2-Fluorobiphenyl
Concen: 59.4827 ug/mL
RT: 6.728 min Scan# 540
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:172 Resp: 4176597

Ion	Ratio	Lower	Upper
172	100		
171	34.2	14.1	54.1

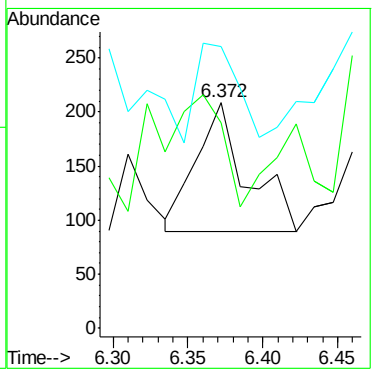


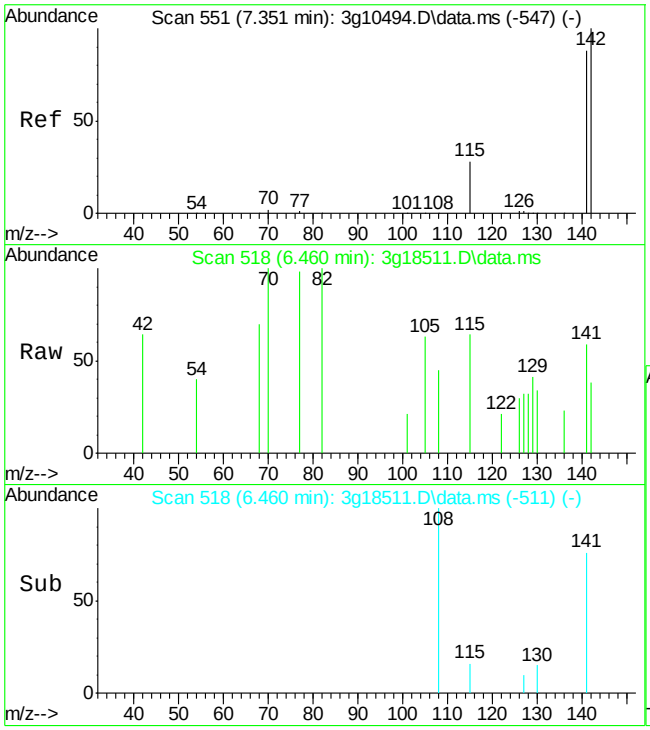


#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.372 min Scan# 511
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:142 Resp: 283

Ion	Ratio	Lower	Upper
142	100		
141	116.6	61.4	101.4#
115	63.6	26.9	66.9

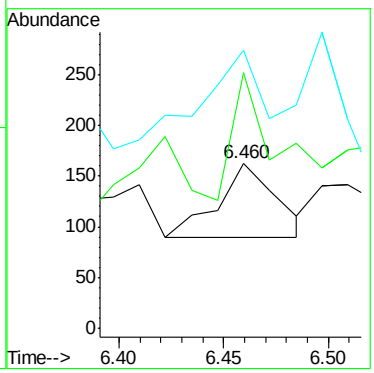


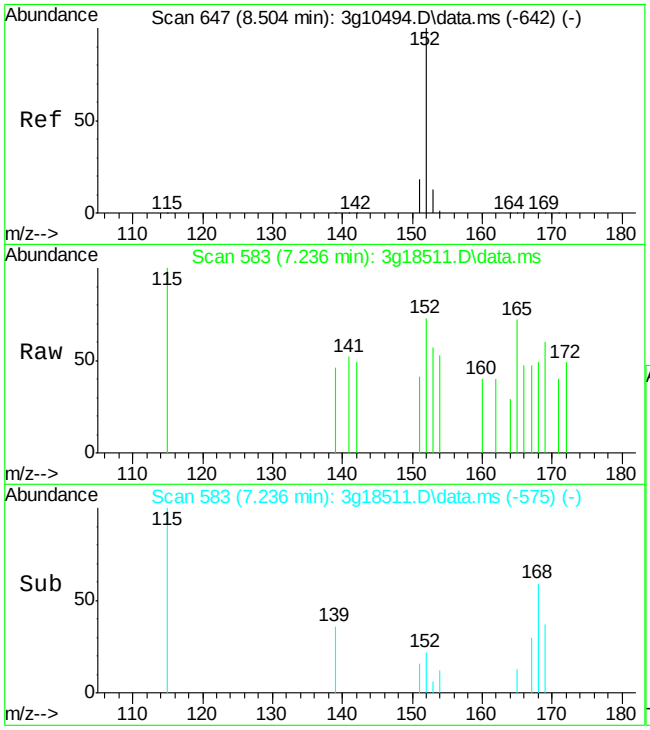


#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.460 min Scan# 518
Delta R.T. -0.012 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:142 Resp: 144

Ion	Ratio	Lower	Upper
142	100		
141	131.9	67.1	107.1#
115	109.0	24.0	64.0#

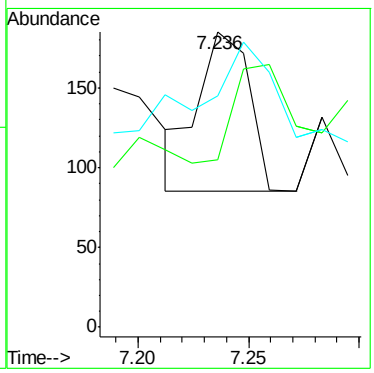


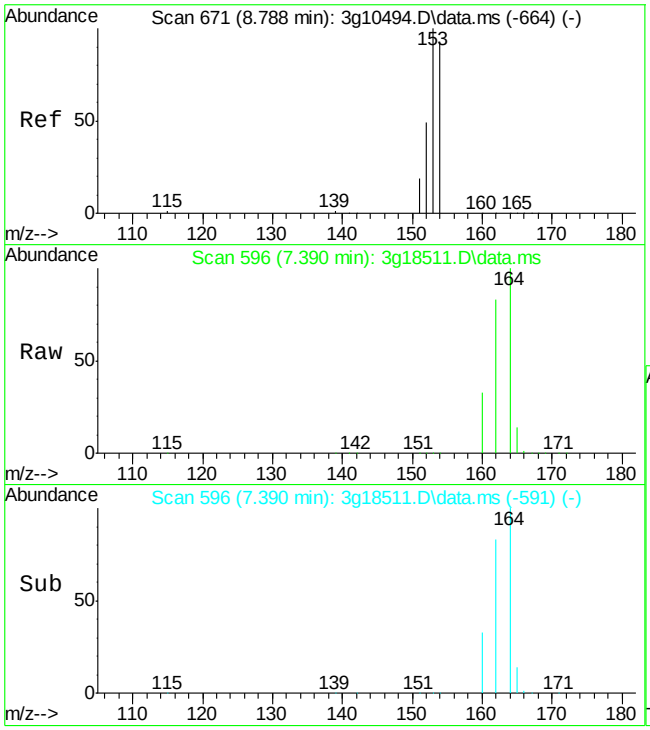


#10
Acenaphthylene
Concen: 0.0423 ug/mL
RT: 7.236 min Scan# 583
Delta R.T. -0.011 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:152 Resp: 162

Ion	Ratio	Lower	Upper
152	100		
151	72.2	0.9	40.9#
153	89.5	0.0	33.8#

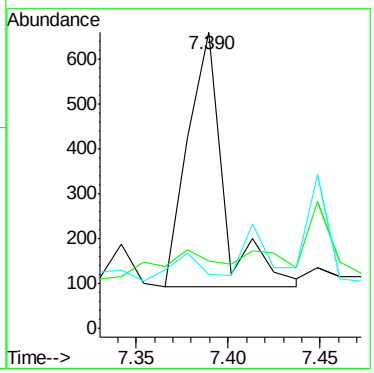


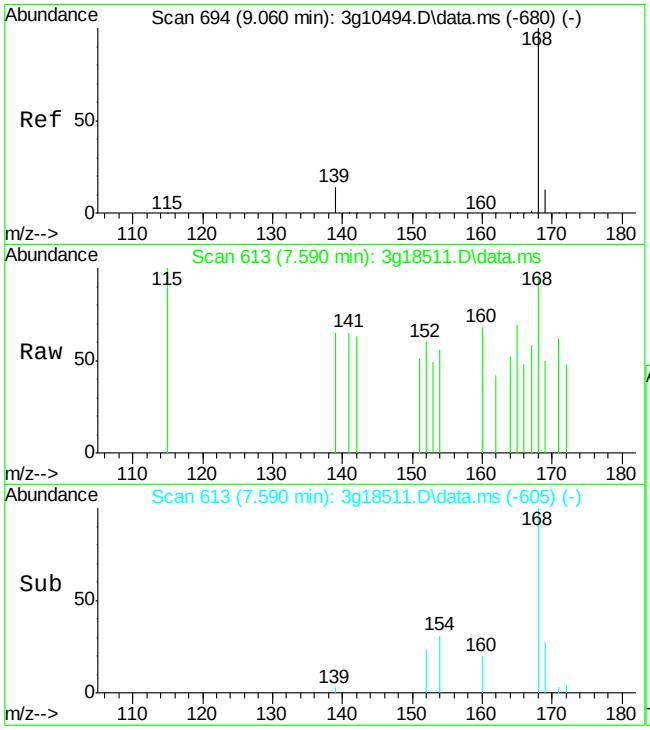


#11
Acenaphthene
Concen: Below ug/mL
RT: 7.390 min Scan# 596
Delta R.T. -0.035 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:154 Resp: 770

Ion	Ratio	Lower	Upper
154	100		
153	5.8	82.9	122.9#
152	11.2	23.8	63.8#

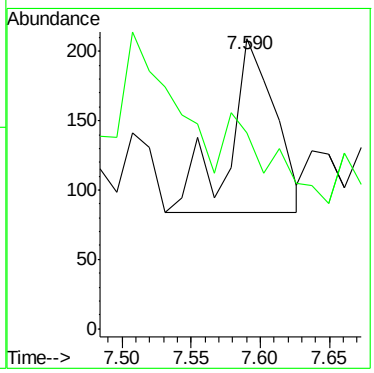


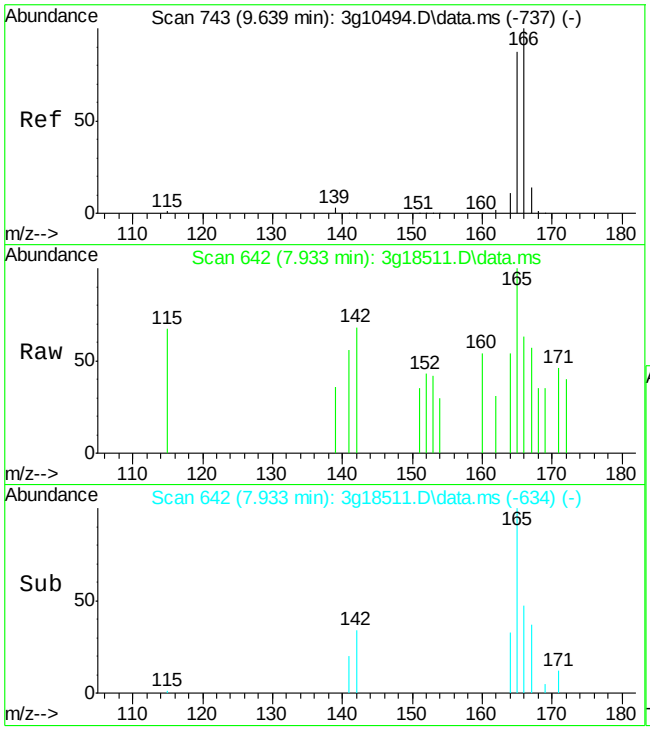


#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.590 min Scan# 613
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:168 Resp: 291

Ion	Ratio	Lower	Upper
168	100		
139	31.3	11.7	51.7

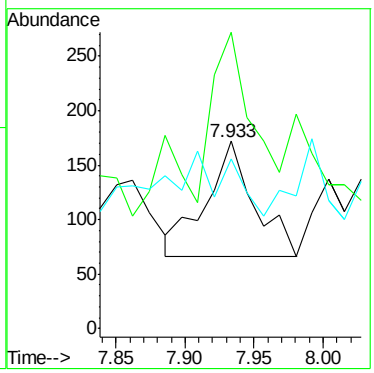


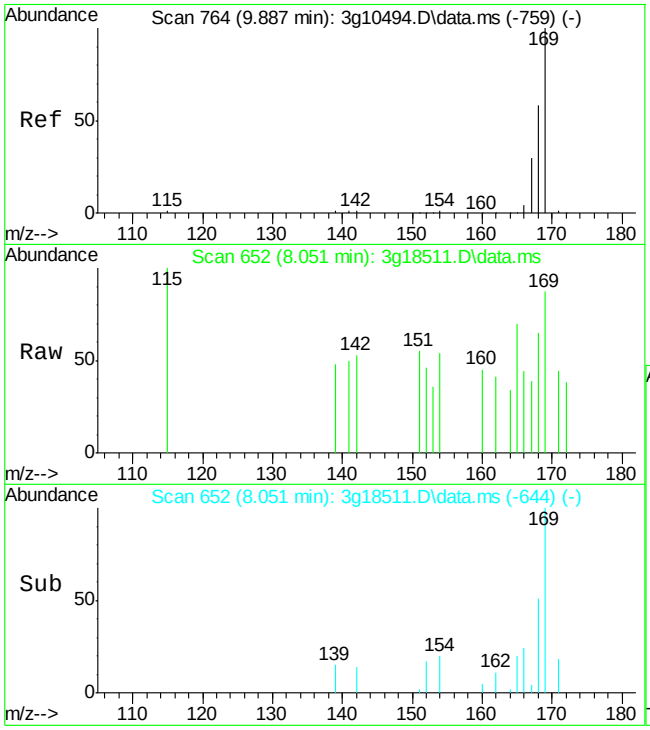


#13
Fluorene
Concen: Below ug/mL
RT: 7.933 min Scan# 642
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:166 Resp: 256

Ion	Ratio	Lower	Upper
166	100		
165	120.3	71.7	111.7#
167	59.4	0.0	33.0#

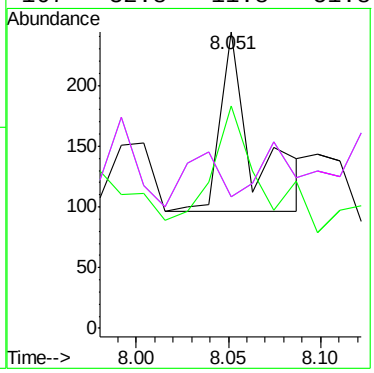


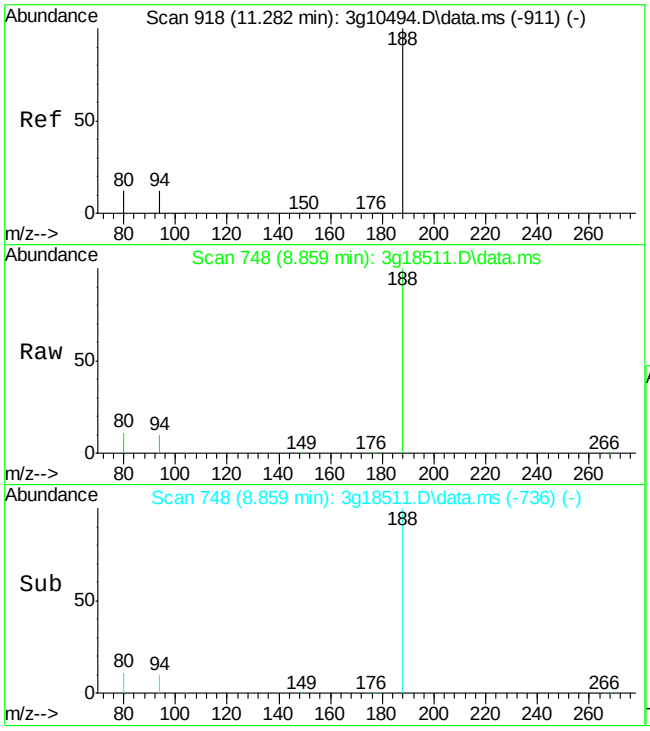


#14
Diphenylamine
Concen: Below ug/mL
RT: 8.051 min Scan# 652
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:169 Resp: 192

Ion	Ratio	Lower	Upper
169	100		
168	101.0	40.6	80.6#
167	32.8	11.8	51.8
167	32.8	11.8	51.8

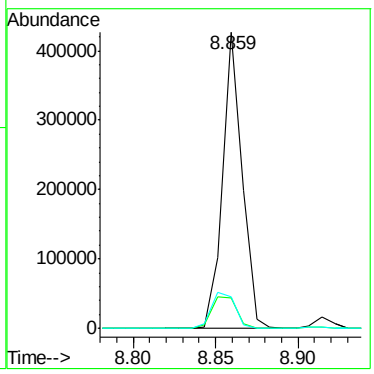


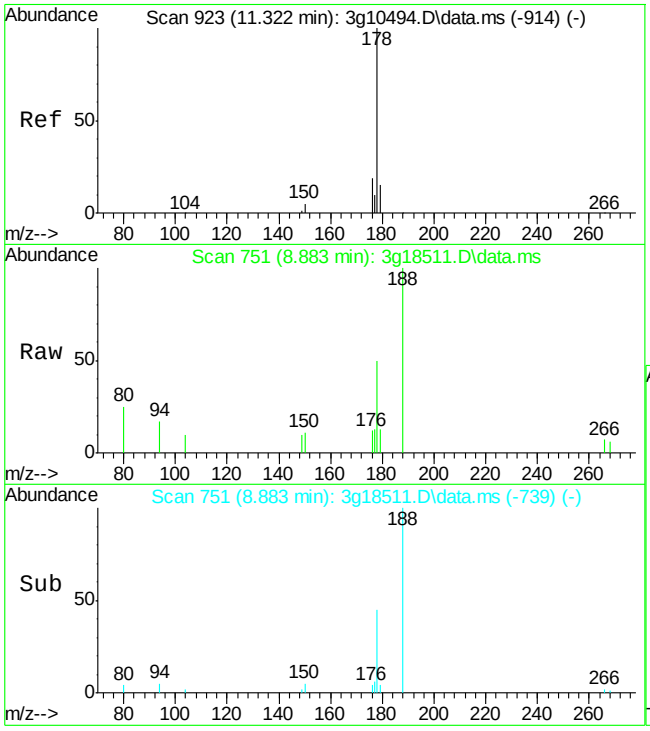


#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.859 min Scan# 748
Delta R.T. -0.008 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:188 Resp: 353685

Ion	Ratio	Lower	Upper
188	100		
94	13.5	0.0	32.7
80	14.6	0.0	33.0

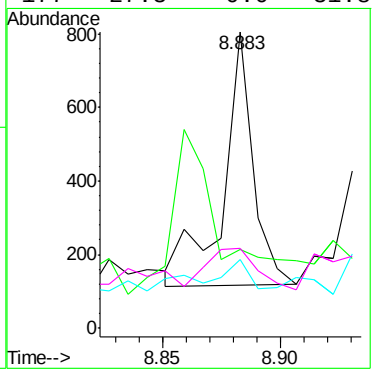


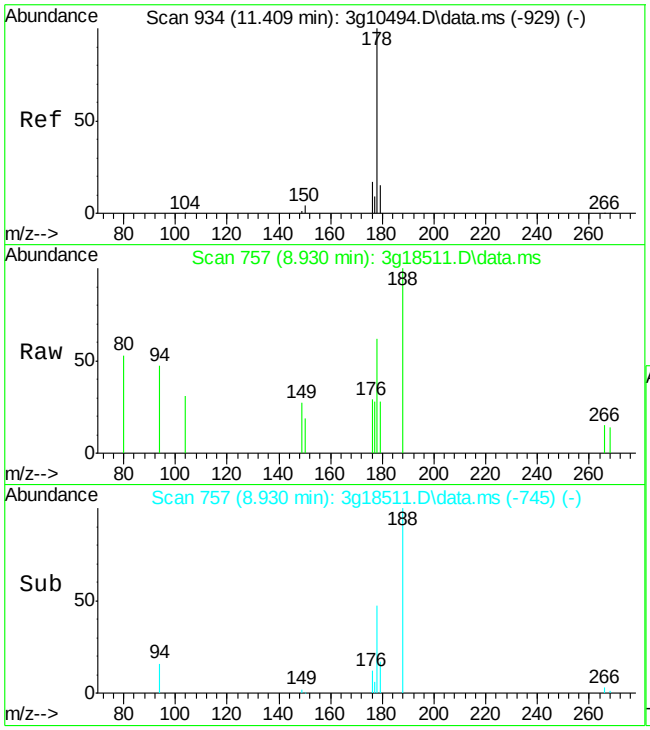


#16
Phenanthrene
Concen: Below ug/mL
RT: 8.883 min Scan# 751
Delta R.T. -0.008 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:178 Resp: 616

Ion	Ratio	Lower	Upper
178	100		
179	108.6	0.0	34.9#
176	0.0	0.0	38.2
177	27.3	0.0	31.8

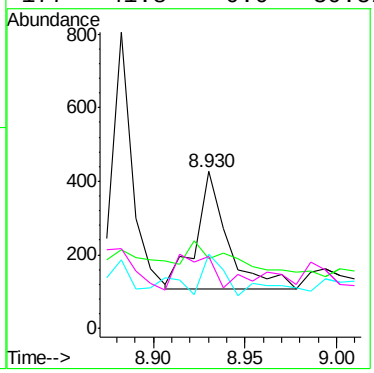


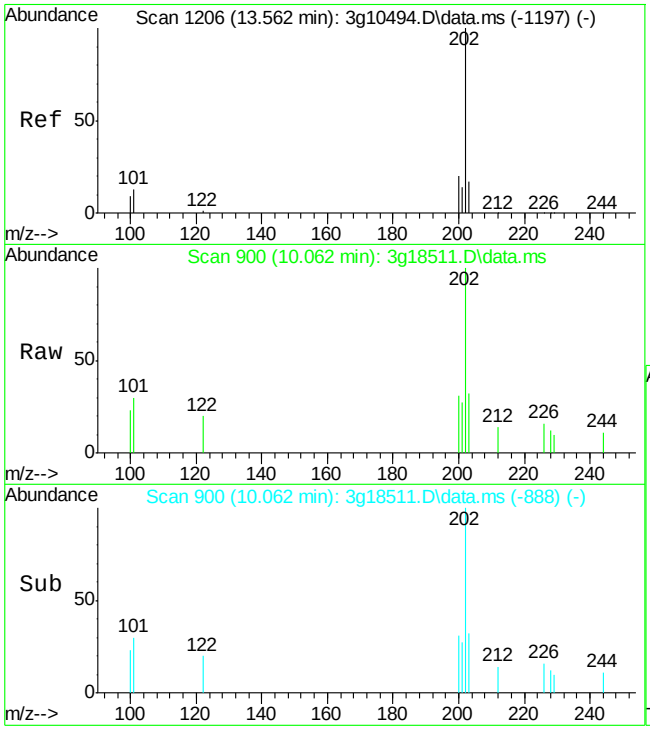


#17
Anthracene
Concen: 0.0428 ug/mL
RT: 8.930 min Scan# 757
Delta R.T. -0.008 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:178 Resp: 383

Ion	Ratio	Lower	Upper
178	100		
179	45.2	0.0	34.9#
176	23.0	0.0	38.0
177	41.8	0.0	30.5#

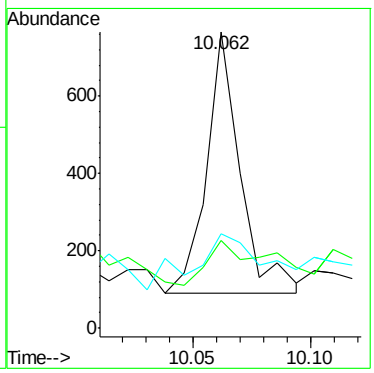


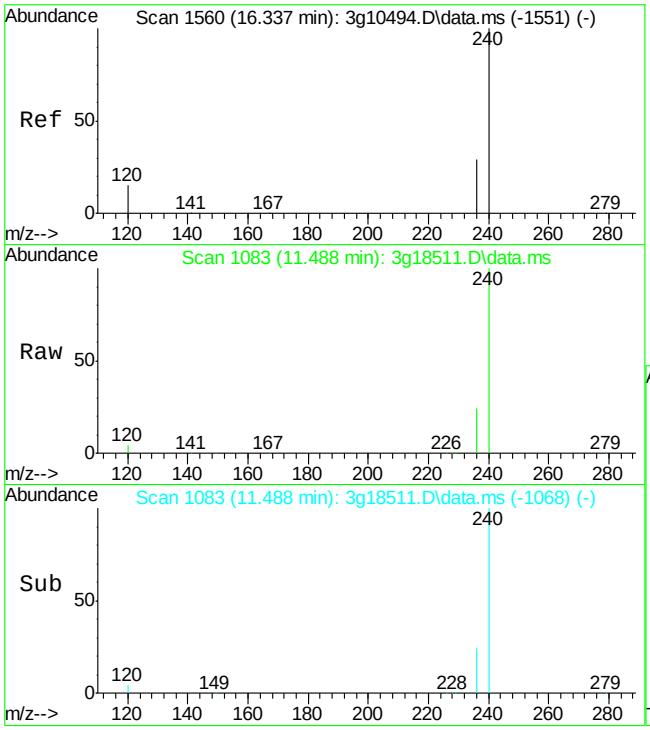


#18
Fluoranthene
Concen: 0.0463 ug/mL
RT: 10.062 min Scan# 900
Delta R.T. -0.008 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:202 Resp: 673

Ion	Ratio	Lower	Upper
202	100		
101	32.2	0.0	34.2
203	45.2	0.0	37.3#

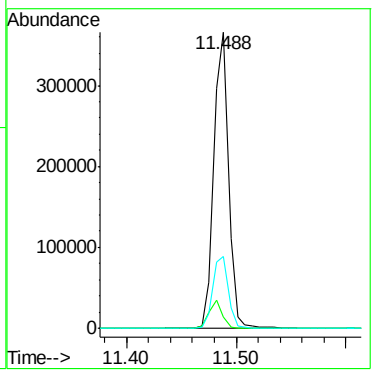


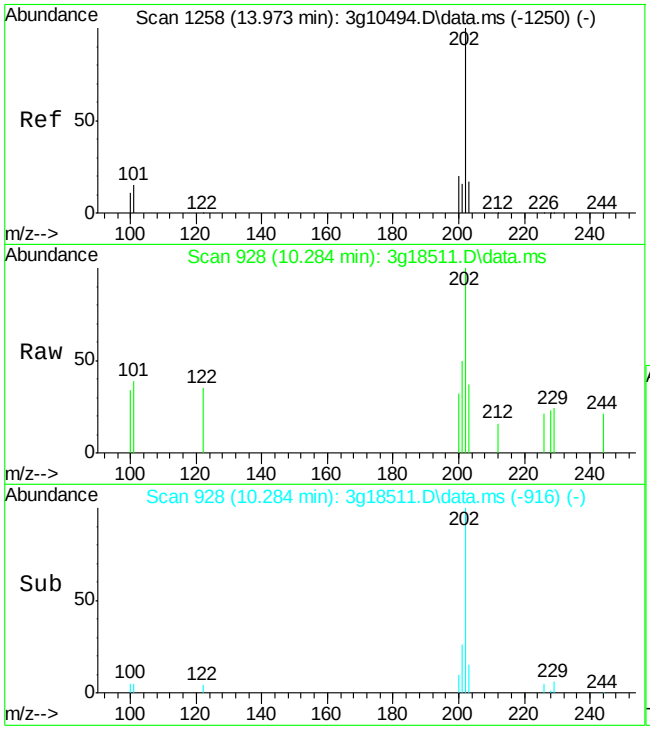


#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.488 min Scan# 1083
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:240 Resp: 340352

Ion	Ratio	Lower	Upper
240	100		
120	8.4	0.0	27.8
236	25.9	7.4	47.4

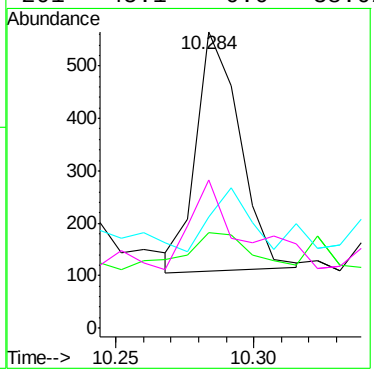


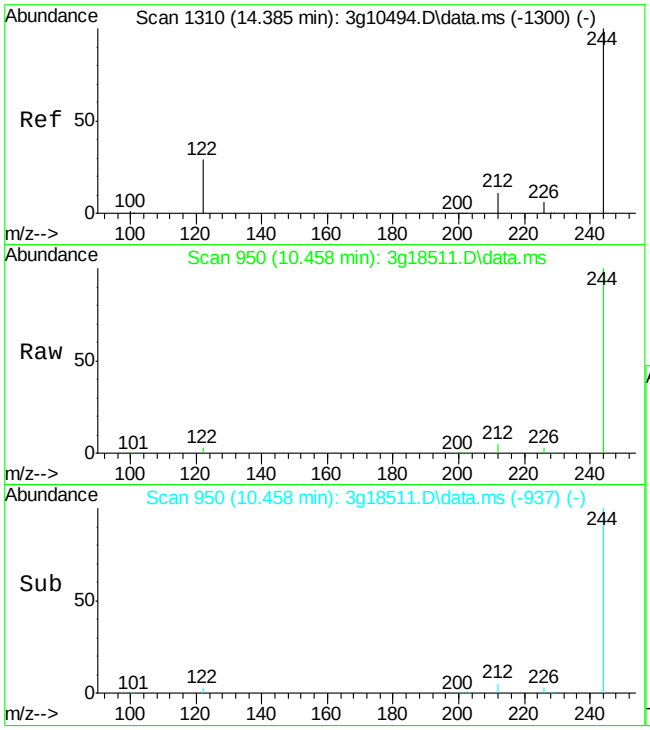


#20
Pyrene
Concen: Below ug/mL
RT: 10.284 min Scan# 928
Delta R.T. -0.007 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:202 Resp: 503

Ion	Ratio	Lower	Upper
202	100		
200	23.7	0.1	40.1
203	29.0	0.0	37.6
201	45.1	0.0	38.0#

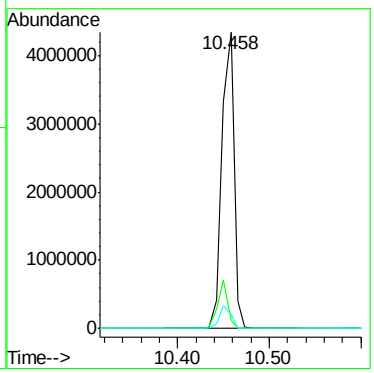


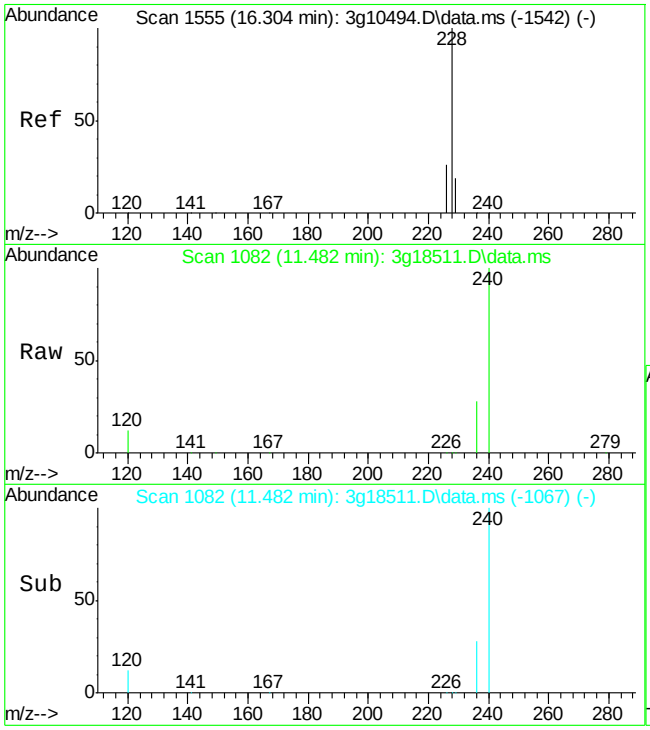


#21
Terphenyl-d14
Concen: 61.3321 ug/mL
RT: 10.458 min Scan# 950
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:244 Resp: 4047575

Ion	Ratio	Lower	Upper
244	100		
122	13.1	0.0	34.7
212	7.3	0.0	27.2

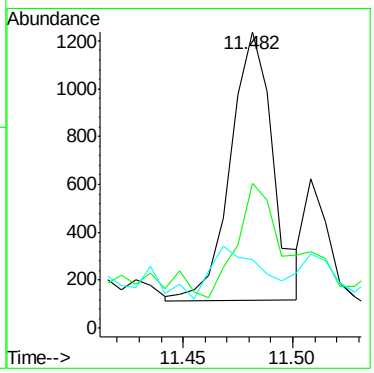


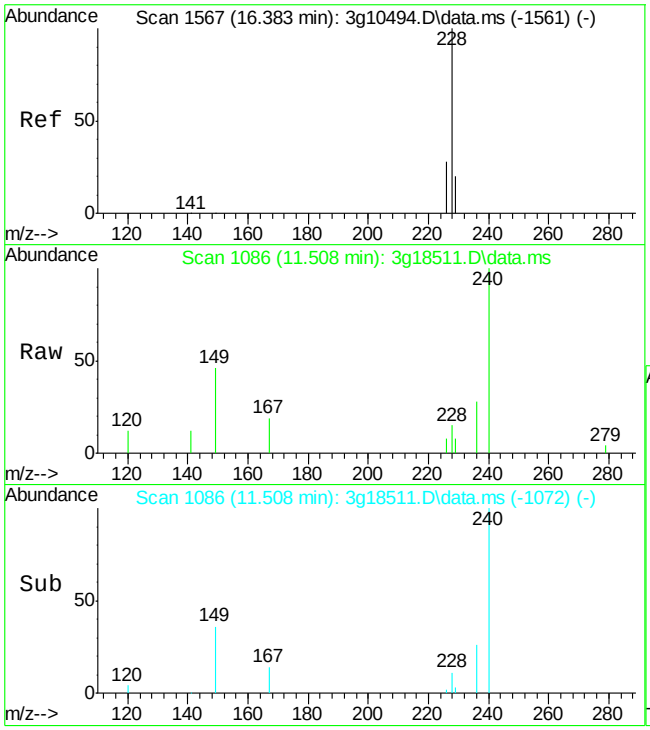


#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.482 min Scan# 1082
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:228 Resp: 1510

Ion	Ratio	Lower	Upper
228	100		
229	53.1	0.0	39.5#
226	22.3	5.9	45.9

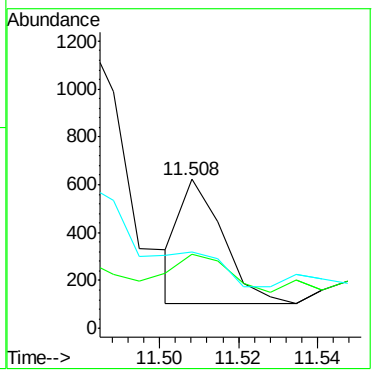


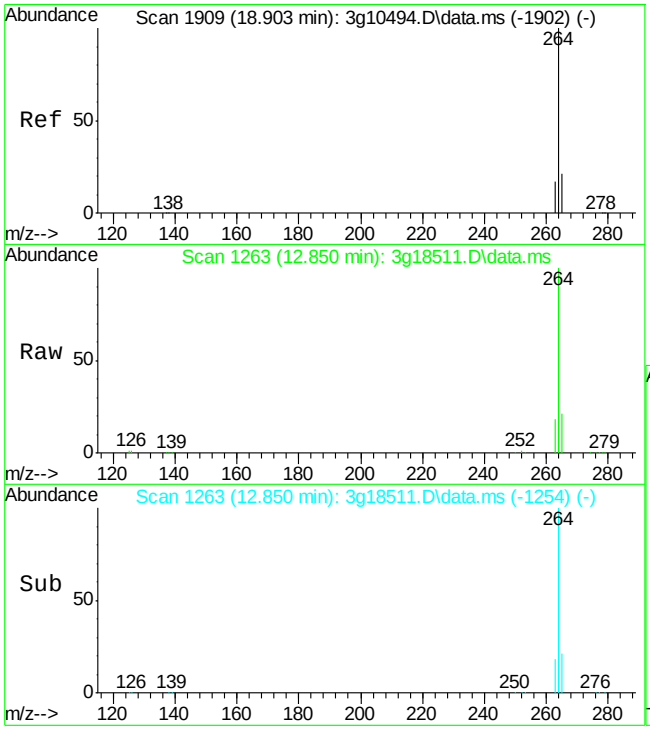


#23
Chrysene
Concen: Below ug/mL
RT: 11.508 min Scan# 1086
Delta R.T. -0.007 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:228 Resp: 391

Ion	Ratio	Lower	Upper
228	100		
226	41.4	8.0	48.0
229	0.0	0.0	39.4

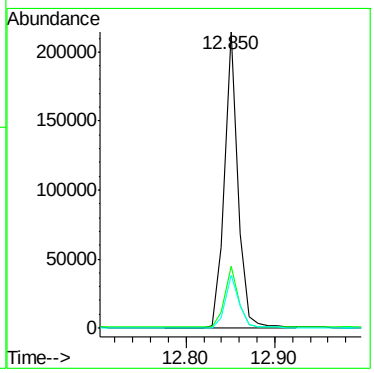


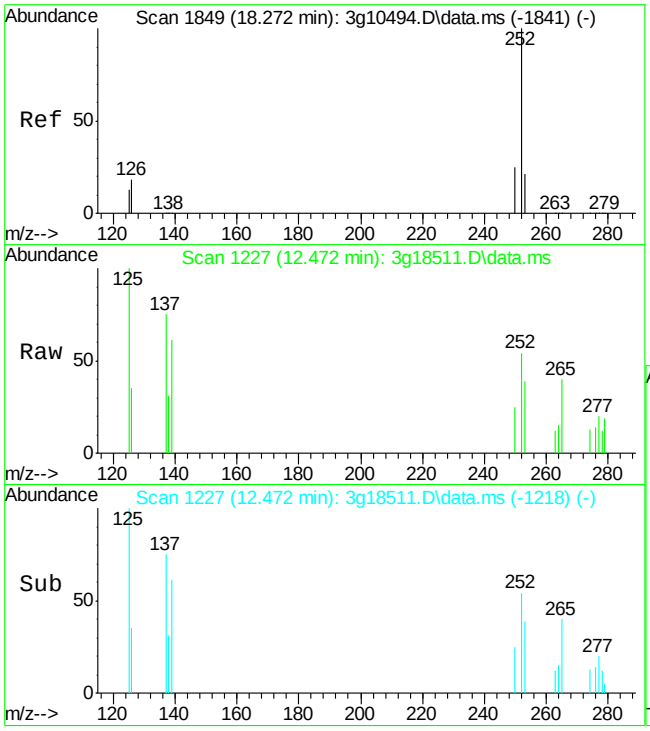


#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.850 min Scan# 1263
Delta R.T. -0.011 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:264 Resp: 226074

Ion	Ratio	Lower	Upper
264	100		
265	20.9	2.2	42.2
263	18.4	0.0	39.4

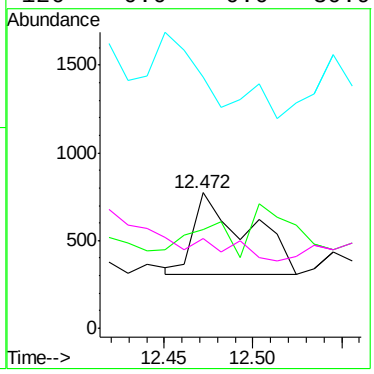


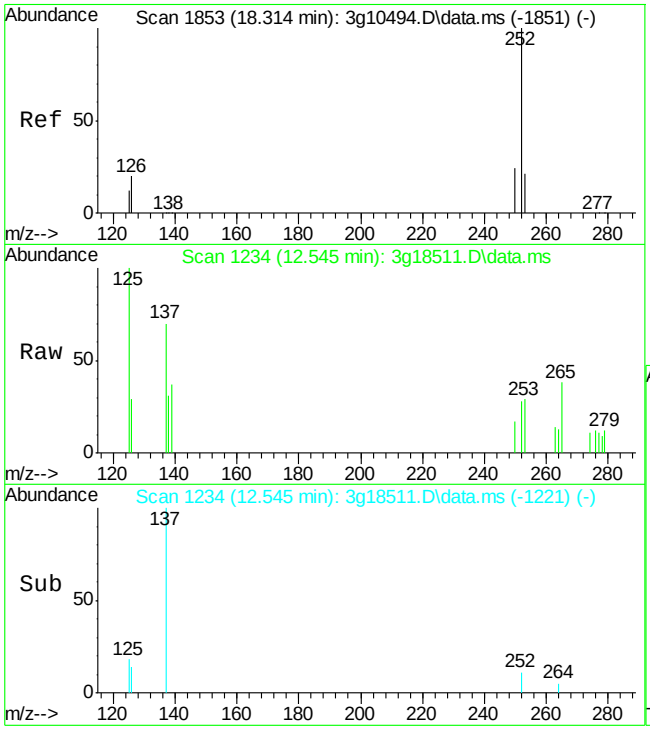


#25
Benzo(b)fluoranthene
Concen: 0.0302 ug/mL
RT: 12.472 min Scan# 1227
Delta R.T. -0.011 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:252 Resp: 989

Ion	Ratio	Lower	Upper
252	100		
253	32.1	25.6	65.6
125	0.0	0.0	38.9
126	0.0	0.0	30.9

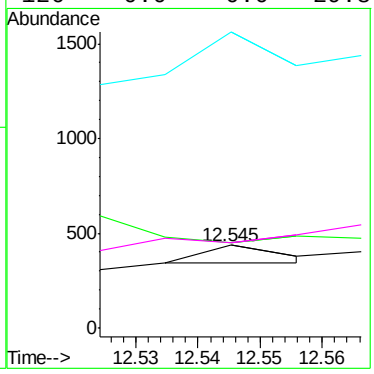


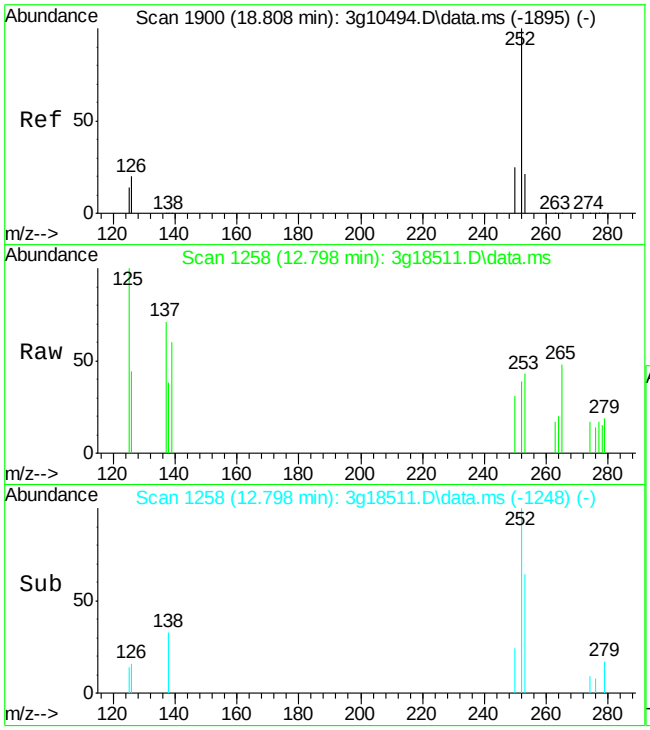


#26
Benzo(k)fluoranthene
Concen: 0.0448 ug/mL
RT: 12.545 min Scan# 1234
Delta R.T. 0.032 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:252 Resp: 84

Ion	Ratio	Lower	Upper
252	100		
253	646.4	21.1	61.1#
125	0.0	0.0	37.0
126	0.0	0.0	29.8

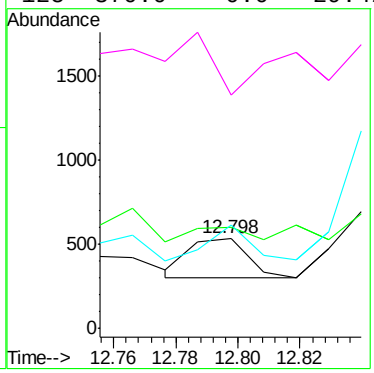


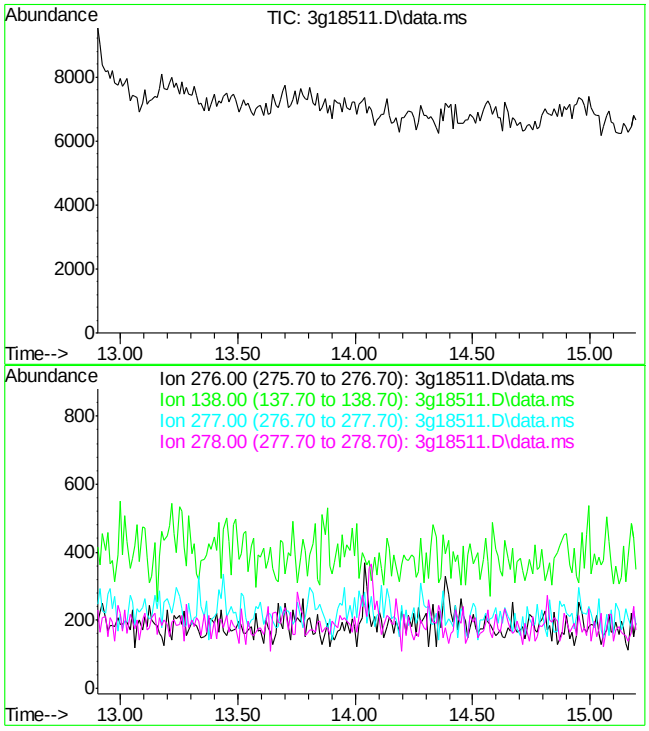


#27
Benzo(a)pyrene
Concen: 0.0490 ug/mL
RT: 12.798 min Scan# 1258
Delta R.T. 0.001 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:252 Resp: 297

Ion	Ratio	Lower	Upper
252	100		
253	151.9	1.6	41.6#
126	64.6	0.0	30.6#
125	370.0	0.0	29.4#



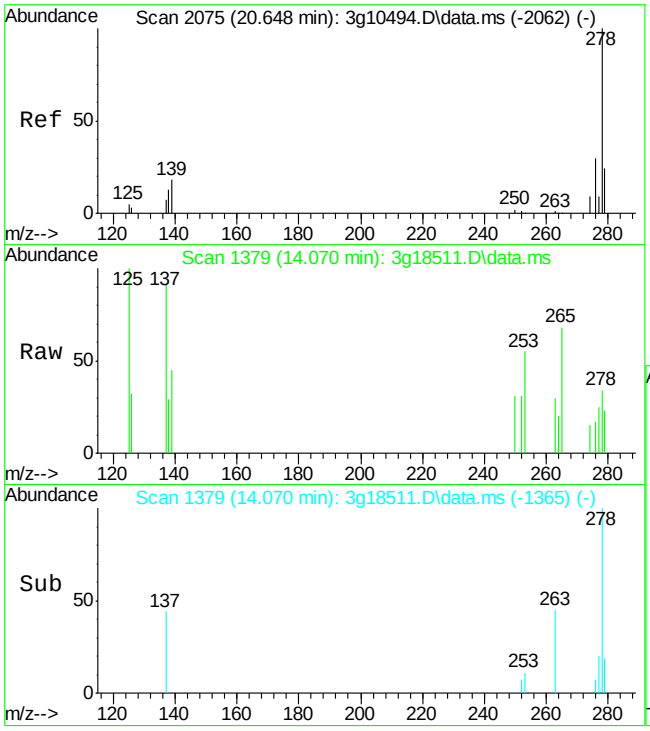


#28
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 14.05 min

Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion: 276

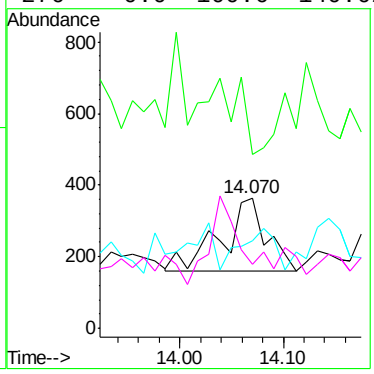
Sig	Exp Ratio
276	100
138	19.6
277	25.4
278	82.8

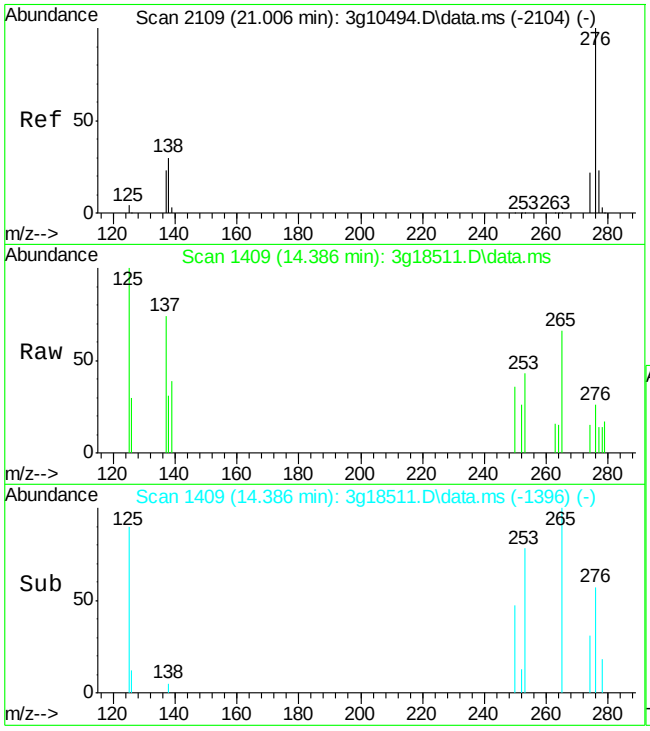


#29
Dibenz(a,h)anthracene
Concen: 0.0529 ug/mL
RT: 14.070 min Scan# 1379
Delta R.T. 0.000 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:278 Resp: 620

Ion	Ratio	Lower	Upper
278	100		
139	58.9	0.0	32.8#
279	36.1	3.4	43.4
276	0.0	100.6	140.6#

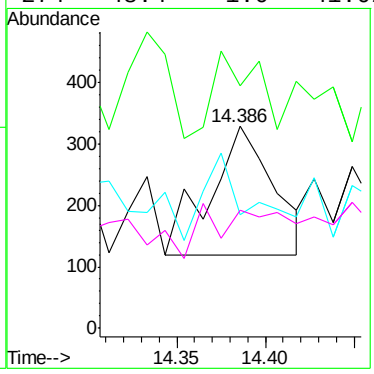




#30
Benzo(g,h,i)perylene
Concen: 0.0570 ug/mL
RT: 14.386 min Scan# 1409
Delta R.T. -0.010 min
Lab File: 3g18511.D
Acq: 18 Mar 14 6:00 pm

Tgt Ion:276 Resp: 521

Ion	Ratio	Lower	Upper
276	100		
138	48.4	0.0	35.9#
277	46.3	3.6	43.6#
274	48.4	1.0	41.0#



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: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1323-MB	GB24086.D	1	03/17/14	AR	n/a	n/a	GGB1323

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

D55961-1

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	101%	60-140%

Blank Spike Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1323-BS	GB24087.D	1	03/17/14	AR	n/a	n/a	GGB1323

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

D55961-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	118	107	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	100%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D55973-12MS	GB24089.D	1	03/17/14	AR	n/a	n/a	GGB1323
D55973-12MSD	GB24090.D	1	03/17/14	AR	n/a	n/a	GGB1323
D55973-12	GB24088.D	1	03/17/14	AR	n/a	n/a	GGB1323

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

D55961-1

CAS No.	Compound	D55973-12 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		181	160	89	147	81	8	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D55973-12	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	99%	101%	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)
Judy Melson 03/18/14 11:48

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\031714\GB24098.D\FID1A.CH Vial: 16
Signal #2 : Y:\1\DATA\031714\GB24098.D\FID2B.CH
Acq On : 18 Mar 2014 12:55 am Operator: ALEXR
Sample : D55961-1 Inst : GC/MS Ins
Misc : GC4272,GGB1323,5.054,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Mar 18 09:22:06 2014 Quant Results File: TB1310GB1310SOIL.RES

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

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

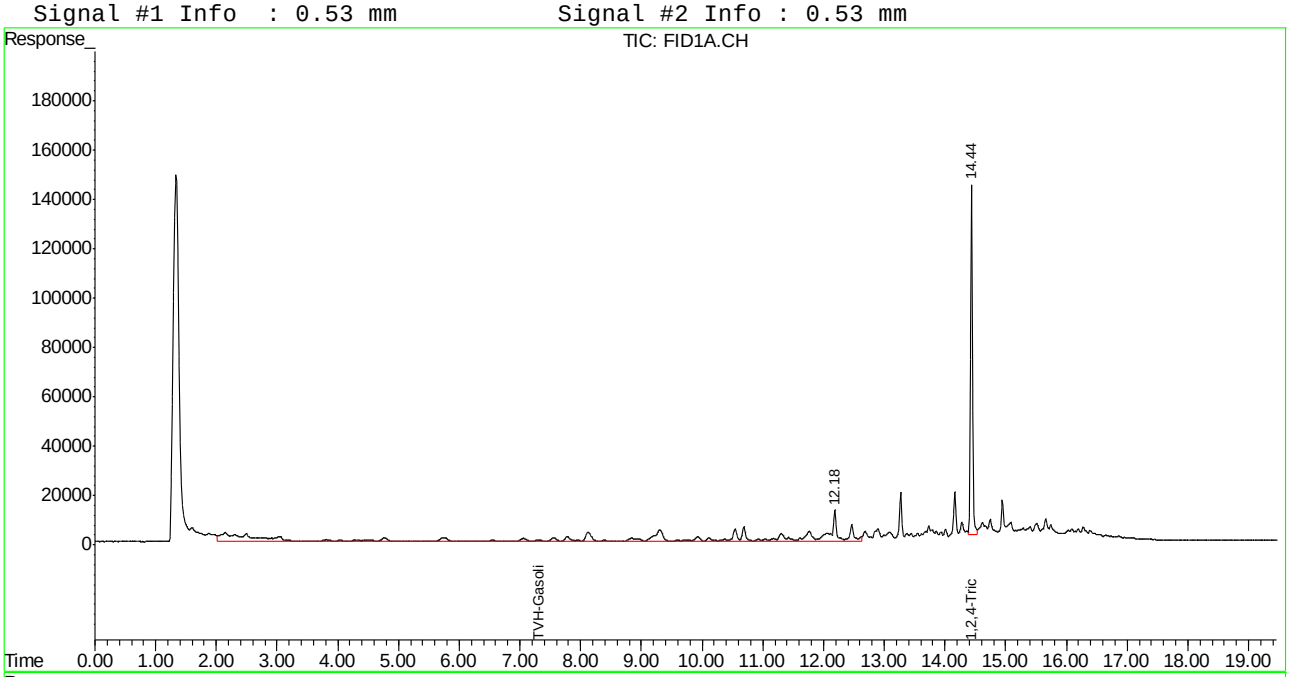
	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.44	3227974	97.101	%	m
10) S	1,2,4-Trichlorobenzene (P)	14.43	8506063	91.389	%	
	Target Compounds					
1) H	TVH-Gasoline	7.32	6324403	0.097	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L	d
5) T	Benzene	0.00	0	N.D.	ug/L	d
6) T	Toluene	7.77	173670	0.846	ug/L	
7) T	Ethylbenzene	0.00	0	N.D.	ug/L	d
8) T	m,p-Xylene	10.54	368037	1.766	ug/L	
9) T	o-Xylene	0.00	0	N.D.	ug/L	d
11) T	Naphthalene	14.62	104299	0.934	ug/L	m

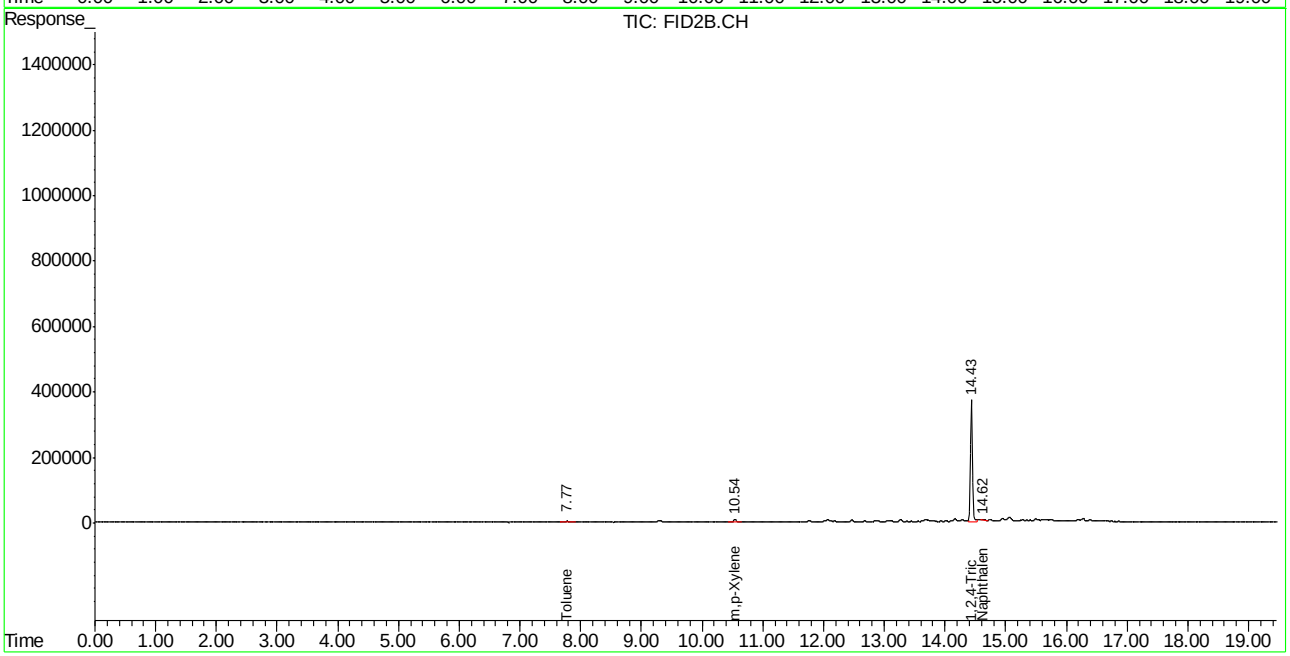
Quantitation Report (QT Reviewed)

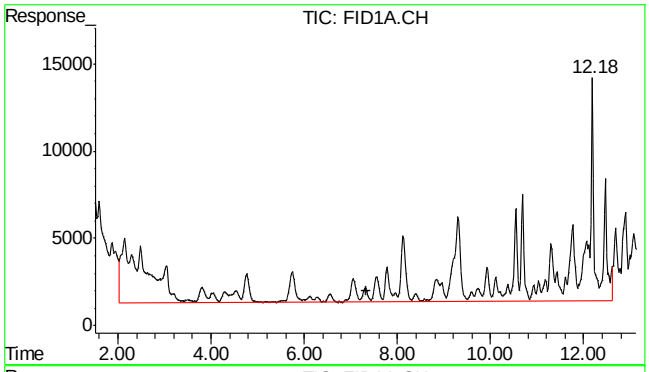
Signal #1 : Y:\1\DATA\031714\GB24098.D\FID1A.CH Vial: 16
Signal #2 : Y:\1\DATA\031714\GB24098.D\FID2B.CH
Acq On : 18 Mar 2014 12:55 am Operator: ALEXR
Sample : D55961-1 Inst : GC/MS Ins
Misc : GC4272,GGB1323,5.054,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Mar 18 11:24 2014 Quant Results File: TB1310GB1310SOIL.RES

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

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

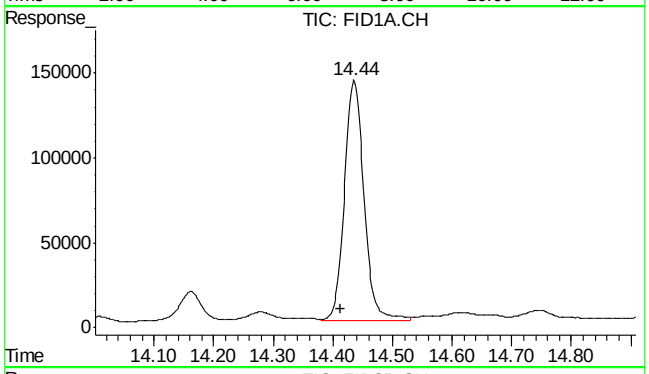






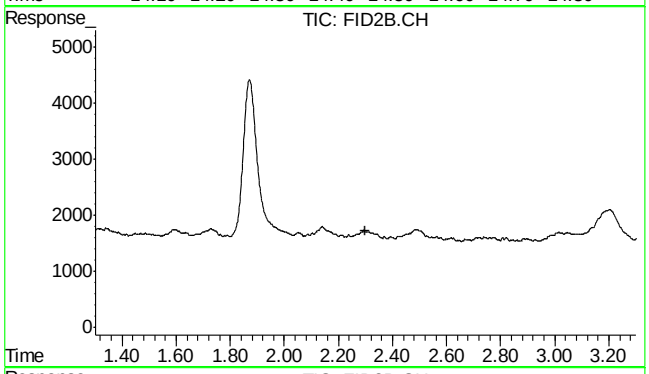
#1 TVH-Gasoline

R.T.: 7.320 min
Delta R.T.: 0.000 min
Response: 6324403
Conc: 0.10 mg/L m



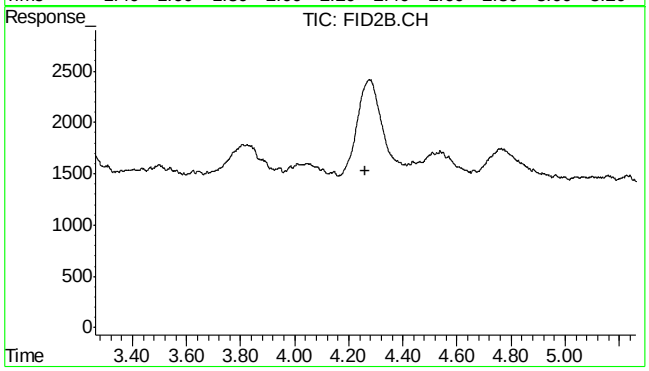
#2 1,2,4-Trichlorobenzene

R.T.: 14.435 min
Delta R.T.: 0.022 min
Response: 3227974
Conc: 97.10 % m



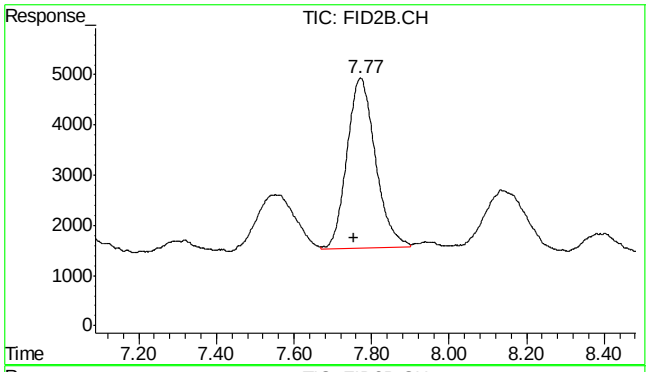
#4 Methyl-t-butyl-ether

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



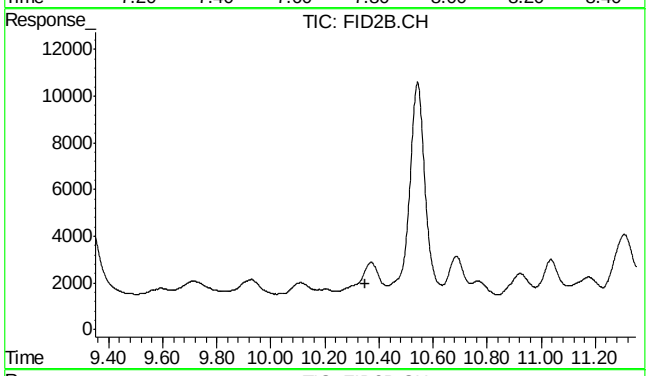
#5 Benzene

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



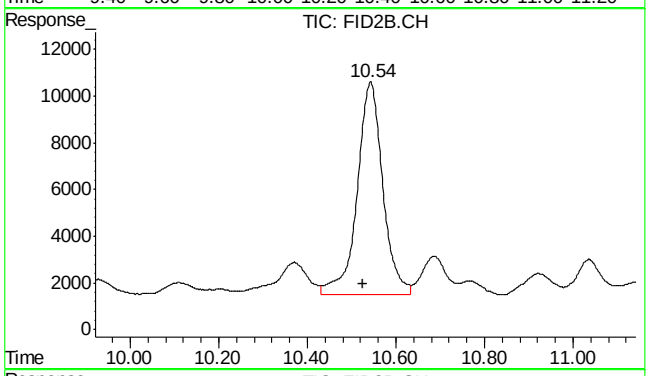
#6 Toluene

R.T.: 7.772 min
Delta R.T.: 0.017 min
Response: 173670
Conc: 0.85 ug/L



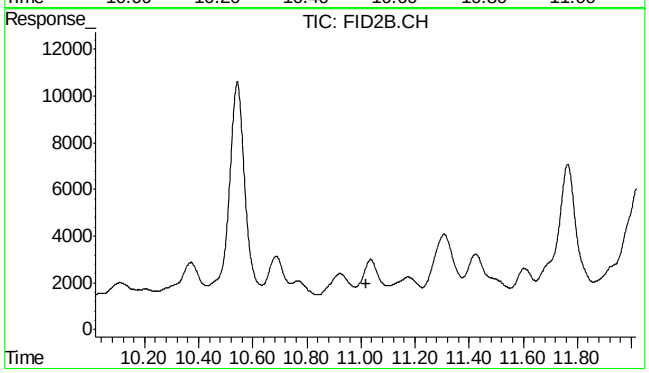
#7 Ethylbenzene

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



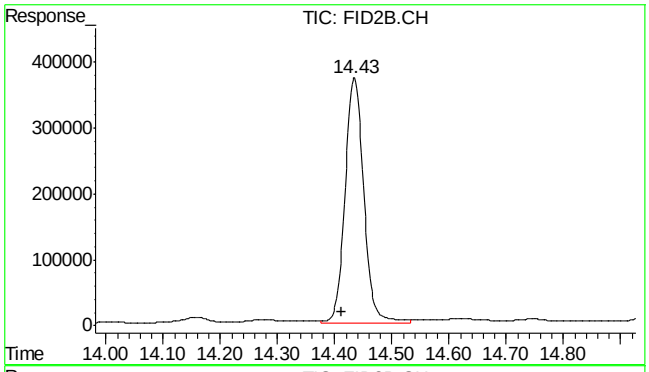
#8 m,p-Xylene

R.T.: 10.543 min
Delta R.T.: 0.017 min
Response: 368037
Conc: 1.77 ug/L



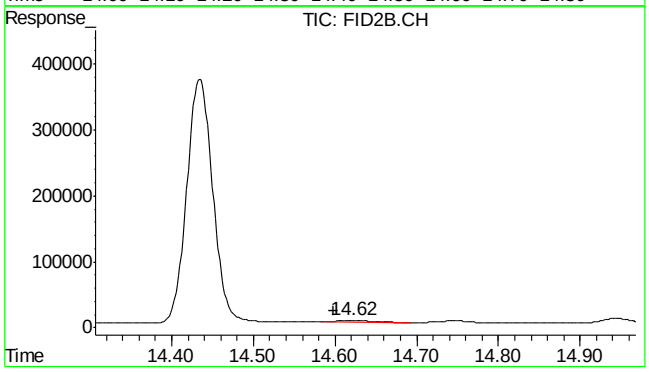
#9 o-Xylene

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



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

R.T.: 14.435 min
Delta R.T.: 0.023 min
Response: 8506063
Conc: 91.39 %



#11 Naphthalene

R.T.: 14.620 min
Delta R.T.: 0.022 min
Response: 104299
Conc: 0.93 ug/L m

Manual Integrations APPROVED (compounds with "m" flag)
Judy Melson 03/18/14 11:48

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\031714\GB24086.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\031714\GB24086.D\FID2B.CH
Acq On : 17 Mar 2014 5:49 pm Operator: ALEXR
Sample : MB, S Inst : GC/MS Ins
Misc : GC4272,GGB1323,5.010,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Mar 18 09:21:30 2014 Quant Results File: TB1310GB1310SOIL.RES

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

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

	Compound	R.T.	Response	Conc	Units	
	System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.42	3361041	101.104	%	m
10) S	1,2,4-Trichlorobenzene (P)	14.42	8728329	93.777	%	m
	Target Compounds					
1) H	TVH-Gasoline	7.32	2254697	0.035	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L	d
5) T	Benzene	0.00	0	N.D.	ug/L	d
6) T	Toluene	0.00	0	N.D.	ug/L	d
7) T	Ethylbenzene	0.00	0	N.D.	ug/L	d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L	d
9) T	o-Xylene	0.00	0	N.D.	ug/L	d
11) T	Naphthalene	0.00	0	N.D.	ug/L	d

11.2.1
11

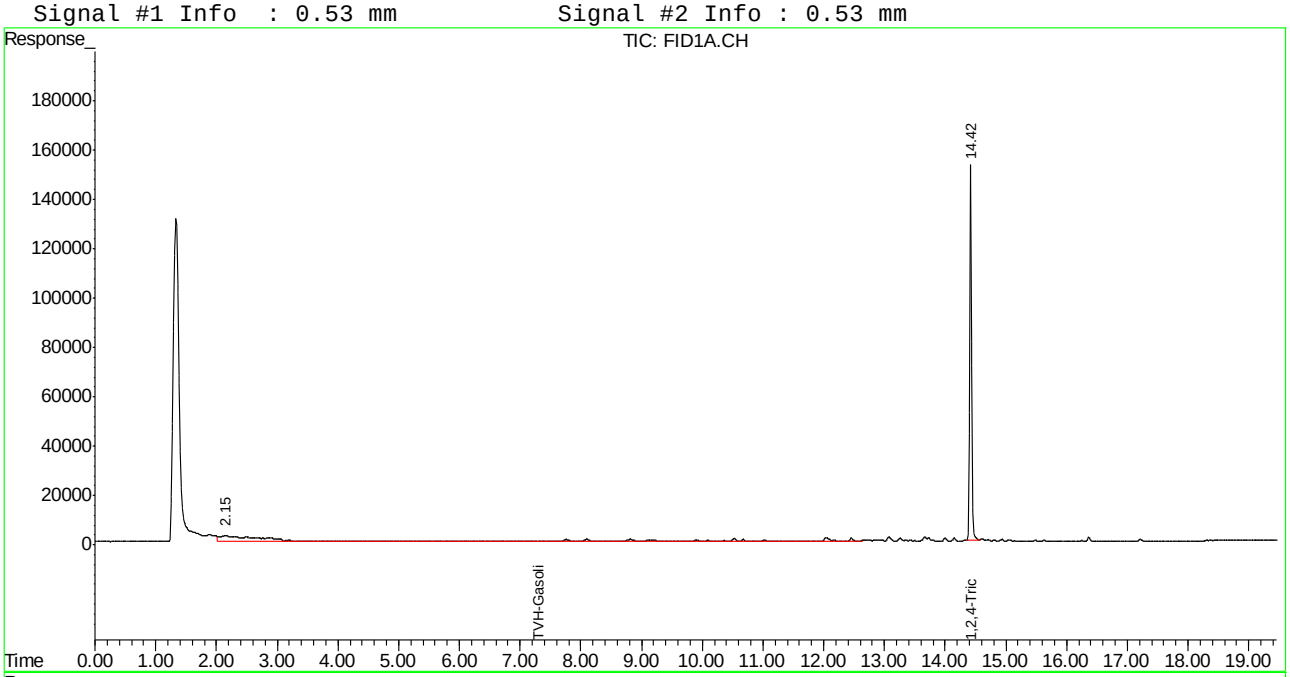
(f)=RT Delta > 1/2 Window (m)=manual int.
GB24086.D TB1310GB1310SOIL.M Tue Mar 18 10:40:27 2014 GC Page 1

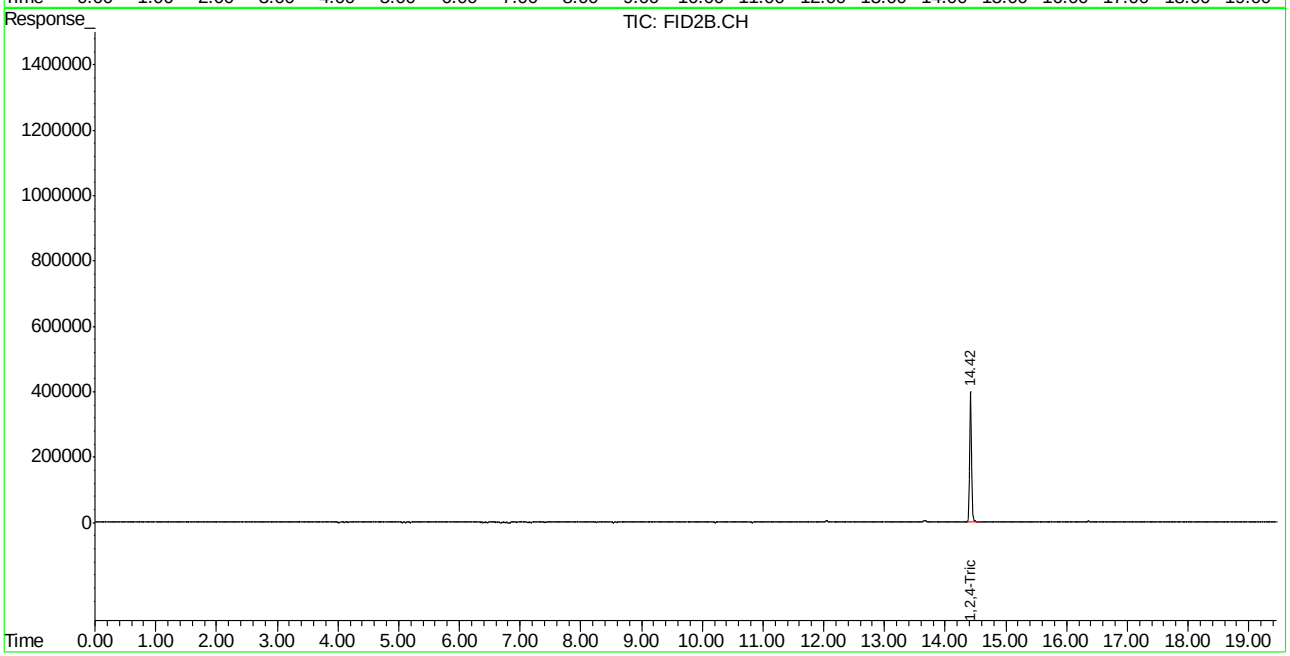
Quantitation Report (QT Reviewed)

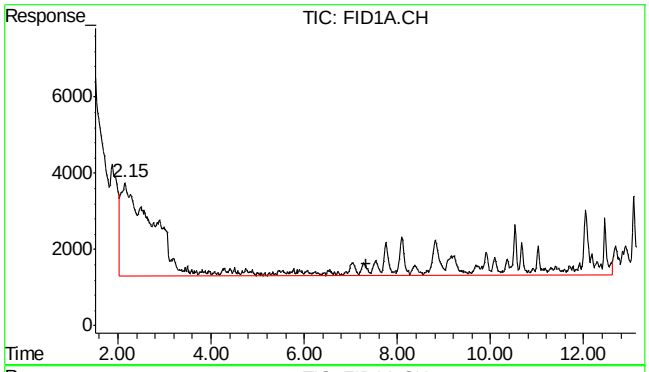
Signal #1 : Y:\1\DATA\031714\GB24086.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\031714\GB24086.D\FID2B.CH
Acq On : 17 Mar 2014 5:49 pm Operator: ALEXR
Sample : MB, S Inst : GC/MS Ins
Misc : GC4272,GGB1323,5.010,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Mar 18 10:51 2014 Quant Results File: TB1310GB1310SOIL.RES

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

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

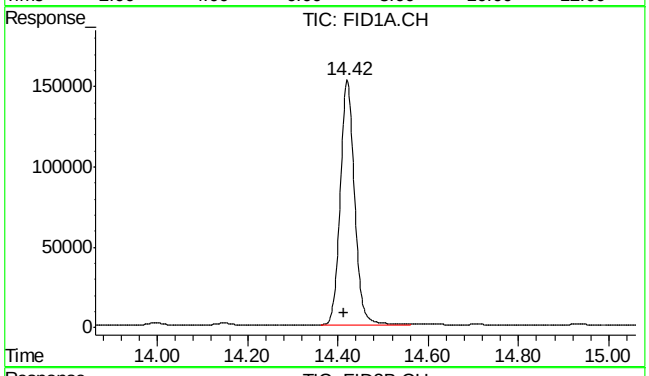






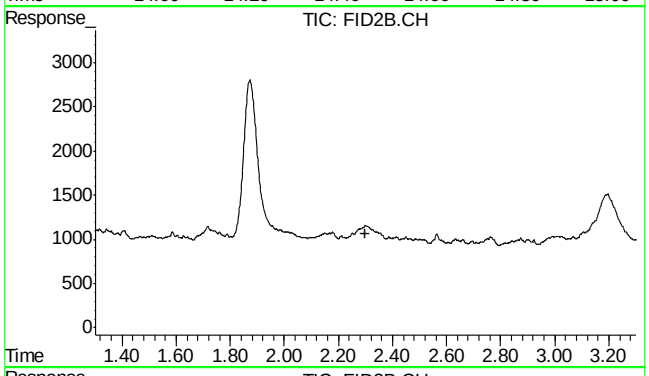
#1 TVH-Gasoline

R.T.: 7.320 min
Delta R.T.: 0.000 min
Response: 2254697
Conc: 0.03 mg/L m



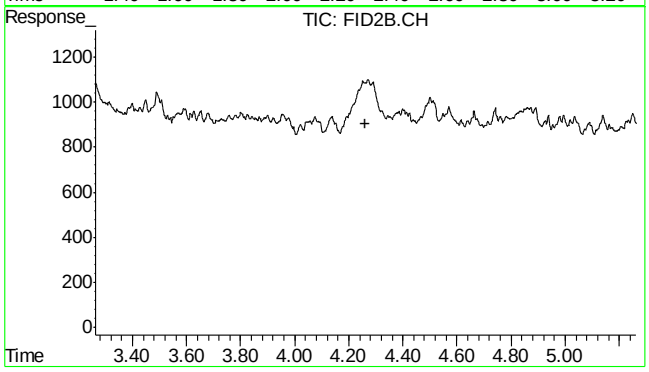
#2 1,2,4-Trichlorobenzene

R.T.: 14.420 min
Delta R.T.: 0.007 min
Response: 3361041
Conc: 101.10 % m



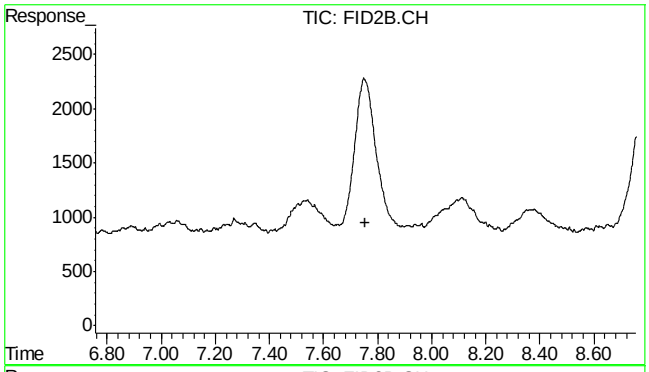
#4 Methyl-t-butyl-ether

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



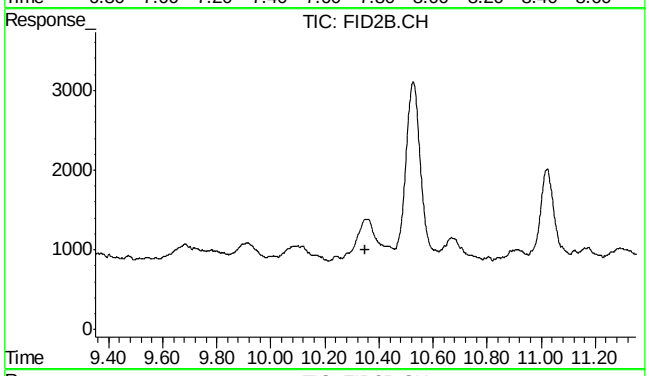
#5 Benzene

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



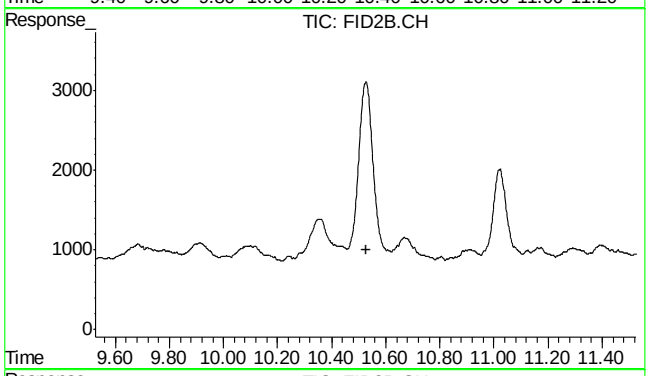
#6 Toluene

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



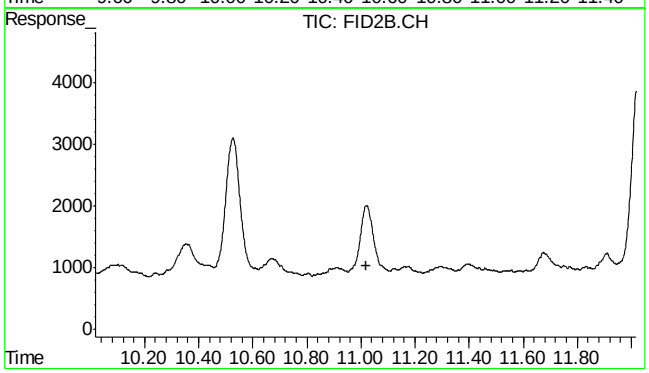
#7 Ethylbenzene

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



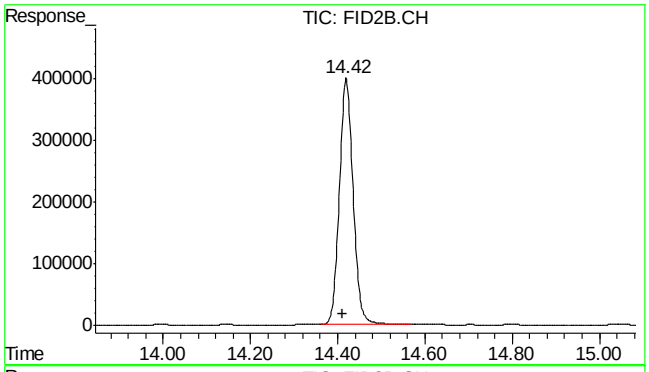
#8 m,p-Xylene

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



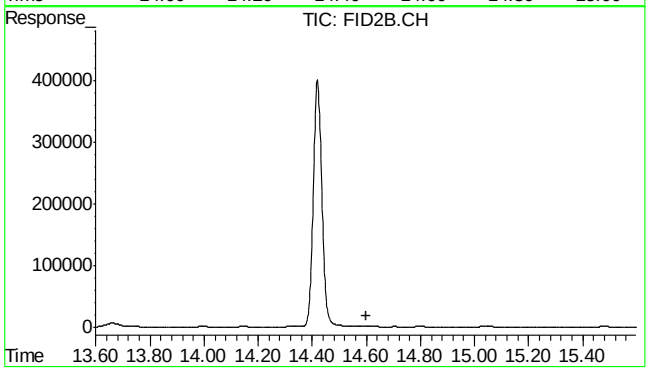
#9 o-Xylene

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



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

R.T.:	14.419 min
Delta R.T.:	0.007 min
Response:	8728329
Conc:	93.78 % m



#11 Naphthalene

R.T.:	0.000 min
Exp R.T. :	14.598 min
Response:	0
Conc:	N.D.

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: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9574-MB	FH019523.D	1	03/20/14	JJ	03/17/14	OP9574	GFH936

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

D55961-1

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	120%	20-130%

Blank Spike Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9574-BS	FH019525.D	1	03/20/14	JJ	03/17/14	OP9574	GFH936

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

D55961-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	167	118	71	42-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	113%	20-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D55961
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9574-MS	FH019527.D	1	03/20/14	JJ	03/17/14	OP9574	GFH936
OP9574-MSD	FH019529.D	1	03/20/14	JJ	03/17/14	OP9574	GFH936
D55973-12	FH019531.D	1	03/20/14	JJ	03/17/14	OP9574	GFH936

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

D55961-1

CAS No.	Compound	D55973-12 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		221	132	60	132	60	0	20-150/30

CAS No.	Surrogate Recoveries	MS	MSD	D55973-12	Limits
84-15-1	o-Terphenyl	68%	70%	82%	20-130%

* = Outside of Control Limits.

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

Raw Data

Manual Integrations APPROVED
(compounds with "m" flag)
Cooper Walsh
03/20/14 12:03

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031914\
Data File : FH019533.D
Signal(s) : FID1A.ch
Acq On : 20 Mar 2014 6:15 am
Operator : JENNJ1
Sample : D55961-1,2x
Misc : OP9574,GFH936,30.01,,,1,2
ALS Vial : 16 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 20 09:53:47 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH934F.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Mar 19 07:46:07 2014
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
4) s	o-Terphenyl	13.374	987146922	695.160	ug/mlm
	Target Compounds				
1) H	TPH-DRO (C10-C28)	10.948	2019005384	1525.412	ug/ml
2) H	TPH-DRO (C10-C32)	12.133	2712443759	2056.996	ug/ml
3)	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/ml

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

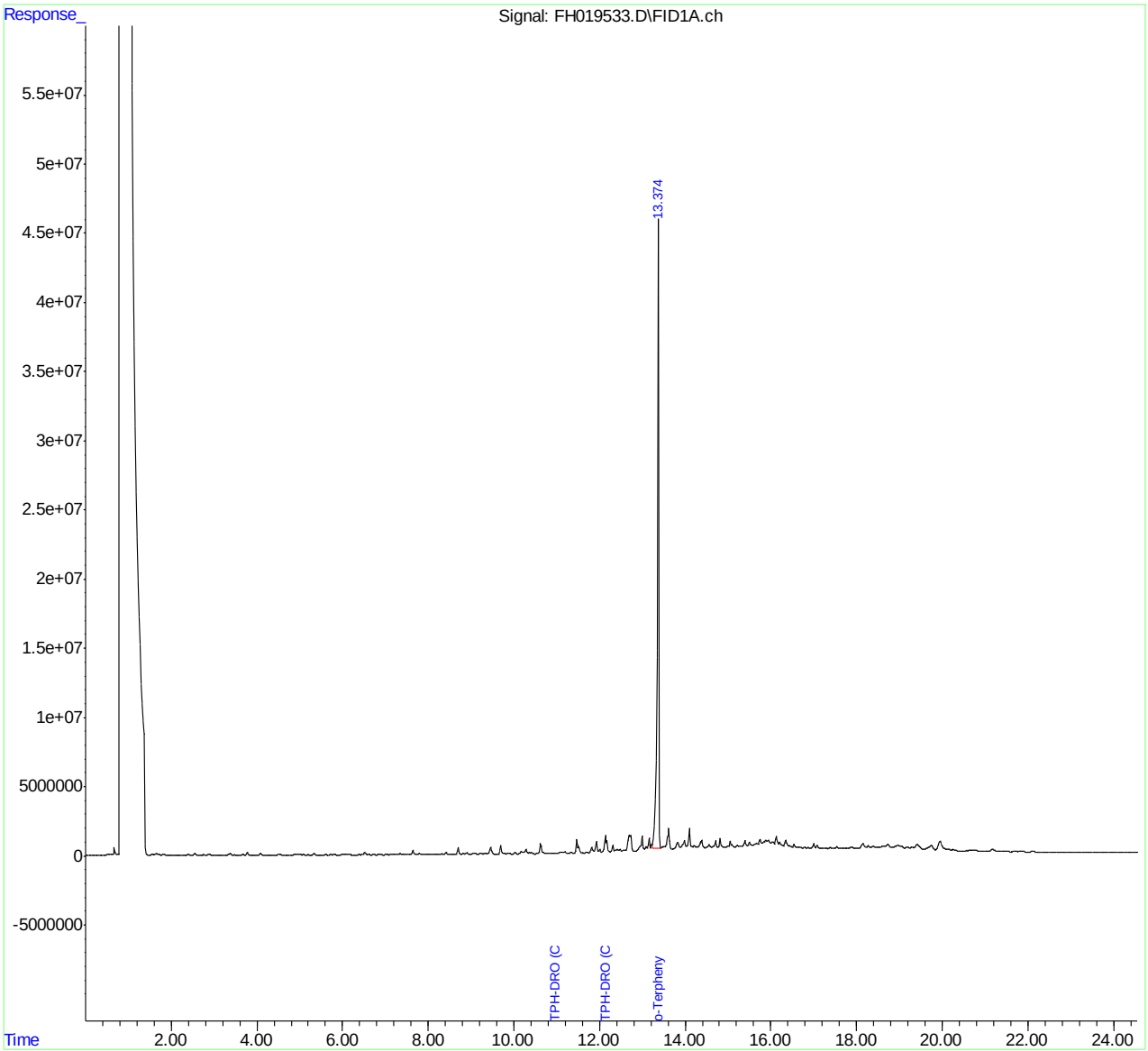
13.1.1
13

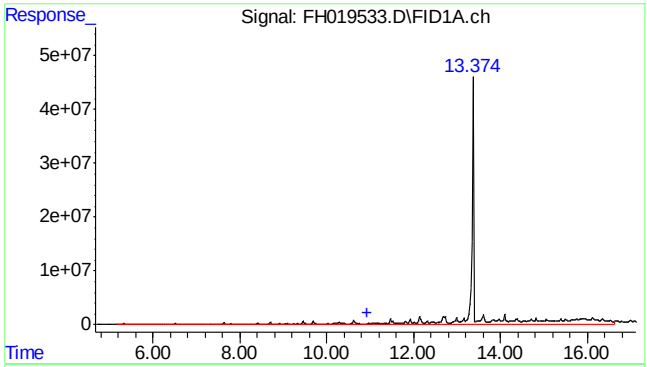
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031914\
Data File : FH019533.D
Signal(s) : FID1A.ch
Acq On : 20 Mar 2014 6:15 am
Operator : JENNJ1
Sample : D55961-1,2x
Misc : OP9574,GFH936,30.01,,,1,2
ALS Vial : 16 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 20 09:53:47 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH934F.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Mar 19 07:46:07 2014
Response via : Initial Calibration
Integrator: ChemStation

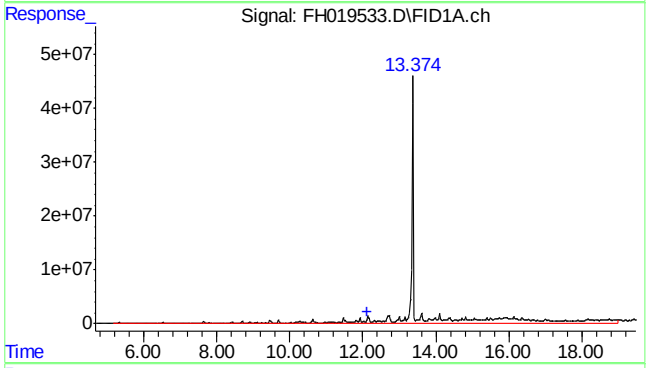
Volume Inj. :
Signal Phase :
Signal Info :





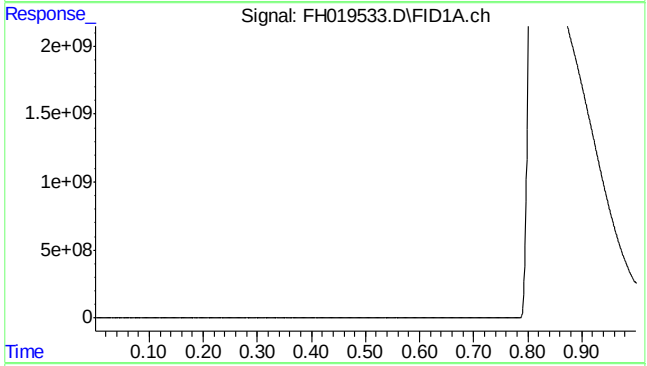
#1 TPH-DRO (C10-C28)

R.T.: 10.948 min
Delta R.T.: 0.000 min
Response: 2019005384
Conc: 1525.41 ug/ml m



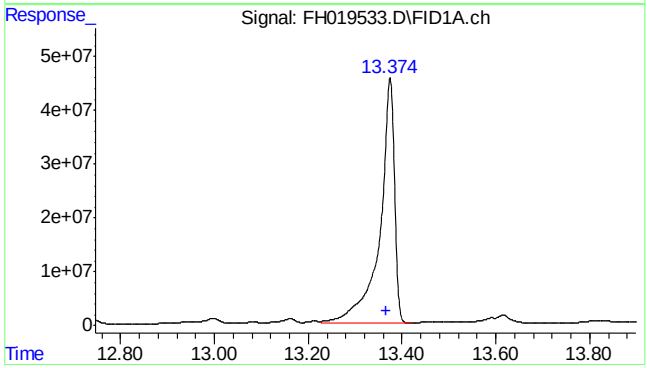
#2 TPH-DRO (C10-C32)

R.T.: 12.133 min
Delta R.T.: 0.000 min
Response: 2712443759
Conc: 2057.00 ug/ml m



#3 TPH-ORO (>C28-C40)

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



#4 o-Terphenyl

R.T.: 13.374 min
Delta R.T.: 0.008 min
Response: 987146922
Conc: 695.16 ug/ml m

Manual Integrations APPROVED (compounds with "m" flag)
Cooper Walsh 03/20/14 12:03

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031914\
Data File : FH019523.D
Signal(s) : FID1A.ch
Acq On : 20 Mar 2014 3:21 am
Operator : JENNJ1
Sample : OP9574-MB
Misc : OP9574,GFH936,30.00,,,1,1
ALS Vial : 11 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 20 09:47:12 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH934F.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Mar 19 07:46:07 2014
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
	System Monitoring Compounds				
4) s	o-Terphenyl	13.388	2433153541	2391.084	ug/mlm
	Target Compounds				
1) H	TPH-DRO (C10-C28)	10.948	129402861	97.053	ug/ml
2) H	TPH-DRO (C10-C32)	12.133	270847364	203.484	ug/ml
3)	TPH-ORO (>C28-C40)	0.000	0	N.D.	ug/ml

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

13.2.1
13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH031914\
Data File : FH019523.D
Signal(s) : FID1A.ch
Acq On : 20 Mar 2014 3:21 am
Operator : JENNJ1
Sample : OP9574-MB
Misc : OP9574,GFH936,30.00,,,1,1
ALS Vial : 11 Sample Multiplier: 1

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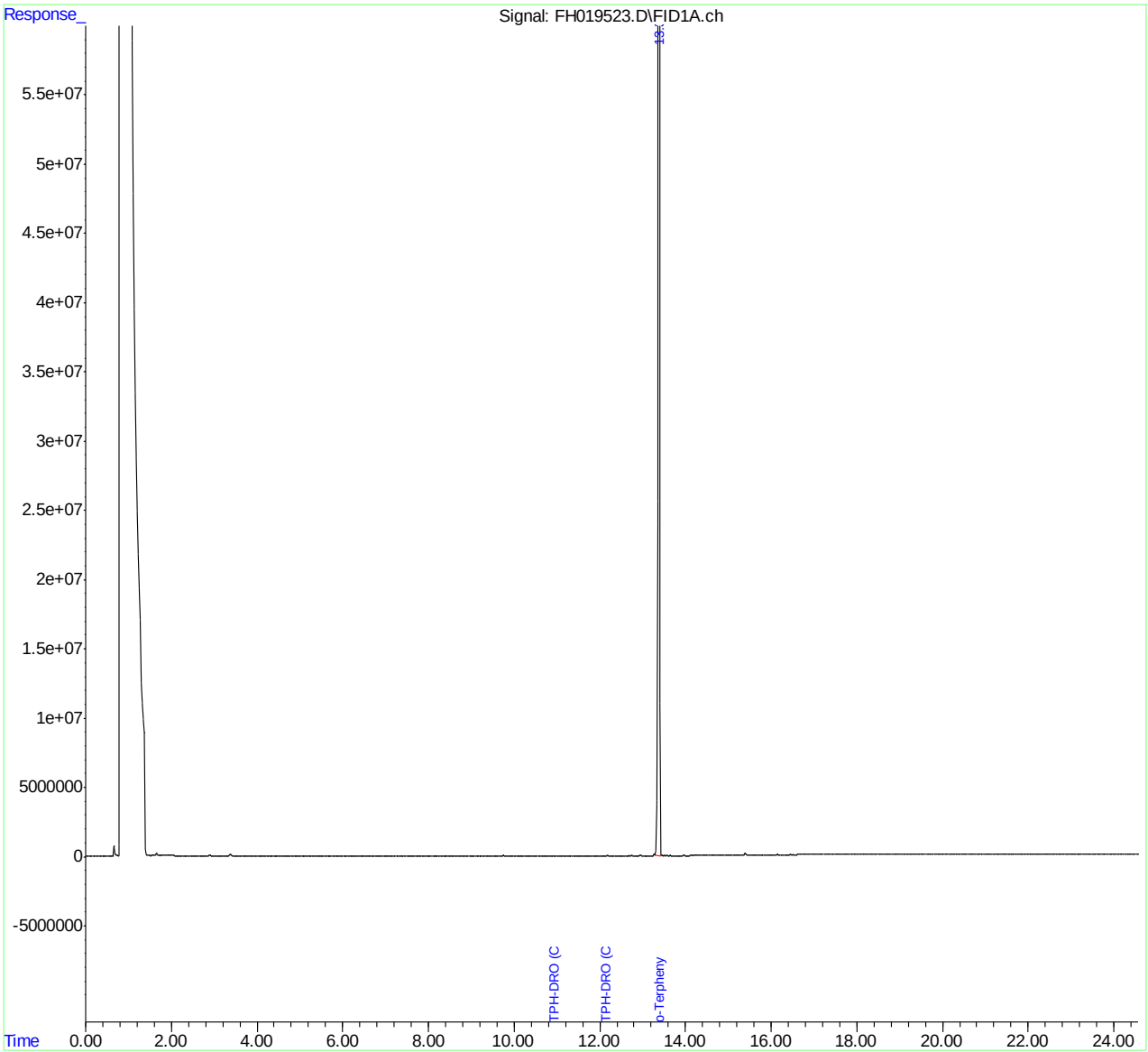
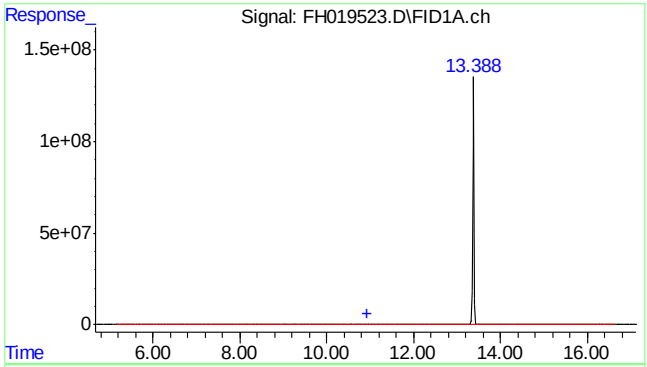
Quant Method : C:\msdchem\1\METHODS\DRO-GFH934F.M
Quant Title : DRO-ORO FRONT
QLast Update : Wed Mar 19 07:46:07 2014
Response via : Initial Calibration
Integrator: ChemStation

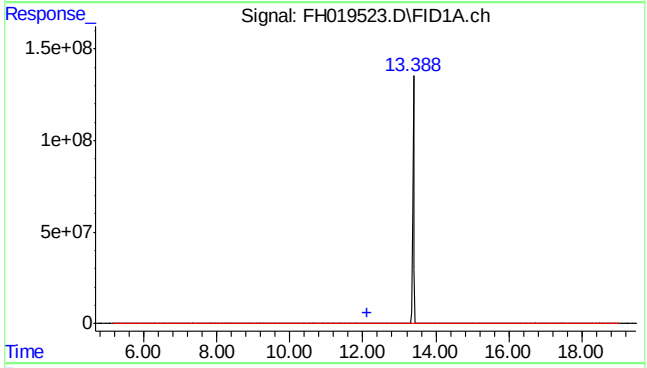
Volume Inj. :
Signal Phase :
Signal Info :





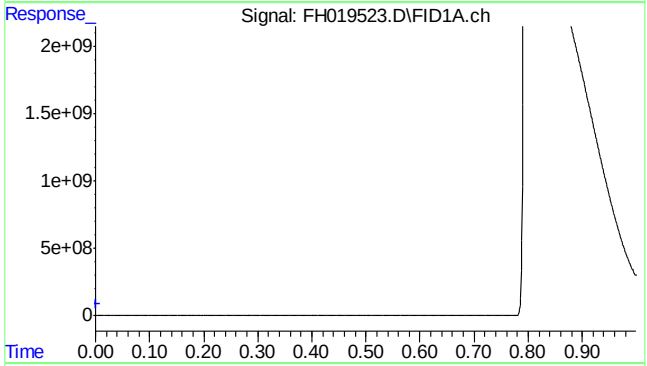
#1 TPH-DRO (C10-C28)

R.T.: 10.948 min
Delta R.T.: 0.000 min
Response: 129402861
Conc: 97.05 ug/ml m



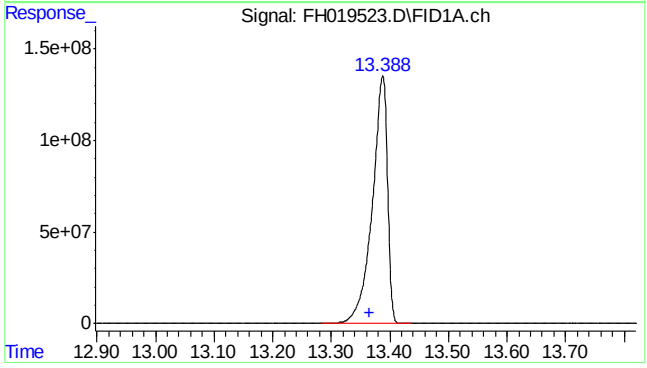
#2 TPH-DRO (C10-C32)

R.T.: 12.133 min
Delta R.T.: 0.000 min
Response: 270847364
Conc: 203.48 ug/ml m



#3 TPH-ORO (>C28-C40)

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



#4 o-Terphenyl

R.T.: 13.388 min
Delta R.T.: 0.022 min
Response: 2433153541
Conc: 2391.08 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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.86	1.8		
Antimony	3.0	.32	.5		
Arsenic	2.5	.52	.63		
Barium	1.0	.14	.36	0.070	<1.0
Beryllium	1.0	.08	.06		
Boron	5.0	.67	.16		
Cadmium	1.0	.04	.28	0.0	<1.0
Calcium	40	.22	6.8		
Chromium	1.0	.04	.03	-0.010	<1.0
Cobalt	0.50	.04	.039		
Copper	1.0	.12	.13	-0.31	<1.0
Iron	7.0	.22	1.8		
Lead	5.0	.36	.25	0.26	<5.0
Lithium	0.50	.19	.13		
Magnesium	20	1.4	1.8		
Manganese	0.50	.001	.038		
Molybdenum	1.0	.08	.13		
Nickel	3.0	.09	.07	-0.12	<3.0
Phosphorus	10	1.5	1.2		
Potassium	200	13	12		
Selenium	5.0	.88	1.1	0.69	<5.0
Silicon	5.0	.52	1.1		
Silver	3.0	.04	.05	-0.010	<3.0
Sodium	40	.49	3.7		
Strontium	5.0	.001	.022		
Thallium	1.0	.29	.46		
Tin	5.0	1.3	2.3		
Titanium	1.0	.015	.46		
Uranium	5.0	.37	.31		
Vanadium	1.0	.04	.043		
Zinc	3.0	.06	.16	0.88	<3.0

Associated samples MP12498: D55961-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	RL	IDL	MDL	MB raw	final

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	D55961-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	7440	7170	228	-118.0(a	75-125
Beryllium					
Boron					
Cadmium	0.0	47.9	57	83.0	75-125
Calcium					
Chromium	26.1	71.0	57	84.8	75-125
Cobalt					
Copper	15.7	70.2	57	96.2	75-125
Iron					
Lead	12.3	107	114	80.7	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	15.5	63.1	57	83.4	75-125
Phosphorus					
Potassium					
Selenium	2.1	109	114	93.7	75-125
Silicon					
Silver	0.0	19.5	22.8	85.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	42.9	83.6	57	73.8N(b)	75-125

Associated samples MP12498: D55961-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	D55961-1 Original MS	Spikelot ICPALL2 % Rec	QC Limits

(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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	D55961-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	7440	7180	237	-109.0(a	-0.1	20
Beryllium						
Boron						
Cadmium	0.0	50.7	59.3	84.5	5.7	20
Calcium						
Chromium	26.1	72.3	59.3	83.7	1.8	20
Cobalt						
Copper	15.7	66.6	59.3	86.4	5.3	20
Iron						
Lead	12.3	112	119	81.8	4.6	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	15.5	64.2	59.3	82.1	1.7	20
Phosphorus						
Potassium						
Selenium	2.1	115	119	95.1	5.4	20
Silicon						
Silver	0.0	20.7	23.7	87.2	6.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	42.9	85.8	59.3	74.6N(b)	2.6	20

Associated samples MP12498: D55961-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date: 03/15/14

Metal	D55961-1 Original MSD	Spikelot ICPALL2 % Rec	MSD RPD	QC Limit

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	198	200	99.0	80-120
Beryllium				
Boron				
Cadmium	47.2	50	94.4	80-120
Calcium				
Chromium	49.1	50	98.2	80-120
Cobalt				
Copper	46.9	50	93.8	80-120
Iron				
Lead	96.9	100	96.9	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	49.0	50	98.0	80-120
Phosphorus				
Potassium				
Selenium	98.8	100	98.8	80-120
Silicon				
Silver	19.6	20	98.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.0	50	94.0	80-120

Associated samples MP12498: D55961-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/15/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/15/14

Metal	D55961-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	100000000069100		104.0*(a	0-10
Beryllium				
Boron				
Cadmium	4.80	2.00	58.3 (b)	0-10
Calcium				
Chromium	220	250	31.2*(a)	0-10
Cobalt				
Copper	132	141	8.7	0-10
Iron				
Lead	112	168	33.8 (b)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	152	151	15.3*(a)	0-10
Phosphorus				
Potassium				
Selenium	328	70.5	307.5(b)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	350	501	43.3*(a)	0-10

Associated samples MP12498: D55961-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12498 Methods: SW846 6010C
Matrix Type: SOLID Units: ug/l

Prep Date: 03/15/14

	D55961-1		QC
Metal	Original	SDL 1:5 %DIF	Limits

(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.
(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12499 Methods: SW846 6020A
Matrix Type: SOLID Units: mg/kg

Prep Date: 03/15/14

Metal	RL	IDL	MDL	MB raw	final
Arsenic	0.10	.0085	.024	-0.0061	<0.10

Associated samples MP12499: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12499
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 03/15/14

Metal	D55961-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Arsenic	7.7	128	114	105.4	75-125

Associated samples MP12499: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12499 Methods: SW846 6020A
Matrix Type: SOLID Units: mg/kg

Prep Date: 03/15/14

Metal	D55961-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Arsenic	7.7	133	119	105.6	3.8	20

Associated samples MP12499: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12499
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 03/15/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Arsenic	104	100	104.0	80-120

Associated samples MP12499: D55961-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12499
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 03/15/14

Metal	D55961-1 Original	SDL 5:25	%DIF	QC Limits
Arsenic	65.2	60.9	6.5	0-10

Associated samples MP12499: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	55	210		
Antimony	150	11	95		
Arsenic	130	19	28		
Barium	50	1	7		
Beryllium	50	4.5	6		
Boron	250	4	33		
Cadmium	50	1	1.8		
Calcium	2000	12	210	-0.50	<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	28.0	<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	803	<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 MP12524: D55961-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	RL	IDL	MDL	MB raw	final

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	D55961-1A Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	226000	352000	125000	100.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	3280	129000	125000	100.6	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	1170000	1250000	125000	64.0 (a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP12524: D55961-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	D55961-1A Original MS	Spikelot ICPALL2	% Rec	QC Limits

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	D55961-1A Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	226000	355000	125000	103.2	0.8	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	3280	129000	125000	100.6	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	1170000	1270000	125000	80.0	1.6	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP12524: D55961-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	D55961-1A Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	131000	125000	104.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	126000	125000	100.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	129000	125000	103.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12524: D55961-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

Metal	D55961-1A Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	45200	46300	2.5	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	657	683	4.0	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	235000	243000	3.6	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12524: D55961-1A

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12524
Matrix Type: AQUEOUS

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

Prep Date: 03/18/14

	D55961-1A		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12526 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 03/19/14

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.008	-0.000040	<0.10

Associated samples MP12526: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12526
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 03/19/14

Metal	D55996-13 Original	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.030	0.34	0.324	95.7	75-125

Associated samples MP12526: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12526 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 03/19/14

Metal	D55996-13 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.030	0.36	0.334	98.8	5.7	20

Associated samples MP12526: D55961-1

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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP12526
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 03/19/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.39	0.4	97.5	80-120

Associated samples MP12526: D55961-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(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: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP12156/GN23994	1.0	0.0	mg/kg	141.5	129	91.2	80-120%
Specific Conductivity	GP12171/GN24015			umhos/cm	9995	10100	101.0	90-110%
pH	GN23996			su	8.00	8.03	100.4	99.3-100.7%

Associated Samples:
Batch GN23996: D55961-1
Batch GP12156: D55961-1
Batch GP12171: D55961-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

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

Associated Samples:
Batch GN23993: D55961-1
Batch GP12156: D55961-1
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

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

Associated Samples:
Batch GP12156: D55961-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D55961
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

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

Associated Samples:
Batch GP12156: D55961-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits