Mountain States ACCUTEST LABORATORIES

05/25/12

Technical Report for

XTO Energy

FRU 297-17A

1108-13A

Accutest Job Number: D34638

Sampling Date: 05/16/12

Report to:

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

Total number of pages in report: **157**

ACCREDITED IN ACCORDANCE WITH nelac

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

Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

Test results relate only to samples analyzed.

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

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Table of Contents

Sample Summary

XTO Energy

Job No: D34638

FRU 297-17A
Project No: 1108-13A

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D34638-1	05/16/12	08:45	DS	05/18/12	SO	Soil	RESERVE PIT SUBLINER
D34638-1A	05/16/12	08:45	DS	05/18/12	SO	Soil	RESERVE PIT SUBLINER

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	XTO Energy	**Job No**	D34638
Site:	FRU 297-17A	**Report Date**	5/25/2012 9:58:29 AM

On 05/18/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D34638 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:** V5V1308

- All samples were analyzed within the recommended method holding time.
- Sample(s) D34638-1MS, D34638-1MSD 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:** OP5918

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1MS, D34638-1MSD were used as the QC samples indicated.
- Sample(s) D34638-1 have surrogates outside control limits. Probable cause due to matrix interference.
- D34638-1 for 2-Fluorobiphenyl: Outside control limits due to matrix interference.

Volatiles by GC By Method SW846 8015B

Matrix SO **Batch ID:** GGB894

- All samples were analyzed within the recommended method holding time.
- Sample(s) D34664-1MS, D34664-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix SO **Batch ID:** OP5922

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D34713-4MS, D34713-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) OP5922-MS have surrogates outside control limits. Probable cause due to matrix interference.
- OP5922-MS for o-Terphenyl: Outside control limits due to possible matrix interference.

Metals By Method SW846 6010C

Matrix AQ **Batch ID:** MP7522

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1AMS, D34638-1AMSD were used as the QC samples for the metals analysis.

Matrix SO **Batch ID:** MP7504

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1MSD, D34638-1MS, D34638-1MSD, D34638-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Cadmium, Selenium, Barium, Copper, Lead are outside control limits for sample MP7504-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP7504-SD1 for Barium, Copper, and Lead: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO **Batch ID:** MP7505

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1MS, D34638-1MSD, D34638-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO **Batch ID:** MP7501

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34534-1MS, D34534-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO **Batch ID:** GN15042

- Sample(s) D34340-5DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO **Batch ID:** GN15029

- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO **Batch ID:** R12786

- The data for SW846 3060/7196A M meets quality control requirements.
- D34638-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO **Batch ID:** GP7264

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1DUP, D34638-1MS, D34638-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 9045C

Matrix	SO	Batch ID:	GN15040

- The following samples were run outside of holding time for method SW846 9045C: D34638-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix	SO	Batch ID:	MP7522

- D34638-1A 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.

Mountain States ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	RESERVE PIT SUBLINER		
Lab Sample ID:	D34638-1	**Date Sampled:**	05/16/12
Matrix:	SO - Soil	**Date Received:**	05/18/12
Method:	SW846 8260B	**Percent Solids:**	91.4
Project:	FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V21507.D	1	05/24/12	BD	n/a	n/a	V5V1308
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.08 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0442	0.059	0.022	mg/kg	J
108-88-3	Toluene	0.130	0.12	0.059	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.022	mg/kg	
1330-20-7	Xylene (total)	0.141	0.23	0.12	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	94%		61-130%
460-00-4	4-Bromofluorobenzene	96%		53-131%
17060-07-0	1,2-Dichloroethane-D4	91%		62-130%

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:	RESERVE PIT SUBLINER		
Lab Sample ID:	D34638-1	**Date Sampled:**	05/16/12
Matrix:	SO - Soil	**Date Received:**	05/18/12
Method:	SW846 8270C BY SIM SW846 3546	**Percent Solids:**	91.4
Project:	FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G09353.D	1	05/22/12	DC	05/20/12	OP5918	E3G407
Run #2	3G09358.D	4	05/22/12	DC	05/20/12	OP5918	E3G407

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0091	0.0047	mg/kg	
120-12-7	Anthracene	ND [a]	0.036	0.019	mg/kg	
56-55-3	Benzo(a)anthracene	0.0303 [a]	0.036	0.019	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.0091	0.0047	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0355	0.0091	0.0047	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.0184	0.0091	0.0047	mg/kg	
218-01-9	Chrysene	0.0576 [a]	0.036	0.019	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0091	0.0047	mg/kg	
206-44-0	Fluoranthene	0.0342 [a]	0.036	0.019	mg/kg	J
86-73-7	Fluorene	ND	0.0091	0.0047	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0160	0.0091	0.0047	mg/kg	
91-20-3	Naphthalene	0.0583	0.013	0.011	mg/kg	
129-00-0	Pyrene	0.0618 [a]	0.036	0.019	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%	75%	10-145%
321-60-8	2-Fluorobiphenyl	137% [b]	85%	10-130%
1718-51-0	Terphenyl-d14	127%	118%	22-130%

(a) Result is from Run# 2
(b) Outside control limits due to matrix interference.

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:	RESERVE PIT SUBLINER		
Lab Sample ID:	D34638-1	**Date Sampled:**	05/16/12
Matrix:	SO - Soil	**Date Received:**	05/18/12
Method:	SW846 8015B	**Percent Solids:**	91.4
Project:	FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB16063.D	1	05/19/12	SK	n/a	n/a	GGB894
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	5.9	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	84%		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:	RESERVE PIT SUBLINER		
Lab Sample ID:	D34638-1	**Date Sampled:**	05/16/12
Matrix:	SO - Soil	**Date Received:**	05/18/12
Method:	SW846-8015B SW846 3546	**Percent Solids:**	91.4
Project:	FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH004492.D	1	05/22/12	AW	05/21/12	OP5922	GFH247
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	664	15	9.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	72%		43-136%

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: RESERVE PIT SUBLINER
Lab Sample ID: D34638-1
Matrix: SO - Soil
Project: FRU 297-17A

Date Sampled: 05/16/12
Date Received: 05/18/12
Percent Solids: 91.4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	4.7	0.11	mg/kg	5	05/21/12	05/22/12	GJ	SW846 6020A [3]	SW846 3050B [6]
Barium	2740	5.5	mg/kg	5	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Cadmium	< 1.1	1.1	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Chromium	33.8	1.1	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Copper	11.1	1.1	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Lead	12.2	5.5	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Mercury	< 0.11	0.11	mg/kg	1	05/21/12	05/21/12	JB	SW846 7471B [1]	SW846 7471B [4]
Nickel	14.7	3.3	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Selenium	< 5.5	5.5	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Silver	< 3.3	3.3	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]
Zinc	41.3	3.3	mg/kg	1	05/21/12	05/21/12	JB	SW846 6010C [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA2442
(2) Instrument QC Batch: MA2443
(3) Instrument QC Batch: MA2447
(4) Prep QC Batch: MP7501
(5) Prep QC Batch: MP7504
(6) Prep QC Batch: MP7505

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RESERVE PIT SUBLINER		
Lab Sample ID:	D34638-1	**Date Sampled:**	05/16/12
Matrix:	SO - Soil	**Date Received:**	05/18/12
		Percent Solids:	91.4
Project:	FRU 297-17A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	05/22/12	CT	SW846 3060A/7196A
Chromium, Trivalent [a]	33.8	2.1	mg/kg	1	05/22/12	CT	SW846 3060/7196A M
Redox Potential Vs H2	338		mv	1	05/18/12	JD	ASTM D1498-76M
Solids, Percent	91.4		%	1	05/18/12	SWT	SM19 2540B M
Specific Conductivity	2950	1.0	umhos/cm	1	05/24/12	CJ	DEPT.OF AG, BOOK N9
pH	10.05		su	1	05/18/12 14:50	CT	SW846 9045C

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: RESERVE PIT SUBLINER
Lab Sample ID: D34638-1A
Matrix: SO - Soil
Project: FRU 297-17A

Date Sampled: 05/16/12
Date Received: 05/18/12
Percent Solids: 91.4

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	160	2.0	mg/l	1	05/23/12	05/23/12	JB	SW846 6010C [1]	EPA 200.7 [2]
Magnesium	13.5	1.0	mg/l	1	05/23/12	05/23/12	JB	SW846 6010C [1]	EPA 200.7 [2]
Sodium	591	2.0	mg/l	1	05/23/12	05/23/12	JB	SW846 6010C [1]	EPA 200.7 [2]

(1) Instrument QC Batch: MA2449
(2) Prep QC Batch: MP7522

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RESERVE PIT SUBLINER		
Lab Sample ID:	D34638-1A	**Date Sampled:**	05/16/12
Matrix:	SO - Soil	**Date Received:**	05/18/12
		Percent Solids:	91.4
Project:	FRU 297-17A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	12.0		ratio	1	05/23/12 12:30	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

PAGE ___ OF ___

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL. 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking # | Bottle Order Control #
Accutest Quote # | Accutest Job # D34638

Client / Reporting Information

Company Name: KRW Consulting
Street Address: 8000 W. 14th Ave. Ste 200
City State Zip: Lakewood CO 80214
Project Contact: Dwayne Knudson E-mail:
Phone #: 970-488-1098 Fax #:
Sampler(s) Name(s): David Sanders Phone #:

Project Information

Project Name: XTO FRU 297-17A
Street:
City:
Project#: 1108-13A
Client PO#:
Project Manager:

Billing Information (If different from Report to)

Company Name: XTO Energy
Street Address: 21459 CR5
City: Rifle State: CO Zip: 81650
Attention: Jessica Dooling PO#:

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	Table 910	LAB USE ONLY
	Reserve Pit Subliner		5-16-12	845	DS	SO	5										X	01

5/18/12

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [x] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 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)
- [ ] Commercial "B" +Narrative
- [ ] FULLT1 (Level 3+4)
- [ ] State Forms
- [ ] EDD Format
- [x] PDF

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Please email results 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		5/17/12	1	2		2 5/18 800
3			3	4		4
5			5			

Custody Seal # HD [x] Intact [ ] Not Intact | Preserved where applicable: [ ] N A | On Ice: X | Cooler Temp: 4.0

D34638: Chain of Custody
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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D34638 **Client:** KRW CONSULTING **Immediate Client Services Action Required:** No

Date / Time Received: 5/18/2012 8:00:00 AM **No. Coolers:** 1 **Client Service Action Required at Login:** No

Project: XTO FRU 297-17A **Airbill #'s:** HD

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

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

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

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

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

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

Comments

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

D34638: Chain of Custody
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Mountain States ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1308-MB	5V21505.D	1	05/24/12	BD	n/a	n/a	V5V1308

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

D34638-1

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	98%	61-130%
460-00-4	4-Bromofluorobenzene	91%	53-131%
17060-07-0	1,2-Dichloroethane-D4	93%	62-130%

Blank Spike Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1308-BS	5V21506.D	1	05/24/12	BD	n/a	n/a	V5V1308

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

D34638-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.7	99	70-130
100-41-4	Ethylbenzene	50	50.2	100	70-130
108-88-3	Toluene	50	49.1	98	70-130
1330-20-7	Xylene (total)	150	152	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	99%	61-130%
460-00-4	4-Bromofluorobenzene	103%	53-131%
17060-07-0	1,2-Dichloroethane-D4	92%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D34638-1MS	5V21508.D	1	05/24/12	BD	n/a	n/a	V5V1308
D34638-1MSD	5V21509.D	1	05/24/12	BD	n/a	n/a	V5V1308
D34638-1	5V21507.D	1	05/24/12	BD	n/a	n/a	V5V1308

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

D34638-1

CAS No.	Compound	D34638-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	44.2	J	2930	3740	126	2960	100	23	70-134/30
100-41-4	Ethylbenzene	ND		2930	3710	127	2990	102	21	70-137/30
108-88-3	Toluene	130		2930	3650	120	2960	97	21	70-130/30
1330-20-7	Xylene (total)	141	J	8790	11300	127	9200	103	20	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D34638-1	Limits
2037-26-5	Toluene-D8	112%	92%	94%	61-130%
460-00-4	4-Bromofluorobenzene	129%	106%	96%	53-131%
17060-07-0	1,2-Dichloroethane-D4	108%	88%	91%	62-130%

Mountain States ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5052412.S\
Data File : 5V21507.D
Acq On : 24 May 2012 10:46 pm
Operator : BRETD
Sample : D34638-1
Misc : MS3970,V5V1308,5.076,,100,5,1
ALS Vial : 29 Sample Multiplier: 1

Quant Time: May 25 04:46:20 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M
Quant Title : 8260
QLast Update : Thu May 24 17:48:23 2012
Response via : Initial Calibration

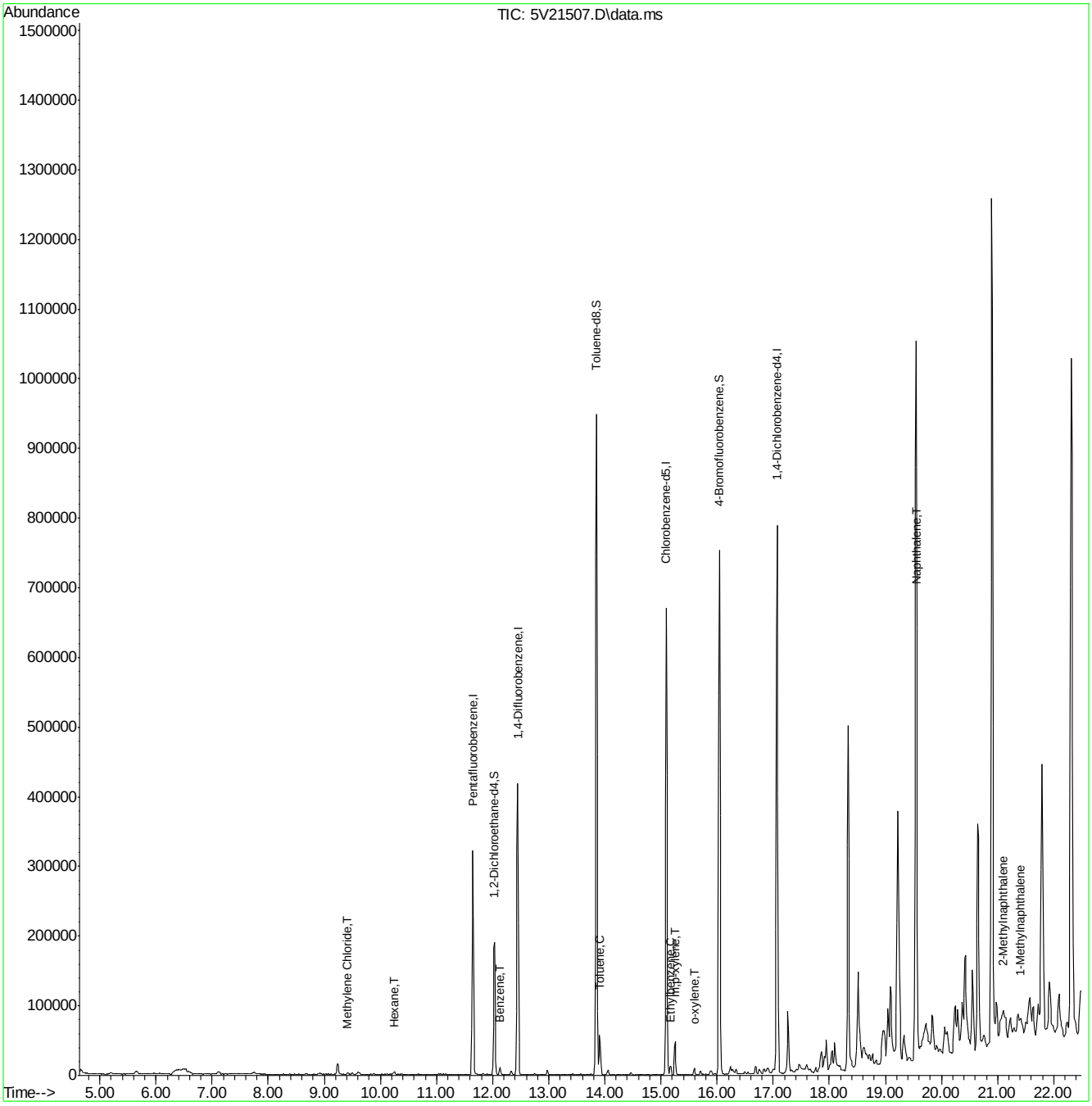
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	242904	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	361764	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	408531	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	266666	50.00	ug/l	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.035	102	33960	45.39	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 90.78%			
61) Toluene-d8	13.850	98	651740	47.20	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.40%			
69) 4-Bromofluorobenzene	16.043	95	271240	47.96	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.92%			
Target Compounds						Qvalue
17) Methylene Chloride	9.409	84	1280	0.32	ug/l #	82
41) Hexane	10.243	57	2154	0.43	ug/l	100
50) Benzene	12.127	78	11333	0.75	ug/l	100
62) Toluene	13.908	92	23597	2.22	ug/l	99
66) Ethylbenzene	15.163	91	4509	0.23	ug/l	95
72) m,p-xylene	15.255	106	16850	2.14	ug/l	99
73) o-xylene	15.597	106	1999	0.26	ug/l	86
91) Naphthalene	19.559	128	18169	1.91	ug/l	100
94) 2-Methylnaphthalene	21.100	142	23141	5.48	ug/l #	88
95) 1-Methylnaphthalene	21.397	142	15523	3.99	ug/l #	70

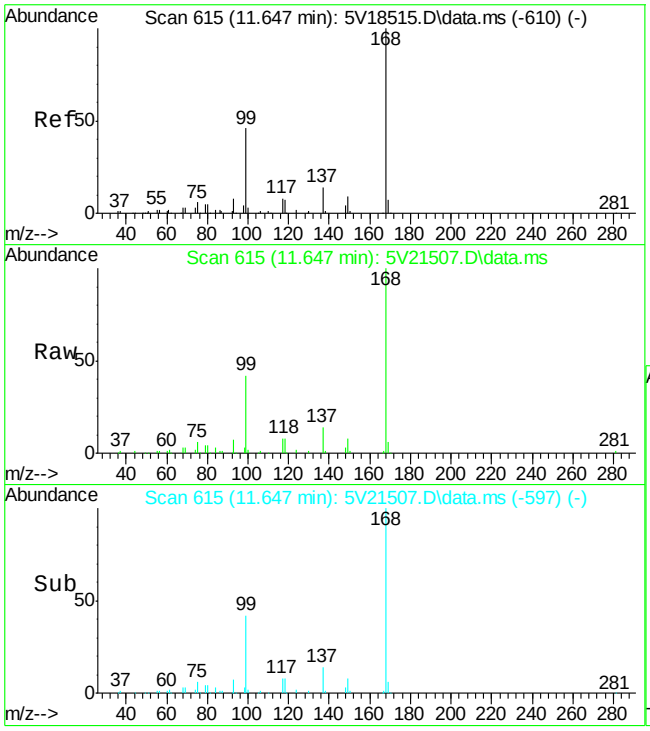
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5052412.S\
Data File : 5V21507.D
Acq On : 24 May 2012 10:46 pm
Operator : BRETD
Sample : D34638-1
Misc : MS3970,V5V1308,5.076,,100,5,1
ALS Vial : 29 Sample Multiplier: 1

Quant Time: May 25 04:46:20 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M
Quant Title : 8260
QLast Update : Thu May 24 17:48:23 2012
Response via : Initial Calibration

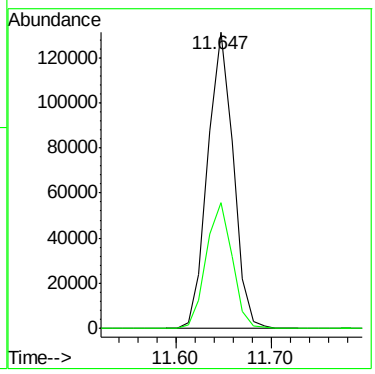


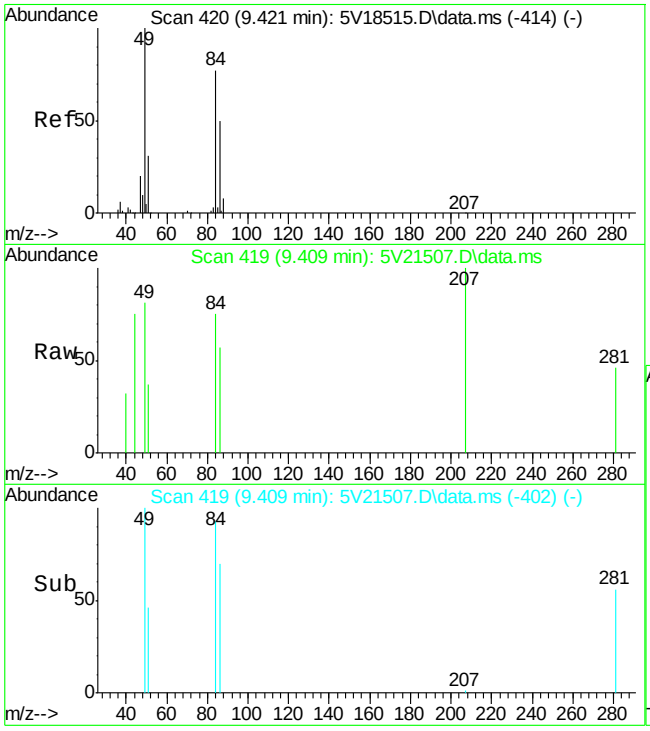


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.647 min Scan# 615
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:168 Resp: 242904

Ion	Ratio	Lower	Upper
168	100		
99	43.1	37.4	56.2

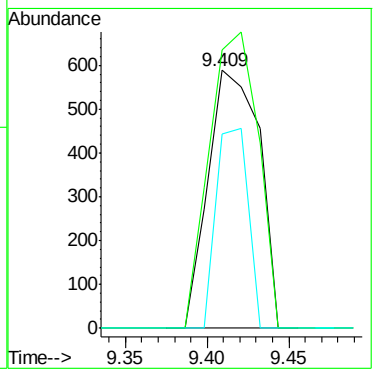


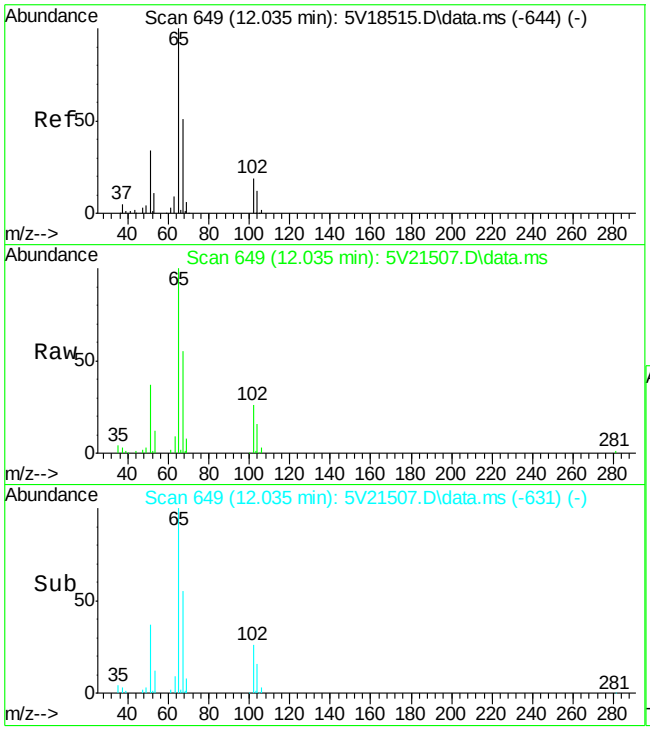


#17
Methylene Chloride
Concen: 0.32 ug/l
RT: 9.409 min Scan# 419
Delta R.T. -0.011 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion: 84 Resp: 1280

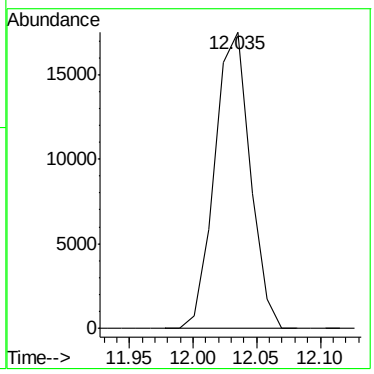
Ion	Ratio	Lower	Upper
84	100		
49	109.8	110.4	150.4#
86	48.2	44.0	84.0

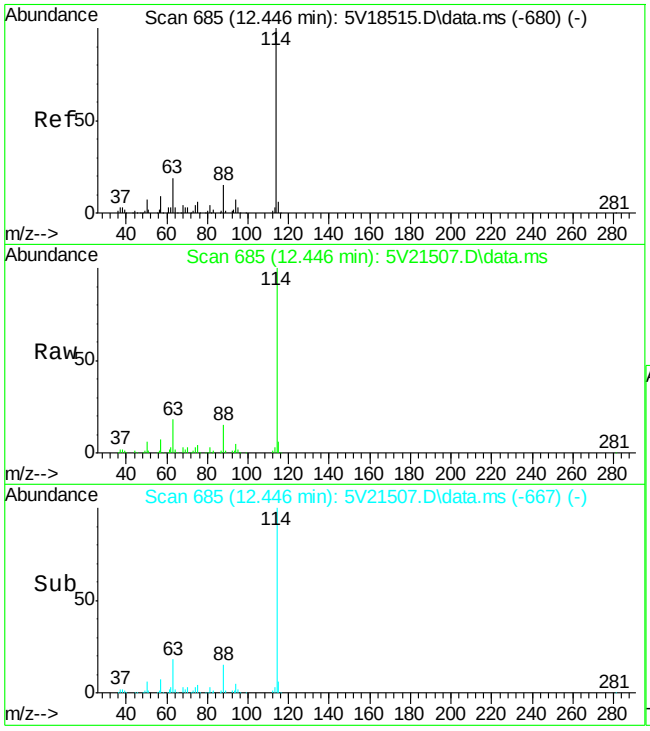




#33
1,2-Dichloroethane-d4
Concen: 45.39 ug/l
RT: 12.035 min Scan# 649
Delta R.T. 0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

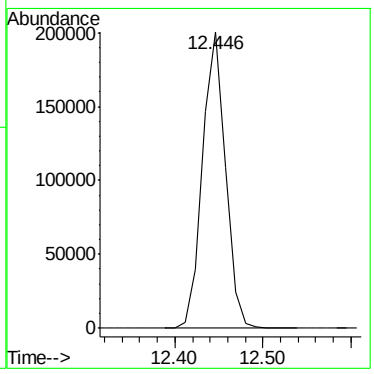
Tgt Ion:102 Resp: 33960

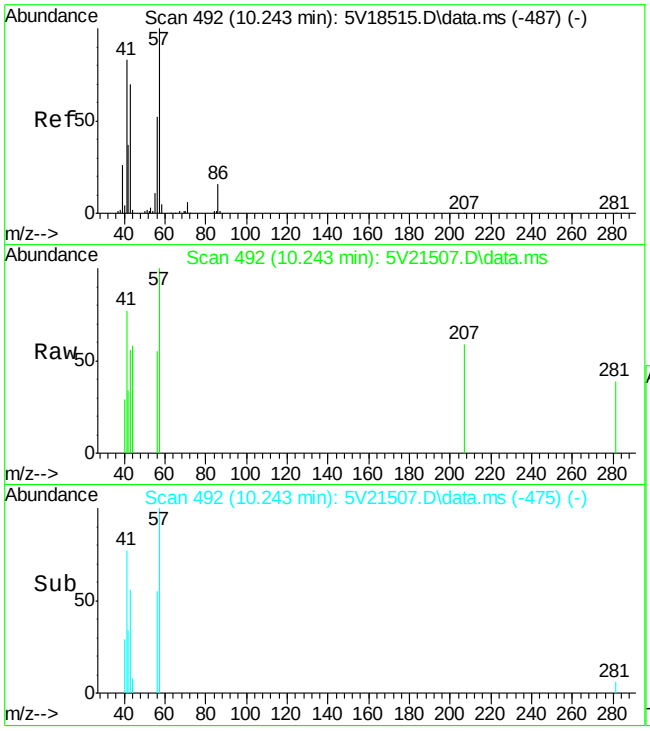




#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.446 min Scan# 685
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

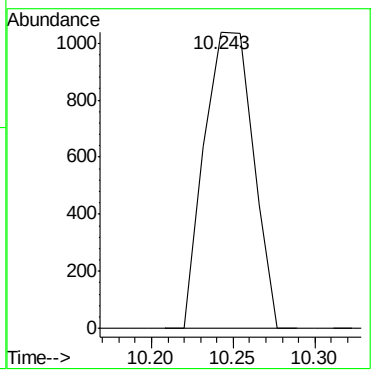
Tgt Ion:114 Resp: 361764

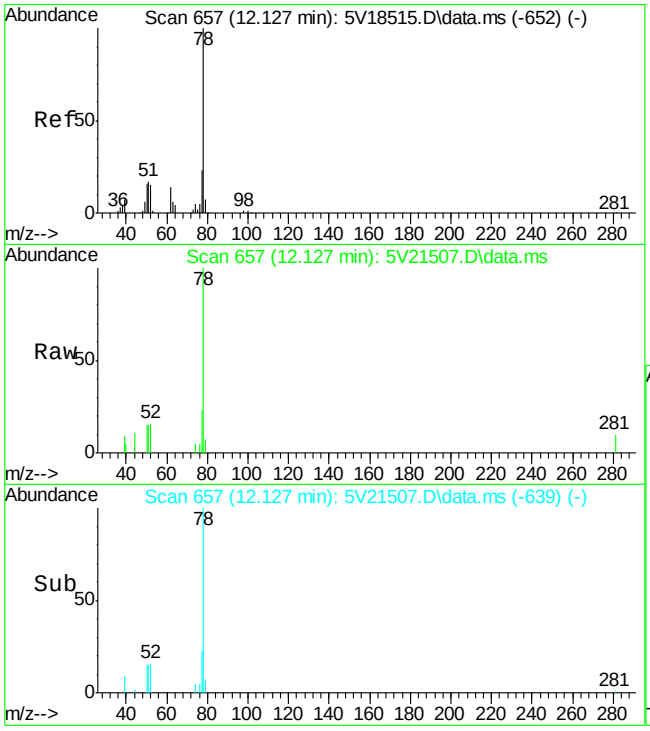




#41
Hexane
Concen: 0.43 ug/l
RT: 10.243 min Scan# 492
Delta R.T. -0.011 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

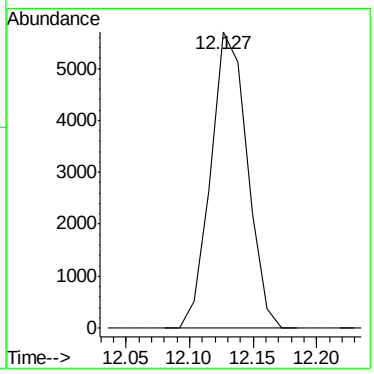
Tgt Ion: 57 Resp: 2154

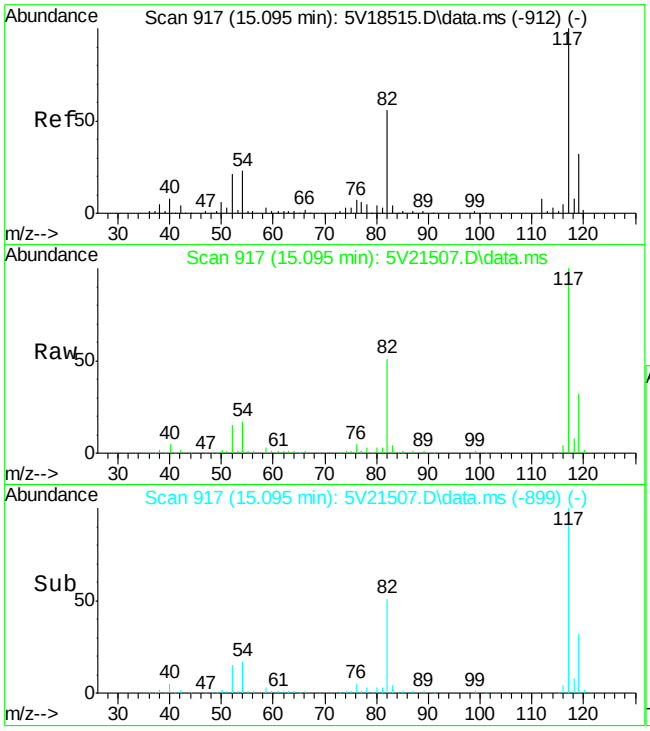




#50
Benzene
Concen: 0.75 ug/l
RT: 12.127 min Scan# 657
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

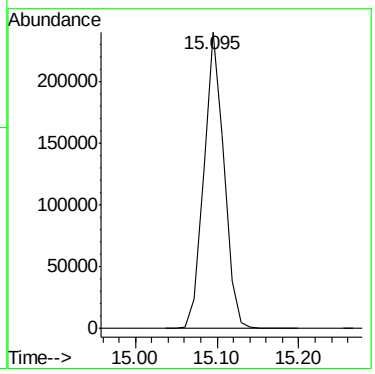
Tgt Ion: 78 Resp: 11333

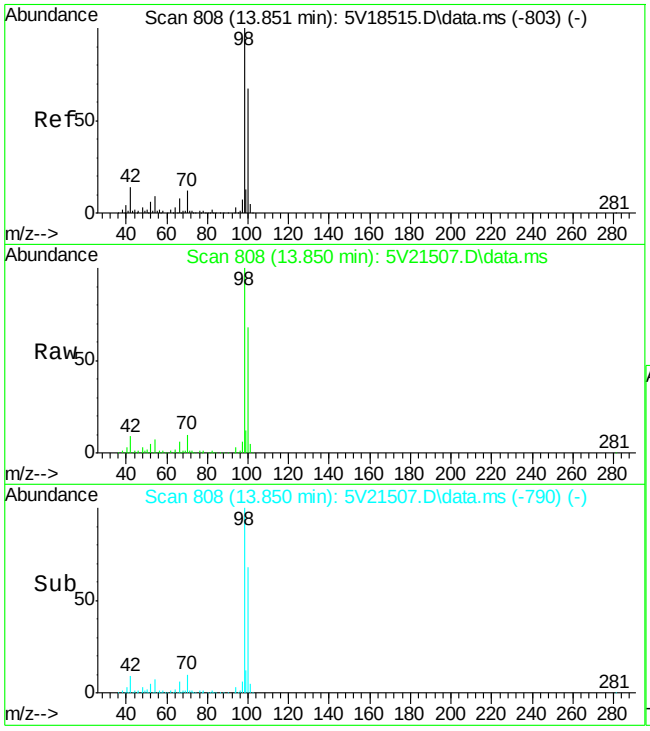




#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.095 min Scan# 917
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

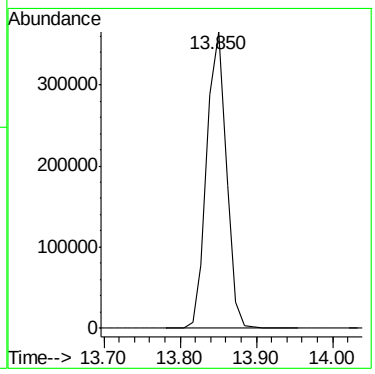
Tgt Ion:117 Resp: 408531

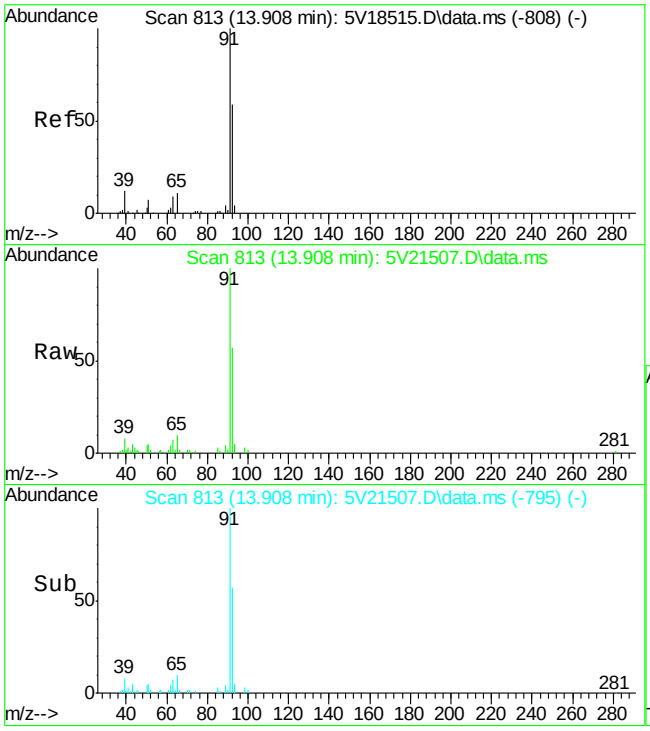




#61
Toluene-d8
Concen: 47.20 ug/l
RT: 13.850 min Scan# 808
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion: 98 Resp: 651740

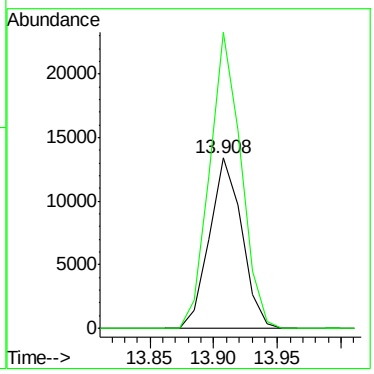


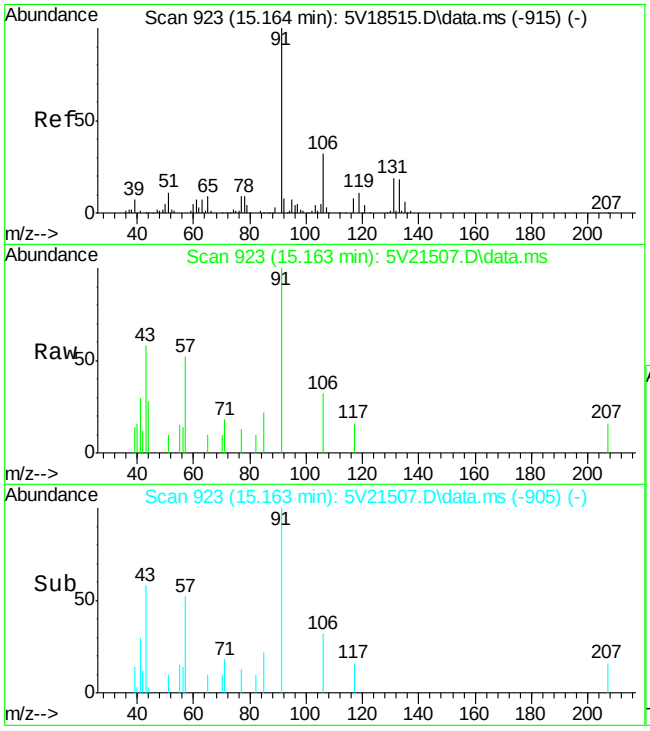


#62
Toluene
Concen: 2.22 ug/l
RT: 13.908 min Scan# 813
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion: 92 Resp: 23597

Ion	Ratio	Lower	Upper
92	100		
91	168.8	149.8	189.8

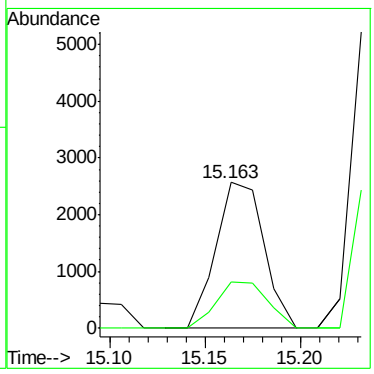


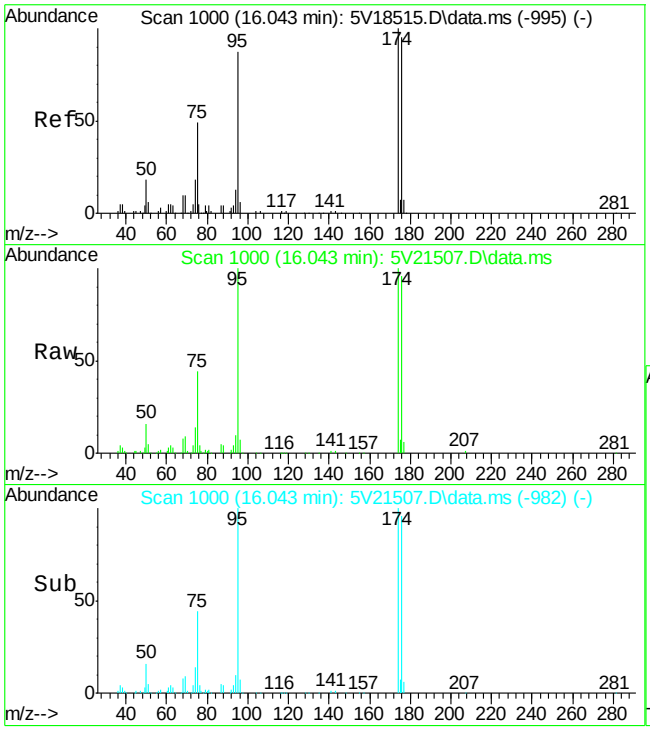


#66
Ethylbenzene
Concen: 0.23 ug/l
RT: 15.163 min Scan# 923
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion: 91 Resp: 4509

Ion	Ratio	Lower	Upper
91	100		
106	34.2	11.7	51.7

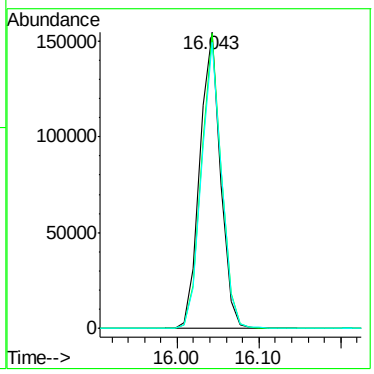


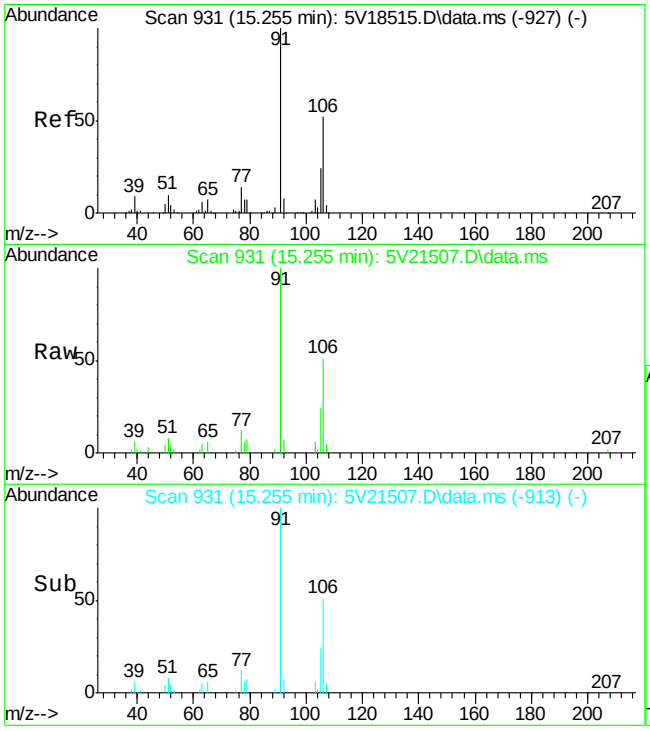


#69
4-Bromofluorobenzene
Concen: 47.96 ug/l
RT: 16.043 min Scan# 1000
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion: 95 Resp: 271240

Ion	Ratio	Lower	Upper
95	100		
174	96.3	77.1	117.1
176	94.0	73.4	113.4

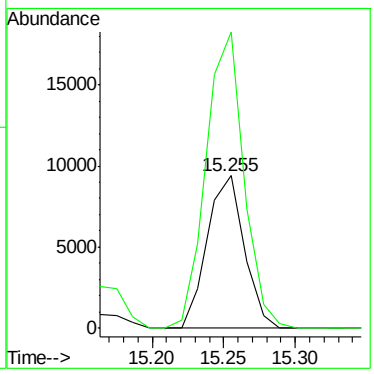


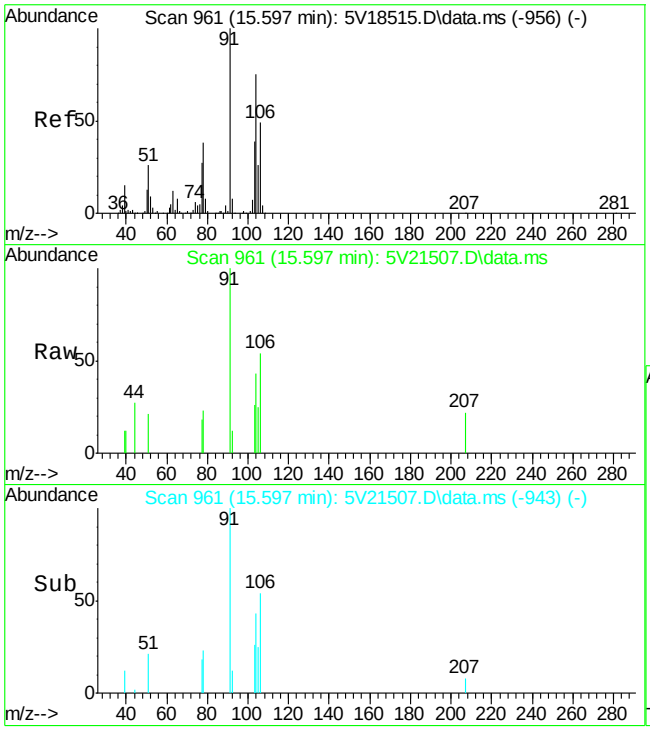


#72
m,p-xylene
Concen: 2.14 ug/l
RT: 15.255 min Scan# 931
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:106 Resp: 16850

Ion	Ratio	Lower	Upper
106	100		
91	197.9	177.1	217.1

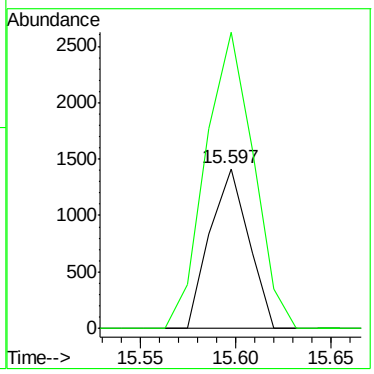


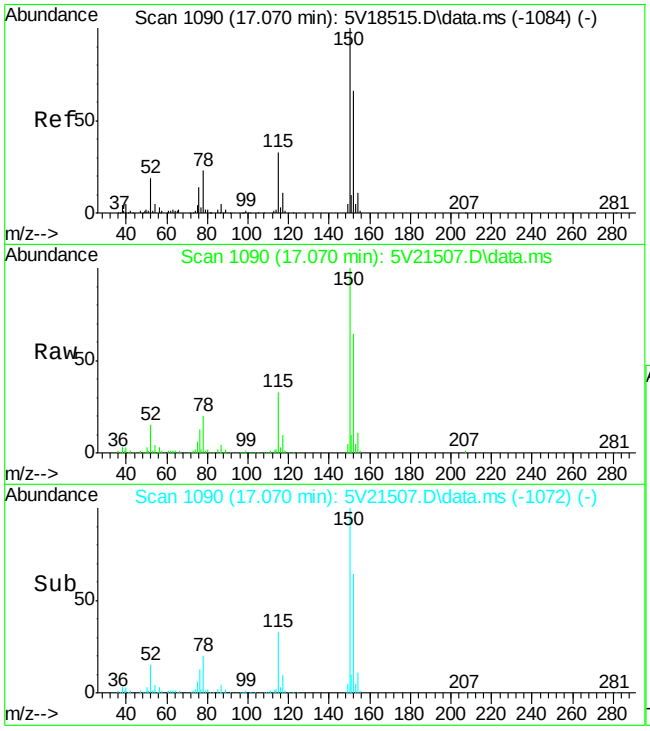


#73
o-xylene
Concen: 0.26 ug/l
RT: 15.597 min Scan# 961
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:106 Resp: 1999

Ion	Ratio	Lower	Upper
106	100		
91	230.1	166.6	249.8

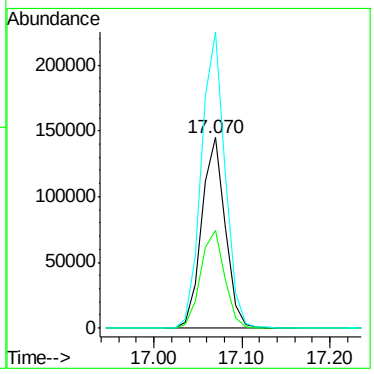


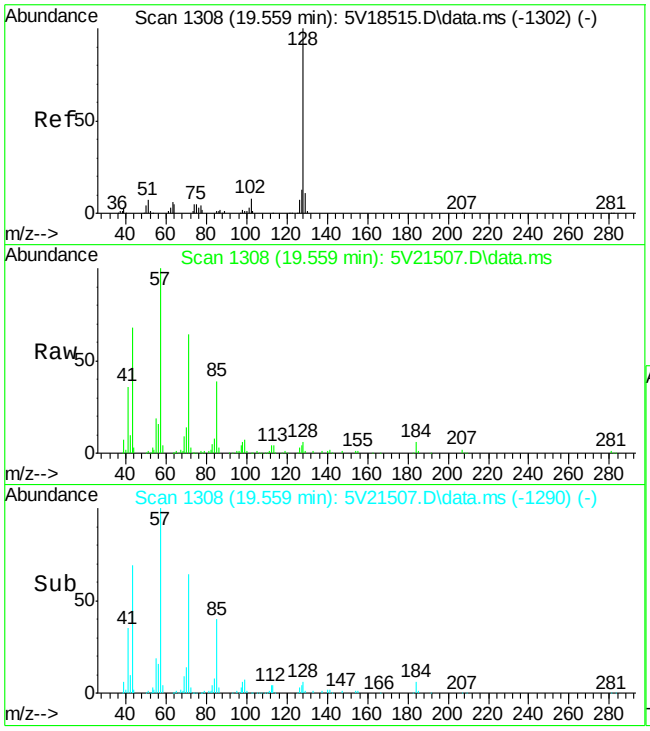


#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.070 min Scan# 1090
Delta R.T. -0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:152 Resp: 266666

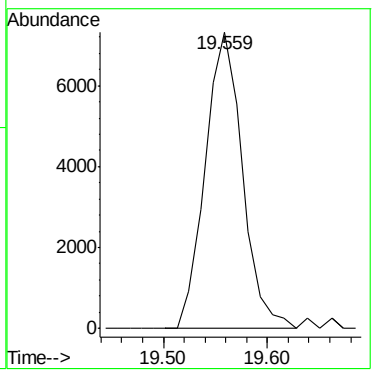
Ion	Ratio	Lower	Upper
152	100		
115	52.4	41.4	62.0
150	156.7	153.9	230.9

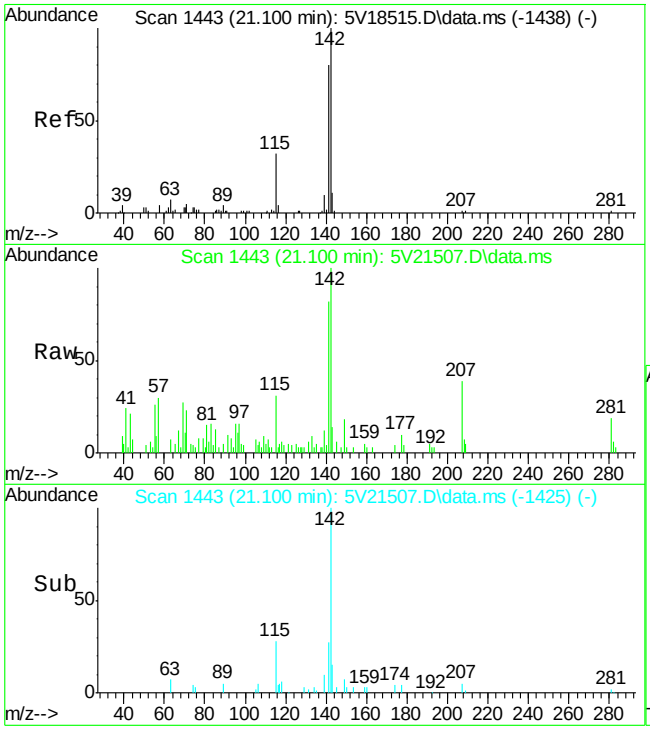




#91
Naphthalene
Concen: 1.91 ug/l
RT: 19.559 min Scan# 1308
Delta R.T. 0.001 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:128 Resp: 18169

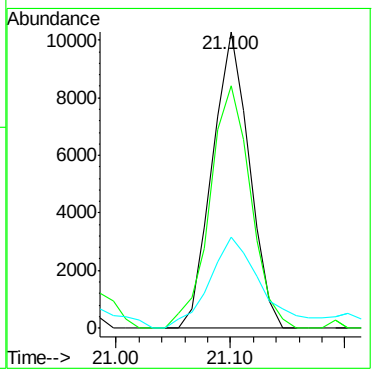


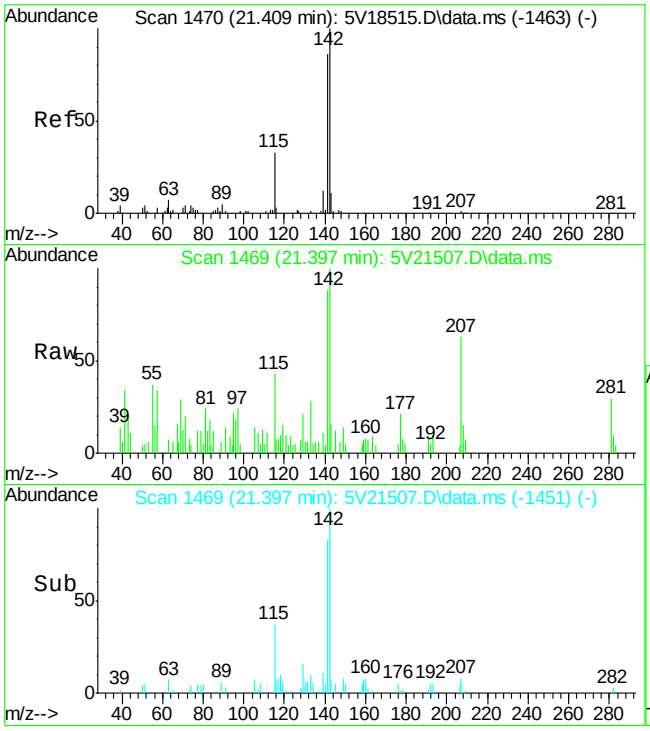


#94
2-Methylnaphthalene
Concen: 5.48 ug/l
RT: 21.100 min Scan# 1443
Delta R.T. 0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:142 Resp: 23141

Ion	Ratio	Lower	Upper
142	100		
141	90.6	66.2	99.4
115	43.3	25.9	38.9#

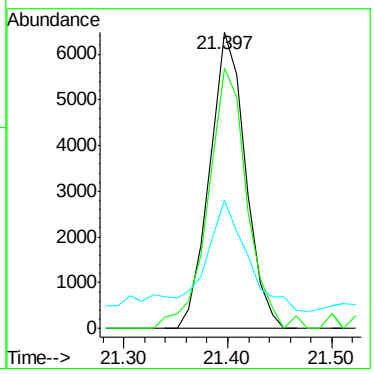




#95
1-Methylnaphthalene
Concen: 3.99 ug/l
RT: 21.397 min Scan# 1469
Delta R.T. 0.000 min
Lab File: 5V21507.D
Acq: 24 May 2012 10:46 pm

Tgt Ion:142 Resp: 15523

Ion	Ratio	Lower	Upper
142	100		
141	95.5	68.9	103.3
115	80.1	27.3	40.9#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5052412.S\
Data File : 5V21505.D
Acq On : 24 May 2012 9:43 pm
Operator : BRETD
Sample : MB
Misc : MS3970,V5V1308,5.00,,100,5,1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: May 25 04:44:13 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M
Quant Title : 8260
QLast Update : Thu May 24 17:48:23 2012
Response via : Initial Calibration

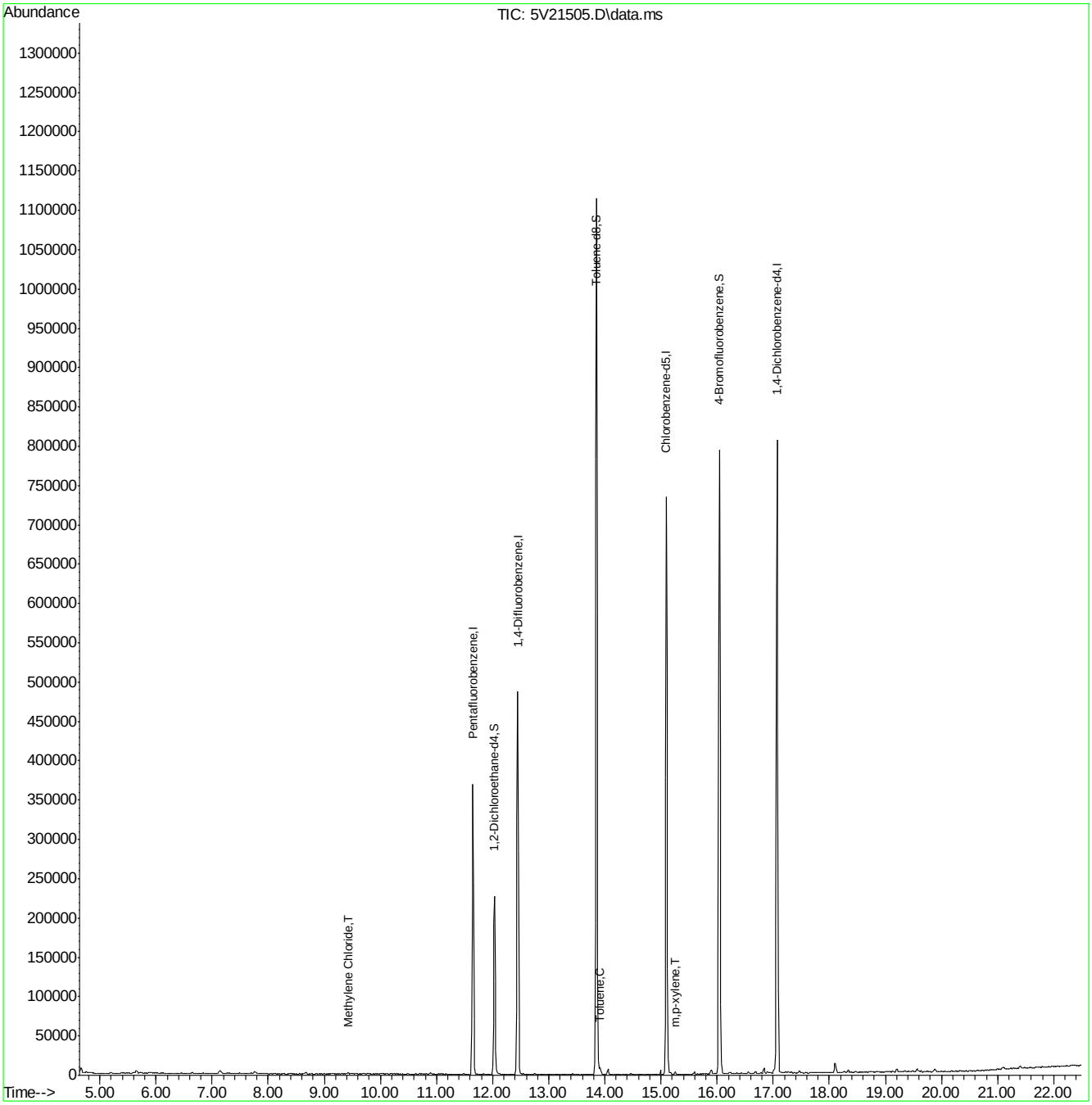
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	273979	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	413446	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	451781	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	270281	50.00	ug/l	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.035	102	39335	46.68	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 93.36%			
61) Toluene-d8	13.850	98	747443	48.95	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 97.90%			
69) 4-Bromofluorobenzene	16.042	95	285130	45.59	ug/l	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 91.18%			
Target Compounds						Qvalue
17) Methylene Chloride	9.421	84	1119	0.24	ug/l	85
62) Toluene	13.907	92	3837	0.33	ug/l	98
72) m,p-xylene	15.255	106	1485	0.17	ug/l #	86

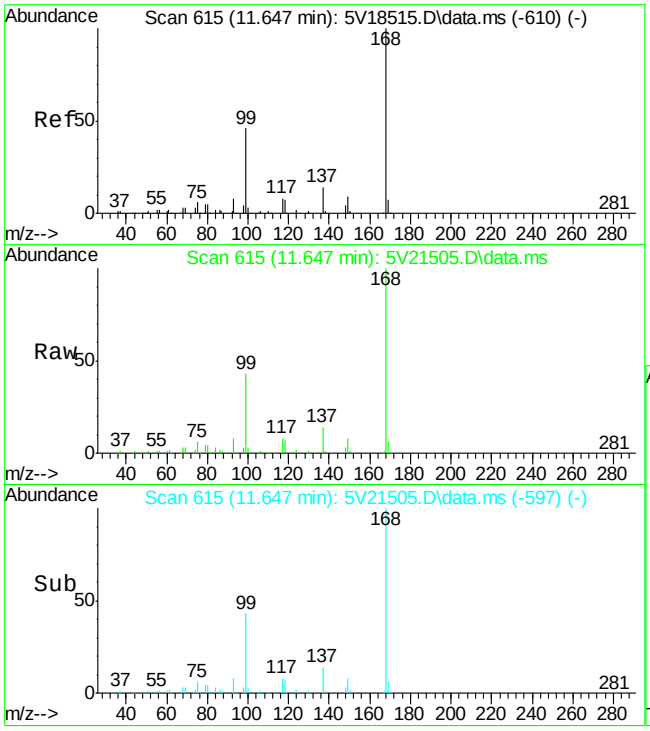
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5052412.S\
Data File : 5V21505.D
Acq On : 24 May 2012 9:43 pm
Operator : BRETD
Sample : MB
Misc : MS3970,V5V1308,5.00,,100,5,1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: May 25 04:44:13 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M
Quant Title : 8260
QLast Update : Thu May 24 17:48:23 2012
Response via : Initial Calibration

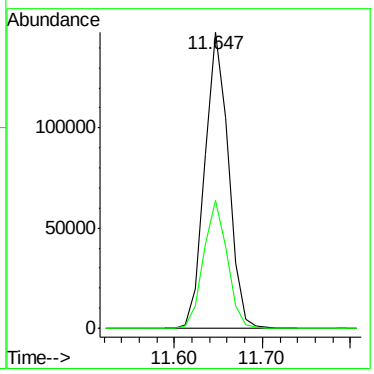


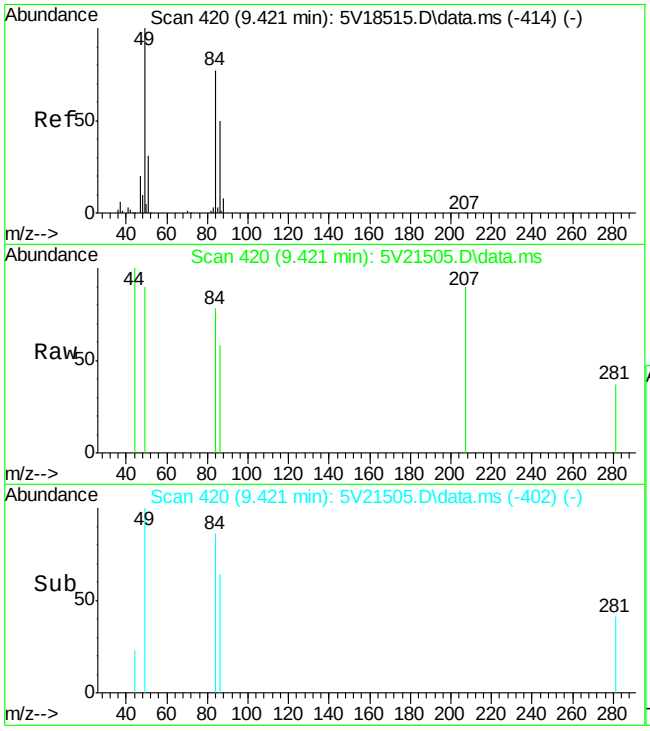


#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.647 min Scan# 615
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion:168 Resp: 273979

Ion	Ratio	Lower	Upper
168	100		
99	43.0	37.4	56.2

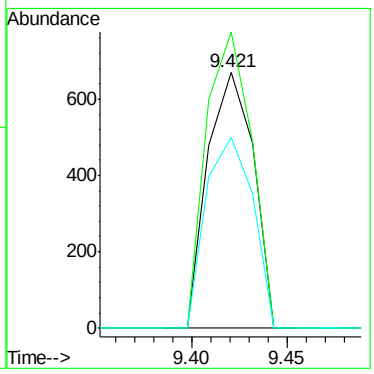


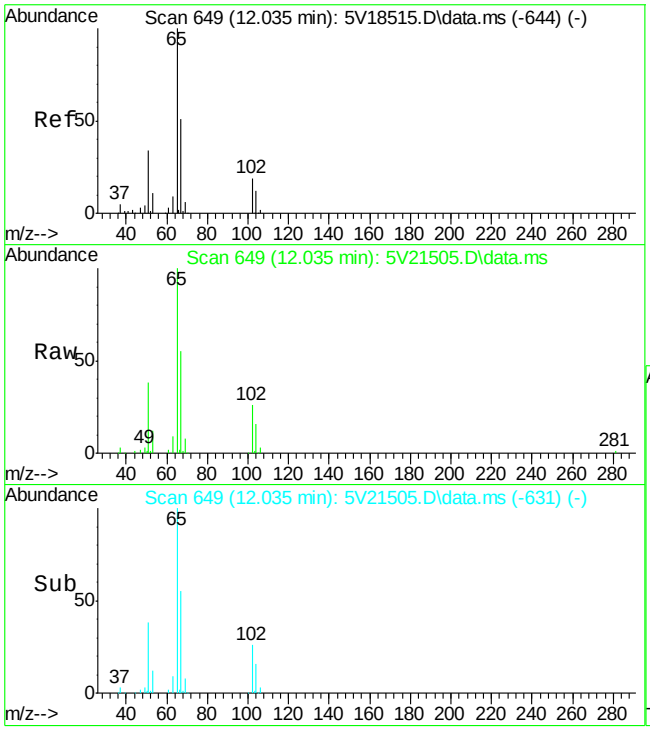


#17
Methylene Chloride
Concen: 0.24 ug/l
RT: 9.421 min Scan# 420
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion: 84 Resp: 1119

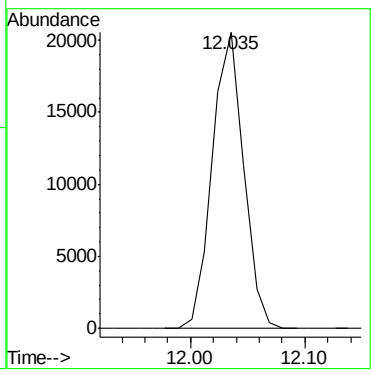
Ion	Ratio	Lower	Upper
84	100		
49	114.2	110.4	150.4
86	76.5	44.0	84.0

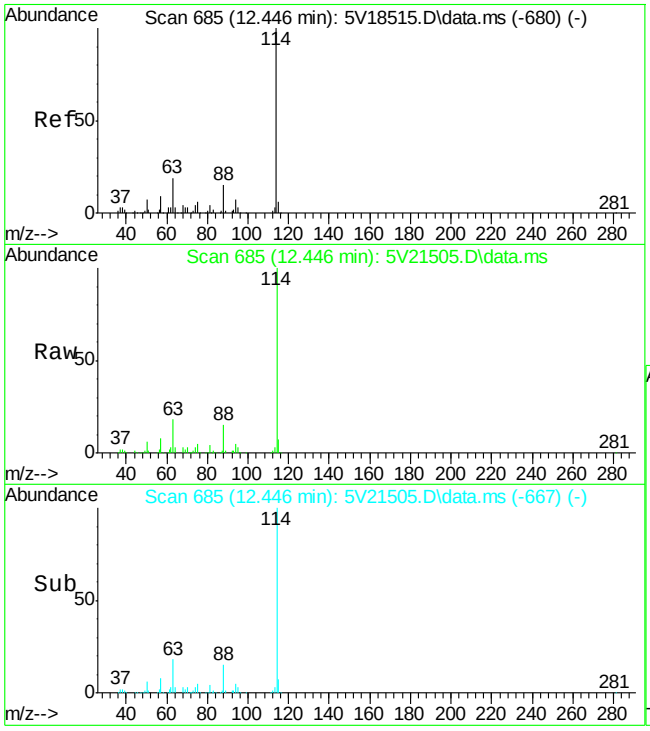




#33
1,2-Dichloroethane-d4
Concen: 46.68 ug/l
RT: 12.035 min Scan# 649
Delta R.T. 0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

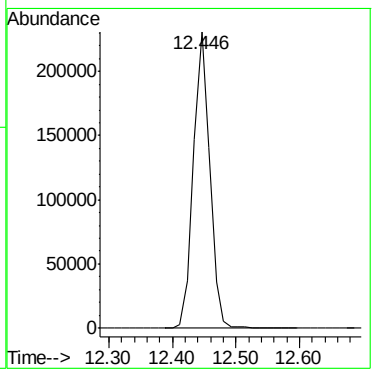
Tgt Ion:102 Resp: 39335

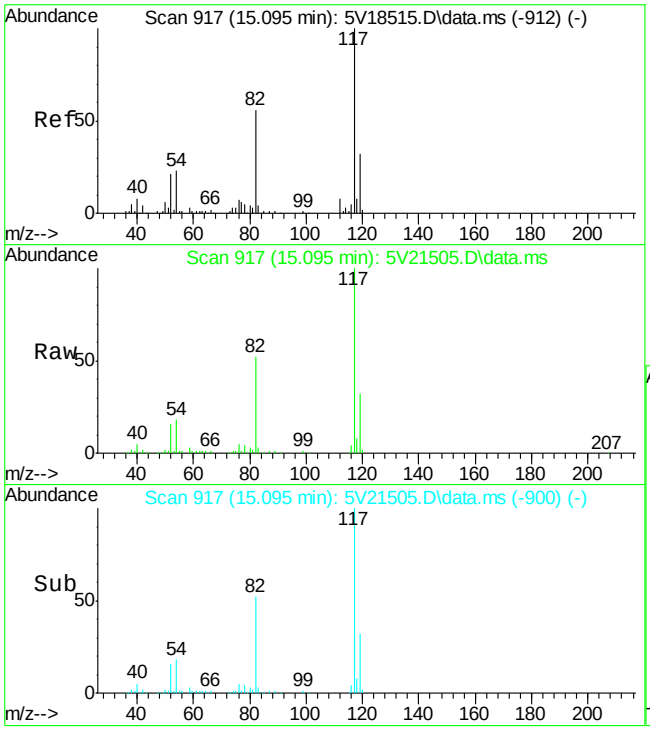




#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.446 min Scan# 685
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

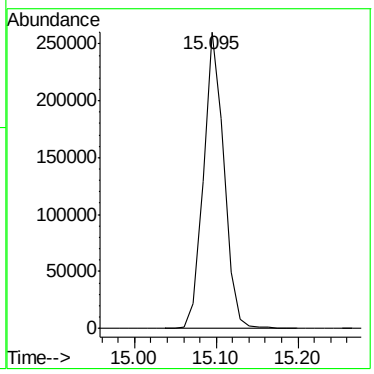
Tgt Ion:114 Resp: 413446

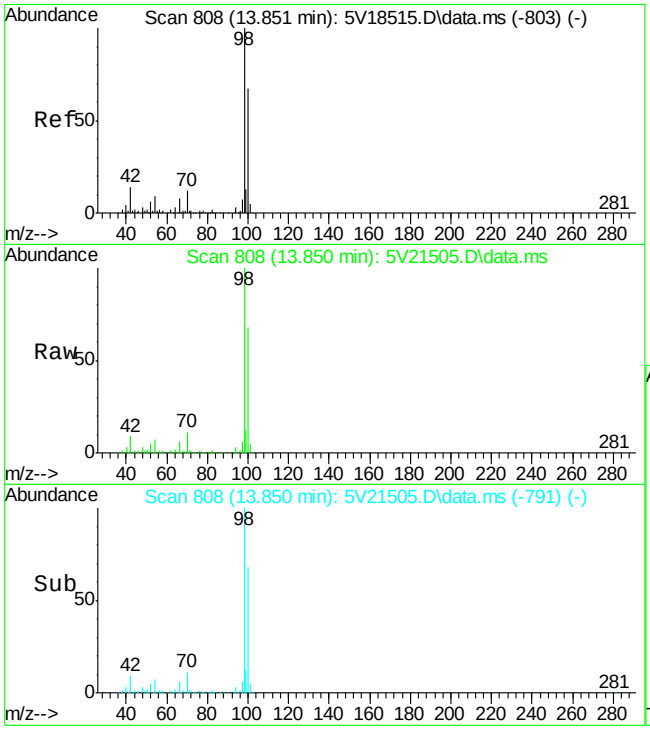




#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.095 min Scan# 917
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

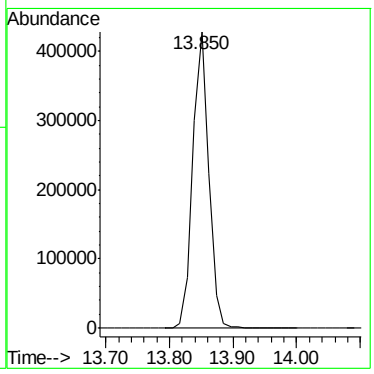
Tgt Ion:117 Resp: 451781

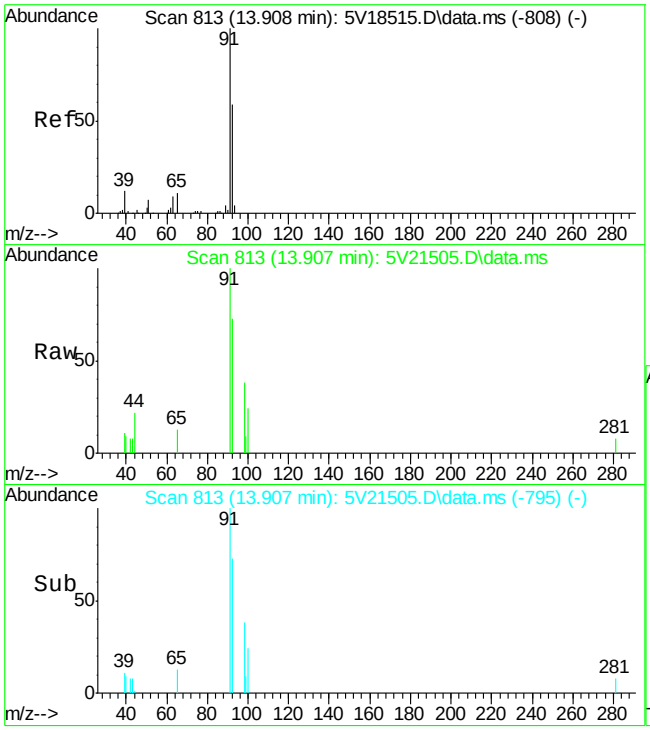




#61
Toluene-d8
Concen: 48.95 ug/l
RT: 13.850 min Scan# 808
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion: 98 Resp: 747443

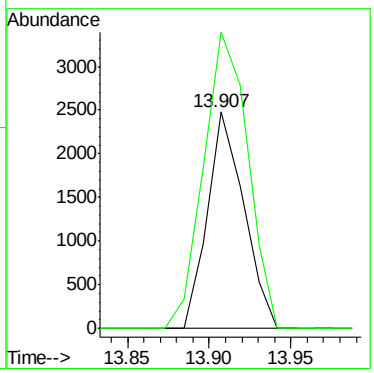


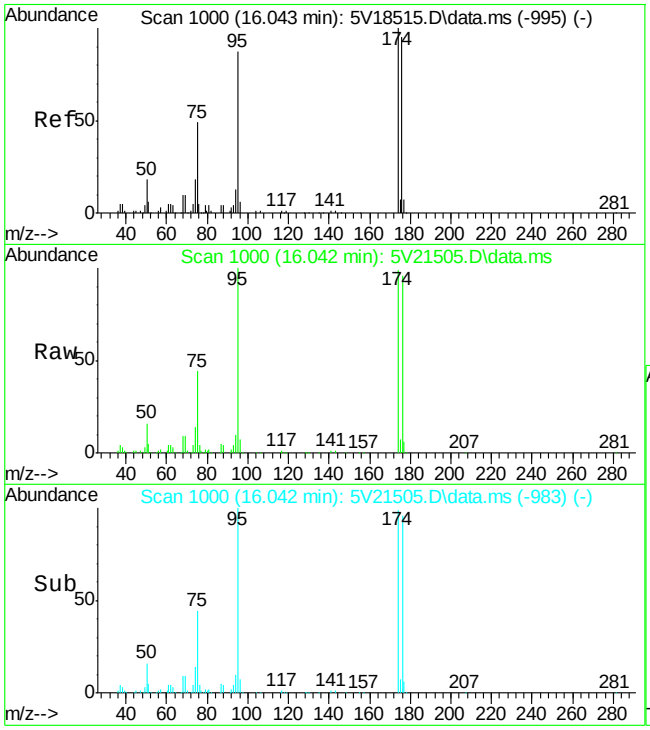


#62
Toluene
Concen: 0.33 ug/l
RT: 13.907 min Scan# 813
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion: 92 Resp: 3837

Ion	Ratio	Lower	Upper
92	100		
91	166.5	149.8	189.8

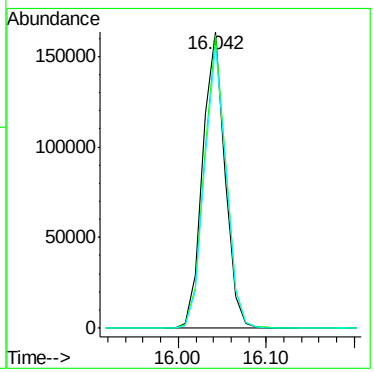


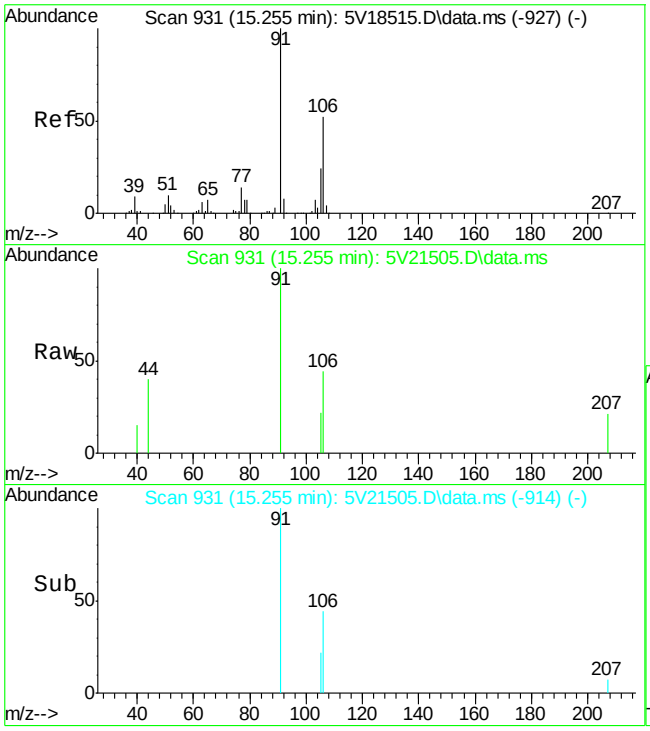


#69
4-Bromofluorobenzene
Concen: 45.59 ug/l
RT: 16.042 min Scan# 1000
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion: 95 Resp: 285130

Ion	Ratio	Lower	Upper
95	100		
174	97.1	77.1	117.1
176	93.7	73.4	113.4

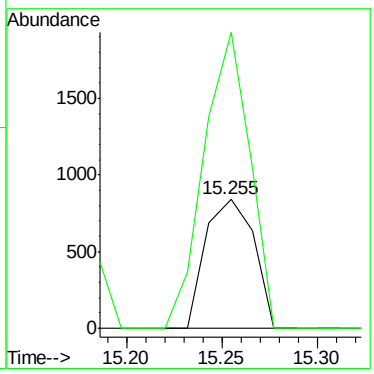


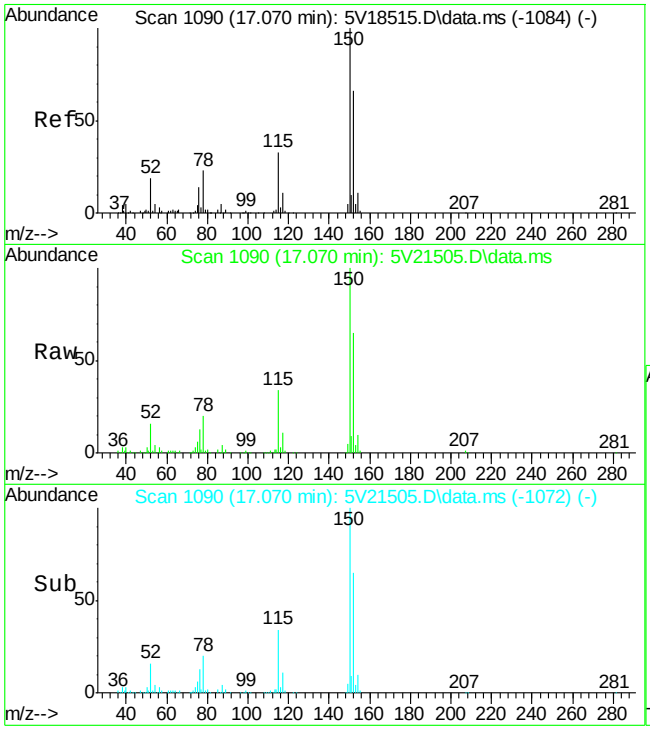


#72
m,p-xylene
Concen: 0.17 ug/l
RT: 15.255 min Scan# 931
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion:106 Resp: 1485

Ion	Ratio	Lower	Upper
106	100		
91	218.2	177.1	217.1#

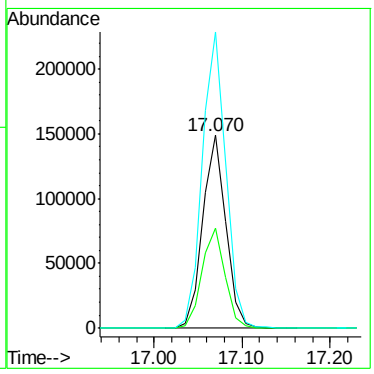




#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.070 min Scan# 1090
Delta R.T. -0.000 min
Lab File: 5V21505.D
Acq: 24 May 2012 9:43 pm

Tgt Ion:152 Resp: 270281

Ion	Ratio	Lower	Upper
152	100		
115	51.9	41.4	62.0
150	156.1	153.9	230.9



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: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5918-MB	3G09350.D	1	05/22/12	DC	05/20/12	OP5918	E3G407

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

D34638-1

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

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	81%	10-145%
321-60-8	2-Fluorobiphenyl	89%	10-130%
1718-51-0	Terphenyl-d14	121%	22-130%

Blank Spike Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5918-BS	3G09351.D	1	05/22/12	DC	05/20/12	OP5918	E3G407

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

D34638-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	73.7	88	34-130
120-12-7	Anthracene	83.3	80.7	97	35-130
56-55-3	Benzo(a)anthracene	83.3	80.0	96	36-130
50-32-8	Benzo(a)pyrene	83.3	79.2	95	36-130
205-99-2	Benzo(b)fluoranthene	83.3	63.9	77	35-130
207-08-9	Benzo(k)fluoranthene	83.3	77.5	93	37-130
218-01-9	Chrysene	83.3	77.6	93	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	96.8	116	32-130
206-44-0	Fluoranthene	83.3	75.4	90	38-130
86-73-7	Fluorene	83.3	75.3	90	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	96.0	115	28-130
91-20-3	Naphthalene	83.3	74.3	89	35-130
129-00-0	Pyrene	83.3	98.2	118	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	79%	10-145%
321-60-8	2-Fluorobiphenyl	84%	10-130%
1718-51-0	Terphenyl-d14	112%	22-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5918-MS	3G09361.D	4	05/22/12	DC	05/20/12	OP5918	E3G407
OP5918-MSD	3G09362.D	4	05/22/12	DC	05/20/12	OP5918	E3G407
D34638-1	3G09353.D	1	05/22/12	DC	05/20/12	OP5918	E3G407
D34638-1	3G09358.D	4	05/22/12	DC	05/20/12	OP5918	E3G407

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

D34638-1

CAS No.	Compound	D34638-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		91.1	108	119	112	123	4	10-155/30
120-12-7	Anthracene	ND [a]		91.1	93.6	103	90.8	100	3	10-155/30
56-55-3	Benzo(a)anthracene	30.3 [a]	J	91.1	119	97	122	101	2	10-175/30
50-32-8	Benzo(a)pyrene	ND		91.1	99.9	110	98.3	108	2	10-164/30
205-99-2	Benzo(b)fluoranthene	35.5		91.1	124	97	120	93	3	10-165/30
207-08-9	Benzo(k)fluoranthene	18.4		91.1	69.8	56	84.9	73	20	10-178/30
218-01-9	Chrysene	57.6 [a]		91.1	128	77	132	82	3	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		91.1	99.9	110	97.4	107	3	10-144/30
206-44-0	Fluoranthene	34.2 [a]	J	91.1	90.1	61	88.3	59	2	10-207/30
86-73-7	Fluorene	ND		91.1	146	160	148	163	1	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	16.0		91.1	101	93	104	97	3	10-180/30
91-20-3	Naphthalene	58.3		91.1	121	69	110	57	10	10-198/30
129-00-0	Pyrene	61.8 [a]		91.1	149	96	156	103	5	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D34638-1	D34638-1	Limits
4165-60-0	Nitrobenzene-d5	68%	61%	64%	75%	10-145%
321-60-8	2-Fluorobiphenyl	83%	77%	137%* [b]	85%	10-130%
1718-51-0	Terphenyl-d14	102%	108%	127%	118%	22-130%

(a) Result is from Run #2.
(b) Outside control limits due to matrix interference.

Mountain States ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Judy Melson 05/23/12 13:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\
Data File : 3g09353.D
Acq On : 22 May 2012 4:45 am
Operator : DONC
Sample : D34638-1
Misc : OP5918,E3G407,30.03,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: May 23 11:28:43 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M
Quant Title : PAHSIM BASE
QLast Update : Tue May 22 07:59:25 2012
Response via : Initial Calibration

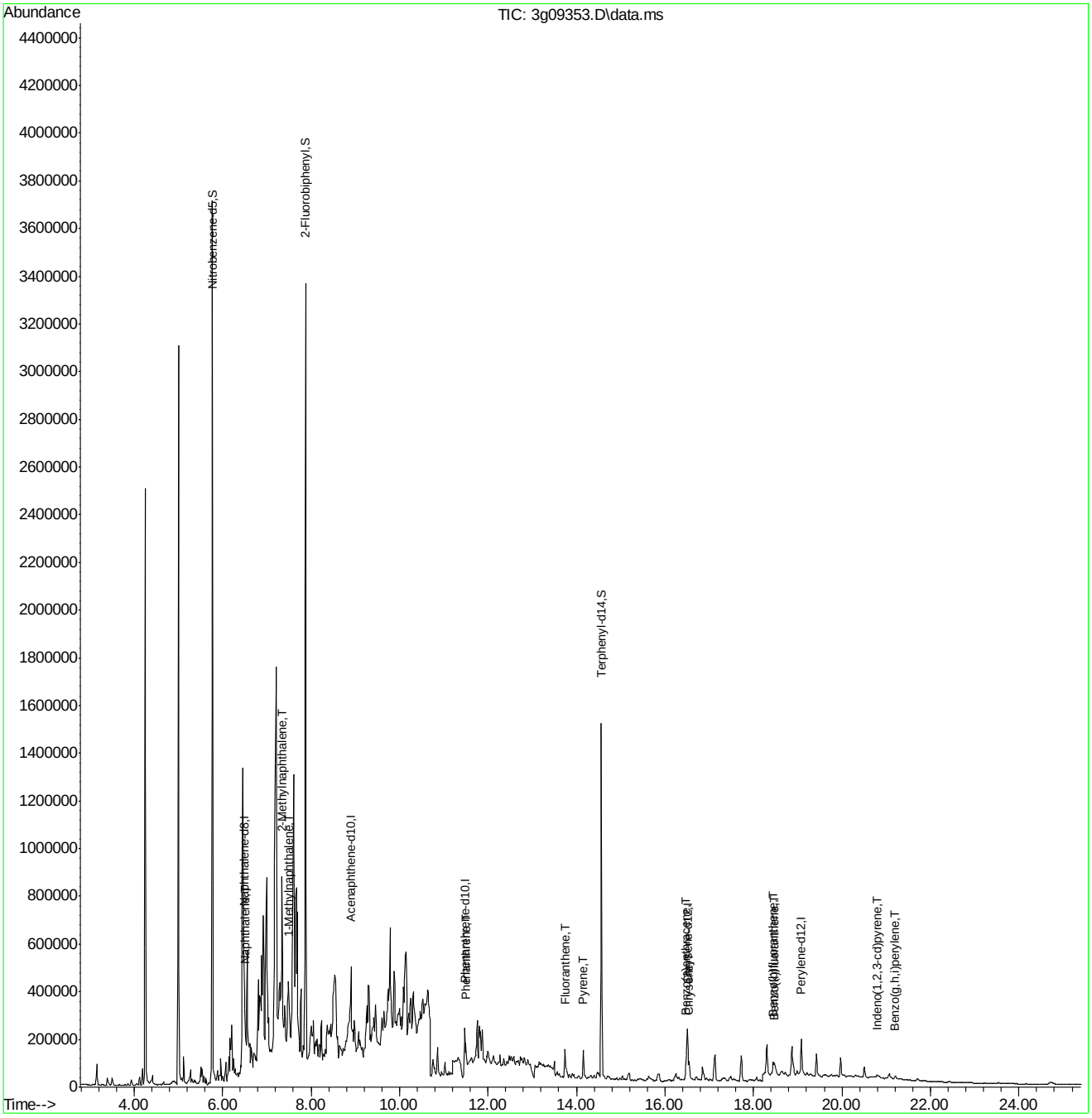
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Naphthalene-d8	6.483	136	465064	4.0000 ug/mL	0.00
6) Acenaphthene-d10	8.909	164	132184	4.0000 ug/mL	0.02
14) Phenanthrene-d10	11.477	188	166089	4.0000 ug/mL	0.04
18) Chrysene-d12	16.507	240	149910	4.0000 ug/mL	0.02
23) Perylene-d12	19.079	264	213177	4.0000 ug/mL	0.01
System Monitoring Compounds					
2) Nitrobenzene-d5	5.772	82	2017376	31.7766 ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 63.56%		
7) 2-Fluorobiphenyl	7.881	172	3223400	68.3097 ug/mL	0.01
Spiked Amount 50.000	Range 25 - 135		Recovery = 136.62%#		
20) Terphenyl-d14	14.564	244	1777236	63.5221 ug/mL	0.02
Spiked Amount 50.000	Range 25 - 135		Recovery = 127.04%		
Target Compounds					Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D. d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	6.507	128	209462	1.5995 ug/mL	94
8) 2-Methylnaphthalene	7.343	142	234943	5.9618 ug/mL#	78
9) 1-Methylnaphthalene	7.492	142	97231	2.5186 ug/mL#	71
10) Acenaphthylene	0.000	152	0	N.D. d	
11) Acenaphthene	0.000	154	0	N.D. d	
12) Fluorene	0.000	166	0	N.D. d	
13) Diphenylamine	0.000	169	0	N.D. d	
15) Phenanthrene	11.509	178	136222	2.6996 ug/mL	66
16) Anthracene	0.000	178	0	N.D. d	
17) Fluoranthene	13.741	202	82738m	1.4581 ug/mL	
19) Pyrene	14.152	202	106767	1.9803 ug/mL	88
21) Benzo(a)anthracene	16.474	228	41649m	1.0066 ug/mL	
22) Chrysene	16.547	228	90652	1.8516 ug/mL	84
24) Benzo(b)fluoranthene	18.448	252	60437m	0.9747 ug/mL	
25) Benzo(k)fluoranthene	18.459	252	47729m	0.5046 ug/mL	
26) Benzo(a)pyrene	0.000	252	0	N.D. d	
27) Indeno(1,2,3-cd)pyrene	20.794	276	20527m	0.4400 ug/mL	
28) Dibenz(a,h)anthracene	0.000	278	0	N.D. d	
29) Benzo(g,h,i)perylene	21.204	276	21474	0.4906 ug/mL	97

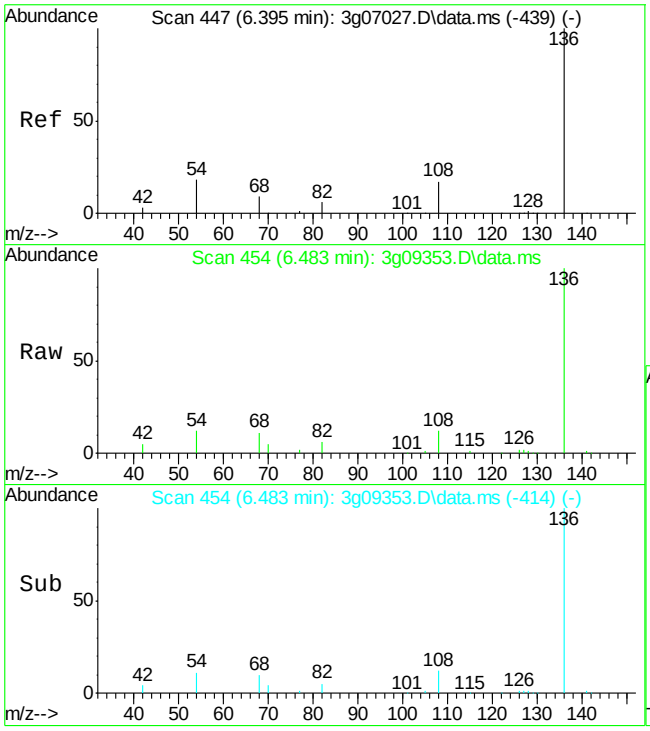
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\
Data File : 3g09353.D
Acq On : 22 May 2012 4:45 am
Operator : DONC
Sample : D34638-1
Misc : OP5918,E3G407,30.03,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: May 23 11:28:43 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M
Quant Title : PAHSIM BASE
QLast Update : Tue May 22 07:59:25 2012
Response via : Initial Calibration

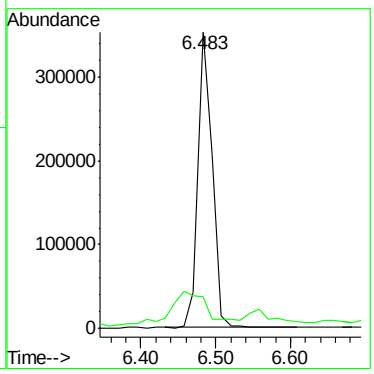


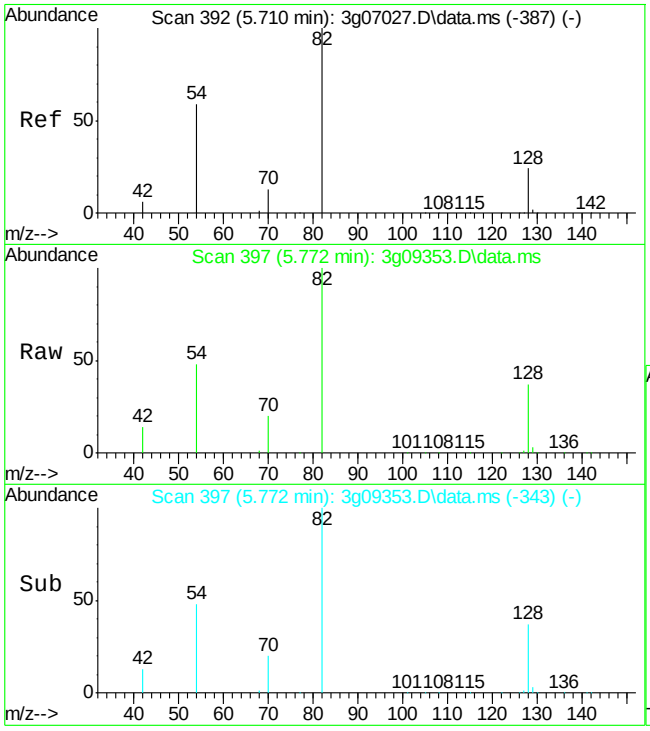


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 6.483 min Scan# 454
Delta R.T. 0.000 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:136 Resp: 465064

Ion	Ratio	Lower	Upper
136	100		
68	28.7	0.0	31.7

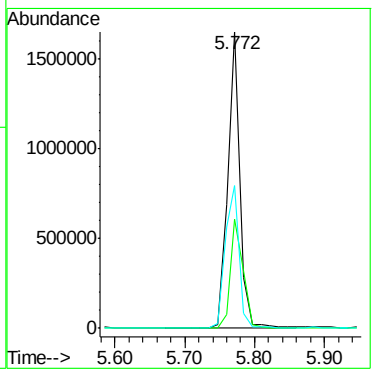


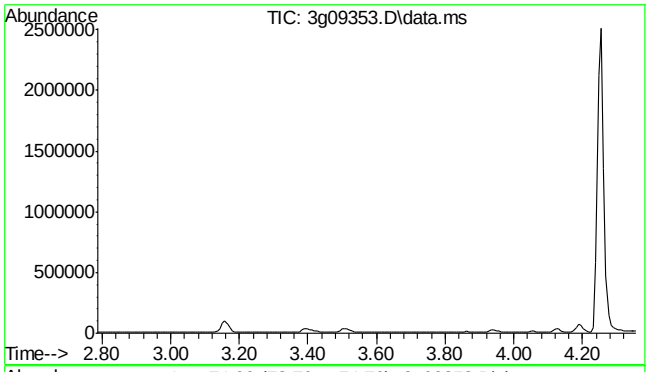


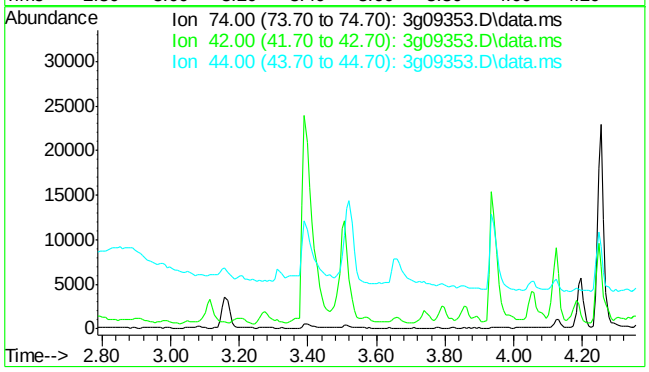
#2
Nitrobenzene-d5
Concen: 31.7766 ug/mL
RT: 5.772 min Scan# 397
Delta R.T. 0.000 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 82 Resp: 2017376

Ion	Ratio	Lower	Upper
82	100		
128	38.3	14.7	54.7
54	55.3	36.8	76.8





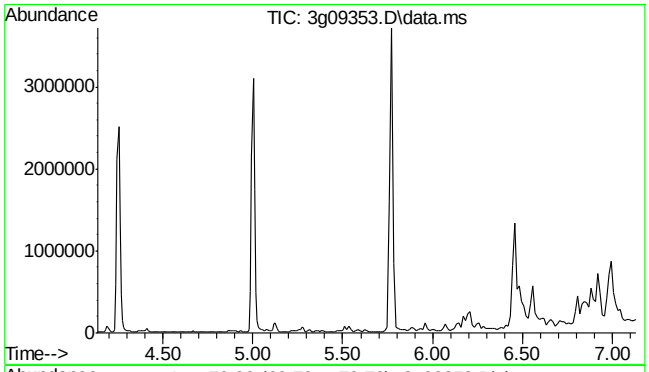


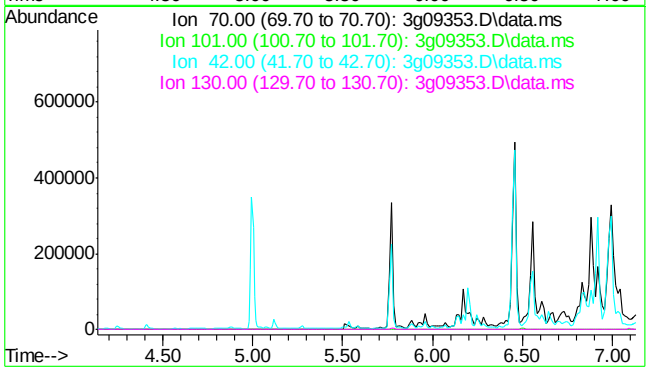
#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.86 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 74

Sig	Exp Ratio
74	100
42	68.8
44	7.4



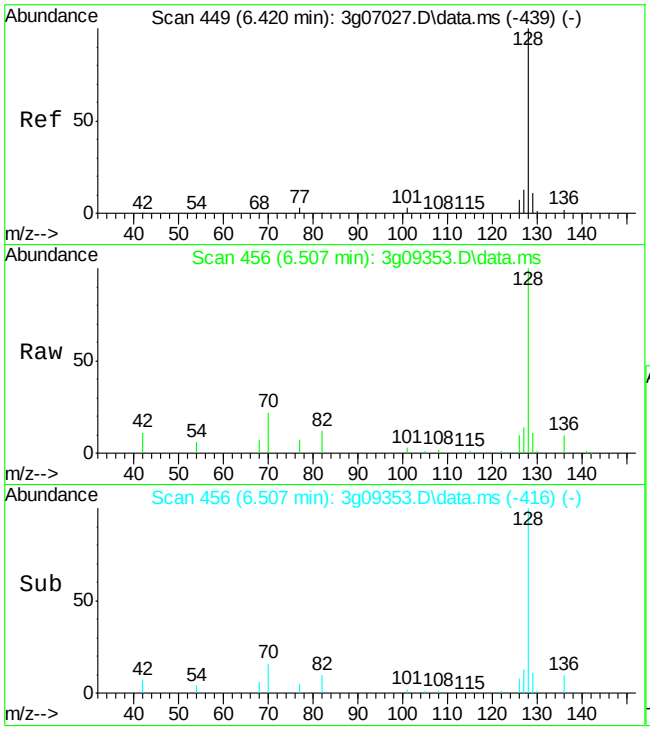


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.63 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 70

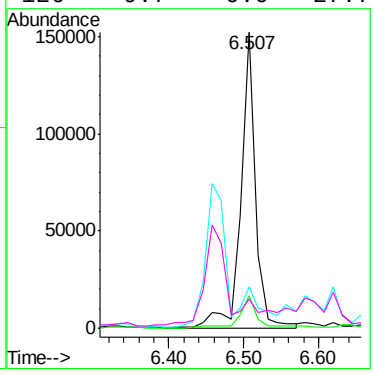
Sig	Exp Ratio
70	100
101	10.0
42	61.7
130	18.9

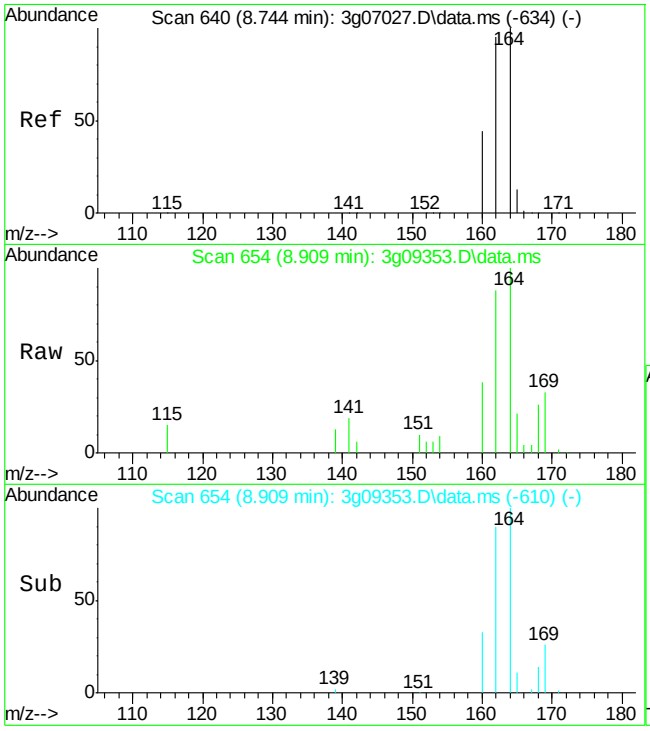


#5
Naphthalene
Concen: 1.5995 ug/mL
RT: 6.507 min Scan# 456
Delta R.T. 0.000 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:128 Resp: 209462

Ion	Ratio	Lower	Upper
128	100		
129	14.0	0.0	30.8
127	14.0	0.0	32.4
126	9.7	0.0	27.7

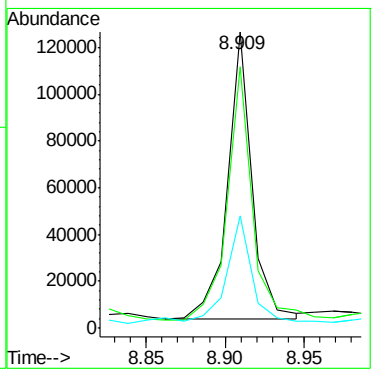


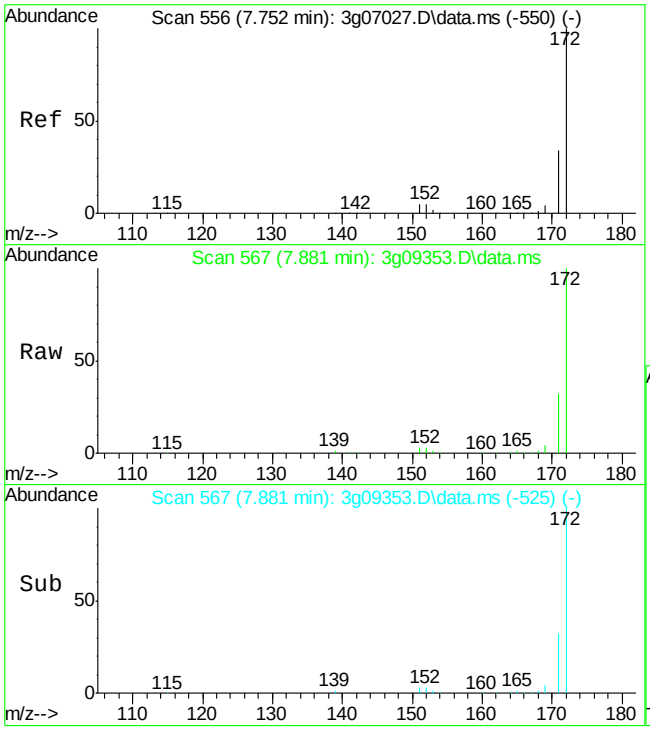


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 8.909 min Scan# 654
Delta R.T. 0.024 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:164 Resp: 132184

Ion	Ratio	Lower	Upper
164	100		
162	93.0	73.1	113.1
160	43.0	22.5	62.5

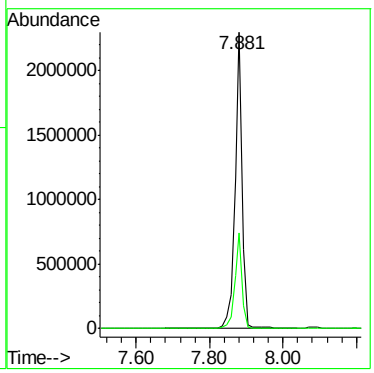


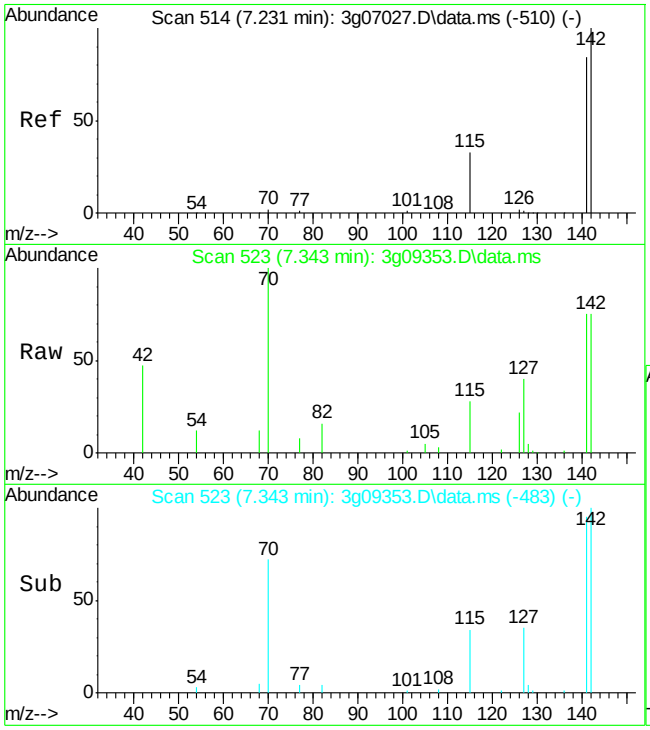


#7
2-Fluorobiphenyl
Concen: 68.3097 ug/mL
RT: 7.881 min Scan# 567
Delta R.T. 0.012 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:172 Resp: 3223400

Ion	Ratio	Lower	Upper
172	100		
171	32.4	13.1	53.1

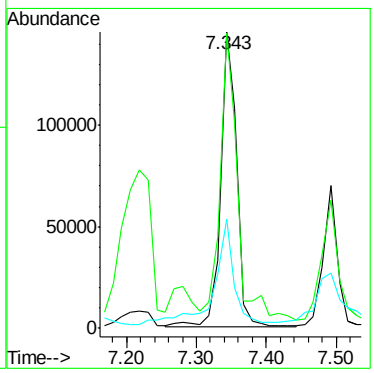


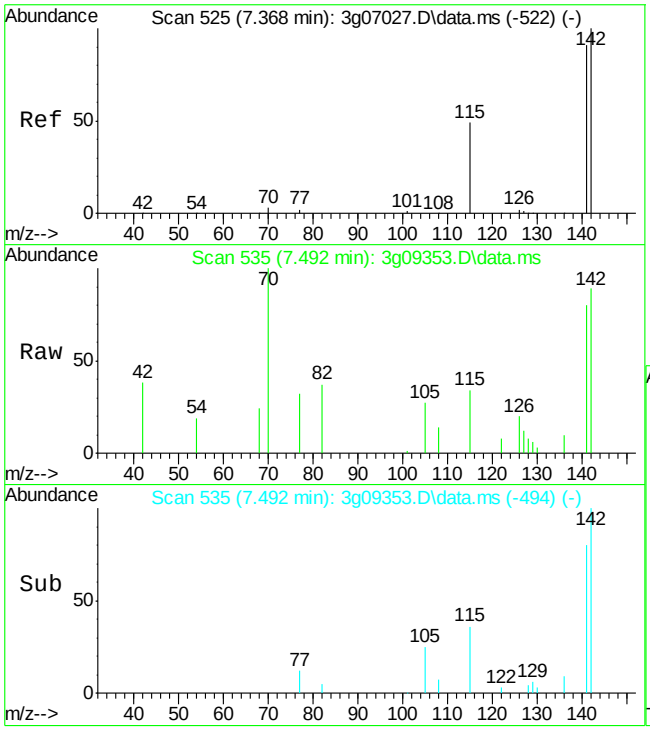


#8
2-Methylnaphthalene
Concen: 5.9618 ug/mL
RT: 7.343 min Scan# 523
Delta R.T. 0.000 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:142 Resp: 234943

Ion	Ratio	Lower	Upper
142	100		
141	104.8	63.0	103.0#
115	45.5	15.6	55.6

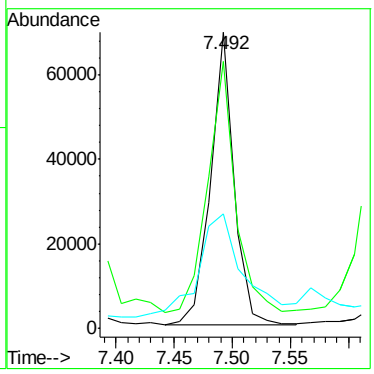


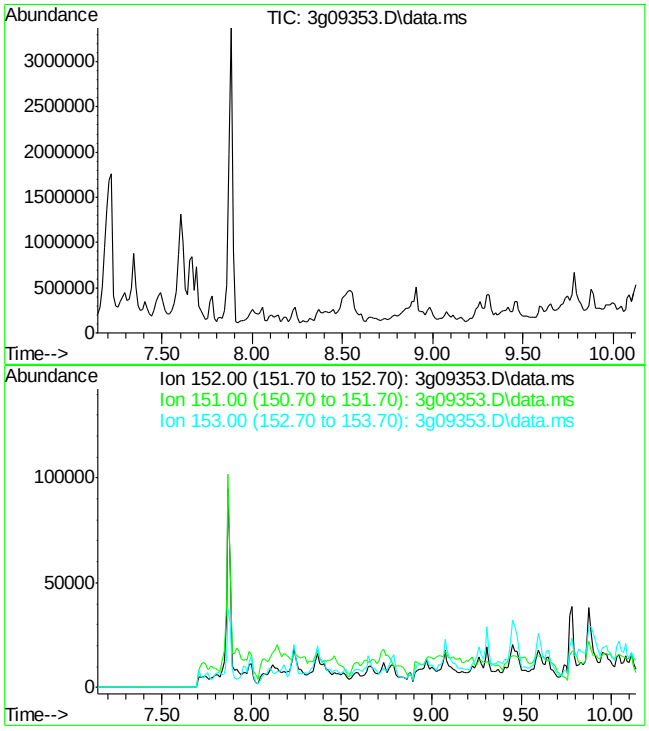


#9
1-Methylnaphthalene
Concen: 2.5186 ug/mL
RT: 7.492 min Scan# 535
Delta R.T. 0.013 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:142 Resp: 97231

Ion	Ratio	Lower	Upper
142	100		
141	106.3	67.2	107.2
115	67.1	17.1	57.1#



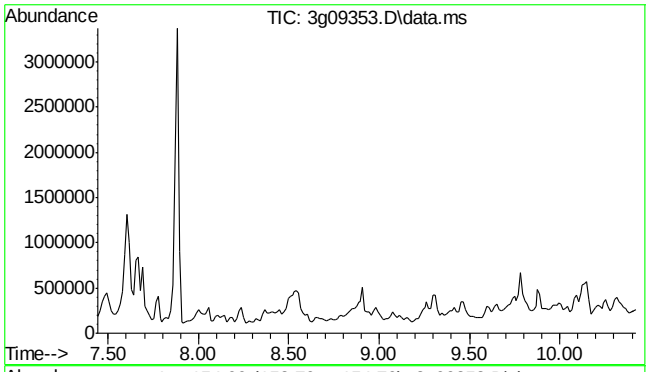


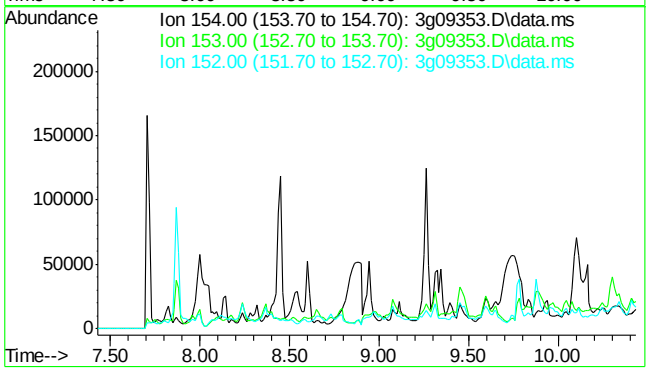
#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.64 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 152

Sig	Exp Ratio
152	100
151	19.0
153	14.1



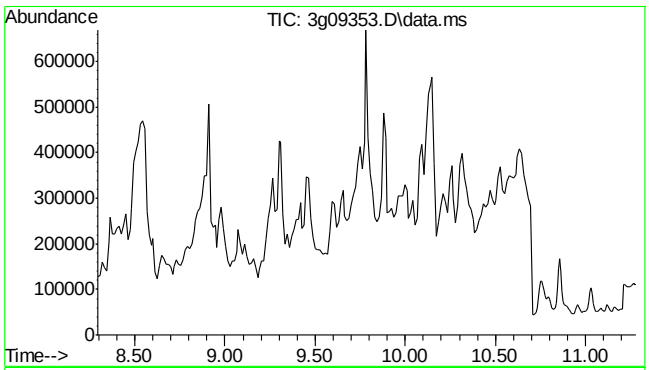


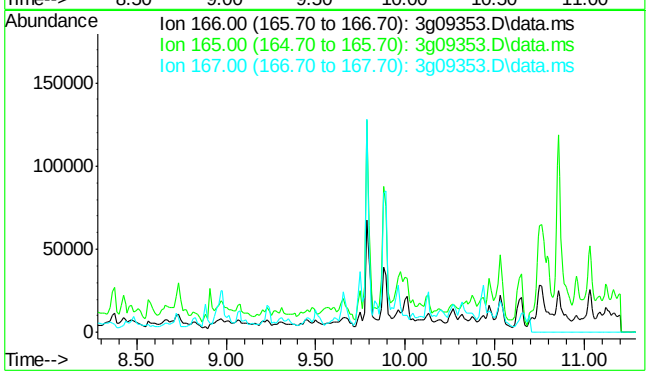
#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.93 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 154

Sig	Exp Ratio
154	100
153	105.0
152	46.1



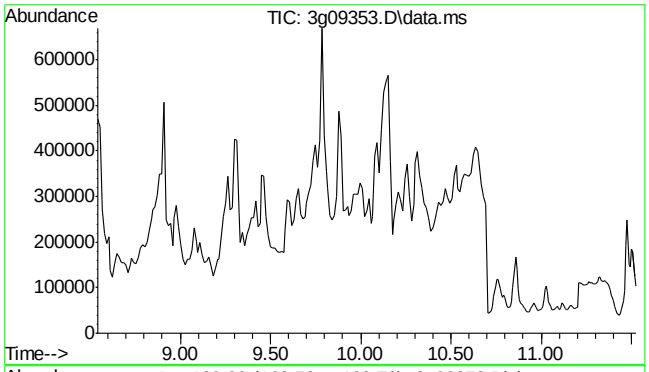


#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.78 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 166

Sig	Exp Ratio
166	100
165	90.8
167	13.2

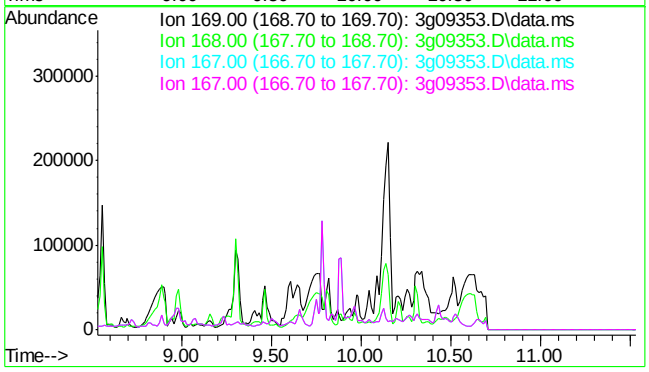


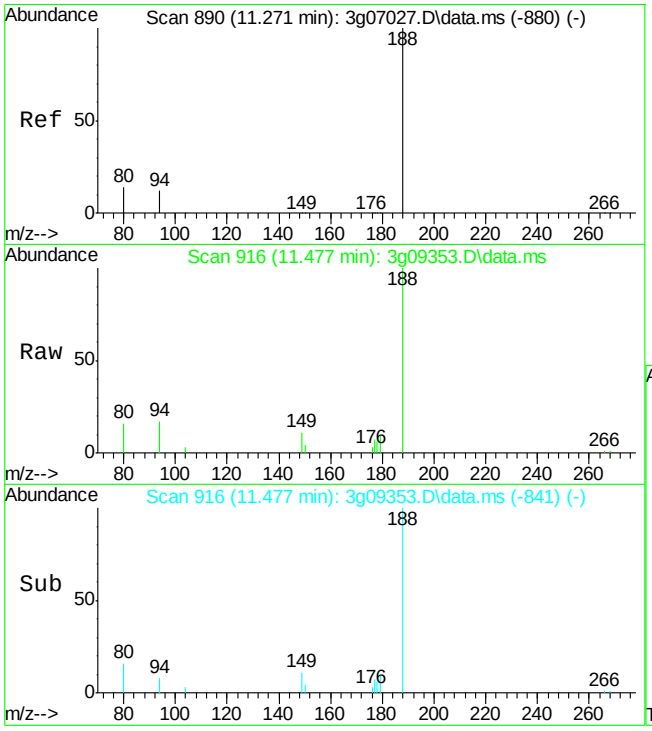
#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.03 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 169

Sig	Exp Ratio
169	100
168	61.6
167	33.6
167	33.6

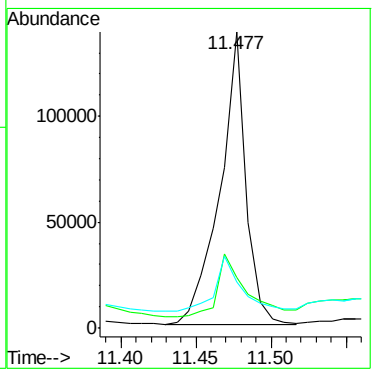


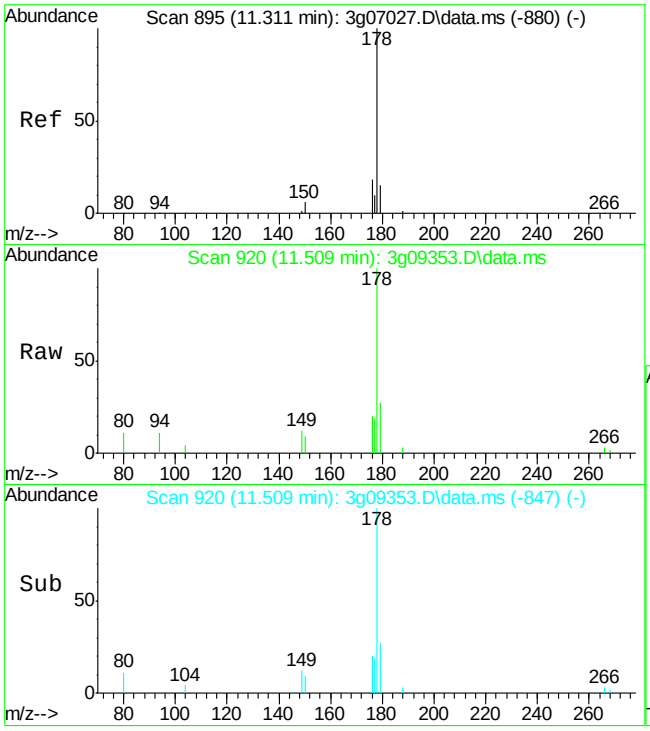


#14
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 11.477 min Scan# 916
Delta R.T. 0.040 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:188 Resp: 166089

Ion	Ratio	Lower	Upper
188	100		
94	25.0	0.0	36.5
80	19.1	0.0	37.9

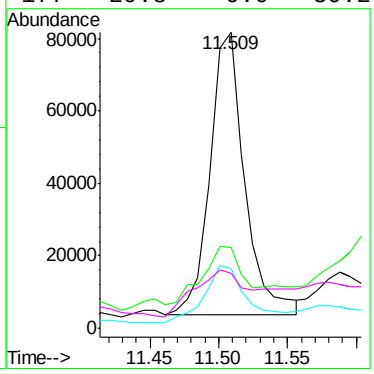


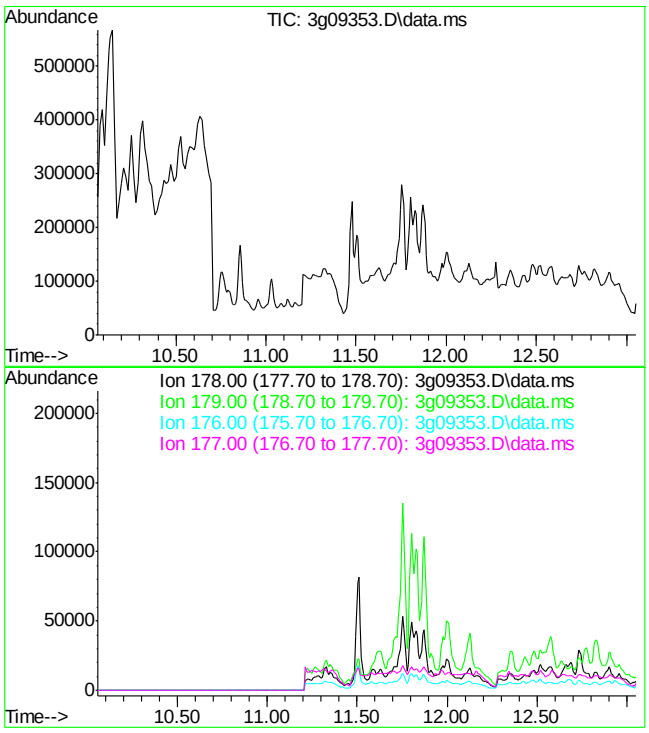


#15
Phenanthrene
Concen: 2.6996 ug/mL
RT: 11.509 min Scan# 920
Delta R.T. 0.032 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:178 Resp: 136222

Ion	Ratio	Lower	Upper
178	100		
179	33.5	0.0	35.1
176	25.6	0.0	38.5
177	29.8	0.0	30.2



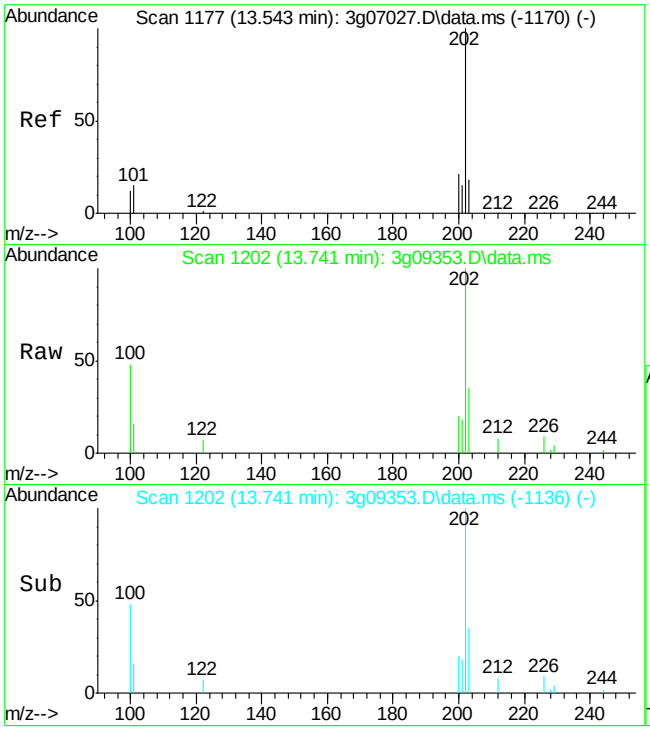


#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.56 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 178

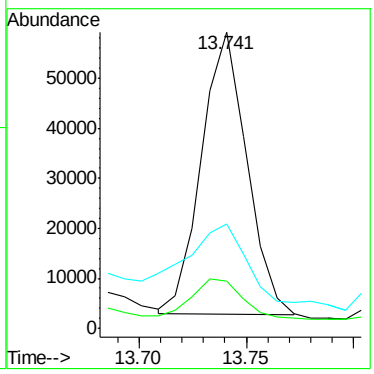
Sig	Exp Ratio
178	100
179	15.1
176	17.8
177	8.7

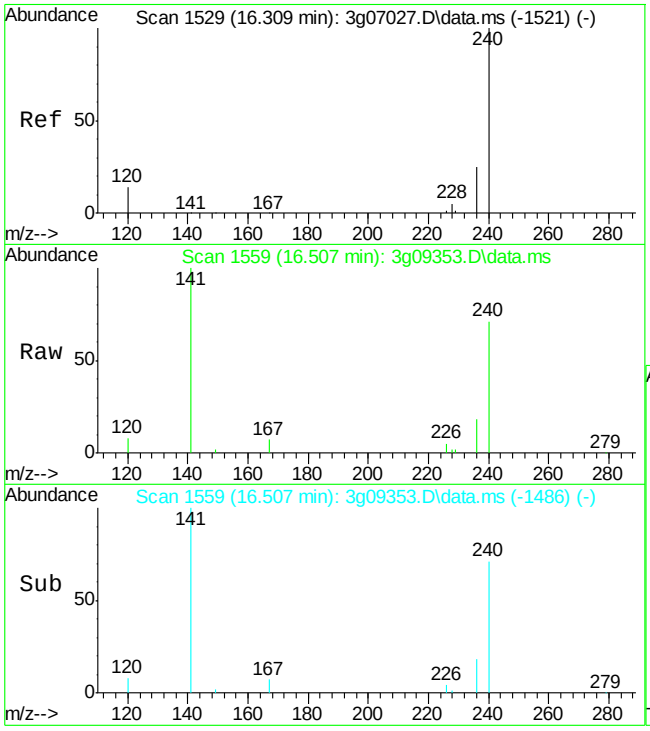


#17
Fluoranthene
Concen: 1.4581 ug/mL m
RT: 13.741 min Scan# 1202
Delta R.T. 0.024 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:202 Resp: 82738

Ion	Ratio	Lower	Upper
202	100		
101	25.9	0.0	35.5
203	44.8	0.0	37.2#

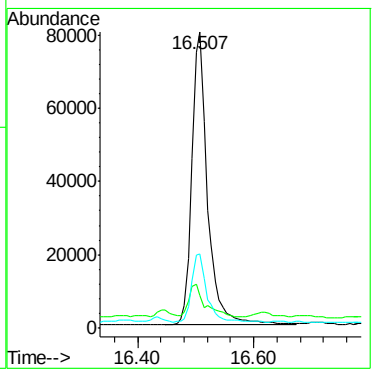


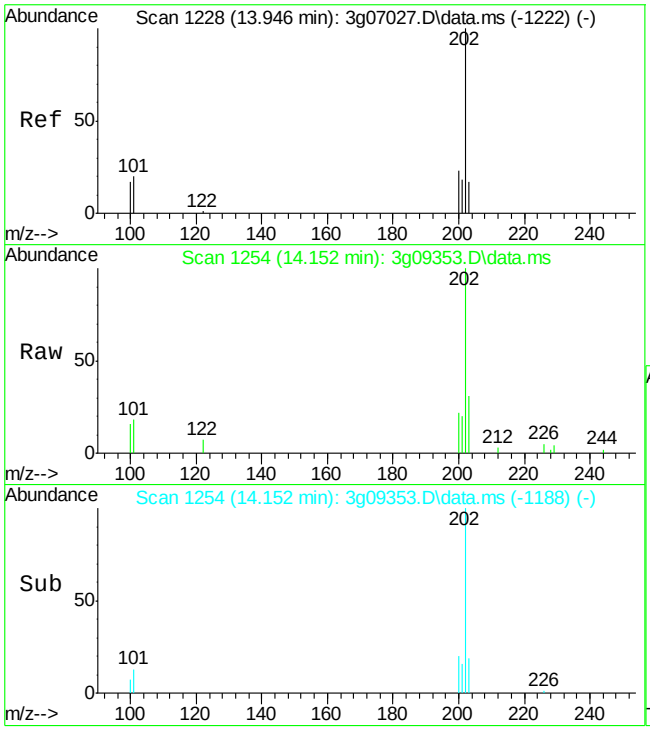


#18
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 16.507 min Scan# 1559
Delta R.T. 0.020 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:240 Resp: 149910

Ion	Ratio	Lower	Upper
240	100		
120	11.5	0.0	35.5
236	22.0	4.8	44.8

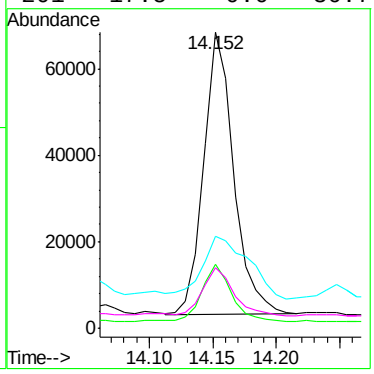


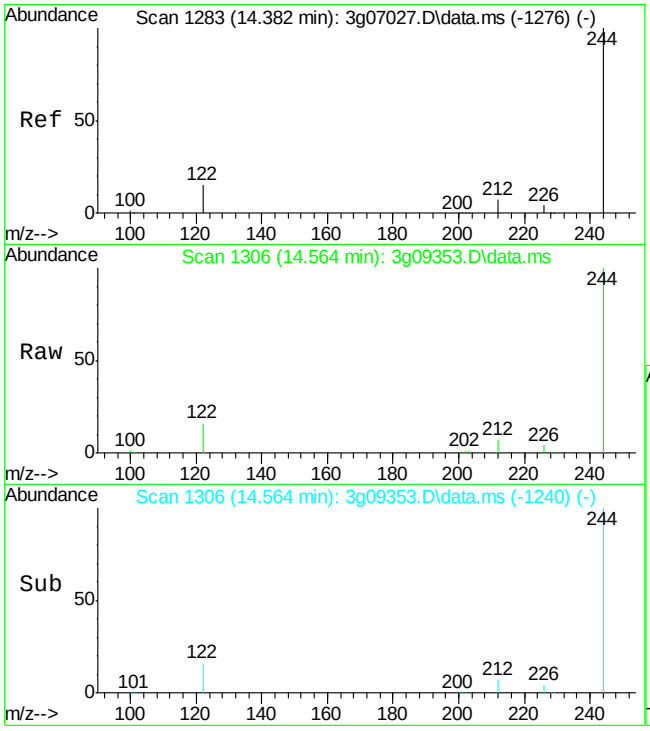


#19
Pyrene
Concen: 1.9803 ug/mL
RT: 14.152 min Scan# 1254
Delta R.T. 0.024 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:202 Resp: 106767

Ion	Ratio	Lower	Upper
202	100		
200	20.1	0.3	40.3
203	32.8	0.0	37.7
201	17.5	0.0	36.7

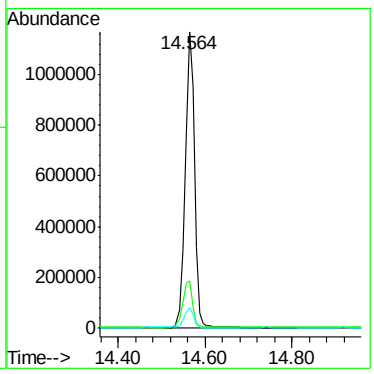


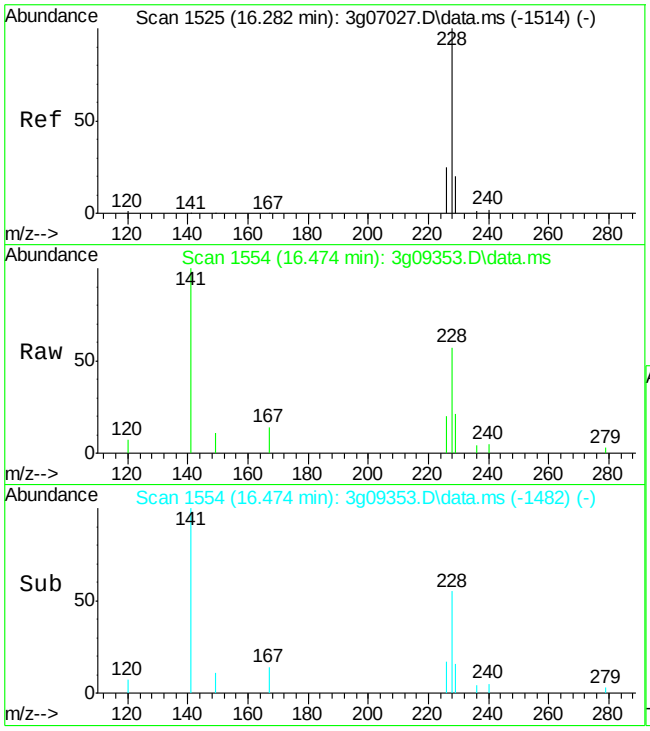


#20
Terphenyl-d14
Concen: 63.5221 ug/mL
RT: 14.564 min Scan# 1306
Delta R.T. 0.024 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:244 Resp: 1777236

Ion	Ratio	Lower	Upper
244	100		
122	17.0	0.0	36.5
212	6.7	0.0	26.8

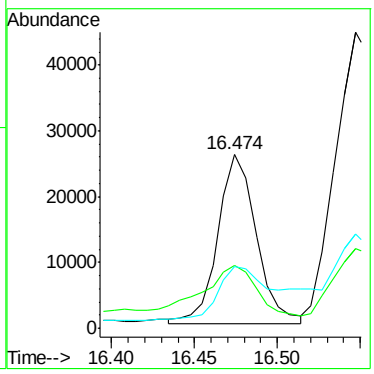


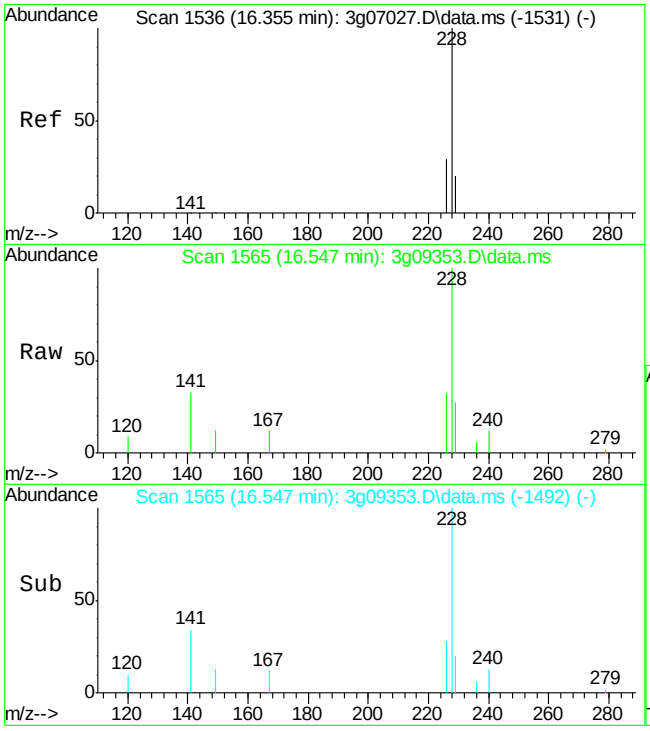


#21
Benzo(a)anthracene
Concen: 1.0066 ug/mL m
RT: 16.474 min Scan# 1554
Delta R.T. 0.014 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:228 Resp: 41649

Ion	Ratio	Lower	Upper
228	100		
229	79.1	0.0	39.5#
226	63.1	6.2	46.2#

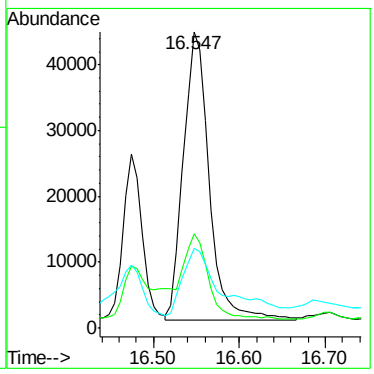


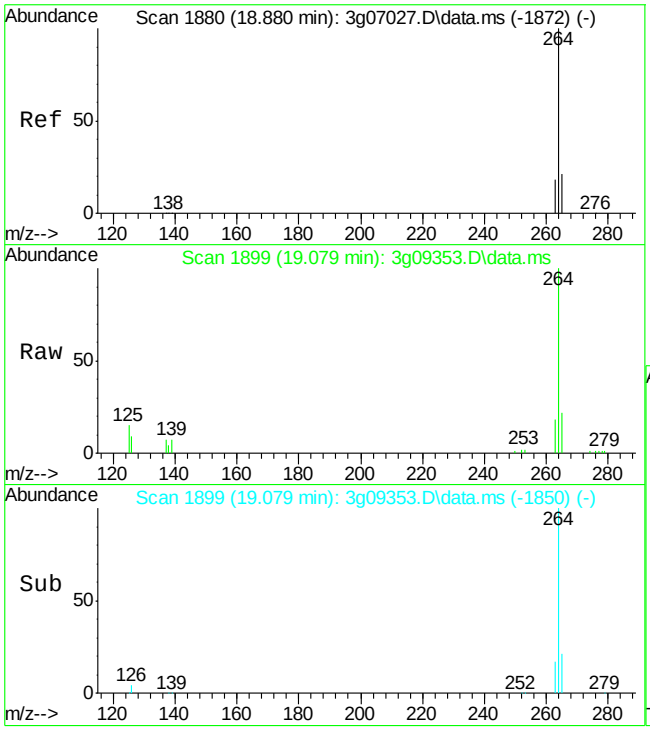


#22
Chrysene
Concen: 1.8516 ug/mL
RT: 16.547 min Scan# 1565
Delta R.T. 0.013 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:228 Resp: 90652

Ion	Ratio	Lower	Upper
228	100		
226	28.5	8.3	48.3
229	36.4	0.0	39.2

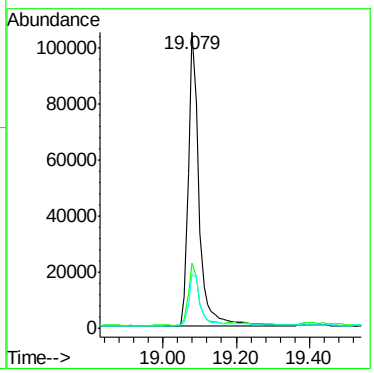


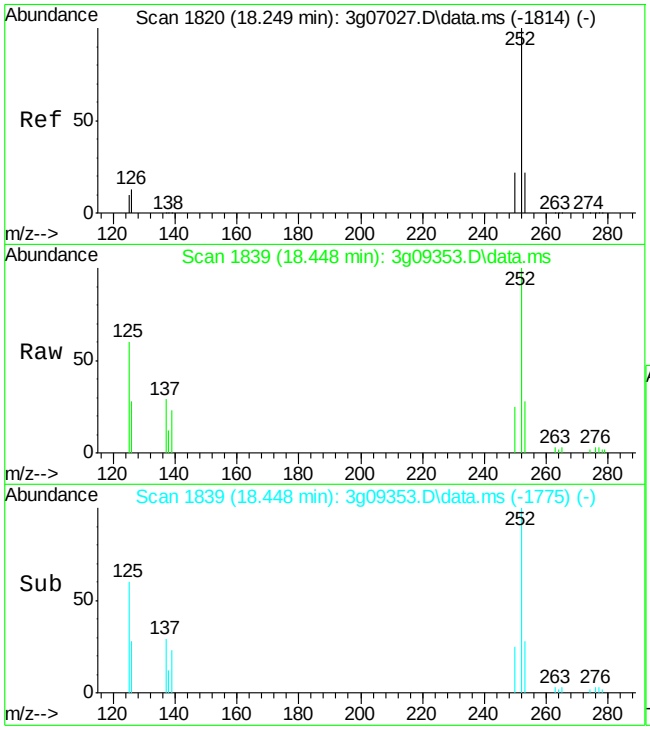


#23
Perylene-d12
Concen: 4.0000 ug/mL
RT: 19.079 min Scan# 1899
Delta R.T. 0.011 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:264 Resp: 213177

Ion	Ratio	Lower	Upper
264	100		
265	20.7	1.1	41.1
263	18.3	0.0	38.9

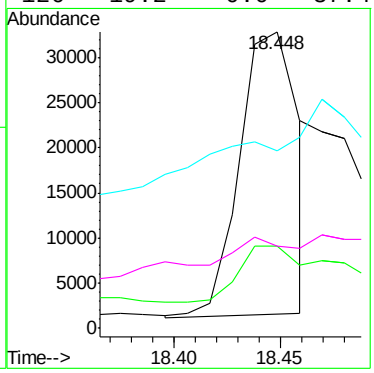


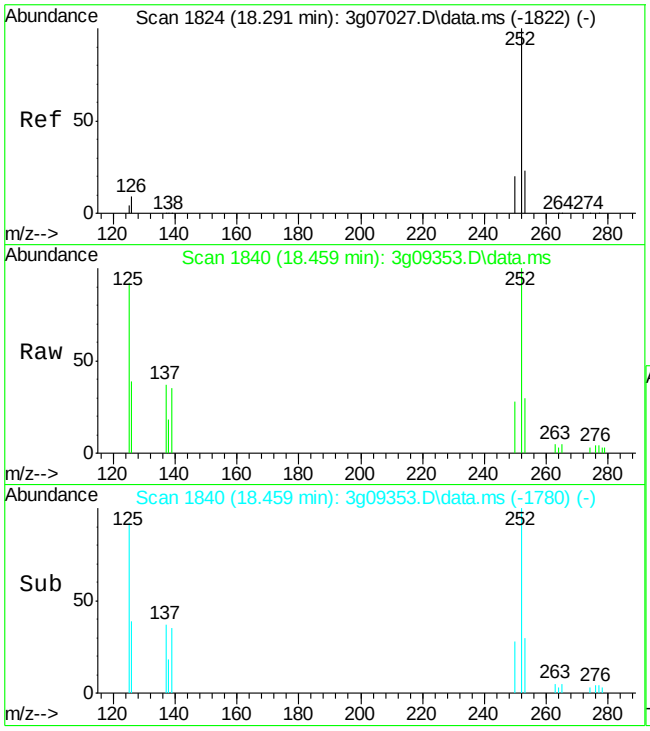


#24
Benzo(b)fluoranthene
Concen: 0.9747 ug/mL m
RT: 18.448 min Scan# 1839
Delta R.T. 0.011 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:252 Resp: 60437

Ion	Ratio	Lower	Upper
252	100		
253	42.3	6.0	46.0
125	0.0	0.0	32.4
126	19.2	0.0	37.4

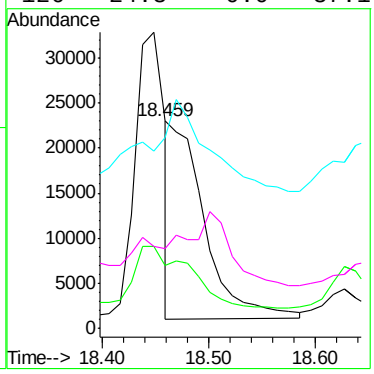


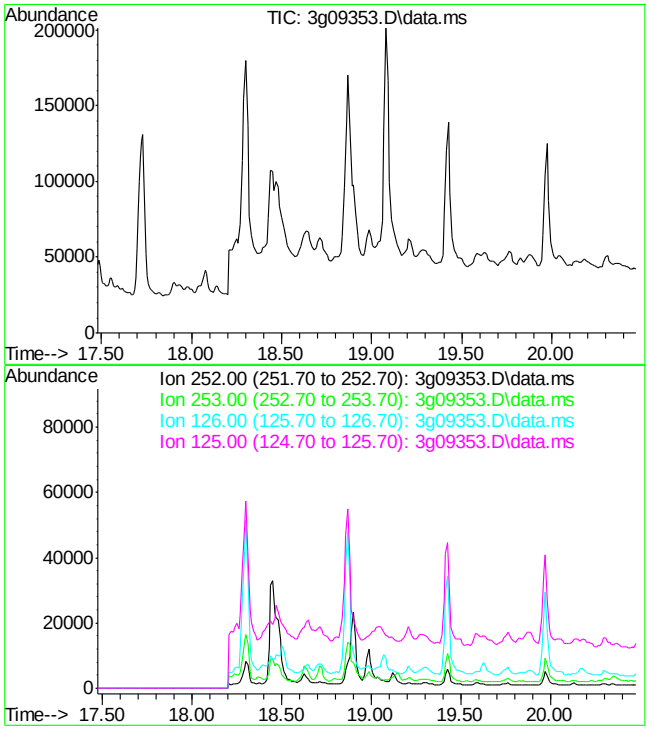


#25
Benzo(k)fluoranthene
Concen: 0.5046 ug/mL m
RT: 18.459 min Scan# 1840
Delta R.T. -0.010 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:252 Resp: 47729

Ion	Ratio	Lower	Upper
252	100		
253	69.6	0.0	39.0#
125	0.0	0.0	31.0
126	24.3	0.0	37.1



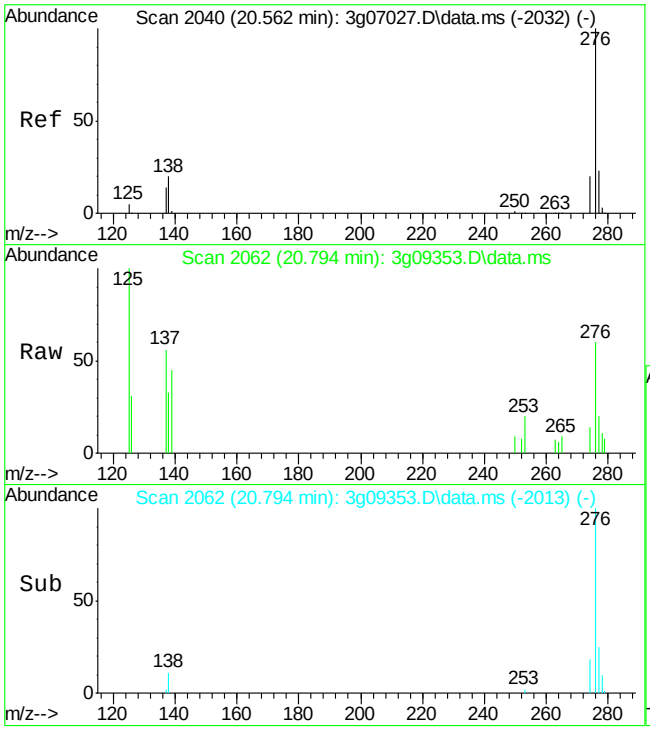


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 18.97 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 252

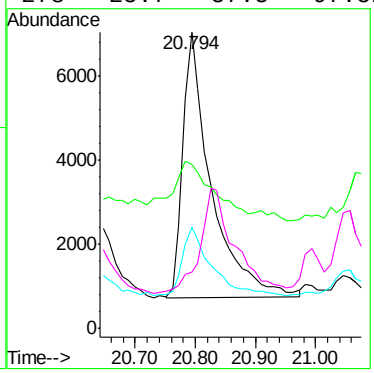
Sig	Exp Ratio
252	100
253	21.6
126	15.7
125	12.5

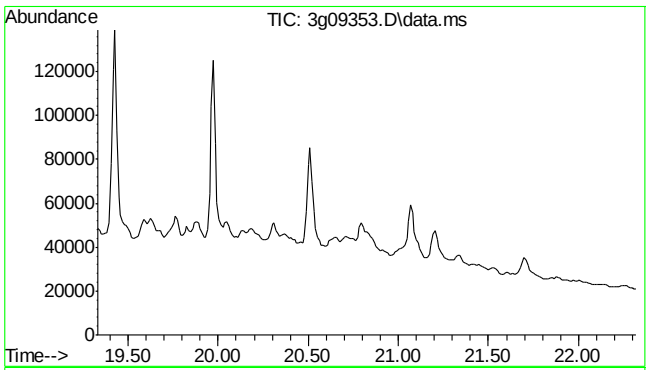


#27
Indeno(1,2,3-cd)pyrene
Concen: 0.4400 ug/mL m
RT: 20.794 min Scan# 2062
Delta R.T. 0.012 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:276 Resp: 20527

Ion	Ratio	Lower	Upper
276	100		
138	6.7	0.0	32.2
277	6.7	4.8	44.8
278	25.7	57.5	97.5#



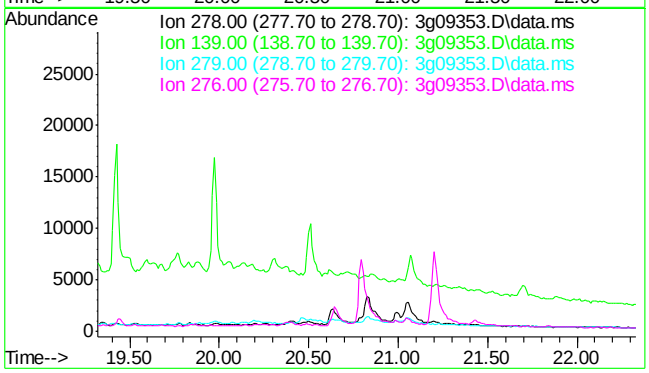


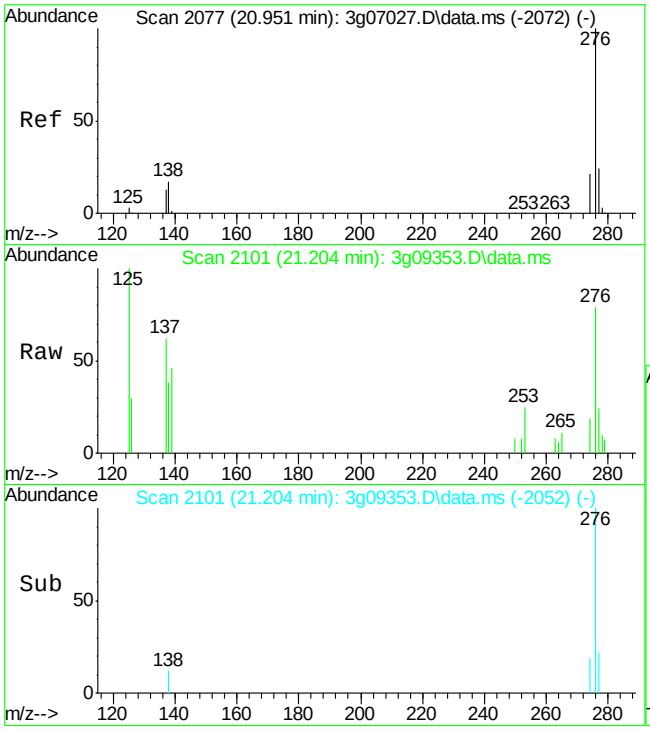
#28
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 20.82 min

Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion: 278

Sig	Exp Ratio
278	100
139	19.0
279	23.4
276	129.1

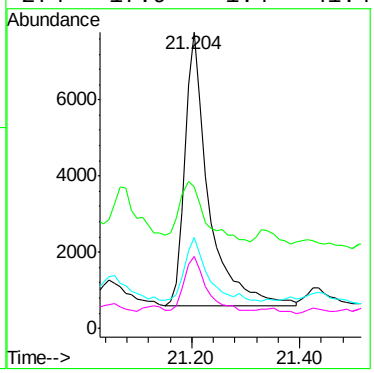




#29
Benzo(g,h,i)perylene
Concen: 0.4906 ug/mL
RT: 21.204 min Scan# 2101
Delta R.T. 0.011 min
Lab File: 3g09353.D
Acq: 22 May 12 4:45 am

Tgt Ion:276 Resp: 21474

Ion	Ratio	Lower	Upper
276	100		
138	24.1	3.6	43.6
277	22.9	3.6	43.6
274	17.9	1.4	41.4



Manual Integrations APPROVED (compounds with "m" flag)
Judy Melson 05/23/12 13:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\
Data File : 3g09358.D
Acq On : 22 May 2012 8:30 am
Operator : DONC
Sample : D34638-1, 4x
Misc : OP5918,E3G407,30.03,,,1,4
ALS Vial : 33 Sample Multiplier: 1

Quant Time: May 23 11:36:37 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M
Quant Title : PAHSIM BASE
QLast Update : Tue May 22 07:59:25 2012
Response via : Initial Calibration

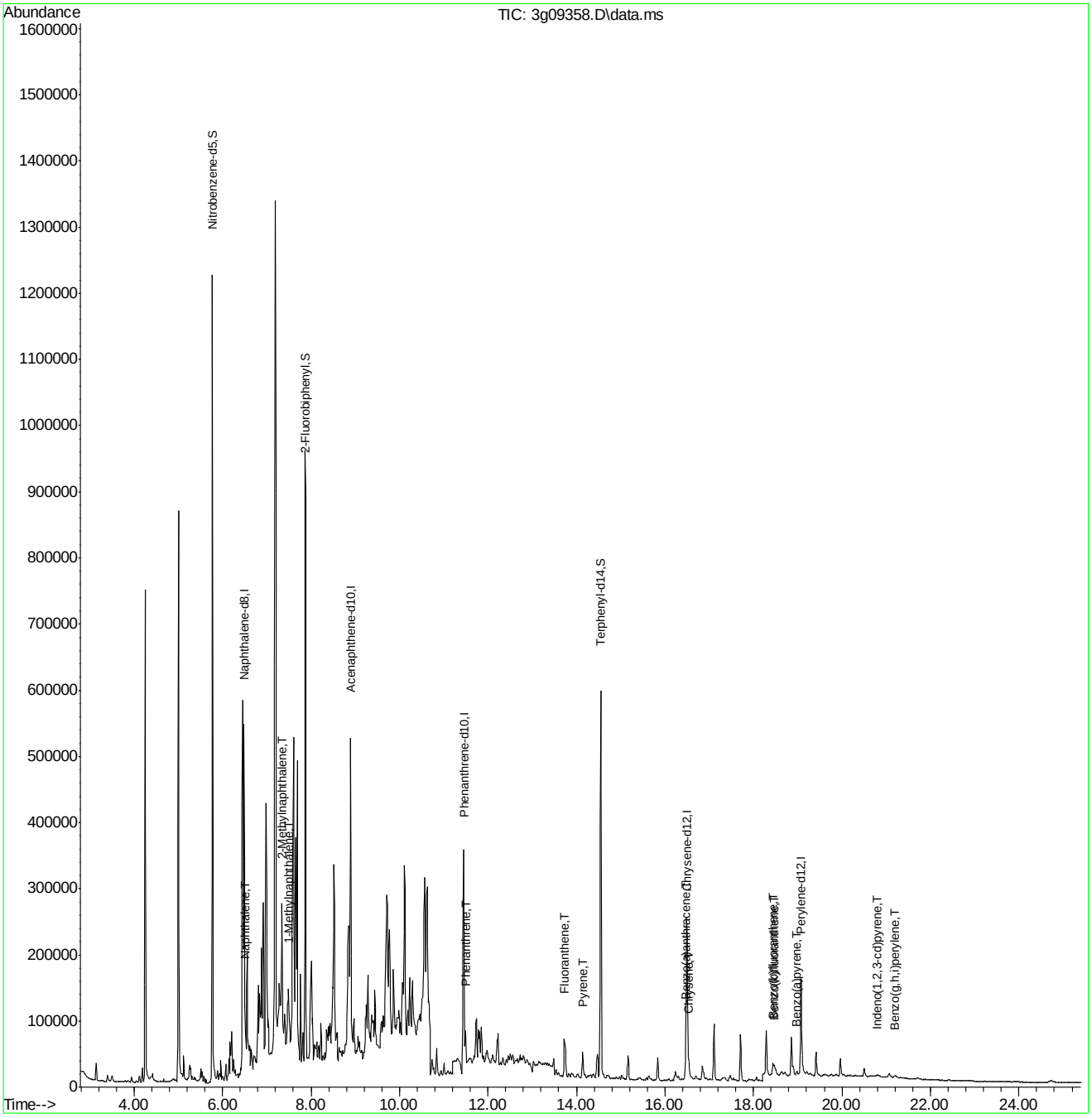
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.482	136	512825	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.897	164	271783	4.0000	ug/mL	0.01
14) Phenanthrene-d10	11.453	188	388322	4.0000	ug/mL	0.02
18) Chrysene-d12	16.501	240	244235	4.0000	ug/mL	0.01
23) Perylene-d12	19.069	264	226566	4.0000	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.772	82	659325	9.4181	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 18.84%#			
7) 2-Fluorobiphenyl	7.881	172	1030118	10.6172	ug/mL	0.01
Spiked Amount 50.000	Range 25 - 135		Recovery = 21.24%#			
20) Terphenyl-d14	14.548	244	672025	14.7431	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 29.48%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	6.507	128	64508	0.4467	ug/mL	96
8) 2-Methylnaphthalene	7.343	142	71239	0.8792	ug/mL#	76
9) 1-Methylnaphthalene	7.492	142	29722	0.3744	ug/mL#	68
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Fluorene	0.000	166	0	N.D.	d	
13) Diphenylamine	0.000	169	0	N.D.	d	
15) Phenanthrene	11.493	178	47822	0.4054	ug/mL	88
16) Anthracene	0.000	178	0	N.D.	d	
17) Fluoranthene	13.725	202	31121m	0.2346	ug/mL	
19) Pyrene	14.136	202	37227	0.4238	ug/mL	87
21) Benzo(a)anthracene	16.468	228	14015m	0.2079	ug/mL	
22) Chrysene	16.540	228	31534	0.3953	ug/mL	88
24) Benzo(b)fluoranthene	18.438	252	20137m	0.3598	ug/mL	
25) Benzo(k)fluoranthene	18.469	252	12891m	0.1570	ug/mL	
26) Benzo(a)pyrene	18.974	252	7209	0.1830	ug/mL#	85
27) Indeno(1,2,3-cd)pyrene	20.794	276	5608	0.1760	ug/mL	80
28) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d	
29) Benzo(g,h,i)perylene	21.204	276	5869	0.1793	ug/mL	95

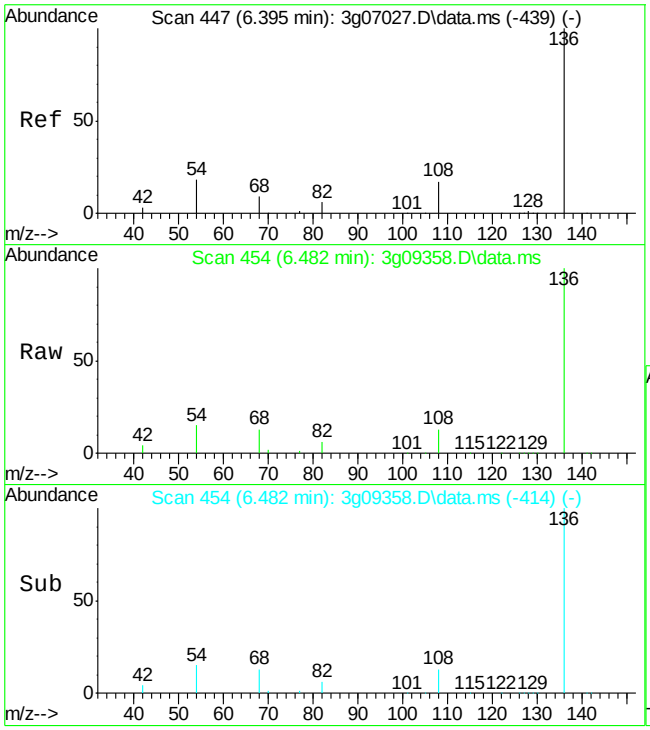
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\
Data File : 3g09358.D
Acq On : 22 May 2012 8:30 am
Operator : DONC
Sample : D34638-1, 4x
Misc : OP5918,E3G407,30.03,,,1,4
ALS Vial : 33 Sample Multiplier: 1

Quant Time: May 23 11:36:37 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M
Quant Title : PAHSIM BASE
QLast Update : Tue May 22 07:59:25 2012
Response via : Initial Calibration

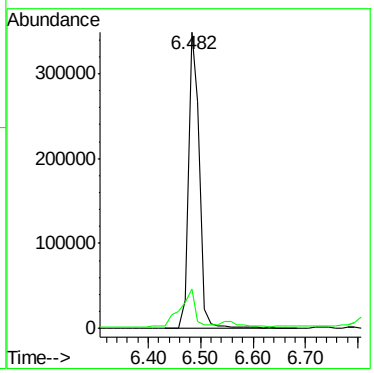


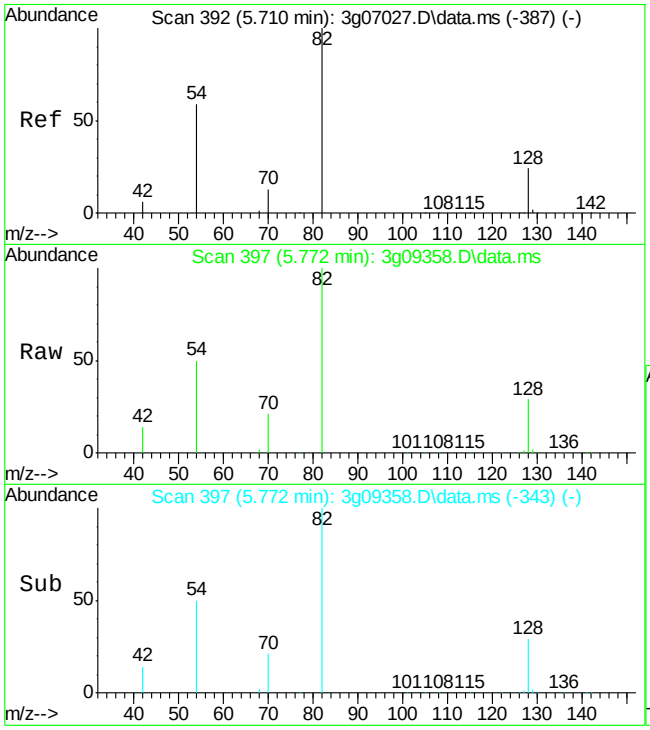


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 6.482 min Scan# 454
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:136 Resp: 512825

Ion	Ratio	Lower	Upper
136	100		
68	18.6	0.0	31.7

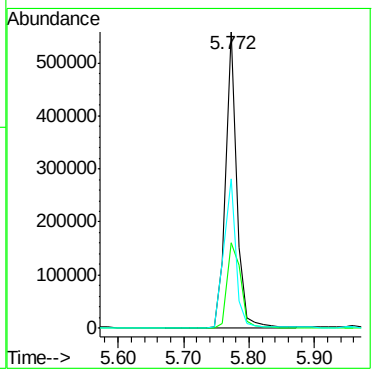


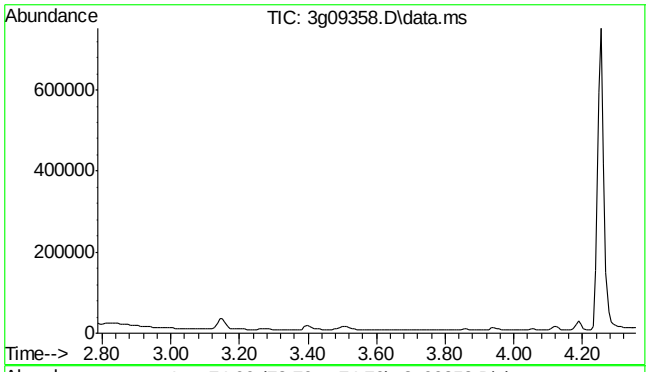


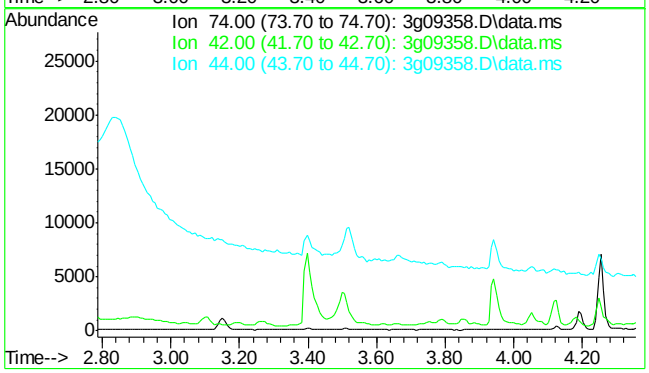
#2
Nitrobenzene-d5
Concen: 9.4181 ug/mL
RT: 5.772 min Scan# 397
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 82 Resp: 659325

Ion	Ratio	Lower	Upper
82	100		
128	35.5	14.7	54.7
54	54.1	36.8	76.8





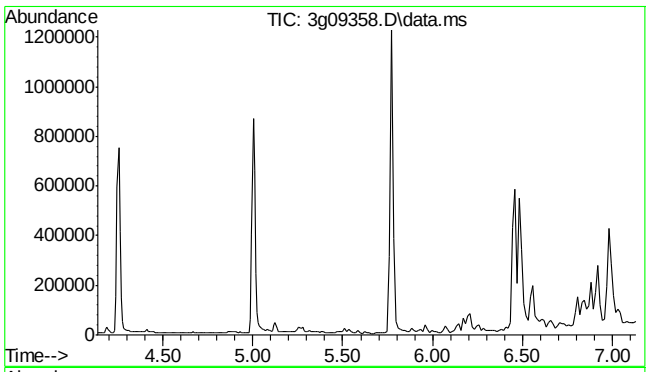


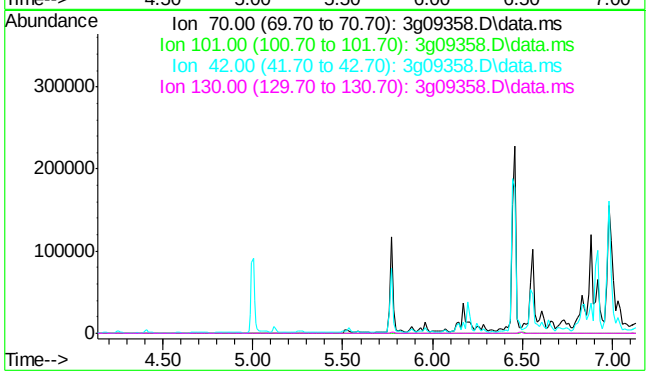
#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.86 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 74

Sig	Exp Ratio
74	100
42	68.8
44	7.4



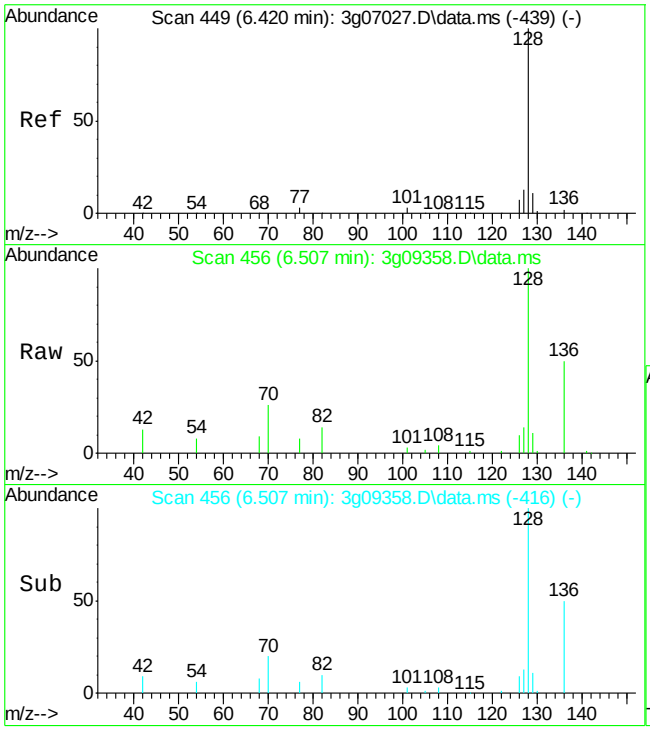


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.63 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 70

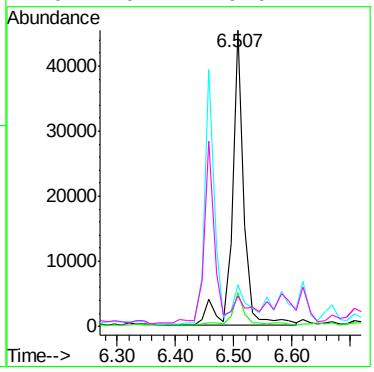
Sig	Exp Ratio
70	100
101	10.0
42	61.7
130	18.9

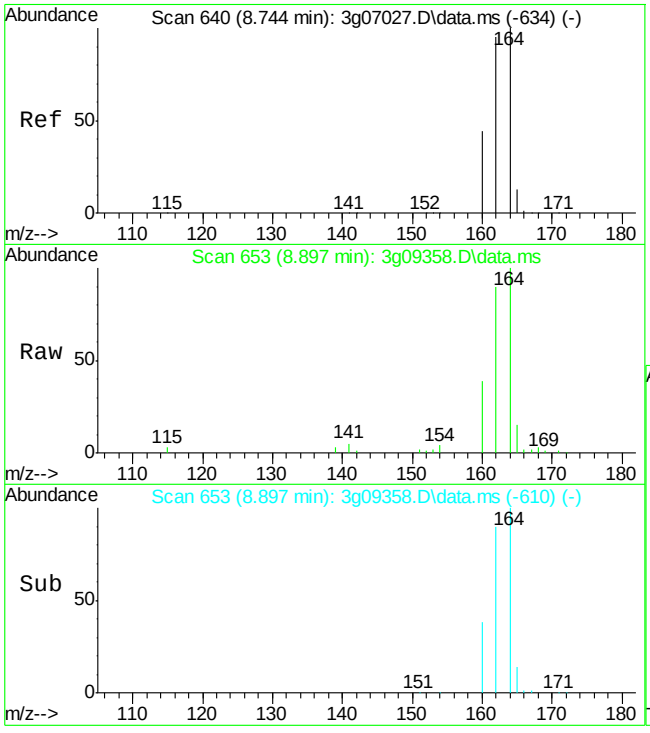


#5
Naphthalene
Concen: 0.4467 ug/mL
RT: 6.507 min Scan# 456
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:128 Resp: 64508

Ion	Ratio	Lower	Upper
128	100		
129	12.6	0.0	30.8
127	13.3	0.0	32.4
126	9.2	0.0	27.7

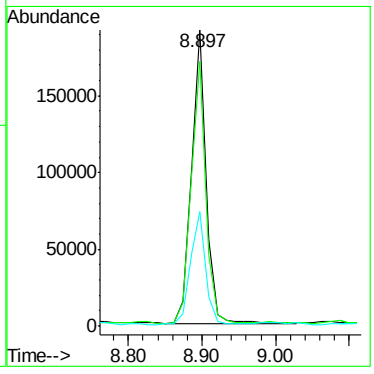


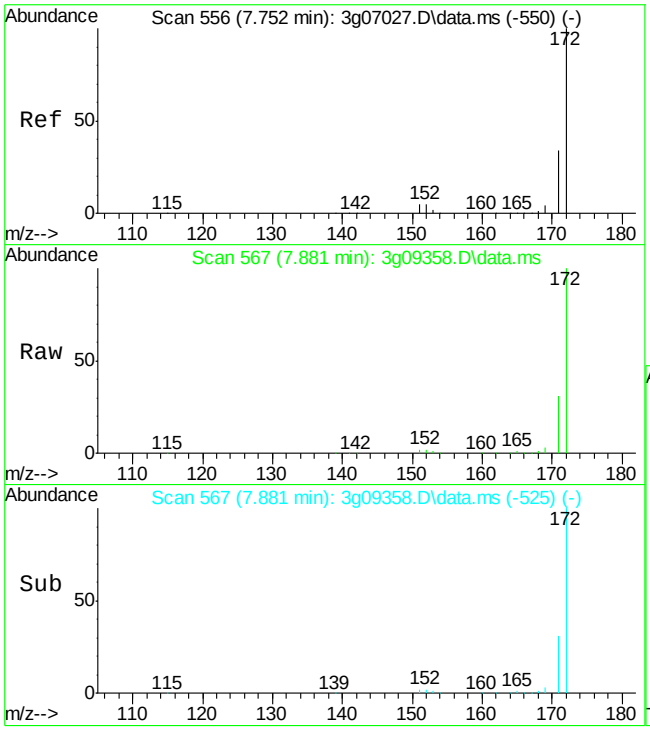


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 8.897 min Scan# 653
Delta R.T. 0.012 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:164 Resp: 271783

Ion	Ratio	Lower	Upper
164	100		
162	89.5	73.1	113.1
160	39.9	22.5	62.5

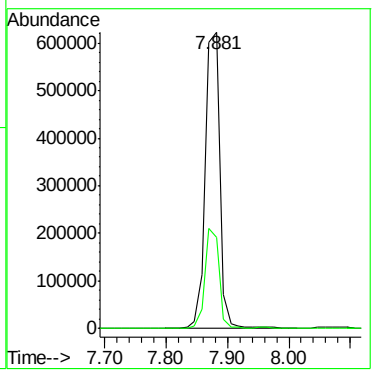


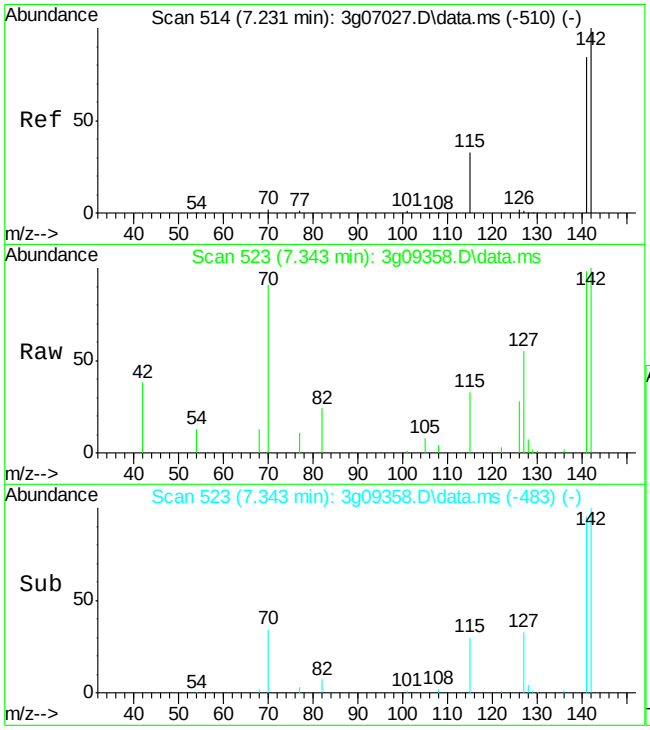


#7
2-Fluorobiphenyl
Concen: 10.6172 ug/mL
RT: 7.881 min Scan# 567
Delta R.T. 0.012 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:172 Resp: 1030118

Ion	Ratio	Lower	Upper
172	100		
171	32.7	13.1	53.1

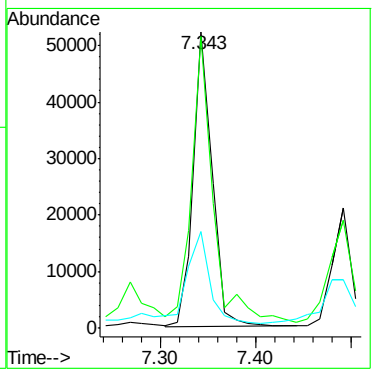


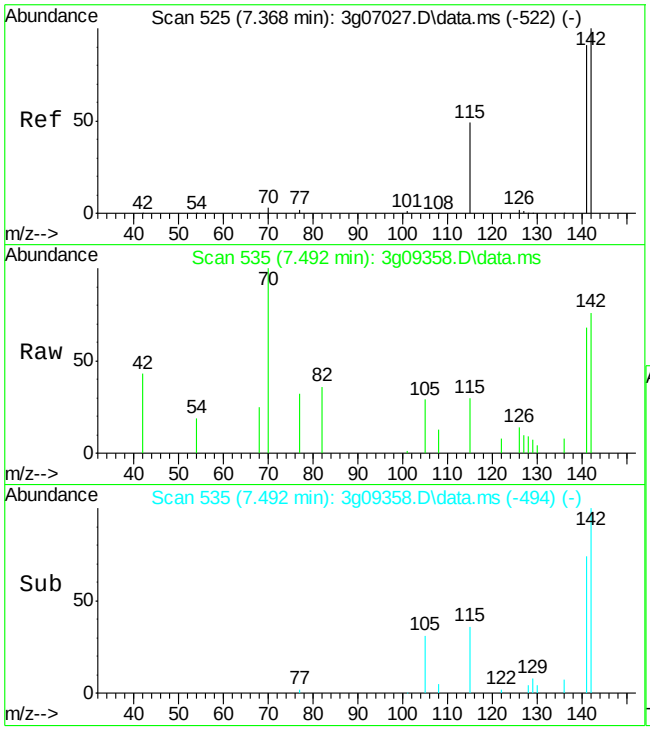


#8
2-Methylnaphthalene
Concen: 0.8792 ug/mL
RT: 7.343 min Scan# 523
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:142 Resp: 71239

Ion	Ratio	Lower	Upper
142	100		
141	109.0	63.0	103.0#
115	42.4	15.6	55.6

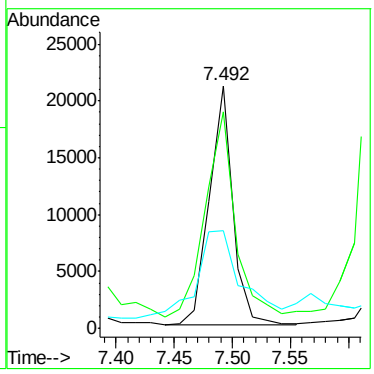


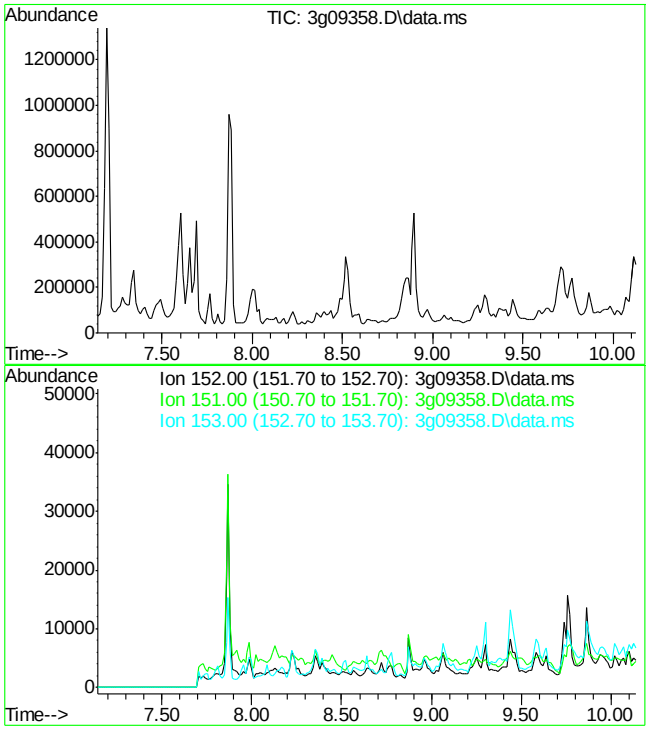


#9
1-Methylnaphthalene
Concen: 0.3744 ug/mL
RT: 7.492 min Scan# 535
Delta R.T. 0.013 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:142 Resp: 29722

Ion	Ratio	Lower	Upper
142	100		
141	109.6	67.2	107.2#
115	68.1	17.1	57.1#



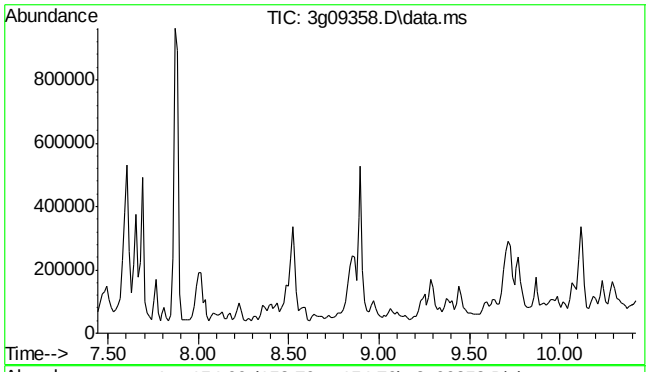


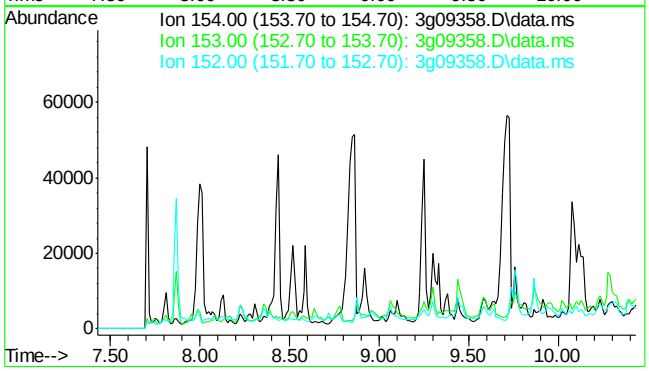
#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.64 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 152

Sig	Exp	Ratio
152	100	
151	19.0	
153	14.1	



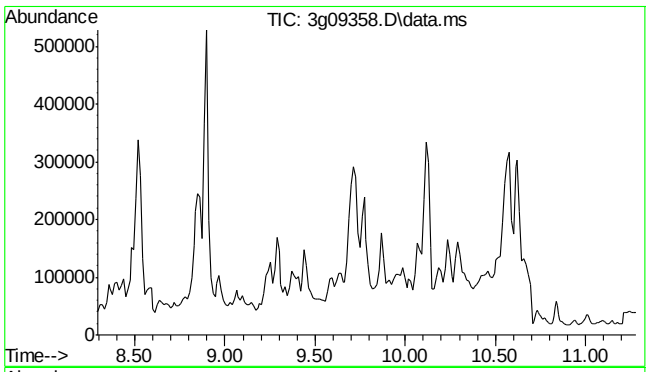


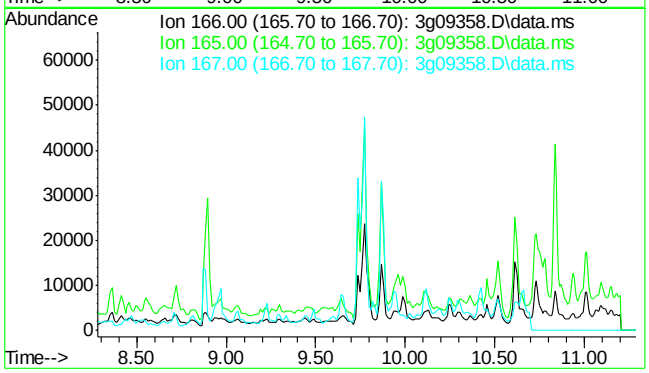
#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.93 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 154

Sig	Exp Ratio
154	100
153	105.0
152	46.1



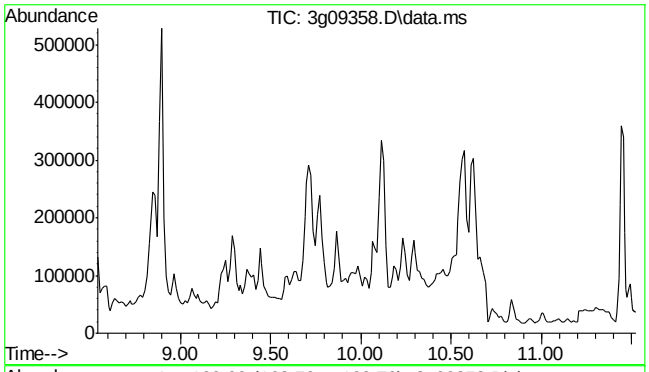


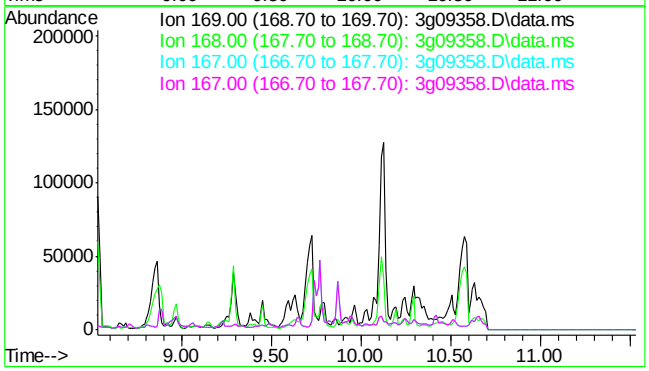
#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.78 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 166

Sig	Exp Ratio
166	100
165	90.8
167	13.2



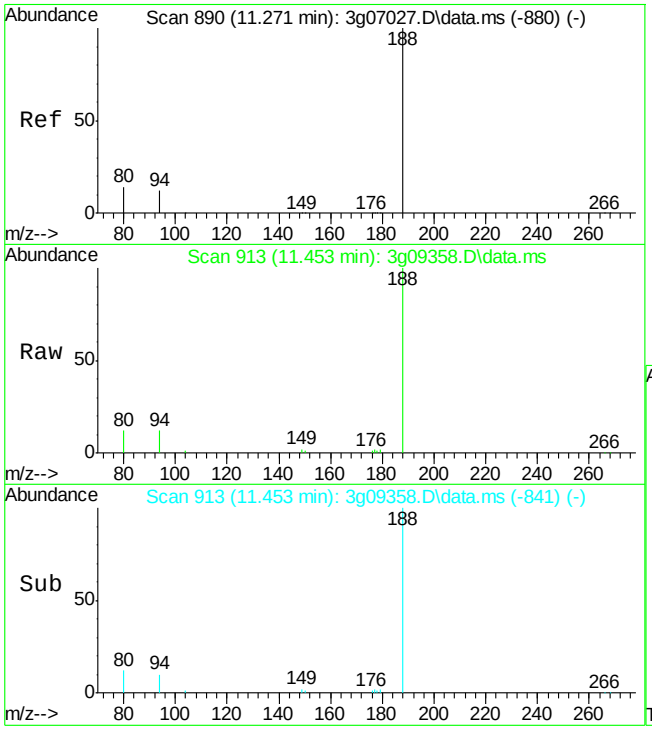


#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.03 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 169

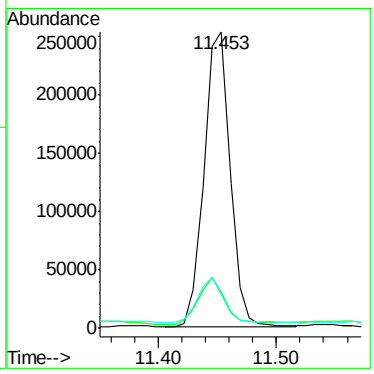
Sig	Exp Ratio
169	100
168	61.6
167	33.6
167	33.6

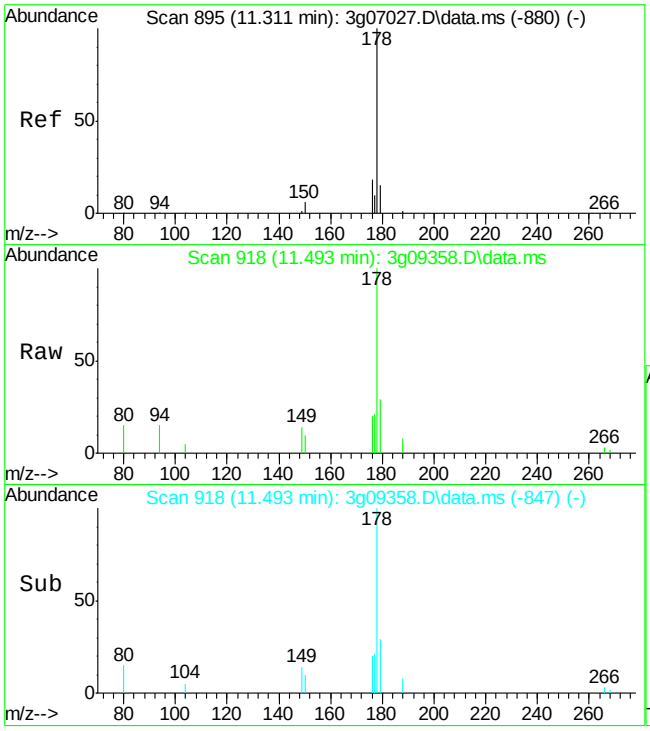


#14
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 11.453 min Scan# 913
Delta R.T. 0.016 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:188 Resp: 388322

Ion	Ratio	Lower	Upper
188	100		
94	17.6	0.0	36.5
80	14.8	0.0	37.9

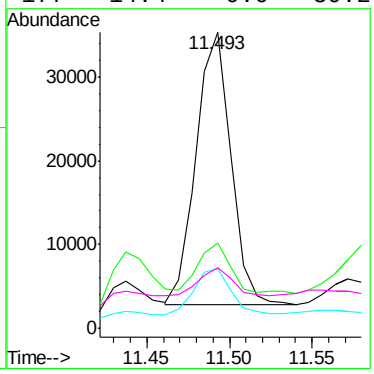


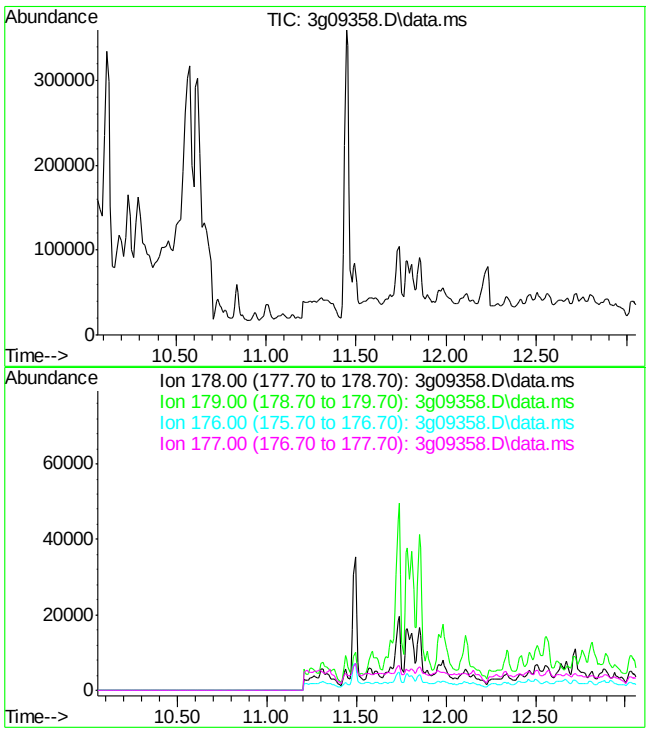


#15
Phenanthrene
Concen: 0.4054 ug/mL
RT: 11.493 min Scan# 918
Delta R.T. 0.016 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:178 Resp: 47822

Ion	Ratio	Lower	Upper
178	100		
179	26.2	0.0	35.1
176	18.6	0.0	38.5
177	14.4	0.0	30.2



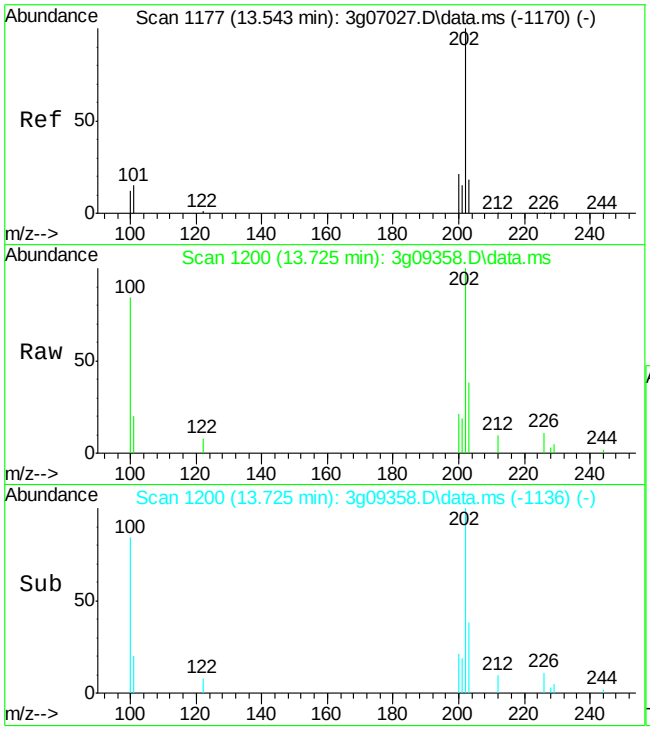


#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.56 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 178

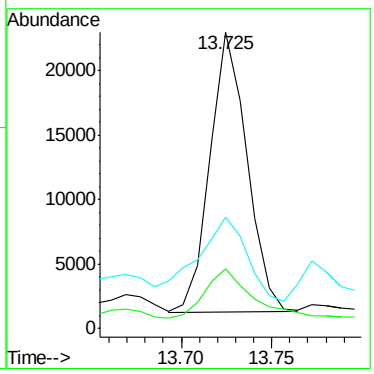
Sig	Exp Ratio
178	100
179	15.1
176	17.8
177	8.7

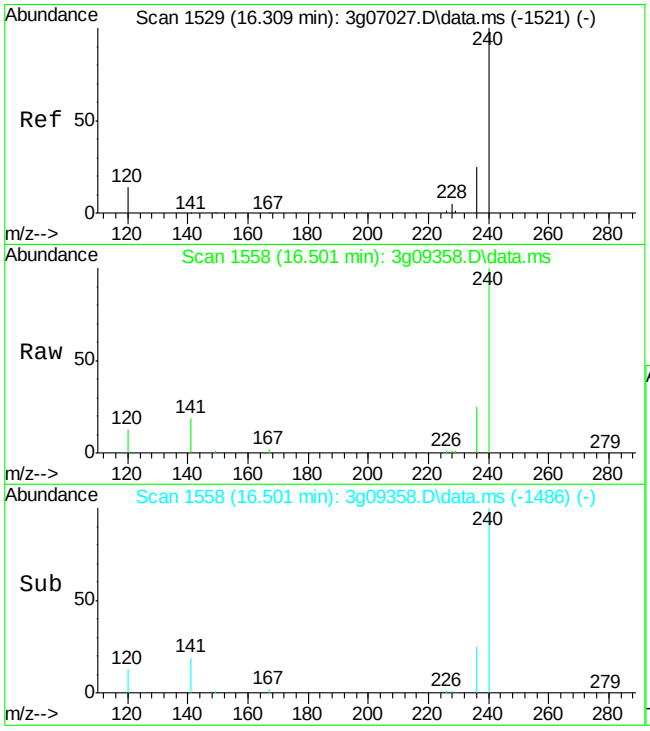


#17
Fluoranthene
Concen: 0.2346 ug/mL m
RT: 13.725 min Scan# 1200
Delta R.T. 0.008 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:202 Resp: 31121

Ion	Ratio	Lower	Upper
202	100		
101	22.3	0.0	35.5
203	41.7	0.0	37.2#

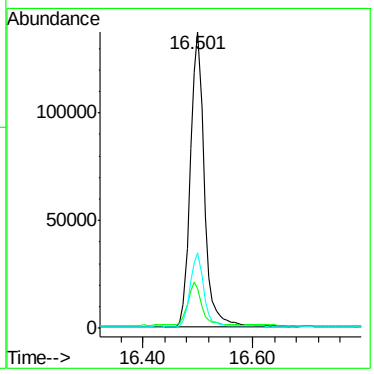


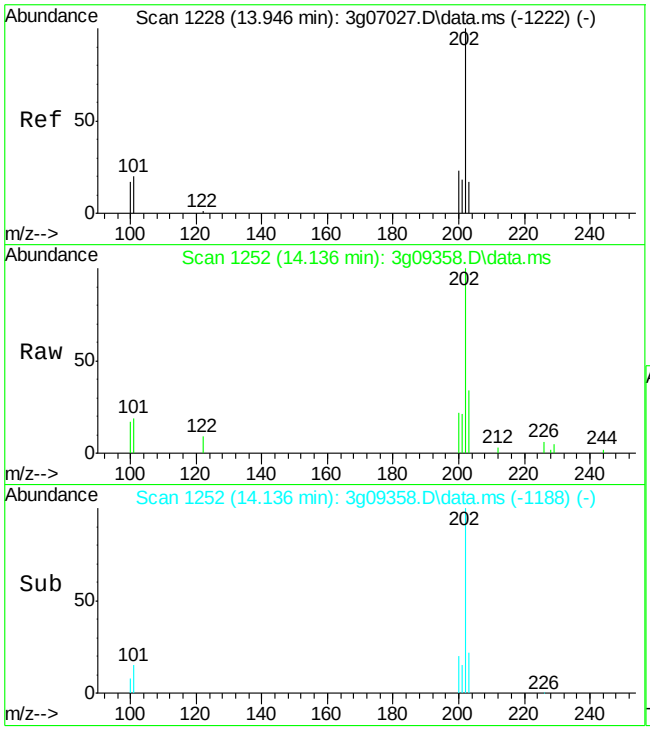


#18
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 16.501 min Scan# 1558
Delta R.T. 0.013 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:240 Resp: 244235

Ion	Ratio	Lower	Upper
240	100		
120	14.2	0.0	35.5
236	24.5	4.8	44.8

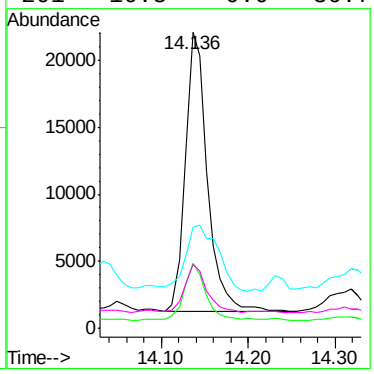


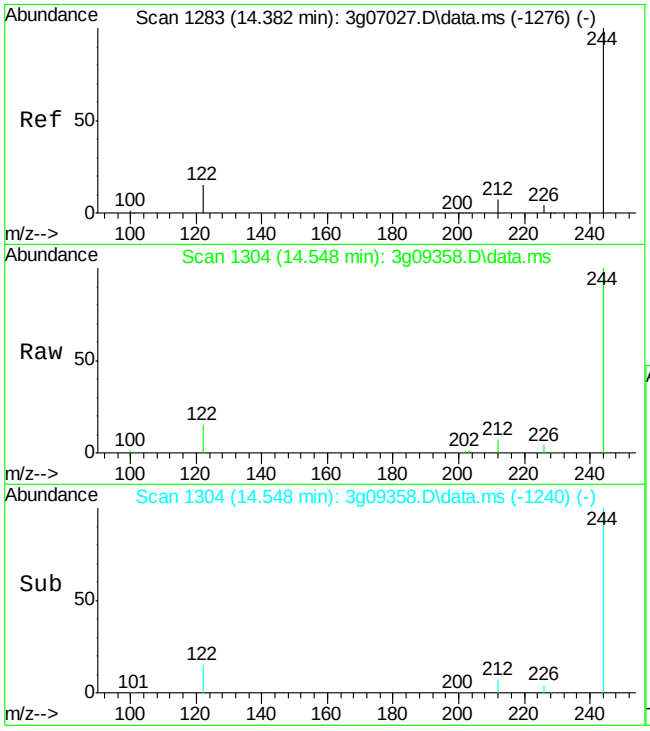


#19
Pyrene
Concen: 0.4238 ug/mL
RT: 14.136 min Scan# 1252
Delta R.T. 0.008 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:202 Resp: 37227

Ion	Ratio	Lower	Upper
202	100		
200	19.7	0.3	40.3
203	34.4	0.0	37.7
201	16.3	0.0	36.7

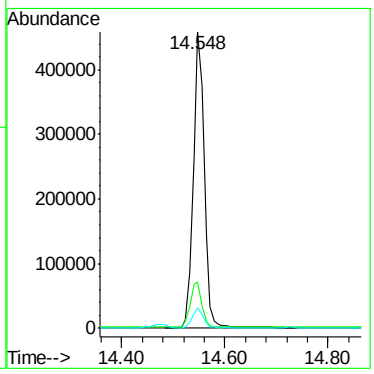


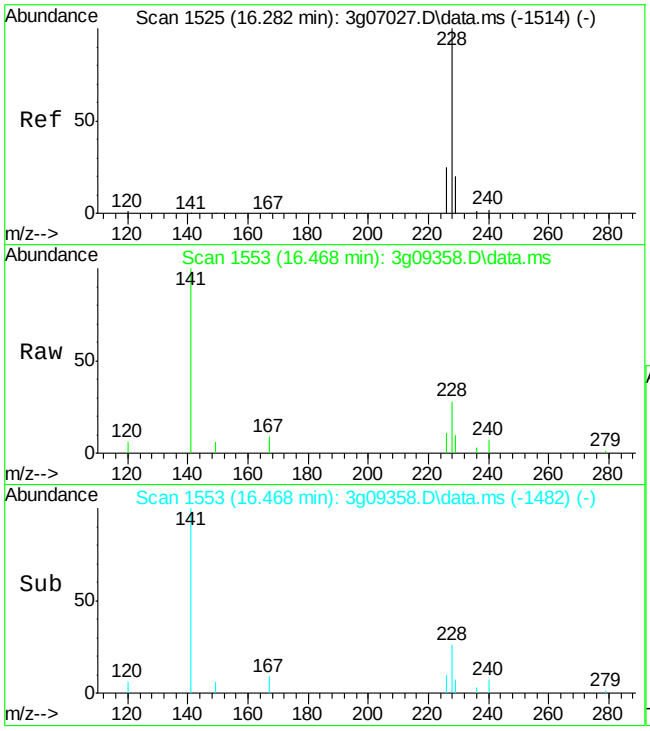


#20
Terphenyl-d14
Concen: 14.7431 ug/mL
RT: 14.548 min Scan# 1304
Delta R.T. 0.008 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:244 Resp: 672025

Ion	Ratio	Lower	Upper
244	100		
122	16.7	0.0	36.5
212	6.6	0.0	26.8

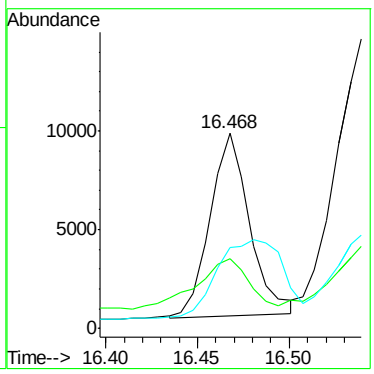


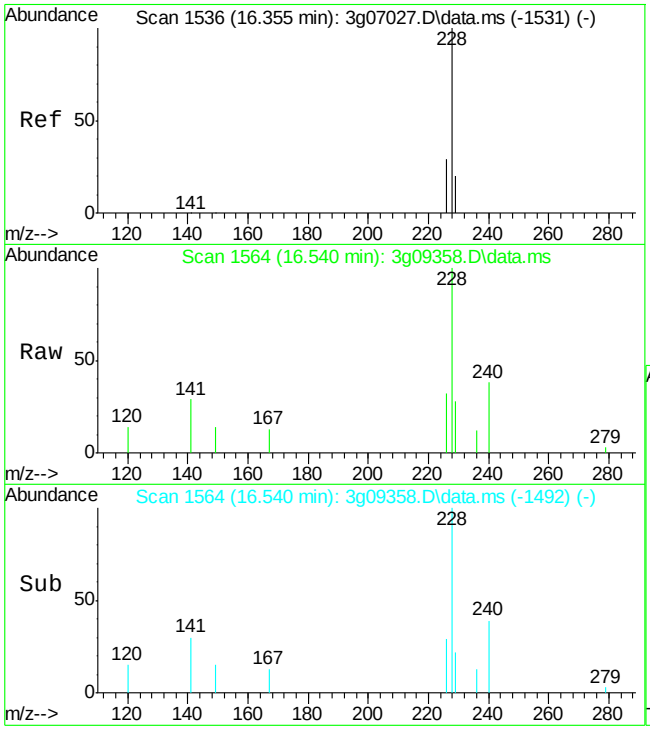


#21
Benzo(a)anthracene
Concen: 0.2079 ug/mL m
RT: 16.468 min Scan# 1553
Delta R.T. 0.008 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:228 Resp: 14015

Ion	Ratio	Lower	Upper
228	100		
229	79.5	0.0	39.5#
226	67.4	6.2	46.2#

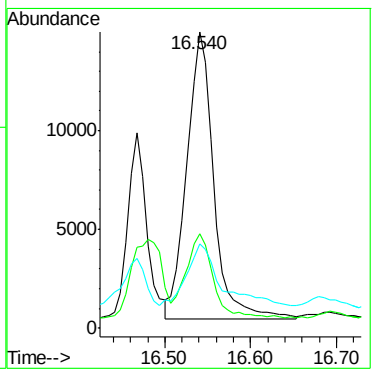


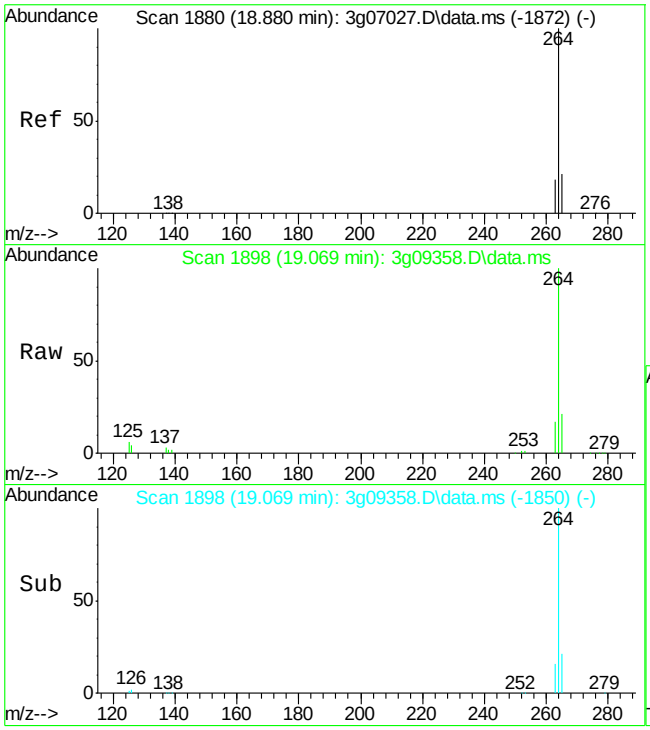


#22
Chrysene
Concen: 0.3953 ug/mL
RT: 16.540 min Scan# 1564
Delta R.T. 0.007 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:228 Resp: 31534

Ion	Ratio	Lower	Upper
228	100		
226	29.9	8.3	48.3
229	30.6	0.0	39.2

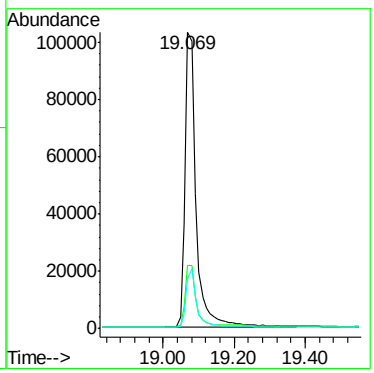


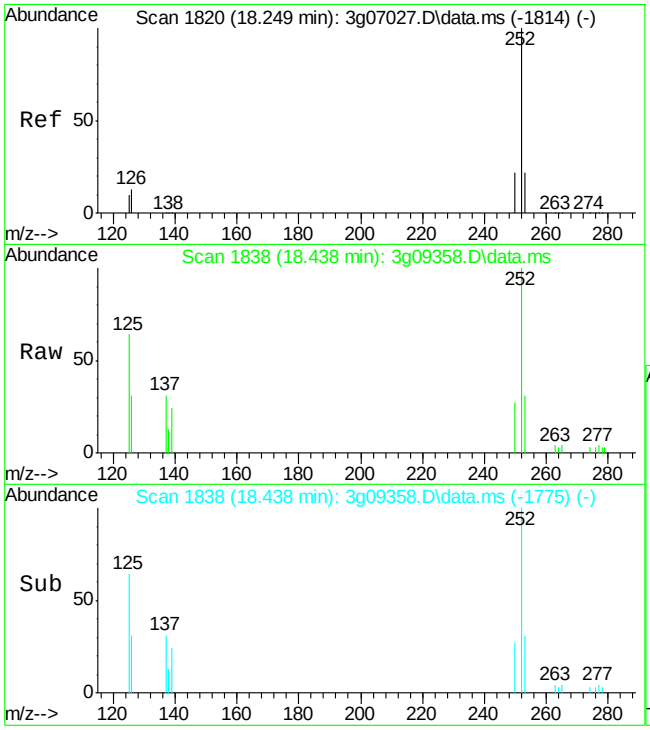


#23
Perylene-d12
Concen: 4.0000 ug/mL
RT: 19.069 min Scan# 1898
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:264 Resp: 226566

Ion	Ratio	Lower	Upper
264	100		
265	20.7	1.1	41.1
263	19.3	0.0	38.9

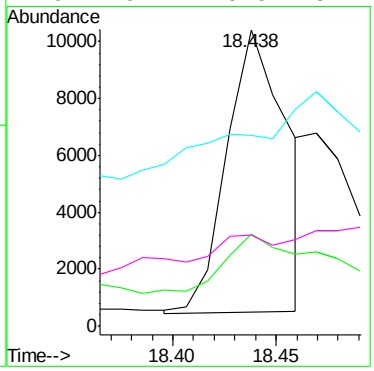


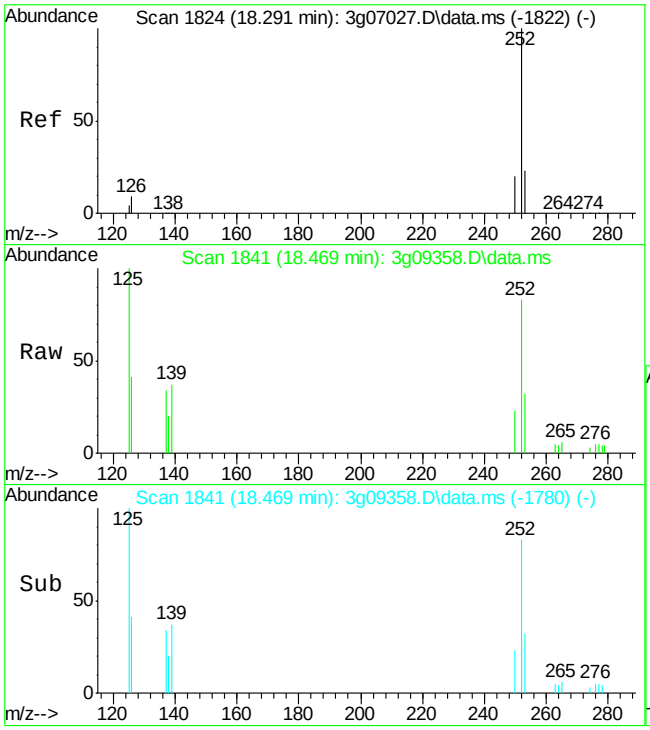


#24
Benzo(b)fluoranthene
Concen: 0.3598 ug/mL m
RT: 18.438 min Scan# 1838
Delta R.T. 0.001 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:252 Resp: 20137

Ion	Ratio	Lower	Upper
252	100		
253	38.1	6.0	46.0
125	0.0	0.0	32.4
126	19.2	0.0	37.4

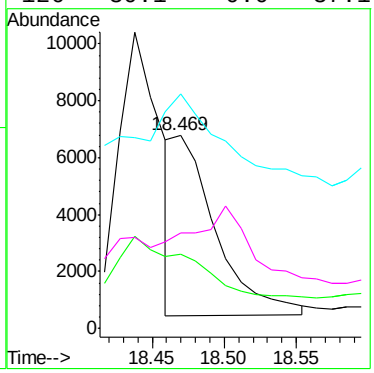


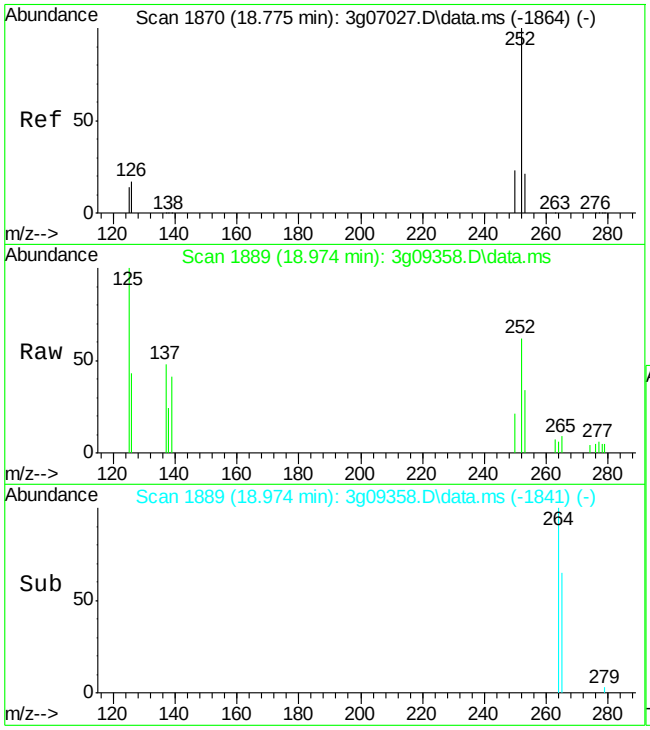


#25
Benzo(k)fluoranthene
Concen: 0.1570 ug/mL m
RT: 18.469 min Scan# 1841
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:252 Resp: 12891

Ion	Ratio	Lower	Upper
252	100		
253	59.5	0.0	39.0#
125	0.0	0.0	31.0
126	30.1	0.0	37.1

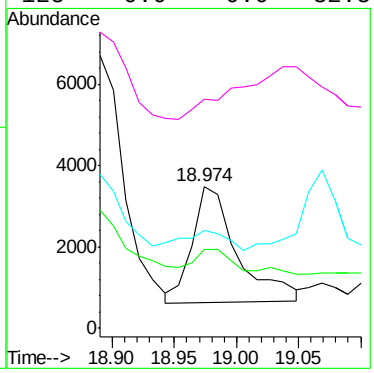


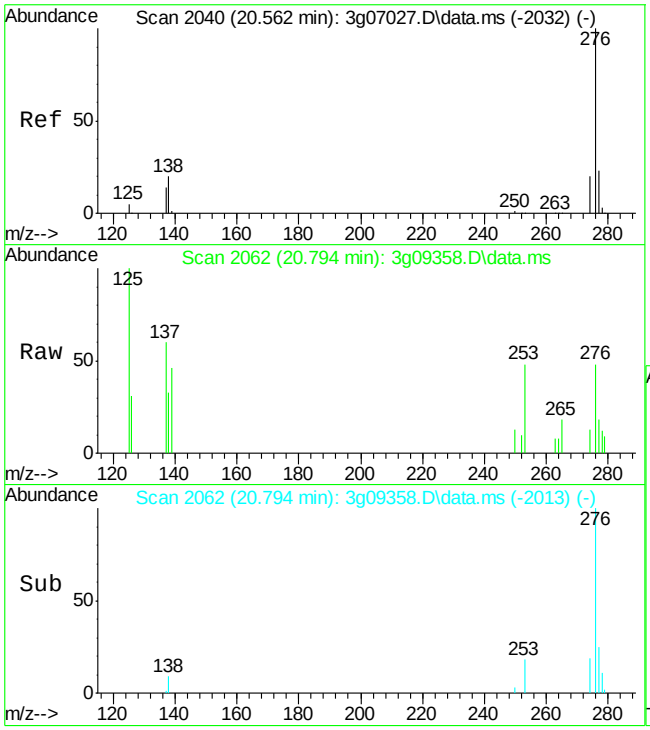


#26
Benzo(a)pyrene
Concen: 0.1830 ug/mL
RT: 18.974 min Scan# 1889
Delta R.T. 0.000 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:252 Resp: 7209

Ion	Ratio	Lower	Upper
252	100		
253	14.4	1.6	41.6
126	15.9	0.0	35.7
125	0.0	0.0	32.5

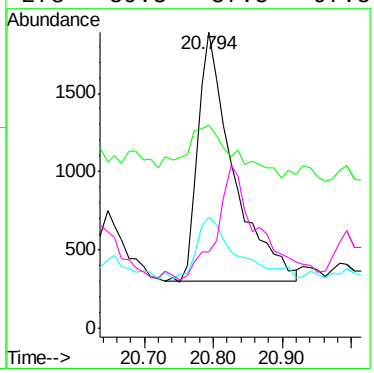


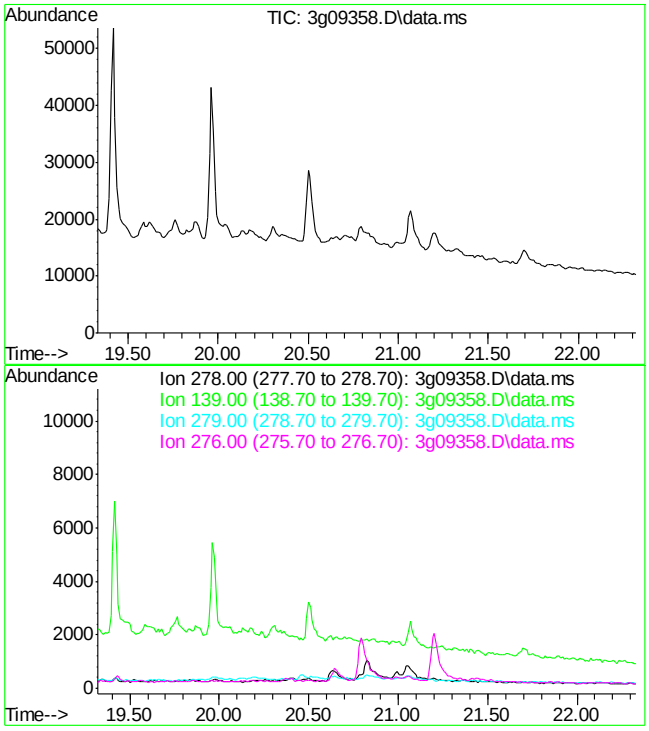


#27
Indeno(1,2,3-cd)pyrene
Concen: 0.1760 ug/mL
RT: 20.794 min Scan# 2062
Delta R.T. 0.012 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:276 Resp: 5608

Ion	Ratio	Lower	Upper
276	100		
138	29.8	0.0	32.2
277	27.6	4.8	44.8
278	59.3	57.5	97.5



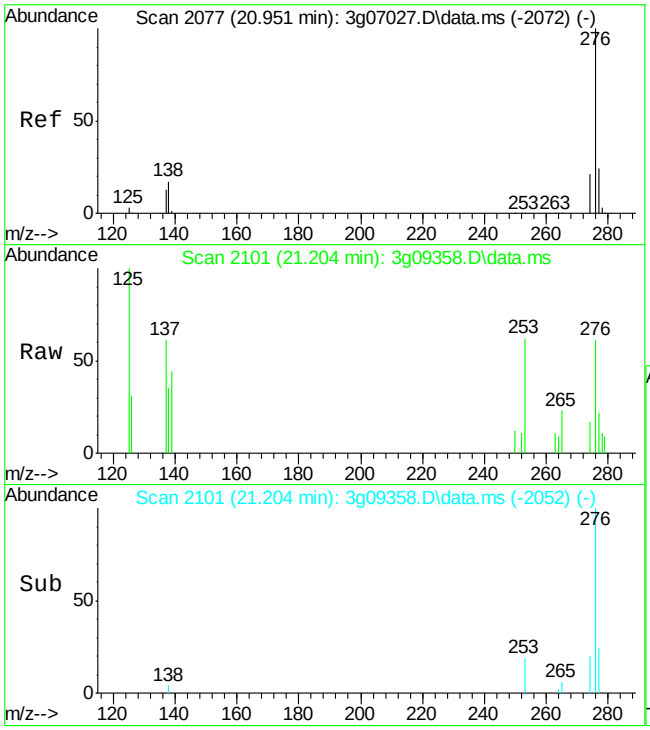


#28
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 20.82 min

Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion: 278

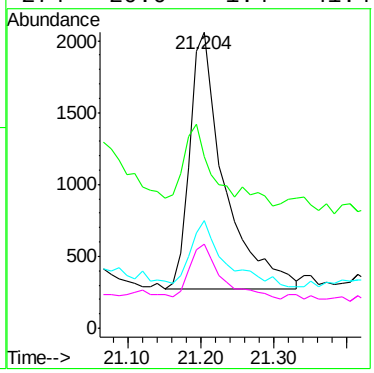
Sig	Exp Ratio
278	100
139	19.0
279	23.4
276	129.1



#29
Benzo(g,h,i)perylene
Concen: 0.1793 ug/mL
RT: 21.204 min Scan# 2101
Delta R.T. 0.011 min
Lab File: 3g09358.D
Acq: 22 May 12 8:30 am

Tgt Ion:276 Resp: 5869

Ion	Ratio	Lower	Upper
276	100		
138	19.5	3.6	43.6
277	25.4	3.6	43.6
274	20.0	1.4	41.4



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\
Data File : 3g09350.D
Acq On : 22 May 2012 2:57 am
Operator : DONC
Sample : OP5918-MB
Misc : OP5918,E3G407,30.00,,,1,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 23 12:12:49 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M
Quant Title : PAHSIM BASE
QLast Update : Tue May 22 07:59:25 2012
Response via : Initial Calibration

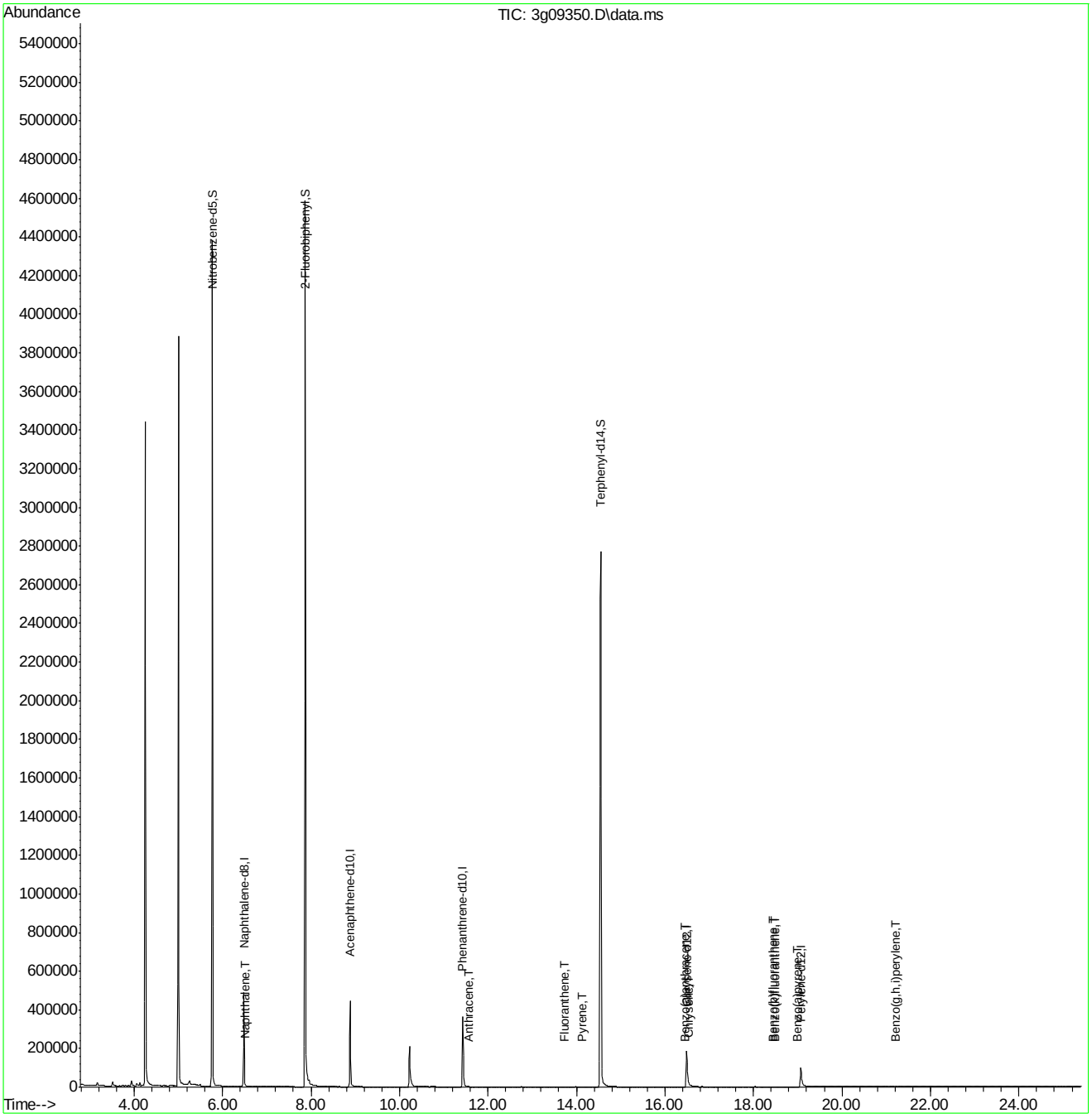
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.483	136	455271	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.886	164	276741	4.0000	ug/mL	0.00
14) Phenanthrene-d10	11.430	188	445756	4.0000	ug/mL	0.00
18) Chrysene-d12	16.488	240	323504	4.0000	ug/mL	0.00
23) Perylene-d12	19.069	264	193834	4.0000	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.772	82	2506195	40.3253	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 80.66%			
7) 2-Fluorobiphenyl	7.870	172	4402726	44.5651	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 89.14%			
20) Terphenyl-d14	14.548	244	3652025	60.4873	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 120.98%			
Target Compounds						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	6.508	128	744	0.0058	ug/mL	75
8) 2-Methylnaphthalene	0.000	142	0	N.D.	d	
9) 1-Methylnaphthalene	0.000	142	0	N.D.	d	
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Fluorene	0.000	166	0	N.D.		
13) Diphenylamine	0.000	169	0	N.D.	d	
15) Phenanthrene	0.000	178	0	N.D.	d	
16) Anthracene	11.556	178	810	0.0266	ug/mL	94
17) Fluoranthene	13.717	202	1589	0.0104	ug/mL	98
19) Pyrene	14.129	202	1536	0.0132	ug/mL	97
21) Benzo(a)anthracene	16.461	228	1011	0.0113	ug/mL	72
22) Chrysene	16.534	228	1484	0.0140	ug/mL	90
24) Benzo(b)fluoranthene	18.438	252	562	0.0874	ug/mL#	67
25) Benzo(k)fluoranthene	18.480	252	802	0.0473	ug/mL#	74
26) Benzo(a)pyrene	18.985	252	484	0.0946	ug/mL	82
27) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
28) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d	
29) Benzo(g,h,i)perylene	21.214	276	572	0.0836	ug/mL	75

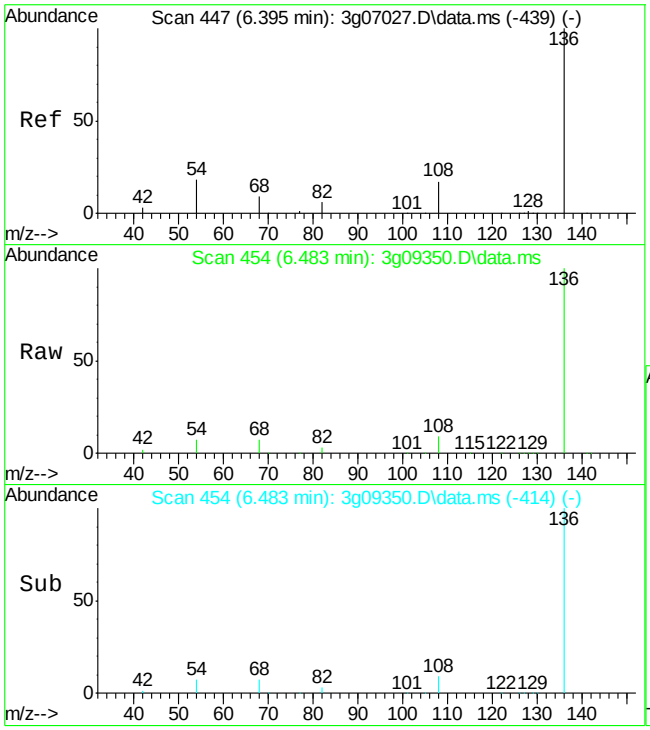
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\
Data File : 3g09350.D
Acq On : 22 May 2012 2:57 am
Operator : DONC
Sample : OP5918-MB
Misc : OP5918,E3G407,30.00,,,1,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 23 12:12:49 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M
Quant Title : PAHSIM BASE
QLast Update : Tue May 22 07:59:25 2012
Response via : Initial Calibration

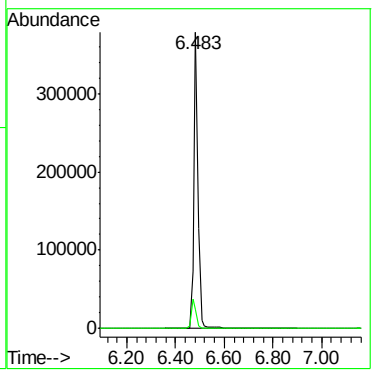


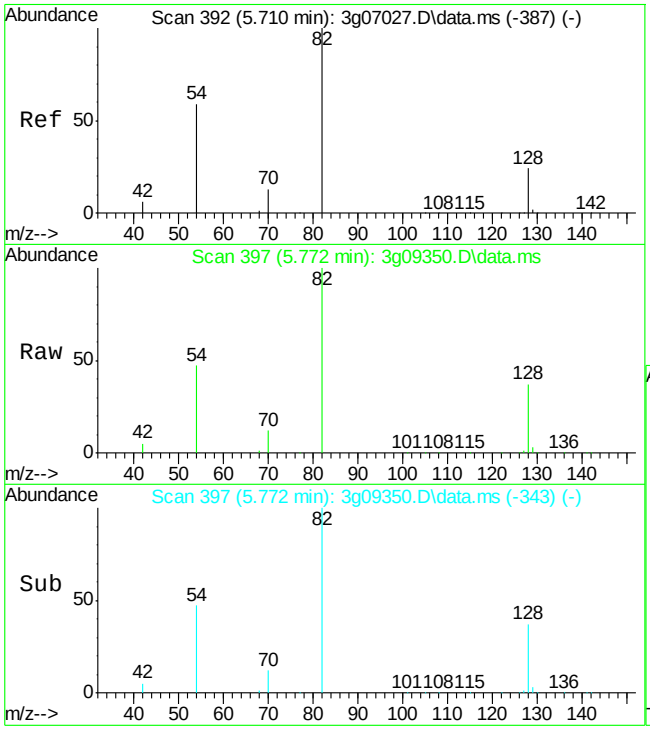


#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 6.483 min Scan# 454
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:136 Resp: 455271

Ion	Ratio	Lower	Upper
136	100		
68	11.4	0.0	31.7

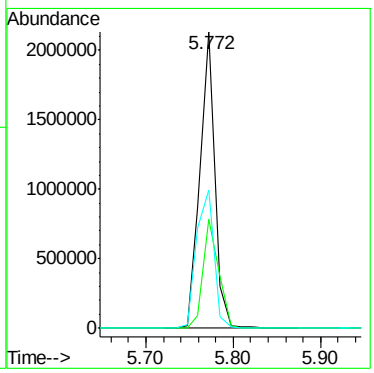


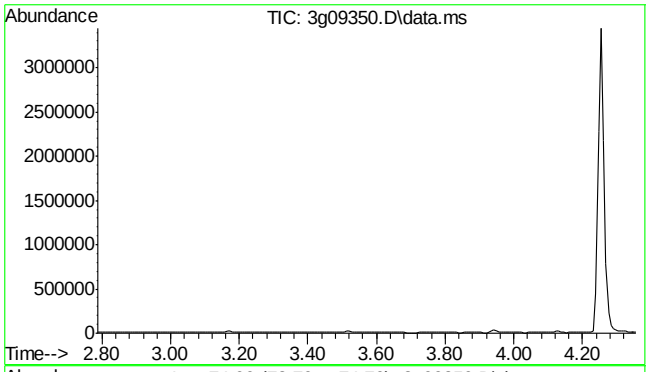


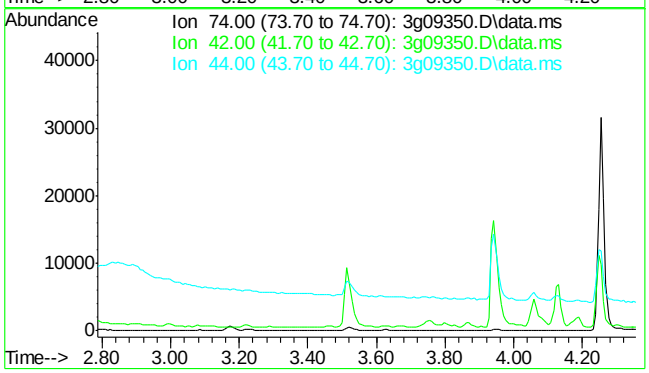
#2
Nitrobenzene-d5
Concen: 40.3253 ug/mL
RT: 5.772 min Scan# 397
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 82 Resp: 2506195

Ion	Ratio	Lower	Upper
82	100		
128	38.1	14.7	54.7
54	55.1	36.8	76.8





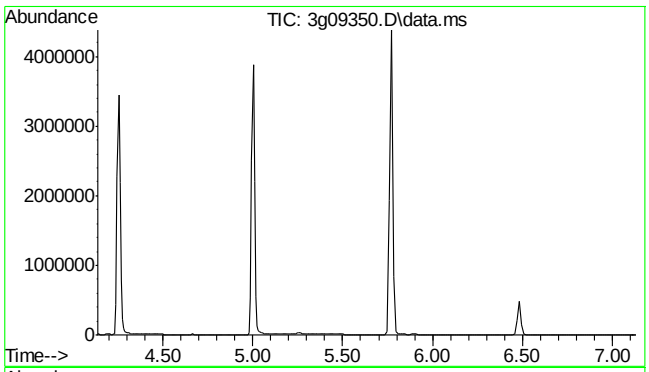


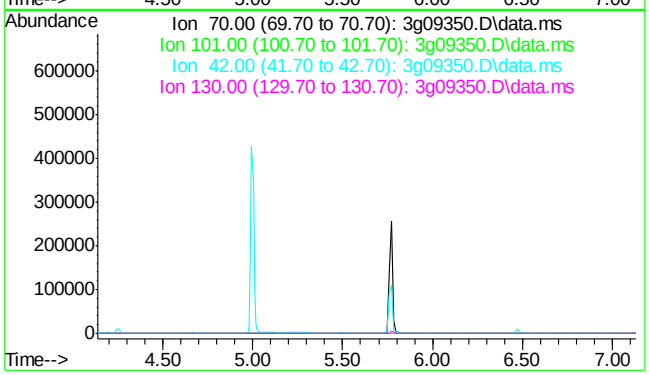
#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.86 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 74

Sig	Exp Ratio
74	100
42	68.8
44	7.4



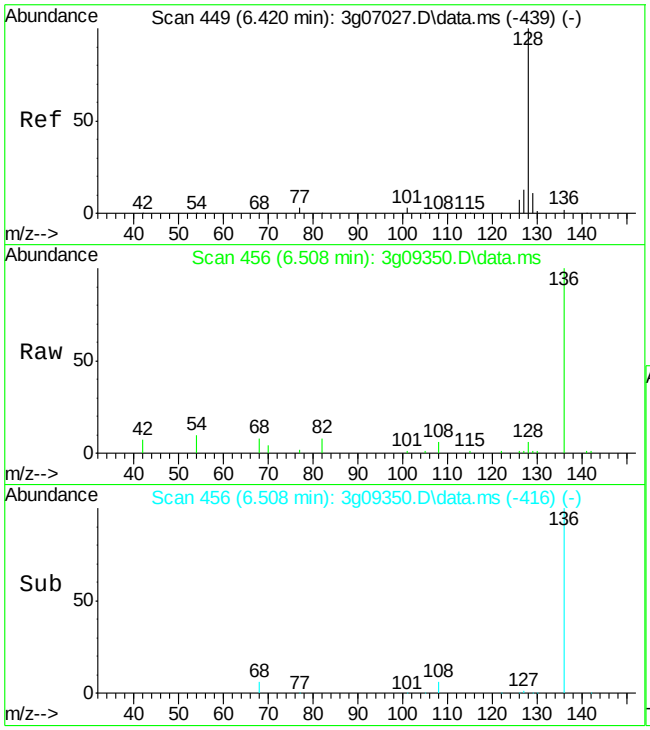


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.63 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 70

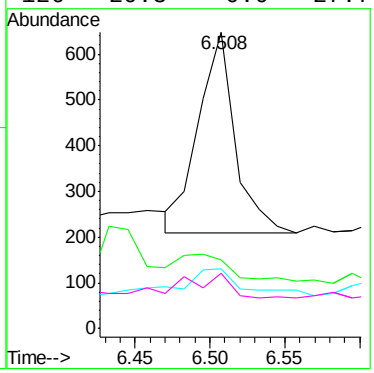
Sig	Exp Ratio
70	100
101	10.0
42	61.7
130	18.9

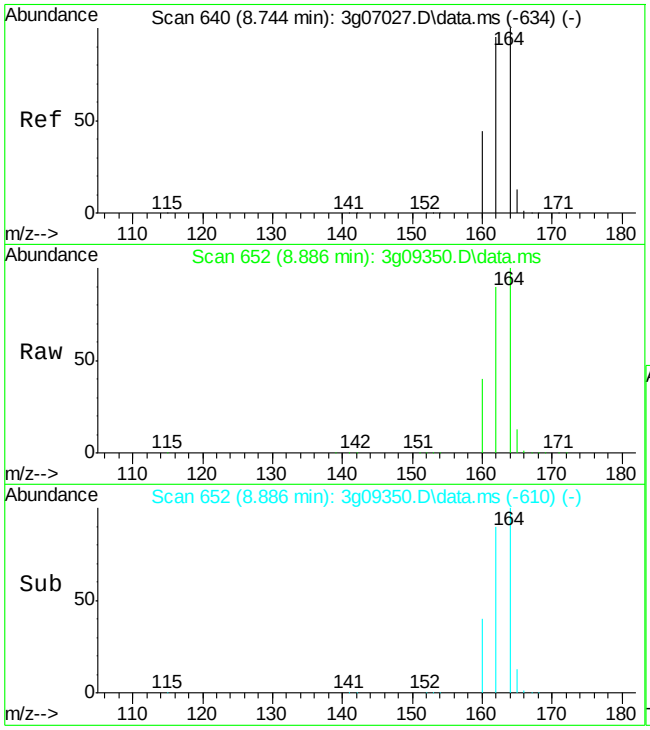


#5
Naphthalene
Concen: 0.0058 ug/mL
RT: 6.508 min Scan# 456
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:128 Resp: 744

Ion	Ratio	Lower	Upper
128	100		
129	18.1	0.0	30.8
127	21.9	0.0	32.4
126	20.3	0.0	27.7

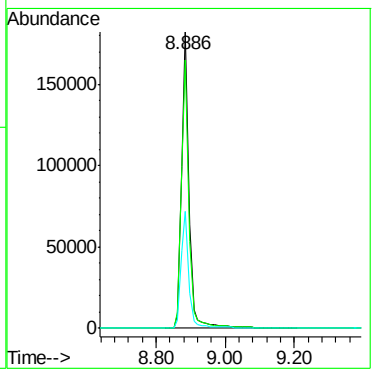


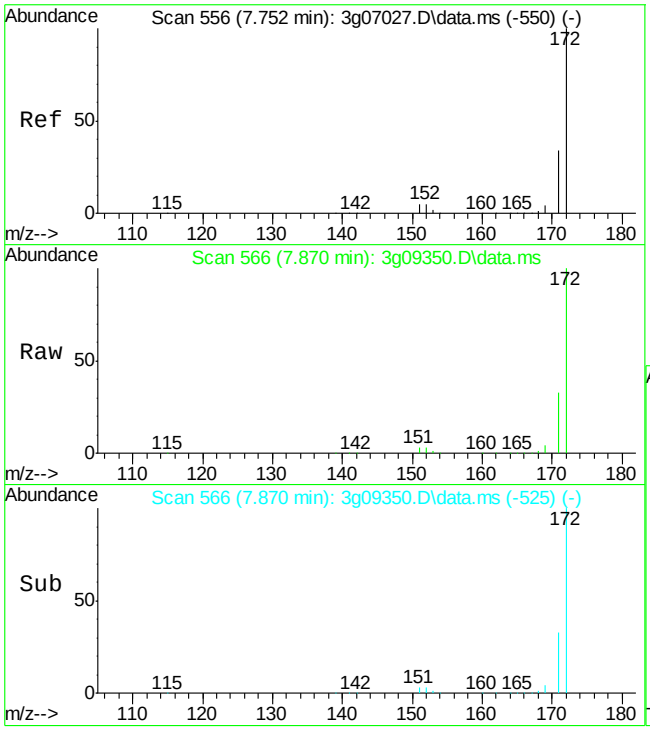


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 8.886 min Scan# 652
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:164 Resp: 276741

Ion	Ratio	Lower	Upper
164	100		
162	92.2	73.1	113.1
160	41.1	22.5	62.5

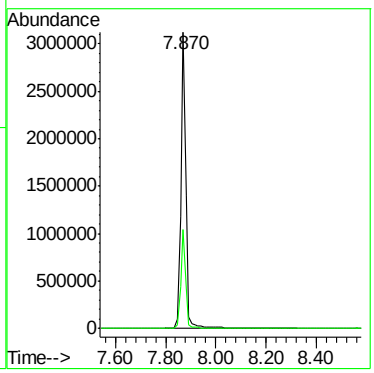


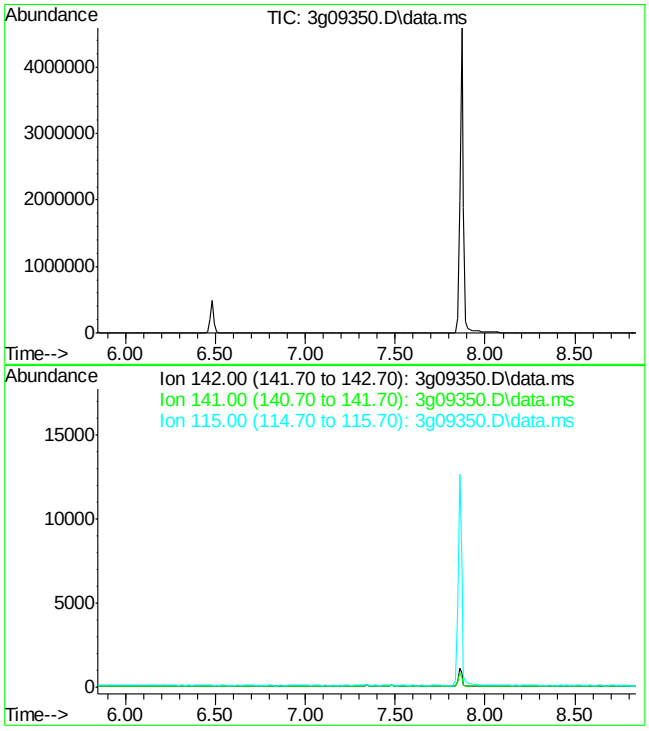


#7
2-Fluorobiphenyl
Concen: 44.5651 ug/mL
RT: 7.870 min Scan# 566
Delta R.T. 0.001 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:172 Resp: 4402726

Ion	Ratio	Lower	Upper
172	100		
171	33.2	13.1	53.1



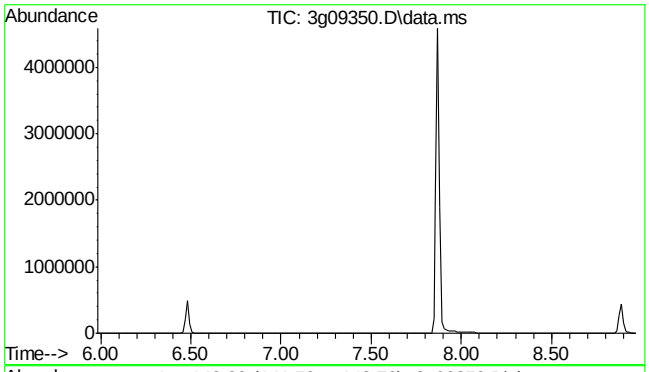


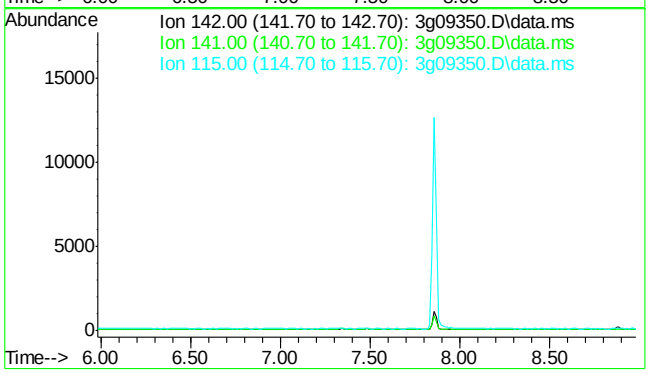
#8
2-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.34 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 142

Sig	Exp Ratio
142	100
141	83.0
115	35.6



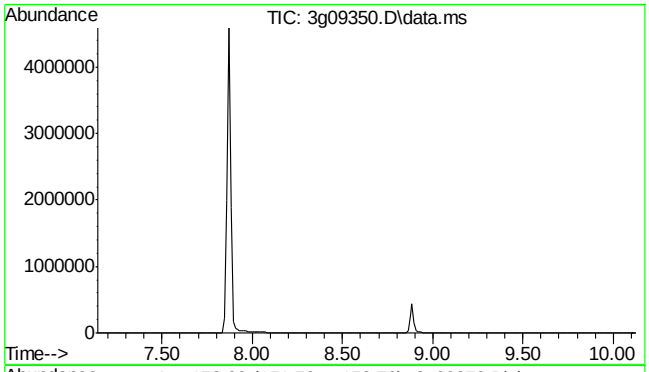


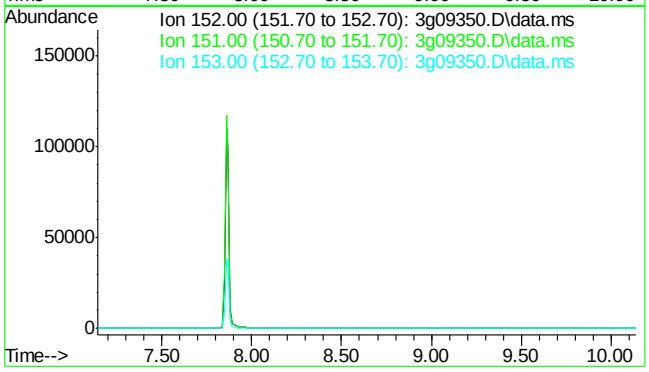
#9
1-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.48 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 142

Sig	Exp Ratio
142	100
141	87.2
115	37.1



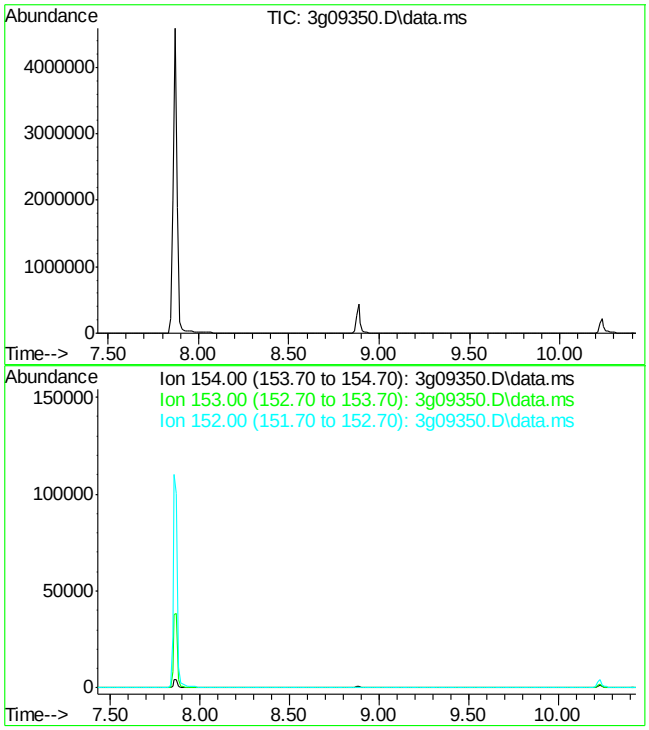


#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.64 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 152

Sig	Exp Ratio
152	100
151	19.0
153	14.1

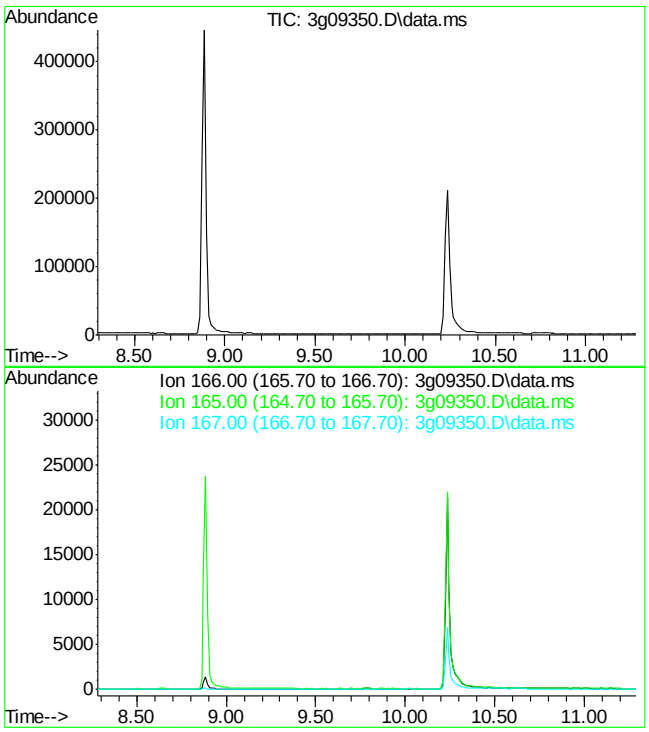


#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.93 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 154

Sig	Exp Ratio
154	100
153	105.0
152	46.1

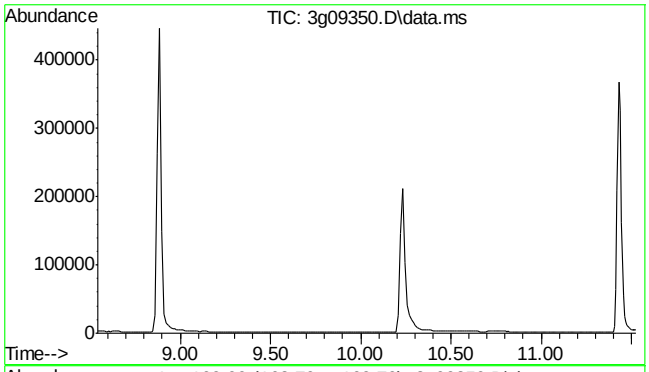


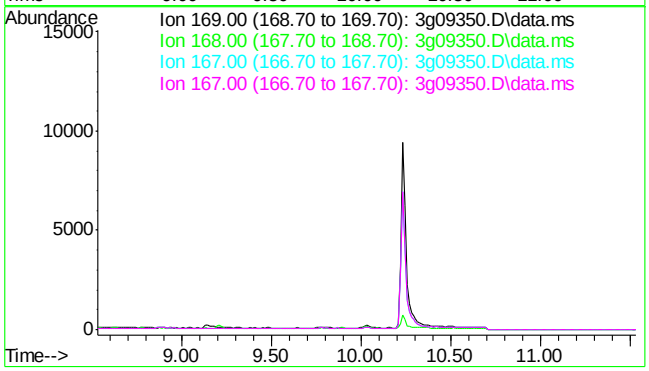
#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.78 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 166

Sig	Exp Ratio
166	100
165	90.8
167	13.2



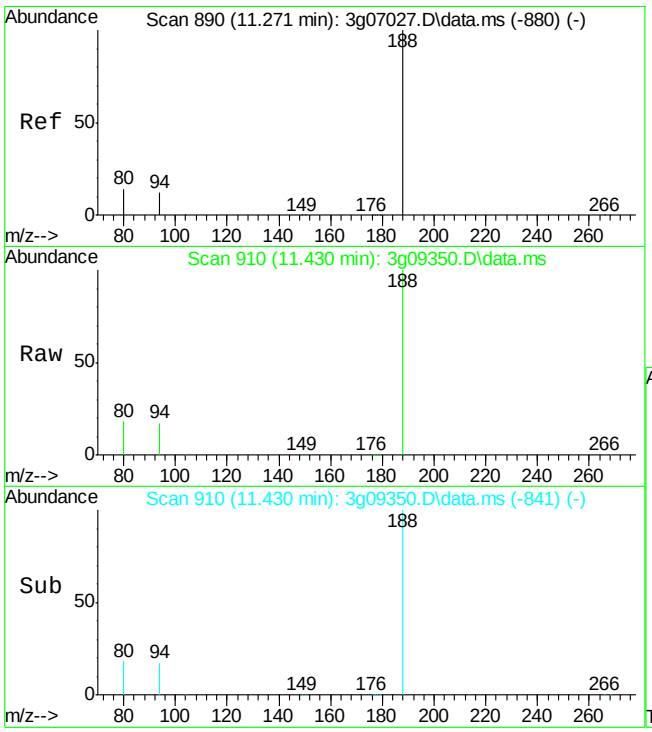


#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.03 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 169

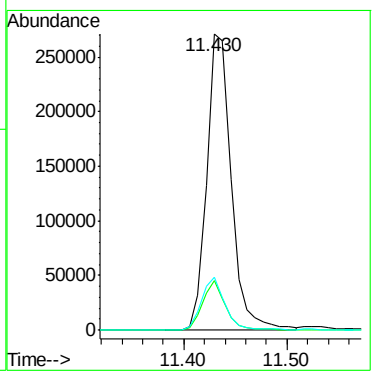
Sig	Exp Ratio
169	100
168	61.6
167	33.6
167	33.6

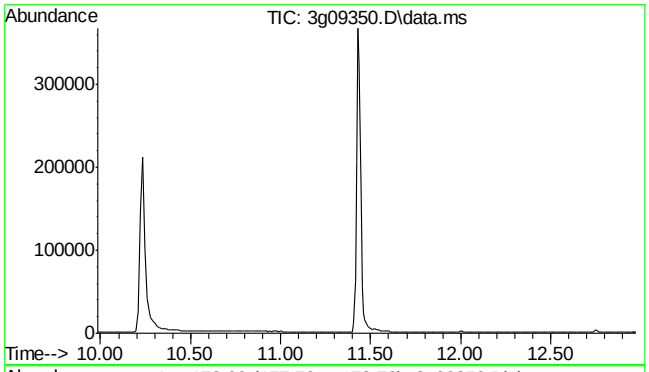


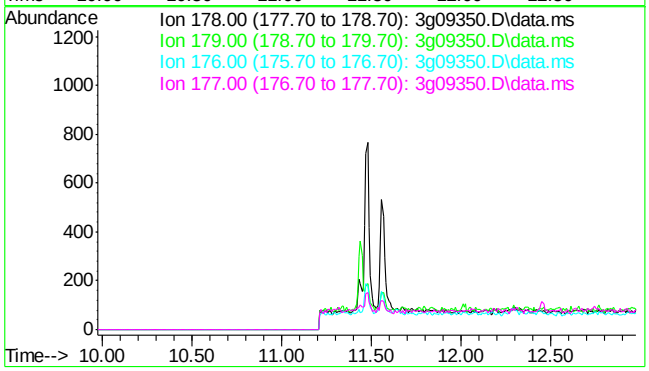
#14
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 11.430 min Scan# 910
Delta R.T. -0.008 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:188 Resp: 445756

Ion	Ratio	Lower	Upper
188	100		
94	15.7	0.0	36.5
80	17.0	0.0	37.9





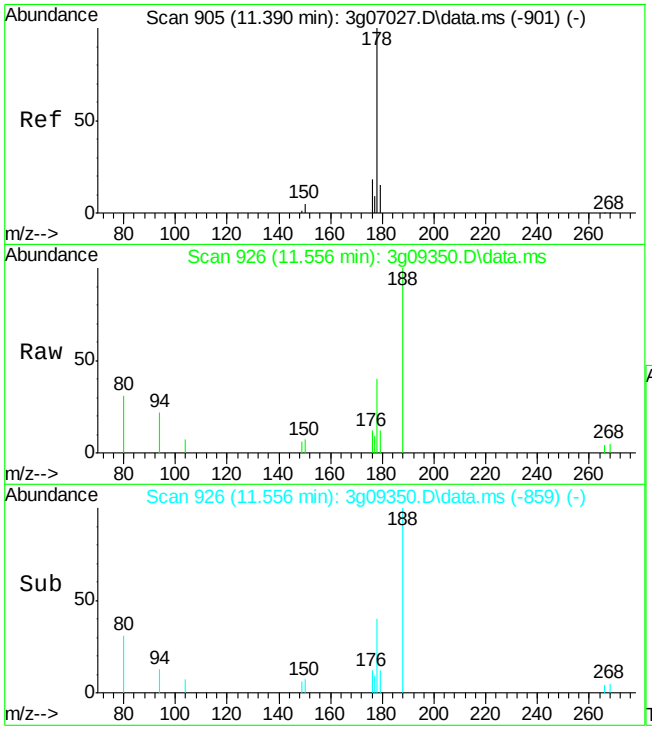


#15
Phenanthrene
Concen: N.D. ug/mL
Expected RT: 11.48 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 178

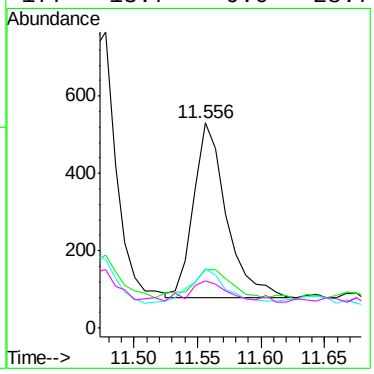
Sig	Exp Ratio
178	100
179	15.1
176	18.5
177	10.2

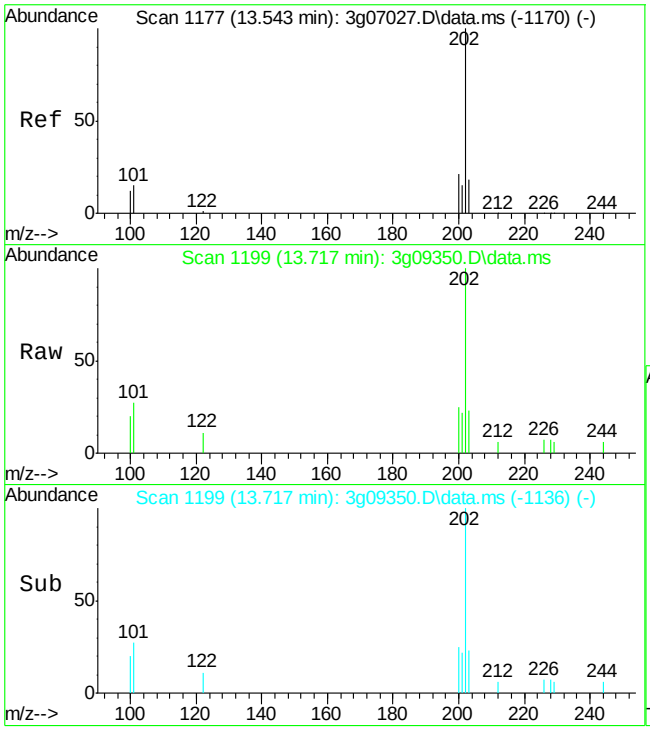


#16
Anthracene
Concen: 0.0266 ug/mL
RT: 11.556 min Scan# 926
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:178 Resp: 810

Ion	Ratio	Lower	Upper
178	100		
179	16.5	0.0	35.1
176	19.5	0.0	37.8
177	13.7	0.0	28.7

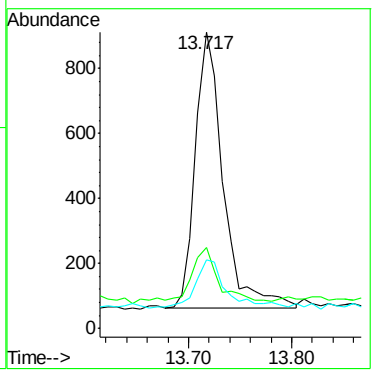


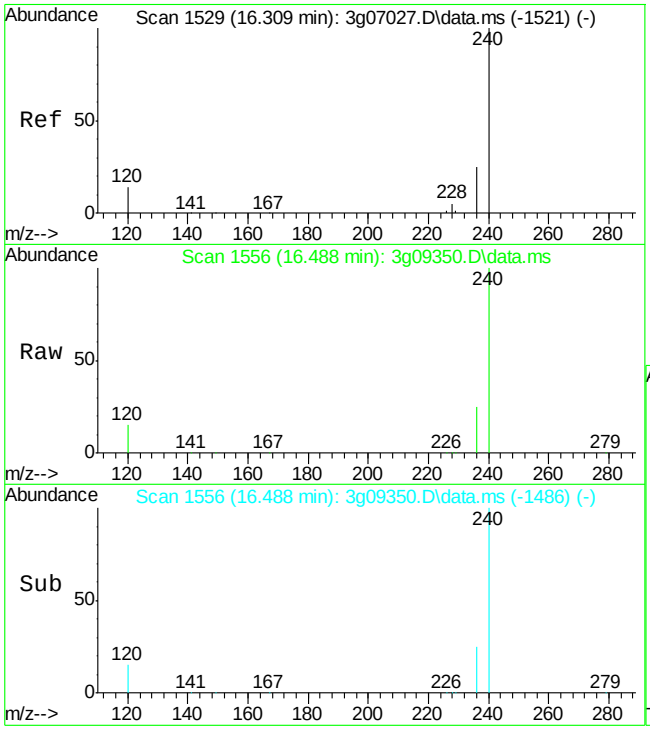


#17
Fluoranthene
Concen: 0.0104 ug/mL
RT: 13.717 min Scan# 1199
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:202 Resp: 1589

Ion	Ratio	Lower	Upper
202	100		
101	16.9	0.0	35.5
203	17.1	0.0	37.2

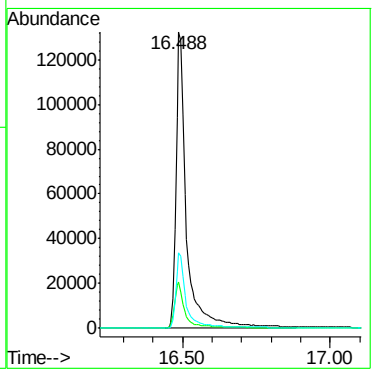


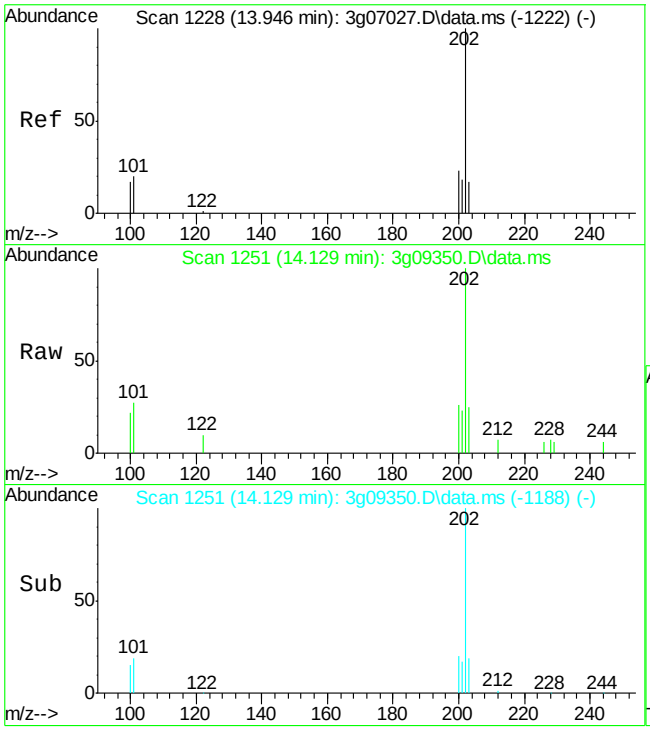


#18
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 16.488 min Scan# 1556
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:240 Resp: 323504

Ion	Ratio	Lower	Upper
240	100		
120	15.2	0.0	35.5
236	24.9	4.8	44.8

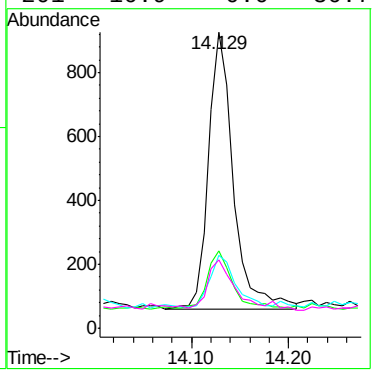


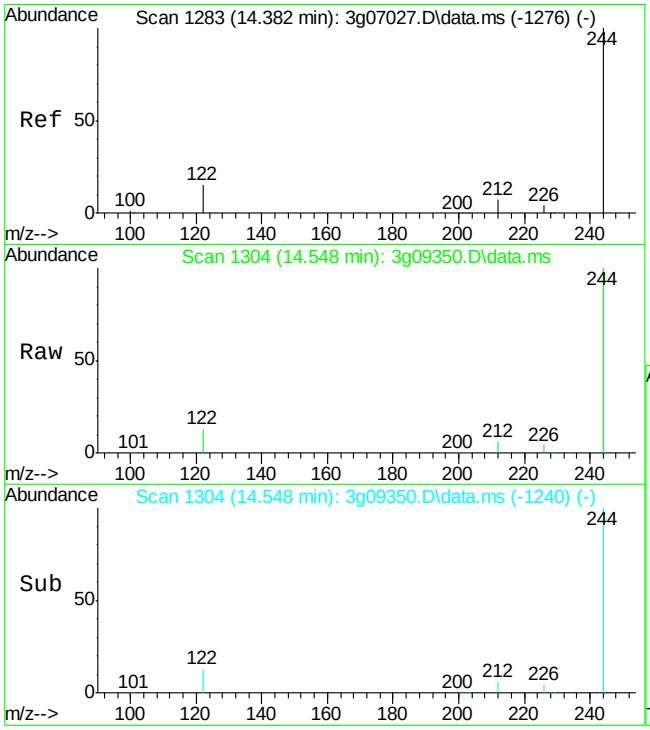


#19
Pyrene
Concen: 0.0132 ug/mL
RT: 14.129 min Scan# 1251
Delta R.T. 0.001 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:202 Resp: 1536

Ion	Ratio	Lower	Upper
202	100		
200	22.3	0.3	40.3
203	19.1	0.0	37.7
201	16.9	0.0	36.7

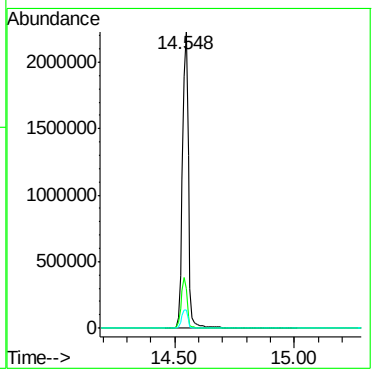


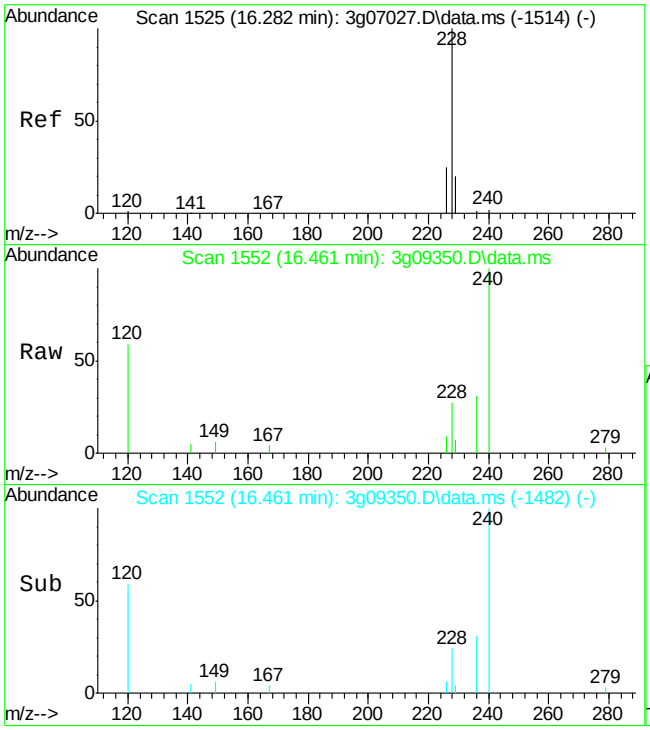


#20
Terphenyl-d14
Concen: 60.4873 ug/mL
RT: 14.548 min Scan# 1304
Delta R.T. 0.008 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:244 Resp: 3652025

Ion	Ratio	Lower	Upper
244	100		
122	16.8	0.0	36.5
212	6.7	0.0	26.8

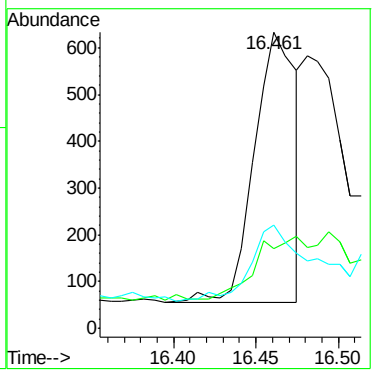


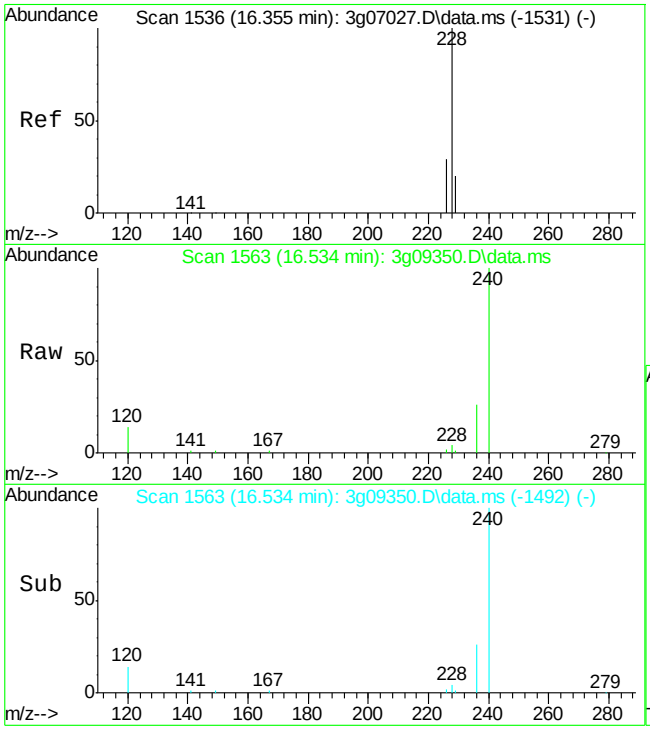


#21
Benzo(a)anthracene
Concen: 0.0113 ug/mL
RT: 16.461 min Scan# 1552
Delta R.T. 0.001 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:228 Resp: 1011

Ion	Ratio	Lower	Upper
228	100		
229	28.4	0.0	39.5
226	44.0	6.2	46.2

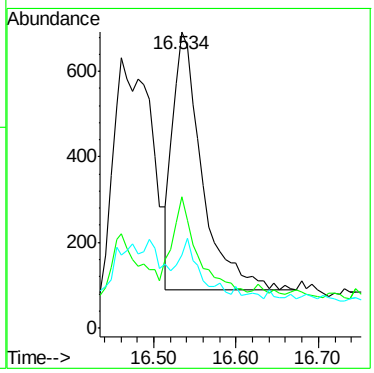


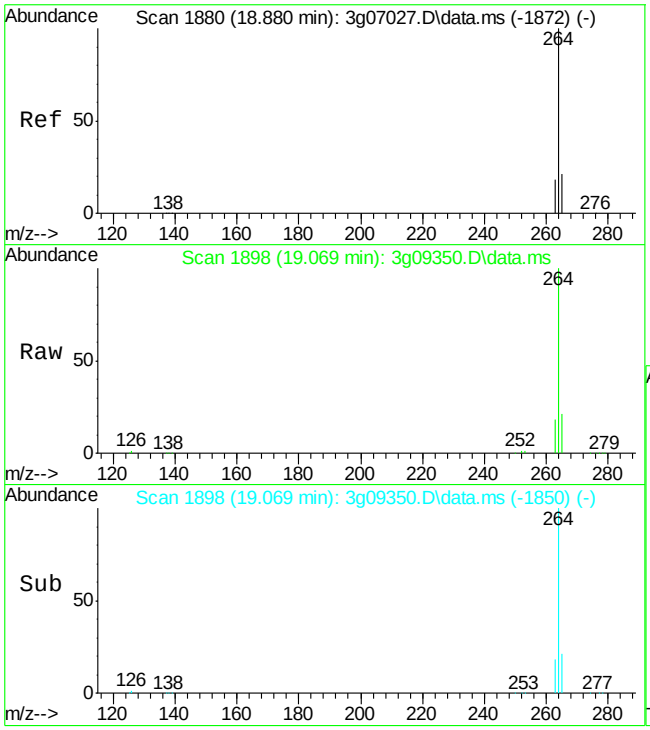


#22
Chrysene
Concen: 0.0140 ug/mL
RT: 16.534 min Scan# 1563
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:228 Resp: 1484

Ion	Ratio	Lower	Upper
228	100		
226	33.0	8.3	48.3
229	14.1	0.0	39.2

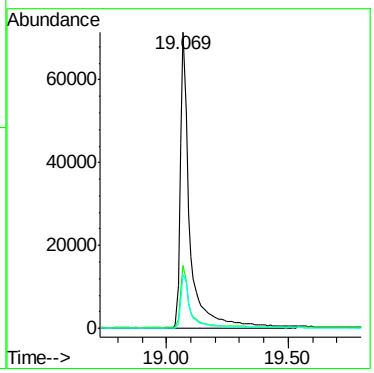


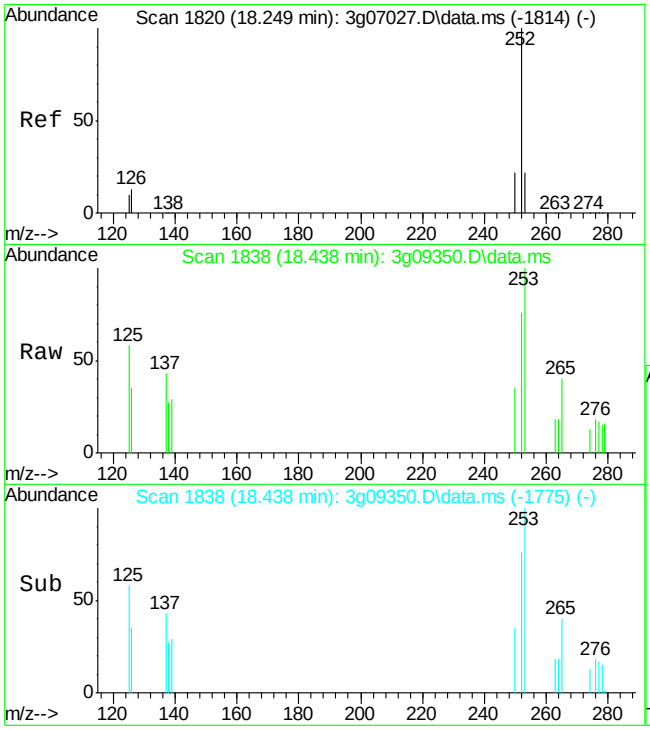


#23
Perylene-d12
Concen: 4.0000 ug/mL
RT: 19.069 min Scan# 1898
Delta R.T. 0.000 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:264 Resp: 193834

Ion	Ratio	Lower	Upper
264	100		
265	20.0	1.1	41.1
263	18.3	0.0	38.9

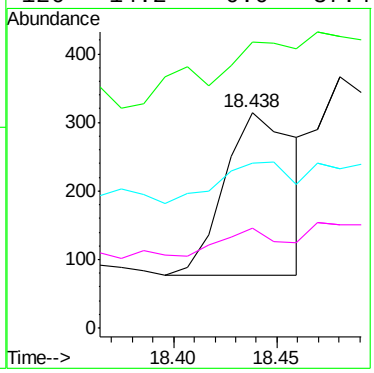


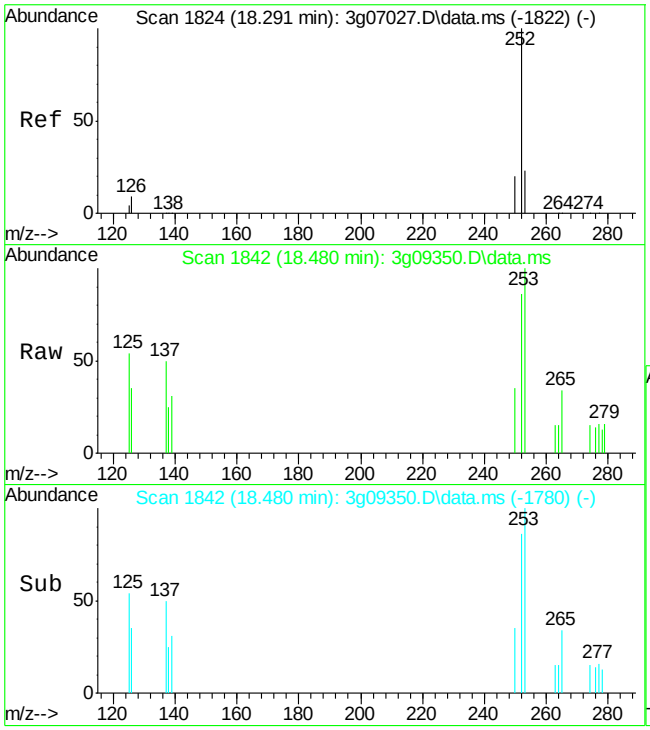


#24
Benzo(b)fluoranthene
Concen: 0.0874 ug/mL
RT: 18.438 min Scan# 1838
Delta R.T. 0.001 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:252 Resp: 562

Ion	Ratio	Lower	Upper
252	100		
253	0.0	6.0	46.0#
125	0.0	0.0	32.4
126	14.2	0.0	37.4

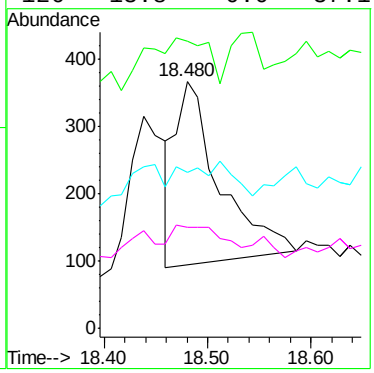


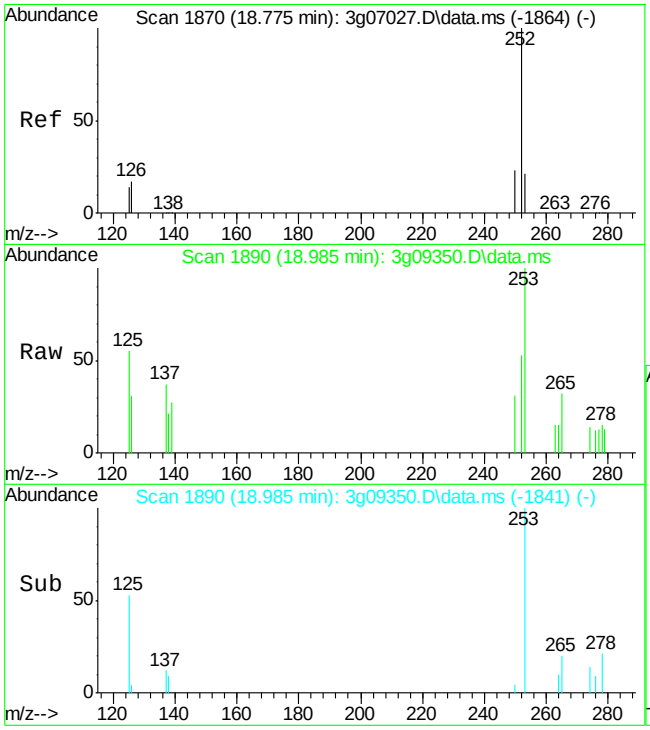


#25
Benzo(k)fluoranthene
Concen: 0.0473 ug/mL
RT: 18.480 min Scan# 1842
Delta R.T. 0.011 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:252 Resp: 802

Ion	Ratio	Lower	Upper
252	100		
253	0.0	0.0	39.0
125	0.0	0.0	31.0
126	13.8	0.0	37.1

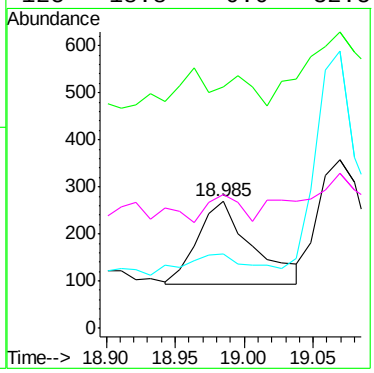


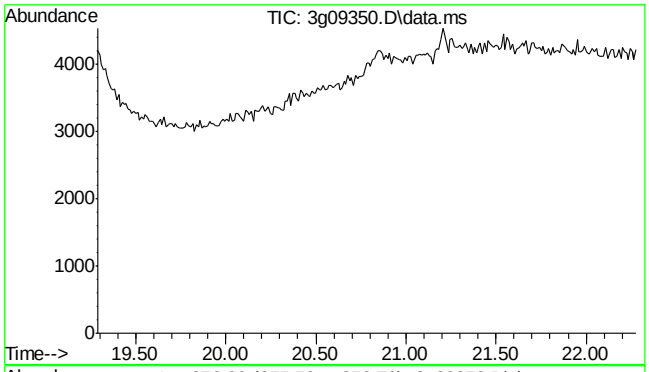


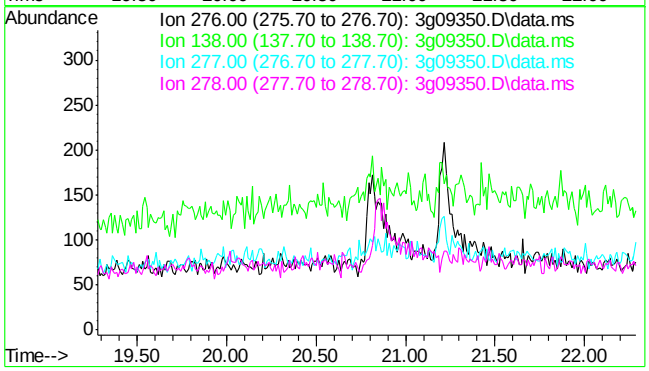
#26
Benzo(a)pyrene
Concen: 0.0946 ug/mL
RT: 18.985 min Scan# 1890
Delta R.T. 0.011 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:252 Resp: 484

Ion	Ratio	Lower	Upper
252	100		
253	28.7	1.6	41.6
126	25.6	0.0	35.7
125	18.8	0.0	32.5





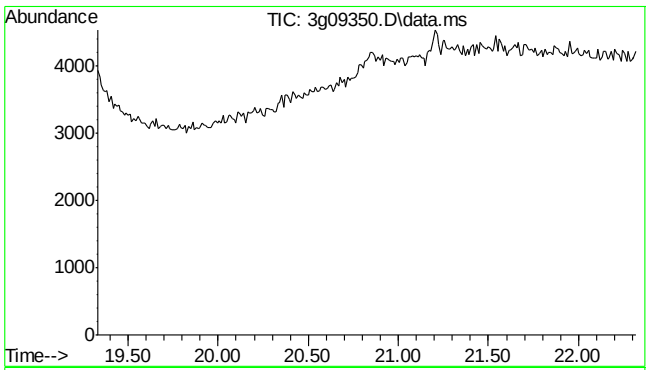


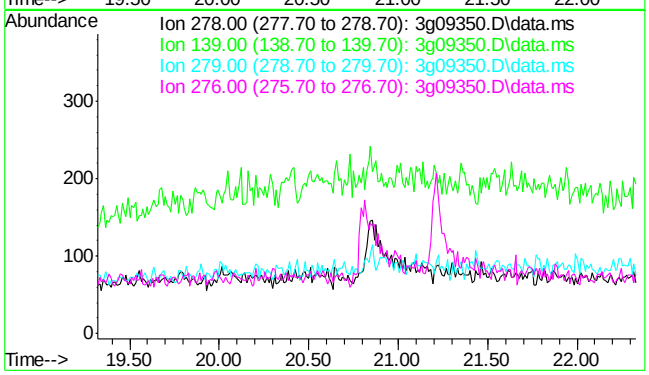
#27
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 20.78 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	12.2
277	24.8
278	77.5



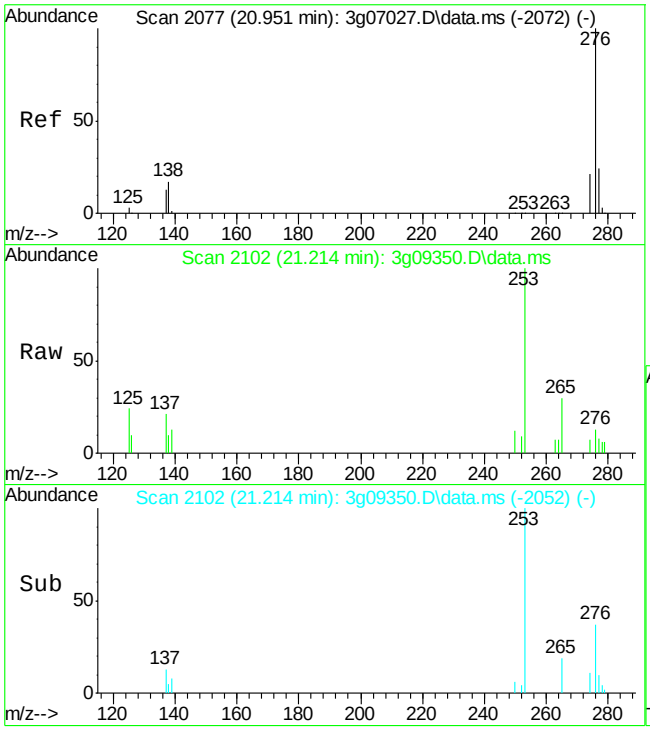


#28
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 20.82 min

Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion: 278

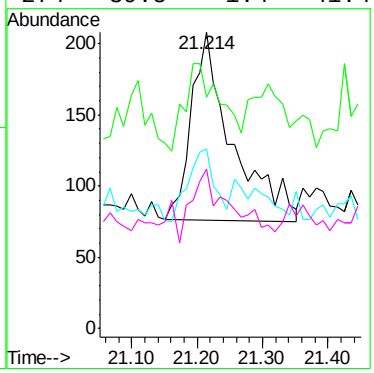
Sig	Exp Ratio
278	100
139	19.0
279	23.4
276	129.1



#29
Benzo(g,h,i)perylene
Concen: 0.0836 ug/mL
RT: 21.214 min Scan# 2102
Delta R.T. 0.021 min
Lab File: 3g09350.D
Acq: 22 May 12 2:57 am

Tgt Ion:276 Resp: 572

Ion	Ratio	Lower	Upper
276	100		
138	40.6	3.6	43.6
277	25.9	3.6	43.6
274	39.5	1.4	41.4



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: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB894-MB	GB16046.D	1	05/18/12	SK	n/a	n/a	GGB894

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

D34638-1

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	90%	60-140%

Blank Spike Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB894-BS	GB16047.D	1	05/18/12	SK	n/a	n/a	GGB894

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

D34638-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	127	115	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	99%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D34664-1MS	GB16049.D	1	05/18/12	SK	n/a	n/a	GGB894
D34664-1MSD	GB16050.D	1	05/18/12	SK	n/a	n/a	GGB894
D34664-1	GB16048.D	1	05/18/12	SK	n/a	n/a	GGB894

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

D34638-1

CAS No.	Compound	D34664-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		144	167	116	166	115	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D34664-1	Limits
120-82-1	1,2,4-Trichlorobenzene	101%	100%	93%	60-140%

Mountain States ACCUTEST LABORATORIES

GC Volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Judy Melson 05/21/12 14:25

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051812\GB16063.D\FID1A.CH Vial: 19
Signal #2 : Y:\1\DATA\051812\GB16063.D\FID2B.CH
Acq On : 19 May 2012 3:44 am Operator: StephK
Sample : D34638-1, 50X Inst : GC/MS Ins
Misc : GC2848,GGB894,5.076,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 21 08:25:04 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon May 21 08:24:34 2012
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	14.32	2633824	84.056	%	m
10) S	1,2,4-Trichlorobenzene (P)	14.32	13980995	86.022	%	
	Target Compounds					
1) H	TVH-Gasoline	7.23	4986471	<MDL	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	7.59	180980	0.457	ug/L	
7) T	Ethylbenzene	0.00	0	N.D.	ug/L	d
8) T	m,p-Xylene	10.41	201322	0.178	ug/L	
9) T	o-Xylene	0.00	0	N.D.	ug/L	d
11) T	Naphthalene	14.52	2083983	10.562	ug/L	

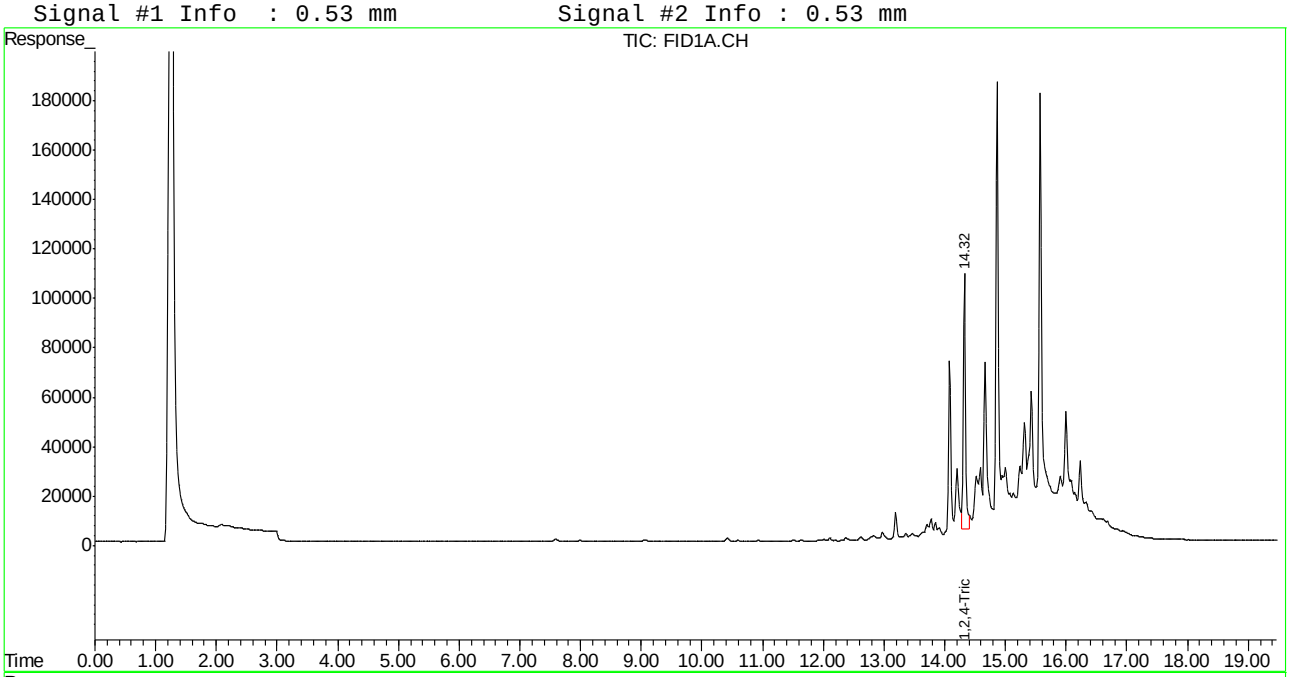
(f)=RT Delta > 1/2 Window (m)=manual int.

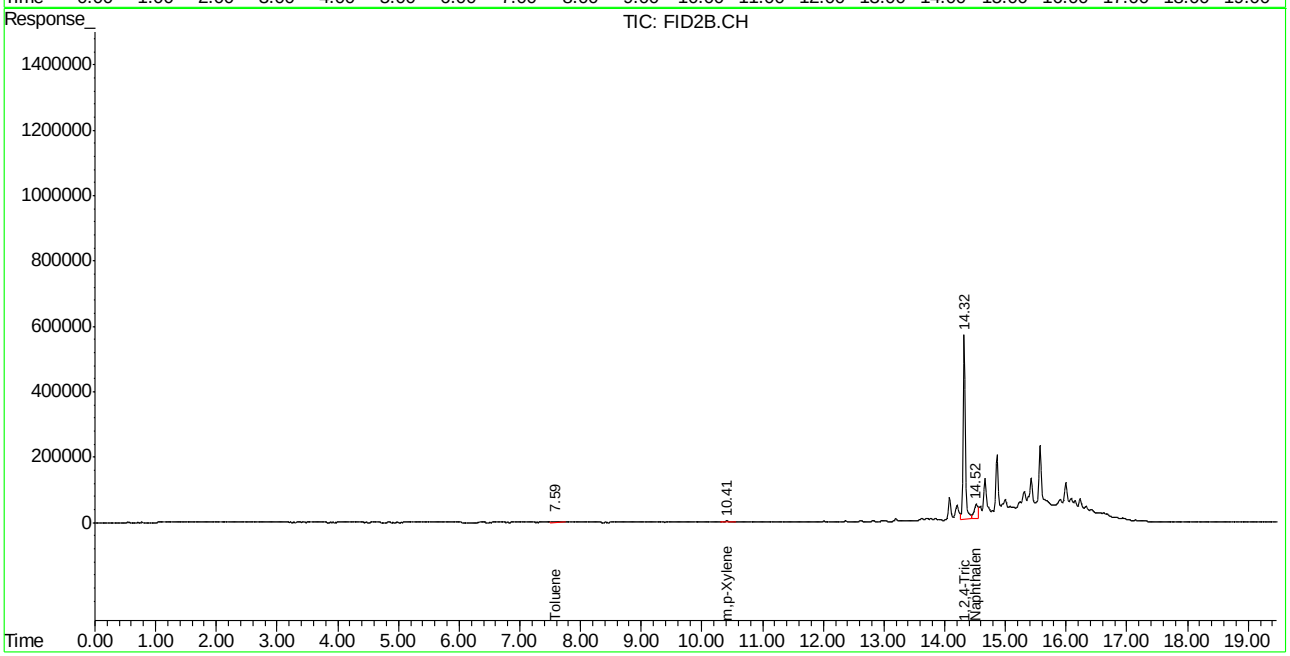
Quantitation Report (QT Reviewed)

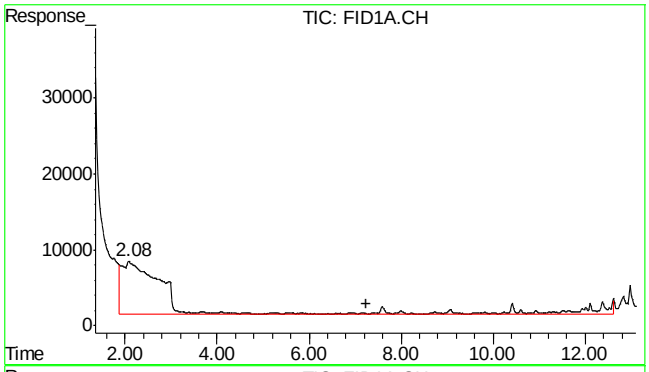
Signal #1 : Y:\1\DATA\051812\GB16063.D\FID1A.CH Vial: 19
Signal #2 : Y:\1\DATA\051812\GB16063.D\FID2B.CH
Acq On : 19 May 2012 3:44 am Operator: StephK
Sample : D34638-1, 50X Inst : GC/MS Ins
Misc : GC2848,GGB894,5.076,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 21 7:41 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon May 21 08:24:34 2012
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

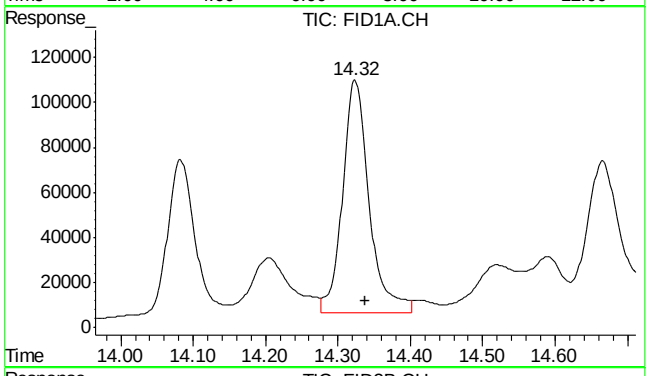






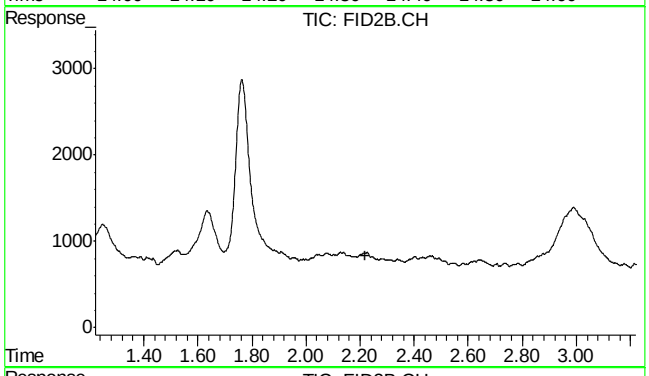
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4986471
Conc: N.D.



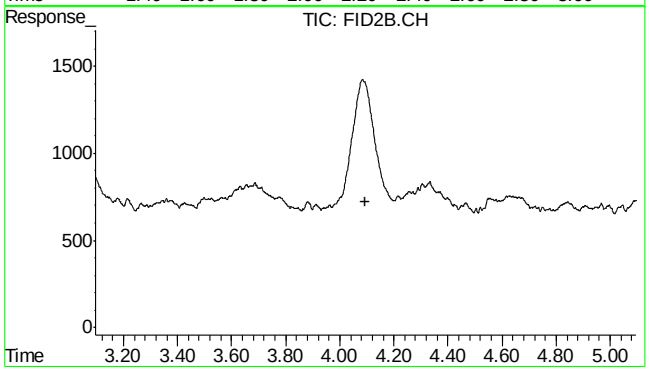
#2 1,2,4-Trichlorobenzene

R.T.: 14.323 min
Delta R.T.: -0.015 min
Response: 2633824
Conc: 84.06 % m



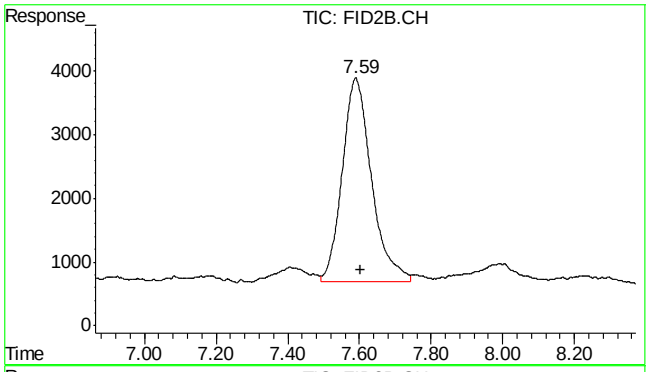
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T. : 2.220 min
Response: 0
Conc: N.D.



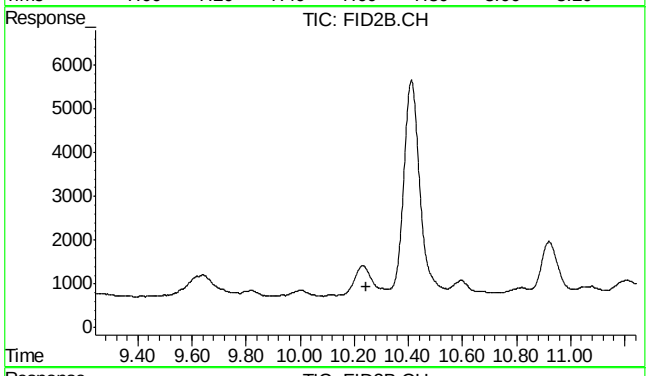
#5 Benzene

R.T.: 0.000 min
Exp R.T. : 4.095 min
Response: 0
Conc: N.D.



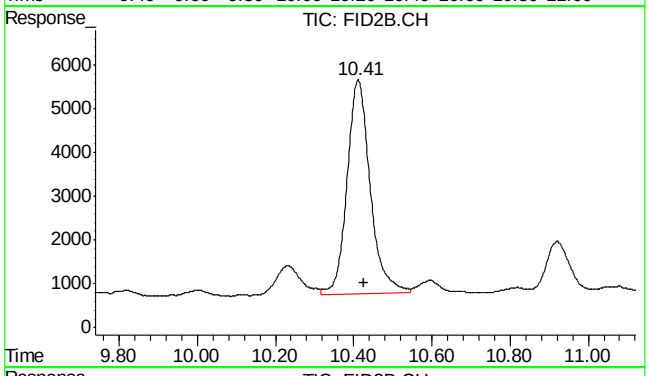
#6 Toluene

R.T.: 7.590 min
Delta R.T.: -0.015 min
Response: 180980
Conc: 0.46 ug/L



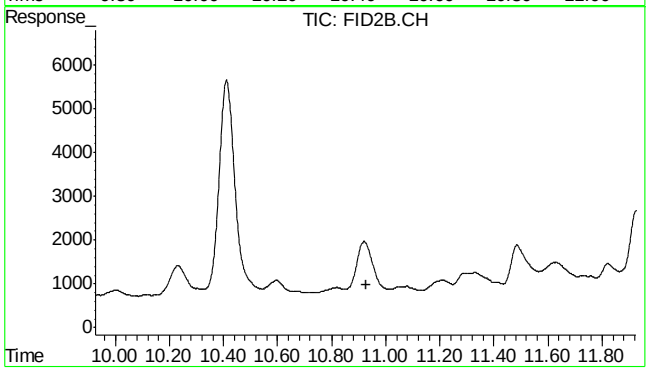
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.243 min
Response: 0
Conc: N.D.



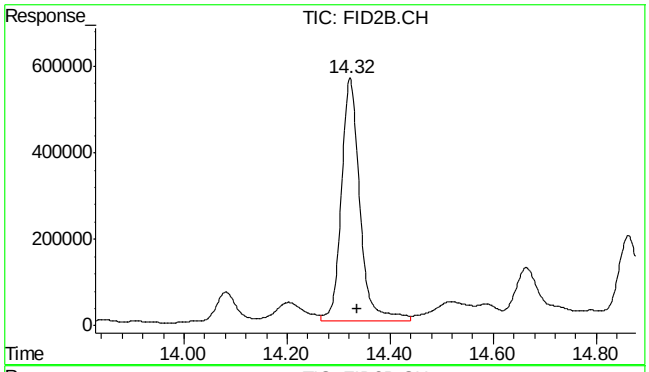
#8 m,p-Xylene

R.T.: 10.412 min
Delta R.T.: -0.014 min
Response: 201322
Conc: 0.18 ug/L



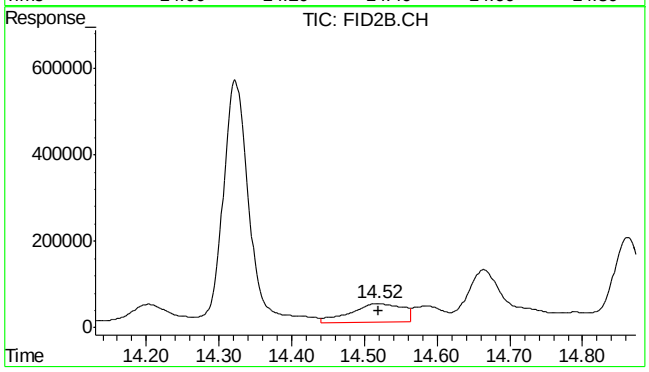
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.926 min
Response: 0
Conc: N.D.



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

R.T.:	14.323 min
Delta R.T.:	-0.014 min
Response:	13980995
Conc:	86.02 %



#11 Naphthalene

R.T.:	14.519 min
Delta R.T.:	0.000 min
Response:	2083983
Conc:	10.56 ug/L

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051812\GB16046.D\FID1A.CH Vial: 2
Signal #2 : Y:\1\DATA\051812\GB16046.D\FID2B.CH
Acq On : 18 May 2012 5:47 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC2848,GGB894,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 21 08:23:21 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon May 21 08:23:01 2012
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	14.32	2812754	89.767	%	
10) S	1,2,4-Trichlorobenzene (P)	14.32	15061670	92.672	%	
	Target Compounds					
1) H	TVH-Gasoline	7.23	4149318	<MDL	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	7.58	130423	0.329	ug/L	
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	14.50	240836	1.221	ug/L	

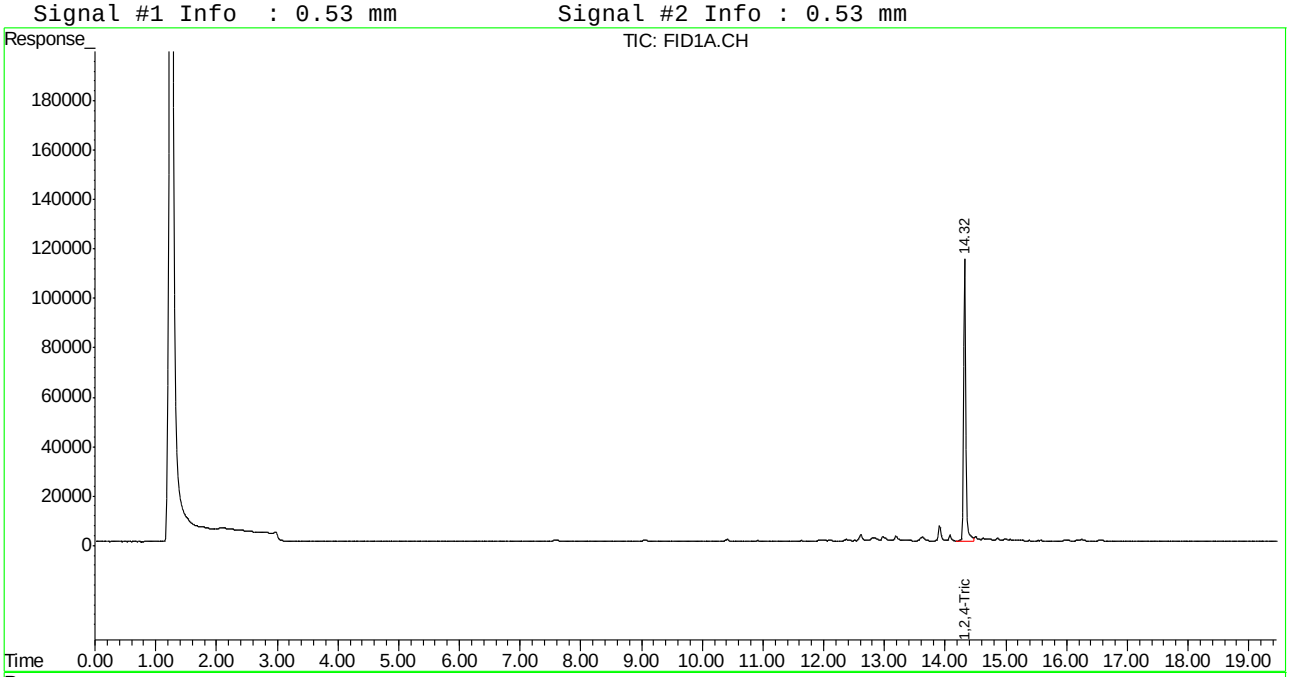
(f)=RT Delta > 1/2 Window (m)=manual int.

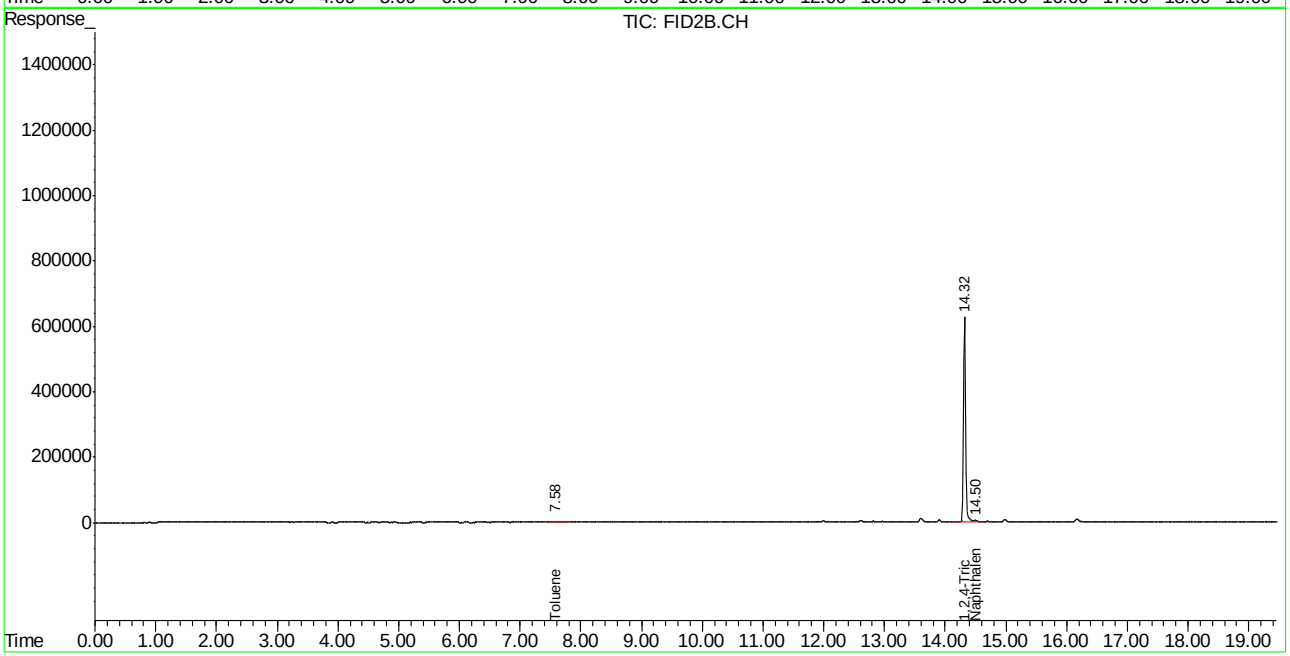
Quantitation Report (QT Reviewed)

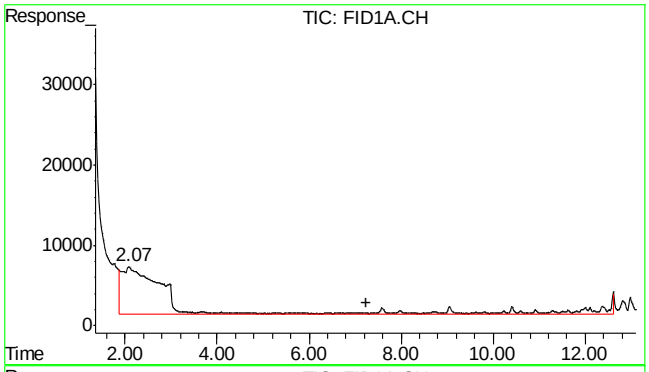
Signal #1 : Y:\1\DATA\051812\GB16046.D\FID1A.CH Vial: 2
Signal #2 : Y:\1\DATA\051812\GB16046.D\FID2B.CH
Acq On : 18 May 2012 5:47 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC2848,GGB894,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 21 7:34 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon May 21 08:23:01 2012
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

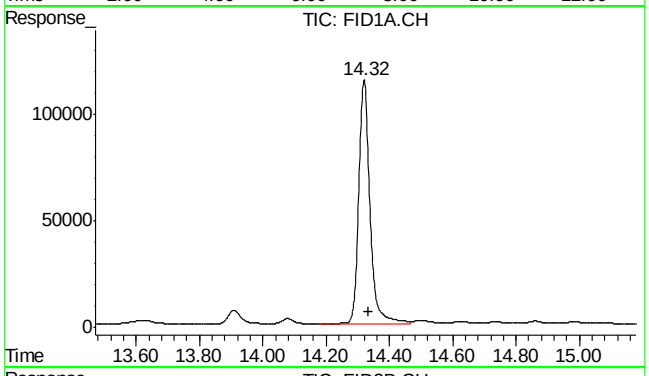






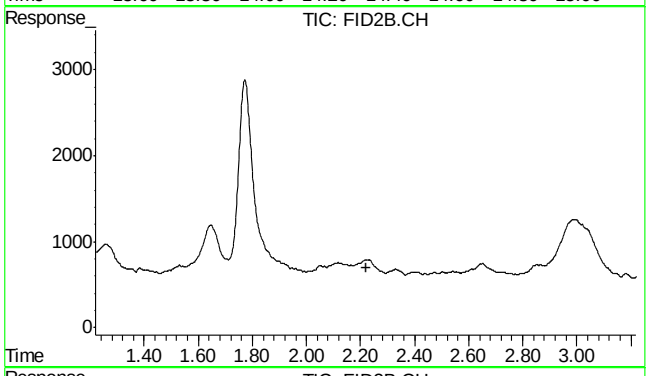
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4149318
Conc: N.D.



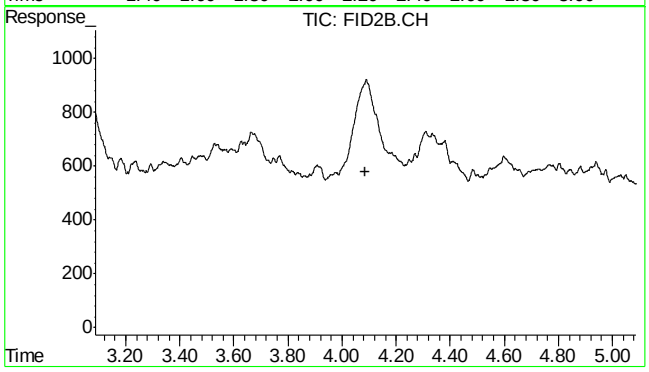
#2 1,2,4-Trichlorobenzene

R.T.: 14.320 min
Delta R.T.: -0.013 min
Response: 2812754
Conc: 89.77 %



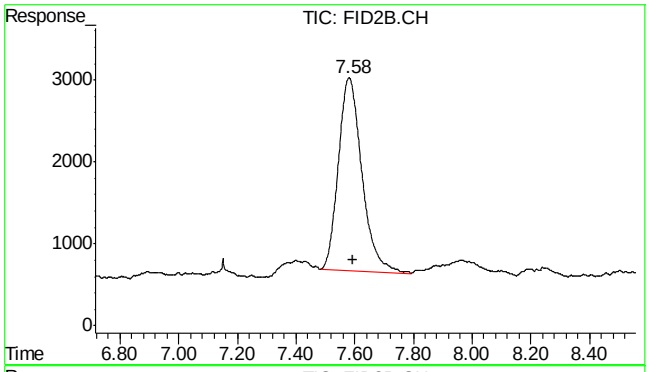
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T. : 2.220 min
Response: 0
Conc: N.D.



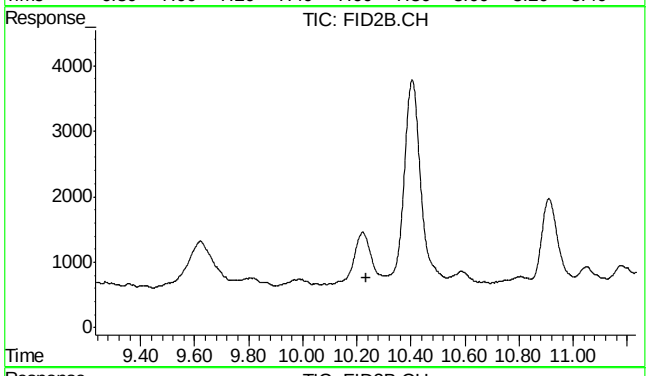
#5 Benzene

R.T.: 0.000 min
Exp R.T. : 4.088 min
Response: 0
Conc: N.D.



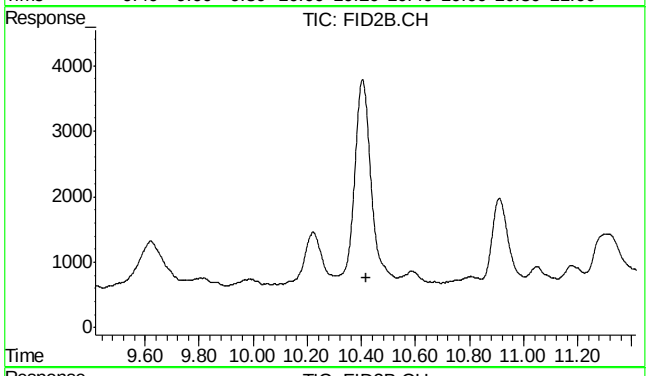
#6 Toluene

R.T.: 7.581 min
Delta R.T.: -0.011 min
Response: 130423
Conc: 0.33 ug/L



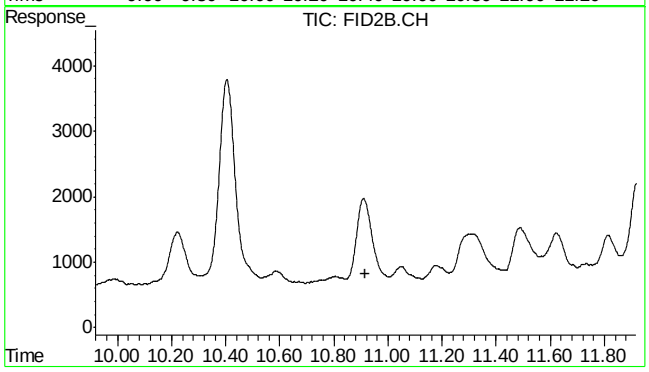
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.233 min
Response: 0
Conc: N.D.



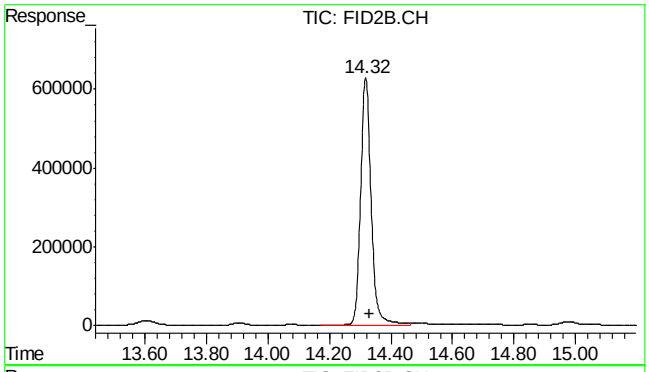
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T. : 10.416 min
Response: 0
Conc: N.D.



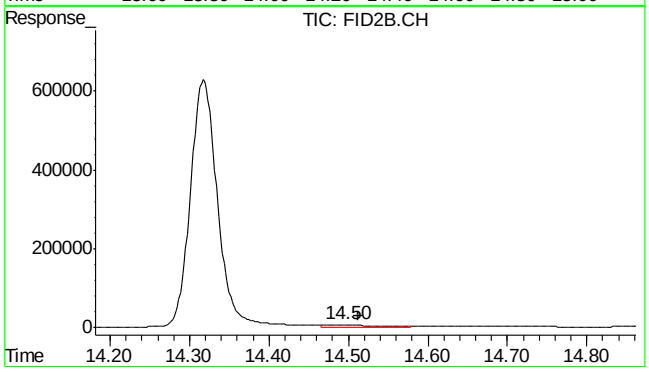
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.917 min
Response: 0
Conc: N.D.



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

R.T.:	14.318 min
Delta R.T.:	-0.013 min
Response:	15061670
Conc:	92.67 %



#11 Naphthalene

R.T.:	14.498 min
Delta R.T.:	-0.015 min
Response:	240836
Conc:	1.22 ug/L

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: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5922-MB	FH004460.D	1	05/21/12	AW	05/21/12	OP5922	GFH247

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

D34638-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	114%	43-136%

Blank Spike Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5922-BS	FH004462.D	1	05/21/12	AW	05/21/12	OP5922	GFH247

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

D34638-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	579	87	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	126%	43-136%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34638
Account: XTOKRWR XTO Energy
Project: FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5922-MS	FH004464.D	1	05/21/12	AW	05/21/12	OP5922	GFH247
OP5922-MSD	FH004466.D	1	05/21/12	AW	05/21/12	OP5922	GFH247
D34713-4	FH004470.D	1	05/21/12	AW	05/21/12	OP5922	GFH247

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

D34638-1

CAS No.	Compound	D34713-4 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		666	229	34	330	50	36	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D34713-4	Limits
84-15-1	o-Terphenyl	39%* [a]	66%	34%* [a]	43-136%

(a) Outside control limits due to possible matrix interference.

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Judy Melson
05/24/12 16:43

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052112.SEC\
Data File : FH004492.D
Signal(s) : FID2B.ch
Acq On : 22 May 2012 3:37 am
Operator : alexw1
Sample : D34638-1
Misc : OP5922,GFH247,30.00,,,2,1
ALS Vial : 69 Sample Multiplier: 1

Integration File: events.e
Quant Time: May 24 14:26:55 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M
Quant Title : DRO-ORO REAR
QLast Update : Fri May 11 15:44:51 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
System Monitoring Compounds					
2) s	o-Terphenyl	12.279	715529192	718.837	ug/mlm
Target Compounds					
1) H	TPH-DRO (C10-C28)	9.674	10409968767	9105.779	ug/ml

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

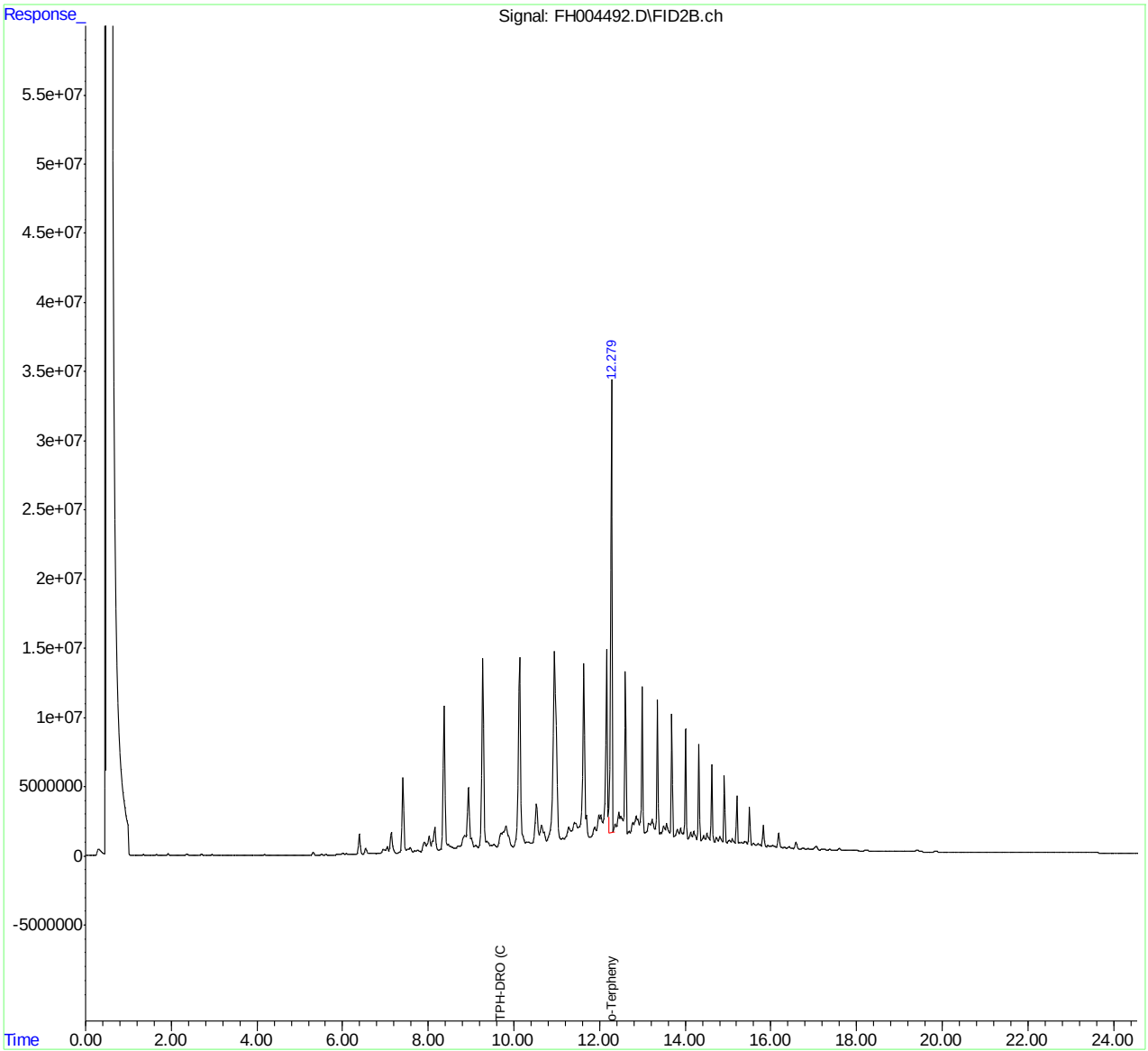
12.1.1
12

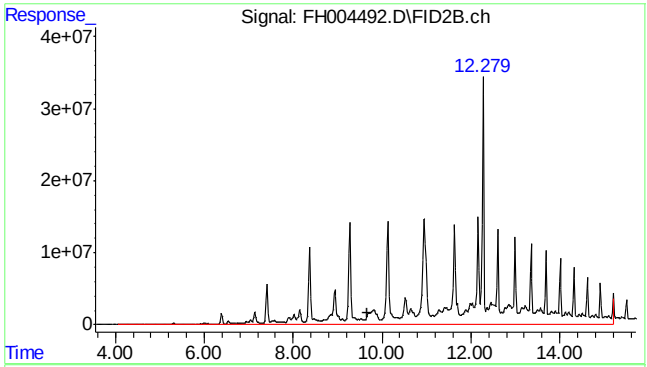
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052112.SEC\
Data File : FH004492.D
Signal(s) : FID2B.ch
Acq On : 22 May 2012 3:37 am
Operator : alexw1
Sample : D34638-1
Misc : OP5922,GFH247,30.00,,,2,1
ALS Vial : 69 Sample Multiplier: 1

Integration File: events.e
Quant Time: May 24 14:26:55 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M
Quant Title : DRO-ORO REAR
QLast Update : Fri May 11 15:44:51 2012
Response via : Initial Calibration
Integrator: ChemStation

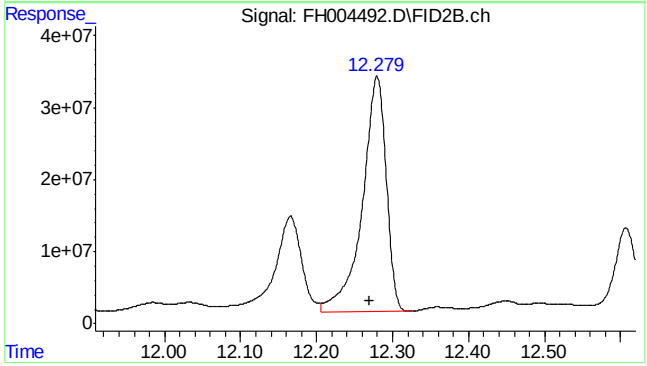
Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 9.674 min
Delta R.T.: 0.000 min
Response: 10409968767
Conc: 9105.78 ug/ml m



#2 o-Terphenyl

R.T.: 12.279 min
Delta R.T.: 0.009 min
Response: 715529192
Conc: 718.84 ug/ml m

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052112.SEC\
Data File : FH004460.D
Signal(s) : FID2B.ch
Acq On : 21 May 2012 6:09 pm
Operator : alexw1
Sample : OP5922-MB
Misc : OP5922,GFH247,30.00,,,2,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e
Quant Time: May 22 08:20:45 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M
Quant Title : DRO-ORO REAR
QLast Update : Fri May 11 15:44:51 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
System Monitoring Compounds					
2) s	o-Terphenyl	12.292	1118460797	1143.215	ug/ml
Target Compounds					
1) H	TPH-DRO (C10-C28)	9.674	80907268	70.771	ug/ml

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

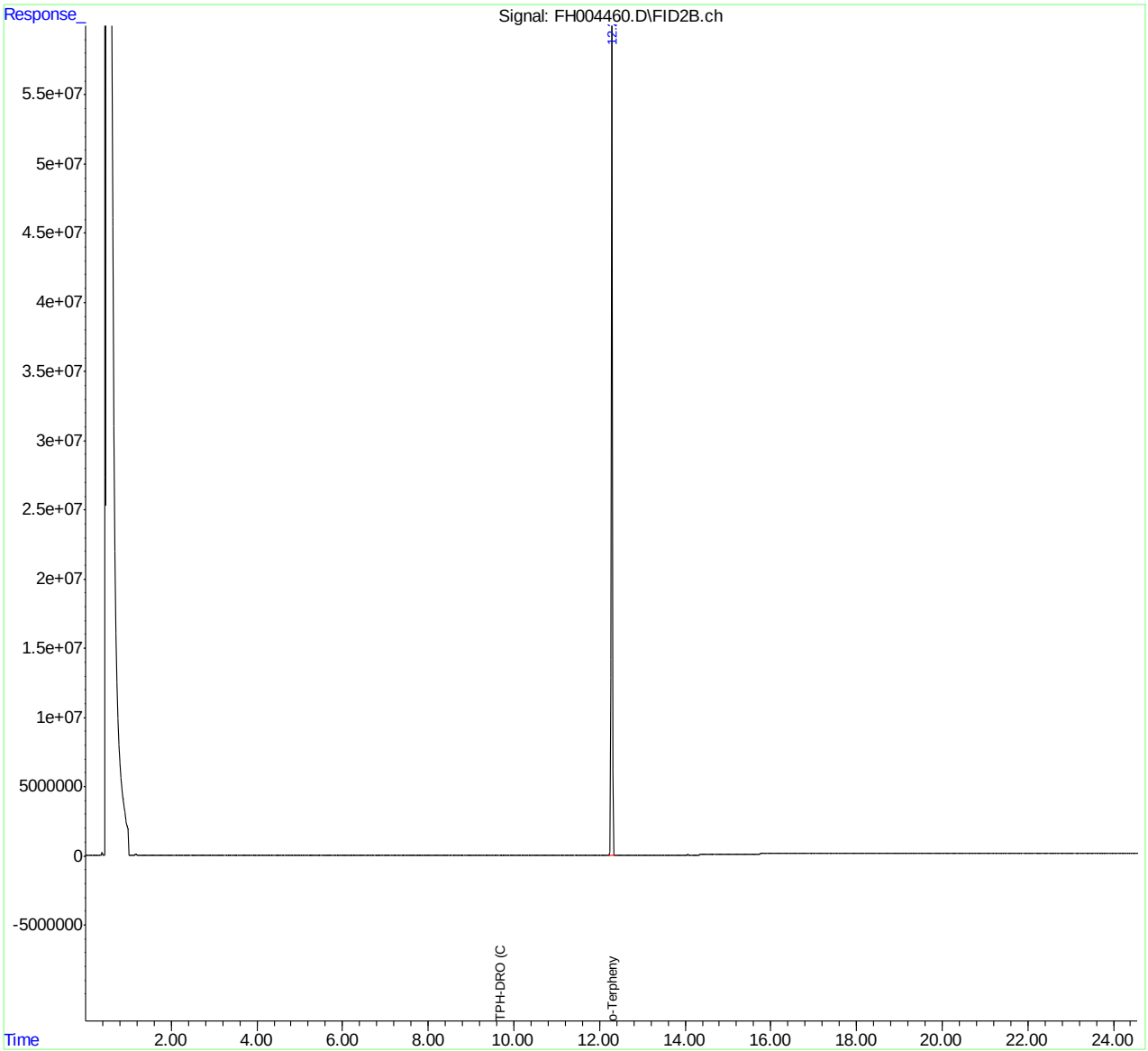
12.2.1 12

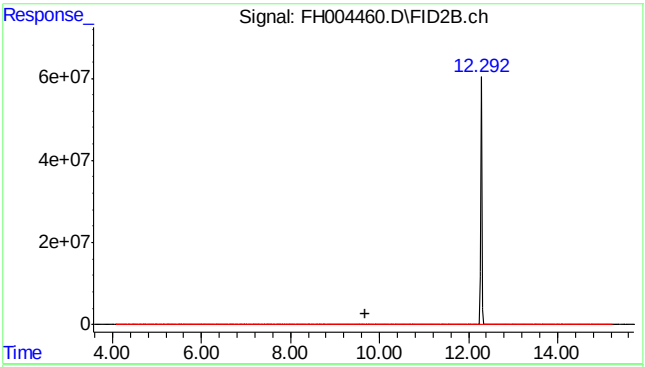
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052112.SEC\
Data File : FH004460.D
Signal(s) : FID2B.ch
Acq On : 21 May 2012 6:09 pm
Operator : alexw1
Sample : OP5922-MB
Misc : OP5922,GFH247,30.00,,,2,1
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e
Quant Time: May 22 08:20:45 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M
Quant Title : DRO-ORO REAR
QLast Update : Fri May 11 15:44:51 2012
Response via : Initial Calibration
Integrator: ChemStation

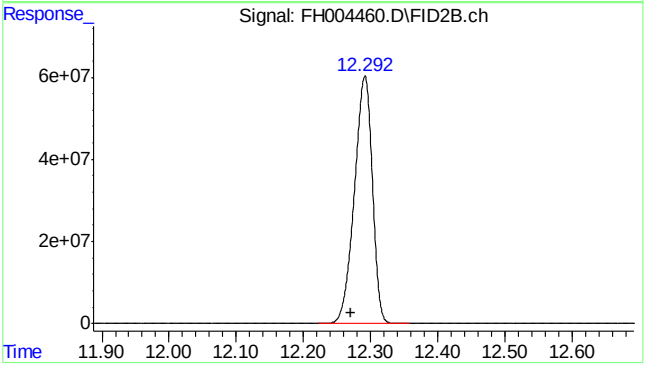
Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 9.674 min
Delta R.T.: 0.000 min
Response: 80907268
Conc: 70.77 ug/ml m



#2 o-Terphenyl

R.T.: 12.292 min
Delta R.T.: 0.022 min
Response: 1118460797
Conc: 1143.22 ug/ml

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7501 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 05/21/12

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.0009	-0.000040	<0.10

Associated samples MP7501: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7501
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 05/21/12

Metal	D34534-1 Original	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.046	0.77	0.791	91.5	75-125

Associated samples MP7501: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7501 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 05/21/12

Metal	D34534-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.046	0.74	0.76	91.3	4.0	

Associated samples MP7501: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7501
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 05/21/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.37	0.4	92.5	80-120

Associated samples MP7501: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 05/21/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.040	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.040	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.050	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.12	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.32	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	0.040	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.42	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.16	<3.0
Sodium	40	.59	1.9		
Strontium	5.0	.004	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.22	.26		
Vanadium	1.0	.02	.036		
Zinc	3.0	.05	.37	0.18	<3.0

Associated samples MP7504: D34638-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 05/21/12

Metal	D34638-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	2740	4010	217	586.2(a)	75-125
Beryllium	anr				
Boron					
Cadmium	0.077	53.3	54.2	98.3	75-125
Calcium					
Chromium	33.8	91.7	54.2	106.9	75-125
Cobalt	anr				
Copper	11.1	70.8	54.2	110.2	75-125
Iron	anr				
Lead	12.2	114	108	94.0	75-125
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	14.7	66.2	54.2	95.1	75-125
Phosphorus					
Potassium					
Selenium	0.57	98.4	108	90.3	75-125
Silicon					
Silver	0.0	22.7	21.7	104.8	75-125
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium	anr				
Vanadium	anr				
Zinc	41.3	99.4	54.2	107.3	75-125

Associated samples MP7504: D34638-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 05/21/12

Metal	D34638-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	2740	4020	219	585.0(a)	13.3	20
Beryllium	anr					
Boron						
Cadmium	0.077	53.9	54.7	98.4	1.1	20
Calcium						
Chromium	33.8	91.5	54.7	105.5	0.2	20
Cobalt	anr					
Copper	11.1	71.4	54.7	110.2	0.8	20
Iron	anr					
Lead	12.2	116	109	94.9	1.7	20
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	14.7	66.4	54.7	94.5	0.3	20
Phosphorus						
Potassium						
Selenium	0.57	99.9	109	90.8	1.5	20
Silicon						
Silver	0.0	23.2	21.9	106.0	2.2	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium	anr					
Zinc	41.3	100	54.7	107.3	0.6	20

Associated samples MP7504: D34638-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 05/21/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	193	200	96.5	80-120
Beryllium	anr			
Boron				
Cadmium	51.6	50	103.2	80-120
Calcium				
Chromium	53.7	50	107.4	80-120
Cobalt	anr			
Copper	52.2	50	104.4	80-120
Iron	anr			
Lead	101	100	101.0	80-120
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	51.2	50	102.4	80-120
Phosphorus				
Potassium				
Selenium	94.4	100	94.4	80-120
Silicon				
Silver	22.3	20	111.5	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	52.5	50	105.0	80-120

Associated samples MP7504: D34638-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 05/21/12

Metal	D34638-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	22900	22500	10.2*(a)	0-10
Beryllium	anr			
Boron				
Cadmium	0.700	0.00	100.0(b)	0-10
Calcium				
Chromium	309	304	1.9	0-10
Cobalt	anr			
Copper	101	84.5	16.6*(a)	0-10
Iron	anr			
Lead	112	84.5	24.3*(a)	0-10
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	135	139	3.3	0-10
Phosphorus				
Potassium				
Selenium	5.20	0.00	100.0(b)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	377	411	8.8	0-10

Associated samples MP7504: D34638-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7504
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7505
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/21/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.042	.06	-0.0026	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Thorium	0.25	.009	.025		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP7505: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7505
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/21/12

Metal	D34638-1 Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	4.7	119	108	105.5	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Thorium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7505: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7505
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/21/12

Metal	D34638-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.7	120	109	105.4	0.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Thorium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7505: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7505
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/21/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	111	100	111.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Thorium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7505: D34638-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7505
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 05/21/12

Metal	D34638-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	42.6	40.4	5.0	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Thorium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7505: D34638-1

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: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date: 05/23/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	110		
Antimony	150	8.5	16		
Arsenic	130	22	38		
Barium	50	.5	2.5		
Beryllium	50	6.5	16		
Boron	250	5	13		
Cadmium	50	3	3		
Calcium	2000	27	37	66.5	<2000
Chromium	50	1.5	2		
Cobalt	25	2	2		
Copper	50	6	15		
Iron	350	6	95		
Lead	250	9.5	15		
Lithium	10	2.5	3.3		
Magnesium	1000	33	55	29.0	<1000
Manganese	25	6	9		
Molybdenum	50	11	11		
Nickel	150	2.5	2.7		
Phosphorus	500	70	300		
Potassium	5000	310	310		
Selenium	250	24	29		
Silicon	250	15	11		
Silver	150	2	3.3		
Sodium	2000	30	490	-34	<2000
Strontium	25	.2	7.5		
Thallium	50	15	15		
Tin	250	60	120		
Titanium	50	.5	6		
Uranium	250	11	11		
Vanadium	50	1	2		
Zinc	150	2.5	7.5		

Associated samples MP7522: D34638-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date: 05/23/12

Metal	D34638-1A Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	160000	304000	125000	115.2	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	13500	144000	125000	104.4	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	591000	706000	125000	92.0	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7522: D34638-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date: 05/23/12

Metal	D34638-1A Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	160000	300000	125000	112.0	1.3	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	13500	142000	125000	102.8	1.4	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	591000	702000	125000	88.8	0.6	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7522: D34638-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date: 05/23/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	146000	125000	116.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	130000	125000	104.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	127000	125000	101.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7522: D34638-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

QC Batch ID: MP7522
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

Mountain States ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP7264/GN15089	1.0	0.0	mg/kg	261	255	97.7	80-120%
Specific Conductivity	GP7296/GN15116			umhos/cm	10009	9900	98.9	90-110%
pH	GN15040			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:
Batch GN15040: D34638-1
Batch GP7264: D34638-1
Batch GP7296: D34638-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP7264/GN15089	D34638-1	mg/kg	0.0	0.0	8.1	0-20%
Redox Potential Vs H2	GN15042	D34340-5	mv	310	309	0.3	0-20%
Redox Potential Vs H2	GN15042	D34340-5	mv	310	309	0.3	0-20%

Associated Samples:
Batch GN15042: D34638-1
Batch GP7264: D34638-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP7264/GN15089	D34638-1	mg/kg	0.0	40	35.7	89.4	75-125%

Associated Samples:
Batch GP7264: D34638-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D34638
Account: XTOKRWR - XTO Energy
Project: FRU 297-17A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP7264/GN15089	D34638-1	mg/kg	0.0	40	34.9	2.5	

Associated Samples:
Batch GP7264: D34638-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits