Mountain States
ACCUTEST
LABORATORIES

03/22/12

Technical Report for

XTO Energy

PCU T35X-2G

1108-11A

Accutest Job Number: D32747

Sampling Date: 03/14/12

Report to:

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

Total number of pages in report: 134

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)
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Mountain States • 4036 Youngfield St. • Wheat Ridge, CO 80033-3862 • tel: 303-425-6021 • fax: 303-425-6854 • http://www.accutest.com

Table of Contents

-1-

Table of Contents

-2-

ACCUTEST
LABORATORIES

D32747

Sample Summary

XTO Energy

Job No: D32747

PCU T35X-2G
Project No: 1108-11A

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D32747-1	03/14/12	11:45	DS	03/15/12	SO	Soil	CUT SUBLINER
D32747-1A	03/14/12	11:45	DS	03/15/12	SO	Soil	CUT SUBLINER

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

Metals By Method SW846 6010C

Matrix	AQ	Batch ID:	MP7102

- All samples were digested and analyzed within the recommended method holding time.
- Sample(s) D32771-1AMS, D32771-1AMSD were used as the QC samples for the metals analysis.

Matrix	SO	Batch ID:	MP7078

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D32747-1MS, D32747-1MSD, D32747-1SDL 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, Silver, Barium, Chromium, Nickel, Zinc are outside control limits for sample MP7078-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP7078-SD1 for Barium, Chromium,Nickel, and Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix	SO	Batch ID:	MP7079

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D32747-1MS, D32747-1MSD, D32747-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix	SO	Batch ID:	MP7098

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D32726-1MS, D32726-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix	SO	Batch ID:	GN14122

- Sample(s) D32747-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method DEPT.OF AG, BOOK N9

Matrix	SO	Batch ID:	GP6755

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM19 2540B M

Matrix	SO	Batch ID:	GN14097

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix	SO	Batch ID:	R12172

- The data for SW846 3060/7196A M meets quality control requirements.
- D32747-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

ACCUTEST
LABORATORIES
D32747

Wet Chemistry By Method SW846 3060A/7196A

Matrix	SO	Batch ID:	GP6737

- All samples were prepared and analyzed within the recommended method holding time.

- All method blanks for this batch meet method specific criteria.

- Sample(s) D32651-1DUP, D32651-1MS, D32651-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 9045C

Matrix	SO	Batch ID:	GN14113

- The following samples were run outside of holding time for method SW846 9045C: D32747-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix	SO	Batch ID:	MP7102

- D32747-1A 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

Page 1 of 1

Client Sample ID:	CUT SUBLINER			
Lab Sample ID:	D32747-1		**Date Sampled:**	03/14/12
Matrix:	SO - Soil		**Date Received:**	03/15/12
Method:	SW846 8260B		**Percent Solids:**	93.8
Project:	PCU T35X-2G			

	File ID	**DF**	**Analyzed**	**By**	**Prep Date**	**Prep Batch**	**Analytical Batch**
Run #1	5V20157.D	1	03/22/12	KV	n/a	n/a	V5V1216
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0761	0.057	0.025	mg/kg	
108-88-3	Toluene	0.226	0.11	0.057	mg/kg	
100-41-4	Ethylbenzene	0.0409	0.11	0.028	mg/kg	J
1330-20-7	Xylene (total)	0.296	0.23	0.11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	94%		61-130%
460-00-4	4-Bromofluorobenzene	88%		53-131%
17060-07-0	1,2-Dichloroethane-D4	89%		62-130%

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CUT SUBLINER		
Lab Sample ID:	D32747-1	Date Sampled:	03/14/12
Matrix:	SO - Soil	Date Received:	03/15/12
Method:	SW846 8270C BY SIM SW846 3546	Percent Solids:	93.8
Project:	PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G08570.D	1	03/19/12	DC	03/19/12	OP5559	E3G352
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0089	0.0046	mg/kg	
120-12-7	Anthracene	ND	0.0089	0.0046	mg/kg	
56-55-3	Benzo(a)anthracene	0.0168	0.0089	0.0046	mg/kg	
50-32-8	Benzo(a)pyrene	0.0084	0.0089	0.0046	mg/kg	J
205-99-2	Benzo(b)fluoranthene	0.0241	0.0089	0.0046	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0089	0.0046	mg/kg	
218-01-9	Chrysene	0.0244	0.0089	0.0046	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	0.0058	0.0089	0.0046	mg/kg	J
206-44-0	Fluoranthene	0.0251	0.0089	0.0046	mg/kg	
86-73-7	Fluorene	ND	0.0089	0.0046	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0089	0.0046	mg/kg	
91-20-3	Naphthalene	0.0320	0.012	0.011	mg/kg	
129-00-0	Pyrene	0.0145	0.0089	0.0046	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	50%		10-145%
321-60-8	2-Fluorobiphenyl	44%		10-130%
1718-51-0	Terphenyl-d14	70%		22-130%

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	CUT SUBLINER				
Lab Sample ID:	D32747-1		**Date Sampled:**	03/14/12	
Matrix:	SO - Soil		**Date Received:**	03/15/12	
Method:	SW846 8015B		**Percent Solids:**	93.8	
Project:	PCU T35X-2G				

	File ID	**DF**	**Analyzed**	**By**	**Prep Date**	**Prep Batch**	**Analytical Batch**
Run #1	GB15308.D	1	03/15/12	SK	n/a	n/a	GGB859
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	11	5.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	96%		60-140%

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

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	CUT SUBLINER			
Lab Sample ID:	D32747-1		Date Sampled:	03/14/12
Matrix:	SO - Soil		Date Received:	03/15/12
Method:	SW846-8015B SW846 3546		Percent Solids:	93.8
Project:	PCU T35X-2G			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH002339.D	1	03/20/12	TR	03/19/12	OP5560	GFH123
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	31.1	14	9.2	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	64%		43-136%

ND = Not detected   MDL - Method Detection Limit   J = Indicates an estimated value

RL = Reporting Limit   B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range   N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CUT SUBLINER			
Lab Sample ID:	D32747-1	**Date Sampled:**	03/14/12	
Matrix:	SO - Soil	**Date Received:**	03/15/12	
		Percent Solids:	93.8	
Project:	PCU T35X-2G			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	3.6	0.43	mg/kg	5	03/16/12	03/19/12	GJ	SW846 6020A [2]	SW846 3050B [5]
Barium	1880	1.1	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Cadmium	< 1.1	1.1	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Chromium	31.6	1.1	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Copper	15.5	1.1	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Lead	14.8	5.4	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Mercury	< 0.10	0.10	mg/kg	1	03/20/12	03/20/12	JB	SW846 7471B [3]	SW846 7471B [6]
Nickel	16.4	3.2	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Selenium	< 5.4	5.4	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Silver	< 3.2	3.2	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]
Zinc	48.2	3.2	mg/kg	1	03/16/12	03/16/12	JB	SW846 6010C [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA2266
(2) Instrument QC Batch: MA2269
(3) Instrument QC Batch: MA2272
(4) Prep QC Batch: MP7078
(5) Prep QC Batch: MP7079
(6) Prep QC Batch: MP7098

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	CUT SUBLINER		
Lab Sample ID:	D32747-1	**Date Sampled:**	03/14/12
Matrix:	SO - Soil	**Date Received:**	03/15/12
		Percent Solids:	93.8
Project:	PCU T35X-2G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	03/20/12	CJ	SW846 3060A/7196A
Chromium, Trivalent [a]	31.6	2.1	mg/kg	1	03/20/12	CJ	SW846 3060/7196A M
Redox Potential Vs H2	377		mv	1	03/18/12 04:30	JK	ASTM D1498-76M
Solids, Percent	93.8		%	1	03/15/12	SWT	SM19 2540B M
Specific Conductivity	5480	1.0	umhos/cm	1	03/21/12	JK	DEPT.OF AG, BOOK N9
pH	9.35		su	1	03/16/12 10:45	CT	SW846 9045C

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

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	CUT SUBLINER		
Lab Sample ID:	D32747-1A	**Date Sampled:**	03/14/12
Matrix:	SO - Soil	**Date Received:**	03/15/12
		Percent Solids:	93.8
Project:	PCU T35X-2G		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	222	2.0	mg/l	1	03/20/12	03/20/12	JB	SW846 6010C [1]	EPA 200.7 [2]
Magnesium	64.4	1.0	mg/l	1	03/20/12	03/20/12	JB	SW846 6010C [1]	EPA 200.7 [2]
Sodium	1010	2.0	mg/l	1	03/20/12	03/20/12	JB	SW846 6010C [1]	EPA 200.7 [2]

(1) Instrument QC Batch: MA2270
(2) Prep QC Batch: MP7102

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	CUT SUBLINER
Lab Sample ID:	D32747-1A
Matrix:	SO - Soil
Project:	PCU T35X-2G

Date Sampled:	03/14/12
Date Received:	03/15/12
Percent Solids:	93.8

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	15.3		ratio	1	03/20/12 11:47	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

CHAIN OF CUSTODY

ACCUTEST LABORATORIES

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

PAGE 1 OF 1

FED-EX Tracking #

Accutest Quote #

Bottle Order Control #

Accutest Job # D-32747

Client / Reporting Information	Project Information	Requested Analysis (see TEST CODE sheet)	Matrix Codes

Company Name: KRW CONSULTING
Street Address: 8000 W 14TH AVE STE 200
City: LAKEWOOD **State:** CO **Zip:** 80214
Project Contact: DWAYNE KNUDSON **E-mail:**
Phone #: 970 488 1098 **Fax #:**
Sampler(s) Name(s): DAVID SANDERS **Phone #:** 970 488 1098

Project Name: XTO PCU T35x-2G
Street:
City:
Project#: 1108-11A
Client PO#:
Project Manager: JOE HESS

Billing Information (If different from Report to)
Company Name: XTO ENERGY
Street Address: 21459 CR 5
City: RIFLE **State:** CO **Zip:** 81650
Attention: JESSICA DOOLING
PO#:

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

4.1

4

Number of preserved Bottles

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	TABLE 910	LAB USE ONLY
	CUT SUBLINER		3/14/12	11:45	DS	SO	S					X					X	01

Turnaround Time (Business days)
☐ Std. 10 Business Days
☒ Std. 5 Business Days (By Contract only) *this one*
☐ 5 Day RI SH
☒ 3 Day EMERGENCY
☐ 2 Day EMERGENCY
☐ 1 Day EMERGENCY
Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information
☐ Commercial "A" (Level 1)
☐ Commercial "B" (Level 2)
☐ Commercial "B" +Narrative
☐ FULLT1 (Level 3+4)
☐ State Forms
☐ EDD Format
☒ 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: 1	Date Time: 3/14/12	Received By: 1 Rifle Service Center	Relinquished By: 2	Date Time: 3/14/12	Received By: 2 American Courier
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4 3-15-12 1200
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☒Intact ☐Not intact	Preserved where applicable ☒	On Ice ☒ Cooler Temp. 4.0

D32747: Chain of Custody
Page 1 of 2

18 of 134
ACCUTEST LABORATORIES
D32747

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D32747   **Client:** KRW   **Immediate Client Services Action Required:** No

Date / Time Received: 3/15/2012 12:00:00 PM   **No. Coolers:** 1   **Client Service Action Required at Login:** No

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

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

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

Quality Control Preservation	Y	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	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

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

Sample Integrity - Instructions	Y	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

D32747: Chain of Custody

Page 2 of 2

Mountain States
ACCUTEST
LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

• Method Blank Summaries
• Blank Spike Summaries
• Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1216-MB	5V20148.D	1	03/22/12	KV	n/a	n/a	V5V1216

5.1.1

5

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

D32747-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	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	104%	61-130%
460-00-4	4-Bromofluorobenzene	88%	53-131%
17060-07-0	1,2-Dichloroethane-D4	96%	62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1216-BS	5V20149.D	1	03/22/12	KV	n/a	n/a	V5V1216

5.2.1

5

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

D32747-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.9	102	70-130
100-41-4	Ethylbenzene	50	54.4	109	70-130
108-88-3	Toluene	50	52.2	104	70-130
1330-20-7	Xylene (total)	150	162	108	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	97%	61-130%
460-00-4	4-Bromofluorobenzene	92%	53-131%
17060-07-0	1,2-Dichloroethane-D4	81%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D32747-1MS	5V20158.D	1	03/22/12	KV	n/a	n/a	V5V1216
D32747-1MSD	5V20159.D	1	03/22/12	KV	n/a	n/a	V5V1216
D32747-1	5V20157.D	1	03/22/12	KV	n/a	n/a	V5V1216

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

D32747-1

CAS No.	Compound	D32747-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	76.1		2830	2990	103	3080	106	3	70-134/30
100-41-4	Ethylbenzene	40.9	J	2830	3130	109	3200	112	2	70-137/30
108-88-3	Toluene	226		2830	3130	103	3150	103	1	70-130/30
1330-20-7	Xylene (total)	296		8480	9820	112	9880	113	1	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D32747-1	Limits
2037-26-5	Toluene-D8	97%	96%	94%	61-130%
460-00-4	4-Bromofluorobenzene	104%	102%	88%	53-131%
17060-07-0	1,2-Dichloroethane-D4	85%	83%	89%	62-130%

Mountain States

ACCUTEST
LABORATORIES

GC/MS Volatiles

Raw Data

ACCUTEST
LABORATORIES
D32747

```
                          Quantitation Report    (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5032212.S\
Data File : 5V20157.D
Acq On    : 22 Mar 2012    2:35 pm
Operator  : KOROUSHV
Sample    : D32747-1
Misc      : MS3611,V5V1216,5.007,,100,5,1
ALS Vial  : 12    Sample Multiplier: 1

Quant Time: Mar 22 15:34:46 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1212TVH1212.M
Quant Title  : 8260
QLast Update : Wed Mar 21 09:50:04 2012
Response via : Initial Calibration

 Internal Standards               R.T. QIon  Response  Conc Units Dev(Min)
 ------------------------------------------------------------------------
   2) Pentafluorobenzene          11.647 168   263850    50.00 ug/l    0.00
  35) 1,4-Difluorobenzene         12.446 114   403571    50.00 ug/l    0.00
  53) Chlorobenzene-d5            15.095 117   447959    50.00 ug/l    0.00
  74) 1,4-Dichlorobenzene-d4      17.070 152   281378    50.00 ug/l    0.00


 System Monitoring Compounds
  33) 1,2-Dichloroethane-d4       12.035 102    37529   44.51 ug/l    0.00
   Spiked Amount     50.000    Range  70 - 130     Recovery   =   89.02%
  61) Toluene-d8                  13.850  98   730358   46.92 ug/l    0.00
   Spiked Amount     50.000    Range  70 - 130     Recovery   =   93.84%
  69) 4-Bromofluorobenzene        16.042  95   309347   44.12 ug/l    0.00
   Spiked Amount     50.000    Range  70 - 130     Recovery   =   88.24%

 Target Compounds                                                Qvalue
  41) Hexane                      10.254  57     7956    2.40 ug/l     100
  50) Benzene                     12.126  78    21559    1.35 ug/l     100
  62) Toluene                     13.908  92    46037    4.00 ug/l     100
  66) Ethylbenzene                15.175  91    15384    0.72 ug/l     100
  72) m,p-xylene                  15.255 106    40909    4.63 ug/l      95
  73) o-xylene                    15.597 106     5051    0.61 ug/l      97
  91) Naphthalene                 19.559 128     7001    1.77 ug/l     100
  94) 2-Methylnaphthalene         21.100 142     3864    1.32 ug/l      97
  95) 1-Methylnaphthalene         21.397 142     1656    2.16 ug/l      94
 ------------------------------------------------------------------------

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

6.1.1

6

```
                          Quantitation Report      (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5032212.S\
Data File : 5V20157.D
Acq On    : 22 Mar 2012   2:35 pm
Operator  : KOROUSHV
Sample    : D32747-1
Misc      : MS3611,V5V1216,5.007,,100,5,1
ALS Vial  : 12   Sample Multiplier: 1

Quant Time: Mar 22 15:34:46 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1212TVH1212.M
Quant Title  : 8260
QLast Update : Wed Mar 21 09:50:04 2012
Response via  : Initial Calibration
```

6.1.1
6

V5AP1212TVH1212.M Thu Mar 22 15:34:54 2012 VOA5   Page: 2
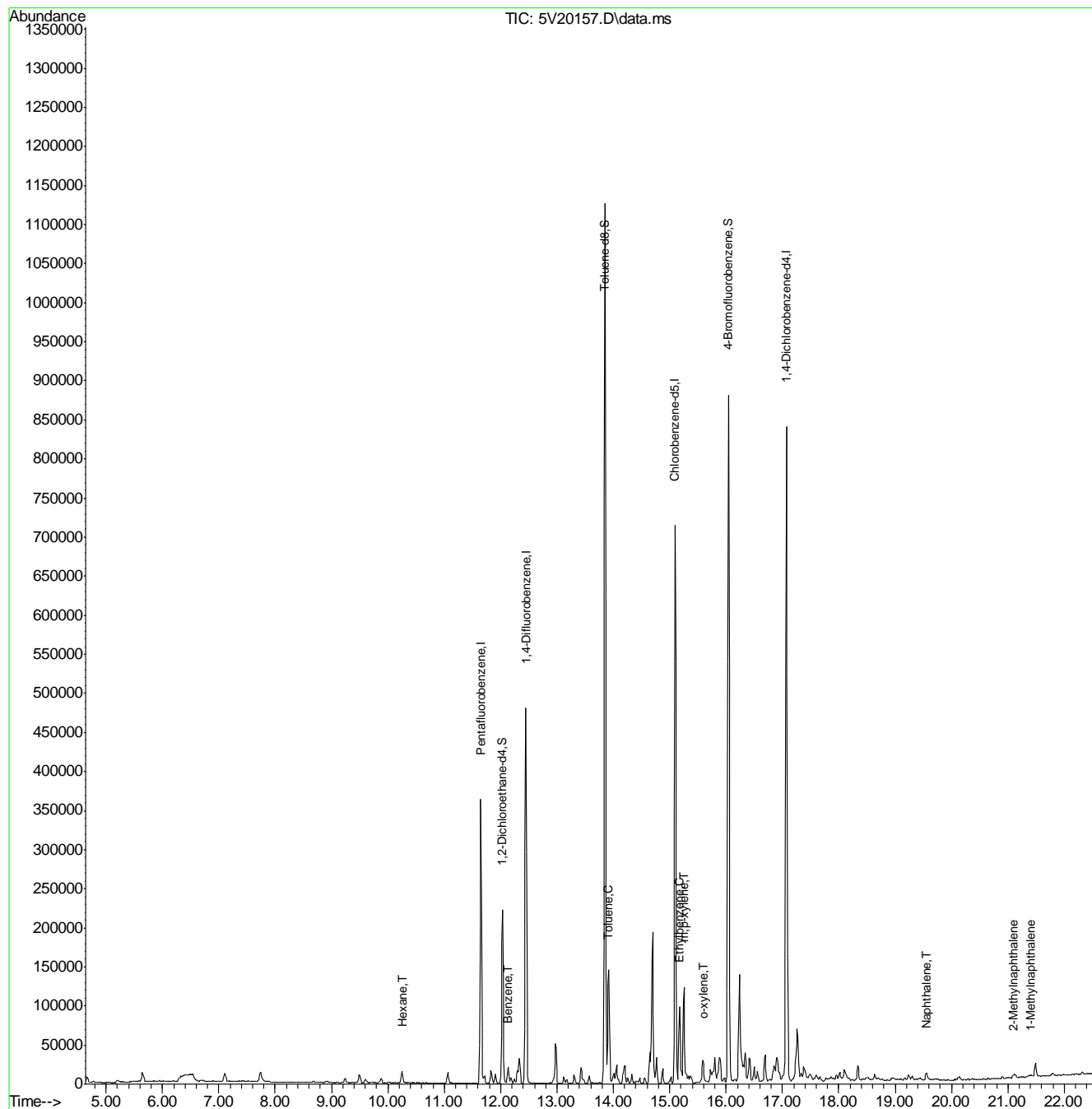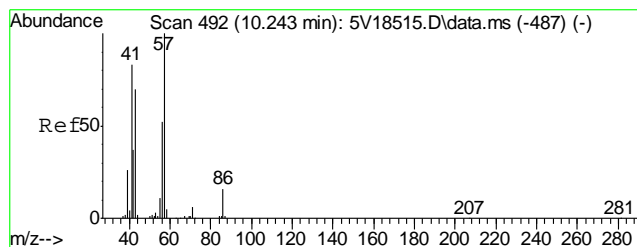
#41
Hexane
Concen: 2.40 ug/l
RT: 10.254 min   Scan# 493
Delta R.T.   0.000 min
Lab File: 5V20157.D
Acq: 22 Mar 2012   2:35 pm

Tgt Ion: 57 Resp: 7956
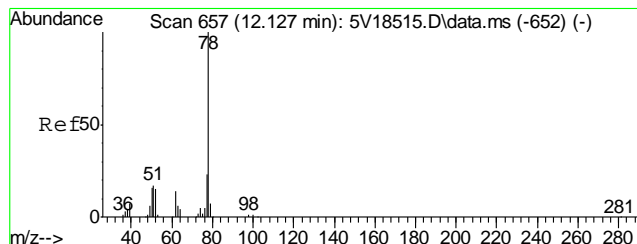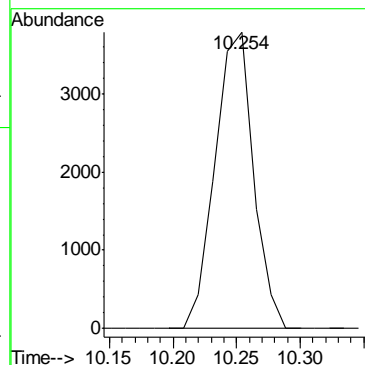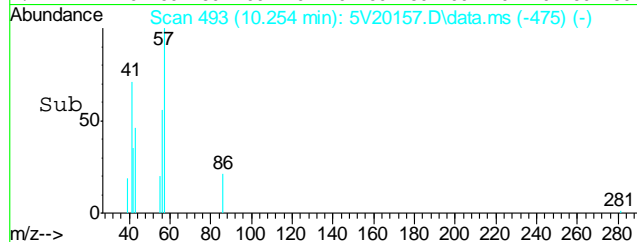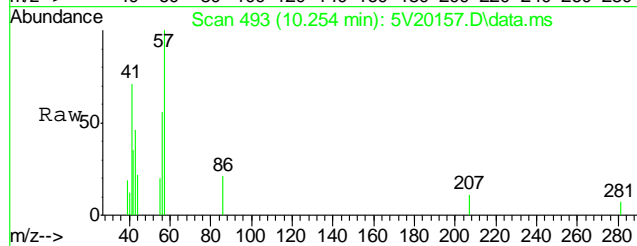
#50
Benzene
Concen: 1.35 ug/l
RT: 12.126 min   Scan# 657
Delta R.T.   -0.011 min
Lab File: 5V20157.D
Acq: 22 Mar 2012   2:35 pm

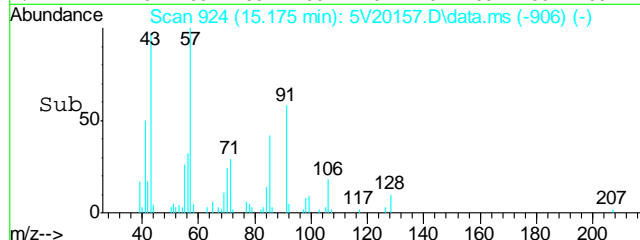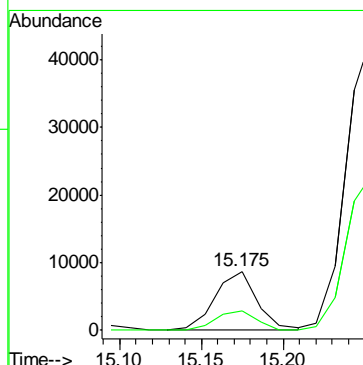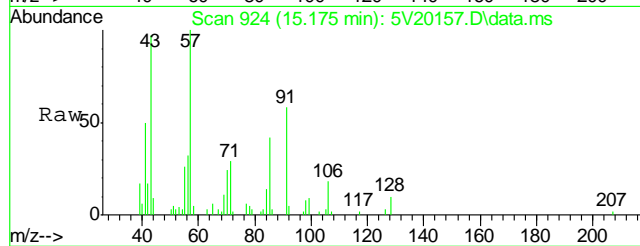Tgt Ion: 78 Resp: 21559

6.1.1

6

5V20157.D V5AP1212TVH1212.M   Thu Mar 22 15:34:55 2012   VOA5   Page 3
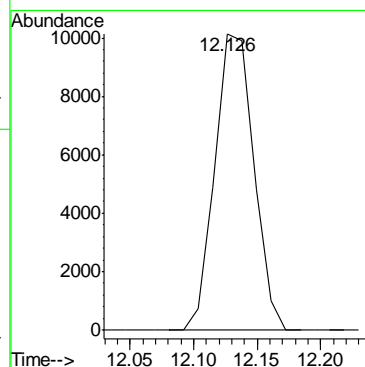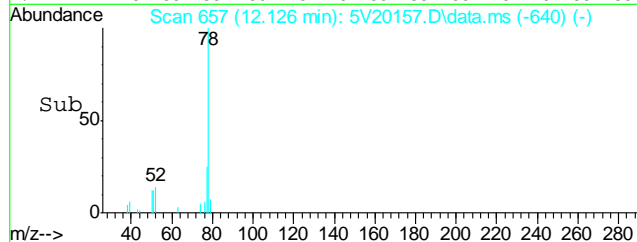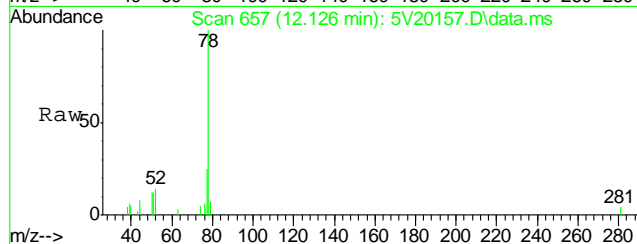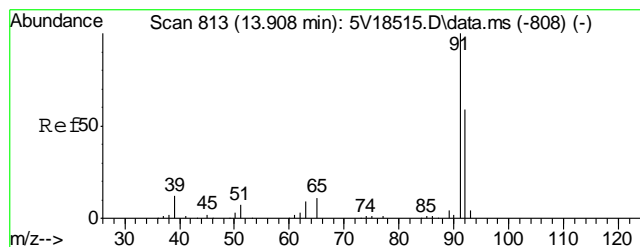
#62
Toluene
Concen: 4.00 ug/l
RT: 13.908 min   Scan# 813
Delta R.T. -0.000 min
Lab File: 5V20157.D
Acq: 22 Mar 2012   2:35 pm
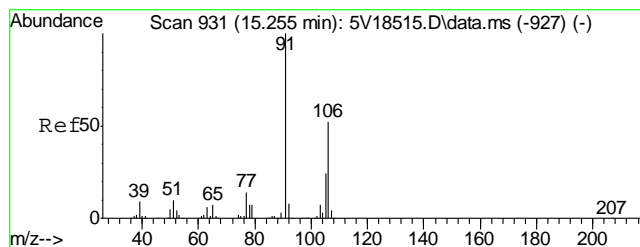
Tgt Ion: 92 Resp: 46037
Ion Ratio   Lower   Upper
 92 100
 91 170.3   149.8   189.8
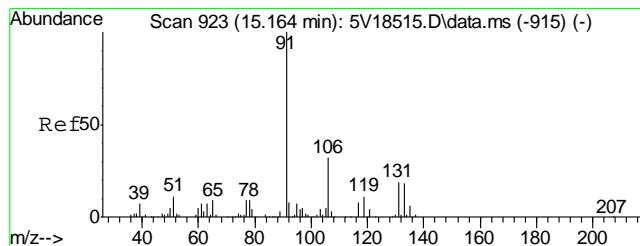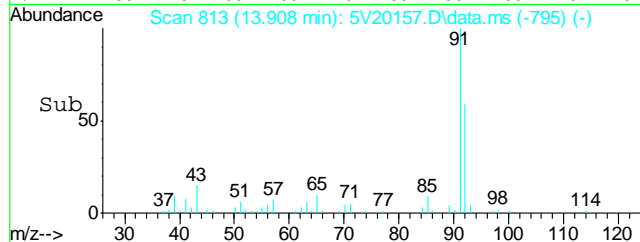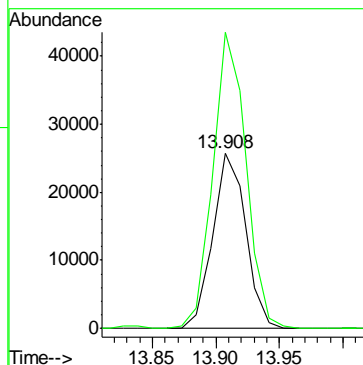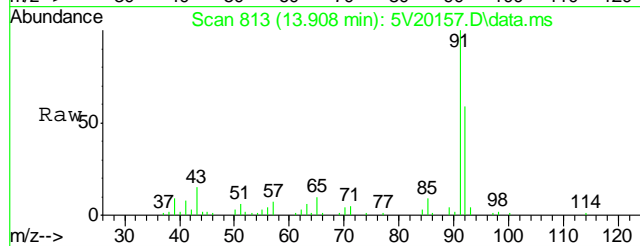
#66
Ethylbenzene
Concen: 0.72 ug/l
RT: 15.175 min   Scan# 924
Delta R.T. -0.000 min
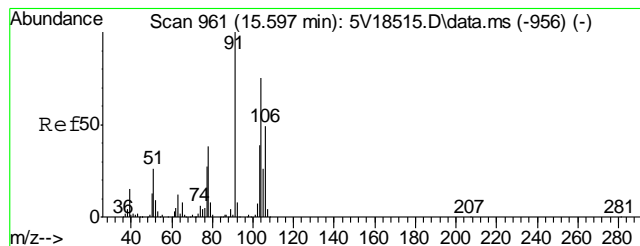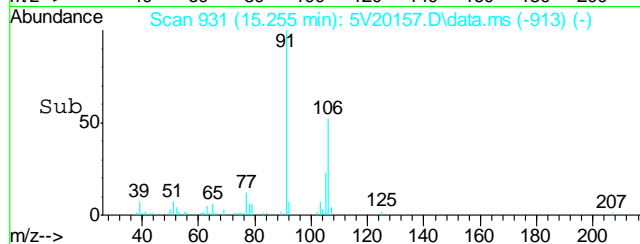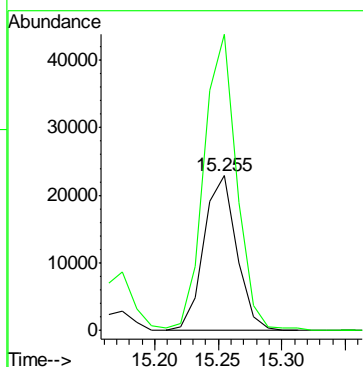Lab File: 5V20157.D
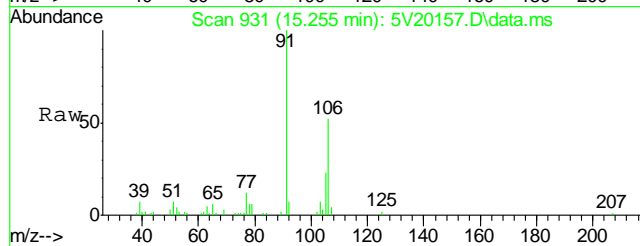Acq: 22 Mar 2012   2:35 pm

Tgt Ion: 91 Resp: 15384
Ion Ratio   Lower   Upper
 91 100
106   31.5   11.7   51.7

6.1.1

6

5V20157.D V5AP1212TVH1212.M   Thu Mar 22 15:34:55 2012   VOA5   Page 4
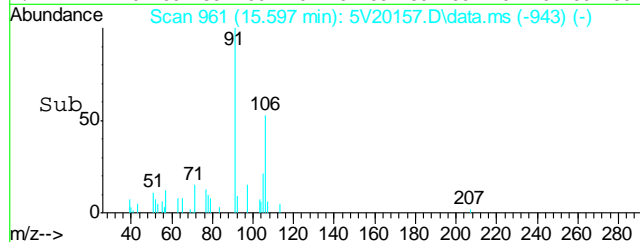
#72
m,p-xylene
Concen: 4.63 ug/l
RT: 15.255 min   Scan# 931
Delta R.T.   -0.000 min
Lab File: 5V20157.D
Acq: 22 Mar 2012   2:35 pm

Tgt Ion:106 Resp: 40909
Ion Ratio Lower   Upper
106 100
 91 190.1 177.1   217.1

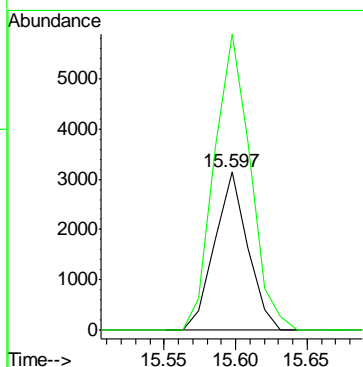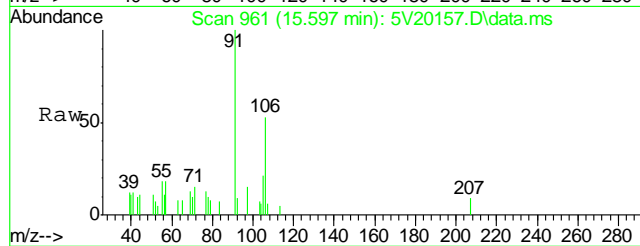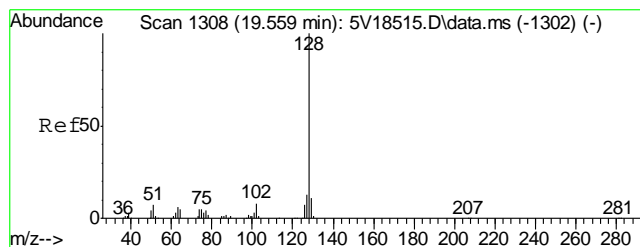#73
o-xylene
Concen: 0.61 ug/l
RT: 15.597 min   Scan# 961
Delta R.T.   -0.000 min
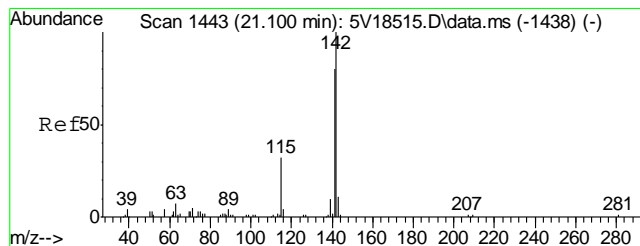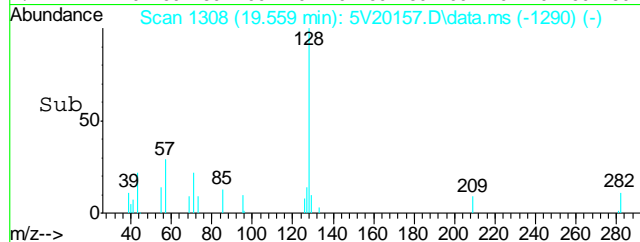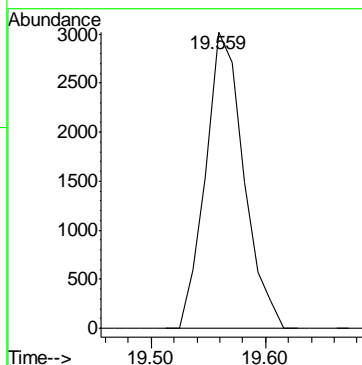Lab File: 5V20157.D
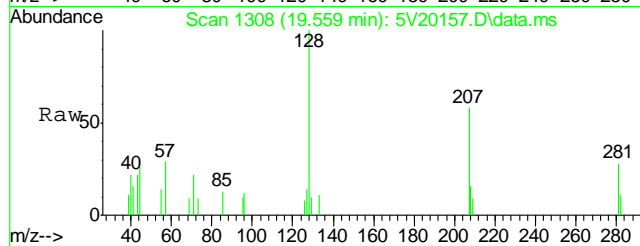Acq: 22 Mar 2012   2:35 pm

Tgt Ion:106 Resp: 5051
Ion Ratio Lower   Upper
106 100
 91 203.3 166.6   249.8

5V20157.D V5AP1212TVH1212.M   Thu Mar 22 15:34:55 2012   VOA5   Page 5

5V20157.D: D32747-1 CUT SUBLINER   page 5 of 7

29 of 134
ACCUTEST
LABORATORIES
D32747

6.1.1
6

Abundance   Scan 1308 (19.559 min): 5V18515.D\data.ms (-1302) (-)
128
Ref50
36 51 75 102   207   281
m/z-->   40 60 80 100 120 140 160 180 200 220 240 260 280

Abundance   Scan 1308 (19.559 min): 5V20157.D\data.ms
128
207
Raw50
40 57
85   281
m/z-->   40 60 80 100 120 140 160 180 200 220 240 260 280

Abundance   Scan 1308 (19.559 min): 5V20157.D\data.ms (-1290) (-)
128
Sub50
39 57 85   209   282
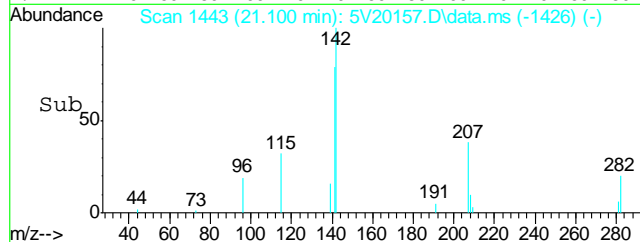m/z-->   40 60 80 100 120 140 160 180 200 220 240 260 280
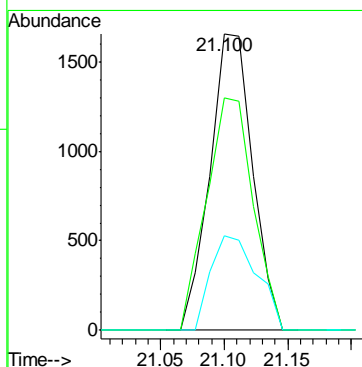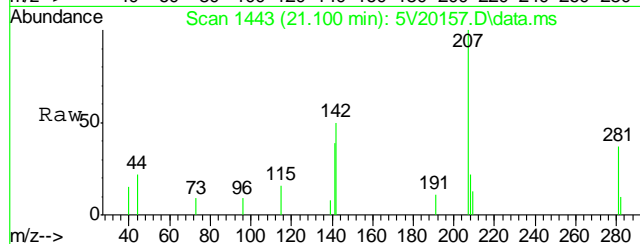
#91
Naphthalene
Concen: 1.77 ug/l
RT: 19.559 min Scan# 1308
Delta R.T. 0.001 min
Lab File: 5V20157.D
Acq: 22 Mar 2012   2:35 pm

Tgt Ion:128 Resp: 7001

Abundance
3000   19.559
2500
2000
1500
1000
500
0
Time-->   19.50   19.60

Abundance   Scan 1443 (21.100 min): 5V18515.D\data.ms (-1438) (-)
142
Ref50
115
39 63 89   207   281
m/z-->   40 60 80 100 120 140 160 180 200 220 240 260 280

Abundance   Scan 1443 (21.100 min): 5V20157.D\data.ms
207
142
Raw50
44
73 96 115   191   281
m/z-->   40 60 80 100 120 140 160 180 200 220 240 260 280

Abundance   Scan 1443 (21.100 min): 5V20157.D\data.ms (-1426) (-)
142
Sub50
115
96   207
44 73   191   282
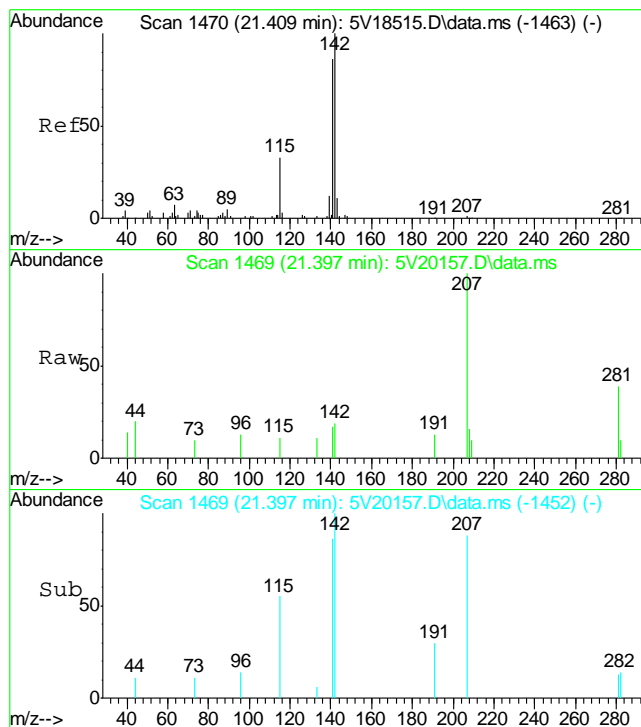m/z-->   40 60 80 100 120 140 160 180 200 220 240 260 280

#94
2-Methylnaphthalene
Concen: 1.32 ug/l
RT: 21.100 min Scan# 1443
Delta R.T. -0.011 min
Lab File: 5V20157.D
Acq: 22 Mar 2012   2:35 pm

Tgt Ion:142 Resp: 3864
Ion Ratio Lower Upper
142 100
141 85.5   66.2   99.4
115 34.4   25.9   38.9

Abundance
1500   21.100
1000
500
0
Time-->   21.05 21.10 21.15

6.1.1

6

5V20157.D V5AP1212TVH1212.M   Thu Mar 22 15:34:55 2012   VOA5   Page 6

ACCUTEST LABORATORIES
D32747

Abundance   Scan 1470 (21.409 min): 5V18515.D\data.ms (-1463) (-)

Ref 50

142
115
39 63 89   191 207   281
m/z--> 40 60 80 100 120 140 160 180 200 220 240 260 280

Abundance   Scan 1469 (21.397 min): 5V20157.D\data.ms

207
Raw 50   281
        44   73 96 115 142   191
      0
m/z--> 40 60 80 100 120 140 160 180 200 220 240 260 280

Abundance   Scan 1469 (21.397 min): 5V20157.D\data.ms (-1452) (-)

142   207
Sub 50   115
        44 73 96   191   282
      0
m/z--> 40 60 80 100 120 140 160 180 200 220 240 260 280

```
#95
1-Methylnaphthalene
Concen:      2.16 ug/l
RT:  21.397 min  Scan# 1469
Delta R.T.  -0.011 min
Lab File:   5V20157.D
Acq: 22 Mar 2012   2:35 pm

Tgt Ion:142 Resp:     1656
Ion  Ratio   Lower   Upper
142  100
141  82.5    68.9   103.3
115  40.8    27.3    40.9
```
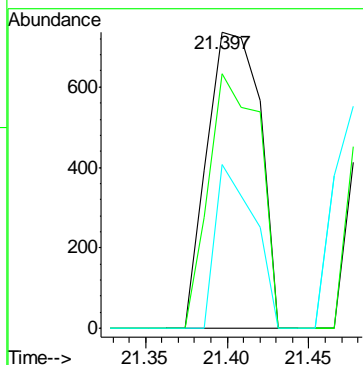
Abundance

21.397

600
400
200
0
Time--> 21.35 21.40 21.45

5V20157.D V5AP1212TVH1212.M   Thu Mar 22 15:34:55 2012   VOA5   Page 7

```
                         Quantitation Report     (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5032212.S\
Data File : 5V20148.D
Acq On    : 22 Mar 2012   9:37 am
Operator  : KOROUSHV
Sample    : MB
Misc      : MS3611,V5V1216,5.00,,100,5,1
ALS Vial  : 3   Sample Multiplier: 1

Quant Time: Mar 22 13:49:12 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1212TVH1212.M
Quant Title  : 8260
QLast Update : Wed Mar 21 09:50:04 2012
Response via : Initial Calibration

 Internal Standards              R.T. QIon  Response  Conc Units Dev(Min)
 ------------------------------------------------------------------------
   2) Pentafluorobenzene        11.647 168   300602    50.00 ug/l    0.00
  35) 1,4-Difluorobenzene       12.446 114   455259    50.00 ug/l    0.00
  53) Chlorobenzene-d5          15.095 117   471270    50.00 ug/l    0.00
  74) 1,4-Dichlorobenzene-d4    17.070 152   278430    50.00 ug/l    0.00

 System Monitoring Compounds
  33) 1,2-Dichloroethane-d4     12.035 102    45796    48.02 ug/l    0.00
   Spiked Amount     50.000   Range  70 - 130    Recovery   =   96.04%
  61) Toluene-d8                13.850  98   850422    51.93 ug/l    0.00
   Spiked Amount     50.000   Range  70 - 130    Recovery   =  103.86%
  69) 4-Bromofluorobenzene      16.043  95   323804    43.90 ug/l    0.00
   Spiked Amount     50.000   Range  70 - 130    Recovery   =   87.80%

 Target Compounds                                              Qvalue
  62) Toluene                   13.908  92     4209     0.35 ug/l      96
  72) m,p-xylene                15.255 106     3324     0.36 ug/l      95
  91) Naphthalene               19.570 128     8783     1.90 ug/l     100
  94) 2-Methylnaphthalene       21.100 142     5886     2.02 ug/l      95
  95) 1-Methylnaphthalene       21.408 142     5257     3.05 ug/l      97
 ------------------------------------------------------------------------

 (#) = qualifier out of range (m) = manual integration (+) = signals summed
```
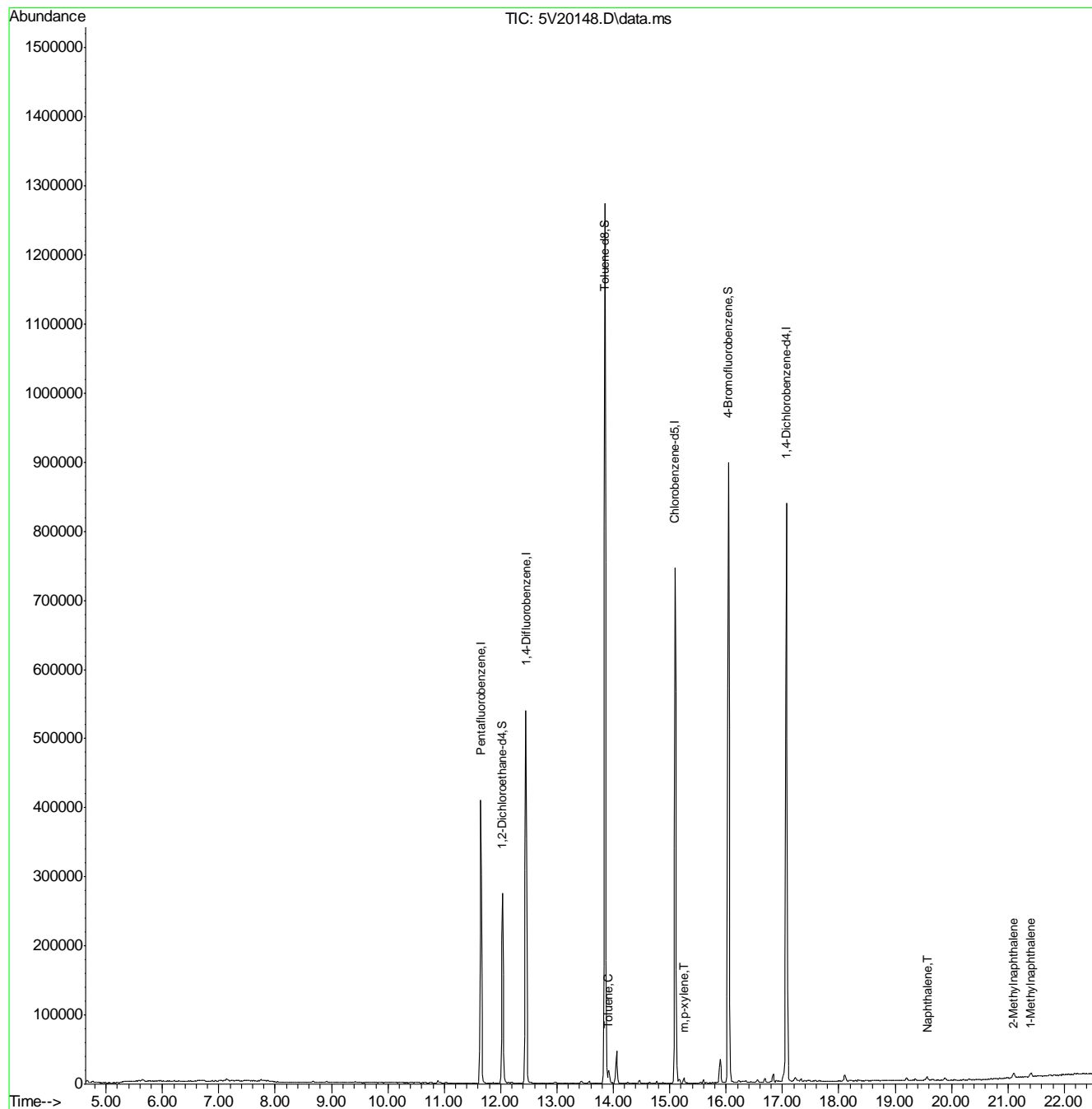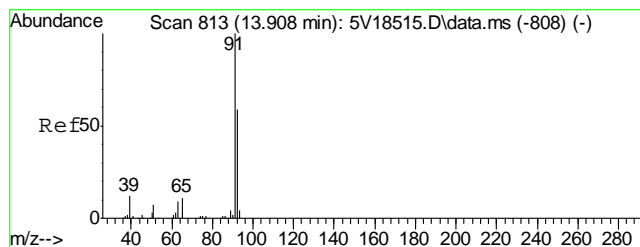
Quantitation Report   (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5032212.S\
Data File : 5V20148.D
Acq On   : 22 Mar 2012   9:37 am
Operator : KOROUSHV
Sample   : MB
Misc   : MS3611,V5V1216,5.00,,100,5,1
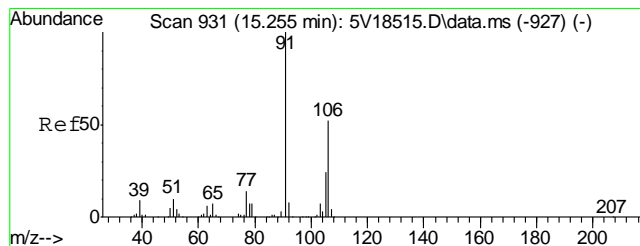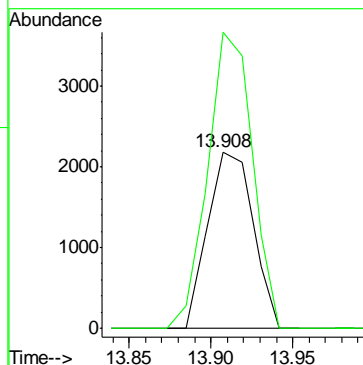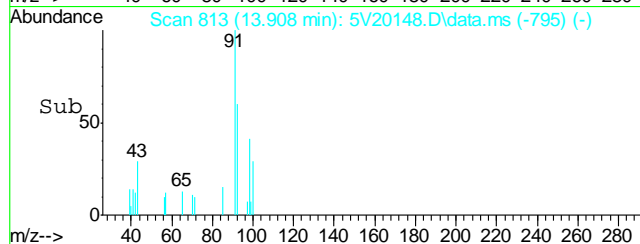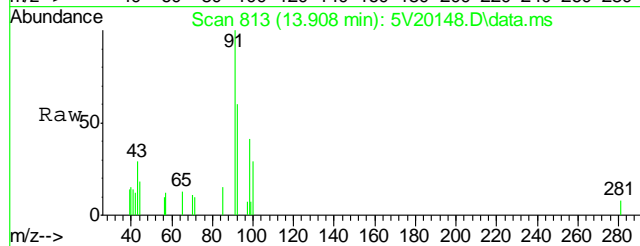ALS Vial : 3   Sample Multiplier: 1

Quant Time: Mar 22 13:49:12 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1212TVH1212.M
Quant Title : 8260
QLast Update : Wed Mar 21 09:50:04 2012
Response via : Initial Calibration

6.2.1

6

V5AP1212TVH1212.M Thu Mar 22 13:49:20 2012 VOA5   Page: 2

ACCUTEST LABORATORIES
D32747

Scan 813 (13.908 min): 5V18515.D\data.ms (-808) (-)

Scan 813 (13.908 min): 5V20148.D\data.ms

Scan 813 (13.908 min): 5V20148.D\data.ms (-795) (-)

#62
Toluene
Concen: 0.35 ug/l
RT: 13.908 min   Scan# 813
Delta R.T. 0.000 min
Lab File: 5V20148.D
Acq: 22 Mar 2012   9:37 am

Tgt Ion: 92 Resp: 4209
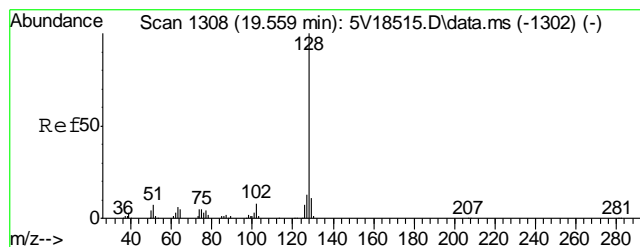Ion Ratio   Lower   Upper
 92 100
 91 164.9   149.8   189.8

13.908

Scan 931 (15.255 min): 5V18515.D\data.ms (-927) (-)

Scan 931 (15.255 min): 5V20148.D\data.ms

Scan 931 (15.255 min): 5V20148.D\data.ms (-913) (-)

#72
m,p-xylene
Concen: 0.36 ug/l
RT: 15.255 min   Scan# 931
Delta R.T. 0.000 min
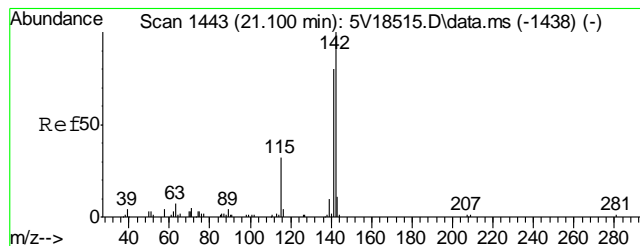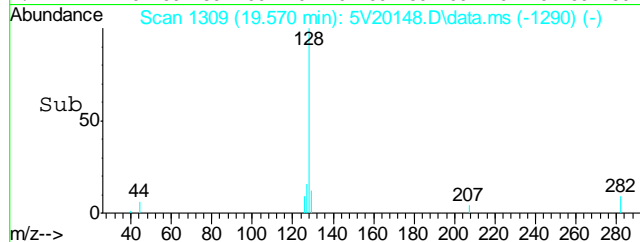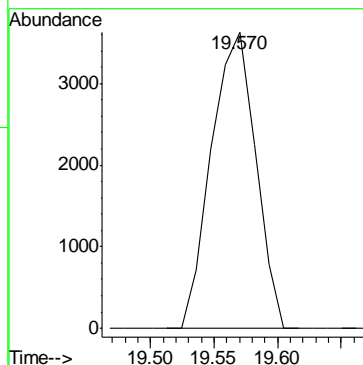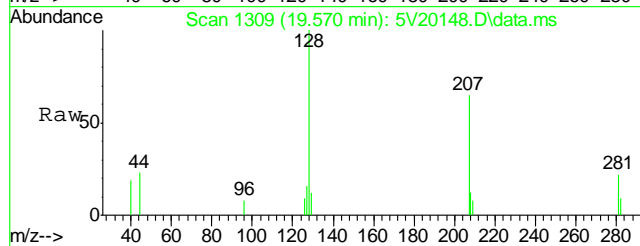Lab File: 5V20148.D
Acq: 22 Mar 2012   9:37 am

Tgt Ion:106 Resp: 3324
Ion Ratio   Lower   Upper
106 100
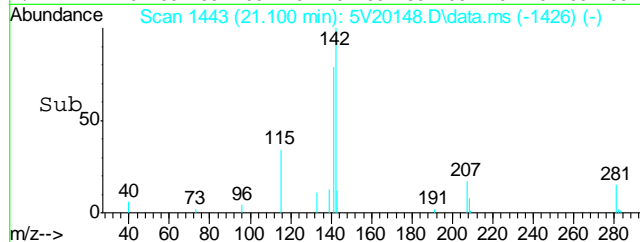 91 189.9   177.1   217.1

15.255

6.2.1

6
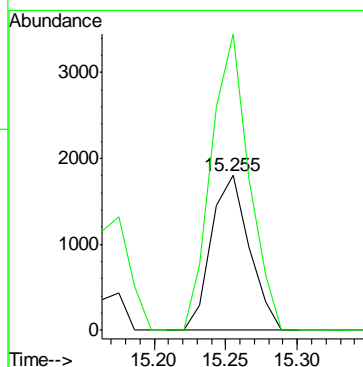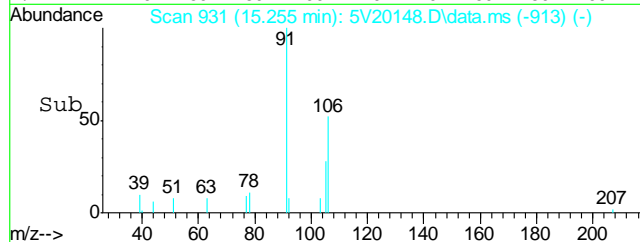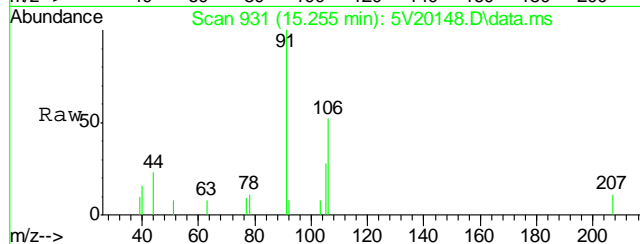
#91
Naphthalene
Concen: 1.90 ug/l
RT: 19.570 min Scan# 1309
Delta R.T. 0.012 min
Lab File: 5V20148.D
Acq: 22 Mar 2012   9:37 am

Tgt Ion:128 Resp: 8783

#94
2-Methylnaphthalene
Concen: 2.02 ug/l
RT: 21.100 min Scan# 1443
Delta R.T. -0.011 min
Lab File: 5V20148.D
Acq: 22 Mar 2012   9:37 am

Tgt Ion:142 Resp: 5886

Ion	Ratio	Lower	Upper
142	100		
141	85.5	66.2	99.4
115	27.4	25.9	38.9

Abundance   Scan 1470 (21.409 min): 5V18515.D\data.ms (-1463) (-)

142

Ref50

115

39 63 89   207   281

m/z-->   50   100 150 200 250 300 350

Abundance   Scan 1470 (21.408 min): 5V20148.D\data.ms

207

142

Raw50   281

44 73 96 115   355

m/z-->   50   100 150 200 250 300 350

Abundance   Scan 1470 (21.408 min): 5V20148.D\data.ms (-1452) (-)

142

Sub50

115

40 71 96   208   283   355

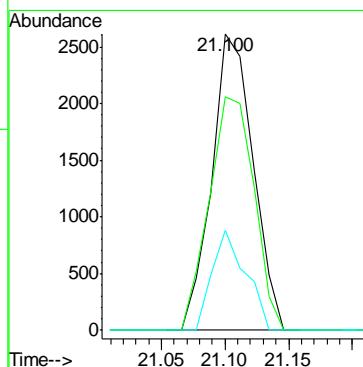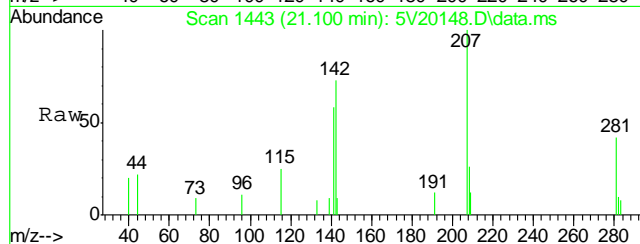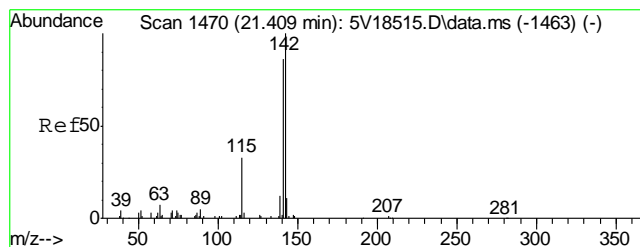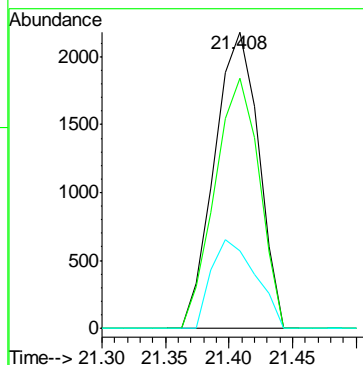m/z-->   50   100 150 200 250 300 350

```
#95
1-Methylnaphthalene
Concen:      3.05 ug/l
RT:   21.408 min   Scan# 1470
Delta R.T.   0.000 min
Lab File:    5V20148.D
Acq: 22 Mar 2012    9:37 am

Tgt Ion:142 Resp:     5257
Ion   Ratio   Lower    Upper
142   100
141   84.9    68.9   103.3
115   30.2    27.3    40.9
```
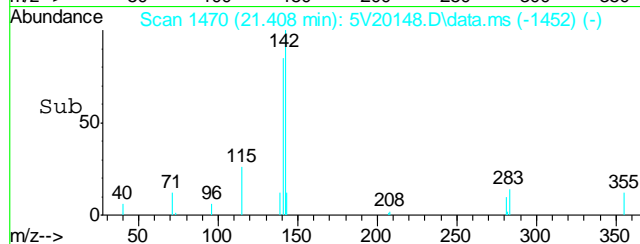
Abundance

2000   21.408

1500

1000

500

0

Time--> 21.30 21.35 21.40 21.45

6.2.1

6

Mountain States
ACCUTEST
LABORATORIES
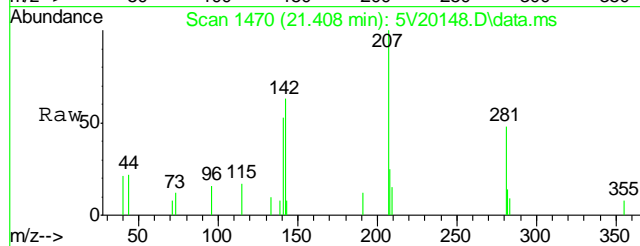
GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

• Method Blank Summaries
• Blank Spike Summaries
• Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5559-MB	3G08568.D	1	03/19/12	DC	03/19/12	OP5559	E3G352

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

D32747-1

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	89%	10-145%
321-60-8	2-Fluorobiphenyl	71%	10-130%
1718-51-0	Terphenyl-d14	90%	22-130%

Blank Spike Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5559-BS	3G08569.D	1	03/19/12	DC	03/19/12	OP5559	E3G352

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

D32747-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	72.6	87	34-130
120-12-7	Anthracene	83.3	76.6	92	35-130
56-55-3	Benzo(a)anthracene	83.3	69.5	83	36-130
50-32-8	Benzo(a)pyrene	83.3	67.7	81	36-130
205-99-2	Benzo(b)fluoranthene	83.3	66.3	80	35-130
207-08-9	Benzo(k)fluoranthene	83.3	71.3	86	37-130
218-01-9	Chrysene	83.3	73.0	88	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	69.6	84	32-130
206-44-0	Fluoranthene	83.3	77.6	93	38-130
86-73-7	Fluorene	83.3	75.8	91	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	75.8	91	28-130
91-20-3	Naphthalene	83.3	72.4	87	35-130
129-00-0	Pyrene	83.3	74.0	89	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	91%	10-145%
321-60-8	2-Fluorobiphenyl	71%	10-130%
1718-51-0	Terphenyl-d14	83%	22-130%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5559-MS	3G08571.D	1	03/19/12	DC	03/19/12	OP5559	E3G352
OP5559-MSD	3G08572.D	1	03/19/12	DC	03/19/12	OP5559	E3G352
D32747-1	3G08570.D	1	03/19/12	DC	03/19/12	OP5559	E3G352

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

D32747-1

CAS No.	Compound	D32747-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		88.8	60.3	68	58.9	66	2	10-155/30
120-12-7	Anthracene	ND		88.8	76.3	86	71.2	80	7	10-155/30
56-55-3	Benzo(a)anthracene	16.8		88.8	94.3	87	89.8	82	5	10-175/30
50-32-8	Benzo(a)pyrene	8.4	J	88.8	76.1	76	71.4	71	6	10-164/30
205-99-2	Benzo(b)fluoranthene	24.1		88.8	104	90	102	88	2	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		88.8	62.3	70	55.5	63	12	10-178/30
218-01-9	Chrysene	24.4		88.8	97.2	82	93.0	77	4	10-147/30
53-70-3	Dibenzo(a,h)anthracene	5.8	J	88.8	99.3	105	94.1	100	5	10-144/30
206-44-0	Fluoranthene	25.1		88.8	94.6	78	87.9	71	7	10-207/30
86-73-7	Fluorene	ND		88.8	77.4	87	75.1	85	3	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		88.8	126	142	121	137	4	10-180/30
91-20-3	Naphthalene	32.0		88.8	88.1	63	95.9	72	8	10-198/30
129-00-0	Pyrene	14.5		88.8	104	101	98.3	95	6	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D32747-1	Limits
4165-60-0	Nitrobenzene-d5	58%	63%	50%	10-145%
321-60-8	2-Fluorobiphenyl	54%	57%	44%	10-130%
1718-51-0	Terphenyl-d14	81%	82%	70%	22-130%

Mountain States

ACCUTEST
L A B O R A T O R I E S

GC/MS Semi-volatiles

Raw Data

8

ACCUTEST
L A B O R A T O R I E S

```
                      Quantitation Report     (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031912\
Data File : 3g08570.D
Acq On    : 19 Mar 2012   1:38 pm
Operator  : DONC
Sample    : D32747-1
Misc      : OP5559,E3G352,30.02,,,1,1
ALS Vial  : 6   Sample Multiplier: 1

Quant Time: Mar 20 10:02:52 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G344.M
Quant Title  : PAHSIM BASE
QLast Update : Mon Mar 12 09:19:25 2012
Response via : Initial Calibration


        Compound                R.T. QIon  Response  Conc Units Dev(Min)
    ----------------------------------------------------------------------
Internal Standards
   1) Naphthalene-d8             6.520  136   700667      4.00 ug/mL  -0.01
   6) Acenaphthene-d10           8.933  164   379520      4.00 ug/mL   0.00
  14) Phenanthrene-d10          11.485  188   507703      4.00 ug/mL   0.00
  18) Chrysene-d12              16.547  240   290746      4.00 ug/mL   0.00
  23) Perylene-d12              19.132  264   213019      4.00 ug/mL   0.00

System Monitoring Compounds
   2) Nitrobenzene-d5            5.809   82  2372869     24.85 ug/mL   0.00
   Spiked Amount     50.000  Range  25 - 135    Recovery   =   49.70%
   7) 2-Fluorobiphenyl           7.917  172  3373224     22.15 ug/mL  -0.01
   Spiked Amount     50.000  Range  25 - 135    Recovery   =   44.30%
  20) Terphenyl-d14             14.603  244  2212264     35.20 ug/mL   0.00
   Spiked Amount     50.000  Range  25 - 135    Recovery   =   70.40%

Target Compounds                                               Qvalue
   3) N-Nitrosodimethylamine     0.000            0      N.D. d
   4) N-Nitrosodi-propylamine    0.000            0      N.D. d
   5) Naphthalene                6.545  128   212235      0.90 ug/mL    97
   8) 2-Methylnaphthalene        7.380  142   227418      1.65 ug/mL    98
   9) 1-Methylnaphthalene        7.530  142   104712      0.79 ug/mL    97
  10) Acenaphthylene             0.000            0      N.D. d
  11) Acenaphthene               0.000            0      N.D. d
  12) Fluorene                   0.000            0      N.D. d
  13) Diphenylamine              0.000            0      N.D. d
  15) Phenanthrene              11.532  178   163892      0.93 ug/mL    99
  16) Anthracene                 0.000            0      N.D. d
  17) Fluoranthene              13.772  202   109551      0.71 ug/mL    95
  19) Pyrene                    14.184  202    53513      0.41 ug/mL    89
  21) Benzo(a)anthracene        16.514  228    44608      0.47 ug/mL    84
  22) Chrysene                  16.587  228    68812      0.69 ug/mL    92
  24) Benzo(b)fluoranthene      18.491  252    52070m     0.68 ug/mL
  25) Benzo(k)fluoranthene       0.000            0      N.D. d
  26) Benzo(a)pyrene            19.027  252    17574      0.24 ug/mL    92
  27) Indeno(1,2,3-cd)pyrene     0.000            0      N.D. d
  28) Dibenz(a,h)anthracene     20.888  278     6010m     0.16 ug/mL
  29) Benzo(g,h,i)perylene      21.267  276    17723      0.37 ug/mL    93
    ----------------------------------------------------------------------

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

```
                          Quantitation Report     (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031912\
Data File : 3g08570.D
Acq On    : 19 Mar 2012   1:38 pm
Operator  : DONC
Sample    : D32747-1
Misc      : OP5559,E3G352,30.02,,,1,1
ALS Vial  : 6   Sample Multiplier: 1

Quant Time: Mar 20 10:02:52 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G344.M
Quant Title  : PAHSIM BASE
QLast Update : Mon Mar 12 09:19:25 2012
Response via : Initial Calibration
```
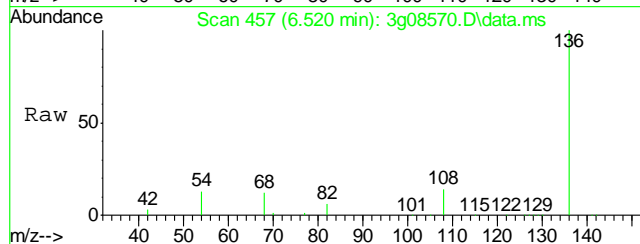


```
SIMPE3G344.M Tue Mar 20 10:03:04 2012 3G                                    Page: 2
```

8.1.1

8
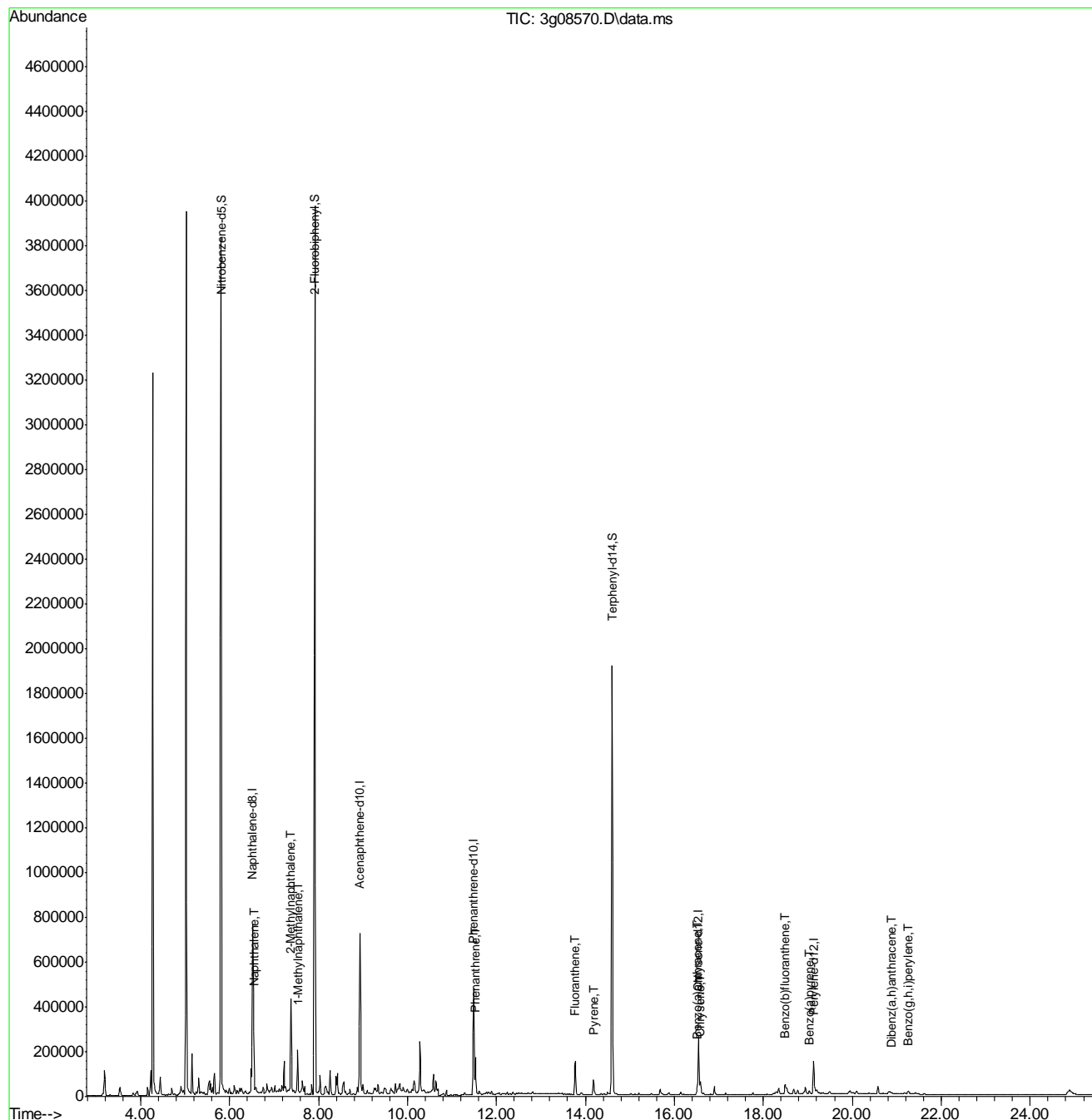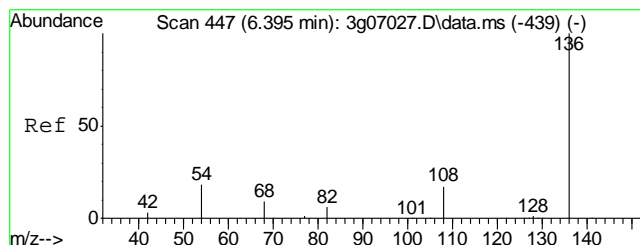
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.520 min   Scan# 457
Delta R.T.   -0.013 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:136 Resp: 700667

Ion	Ratio	Lower	Upper
136	100		
68	14.6	0.0	32.2
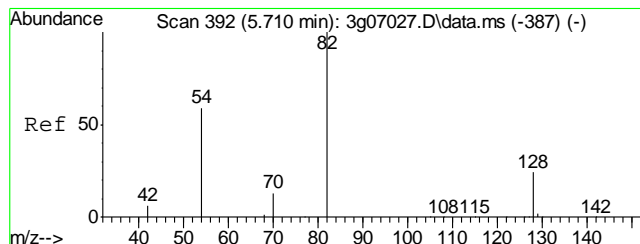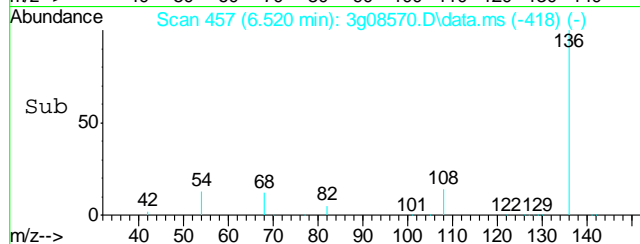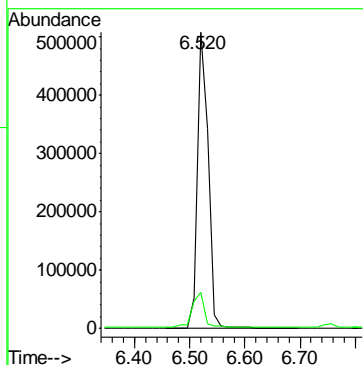
#2
Nitrobenzene-d5
Concen: 24.85 ug/mL
RT: 5.809 min   Scan# 400
Delta R.T.   -0.000 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 82 Resp: 2372869

Ion	Ratio	Lower	Upper
82	100		
128	36.2	16.8	56.8
54	46.9	27.0	67.0
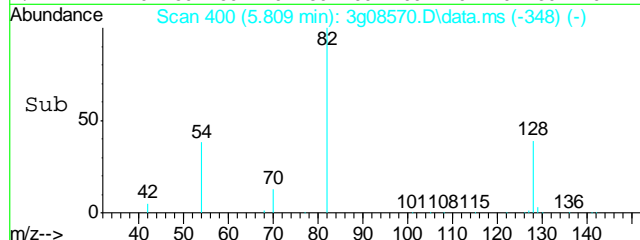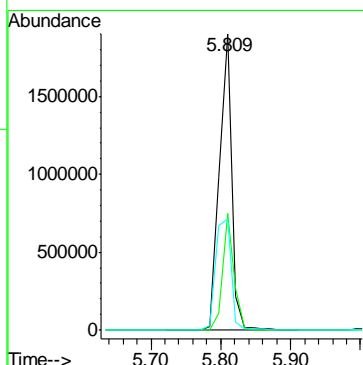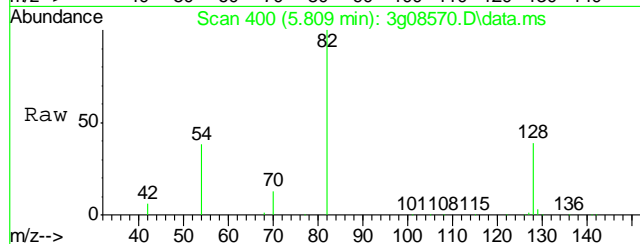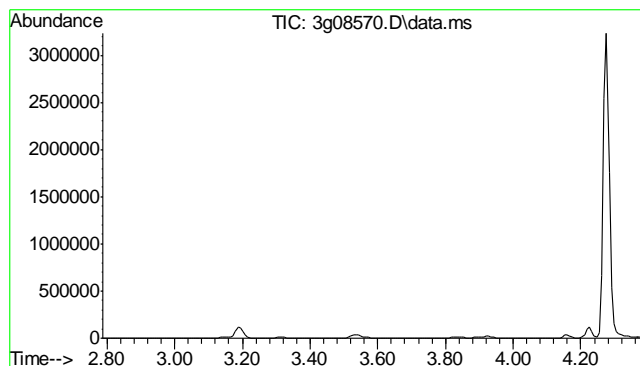
#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 74
Sig	Exp Ratio
74	100
42	58.8
44	4.0

#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min
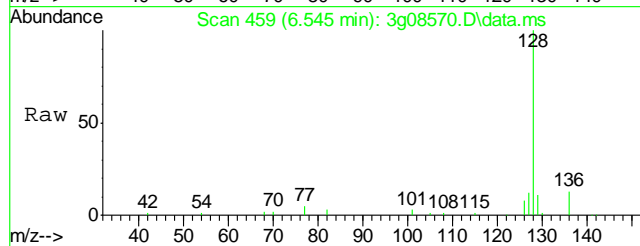
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 70
Sig	Exp Ratio
70	100
101	11.0
42	49.0
130	18.8

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:05 2012   3G   Page 4

3G08570.D: D32747-1 CUT SUBLINER   page 4 of 17

45 of 134
ACCUTEST
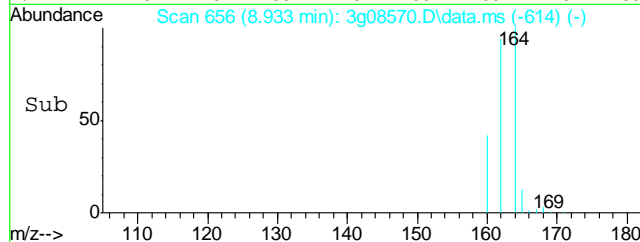LABORATORIES
D32747
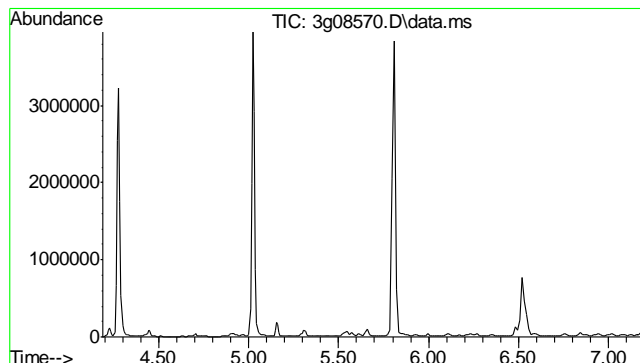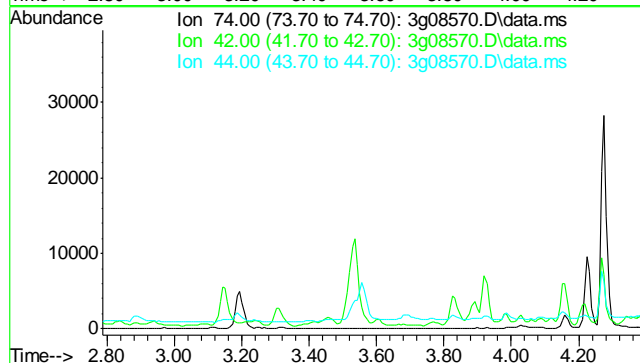
8.1.1
8
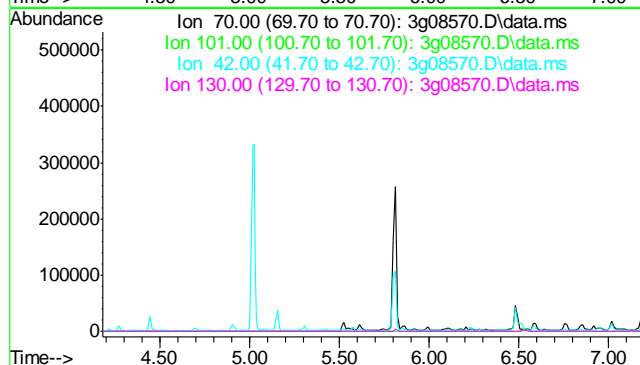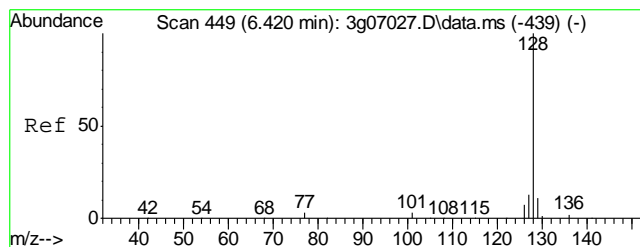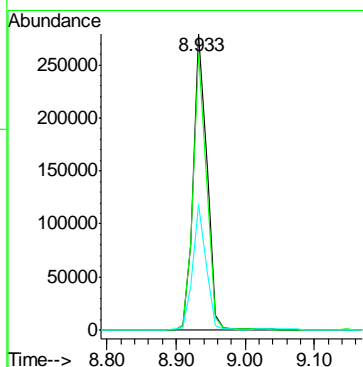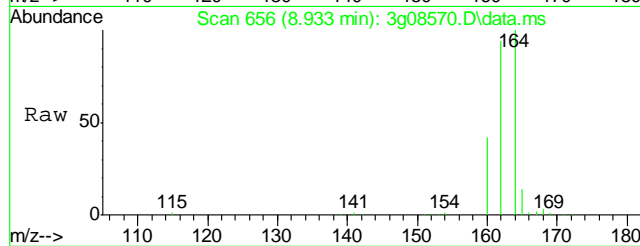
#5
Naphthalene
Concen: 0.90 ug/mL
RT: 6.545 min   Scan# 459
Delta R.T.   -0.000 min
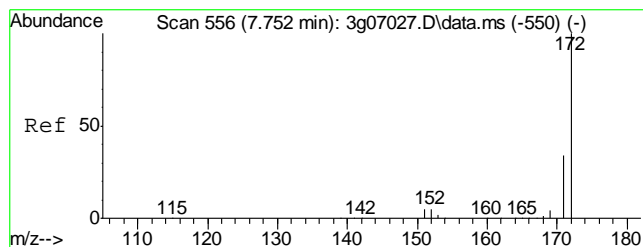Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:128 Resp: 212235

Ion	Ratio	Lower	Upper
128	100		
129	12.7	0.0	30.9
127	11.6	0.0	32.4
126	7.6	0.0	27.6
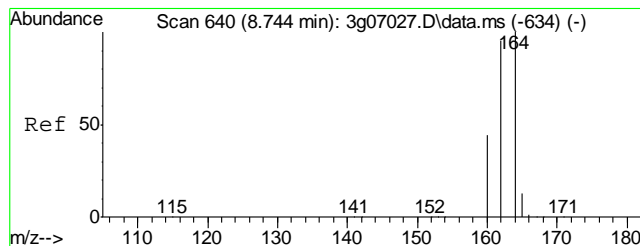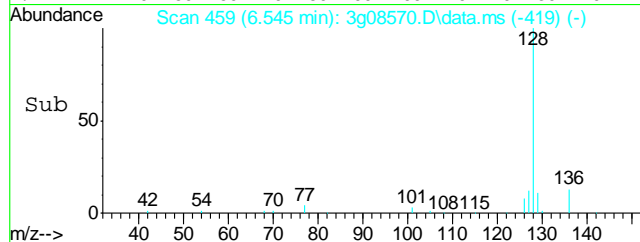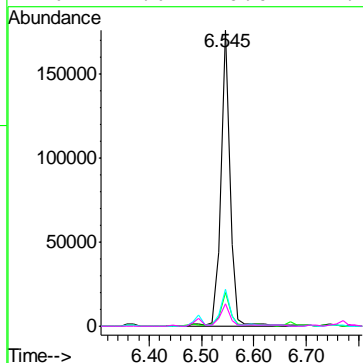
#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.933 min   Scan# 656
Delta R.T.   -0.000 min
Lab File: 3g08570.D
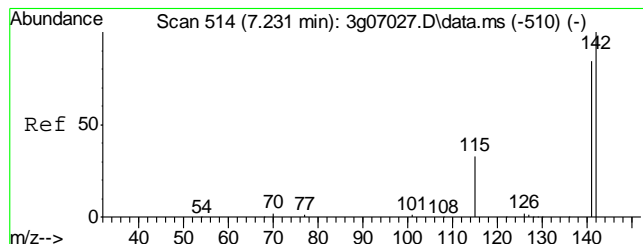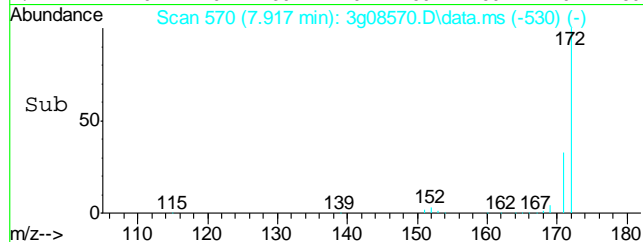Acq: 19 Mar 12   1:38 pm

Tgt Ion:164 Resp: 379520

Ion	Ratio	Lower	Upper
164	100		
162	91.8	72.9	112.9
160	41.1	22.1	62.1

8.1.1

8

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:05 2012   3G

ACCUTEST LABORATORIES
D32747

#7
2-Fluorobiphenyl
Concen: 22.15 ug/mL
RT: 7.917 min   Scan# 570
Delta R.T. -0.012 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:172 Resp: 3373224
Ion Ratio Lower Upper
172 100
171   33.1   12.9   52.9
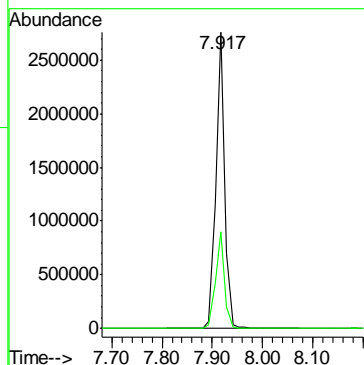
#8
2-Methylnaphthalene
Concen: 1.65 ug/mL
RT: 7.380 min   Scan# 526
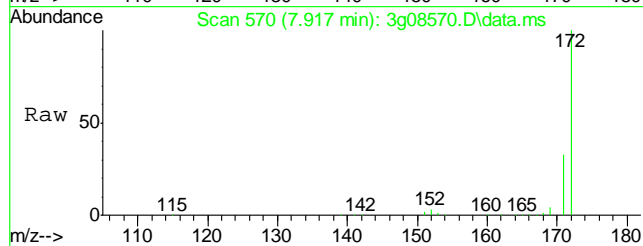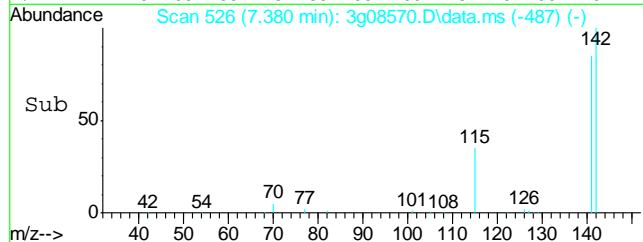Delta R.T. -0.013 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:142 Resp: 227418
Ion Ratio Lower Upper
142 100
141   83.1   63.6 103.6
115   39.7   17.0   57.0

8.1.1

8

Scan 525 (7.368 min): 3g07027.D\data.ms (-522) (-)

Scan 538 (7.530 min): 3g08570.D\data.ms

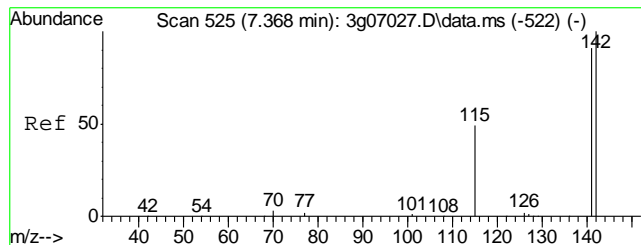Scan 538 (7.530 min): 3g08570.D\data.ms (-498) (-)
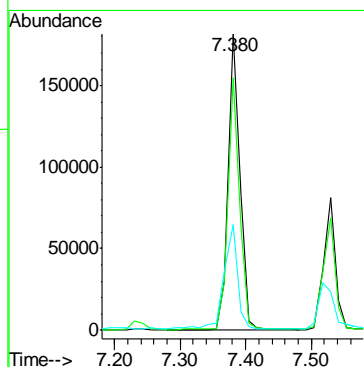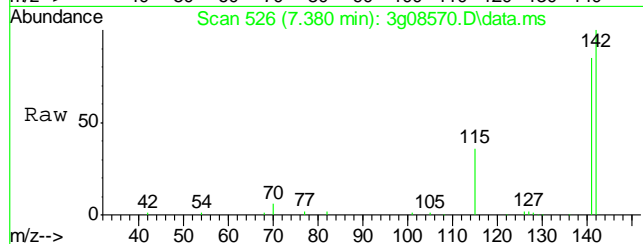
```
#9
1-Methylnaphthalene
Concen:     0.79 ug/mL
RT:    7.530 min   Scan# 538
Delta R.T.   -0.000 min
Lab File:   3g08570.D
Acq: 19 Mar 12    1:38 pm

Tgt Ion:142 Resp:   104712
Ion  Ratio   Lower   Upper
142  100
141   86.1   66.9   106.9
115   45.3   19.7    59.7
```



```
#10
Acenaphthylene
Concen:     N.D. ug/mL
Expected RT: 8.70 min

Lab File:   3g08570.D
Acq: 19 Mar 12    1:38 pm

Tgt Ion: 152
Sig      Exp Ratio
152        100
151         18.9
153         12.9
```
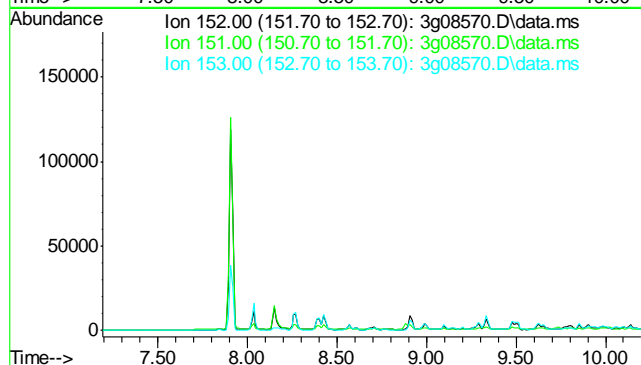

TIC: 3g08570.D\data.ms

Ion 152.00 (151.70 to 152.70): 3g08570.D\data.ms
Ion 151.00 (150.70 to 151.70): 3g08570.D\data.ms
Ion 153.00 (152.70 to 153.70): 3g08570.D\data.ms

8.1.1

8

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:05 2012   3G   Page 7

```
#11
Acenaphthene
Concen:      N.D. ug/mL
Expected RT: 8.99 min

Lab File:    3g08570.D
Acq: 19 Mar 12    1:38 pm

Tgt Ion: 154
Sig      Exp Ratio
154        100
153        104.5
152        50.0
```



```
#12
Fluorene
Concen:      N.D. ug/mL
Expected RT: 9.84 min

Lab File:    3g08570.D
Acq: 19 Mar 12    1:38 pm

Tgt Ion: 166
Sig      Exp Ratio
166        100
165        91.4
167        13.2
```

TIC: 3g08570.D\data.ms

Abundance

600000
400000
200000
0
Time--> 9.00 9.50 10.00 10.50 11.00

#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.08 min

Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 169
Sig   Exp Ratio
169   100
168   61.3
167   33.2
167   33.2

Abundance   Ion 169.00 (168.70 to 169.70): 3g08570.D\data.ms
             Ion 168.00 (167.70 to 168.70): 3g08570.D\data.ms
             Ion 167.00 (166.70 to 167.70): 3g08570.D\data.ms
             Ion 167.00 (166.70 to 167.70): 3g08570.D\data.ms

60000
50000
40000
30000
20000
10000
0
Time--> 9.00 9.50 10.00 10.50 11.00

Abundance   Scan 890 (11.271 min): 3g07027.D\data.ms (-880) (-)
                                    188

Ref 50

80 94
                  149   176   266
m/z--> 80 100 120 140 160 180 200 220 240 260
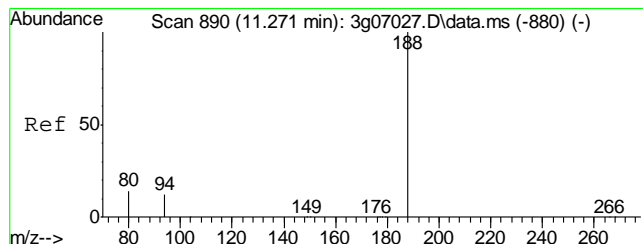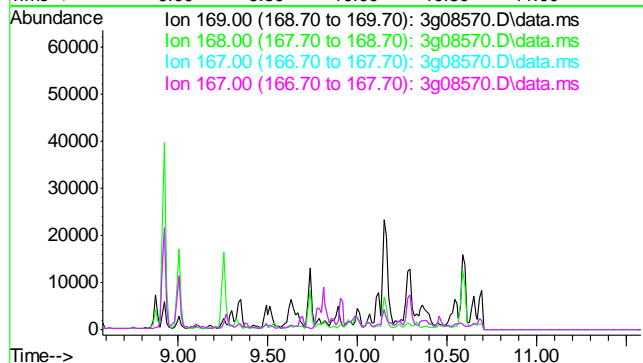
#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.485 min   Scan# 917
Delta R.T. -0.008 min
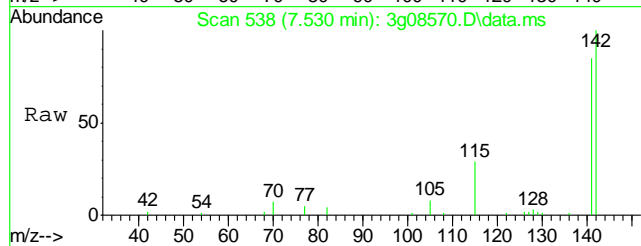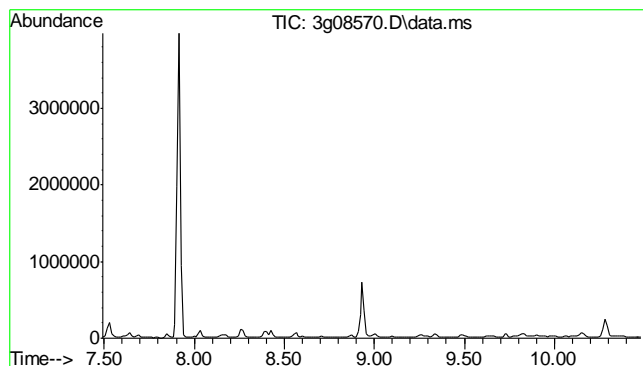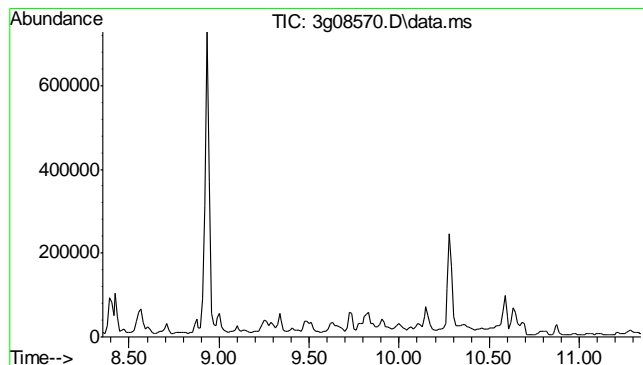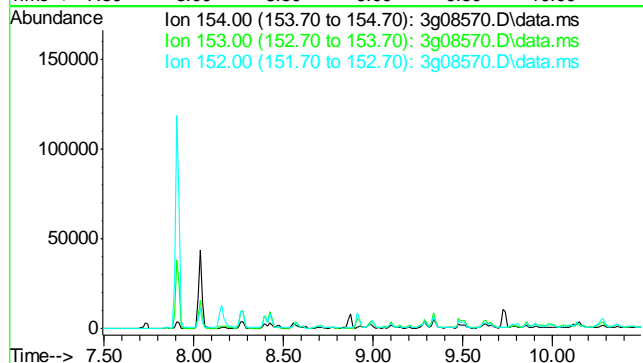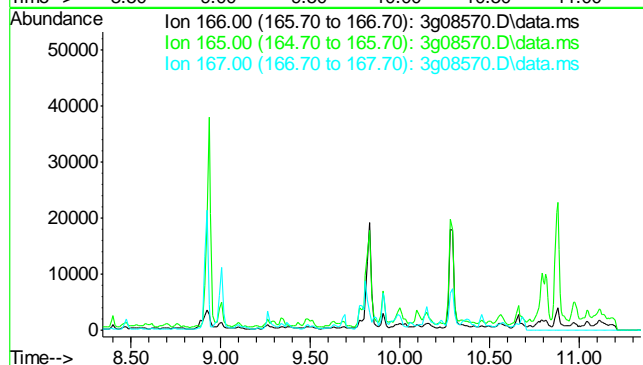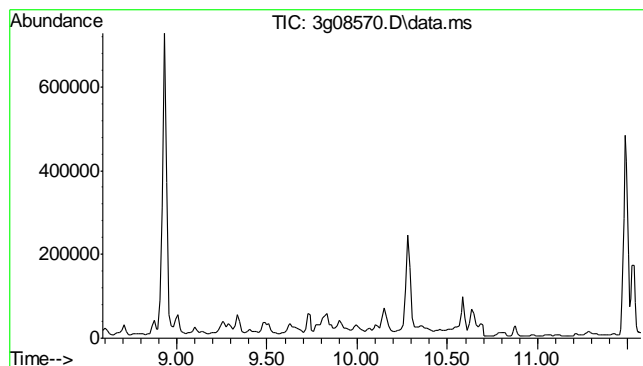Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:188 Resp: 507703
Ion Ratio Lower   Upper
188 100
 94   20.5   1.7   41.7
 80   21.6   2.2   42.2

Abundance   Scan 917 (11.485 min): 3g08570.D\data.ms
                                    188

Raw 50

80 94
                  149   176   266
m/z--> 80 100 120 140 160 180 200 220 240 260

Abundance
300000
250000
200000
150000
100000
50000
0
Time--> 11.40   11.50

11.485

Abundance   Scan 917 (11.485 min): 3g08570.D\data.ms (-850) (-)
                                    188

Sub 50

80 94
                  149   176   266
m/z--> 80 100 120 140 160 180 200 220 240 260

3g08570.D   SIMPE3G344.M   Tue Mar 20 10:03:05 2012   3G   Page 9

3G08570.D: D32747-1 CUT SUBLINER   page 9 of 17

50 of 134
ACCUTEST
LABORATORIES
D32747

#15
Phenanthrene
Concen: 0.93 ug/mL
RT: 11.532 min   Scan# 923
Delta R.T.   -0.008 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:178 Resp: 163892

Ion	Ratio	Lower	Upper
178	100		
179	16.5	0.0	35.1
176	18.4	0.0	38.5
177	10.5	0.0	30.2
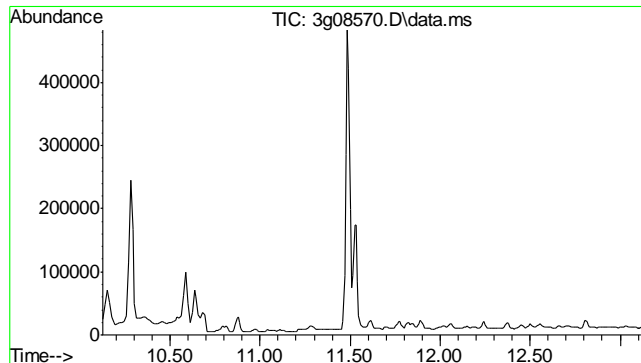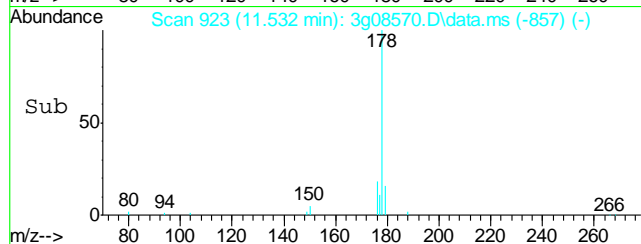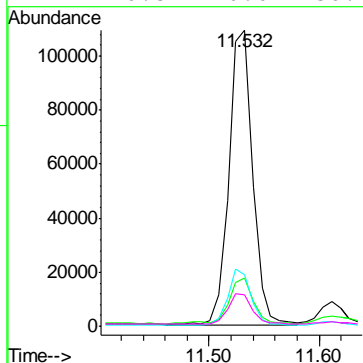
#16
Anthracene
Concen: N.D. ug/mL
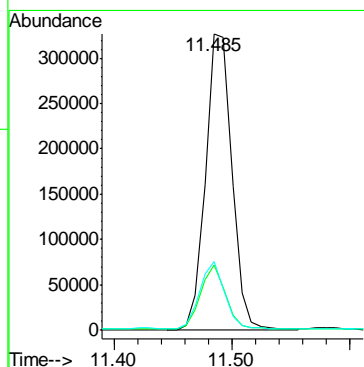Expected RT: 11.62 min

Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 178

Sig	Exp Ratio
178	100
179	15.0
176	17.7
177	8.7

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:06 2012   3G   Page 10

Scan 1177 (13.543 min): 3g07027.D\data.ms (-1170) (-)

Scan 1206 (13.772 min): 3g08570.D\data.ms

Scan 1206 (13.772 min): 3g08570.D\data.ms (-1144) (-)
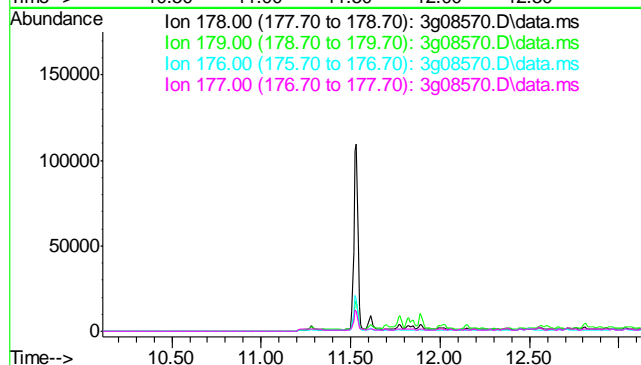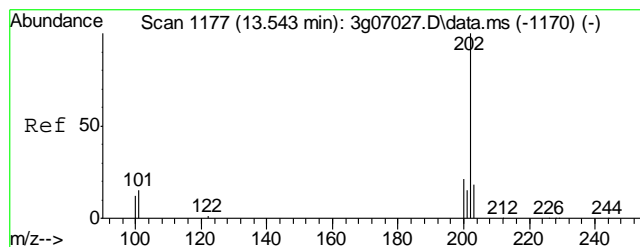
```
#17
Fluoranthene
Concen:      0.71 ug/mL
RT:  13.772 min   Scan# 1206
Delta R.T.  -0.008 min
Lab File:   3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:202 Resp:   109551
Ion  Ratio  Lower   Upper
202  100
101   22.4    3.2    43.2
203   21.7    0.0    37.2
```


Scan 1529 (16.309 min): 3g07027.D\data.ms (-1521) (-)

Scan 1565 (16.547 min): 3g08570.D\data.ms

Scan 1565 (16.547 min): 3g08570.D\data.ms (-1494) (-)
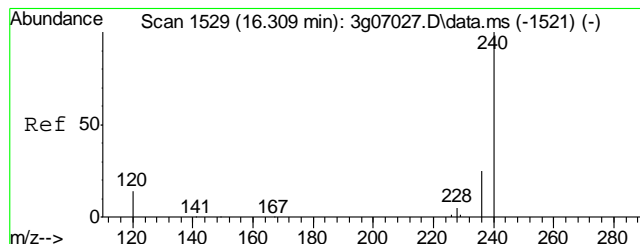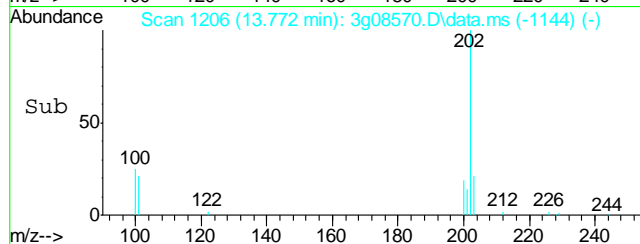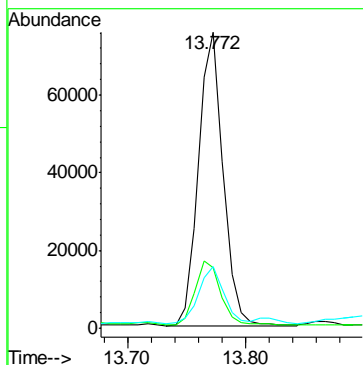
```
#18
Chrysene-d12
Concen:      4.00 ug/mL
RT:  16.547 min   Scan# 1565
Delta R.T.  -0.007 min
Lab File:   3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:240 Resp:   290746
Ion  Ratio  Lower   Upper
240  100
120   18.8    4.4    44.4
236   24.7    5.0    45.0
```

8.1.1

8

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:06 2012   3G   Page 11
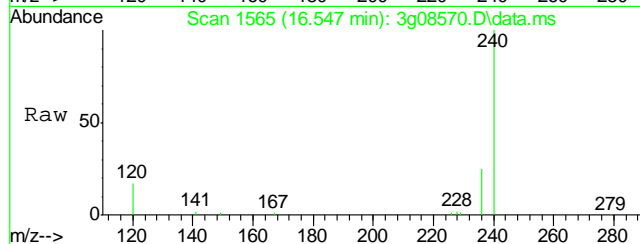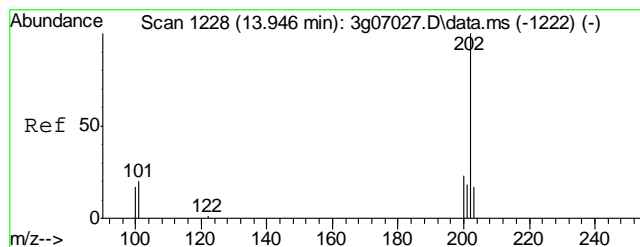
#19
Pyrene
Concen: 0.41 ug/mL
RT: 14.184 min Scan# 1258
Delta R.T. -0.008 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:202 Resp: 53513

Ion	Ratio	Lower	Upper
202	100		
200	20.7	0.1	40.1
203	30.8	0.0	37.8
201	17.4	0.0	36.5
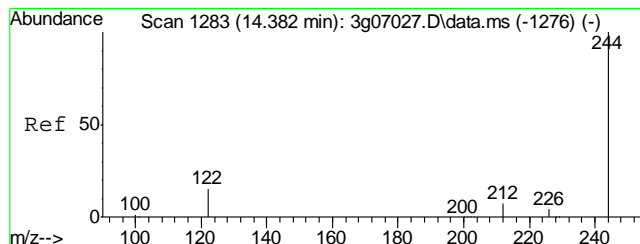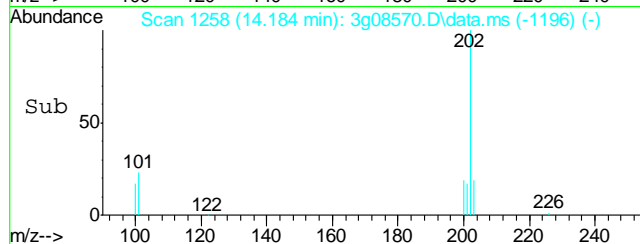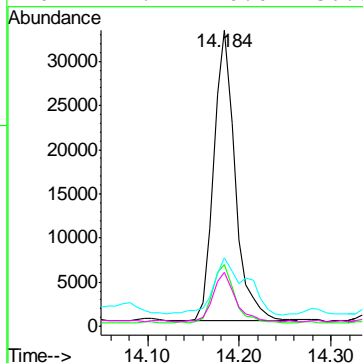
#20
Terphenyl-d14
Concen: 35.20 ug/mL
RT: 14.603 min Scan# 1311
Delta R.T. -0.008 min
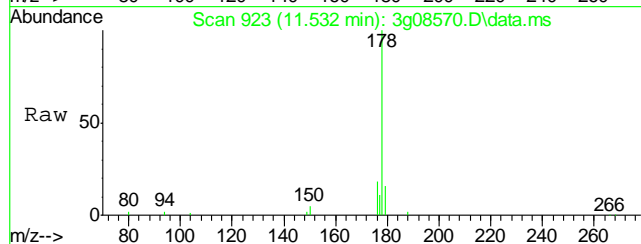Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:244 Resp: 2212264

Ion	Ratio	Lower	Upper
244	100		
122	20.3	4.9	44.9
212	6.8	0.0	27.3

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:06 2012   3G   Page 12
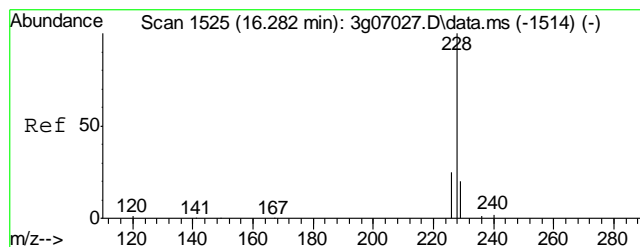
```
#21
Benzo(a)anthracene
Concen:      0.47 ug/mL
RT:  16.514 min   Scan# 1560
Delta R.T.   -0.013 min
Lab File:   3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:228 Resp:     44608
Ion  Ratio    Lower    Upper
228  100
229   33.9     0.0     39.6
226   27.7     5.7     45.7
```
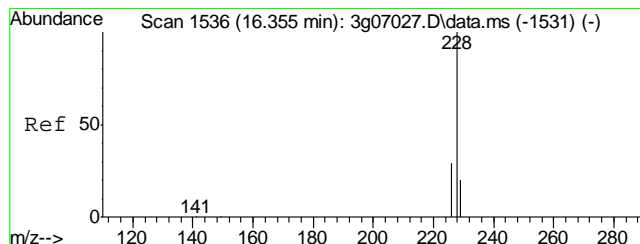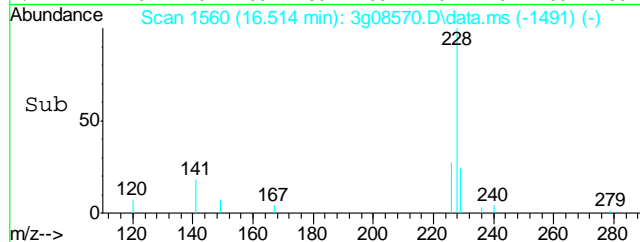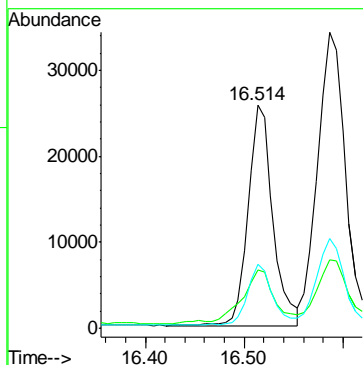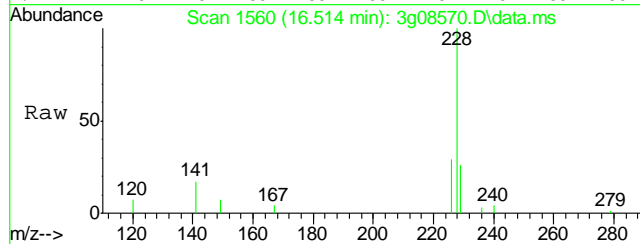
```
#22
Chrysene
Concen:      0.69 ug/mL
RT:  16.587 min   Scan# 1571
Delta R.T.   -0.020 min
Lab File:   3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:228 Resp:     68812
Ion  Ratio    Lower    Upper
228  100
226   29.6     8.7     48.7
229   26.8     0.0     39.4
```
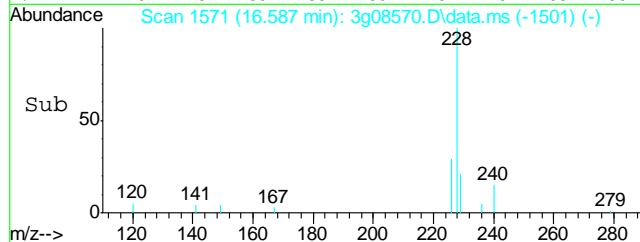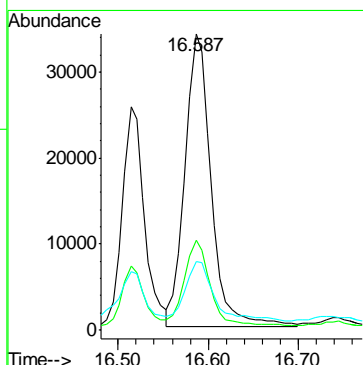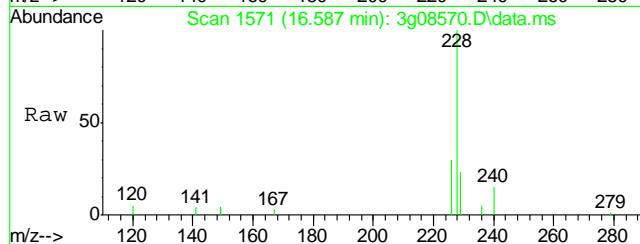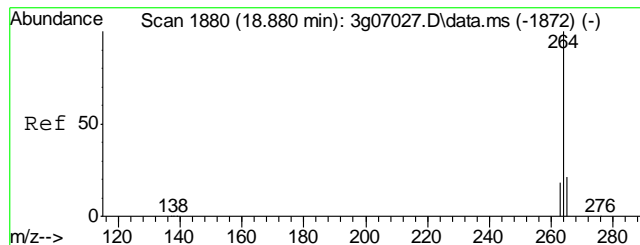
3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:06 2012   3G   Page 13

3G08570.D: D32747-1 CUT SUBLINER   page 13 of 17

54 of 134
ACCUTEST LABORATORIES
D32747
8.1.1 8

#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min   Scan# 1904
Delta R.T. -0.000 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:264 Resp: 213019
Ion Ratio   Lower   Upper
264 100
265   20.4   1.1   41.1
263   19.3   0.0   39.1
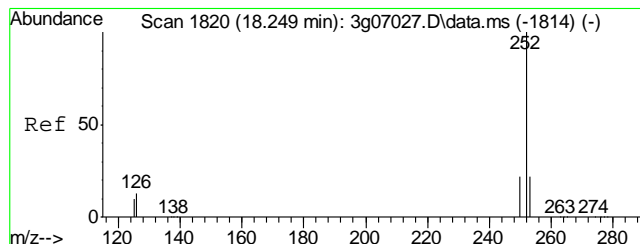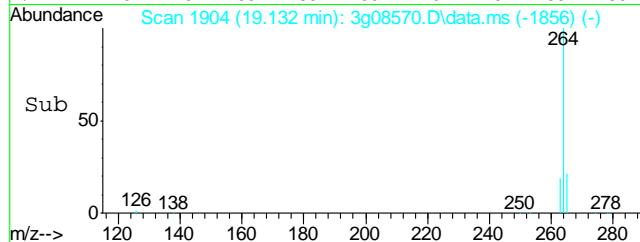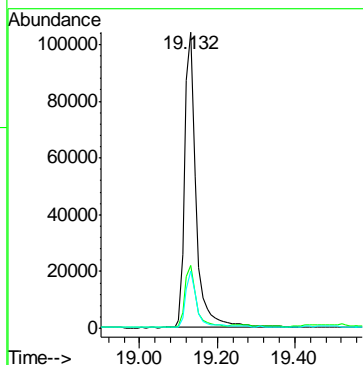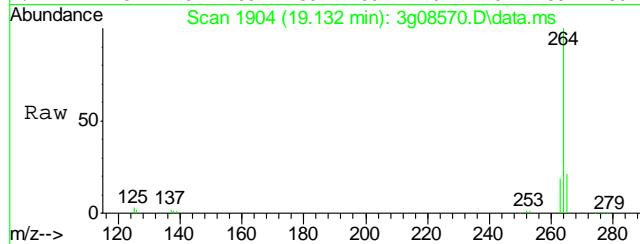
#24
Benzo(b)fluoranthene
Concen: 0.68 ug/mL m
RT: 18.491 min   Scan# 1843
Delta R.T. -0.010 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:252 Resp: 52070
Ion Ratio   Lower   Upper
252 100
253   37.7   1.5   41.5
125   21.7   0.0   38.6
126   39.2   6.2   46.2
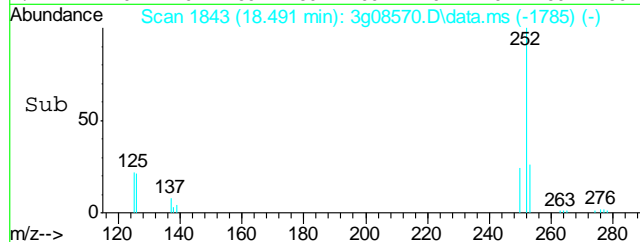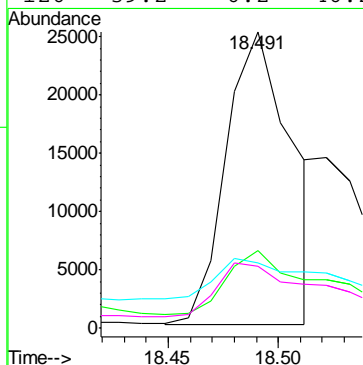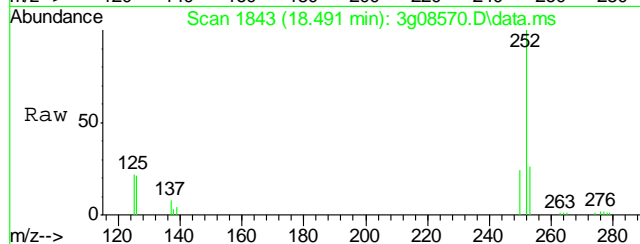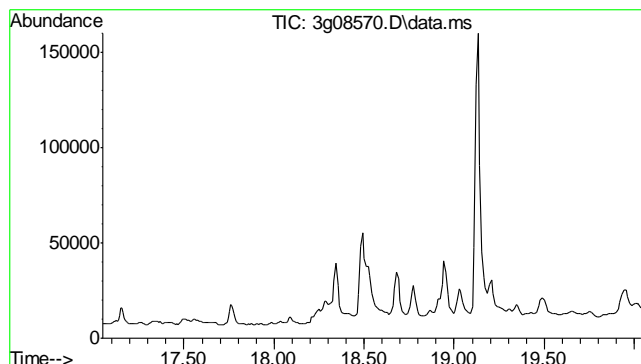
8.1.1

8

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:06 2012   3G   Page 14

#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
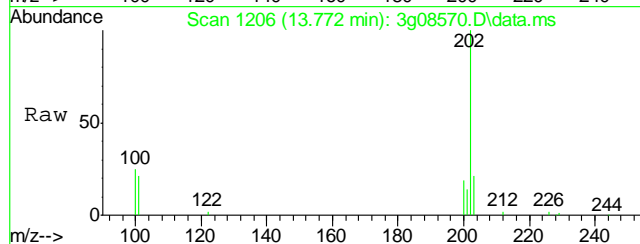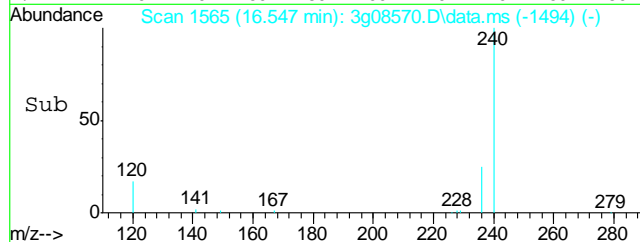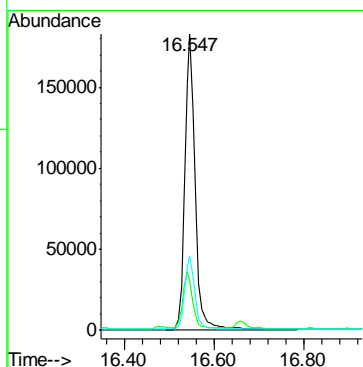Expected RT: 18.54 min

Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 252
Sig	Exp Ratio
252	100
253	21.7
125	16.4
126	25.4
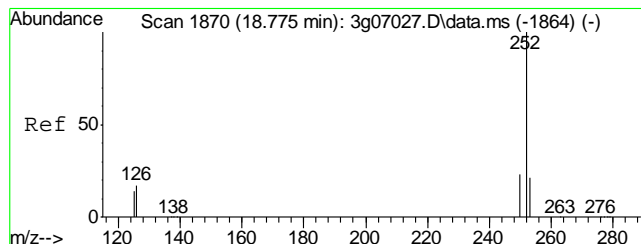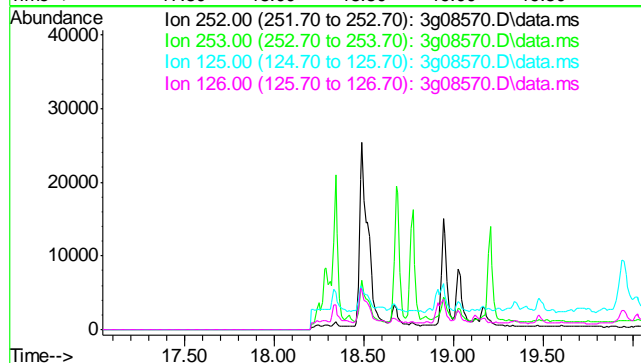
#26
Benzo(a)pyrene
Concen: 0.24 ug/mL
RT: 19.027 min   Scan# 1894
Delta R.T. -0.010 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:252 Resp: 17574
Ion	Ratio	Lower	Upper
252	100		
253	24.9	1.3	41.3
126	17.9	3.6	43.6
125	15.1	0.0	37.1
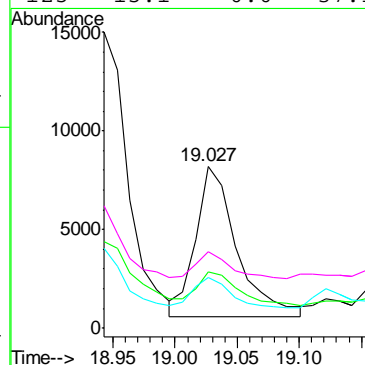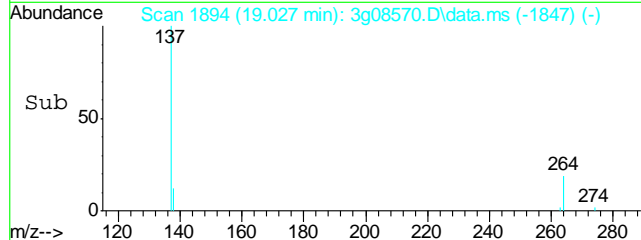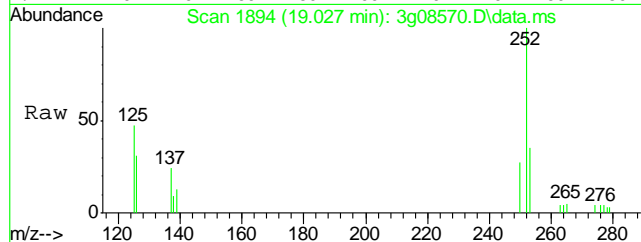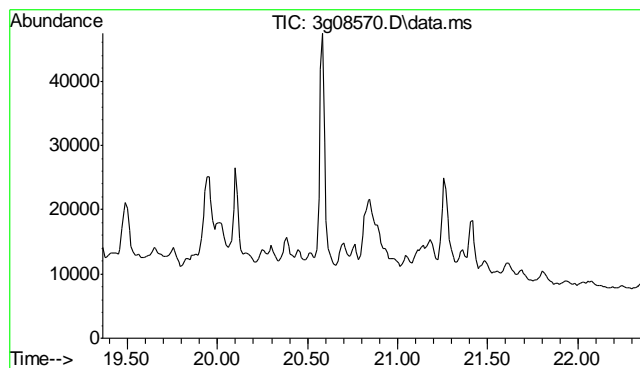
3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:06 2012   3G   Page 15

3G08570.D: D32747-1 CUT SUBLINER   page 15 of 17

56 of 134
ACCUTEST
LABORATORIES
D32747

TIC: 3g08570.D\data.ms

#27
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 20.86 min

Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion: 276
Sig	Exp Ratio
276	100
138	80.3
277	51.9
278	157.2

Ion 276.00 (275.70 to 276.70): 3g08570.D\data.ms
Ion 138.00 (137.70 to 138.70): 3g08570.D\data.ms
Ion 277.00 (276.70 to 277.70): 3g08570.D\data.ms
Ion 278.00 (277.70 to 278.70): 3g08570.D\data.ms

Scan 2045 (20.615 min): 3g07027.D\data.ms (-2032) (-)
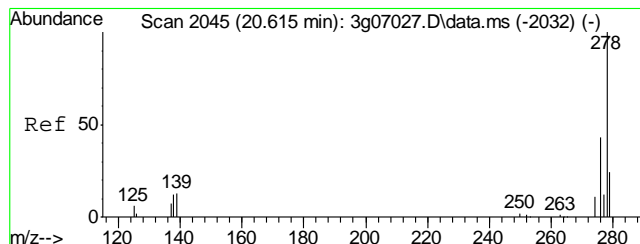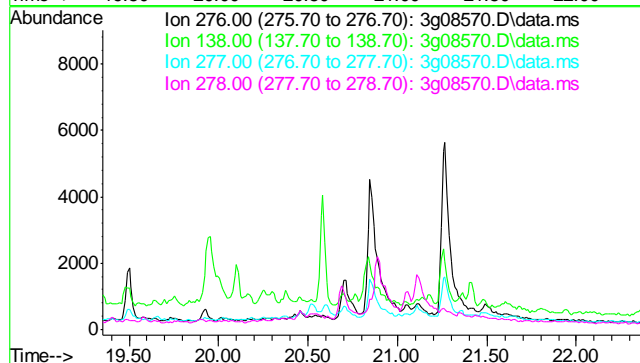
#28
Dibenz(a,h)anthracene
Concen: 0.16 ug/mL m
RT: 20.888 min   Scan# 2071
Delta R.T. -0.010 min
Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:278 Resp: 6010
Ion	Ratio	Lower	Upper
278	100		
139	13.5	6.0	46.0
279	16.8	3.2	43.2
276	70.8	113.1	153.1#

Scan 2071 (20.888 min): 3g08570.D\data.ms

Scan 2071 (20.888 min): 3g08570.D\data.ms (-2024) (-)
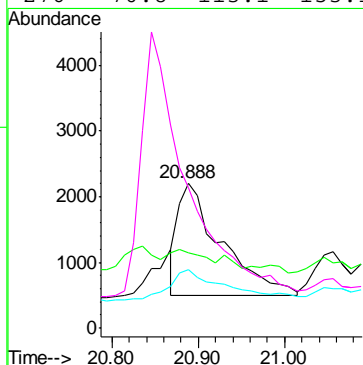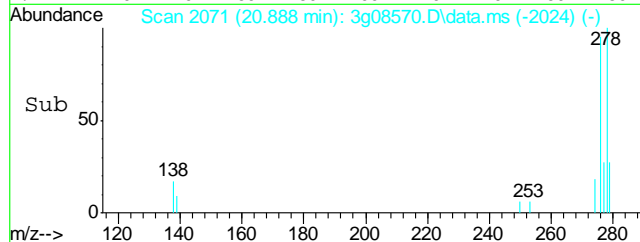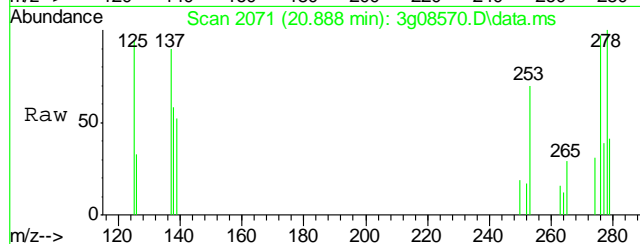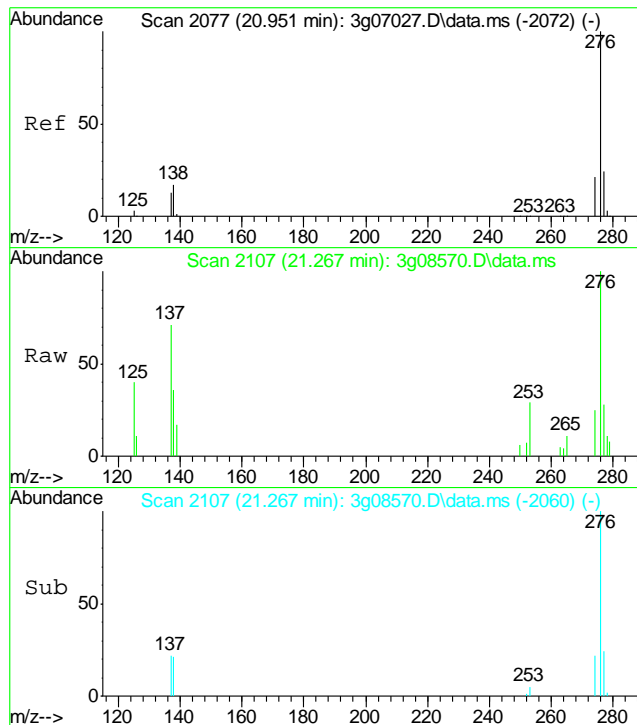
#29
Benzo(g,h,i)perylene
Concen: 0.37 ug/mL
RT: 21.267 min   Scan# 2107
Delta R.T.   -0.010 min
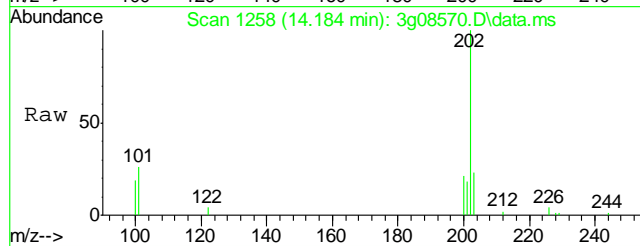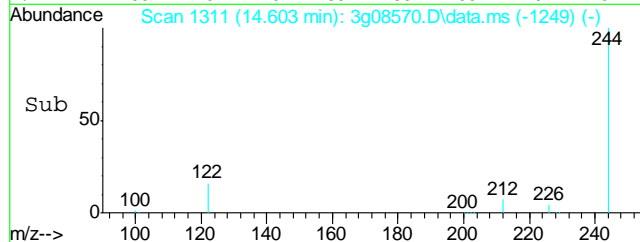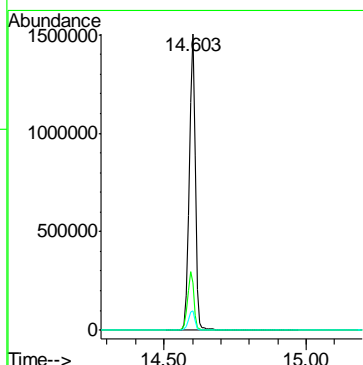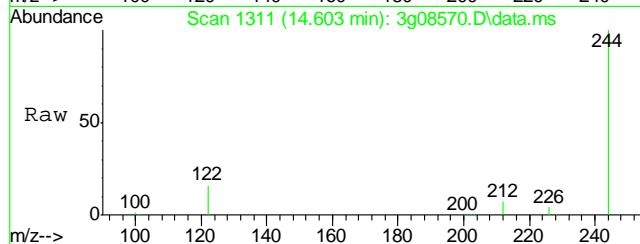Lab File: 3g08570.D
Acq: 19 Mar 12   1:38 pm

Tgt Ion:276 Resp: 17723

Ion	Ratio	Lower	Upper
276	100		
138	25.9	12.2	52.2
277	19.8	3.3	43.3
274	20.2	0.9	40.9

8.1.1

8

3g08570.D SIMPE3G344.M   Tue Mar 20 10:03:07 2012   3G   Page 17

```
                        Quantitation Report    (QT Reviewed)

Data Path : C:\msdchem\1\DATA\031912\
Data File : 3g08568.D
Acq On    : 19 Mar 2012  12:27 pm
Operator  : DONC
Sample    : OP5559-MB
Misc      : OP5559,E3G352,30.00,,,1,1
ALS Vial  : 4   Sample Multiplier: 1

Quant Time: Mar 20 09:59:44 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G344.M
Quant Title  : PAHSIM BASE
QLast Update : Mon Mar 12 09:19:25 2012
Response via : Initial Calibration


        Compound                   R.T. QIon  Response  Conc Units Dev(Min)
     ---------------------------------------------------------------------------

Internal Standards
  1) Naphthalene-d8               6.532  136   768016    4.00 ug/mL   0.00
  6) Acenaphthene-d10             8.945  164   394036    4.00 ug/mL   0.01
 14) Phenanthrene-d10            11.493  188   564653    4.00 ug/mL   0.00
 18) Chrysene-d12                16.553  240   381549    4.00 ug/mL   0.00
 23) Perylene-d12                19.132  264   207065    4.00 ug/mL   0.00


System Monitoring Compounds
  2) Nitrobenzene-d5              5.809   82  4649774   44.43 ug/mL   0.00
     Spiked Amount    50.000    Range  25 - 135    Recovery   =    88.86%
  7) 2-Fluorobiphenyl             7.917  172  5637717   35.66 ug/mL  -0.01
     Spiked Amount    50.000    Range  25 - 135    Recovery   =    71.32%
 20) Terphenyl-d14               14.611  244  3706451   44.94 ug/mL   0.00
     Spiked Amount    50.000    Range  25 - 135    Recovery   =    89.88%

Target Compounds                                                  Qvalue
  3) N-Nitrosodimethylamine       0.000            0      N.D. d
  4) N-Nitrosodi-propylamine      0.000            0      N.D. d
  5) Naphthalene                  6.545  128     1341     0.01 ug/mL#    73
  8) 2-Methylnaphthalene          0.000            0      N.D. d
  9) 1-Methylnaphthalene          0.000            0      N.D. d
 10) Acenaphthylene               0.000            0      N.D. d
 11) Acenaphthene                 0.000            0      N.D. d
 12) Fluorene                     0.000            0      N.D. d
 13) Diphenylamine                0.000            0      N.D. d
 15) Phenanthrene                 0.000            0      N.D. d
 16) Anthracene                   0.000            0      N.D. d
 17) Fluoranthene                 0.000            0      N.D. d
 19) Pyrene                       0.000            0      N.D. d
 21) Benzo(a)anthracene          16.547  228     1429     0.01 ug/mL     68
 22) Chrysene                    16.600  228      865     0.01 ug/mL#    71
 24) Benzo(b)fluoranthene         0.000            0      N.D. d
 25) Benzo(k)fluoranthene         0.000            0      N.D. d
 26) Benzo(a)pyrene               0.000            0      N.D. d
 27) Indeno(1,2,3-cd)pyrene       0.000            0      N.D. d
 28) Dibenz(a,h)anthracene        0.000            0      N.D. d
 29) Benzo(g,h,i)perylene         0.000            0      N.D. d
     ---------------------------------------------------------------------------

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

8.2.1

8

Quantitation Report   (QT Reviewed)

```
Data Path : C:\msdchem\1\DATA\031912\
Data File : 3g08568.D
Acq On    : 19 Mar 2012  12:27 pm
Operator  : DONC
Sample    : OP5559-MB
Misc      : OP5559,E3G352,30.00,,,1,1
ALS Vial  : 4   Sample Multiplier: 1

Quant Time: Mar 20 09:59:44 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G344.M
Quant Title  : PAHSIM BASE
QLast Update : Mon Mar 12 09:19:25 2012
Response via : Initial Calibration
```


8.2.1

8

SIMPE3G344.M Tue Mar 20 09:59:49 2012 3G   Page: 2
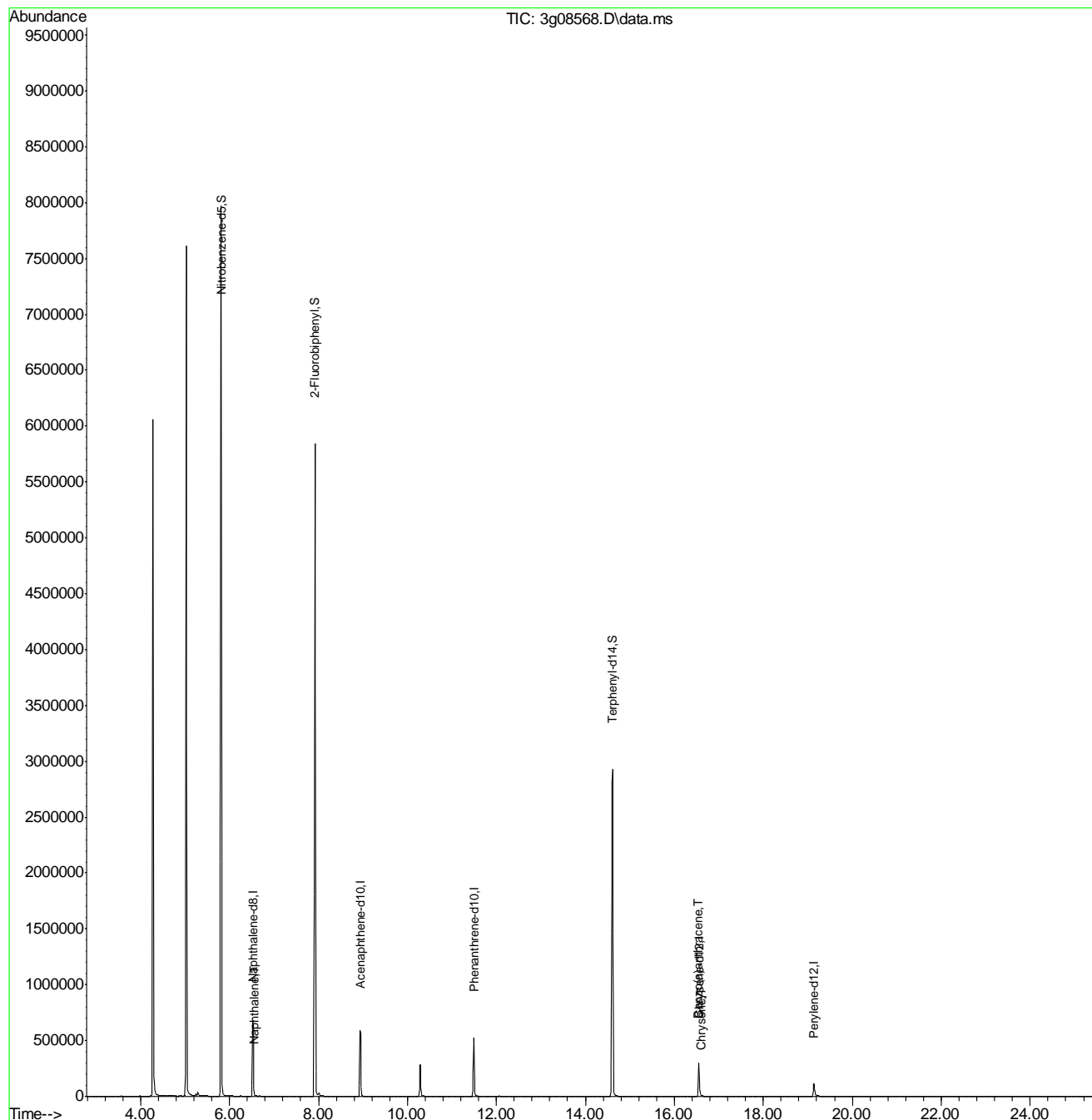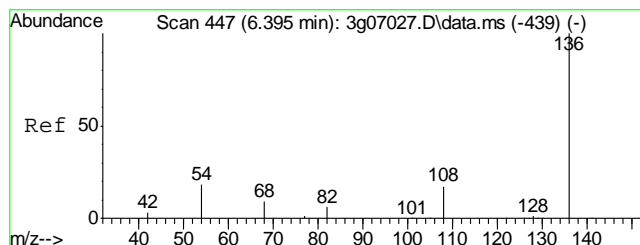
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.532 min   Scan# 458
Delta R.T. -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:136 Resp: 768016

Ion	Ratio	Lower	Upper
136	100		
68	12.4	0.0	32.2
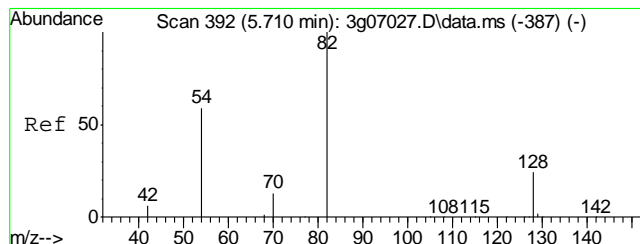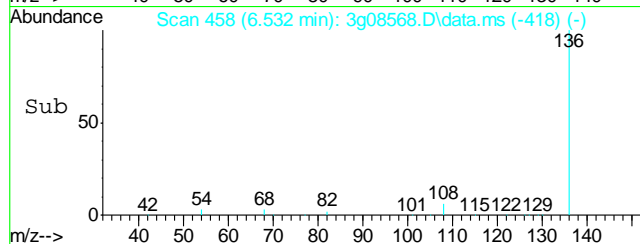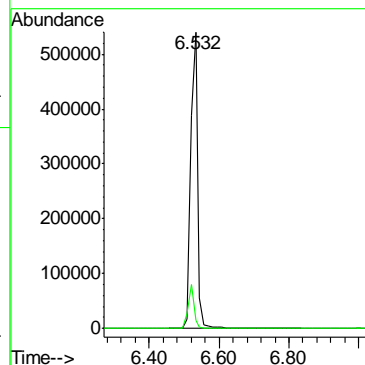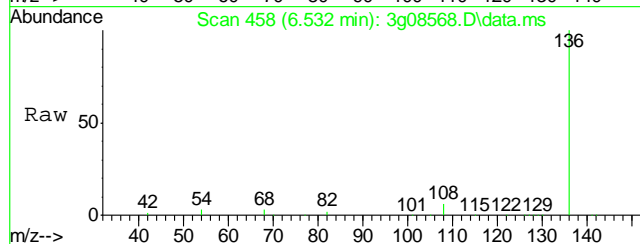
#2
Nitrobenzene-d5
Concen: 44.43 ug/mL
RT: 5.809 min   Scan# 400
Delta R.T. -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 82 Resp: 4649774

Ion	Ratio	Lower	Upper
82	100		
128	35.8	16.8	56.8
54	44.9	27.0	67.0
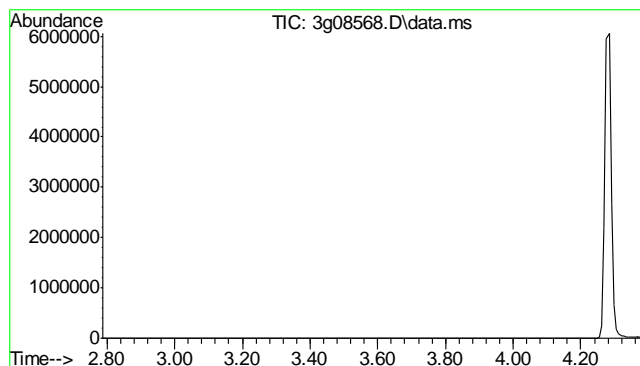
3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:49 2012   3G   Page 3

8.2.1

8

61 of 134
ACCUTEST
LABORATORIES
D32747

3G08568.D: OP5559-MB Method Blank   page 3 of 17

#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 74
Sig   Exp Ratio
 74   100
 42   58.8
 44   4.0
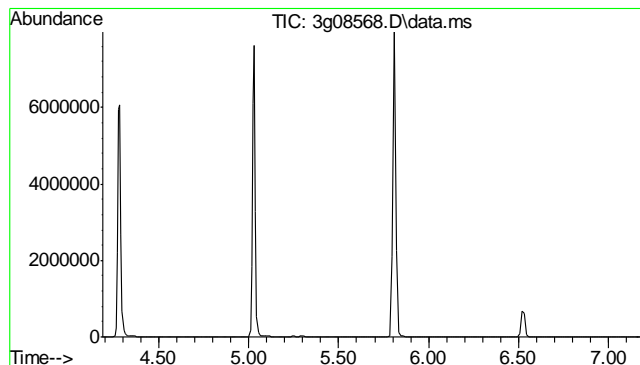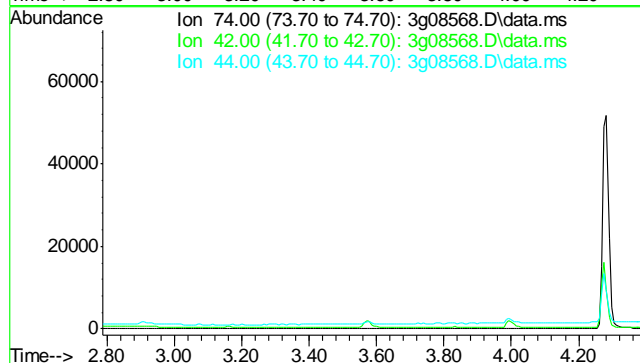
#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 70
Sig   Exp Ratio
 70   100
101   11.0
 42   49.0
130   18.8

8.2.1

8

3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:49 2012   3G   Page 4
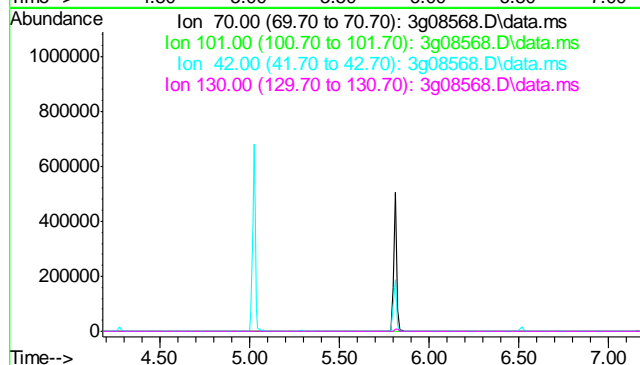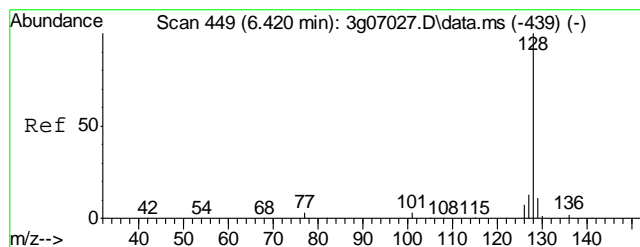
#5
Naphthalene
Concen: 0.01 ug/mL
RT: 6.545 min   Scan# 459
Delta R.T.   -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:128 Resp: 1341

Ion	Ratio	Lower	Upper
128	100		
129	21.8	0.0	30.9
127	11.4	0.0	32.4
126	30.4	0.0	27.6#
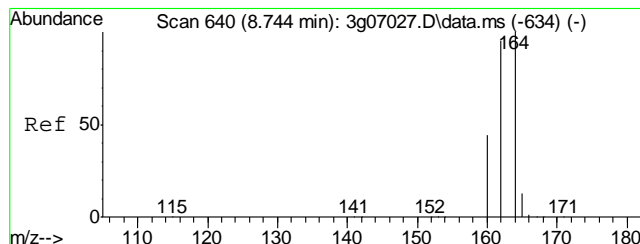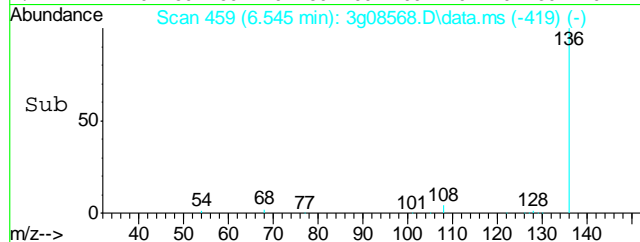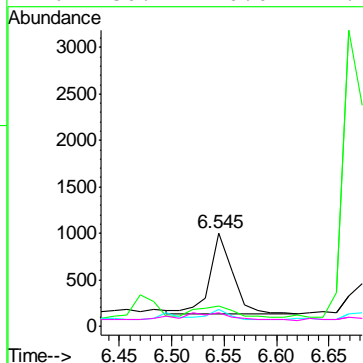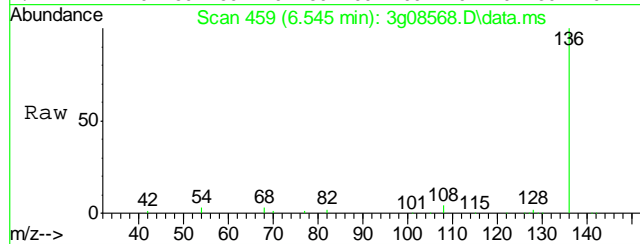
#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.945 min   Scan# 657
Delta R.T.   0.012 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:164 Resp: 394036

Ion	Ratio	Lower	Upper
164	100		
162	92.7	72.9	112.9
160	42.0	22.1	62.1

8.2.1

8
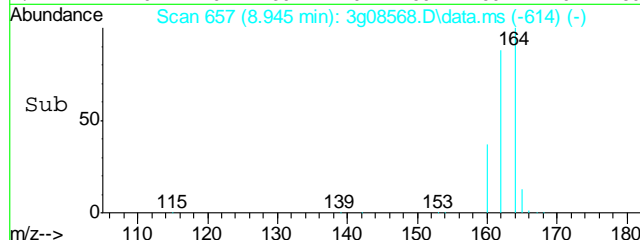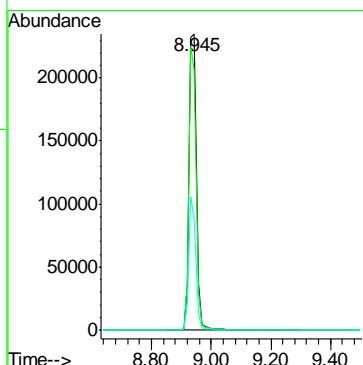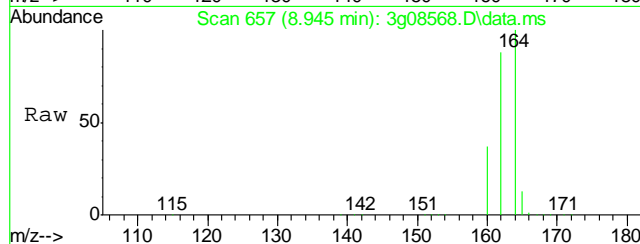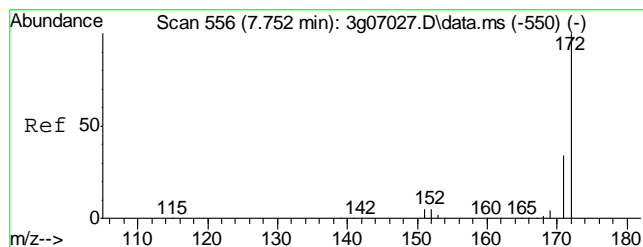
#7
2-Fluorobiphenyl
Concen: 35.66 ug/mL
RT: 7.917 min   Scan# 570
Delta R.T.   -0.012 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:172 Resp: 5637717
Ion   Ratio   Lower   Upper
172   100
171   32.8   12.9   52.9
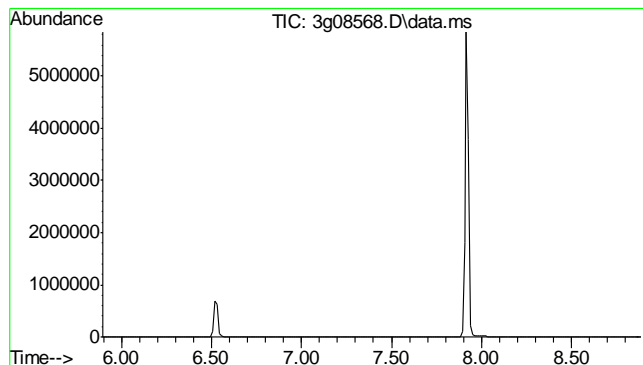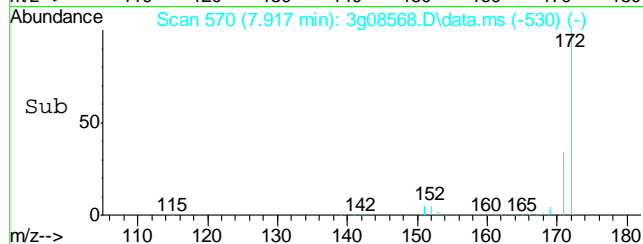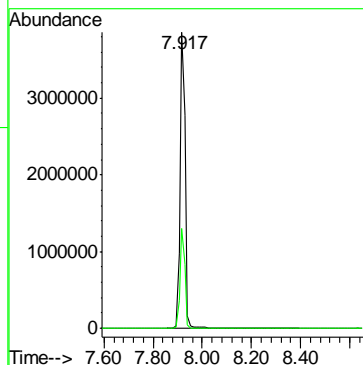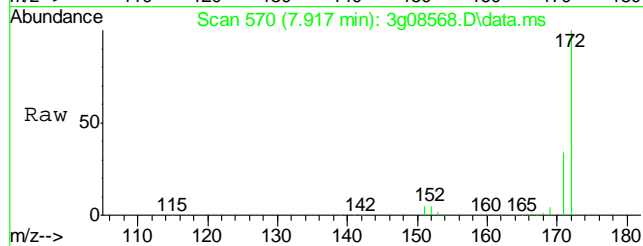
#8
2-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.39 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 142
Sig   Exp Ratio
142   100
141   83.6
115   37.0
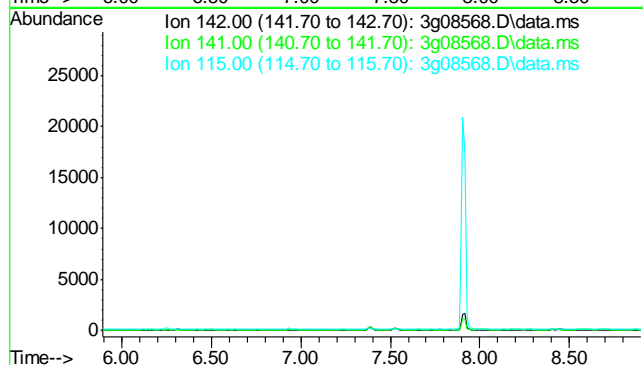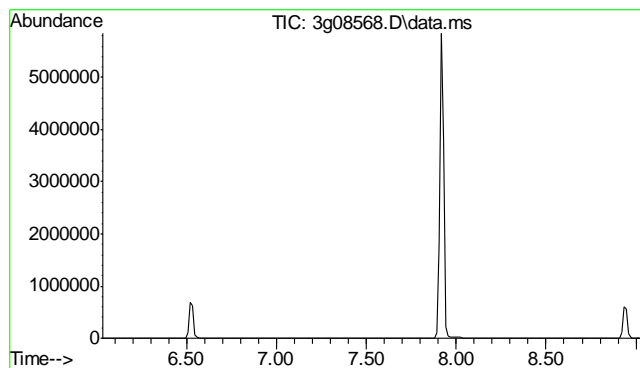
#9
1-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.53 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 142
Sig   Exp Ratio
142   100
141   86.9
115   39.7
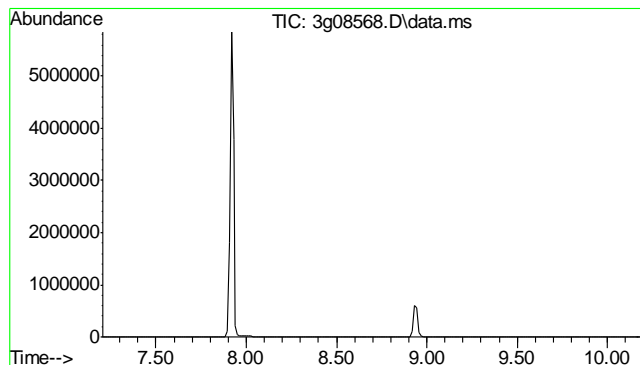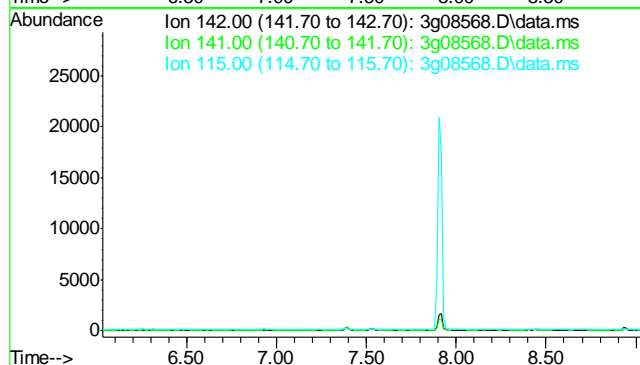
#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.70 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 152
Sig   Exp Ratio
152   100
151   18.9
153   12.9
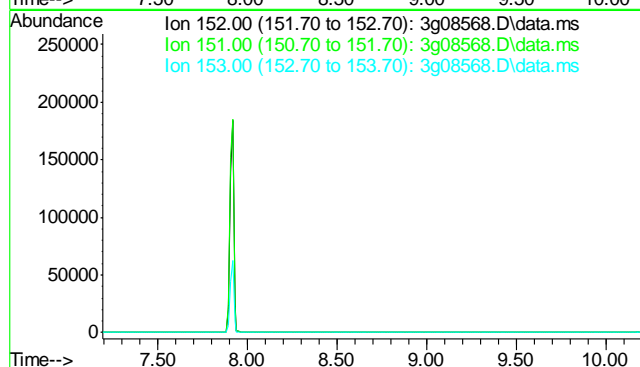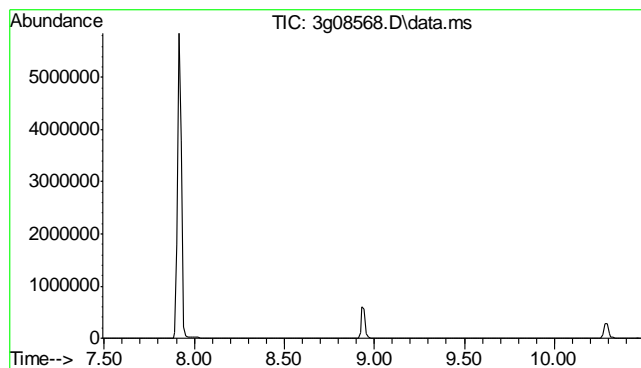
8.2.1

8

#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.99 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 154
Sig   Exp Ratio
154   100
153   104.5
152   50.0
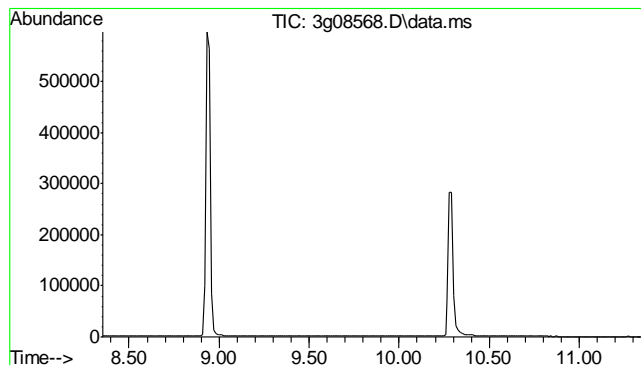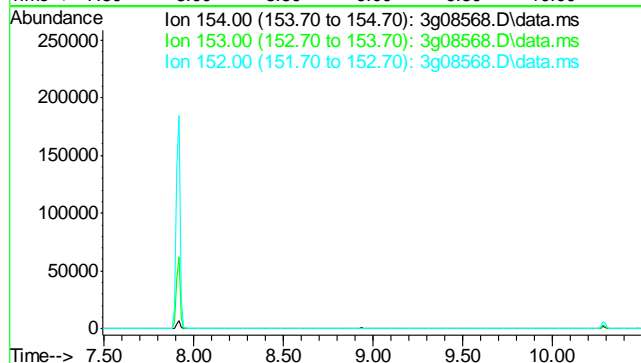
#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.84 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 166
Sig   Exp Ratio
166   100
165   91.4
167   13.2
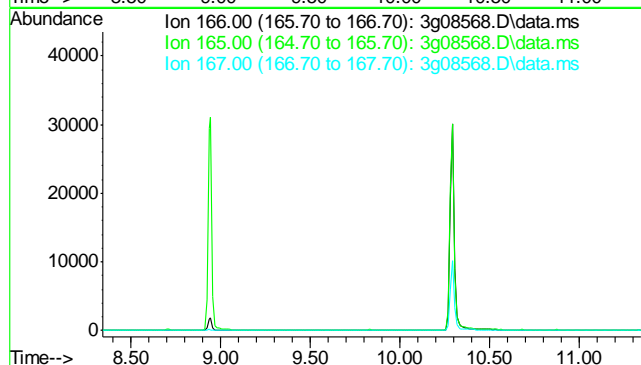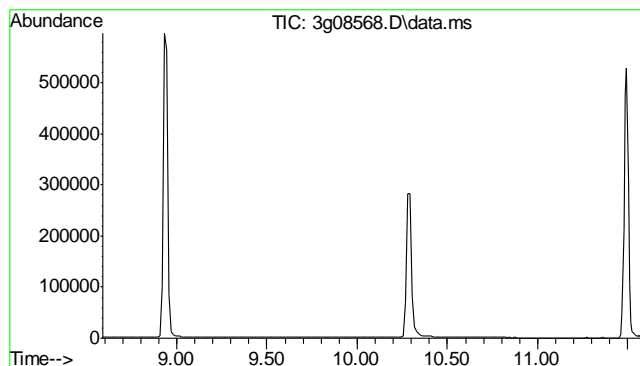
8.2.1

8

#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.08 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 169
Sig   Exp Ratio
169   100
168   61.3
167   33.2
167   33.2
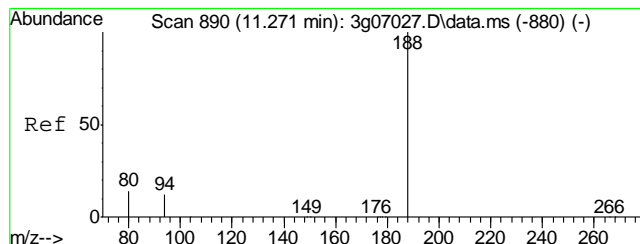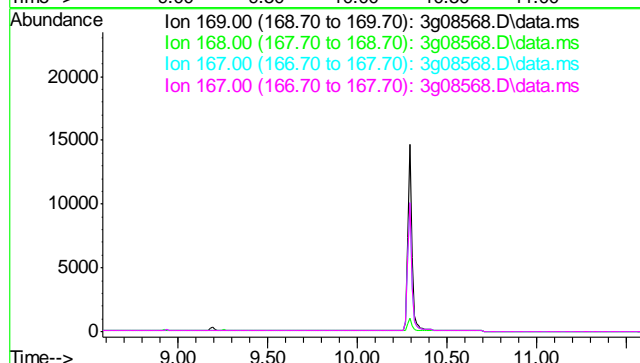
#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.493 min Scan# 918
Delta R.T. -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:188 Resp: 564653
Ion Ratio Lower   Upper
188 100
 94   22.9   1.7   41.7
 80   23.5   2.2   42.2

3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:50 2012   3G   Page 9

8.2.1

8

67 of 134
ACCUTEST
LABORATORIES
D32747

3G08568.D: OP5559-MB Method Blank   page 9 of 17
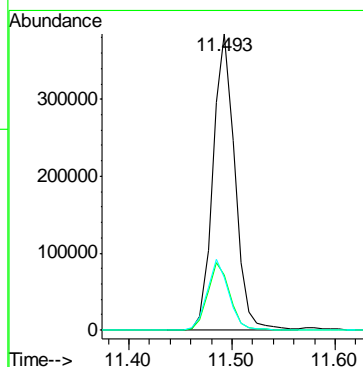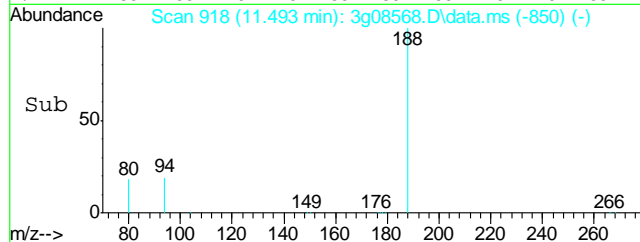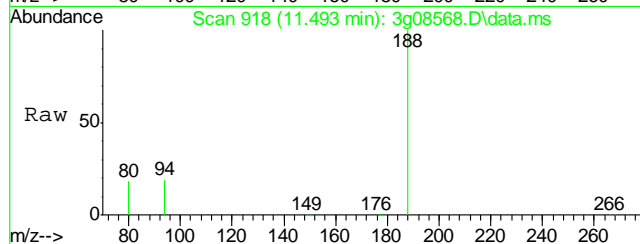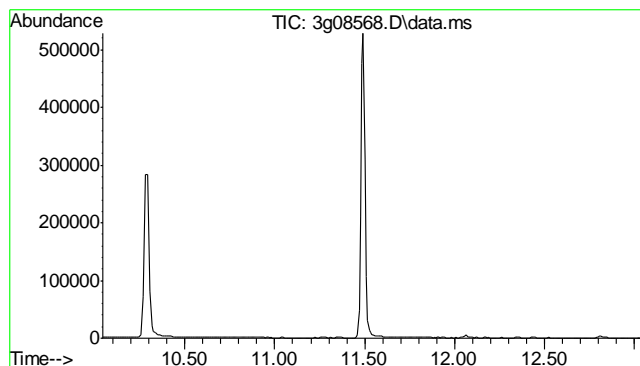
#15
Phenanthrene
Concen: N.D. ug/mL
Expected RT: 11.54 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 178
Sig	Exp Ratio
178	100
179	15.1
176	18.5
177	10.2
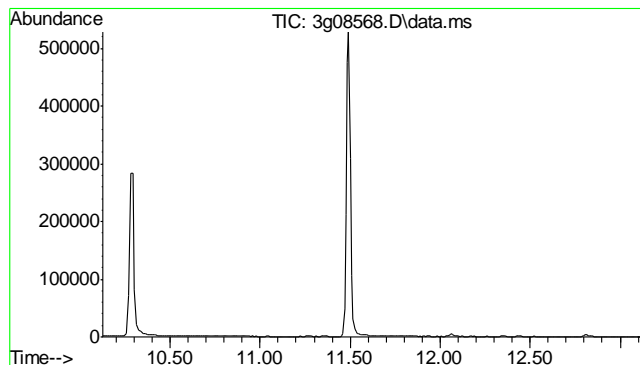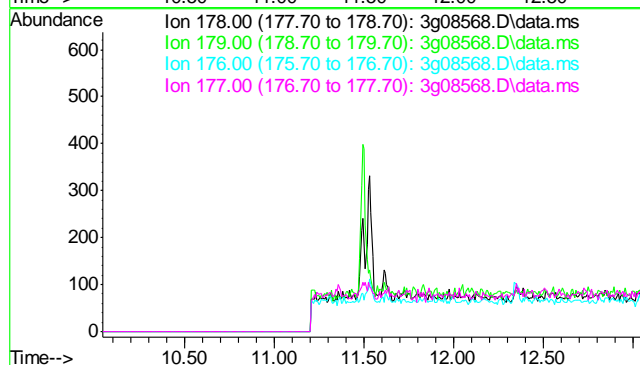
#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.62 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 178
Sig	Exp Ratio
178	100
179	15.0
176	17.7
177	8.7

8.2.1

8

3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:50 2012   3G   Page 10

68 of 134
ACCUTEST
LABORATORIES
D32747

3G08568.D: OP5559-MB Method Blank   page 10 of 17
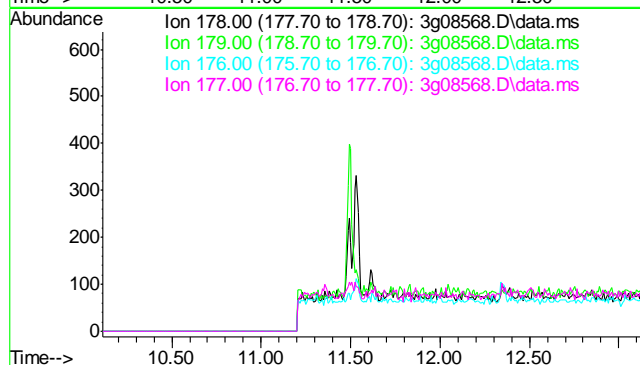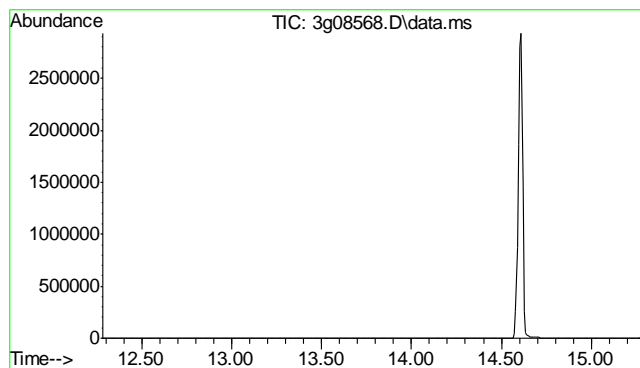
#17
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 13.78 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 202

Sig	Exp Ratio
202	100
101	23.2
203	17.2

TIC: 3g08568.D\data.ms

Ion 202.00 (201.70 to 202.70): 3g08568.D\data.ms
Ion 101.00 (100.70 to 101.70): 3g08568.D\data.ms
Ion 203.00 (202.70 to 203.70): 3g08568.D\data.ms
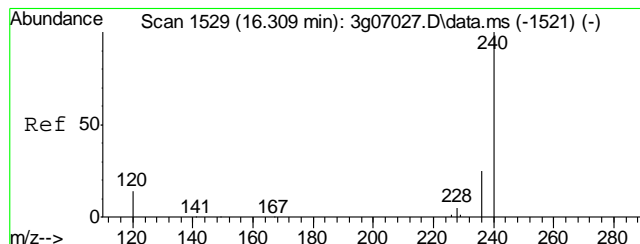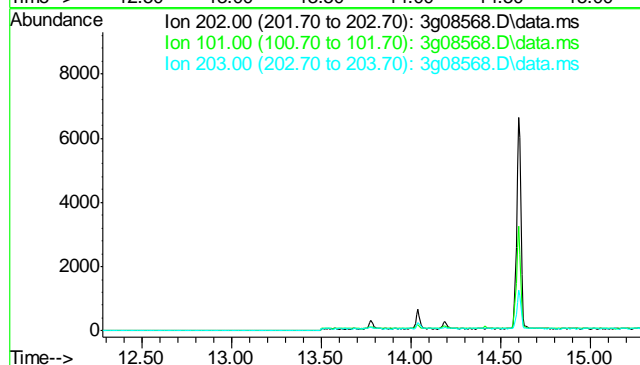
#18
Chrysene-d12
Concen: 4.00 ug/mL
RT: 16.553 min   Scan# 1566
Delta R.T. -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:240 Resp: 381549

Ion	Ratio	Lower	Upper
240	100		
120	25.5	4.4	44.4
236	24.8	5.0	45.0

Scan 1529 (16.309 min): 3g07027.D\data.ms (-1521) (-)

Scan 1566 (16.553 min): 3g08568.D\data.ms

Scan 1566 (16.553 min): 3g08568.D\data.ms (-1494) (-)
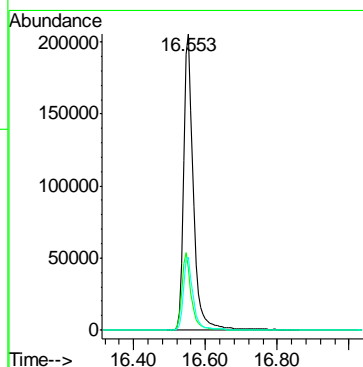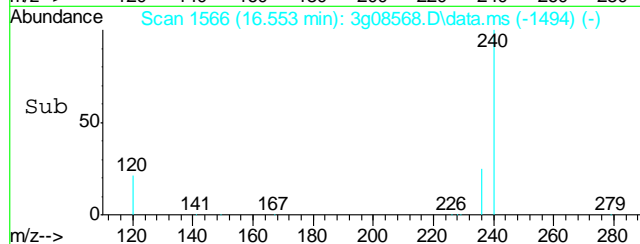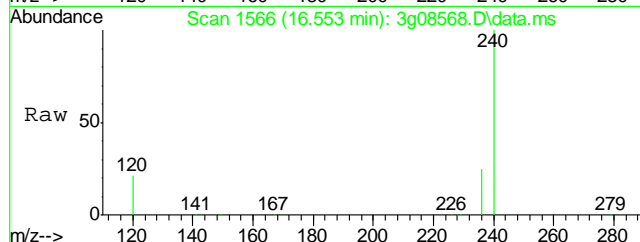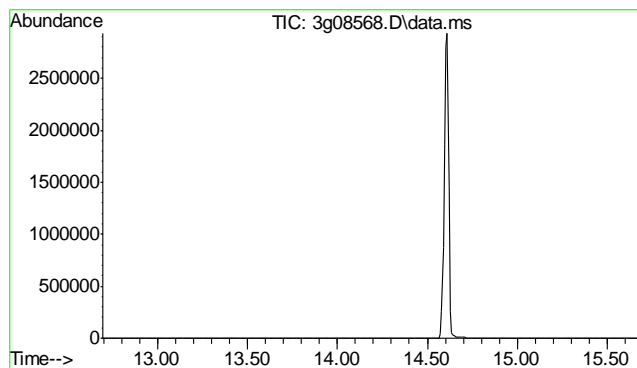
#19
Pyrene
Concen: N.D. ug/mL
Expected RT: 14.19 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 202
Sig   Exp Ratio
202   100
200   20.1
203   17.8
201   16.5
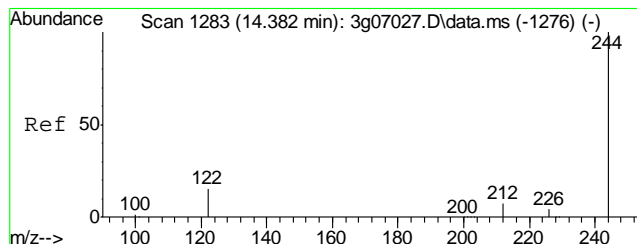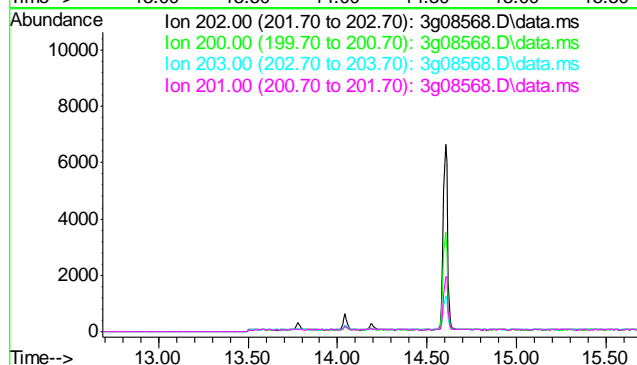
#20
Terphenyl-d14
Concen: 44.94 ug/mL
RT: 14.611 min   Scan# 1312
Delta R.T. -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:244 Resp: 3706451
Ion   Ratio   Lower   Upper
244   100
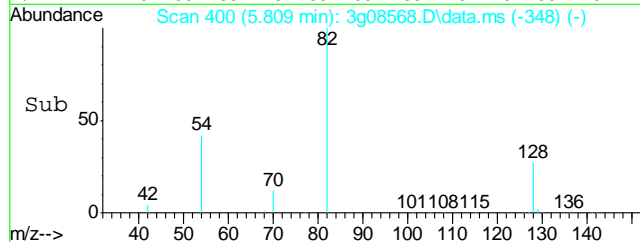122   24.7   4.9   44.9
212   6.9   0.0   27.3
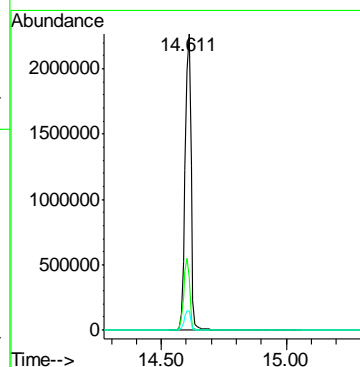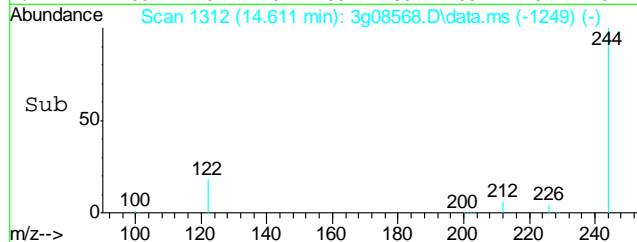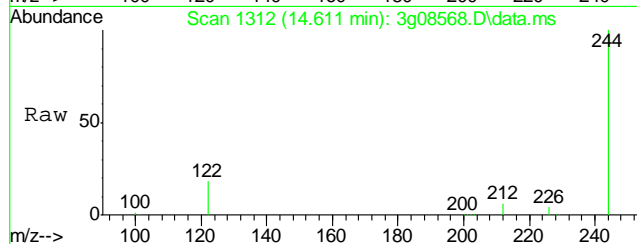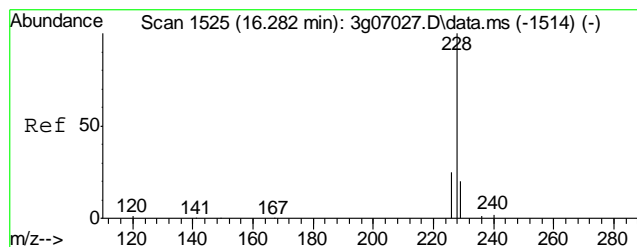
#21
Benzo(a)anthracene
Concen: 0.01 ug/mL
RT: 16.547 min Scan# 1565
Delta R.T. 0.020 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:228 Resp: 1429
Ion Ratio   Lower   Upper
228 100
229   31.4   0.0   39.6
226   6.9   5.7   45.7
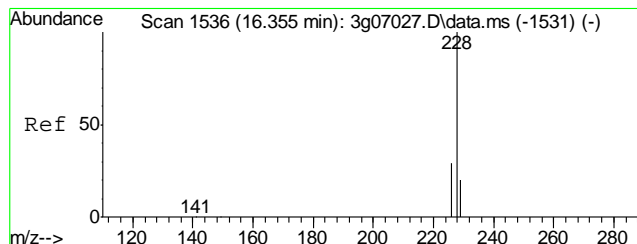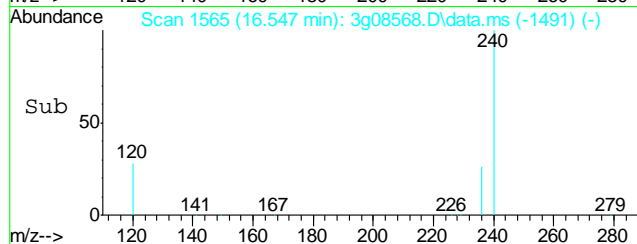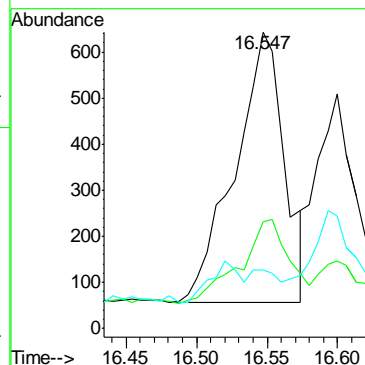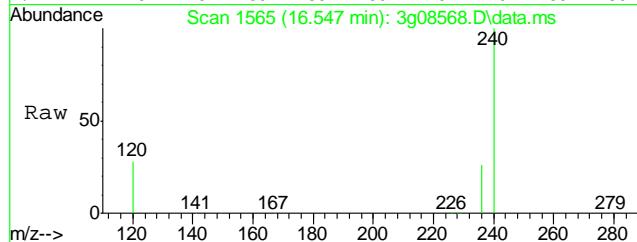
#22
Chrysene
Concen: 0.01 ug/mL
RT: 16.600 min Scan# 1573
Delta R.T. -0.007 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:228 Resp: 865
Ion Ratio   Lower   Upper
228 100
226   53.3   8.7   48.7#
229   20.6   0.0   39.4
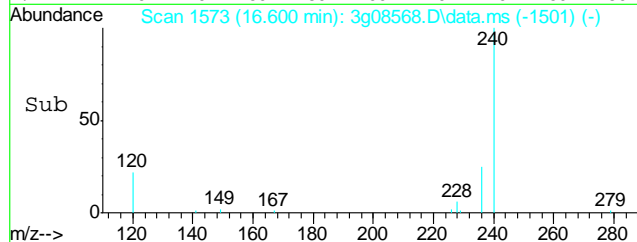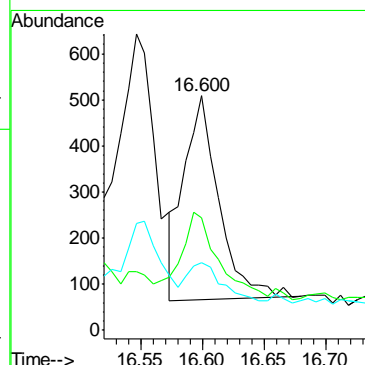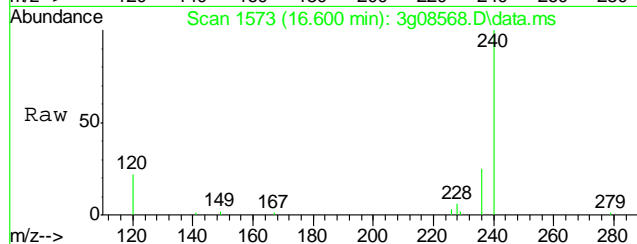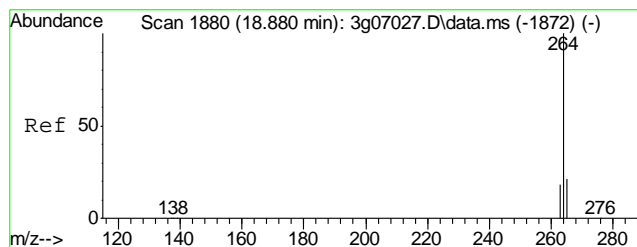
8.2.1

8

3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:51 2012   3G   Page 13

#23
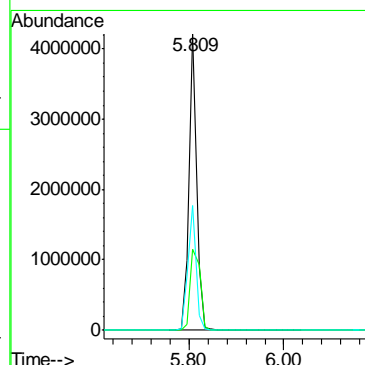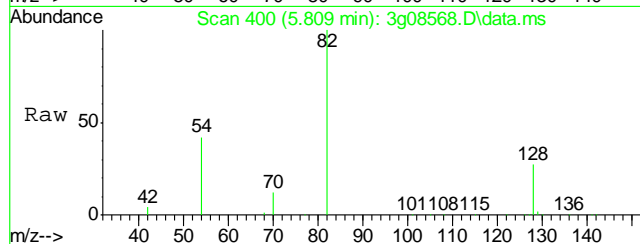Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min Scan# 1904
Delta R.T. -0.000 min
Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion:264 Resp: 207065

Ion	Ratio	Lower	Upper
264	100		
265	21.3	1.1	41.1
263	19.0	0.0	39.1
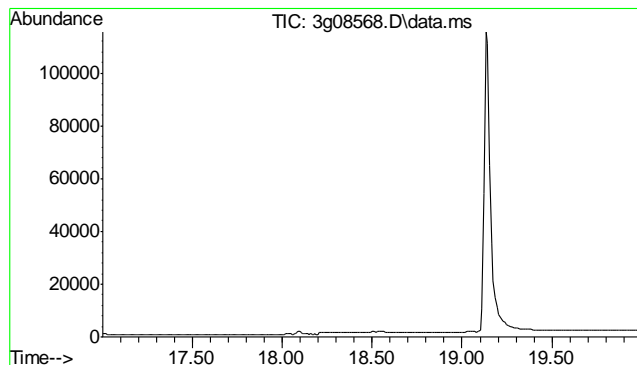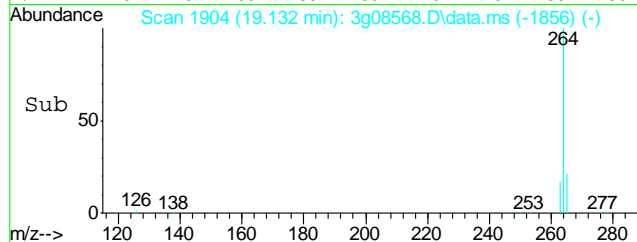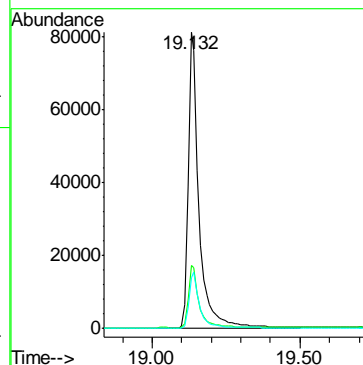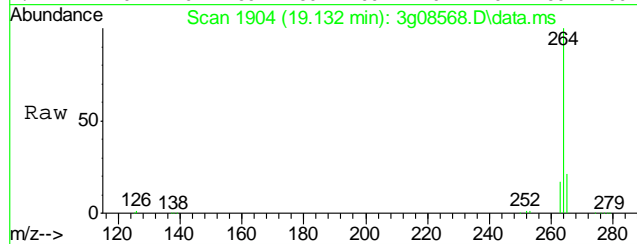
#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.50 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.5
125	18.6
126	26.2
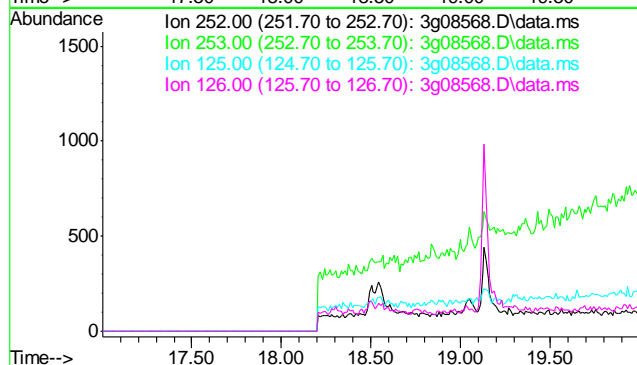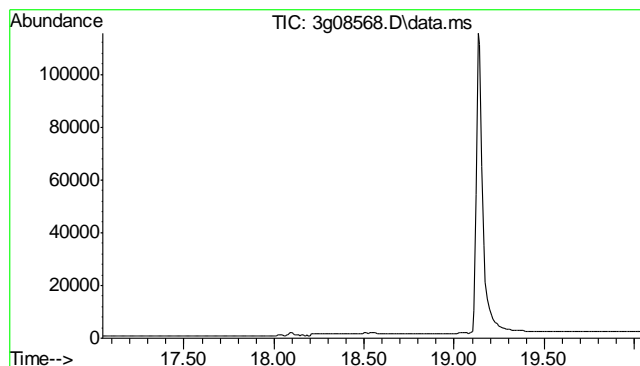
3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:51 2012   3G   Page 14

8.2.1

8

72 of 134
ACCUTEST
LABORATORIES
D32747

3G08568.D: OP5559-MB Method Blank   page 14 of 17

#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.54 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.7
125	16.4
126	25.4
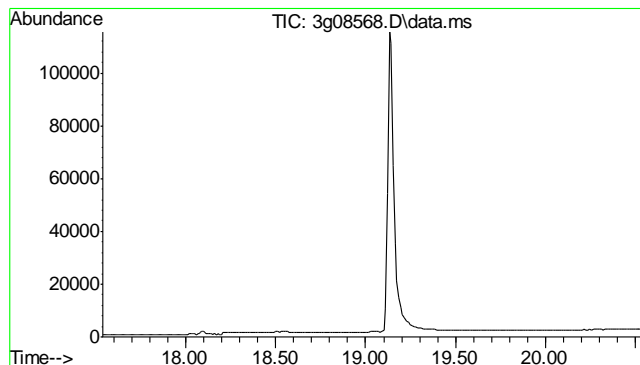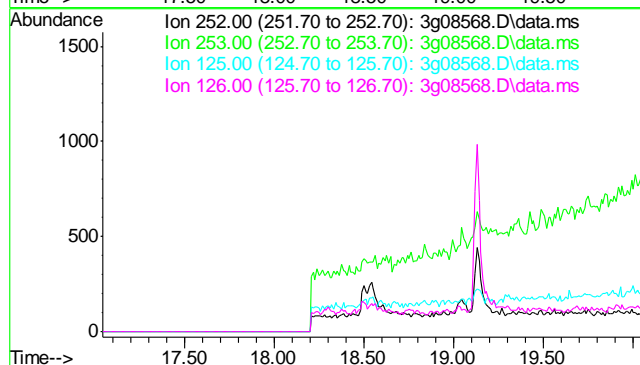
#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 19.04 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	21.3
126	23.6
125	17.1
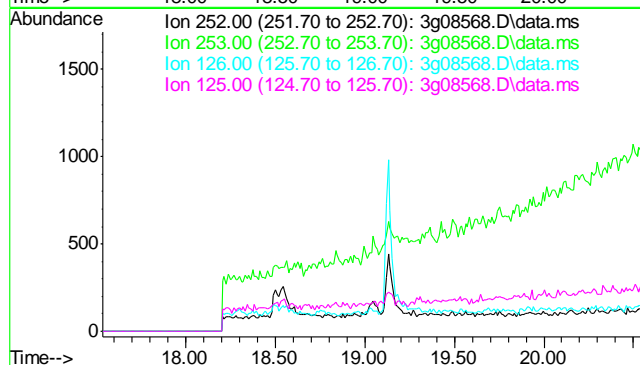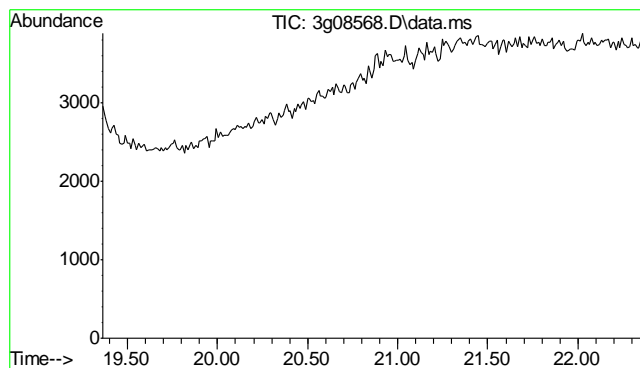
8.2.1

8

```
#27
Indeno(1,2,3-cd)pyrene
Concen:     N.D. ug/mL
Expected RT: 20.86 min

Lab File:   3g08568.D
Acq: 19 Mar 12  12:27 pm

Tgt Ion: 276
Sig     Exp Ratio
276      100
138       80.3
277       51.9
278      157.2
```
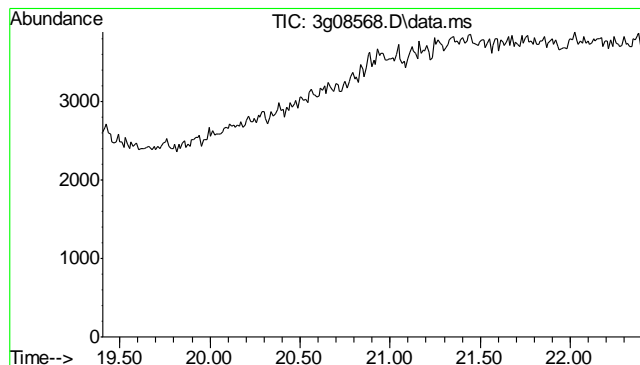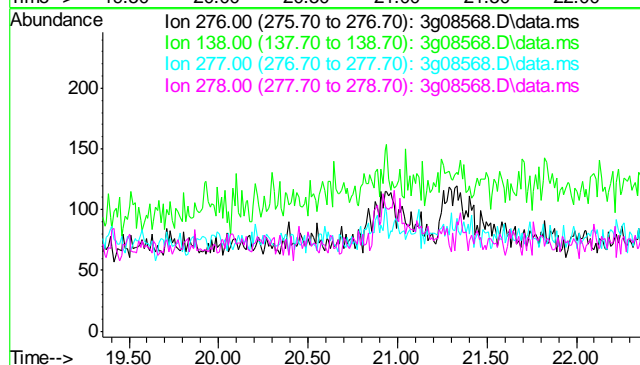


```
#28
Dibenz(a,h)anthracene
Concen:     N.D. ug/mL
Expected RT: 20.90 min

Lab File:   3g08568.D
Acq: 19 Mar 12  12:27 pm

Tgt Ion: 278
Sig     Exp Ratio
278      100
139       26.0
279       23.2
276      133.1
```

8.2.1

8

3g08568.D SIMPE3G344.M   Tue Mar 20 09:59:51 2012   3G   Page 16
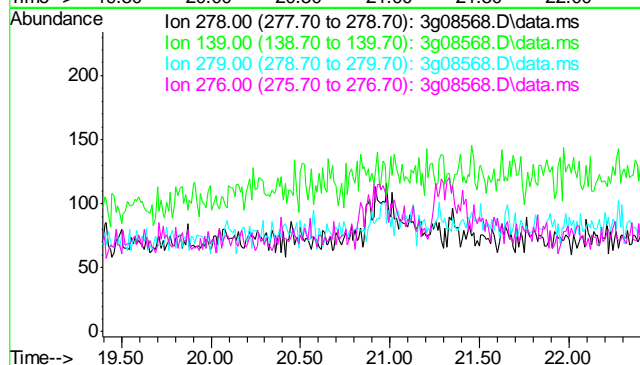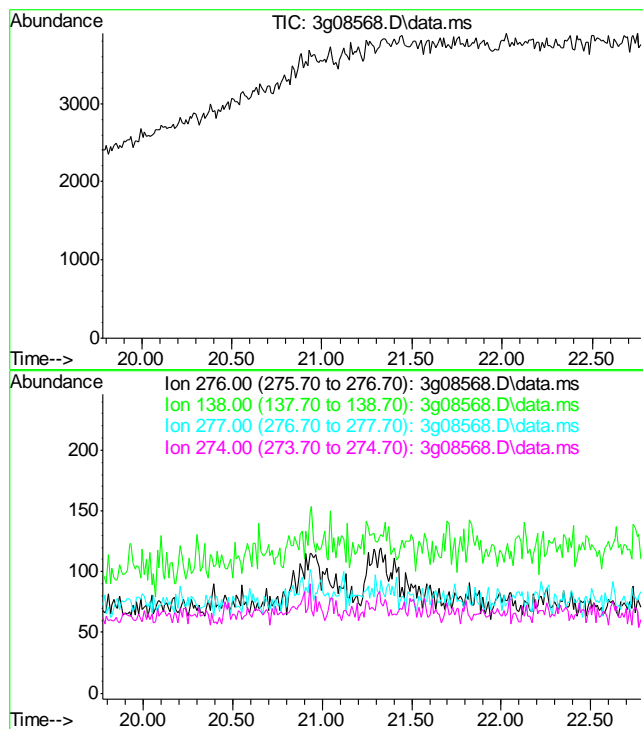
#29
Benzo(g,h,i)perylene
Concen: N.D. ug/mL
Expected RT: 21.28 min

Lab File: 3g08568.D
Acq: 19 Mar 12 12:27 pm

Tgt Ion: 276
Sig	Exp Ratio
276	100
138	32.2
277	23.3
274	20.9

3g08568.D   SIMPE3G344.M   Tue Mar 20 09:59:51 2012   3G   Page 17

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

Page 1 of 1

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB859-MB	GB15306.D	1	03/15/12	SK	n/a	n/a	GGB859

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

D32747-1

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	104%	60-140%	

9.1.1

9

Blank Spike Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB859-BS	GB15307.D	1	03/15/12	SK	n/a	n/a	GGB859

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

D32747-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	114	104	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	115%	60-140%

9.2.1

9

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D32747-1MS	GB15309.D	1	03/15/12	SK	n/a	n/a	GGB859
D32747-1MSD	GB15310.D	1	03/15/12	SK	n/a	n/a	GGB859
D32747-1	GB15308.D	1	03/15/12	SK	n/a	n/a	GGB859

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

D32747-1

CAS No.	Compound	D32747-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		124	126	101	128	103	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D32747-1	Limits
120-82-1	1,2,4-Trichlorobenzene	109%	109%	96%	60-140%

9.3.1

9

Mountain States

ACCUTEST
LABORATORIES

D32747

GC Volatiles

Raw Data

10

ACCUTEST
LABORATORIES

```
                        Quantitation Report      (QT Reviewed)

     Signal #1 : Y:\1\DATA\031512\GB15308.D\FID1A.CH          Vial: 6
     Signal #2 : Y:\1\DATA\031512\GB15308.D\FID2B.CH
     Acq On    : 15 Mar 2012   9:26 pm            Operator: StephK
     Sample    : D32747-1, 50X                    Inst    : GC/MS Ins
     Misc      : GC2679,GGB859,5.007,,100,5,1     Multiplr: 1.00
     IntFile Signal #1: TVH1.E      IntFile Signal #2: FB2.E
     Quant Time: Mar 16 07:16:01 2012  Quant Results File: TB851GB851SOIL.RES

     Quant Method : C:\MSDCHEM\1...\TB851GB851SOIL.M (Chemstation Integrator)
     Title        : 8015B/8021B  TVH/BTEX
     Last Update  : Fri Mar 16 07:15:36 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     14.35      2905995   96.330 %      m
 10) S   1,2,4-Trichlorobenzene (P) 14.35     23623976  101.512 %

     Target Compounds
  1) H   TVH-Gasoline                7.26      6301119    <MDL  mg/L
  4) T   Methyl-t-butyl-ether        0.00            0    N.D.  ug/L d
  5) T   Benzene                     4.12       118474   0.214 ug/L
  6) T   Toluene                     7.63       517549   0.945 ug/L
  7) T   Ethylbenzene               10.26       107345   0.235 ug/L
  8) T   m,p-Xylene                 10.44       648782   1.159 ug/L
  9) T   o-Xylene                   10.95       138041   0.301 ug/L
 11) T   Naphthalene                14.53      1026254   3.928 ug/L
```

10.1.1

10

```
-----------------------------------------------------------------------------
(f)=RT Delta > 1/2 Window                           (m)=manual int.
GB15308.D  TB851GB851SOIL.M       Fri Mar 16 07:20:33 2012       GC
```

```
                         Quantitation Report      (QT Reviewed)

     Signal #1 : Y:\1\DATA\031512\GB15308.D\FID1A.CH          Vial: 6
     Signal #2 : Y:\1\DATA\031512\GB15308.D\FID2B.CH
     Acq On     : 15 Mar 2012   9:26 pm                 Operator: StephK
     Sample     : D32747-1, 50X                          Inst    : GC/MS Ins
     Misc       : GC2679,GGB859,5.007,,100,5,1          Multiplr: 1.00
     IntFile Signal #1: TVH1.E       IntFile Signal #2: FB2.E
     Quant Time: Mar 16  7:19 2012  Quant Results File: TB851GB851SOIL.RES

     Quant Method : C:\MSDCHEM\1...\TB851GB851SOIL.M (Chemstation Integrator)
     Title        : 8015B/8021B  TVH/BTEX
     Last Update  : Fri Mar 16 07:15:36 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
```

```
GB15308.D   TB851GB851SOIL.M      Fri Mar 16 07:20:33 2012        GC                Page  2
```
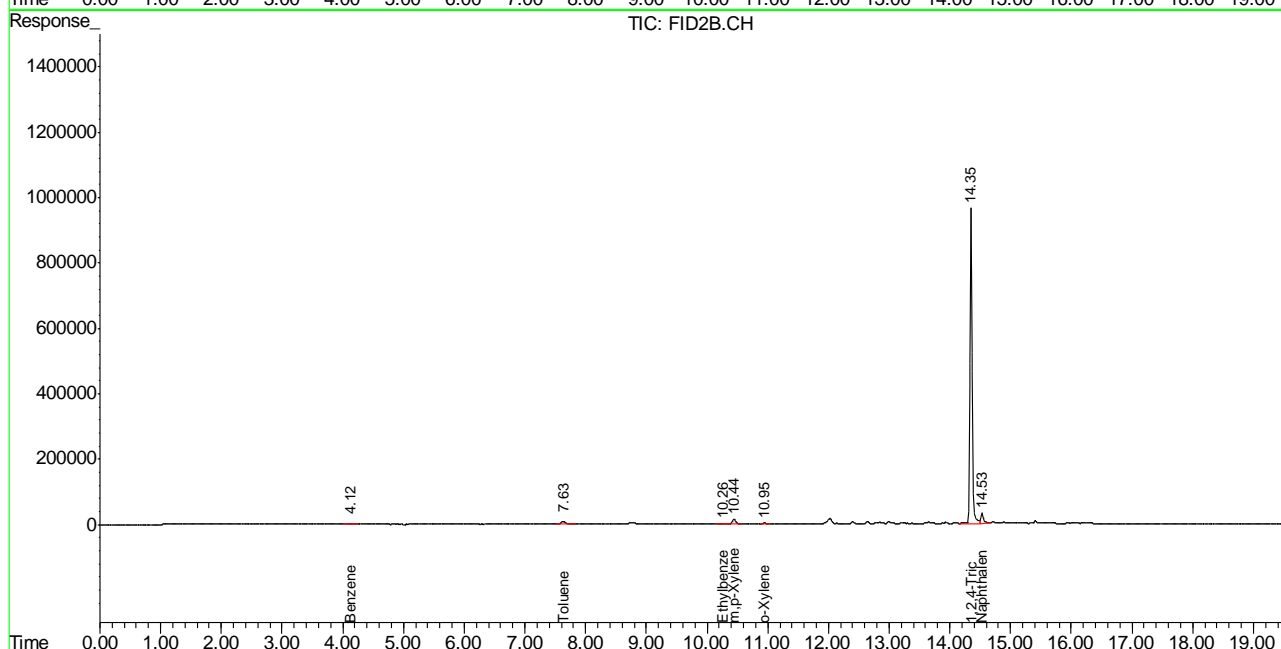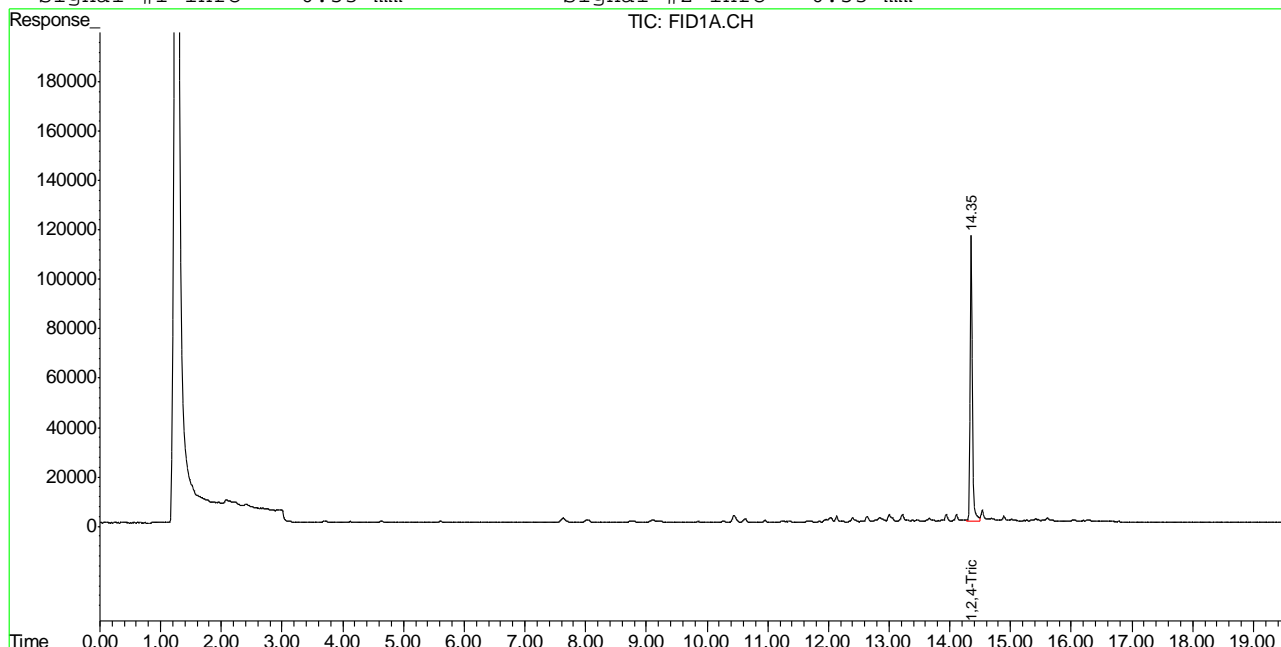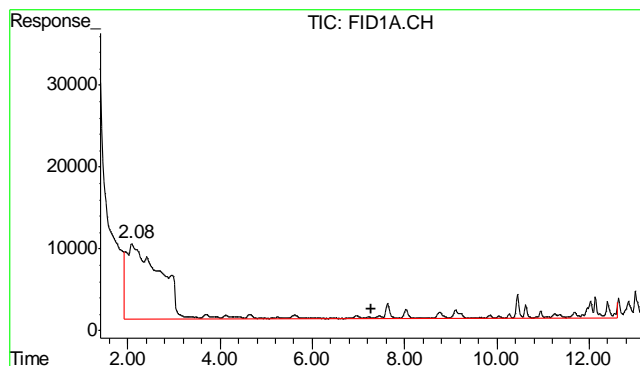
#1   TVH-Gasoline

          R.T.:   7.265 min
Delta R.T.:   0.000 min
   Response: 6301119
          Conc: N.D.
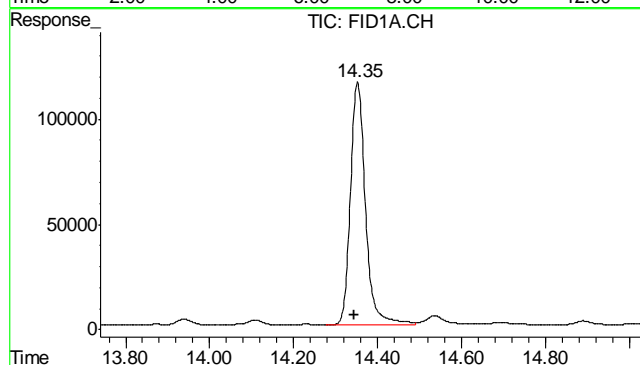
#2   1,2,4-Trichlorobenzene

          R.T.:   14.352 min
Delta R.T.:   0.007 min
   Response: 2905995
          Conc: 96.33 % m
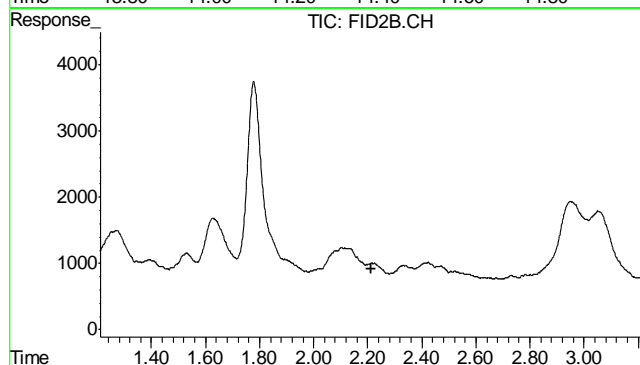
#4   Methyl-t-butyl-ether

          R.T.:   0.000 min
Exp R.T. :   2.211 min
   Response: 0
          Conc: N.D.
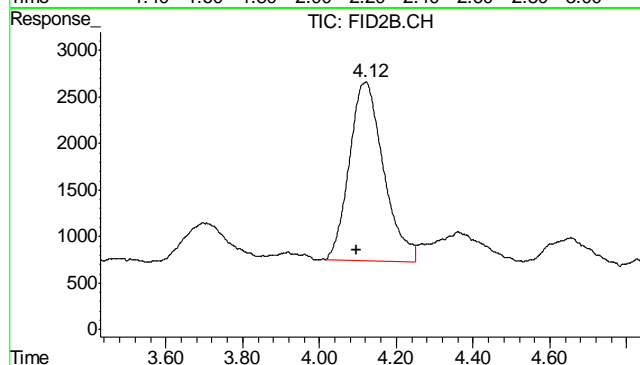
#5   Benzene

          R.T.:   4.122 min
Delta R.T.:   0.026 min
   Response: 118474
          Conc: 0.21 ug/L

GB15308.D   TB851GB851SOIL.M   Fri Mar 16 07:20:33 2012   GC   Page 3
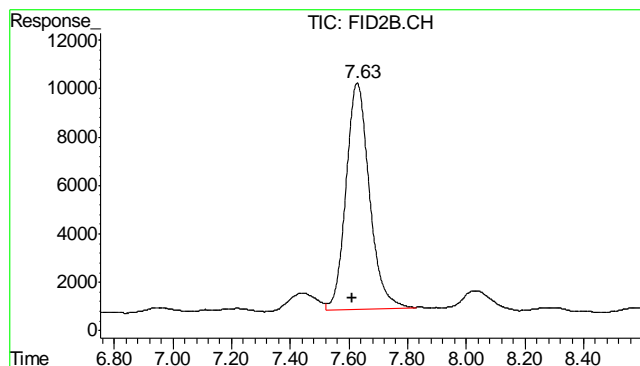
#6 Toluene

```
          R.T.:   7.628 min
Delta R.T.:   0.016 min
    Response:   517549
        Conc:   0.95 ug/L
```
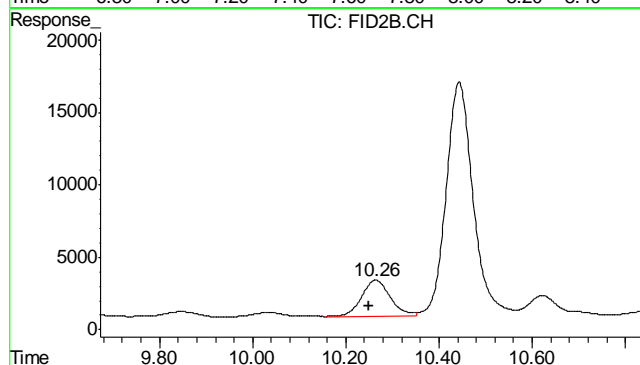
#7 Ethylbenzene

```
          R.T.:  10.264 min
Delta R.T.:   0.013 min
    Response:   107345
        Conc:   0.23 ug/L
```
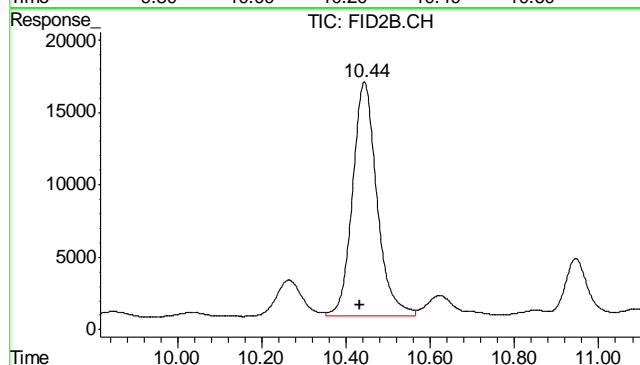
#8 m,p-Xylene

```
          R.T.:  10.443 min
Delta R.T.:   0.010 min
    Response:   648782
        Conc:   1.16 ug/L
```
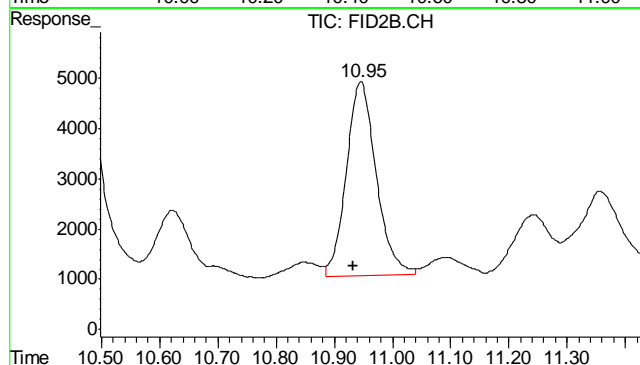
#9 o-Xylene

```
          R.T.:  10.946 min
Delta R.T.:   0.013 min
    Response:   138041
        Conc:   0.30 ug/L
```

10.1.1

10

GB15308.D TB851GB851SOIL.M   Fri Mar 16 07:20:34 2012   GC   Page 4
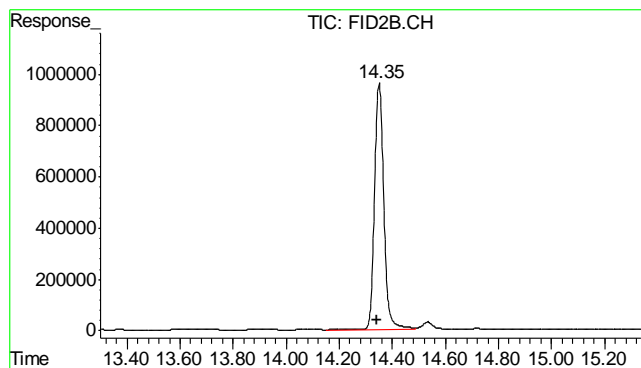
#10   1,2,4-Trichlorobenzene (P)

```
        R.T.:   14.350 min
Delta R.T.:    0.008 min
  Response:    23623976
      Conc:   101.51 %
```
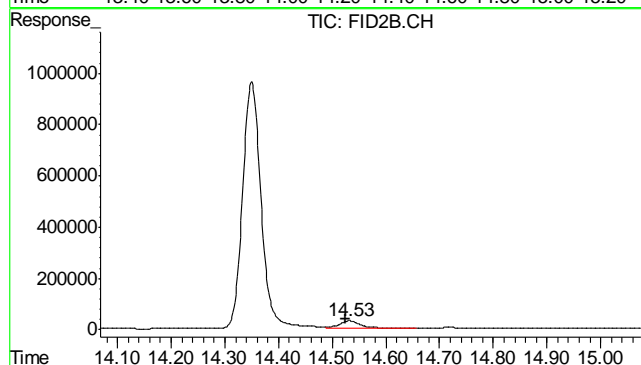
#11   Naphthalene

```
        R.T.:   14.532 min
Delta R.T.:    0.008 min
  Response:    1026254
      Conc:     3.93 ug/L
```

GB15308.D   TB851GB851SOIL.M   Fri Mar 16 07:20:34 2012   GC   Page 5

GB15308.D: D32747-1 CUT SUBLINER   page 5 of 5

85 of 134
ACCUTEST
LABORATORIES
D32747

Manual Integrations
APPROVED
(compounds with "m" flag)

Judy Melson
03/16/12 13:47

Quantitation Report   (QT Reviewed)

```
     Signal #1 : Y:\1\DATA\031512\GB15306.D\FID1A.CH          Vial: 4
     Signal #2 : Y:\1\DATA\031512\GB15306.D\FID2B.CH
     Acq On    : 15 Mar 2012   8:15 pm              Operator: StephK
     Sample    : MB                                 Inst    : GC/MS Ins
     Misc      : GC2679,GGB859,5.000,,100,5,1        Multiplr: 1.00
     IntFile Signal #1: TVH1.E       IntFile Signal #2: FB2.E
     Quant Time: Mar 16 07:15:53 2012  Quant Results File: TB851GB851SOIL.RES

     Quant Method : C:\MSDCHEM\1...\TB851GB851SOIL.M (Chemstation Integrator)
     Title        : 8015B/8021B  TVH/BTEX
     Last Update  : Fri Mar 16 07:15:36 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       14.34      3134910  103.918 %      m
 10) S   1,2,4-Trichlorobenzene (P)   14.33     25016008  107.494 %

     Target Compounds
  1) H   TVH-Gasoline                  7.26      5799283   <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                       7.61       268803   0.491 ug/L
  7) T   Ethylbenzene                  0.00            0   N.D.  ug/L d
  8) T   m,p-Xylene                   10.43       247992   0.443 ug/L
  9) T   o-Xylene                     10.93        88682   0.193 ug/L
 11) T   Naphthalene                  14.51       335362   1.283 ug/L
```

10.2.1

10

```
-------------------------------------------------------------------------
(f)=RT Delta > 1/2 Window                            (m)=manual int.
GB15306.D  TB851GB851SOIL.M      Fri Mar 16 07:20:27 2012       GC
```
Page 1

86 of 134

ACCUTEST LABORATORIES

D32747

GB15306.D: GGB859-MB Method Blank   page 1 of 5

```
                        Quantitation Report      (QT Reviewed)

    Signal #1 : Y:\1\DATA\031512\GB15306.D\FID1A.CH          Vial: 4
    Signal #2 : Y:\1\DATA\031512\GB15306.D\FID2B.CH
    Acq On    : 15 Mar 2012   8:15 pm                 Operator: StephK
    Sample    : MB                                    Inst    : GC/MS Ins
    Misc      : GC2679,GGB859,5.000,,100,5,1          Multiplr: 1.00
    IntFile Signal #1: TVH1.E       IntFile Signal #2: FB2.E
    Quant Time: Mar 16  7:18 2012  Quant Results File: TB851GB851SOIL.RES

    Quant Method : C:\MSDCHEM\1...\TB851GB851SOIL.M (Chemstation Integrator)
    Title        : 8015B/8021B  TVH/BTEX
    Last Update  : Fri Mar 16 07:15:36 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
```



```
GB15306.D   TB851GB851SOIL.M     Fri Mar 16 07:20:27 2012       GC            Page 2
```
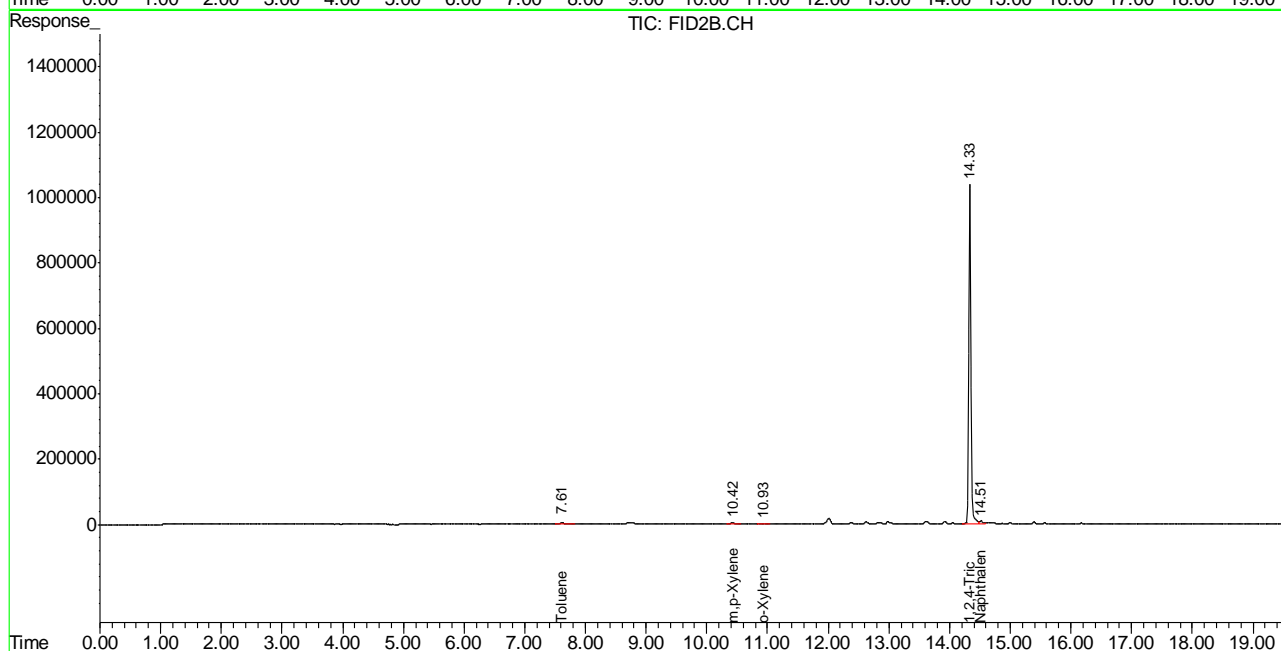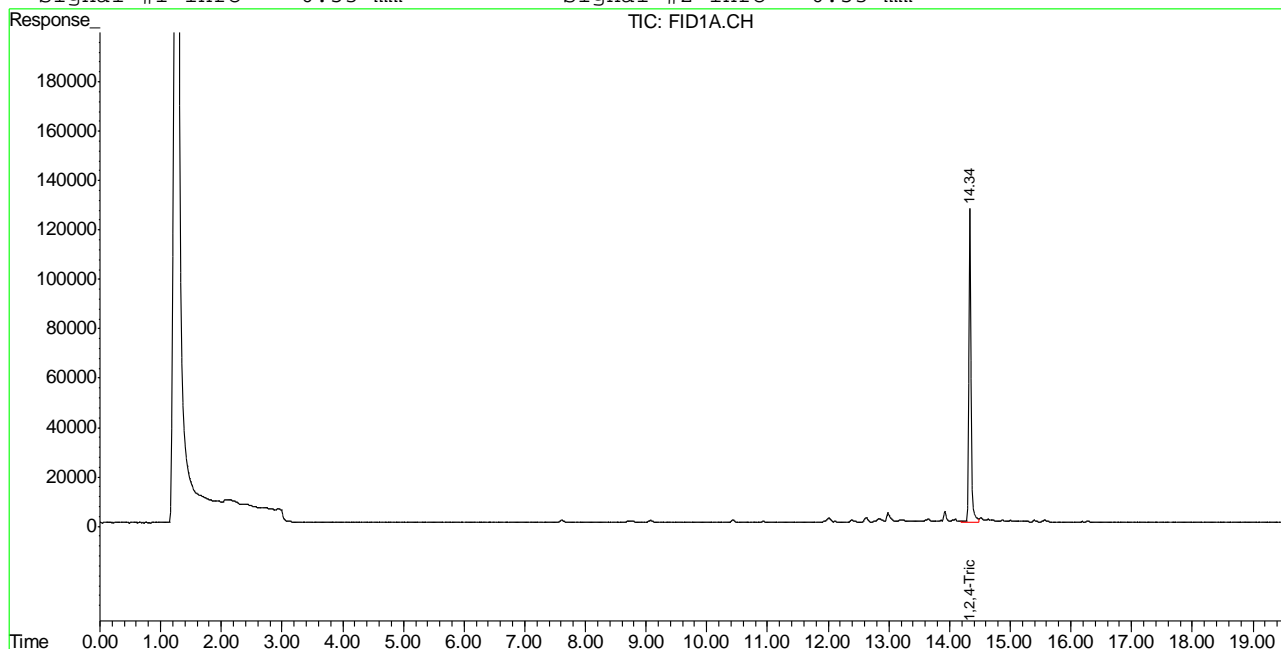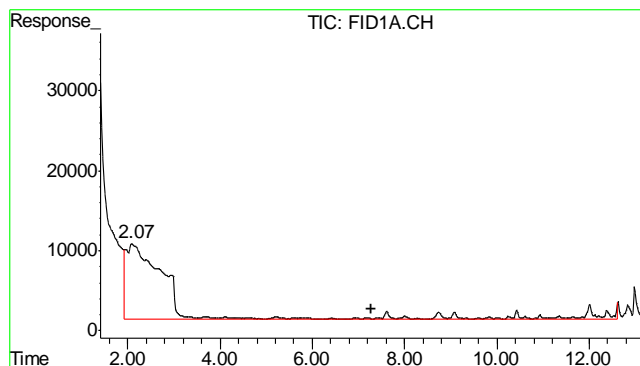
#1 TVH-Gasoline

```
      R.T.:    7.265 min
Delta R.T.:    0.000 min
  Response:    5799283
      Conc:    N.D.
```
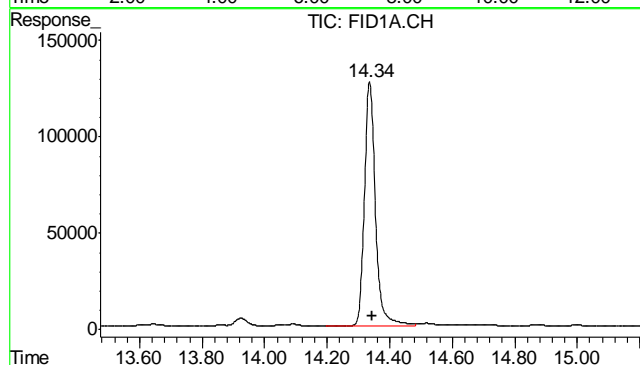
#2 1,2,4-Trichlorobenzene

```
      R.T.:   14.335 min
Delta R.T.:   -0.009 min
  Response:    3134910
      Conc:  103.92 % m
```
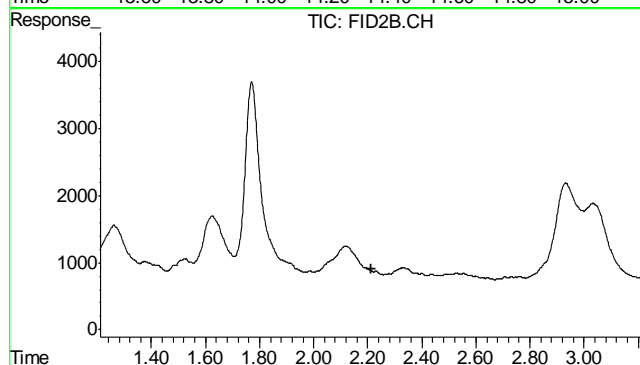
#4 Methyl-t-butyl-ether

```
      R.T.:    0.000 min
Exp R.T.  :    2.211 min
  Response:          0
      Conc:    N.D.
```
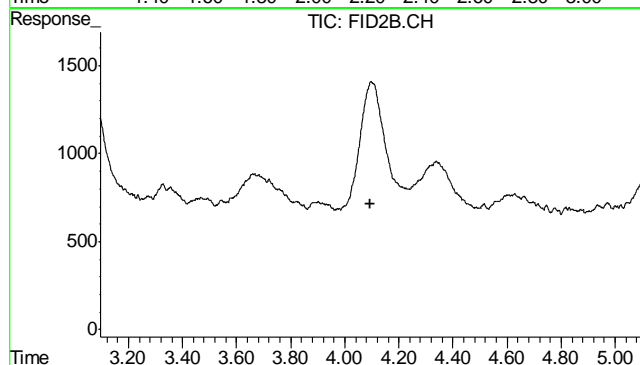
#5 Benzene

```
      R.T.:    0.000 min
Exp R.T.  :    4.096 min
  Response:          0
      Conc:    N.D.
```

10.2.1

10
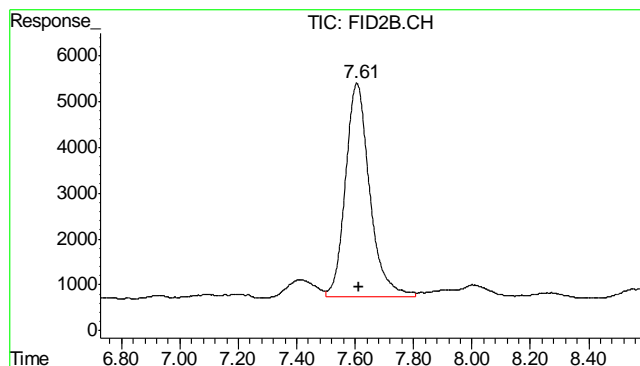
#6   Toluene

          R.T.:   7.606 min
Delta R.T.:   -0.006 min
   Response: 268803
          Conc: 0.49 ug/L
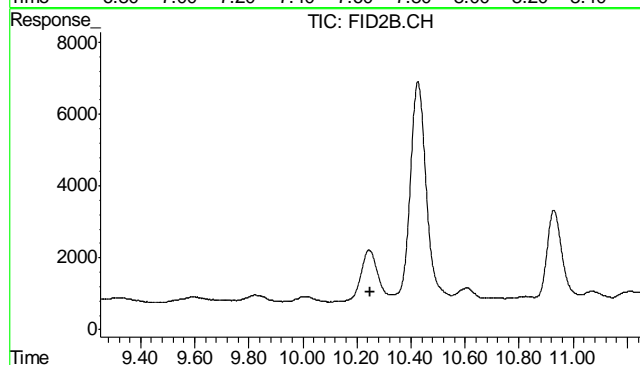
#7   Ethylbenzene

          R.T.:   0.000 min
Exp R.T. :   10.251 min
   Response: 0
          Conc: N.D.
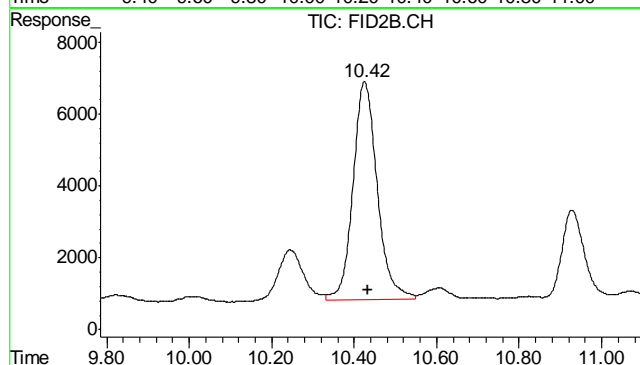
#8   m,p-Xylene

          R.T.:   10.425 min
Delta R.T.:   -0.008 min
   Response: 247992
          Conc: 0.44 ug/L
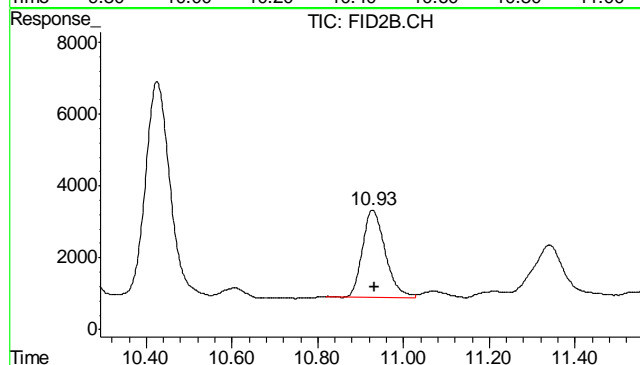
#9   o-Xylene

          R.T.:   10.928 min
Delta R.T.:   -0.005 min
   Response: 88682
          Conc: 0.19 ug/L

GB15306.D   TB851GB851SOIL.M   Fri Mar 16 07:20:28 2012   GC   Page 4
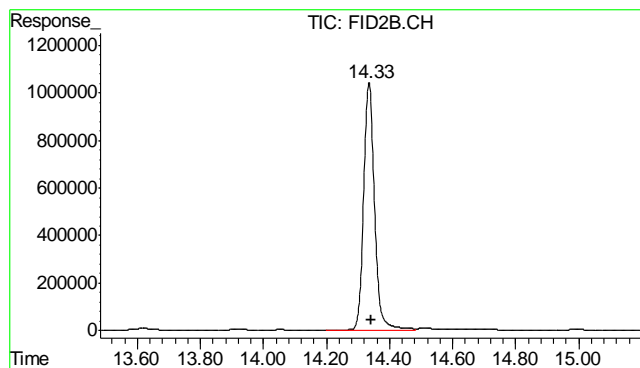
#10 1,2,4-Trichlorobenzene (P)

```
           R.T.:  14.335 min
    Delta R.T.:  -0.007 min
      Response:  25016008
          Conc: 107.49 %
```
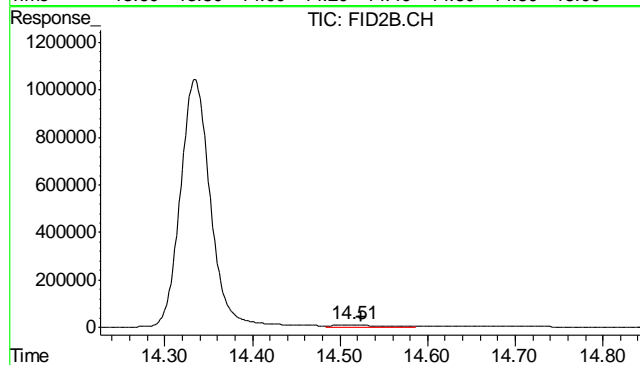
#11 Naphthalene

```
           R.T.:  14.515 min
    Delta R.T.:  -0.009 min
      Response:   335362
          Conc:   1.28 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

11

Method Blank Summary

Page 1 of 1

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5560-MB	FH002331.D	1	03/20/12	TR	03/19/12	OP5560	GFH123

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

D32747-1

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	86%	43-136%	

11.1.1

11

Blank Spike Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5560-BS	FH002333.D	1	03/20/12	TR	03/19/12	OP5560	GFH123

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

D32747-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	520	78	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	85%	43-136%

11.2.1

11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D32747
Account: XTOKRWR XTO Energy
Project: PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5560-MS	FH002335.D	1	03/20/12	TR	03/19/12	OP5560	GFH123
OP5560-MSD	FH002337.D	1	03/20/12	TR	03/19/12	OP5560	GFH123
D32747-1	FH002339.D	1	03/20/12	TR	03/19/12	OP5560	GFH123

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

D32747-1

CAS No.	Compound	D32747-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	31.1		710	518	69	483	64	7	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D32747-1	Limits
84-15-1	o-Terphenyl	68%	68%	64%	43-136%

11.3.1

11

Mountain States
ACCUTEST
L A B O R A T O R I E S

GC Semi-volatiles

Raw Data

```
                        Quantitation Report    (QT Reviewed)


  Data Path : C:\msdchem\1\DATA\FH032012.SEC\
  Data File : FH002339.D
  Signal(s) : FID2B.ch
  Acq On    : 20 Mar 2012   6:00 pm
  Operator  : tedr
  Sample    : D32747-1
  Misc      : OP5560,GFH123,30.12,,,2,1
  ALS Vial  : 57   Sample Multiplier: 1


  Integration File: events.e
  Quant Time: Mar 21 08:17:25 2012
  Quant Method : C:\msdchem\1\METHODS\DRO-GFH95R.M
  Quant Title  : DRO-ORO REAR
  QLast Update : Sun Mar 04 19:15:40 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               12.344    1098692658  641.625 ug/ml


  Target Compounds
  1) H   TPH-DRO (C10-C28)          9.832     678039155  439.362 ug/ml
  ------------------------------------------------------------------------

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

DRO-GFH95R.M Wed Mar 21 10:44:59 2012   Page: 1

FH002339.D: D32747-1 CUT SUBLINER   page 1 of 3

12.1.1
12

96 of 134
ACCUTEST
LABORATORIES
D32747

Quantitation Report   (QT Reviewed)

```
Data Path : C:\msdchem\1\DATA\FH032012.SEC\
Data File : FH002339.D
Signal(s) : FID2B.ch
Acq On    : 20 Mar 2012   6:00 pm
Operator  : tedr
Sample    : D32747-1
Misc      : OP5560,GFH123,30.12,,,2,1
ALS Vial  : 57    Sample Multiplier: 1

Integration File: events.e
Quant Time: Mar 21 08:17:25 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH95R.M
Quant Title  : DRO-ORO REAR
QLast Update : Sun Mar 04 19:15:40 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj.  :
Signal Phase :
Signal Info  :
```


12.1.1

12

DRO-GFH95R.M Wed Mar 21 10:44:59 2012   Page: 2

#1 TPH-DRO (C10-C28)

```
        R.T.:     9.832 min
Delta R.T.:     0.000 min
   Response: 678039155
        Conc: 439.36 ug/ml m
```
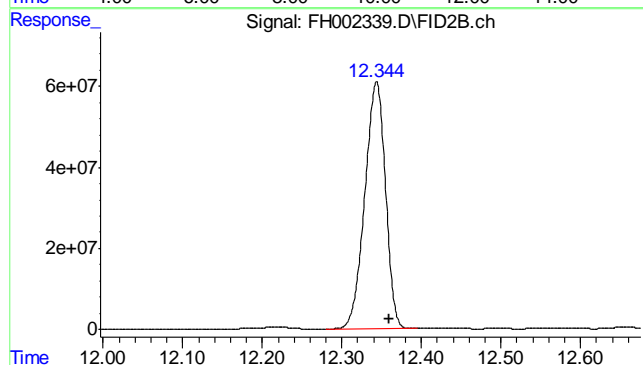
#2 o-Terphenyl

```
        R.T.:    12.344 min
Delta R.T.:    -0.016 min
   Response: 1098692658
        Conc: 641.62 ug/ml
```

FH002339.D DRO-GFH95R.M   Wed Mar 21 10:44:59 2012   Page 4

```
                        Quantitation Report     (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH032012.SEC\
Data File : FH002331.D
Signal(s) : FID2B.ch
Acq On    : 20 Mar 2012   3:38 pm
Operator  : tedr
Sample    : OP5560-MB
Misc      : OP5560,GFH123,30.00,,,2,1
ALS Vial  : 53   Sample Multiplier: 1


Integration File: events.e
Quant Time: Mar 20 16:04:08 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH95R.M
Quant Title  : DRO-ORO REAR
QLast Update : Sun Mar 04 19:15:40 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               12.346    1475787544  861.844 ug/ml

 Target Compounds
 1) H   TPH-DRO (C10-C28)         9.832      43097947   27.927 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\FH032012.SEC\
Data File : FH002331.D
Signal(s) : FID2B.ch
Acq On    : 20 Mar 2012   3:38 pm
Operator  : tedr
Sample    : OP5560-MB
Misc      : OP5560,GFH123,30.00,,,2,1
ALS Vial  : 53    Sample Multiplier: 1

Integration File: events.e
Quant Time: Mar 20 16:04:08 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH95R.M
Quant Title  : DRO-ORO REAR
QLast Update : Sun Mar 04 19:15:40 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj.  :
Signal Phase :
Signal Info  :
```


DRO-GFH95R.M Wed Mar 21 10:44:51 2012   Page: 2

Signal: FH002331.D\FID2B.ch
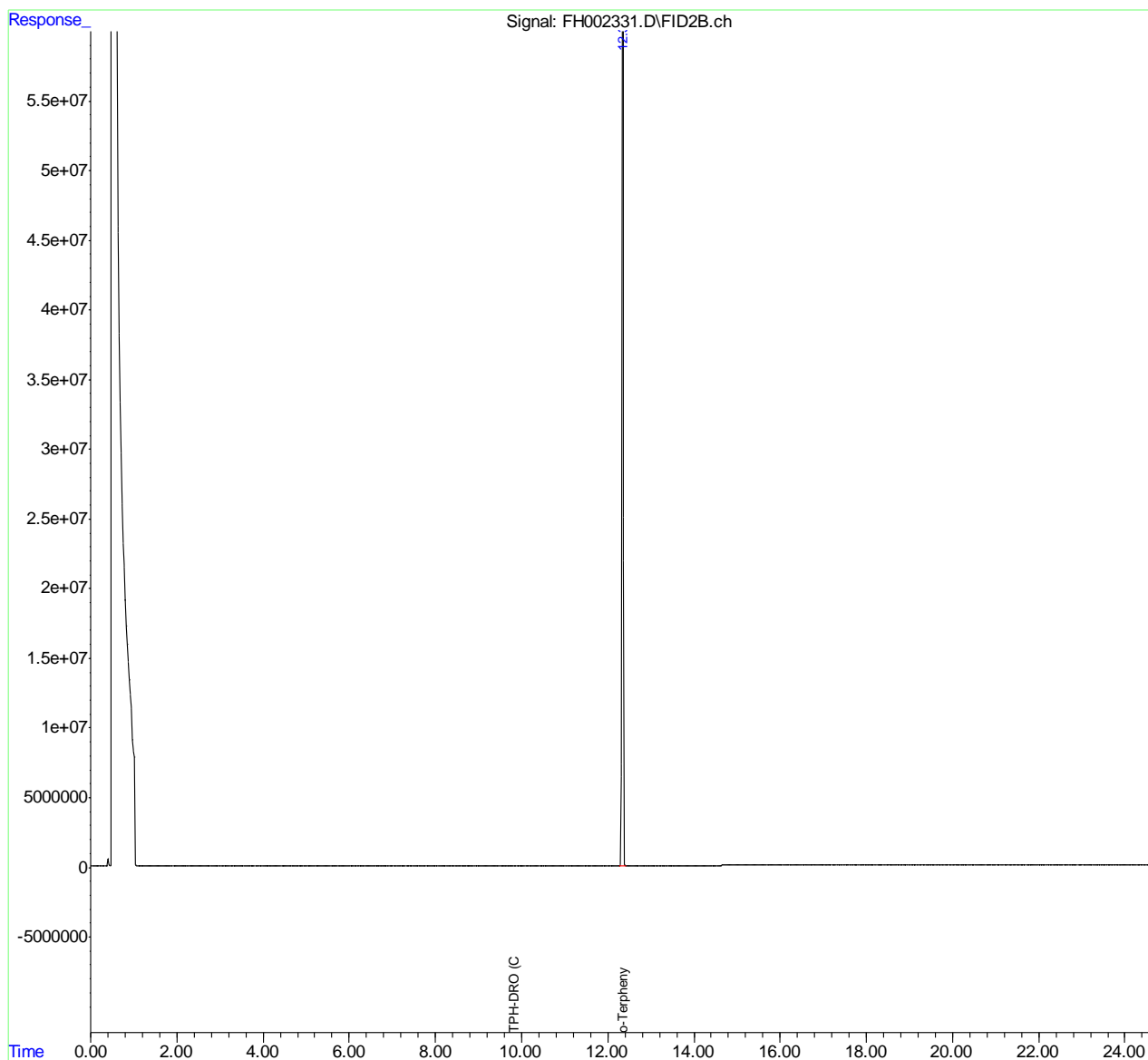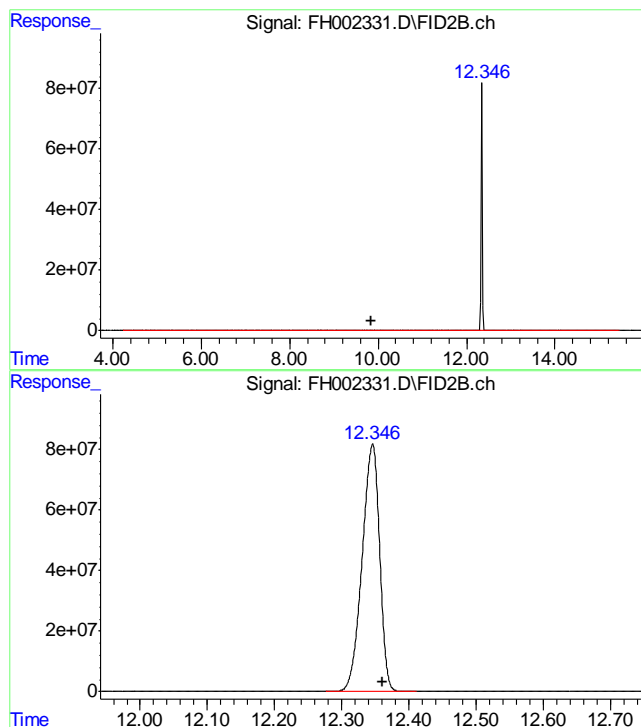
#1 TPH-DRO (C10-C28)

```
      R.T.:    9.832 min
Delta R.T.:    0.000 min
  Response:   43097947
      Conc:   27.93 ug/ml m
```

Signal: FH002331.D\FID2B.ch

#2 o-Terphenyl

```
      R.T.:   12.346 min
Delta R.T.:   -0.014 min
  Response: 1475787544
      Conc:  861.84 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

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/16/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.060	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.010	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.060	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	0.19	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.20	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	0.040	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.18	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.080	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	0.49	<3.0

Associated samples MP7078: D32747-1

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

13.1.1

13

ACCUTEST
LABORATORIES

D32747

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.1

13

Page 2

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.1

13

Page 2

104 of 134
D32747

```
                    MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY


                             Login Number: D32747
                          Account: XTOKRWR - XTO Energy
                             Project: PCU T35X-2G

QC Batch ID: MP7078                              Methods: SW846 6010C
Matrix Type: SOLID                                 Units: mg/kg

Prep Date:                        03/16/12
```

Metal	D32747-1 Original	MS	Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	1880	2000	207	58.0 (a)	75-125
Beryllium					
Boron					
Cadmium	0.18	44.5	51.8	85.6	75-125
Calcium					
Chromium	31.6	75.5	51.8	84.8	75-125
Cobalt					
Copper	15.5	63.7	51.8	93.1	75-125
Iron					
Lead	14.8	98.6	104	81.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	16.4	56.9	51.8	78.3	75-125
Phosphorus					
Potassium					
Selenium	0.96	86.5	104	82.6	75-125
Silicon					
Silver	0.26	19.4	20.7	92.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	48.2	87.5	51.8	75.9	75-125

Associated samples MP7078: D32747-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   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: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/16/12

Metal	D32747-1 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	1880	2000	213	56.3 (a)	0.0	20
Beryllium						
Boron						
Cadmium	0.18	45.3	53.3	84.6	1.8	20
Calcium						
Chromium	31.6	77.5	53.3	86.1	2.6	20
Cobalt						
Copper	15.5	65.1	53.3	93.0	2.2	20
Iron						
Lead	14.8	103	107	82.7	4.4	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	16.4	58.6	53.3	79.2	2.9	20
Phosphorus						
Potassium						
Selenium	0.96	87.6	107	81.3	1.3	20
Silicon						
Silver	0.26	19.8	21.3	91.6	2.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	48.2	88.9	53.3	76.4	1.6	20

Associated samples MP7078: D32747-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   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: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/16/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	193	200	96.5	80-120
Beryllium				
Boron				
Cadmium	47.5	50	95.0	80-120
Calcium				
Chromium	49.8	50	99.6	80-120
Cobalt				
Copper	49.5	50	99.0	80-120
Iron				
Lead	96.3	100	96.3	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.6	50	95.2	80-120
Phosphorus				
Potassium				
Selenium	94.2	100	94.2	80-120
Silicon				
Silver	21.0	20	105.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.4	50	94.8	80-120

Associated samples MP7078: D32747-1

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

ACCUTEST LABORATORIES

D32747

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   Units: ug/l

Prep Date: 03/16/12

Metal	D32747-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	17500	19800	13.3*(a)	0-10
Beryllium				
Boron				
Cadmium	1.70	0.00	100.0(b)	0-10
Calcium				
Chromium	293	331	12.7*(a)	0-10
Cobalt				
Copper	144	141	2.6	0-10
Iron				
Lead	138	146	5.7	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	152	178	16.9*(a)	0-10
Phosphorus				
Potassium				
Selenium	8.90	20.5	130.3(b)	0-10
Silicon				
Silver	2.40	3.50	45.8 (b)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	448	541	20.7*(a)	0-10

Associated samples MP7078: D32747-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7078   Methods: SW846 6010C
Matrix Type: SOLID   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).

13.1.4

13

D32747

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7079   Methods: SW846 6020A
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/16/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.3		
Antimony	0.20	.001	.012		
Arsenic	0.40	.049		0.056	<0.40
Barium	1.0	.0035	.025		
Beryllium	0.10	.0075	.055		
Boron	20	.97	.6		
Cadmium	0.050	.023	.034		
Calcium	200	1.8	9.5		
Chromium	1.0	.021	.041		
Cobalt	0.10	.0033	.0085		
Copper	1.0	.011	.055		
Iron	20	.81	18		
Lead	0.25	.0012	.023		
Magnesium	50	.067	.6		
Manganese	0.50	.007	.039		
Molybdenum	0.50	.0044	.025		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	6		
Selenium	0.20	.075			
Silver	0.050	.0008	.022		
Sodium	250	.8	3		
Strontium	10	.004	.024		
Thallium	0.10	.015	.013		
Tin	5.0	.006	.15		
Titanium	1.0	.035	.12		
Uranium	0.25	.00038	.008		
Vanadium	2.0	.052	.19		
Zinc	5.0	.039	.23		

Associated samples MP7079: D32747-1

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

13.2.1

13

ACCUTEST
LABORATORIES
D32747

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7079   Methods: SW846 6020A
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/16/12

Metal	D32747-1 Original	MS	Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	3.6	111	104	103.8	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7079: D32747-1

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

13.2.2

13

ACCUTEST
LABORATORIES
D32747

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7079   Methods: SW846 6020A
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/16/12

Metal	D32747-1 Original MSD		Spikelot MPICPALL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	3.6	116	107	105.4	4.4	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7079: D32747-1

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

13.2.2

13

```
                    SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY


                              Login Number: D32747
                           Account: XTOKRWR - XTO Energy
                              Project: PCU T35X-2G

QC Batch ID: MP7079                              Methods: SW846 6020A
Matrix Type: SOLID                                 Units: mg/kg

Prep Date:                    03/16/12
```

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	103	100	103.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7079: D32747-1

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

13.2.3

13

D32747

SERIAL DILUTION RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7079   Methods: SW846 6020A
Matrix Type: SOLID   Units: ug/l

Prep Date: 03/16/12

Metal	D32747-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	33.6	31.5	6.3	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7079: D32747-1

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

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7098   Methods: SW846 7471B
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/20/12

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.013	0.0016	<0.10

Associated samples MP7098: D32747-1

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

13.3.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7098   Methods: SW846 7471B
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/20/12

Metal	D32726-1 Original	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.019	0.40	0.415	91.7	75-125

Associated samples MP7098: D32747-1

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

13.3.2

13

Page 1

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7098   Methods: SW846 7471B
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/20/12

Metal	D32726-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.019	0.43	0.432	95.1	7.2	

Associated samples MP7098: D32747-1

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

13.3.2
13

D32747

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7098   Methods: SW846 7471B
Matrix Type: SOLID   Units: mg/kg

Prep Date: 03/20/12

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

Associated samples MP7098: D32747-1

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: D32747
                       Account: XTOKRWR - XTO Energy
                          Project: PCU T35X-2G
```

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   Units: ug/l

Prep Date: 03/20/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	-10	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	-9.0	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	11.0	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP7102: D32747-1A

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

13.4.1
13

ACCUTEST
LABORATORIES
D32747

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

```
                    MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY


                             Login Number: D32747
                          Account: XTOKRWR - XTO Energy
                             Project: PCU T35X-2G

QC Batch ID: MP7102                          Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS                         Units: ug/l

Prep Date:                        03/20/12
```

Metal	D32771-1A Original	MS	Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	152000	284000	125000	105.6	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	34700	163000	125000	102.6	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	128000	260000	125000	105.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7102: D32747-1A

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

ACCUTEST LABORATORIES

D32747

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   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: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   Units: ug/l

Prep Date: 03/20/12

Metal	D32771-1A Original MSD		Spikelot MPICPALL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	152000	289000	125000	109.6	1.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	34700	164000	125000	103.4	0.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	128000	264000	125000	108.8	1.5	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7102: D32747-1A

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

13.4.2

13

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   Units: ug/l

Prep Date:

Metal

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

13.4.2

13

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   Units: ug/l

Prep Date: 03/20/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	128000	125000	102.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	126000	125000	100.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	129000	125000	103.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7102: D32747-1A

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

13.4.3

13

ACCUTEST LABORATORIES

D32747

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

QC Batch ID: MP7102   Methods: SW846 6010C, USDA HANDBOOK 60
Matrix Type: AQUEOUS   Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

13.4.3

13

Page 2

129 of 134
ACCUTEST LABORATORIES
D32747

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

14

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP6737/GN14152	1.0	0.0	mg/kg	185	178	96.4	80-120%
Specific Conductivity	GP6755/GN14169	1.0	<1.0	umhos/cm	9967	9890	99.2	90-110%
pH	GN14113			su	8.00	7.96	99.5	99.3-100.7%

Associated Samples:
Batch GN14113: D32747-1
Batch GP6737: D32747-1
Batch GP6755: D32747-1
(*) Outside of QC limits

Page 1

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP6737/GN14152	D32651-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN14122	D32747-1	mv	377	361	4.3	0-20%

Associated Samples:
Batch GN14122: D32747-1
Batch GP6737: D32747-1
(*) Outside of QC limits

ACCUTEST
LABORATORIES

D32747

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP6737/GN14152	D32651-1	mg/kg	0.0	40	46.1	115.0	75-125%

Associated Samples:
Batch GP6737: D32747-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

ACCUTEST
LABORATORIES
D32747

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D32747
Account: XTOKRWR - XTO Energy
Project: PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP6737/GN14152	D32651-1	mg/kg	0.0	40	44.3	4.1	

Associated Samples:
Batch GP6737: D32747-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

14.4

14

D32747