



12/17/12

Technical Report for

XTO Energy

XTO Love Ranch 8

1108-07A

Accutest Job Number: D41662

Sampling Date: 12/06/12

Report to:

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Total number of pages in report: 145



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.


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

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D41662

XTO Love Ranch 8
Project No: 1108-07A

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D41662-1	12/06/12	10:40	DS	12/08/12	SO	Soil	FW SUBLINER (COMP.)
D41662-1A	12/06/12	10:40	DS	12/08/12	SO	Soil	FW SUBLINER (COMP.)

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D41662

Site: XTO Love Ranch 8

Report Date 12/17/2012 10:50:25 A

On 12/08/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D41662 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO	Batch ID: V5V1520
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41645-6MS, D41645-6MSD were used as the QC samples indicated.
- The RPD(s) for the MS and MSD recoveries of Ethylbenzene, Xylene (total) are outside control limits for sample D41645-6MSD. Variability of recovery may be due to sample matrix/homogeneity.
- D41645-6MSD: Variability of recovery may be due to sample matrix/homogeneity.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP7075
------------------	-------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D41381-1MS, D41381-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8015B

Matrix SO	Batch ID: GGB1026
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41665-1MS, D41665-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO	Batch ID: OP7086
------------------	-------------------------

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D41662-1MS, D41662-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The RPD(s) for the MS and MSD recoveries of TPH-DRO (C10-C28) are outside control limits for sample OP7086-MSD. Variability of recovery may be due to sample matrix/homogeneity.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP9064

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16439-1MS, MC16439-1MSD, MC16439-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Calcium, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- MP9064-MB1 for Sodium: All sample results >10x method blank concentration.

Matrix SO

Batch ID: MP9037

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41644-1MS, D41644-1MSD, D41644-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Nickel, Zinc are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Barium are outside control limits for sample MP9037-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Chromium, Nickel, Zinc are outside control limits for sample MP9037-SD1. Probable cause due to sample homogeneity.
- MP9037-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP9037-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP9037-SD1 for Chromium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP9038

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41644-1MS, D41644-1MSD, D41644-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP9051

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41644-1MS, D41644-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN18022

- Sample(s) D41662-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN18042
------------------	--------------------------

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: GP8865
------------------	-------------------------

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41644-1DUP, D41644-1MS, D41644-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix SO	Batch ID: R15425
------------------	-------------------------

- The data for SW846 3060A/7196A M meets quality control requirements.
- D41662-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix SO	Batch ID: GN18017
------------------	--------------------------

- The following samples were run outside of holding time for method SW846 9045D: D41662-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO	Batch ID: MP9064
------------------	-------------------------

- D41662-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Job Number: D41662
Account: XTO Energy
Project: XTO Love Ranch 8
Collected: 12/06/12

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

D41662-1 FW SUBLINER (COMP.)

Anthracene	0.0369	0.0094	0.0049	mg/kg	SW846 8270C BY SIM
Chrysene	0.0145	0.0094	0.0049	mg/kg	SW846 8270C BY SIM
Fluoranthene	0.0117	0.0094	0.0049	mg/kg	SW846 8270C BY SIM
Fluorene	0.0716	0.0094	0.0049	mg/kg	SW846 8270C BY SIM
Naphthalene	0.0548	0.013	0.012	mg/kg	SW846 8270C BY SIM
Pyrene	0.0213	0.0094	0.0049	mg/kg	SW846 8270C BY SIM
TPH-GRO (C6-C10)	7.25 J	12	6.2	mg/kg	SW846 8015B
TPH-DRO (C10-C28)	560	7.5	4.5	mg/kg	SW846-8015B
Arsenic	7.1	0.11		mg/kg	SW846 6020A
Barium	1870	1.1		mg/kg	SW846 6010C
Chromium	25.7	1.1		mg/kg	SW846 6010C
Copper	11.4	1.1		mg/kg	SW846 6010C
Lead	10.3	5.5		mg/kg	SW846 6010C
Nickel	13.8	3.3		mg/kg	SW846 6010C
Zinc	37.0	3.3		mg/kg	SW846 6010C
Specific Conductivity	1370	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	25.7	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	112			mv	ASTM D1498-76M
pH	9.91			su	SW846 9045D

D41662-1A FW SUBLINER (COMP.)

Calcium	23.3	2.0		mg/l	SW846 6010C
Magnesium	6.43	1.0		mg/l	SW846 6010C
Sodium	282	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	13.3			ratio	USDA HANDBOOK 60

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

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

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER (COMP.)	Date Sampled:	12/06/12
Lab Sample ID:	D41662-1	Date Received:	12/08/12
Matrix:	SO - Soil	Percent Solids:	88.7
Method:	SW846 8260B		
Project:	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V24927.D	1	12/11/12	BD	n/a	n/a	V5V1520
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.062	0.031	mg/kg	
108-88-3	Toluene	ND	0.12	0.062	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	101%		64-130%
460-00-4	4-Bromofluorobenzene	97%		62-131%
17060-07-0	1,2-Dichloroethane-D4	100%		70-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER (COMP.)			Date Sampled:	12/06/12
Lab Sample ID:	D41662-1			Date Received:	12/08/12
Matrix:	SO - Soil			Percent Solids:	88.7
Method:	SW846 8270C BY SIM SW846 3546				
Project:	XTO Love Ranch 8				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12519.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0094	0.0049	mg/kg	
120-12-7	Anthracene	0.0369	0.0094	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0094	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0094	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0094	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0094	0.0049	mg/kg	
218-01-9	Chrysene	0.0145	0.0094	0.0049	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0094	0.0049	mg/kg	
206-44-0	Fluoranthene	0.0117	0.0094	0.0049	mg/kg	
86-73-7	Fluorene	0.0716	0.0094	0.0049	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0094	0.0049	mg/kg	
91-20-3	Naphthalene	0.0548	0.013	0.012	mg/kg	
129-00-0	Pyrene	0.0213	0.0094	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	61%		10-159%
321-60-8	2-Fluorobiphenyl	56%		19-131%
1718-51-0	Terphenyl-d14	82%		18-150%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	FW SUBLINER (COMP.)			Date Sampled:	12/06/12
Lab Sample ID:	D41662-1			Date Received:	12/08/12
Matrix:	SO - Soil			Percent Solids:	88.7
Method:	SW846 8015B				
Project:	XTO Love Ranch 8				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18850.D	1	12/10/12	SK	n/a	n/a	GGB1026
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)	7.25	12	6.2	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	98%		60-140%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER (COMP.)			Date Sampled:	12/06/12
Lab Sample ID:	D41662-1			Date Received:	12/08/12
Matrix:	SO - Soil			Percent Solids:	88.7
Method:	SW846-8015B SW846 3546				
Project:	XTO Love Ranch 8				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD20459.D	1	12/12/12	AV	12/11/12	OP7086	GFD1023
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	560	7.5	4.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	45%		35-130%		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FW SUBLINER (COMP.)	Date Sampled:	12/06/12
Lab Sample ID:	D41662-1	Date Received:	12/08/12
Matrix:	SO - Soil	Percent Solids:	88.7
Project:	XTO Love Ranch 8		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	7.1	0.11	mg/kg	5	12/10/12	12/15/12 JM	SW846 6020A ³	SW846 3050B ⁵
Barium	1870	1.1	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Chromium	25.7	1.1	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Copper	11.4	1.1	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Lead	10.3	5.5	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.085	0.085	mg/kg	1	12/11/12	12/11/12 JB	SW846 7471B ²	SW846 7471B ⁶
Nickel	13.8	3.3	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.5	5.5	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.3	3.3	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴
Zinc	37.0	3.3	mg/kg	1	12/10/12	12/10/12 JB	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA3069

(2) Instrument QC Batch: MA3072

(3) Instrument QC Batch: MA3085

(4) Prep QC Batch: MP9037

(5) Prep QC Batch: MP9038

(6) Prep QC Batch: MP9051

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FW SUBLINER (COMP.)	Date Sampled:	12/06/12
Lab Sample ID:	D41662-1	Date Received:	12/08/12
Matrix:	SO - Soil	Percent Solids:	88.7
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1370	1.0	umhos/cm	1	12/12/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	12/11/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	25.7	2.1	mg/kg	1	12/11/12	KB	SW846 3060A/7196A M
Redox Potential Vs H2	112		mv	1	12/10/12	JD	ASTM D1498-76M
Solids, Percent	88.7		%	1	12/11/12	SWT	SM19 2540B M
pH	9.91		su	1	12/10/12 14:30	JK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: FW SUBLINER (COMP.)
Lab Sample ID: D41662-1A
Matrix: SO - Soil
Project: XTO Love Ranch 8

Date Sampled: 12/06/12
Date Received: 12/08/12
Percent Solids: 88.7

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	23.3	2.0	mg/l	1	12/12/12	12/12/12 JB	SW846 6010C ¹	SW846 3010A/M ³
Magnesium	6.43	1.0	mg/l	1	12/12/12	12/12/12 JB	SW846 6010C ¹	SW846 3010A/M ³
Sodium	282	2.0	mg/l	1	12/13/12	12/13/12 JB	SW846 6010C ²	SW846 3010A/M ³

- (1) Instrument QC Batch: MA3077
(2) Instrument QC Batch: MA3081
(3) Prep QC Batch: MP9064

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID:	FW SUBLINER (COMP.)	Date Sampled:	12/06/12
Lab Sample ID:	D41662-1A	Date Received:	12/08/12
Matrix:	SO - Soil	Percent Solids:	88.7
Project:	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	13.3		ratio	1	12/13/12 15:33	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D41662

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 12/8/2012 9:00:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO LOVE RANCH 8

Airbill #'s: FX

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

Accutest Laboratories
V: (303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

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

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1520-MB	5V24915.D	1	12/11/12	BD	n/a	n/a	V5V1520

The QC reported here applies to the following samples:

Method: SW846 8260B

D41662-1

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

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	100% 64-130%
460-00-4	4-Bromofluorobenzene	93% 62-131%
17060-07-0	1,2-Dichloroethane-D4	103% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1520-BS	5V24916.D	1	12/11/12	BD	n/a	n/a	V5V1520

The QC reported here applies to the following samples:

Method: SW846 8260B

D41662-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	54.6	109	70-130
100-41-4	Ethylbenzene	50	54.1	108	70-130
108-88-3	Toluene	50	54.0	108	70-130
1330-20-7	Xylene (total)	150	168	112	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	101%	64-130%
460-00-4	4-Bromofluorobenzene	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	100%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41645-6MS	5V24918.D	1	12/11/12	BD	n/a	n/a	V5V1520
D41645-6MSD ^a	5V24919.D	1	12/11/12	BD	n/a	n/a	V5V1520
D41645-6	5V24917.D	1	12/11/12	BD	n/a	n/a	V5V1520

The QC reported here applies to the following samples:

Method: SW846 8260B

D41662-1

CAS No.	Compound	D41645-6 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	328		3290	3590	99	2640	70	30	64-139/30
100-41-4	Ethylbenzene	133		3290	3480	102	2520	73	32*	68-136/30
108-88-3	Toluene	732		3290	3850	95	2870	65	29	60-130/30
1330-20-7	Xylene (total)	664		9870	10900	104	7990	74	31*	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D41645-6	Limits
2037-26-5	Toluene-D8	101%	102%	100%	64-130%
460-00-4	4-Bromofluorobenzene	104%	101%	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	102%	103%	103%	70-130%

(a) Variability of recovery may be due to sample matrix/homogeneity.

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5121112.S\
 Data File : 5V24927.D
 Acq On : 11 Dec 2012 6:34 pm
 Operator : BRETD
 Sample : D41662-1
 Misc : MS5092,V5V1520,5.043,,100,5,1
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 12 09:01:46 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
 Quant Title : 8260
 QLast Update : Wed Nov 14 09:54:38 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.624	168	459799	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.423	114	579240	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.072	117	545733	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	390869	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.012	102	39259	50.17	ug/l	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.34%
61) Toluene-d8	13.816	98	655441	50.70	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.40%
69) 4-Bromofluorobenzene	16.020	95	271135	48.66	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.32%

Target Compounds

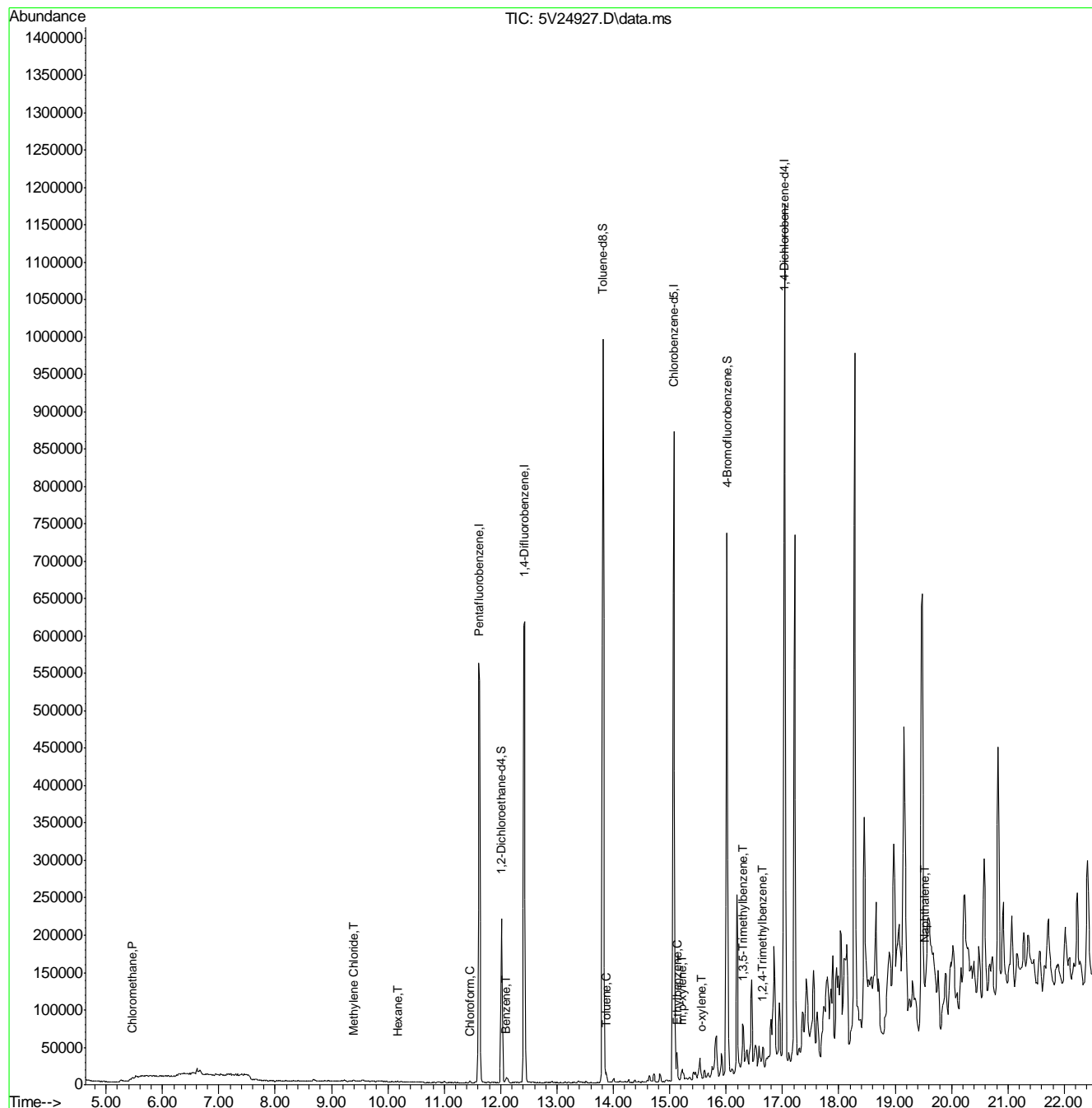
						Qvalue
4) Chloromethane	5.470	50	412	0.08	ug/l	66
17) Methylene Chloride	9.386	84	588	0.14	ug/l	88
29) Chloroform	11.453	83	1442	0.21	ug/l	93
41) Hexane	10.174	57	180	0.03	ug/l	100
50) Benzene	12.092	78	5982	0.39	ug/l	100
62) Toluene	13.873	92	3350	0.33	ug/l	92
66) Ethylbenzene	15.141	91	4795	0.25	ug/l	100
72) m,p-xylene	15.220	106	4640	0.60	ug/l	97
73) o-xylene	15.563	106	875	0.11	ug/l	75
80) 1,3,5-Trimethylbenzene	16.305	105	29275	1.64	ug/l	91
82) 1,2,4-Trimethylbenzene	16.648	105	7147	0.38	ug/l	93
91) Naphthalene	19.525	128	16917	0.87	ug/l	100

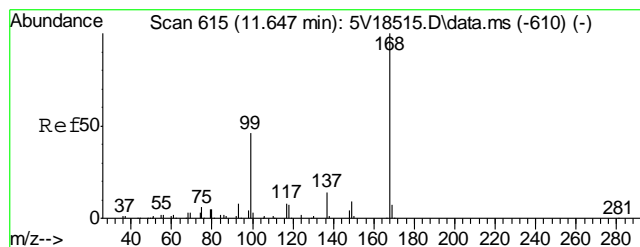
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5121112.S\
Data File : 5V24927.D
Acq On : 11 Dec 2012 6:34 pm
Operator : BRETD
Sample : D41662-1
Misc : MS5092,V5V1520,5.043,,100,5,1
ALS Vial : 16 Sample Multiplier: 1

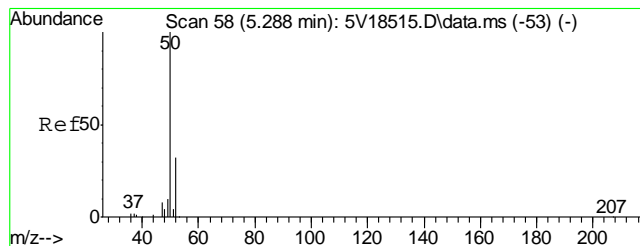
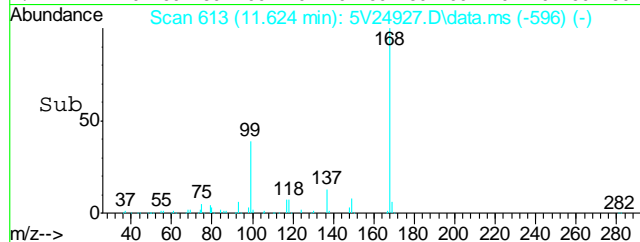
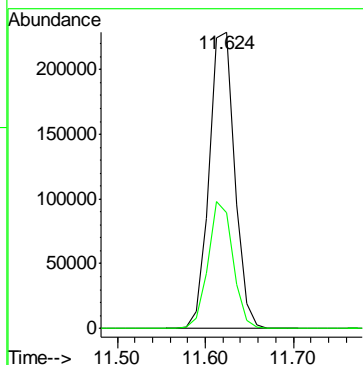
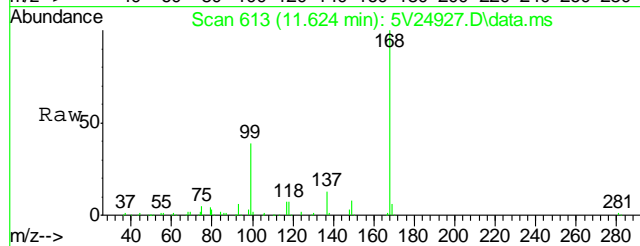
Quant Time: Dec 12 09:01:46 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:54:38 2012
Response via : Initial Calibration





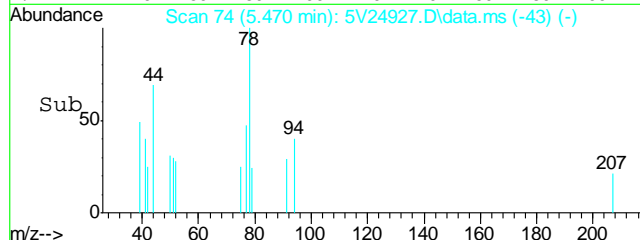
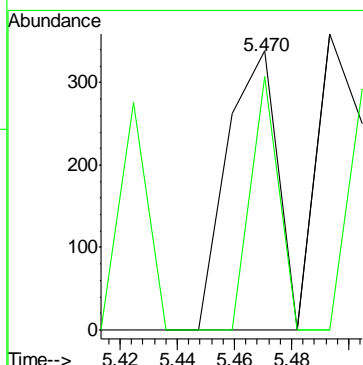
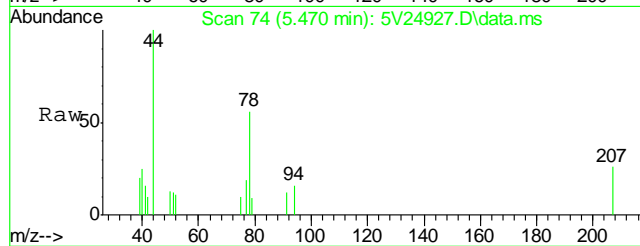
#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.624 min Scan# 613
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

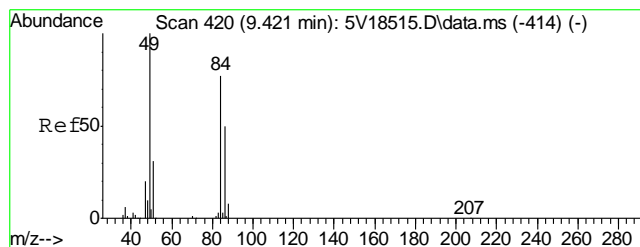
Tgt Ion: 168 Resp: 459799
Ion Ratio Lower Upper
168 100
99 41.7 37.4 56.2



#4
Chloromethane
Concen: 0.08 ug/l
RT: 5.470 min Scan# 74
Delta R.T. 0.205 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

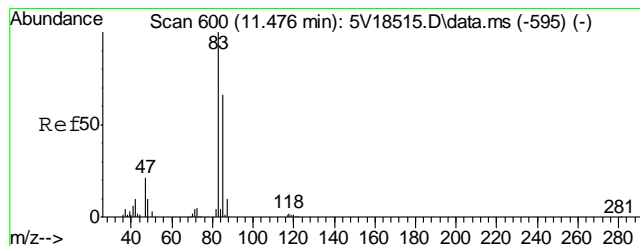
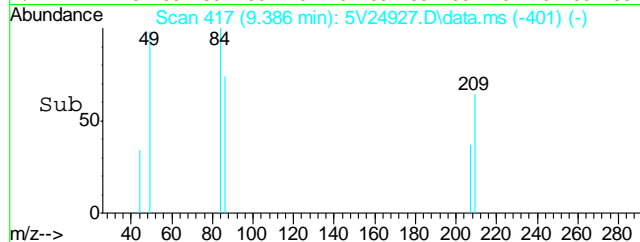
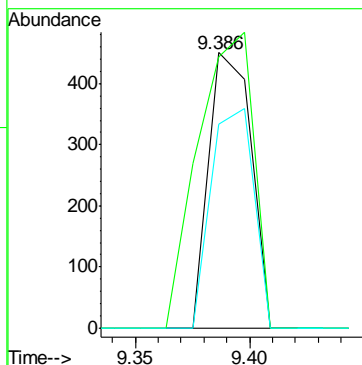
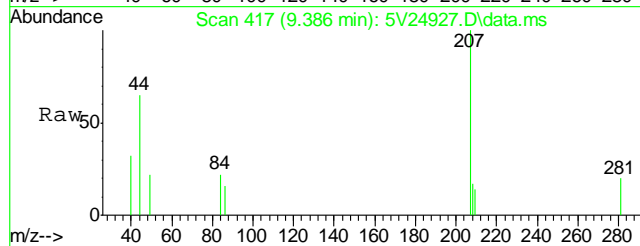
Tgt Ion: 50 Resp: 412
Ion Ratio Lower Upper
50 100
52 51.0 12.1 52.1





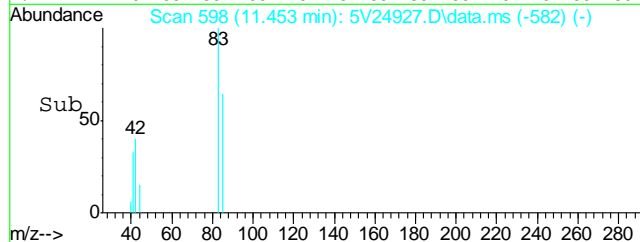
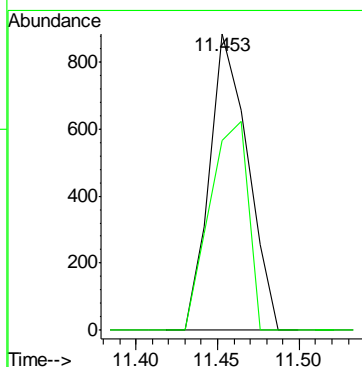
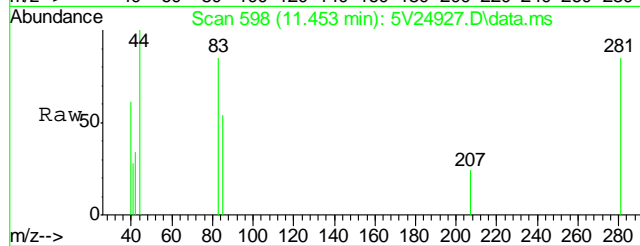
#17
Methylene Chloride
Concen: 0.14 ug/l
RT: 9.386 min Scan# 417
Delta R.T. -0.012 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

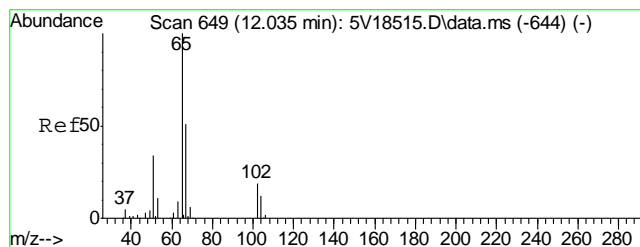
Tgt Ion	Ratio	Lower	Upper
84	100		
49	139.6	110.4	150.4
86	80.8	44.0	84.0



#29
Chloroform
Concen: 0.21 ug/l
RT: 11.453 min Scan# 598
Delta R.T. -0.012 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

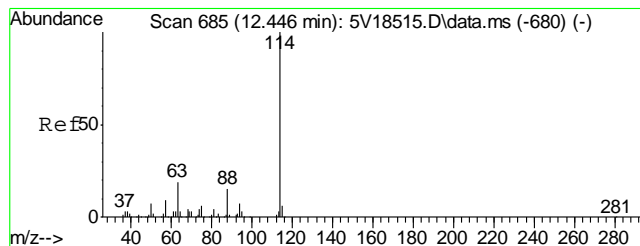
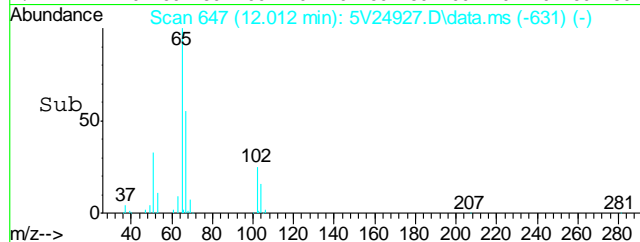
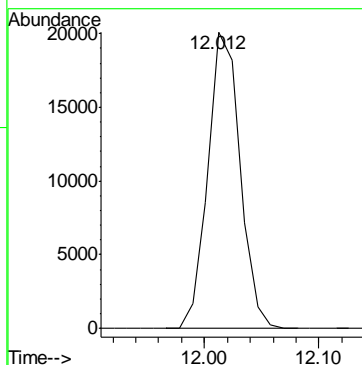
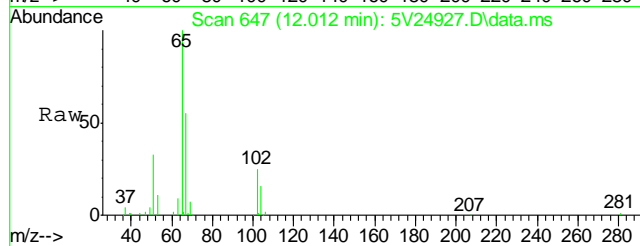
Tgt Ion	Ratio	Lower	Upper
83	100		
85	70.3	44.9	84.9





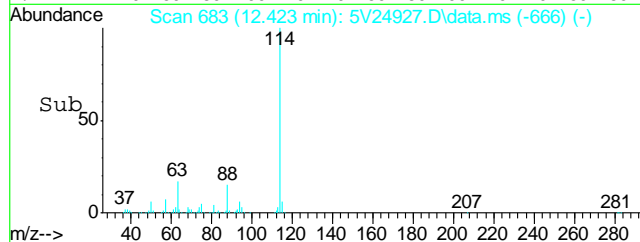
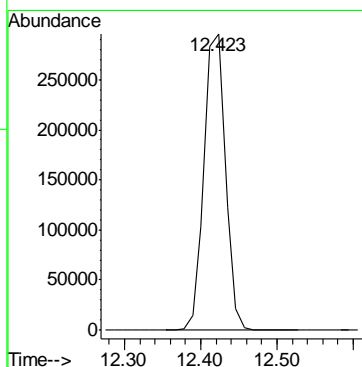
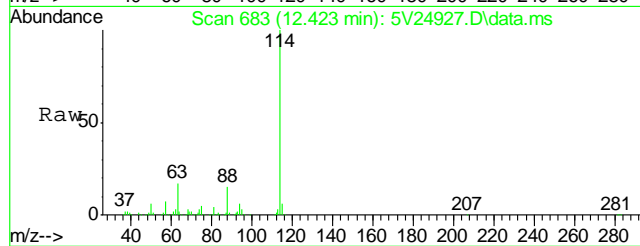
#33
1,2-Dichloroethane-d4
Concen: 50.17 ug/l
RT: 12.012 min Scan# 647
Delta R.T. -0.012 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

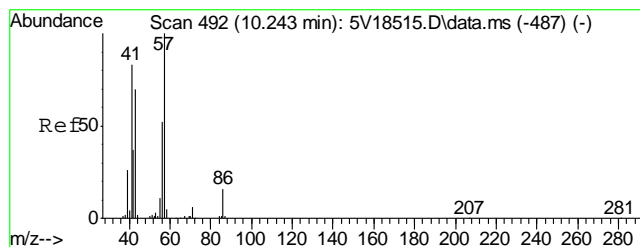
Tgt Ion:102 Resp: 39259



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.423 min Scan# 683
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

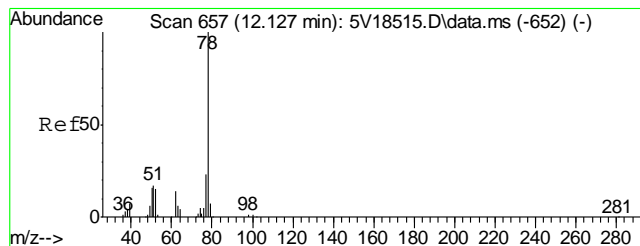
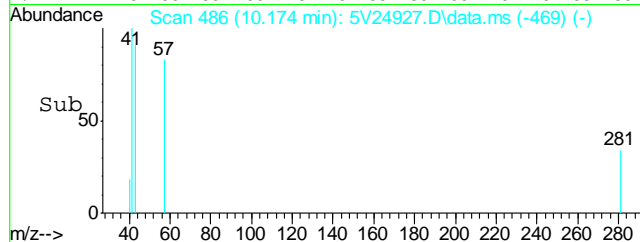
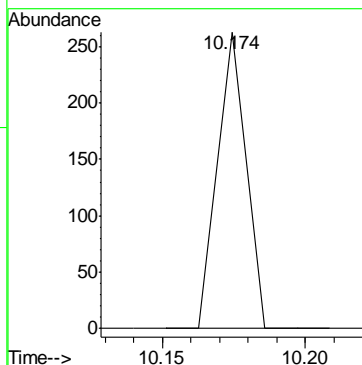
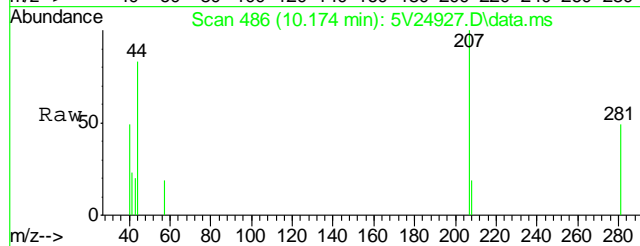
Tgt Ion:114 Resp: 579240





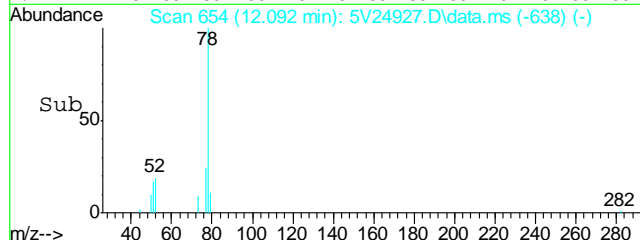
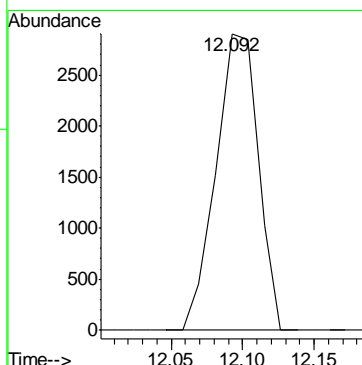
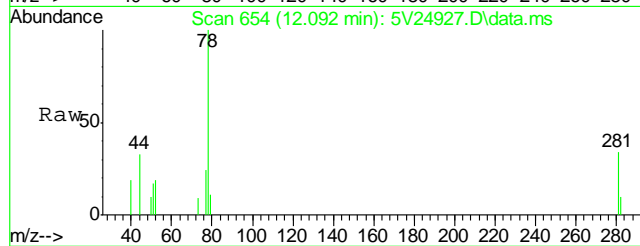
#41
Hexane
Concen: 0.03 ug/l
RT: 10.174 min Scan# 486
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

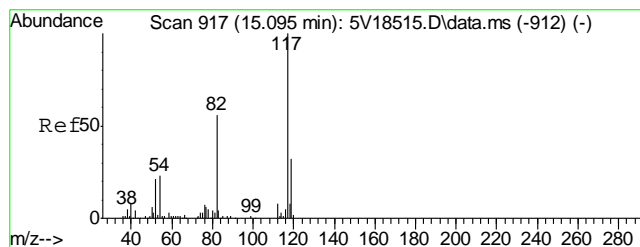
Tgt Ion: 57 Resp: 180



#50
Benzene
Concen: 0.39 ug/l
RT: 12.092 min Scan# 654
Delta R.T. -0.012 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

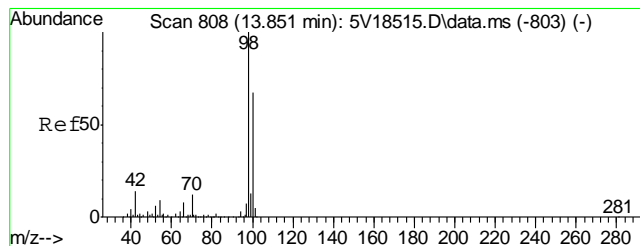
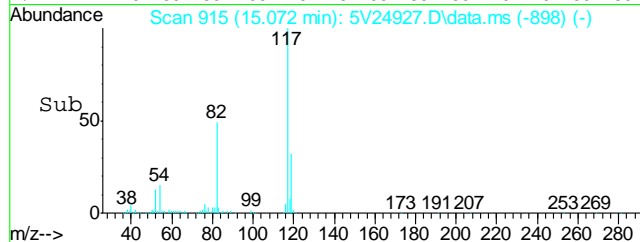
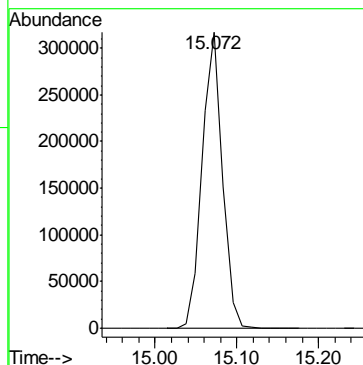
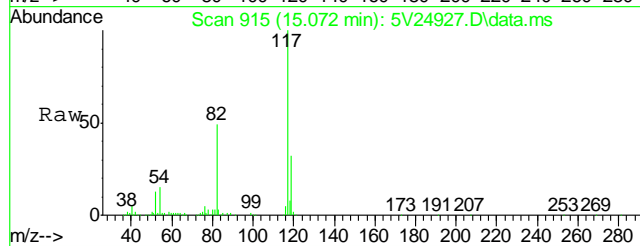
Tgt Ion: 78 Resp: 5982





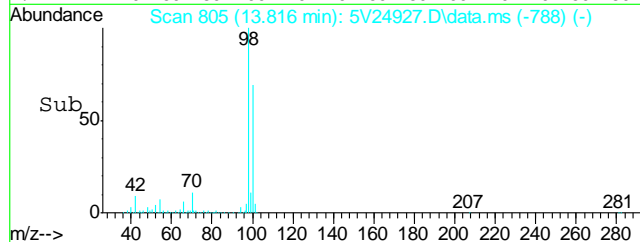
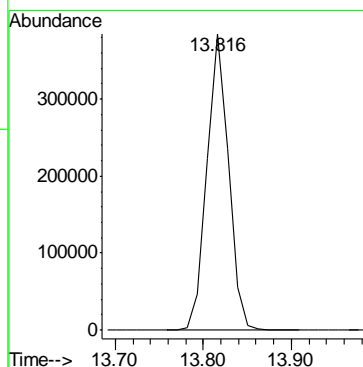
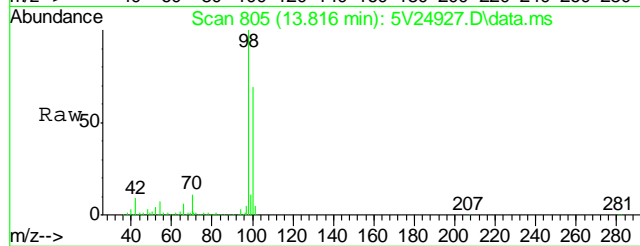
#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.072 min Scan# 915
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

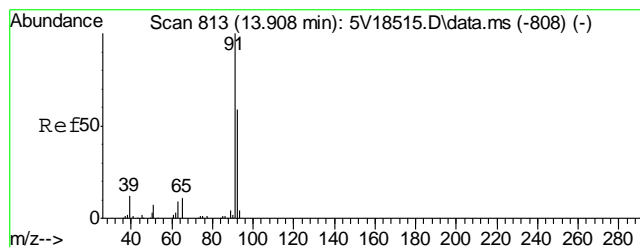
Tgt Ion:117 Resp: 545733



#61
Toluene-d8
Concen: 50.70 ug/l
RT: 13.816 min Scan# 805
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

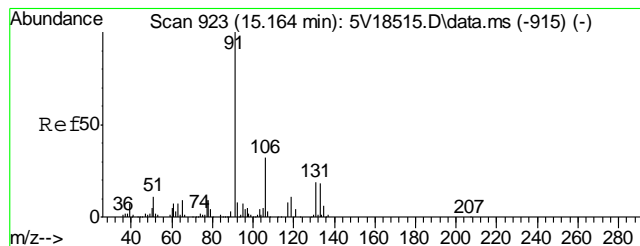
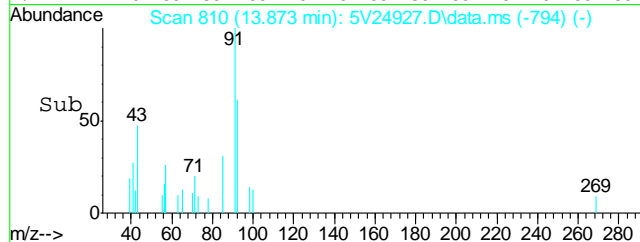
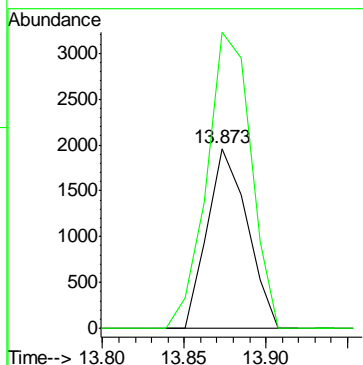
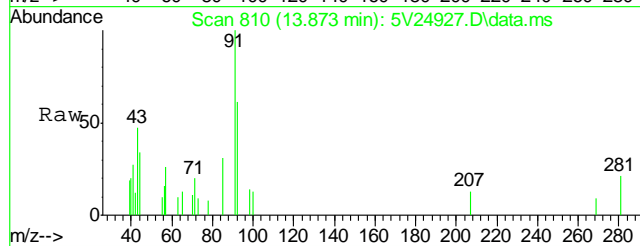
Tgt Ion: 98 Resp: 655441





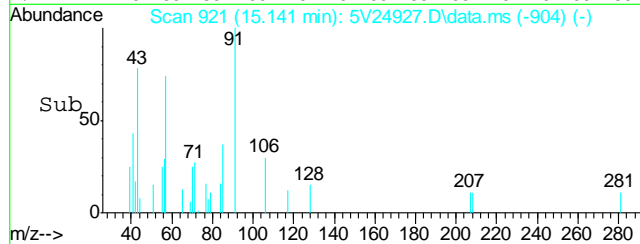
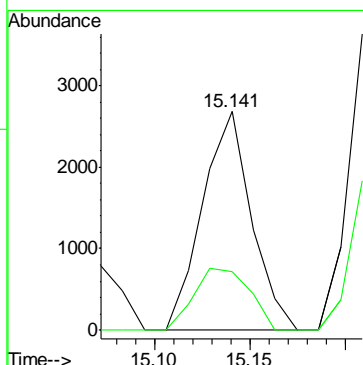
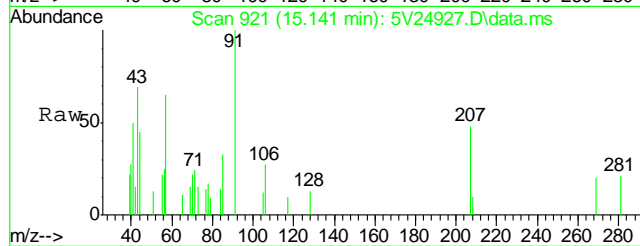
#62
Toluene
Concen: 0.33 ug/l
RT: 13.873 min Scan# 810
Delta R.T. -0.012 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

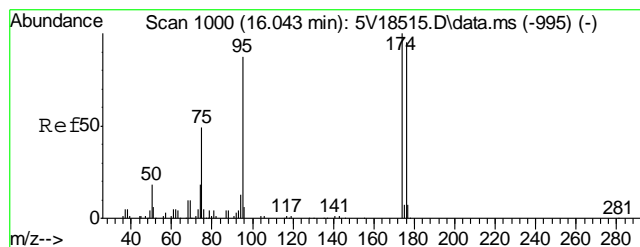
Tgt Ion: 92 Resp: 3350
Ion Ratio Lower Upper
92 100
91 180.5 149.8 189.8



#66
Ethylbenzene
Concen: 0.25 ug/l
RT: 15.141 min Scan# 921
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

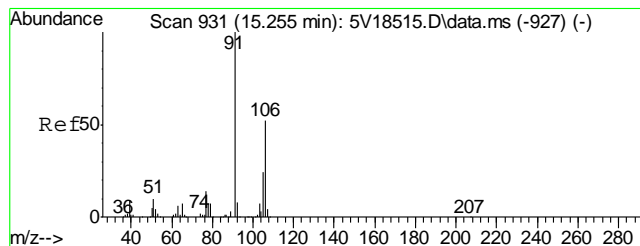
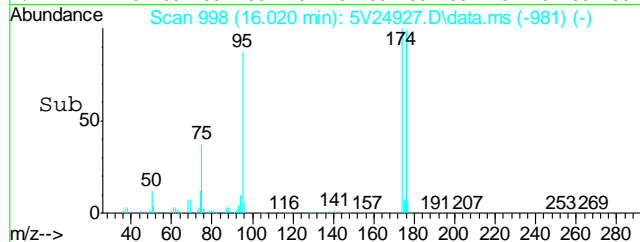
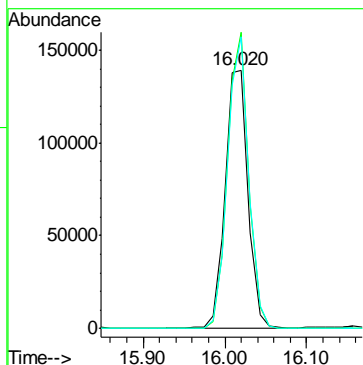
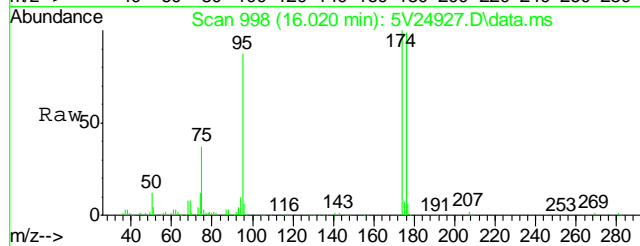
Tgt Ion: 91 Resp: 4795
Ion Ratio Lower Upper
91 100
106 31.9 11.7 51.7





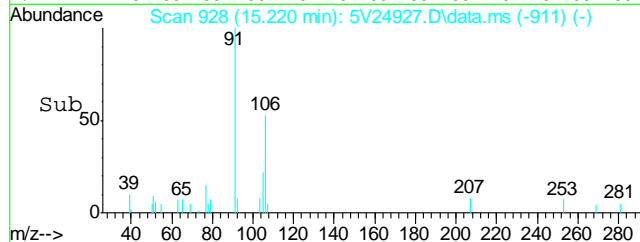
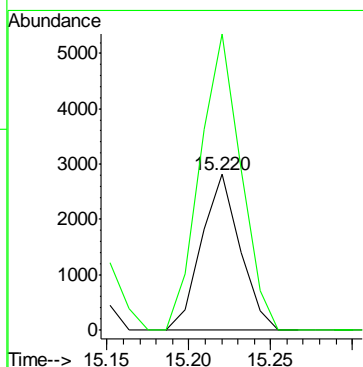
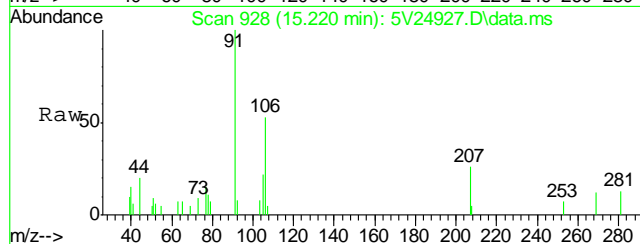
#69
4-Bromofluorobenzene
Concen: 48.66 ug/l
RT: 16.020 min Scan# 998
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

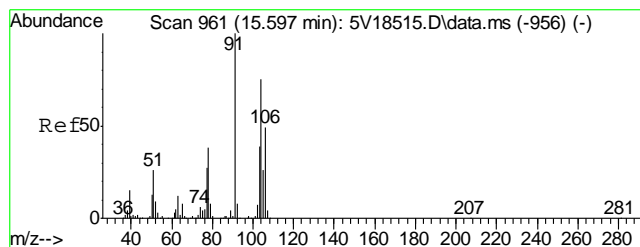
Tgt Ion	Resp	Lower	Upper
95	271135		
174	105.3	77.1	117.1
176	104.5	73.4	113.4



#72
m,p-xylene
Concen: 0.60 ug/l
RT: 15.220 min Scan# 928
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

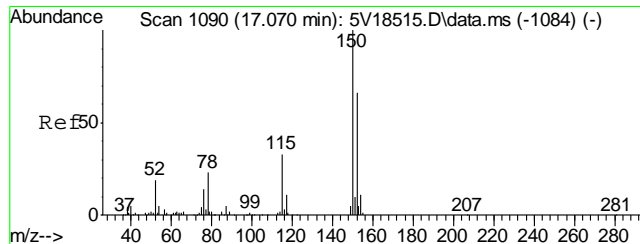
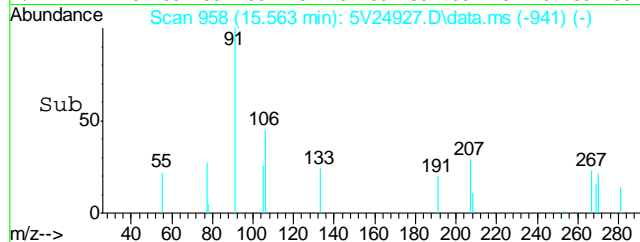
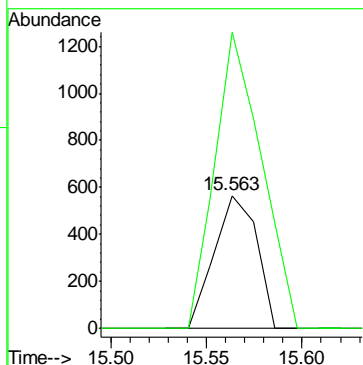
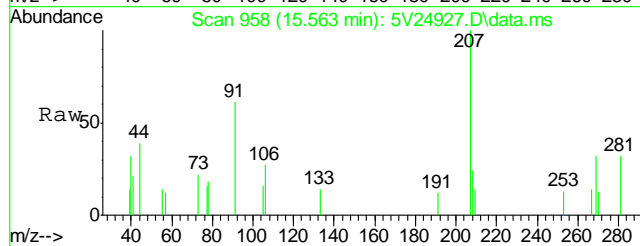
Tgt Ion	Resp	Lower	Upper
106	4640		
91	200.9	177.1	217.1





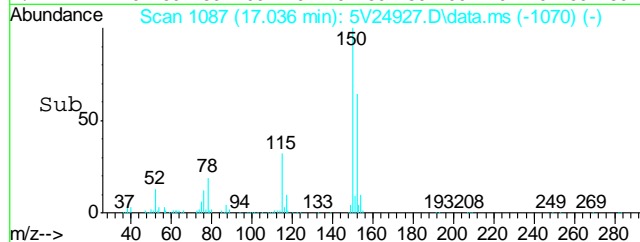
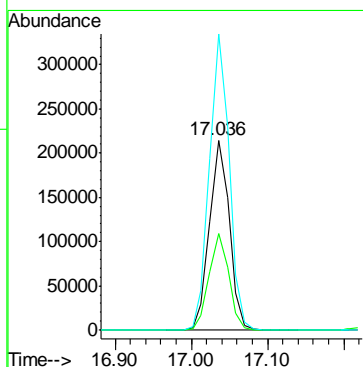
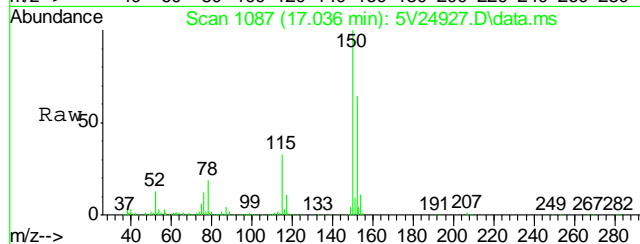
#73
o-xylene
Concen: 0.11 ug/l
RT: 15.563 min Scan# 958
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

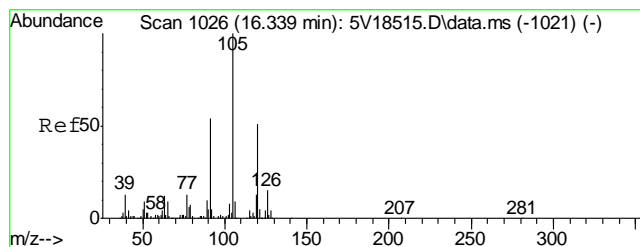
Tgt Ion:106 Resp: 875
Ion Ratio Lower Upper
106 100
91 246.3 166.6 249.8



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

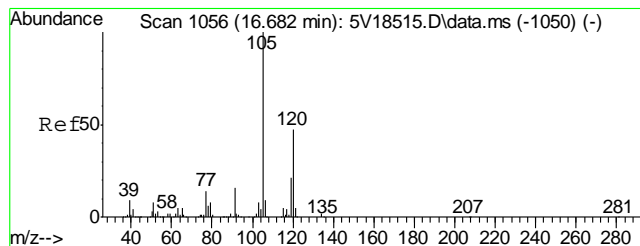
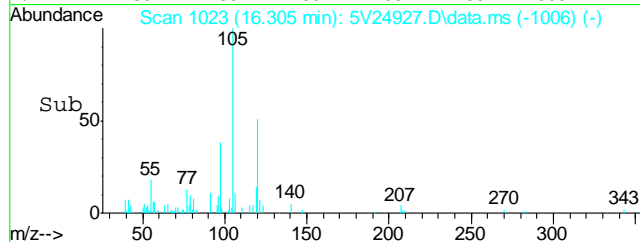
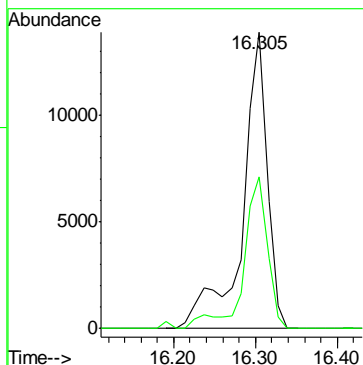
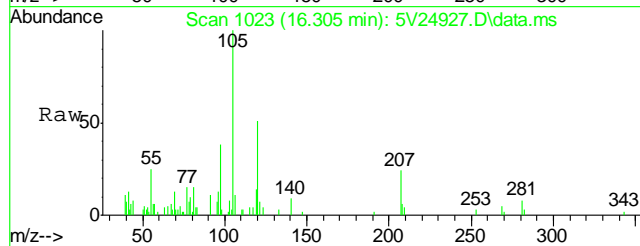
Tgt Ion:152 Resp: 390869
Ion Ratio Lower Upper
152 100
115 50.4 41.4 62.0
150 154.3 153.9 230.9





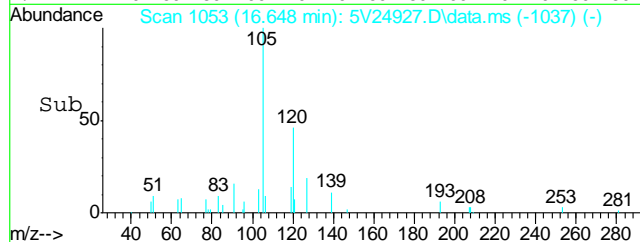
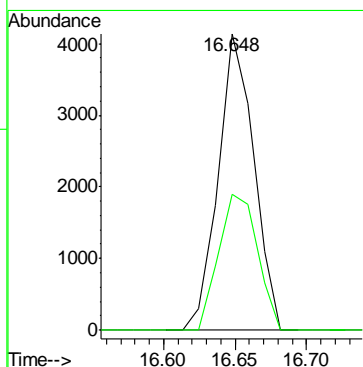
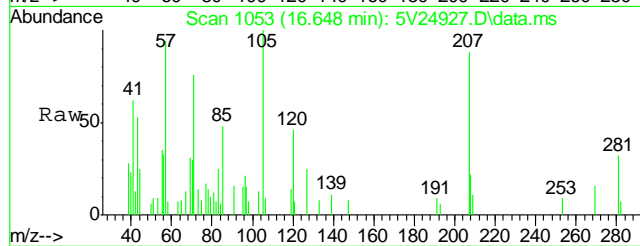
#80
1,3,5-Trimethylbenzene
Concen: 1.64 ug/l
RT: 16.305 min Scan# 1023
Delta R.T. -0.000 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

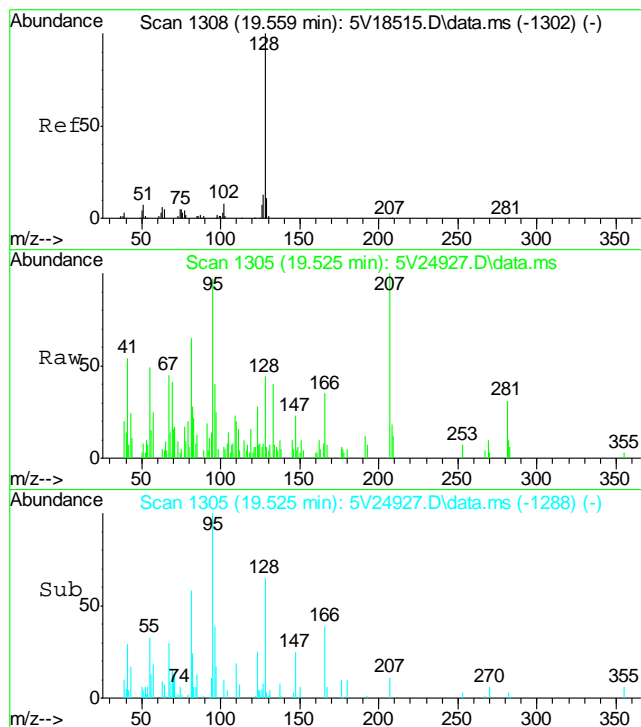
Tgt Ion	Ratio	Lower	Upper
105	100		
120	44.0	40.1	60.1



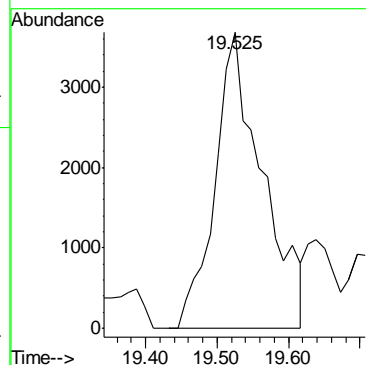
#82
1,2,4-Trimethylbenzene
Concen: 0.38 ug/l
RT: 16.648 min Scan# 1053
Delta R.T. -0.012 min
Lab File: 5V24927.D
Acq: 11 Dec 2012 6:34 pm

Tgt Ion	Ratio	Lower	Upper
105	100		
120	49.8	43.8	65.8





#91
 Naphthalene
 Concen: 0.87 ug/l
 RT: 19.525 min Scan# 1305
 Delta R.T. -0.000 min
 Lab File: 5V24927.D
 Acq: 11 Dec 2012 6:34 pm
 Tgt Ion:128 Resp: 16917



7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5121112.S\
Data File : 5V24915.D
Acq On : 11 Dec 2012 11:59 am
Operator : BRETD
Sample : MB
Misc : MS5092,V5V1520,5.00,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 12 08:21:23 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:54:38 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.624	168	420896	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.423	114	524960	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.072	117	498585	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	344291	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.012	102	36929	51.55	ug/l	-0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	103.10%
61) Toluene-d8	13.816	98	591484	50.08	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.16%
69) 4-Bromofluorobenzene	16.020	95	237416	46.64	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.28%

Target Compounds

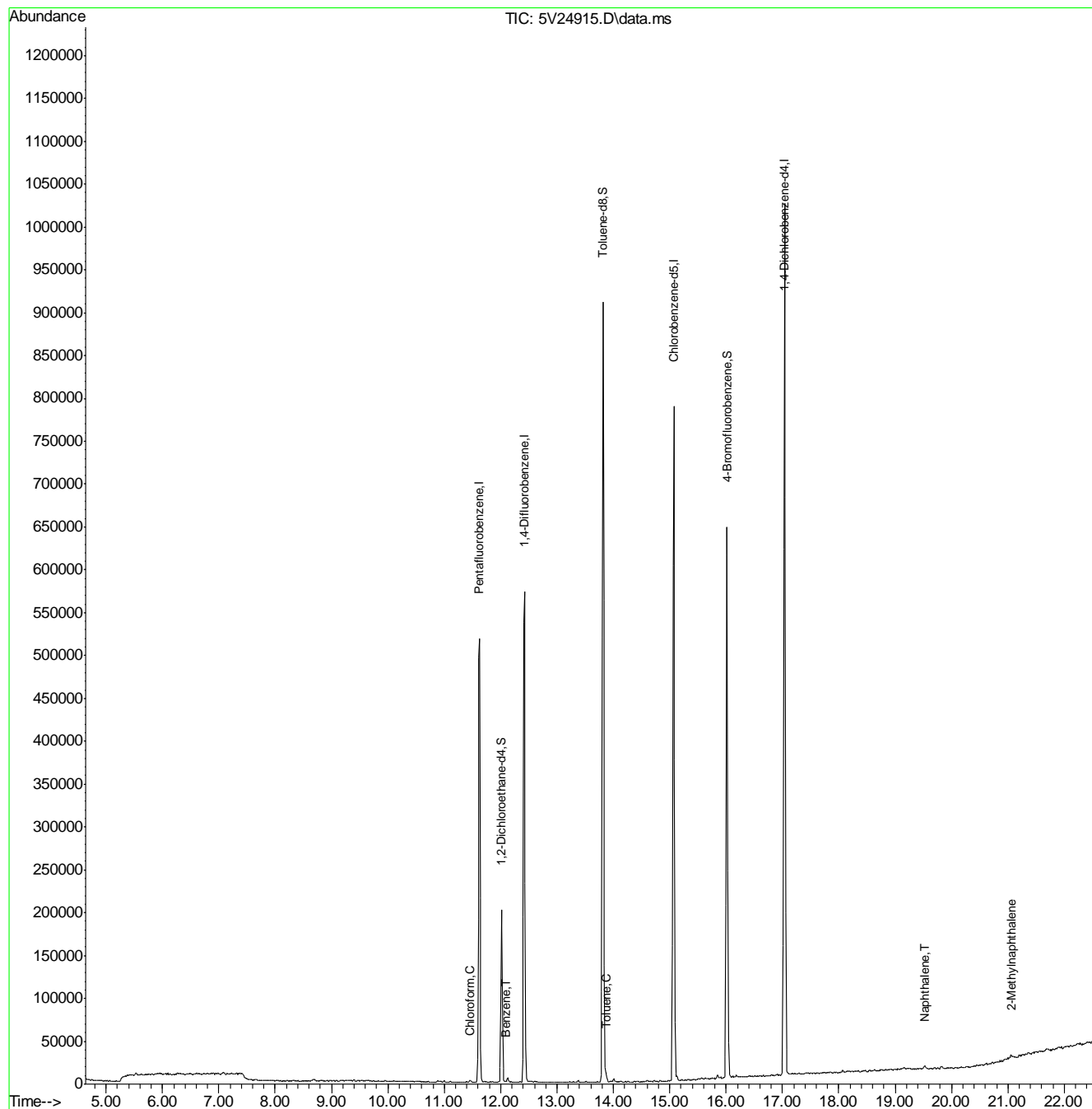
						Qvalue
29) Chloroform	11.453	83	1673	0.27	ug/l	87
50) Benzene	12.092	78	1054	0.08	ug/l	100
62) Toluene	13.873	92	1302	0.14	ug/l	95
91) Naphthalene	19.525	128	5284	0.31	ug/l	100
94) 2-Methylnaphthalene	21.055	142	1310	5.14	ug/l	91

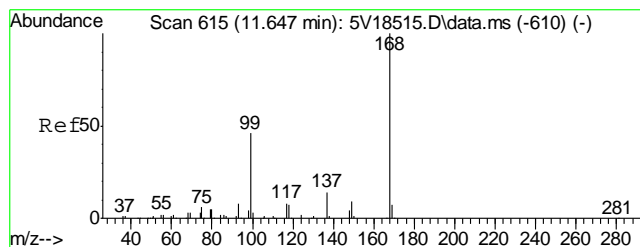
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5121112.S\
Data File : 5V24915.D
Acq On : 11 Dec 2012 11:59 am
Operator : BRETD
Sample : MB
Misc : MS5092,V5V1520,5.00,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

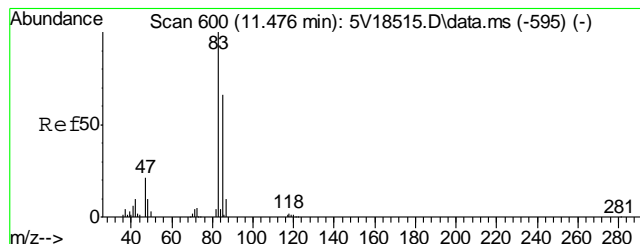
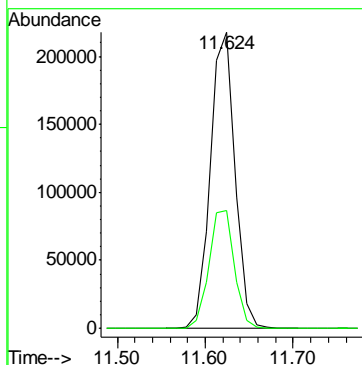
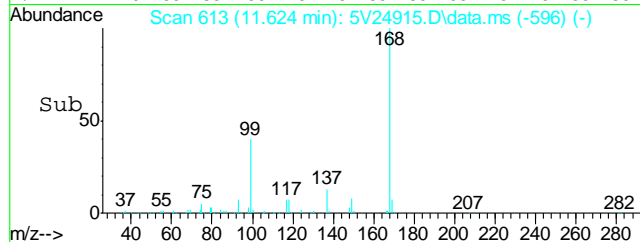
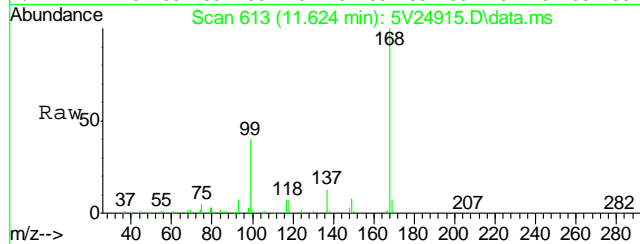
Quant Time: Dec 12 08:21:23 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1497TVH1497.M
Quant Title : 8260
QLast Update : Wed Nov 14 09:54:38 2012
Response via : Initial Calibration





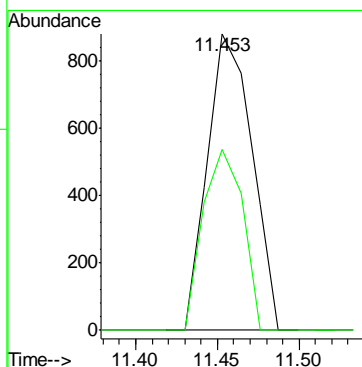
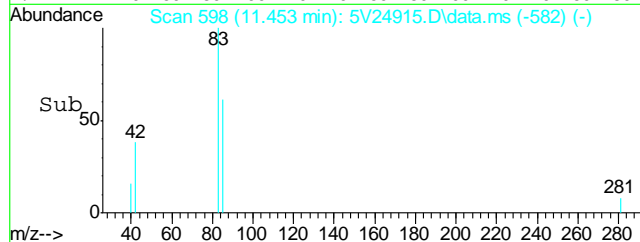
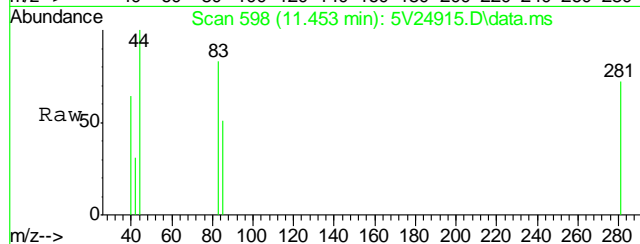
#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.624 min Scan# 613
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

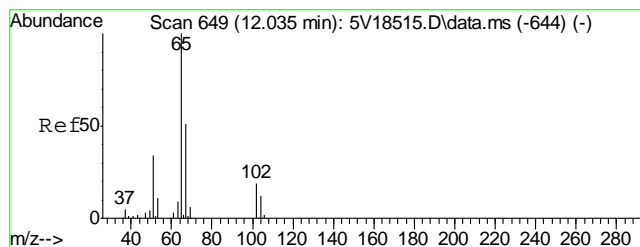
Tgt Ion: 168 Resp: 420896
Ion Ratio Lower Upper
168 100
99 41.1 37.4 56.2



#29
Chloroform
Concen: 0.27 ug/l
RT: 11.453 min Scan# 598
Delta R.T. -0.012 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

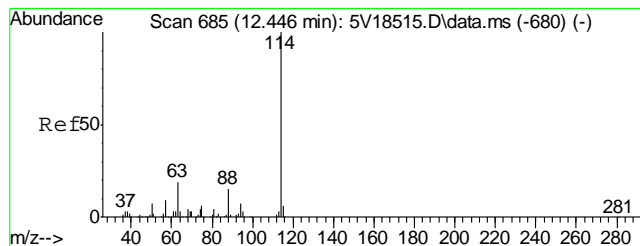
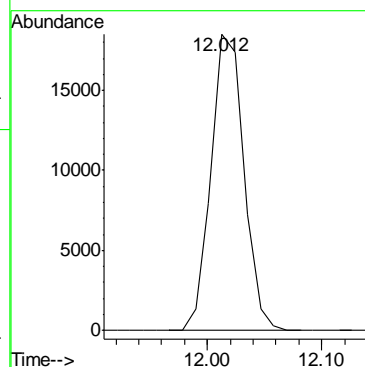
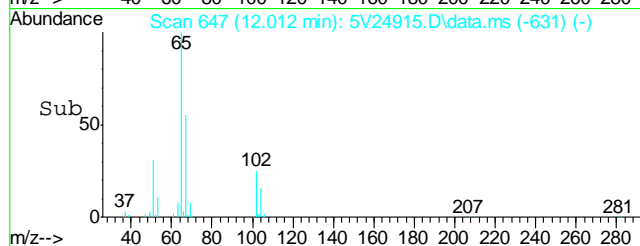
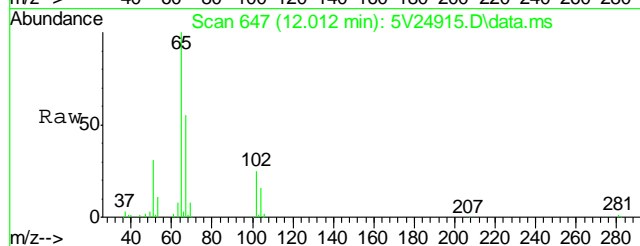
Tgt Ion: 83 Resp: 1673
Ion Ratio Lower Upper
83 100
85 54.3 44.9 84.9





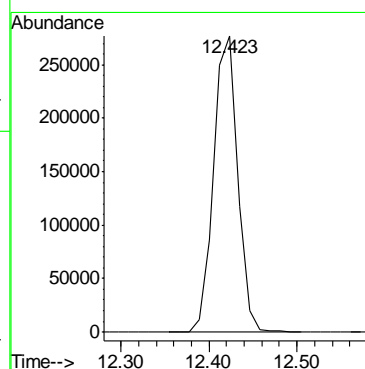
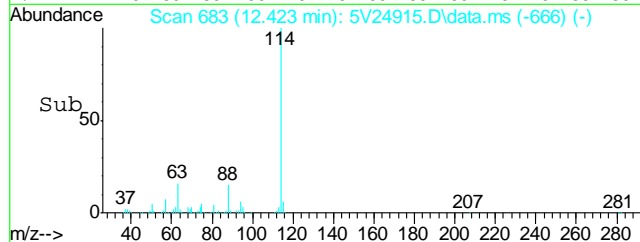
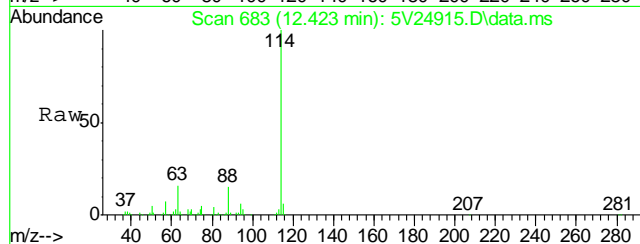
#33
1,2-Dichloroethane-d4
Concen: 51.55 ug/l
RT: 12.012 min Scan# 647
Delta R.T. -0.012 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

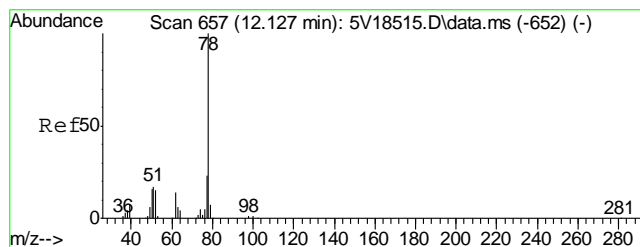
Tgt Ion:102 Resp: 36929



#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.423 min Scan# 683
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

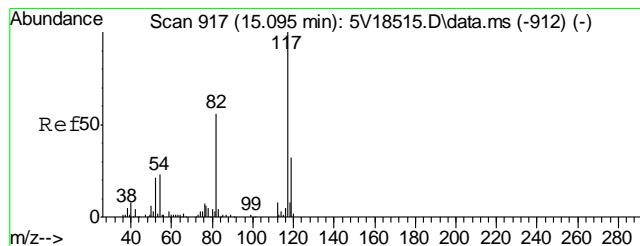
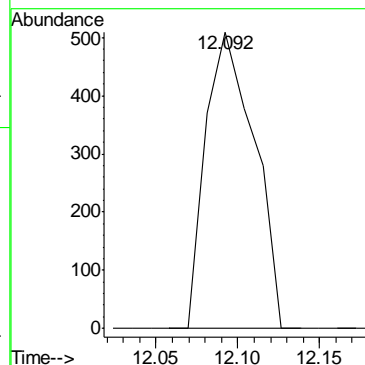
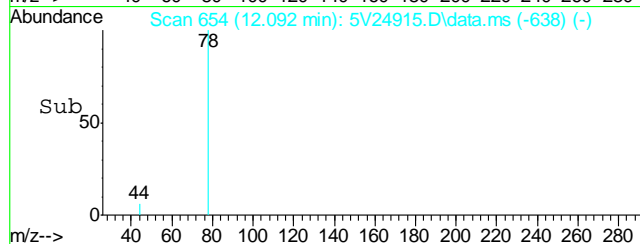
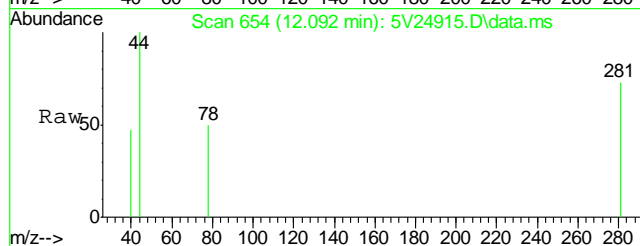
Tgt Ion:114 Resp: 524960





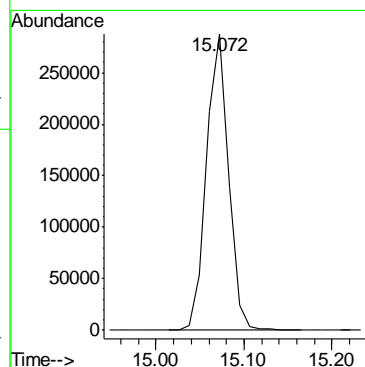
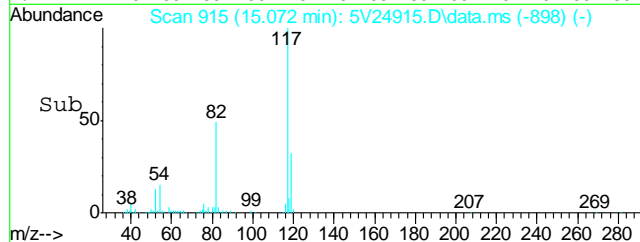
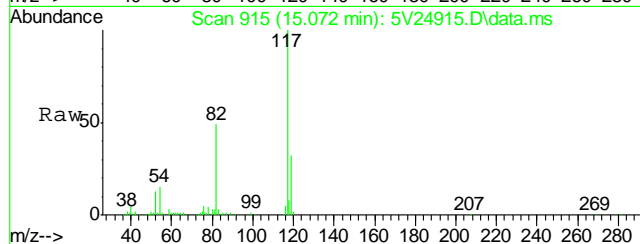
#50
Benzene
Concen: 0.08 ug/l
RT: 12.092 min Scan# 654
Delta R.T. -0.012 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

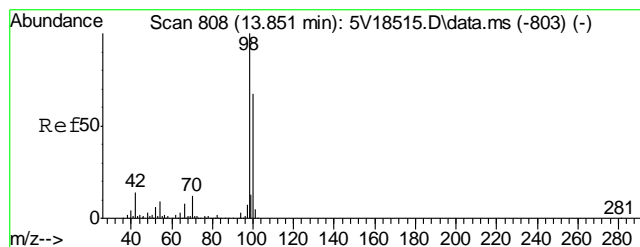
Tgt Ion: 78 Resp: 1054



#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.072 min Scan# 915
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

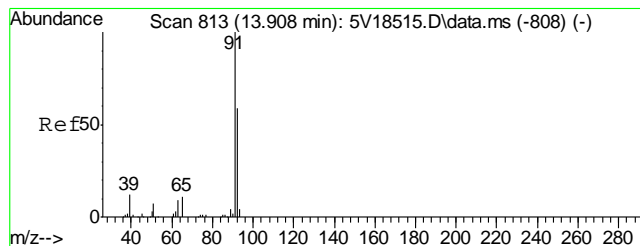
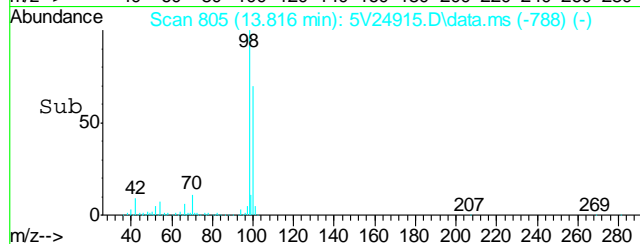
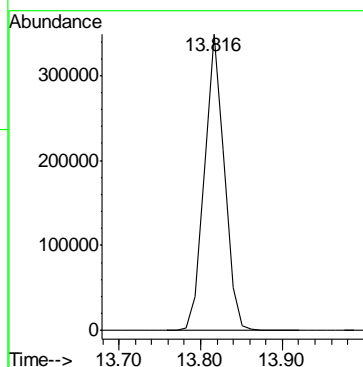
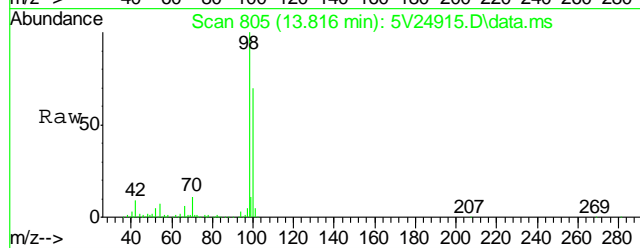
Tgt Ion: 117 Resp: 498585





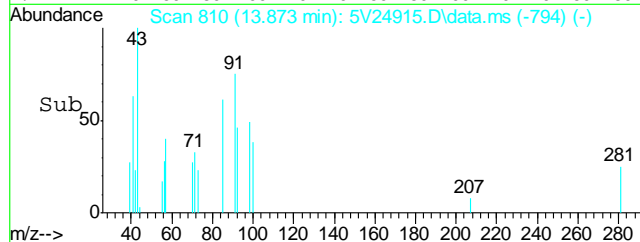
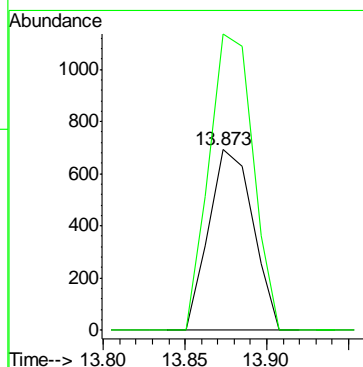
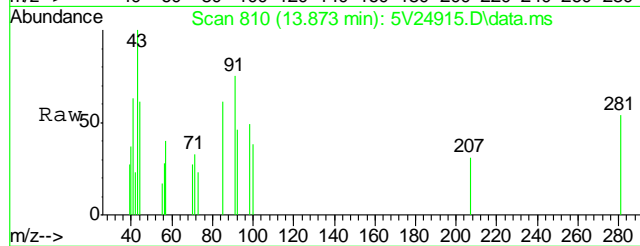
#61
Toluene-d8
Concen: 50.08 ug/l
RT: 13.816 min Scan# 805
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

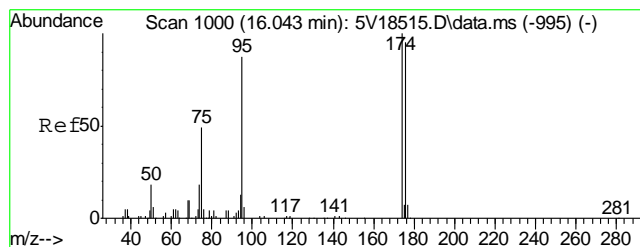
Tgt Ion: 98 Resp: 591484



#62
Toluene
Concen: 0.14 ug/l
RT: 13.873 min Scan# 810
Delta R.T. -0.012 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

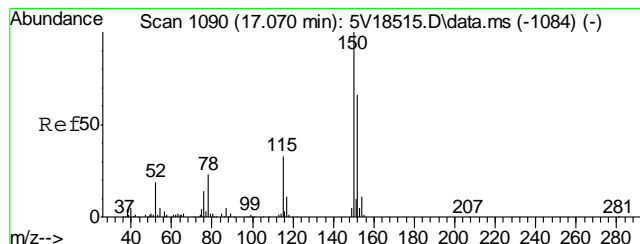
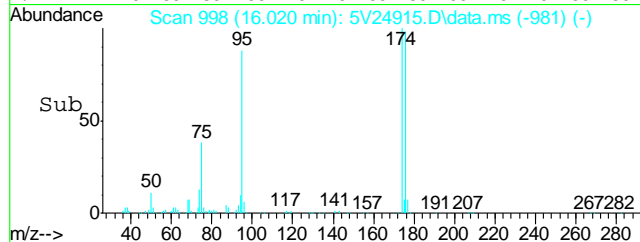
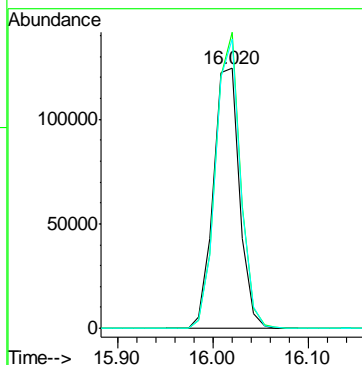
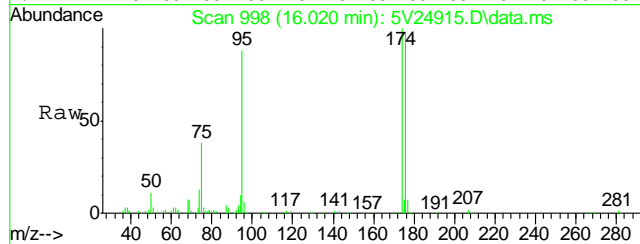
Tgt Ion: 92 Resp: 1302
Ion Ratio Lower Upper
92 100
91 163.1 149.8 189.8





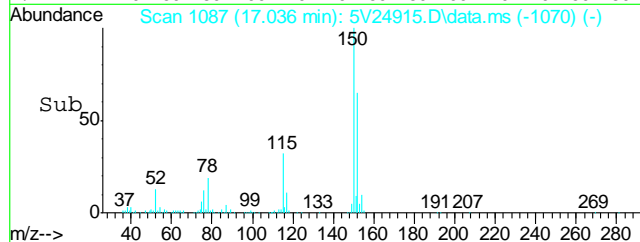
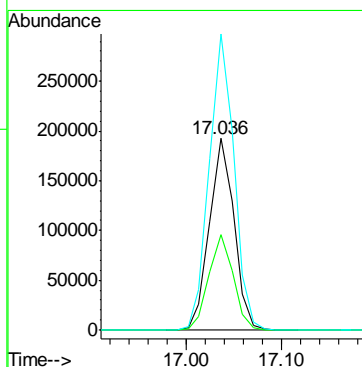
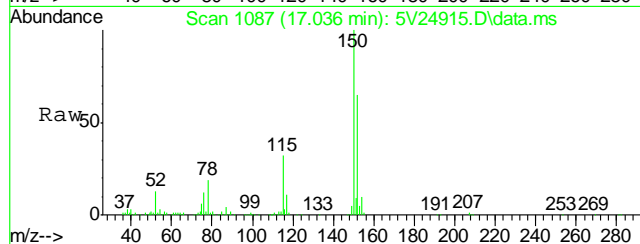
#69
4-Bromofluorobenzene
Concen: 46.64 ug/l
RT: 16.020 min Scan# 998
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

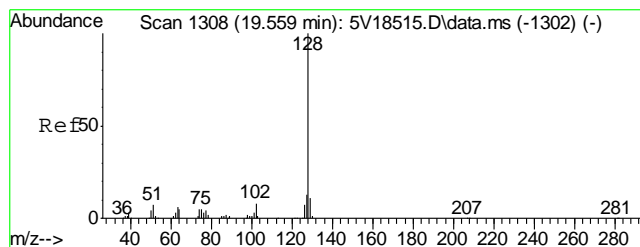
Tgt Ion:	95	Resp:	237416
Ion Ratio	Lower	Upper	
95	100		
174	107.4	77.1	117.1
176	105.9	73.4	113.4



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.036 min Scan# 1087
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

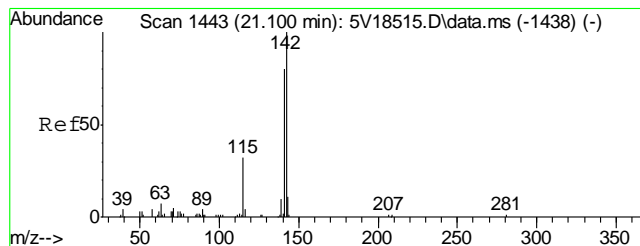
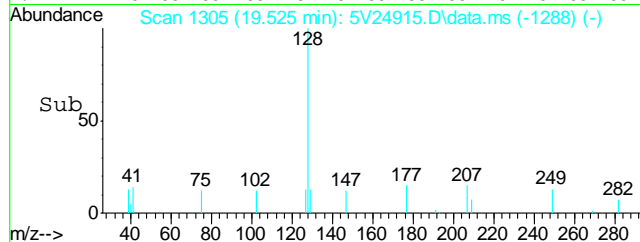
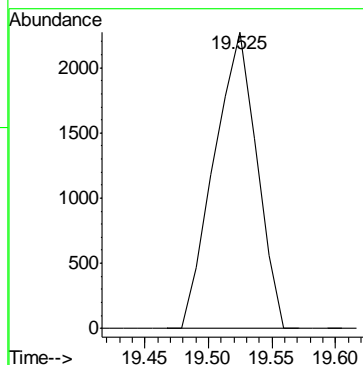
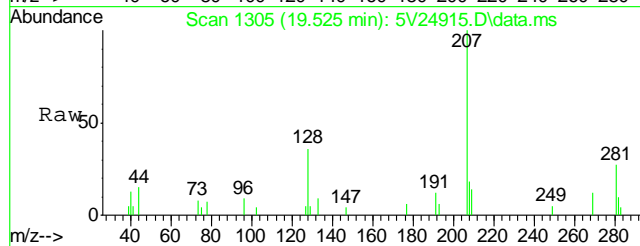
Tgt Ion:	152	Resp:	344291
Ion Ratio	Lower	Upper	
152	100		
115	49.7	41.4	62.0
150	155.2	153.9	230.9





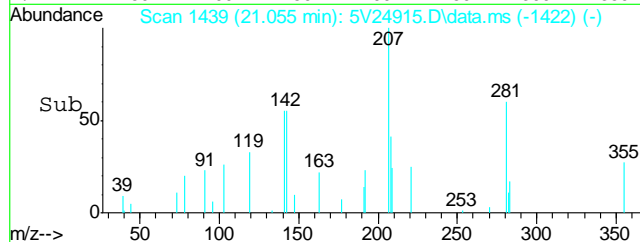
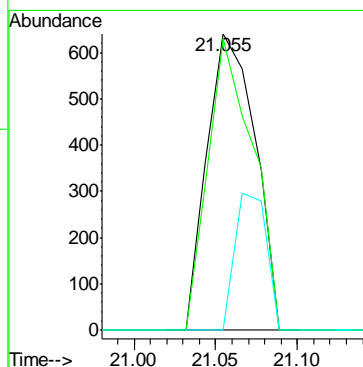
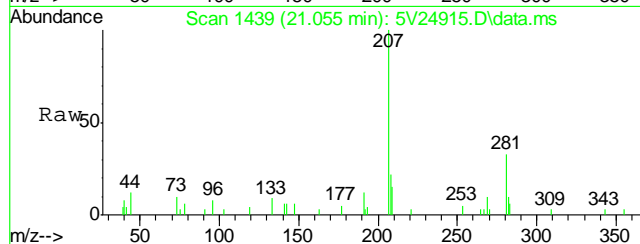
#91
Naphthalene
Concen: 0.31 ug/l
RT: 19.525 min Scan# 1305
Delta R.T. -0.000 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

Tgt Ion:128 Resp: 5284



#94
2-Methylnaphthalene
Concen: 5.14 ug/l
RT: 21.055 min Scan# 1439
Delta R.T. -0.011 min
Lab File: 5V24915.D
Acq: 11 Dec 2012 11:59 am

Tgt Ion:142 Resp: 1310
Ion Ratio Lower Upper
142 100
141 92.0 66.2 99.4
115 30.0 25.9 38.9



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: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7075-MB	3G12508.D	1	12/10/12	DC	12/10/12	OP7075	E3G593

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41662-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.3	4.3	ug/kg	
120-12-7	Anthracene	ND	8.3	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	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	88% 10-159%
321-60-8	2-Fluorobiphenyl	79% 19-131%
1718-51-0	Terphenyl-d14	91% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7075-BS	3G12509.D	1	12/10/12	DC	12/10/12	OP7075	E3G593

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41662-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	74.0	89	68-130
120-12-7	Anthracene	83.3	63.0	76	67-130
56-55-3	Benzo(a)anthracene	83.3	72.7	87	65-130
205-99-2	Benzo(b)fluoranthene	83.3	83.2	100	44-130
207-08-9	Benzo(k)fluoranthene	83.3	66.7	80	56-131
50-32-8	Benzo(a)pyrene	83.3	74.9	90	62-130
218-01-9	Chrysene	83.3	74.6	90	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	72.2	87	55-130
206-44-0	Fluoranthene	83.3	63.1	76	70-130
86-73-7	Fluorene	83.3	71.5	86	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	72.0	86	56-130
91-20-3	Naphthalene	83.3	78.0	94	70-130
129-00-0	Pyrene	83.3	76.0	91	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	97%	10-159%
321-60-8	2-Fluorobiphenyl	76%	19-131%
1718-51-0	Terphenyl-d14	87%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7075-MS	3G12511.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
OP7075-MSD	3G12512.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
D41381-1	3G12510.D	1	12/10/12	DC	12/10/12	OP7075	E3G593

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41662-1

CAS No.	Compound	D41381-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		93.9	77.2	82	74.1	79	4	25-151/30
120-12-7	Anthracene	ND		93.9	71.0	76	69.6	74	2	39-159/30
56-55-3	Benzo(a)anthracene	ND		93.9	80.7	86	79.9	85	1	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		93.9	85.0	90	85.9	92	1	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		93.9	77.1	82	76.7	82	1	10-188/30
50-32-8	Benzo(a)pyrene	ND		93.9	83.5	89	81.1	86	3	32-144/30
218-01-9	Chrysene	ND		93.9	80.3	85	81.0	86	1	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		93.9	81.0	86	77.6	83	4	21-152/30
206-44-0	Fluoranthene	ND		93.9	71.8	76	69.7	74	3	36-157/30
86-73-7	Fluorene	ND		93.9	80.0	85	74.9	80	7	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		93.9	79.8	85	77.7	83	3	20-154/30
91-20-3	Naphthalene	ND		93.9	77.2	82	73.0	78	6	10-163/30
129-00-0	Pyrene	ND		93.9	83.7	89	83.2	89	1	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D41381-1	Limits
4165-60-0	Nitrobenzene-d5	83%	78%	70%	10-159%
321-60-8	2-Fluorobiphenyl	69%	64%	57%	19-131%
1718-51-0	Terphenyl-d14	78%	78%	72%	18-150%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
 Data File : 3g12519.D
 Acq On : 10 Dec 2012 4:13 pm
 Operator : DONC
 Sample : D41662-1
 Misc : OP7075,E3G593,30.05,,,1,1
 ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 11 13:07:53 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Dec 04 08:50:28 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.670	136	138874	4.0000	ug/mL	-0.01
6) Acenaphthene-d10	7.385	164	96795	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.867	188	129370	4.0000	ug/mL	-0.01
19) Chrysene-d12	11.496	240	92260	4.0000	ug/mL	-0.02
24) Perylene-d12	12.873	264	73437	4.0000	ug/mL	-0.02

System Monitoring Compounds

2) Nitrobenzene-d5	4.985	82	423351	30.4962	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	61.00%		
7) 2-Fluorobiphenyl	6.723	172	1228752	28.1085	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	56.22%		
21) Terphenyl-d14	10.458	244	554108	40.8022	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	81.60%		

Target Compounds

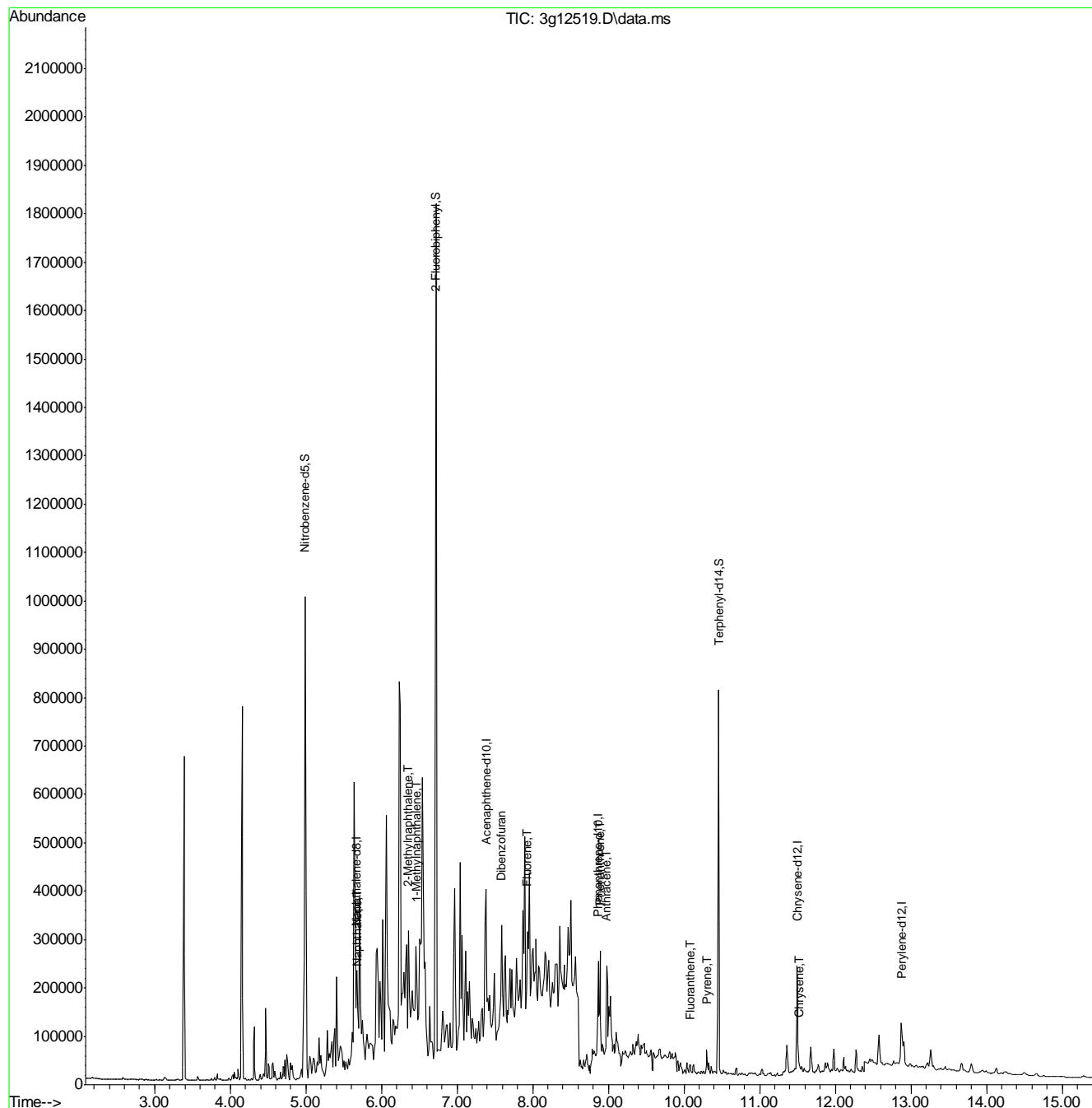
					Qvalue
3) N-Nitrosodimethylamine	2.349	74	76	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.683	128	61351	1.4602 ug/mL	83
8) 2-Methylnaphthalene	6.356	142	84926	2.4545 ug/mL#	82
9) 1-Methylnaphthalene	6.456	142	52048m	1.5178 ug/mL	
10) Acenaphthylene	0.000	152	0	N.D. d	
11) Acenaphthene	0.000	154	0	N.D. d	
12) Dibenzofuran	7.585	168	34069	0.6084 ug/mL	88
13) Fluorene	7.928	166	82779	1.9084 ug/mL#	32
14) Diphenylamine	0.000	169	0	N.D. d	
16) Phenanthrene	8.891	178	115141	2.1692 ug/mL#	66
17) Anthracene	8.978	178	53452	0.9832 ug/mL#	1
18) Fluoranthene	10.078	202	18080	0.3110 ug/mL#	39
20) Pyrene	10.300	202	29335	0.5665 ug/mL#	74
22) Benzo(a)anthracene	0.000	228	0	N.D. d	
23) Chrysene	11.523	228	16949	0.3862 ug/mL	77
25) Benzo(b)fluoranthene	0.000	252	0	N.D. d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D. d	
27) Benzo(a)pyrene	12.820	252	1217	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.093	276	586	N.D.	
29) Dibenz(a,h)anthracene	14.103	278	365	N.D.	
30) Benzo(g,h,i)perylene	14.440	276	1485	N.D.	

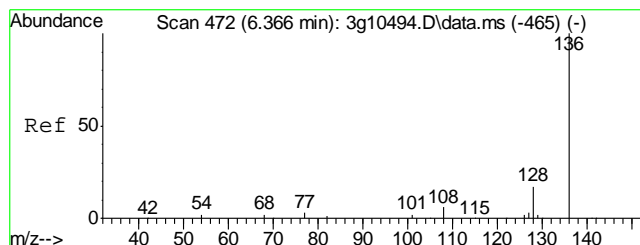
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
 Data File : 3g12519.D
 Acq On : 10 Dec 2012 4:13 pm
 Operator : DONC
 Sample : D41662-1
 Misc : OP7075,E3G593,30.05,,,1,1
 ALS Vial : 15 Sample Multiplier: 1

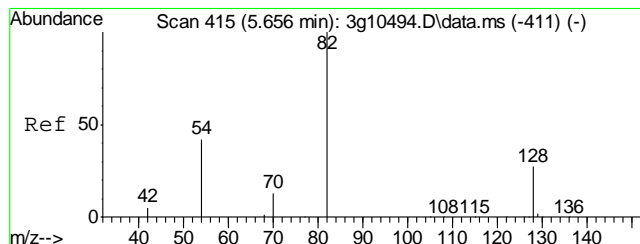
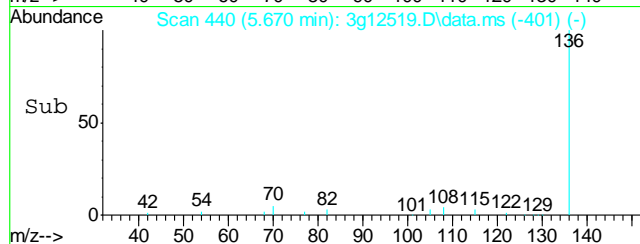
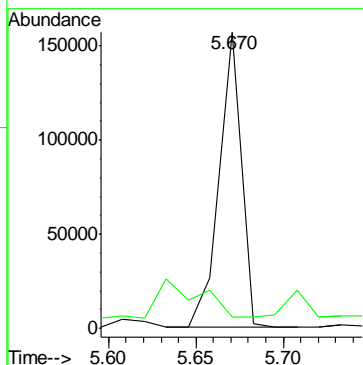
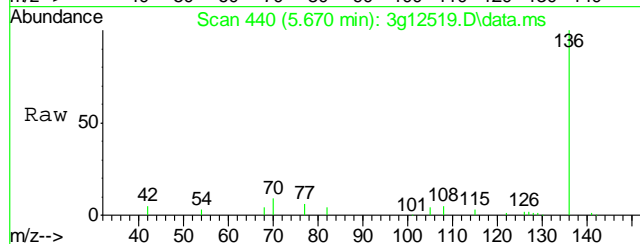
Quant Time: Dec 11 13:07:53 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Dec 04 08:50:28 2012
 Response via : Initial Calibration





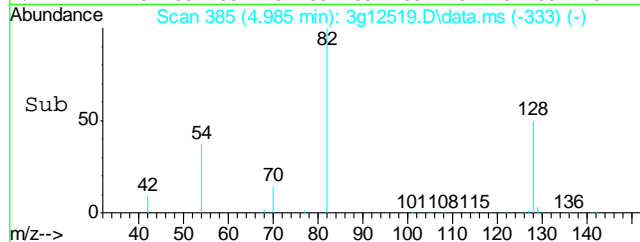
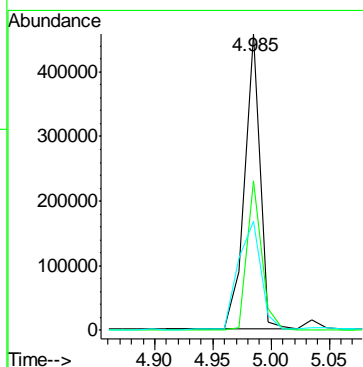
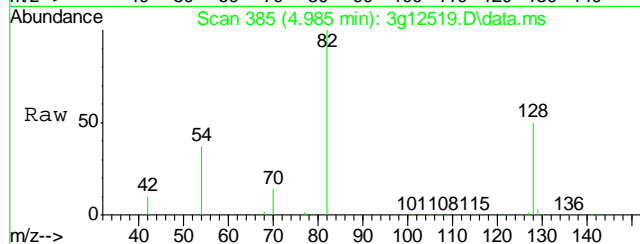
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

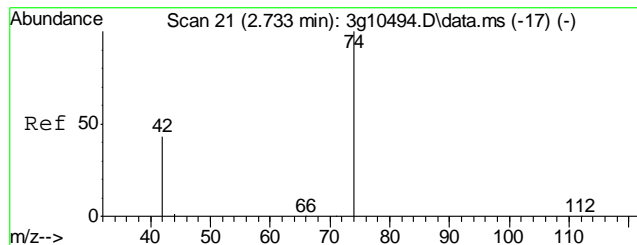
Tgt Ion	Ratio	Lower	Upper
136	100		
68	15.2	0.0	28.4



#2
Nitrobenzene-d5
Concen: 30.4962 ug/mL
RT: 4.985 min Scan# 385
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

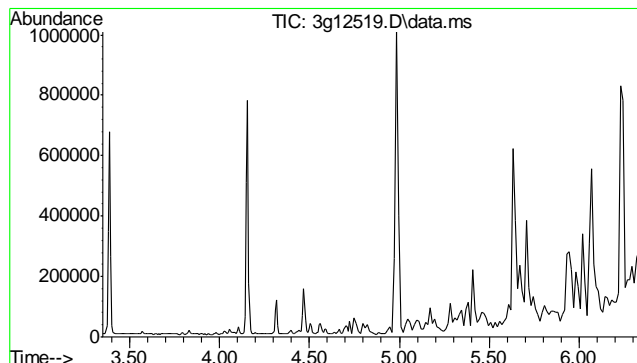
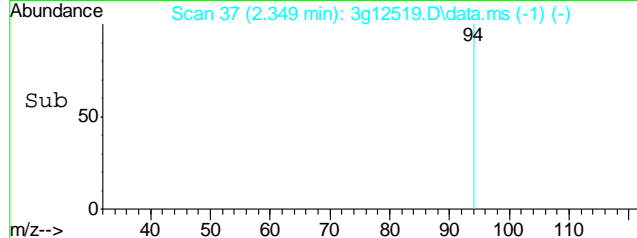
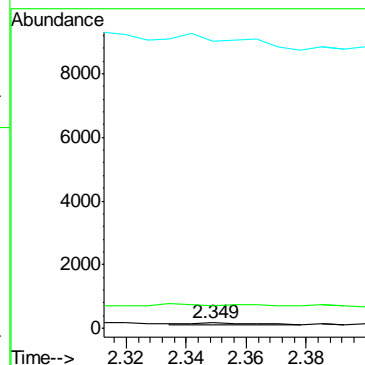
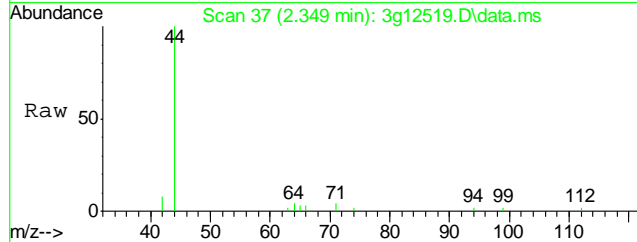
Tgt Ion	Ratio	Lower	Upper
82	100		
128	47.6	31.8	71.8
54	54.3	29.2	69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.349 min Scan# 37
Delta R.T. -0.029 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

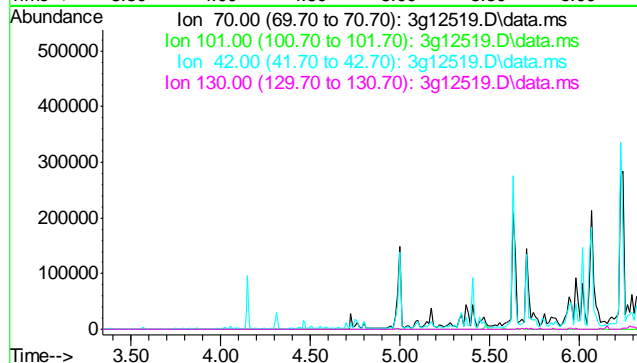
Tgt Ion	Ratio	Lower	Upper
74	100		
42	101.3	52.5	92.5#
44	0.0	0.0	24.1

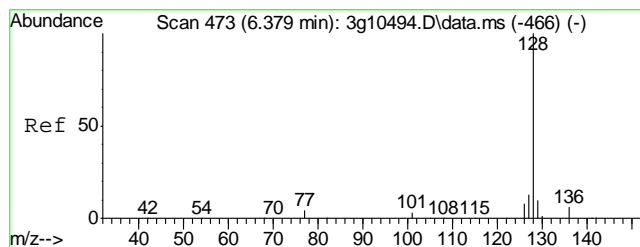


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

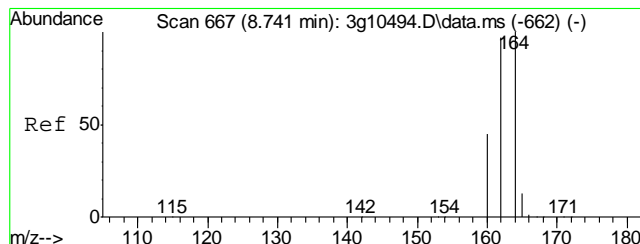
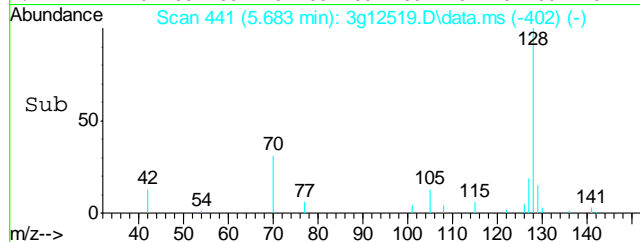
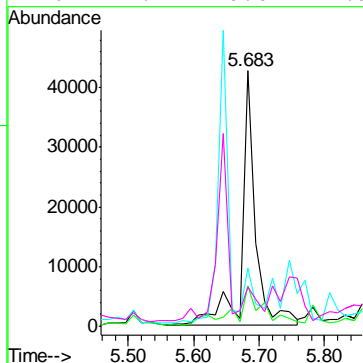
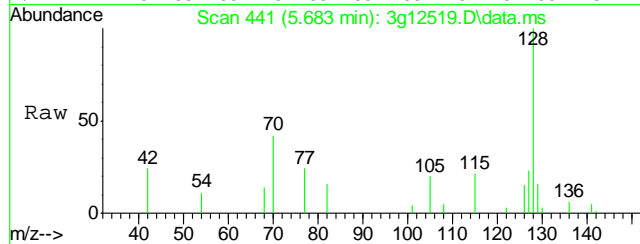
Tgt Ion	Sig	Exp Ratio
70	100	
101	12.2	
42	67.9	
130	33.2	





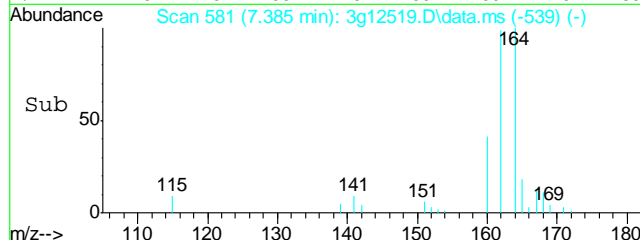
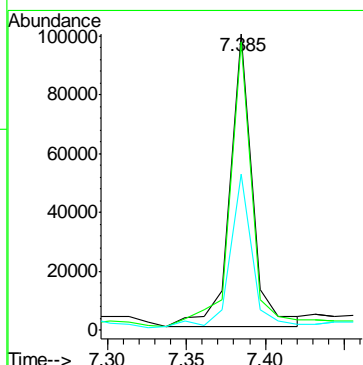
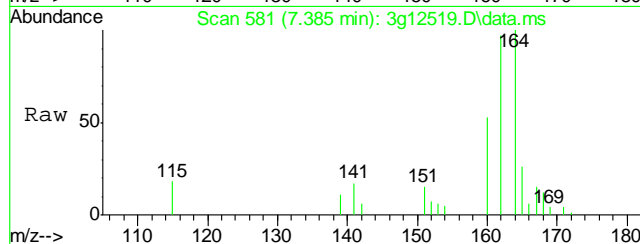
#5
Naphthalene
Concen: 1.4602 ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

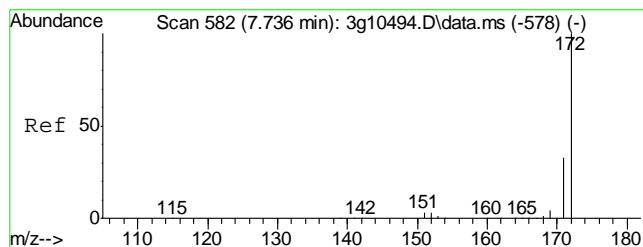
Tgt Ion	128	129	127	126
Resp	61351	24.9	14.5	11.7
Ratio	100			
Lower		0.0	0.0	0.0
Upper		30.7	33.2	27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

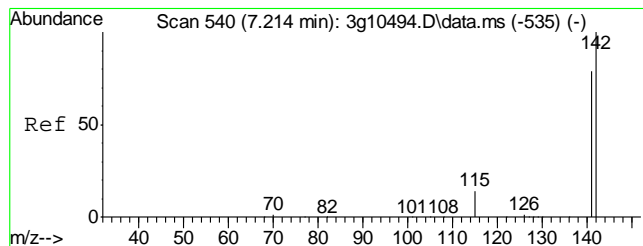
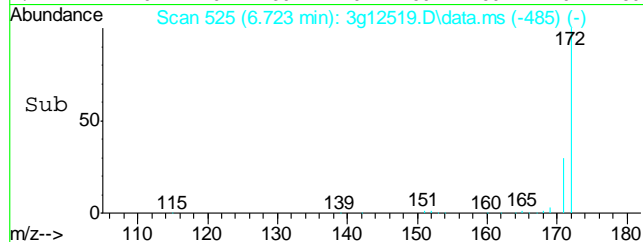
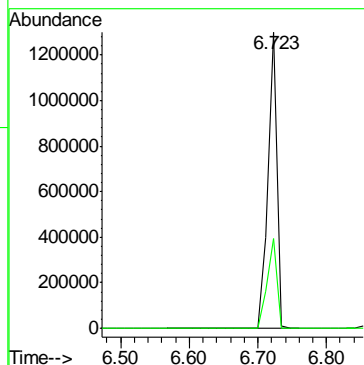
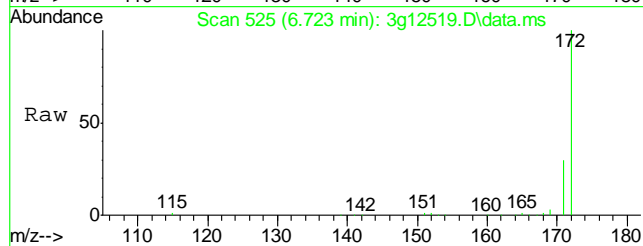
Tgt Ion	164	162	160
Resp	96795	97.3	51.9
Ratio	100		
Lower		78.0	27.3
Upper		118.0	67.3





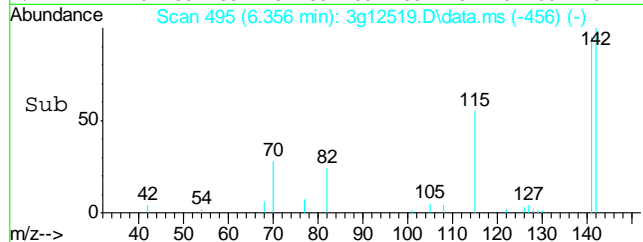
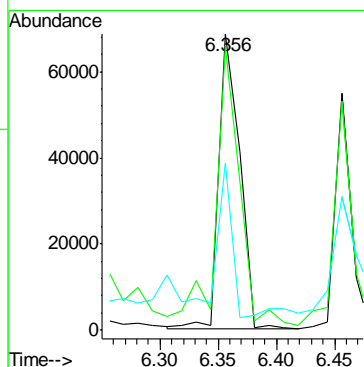
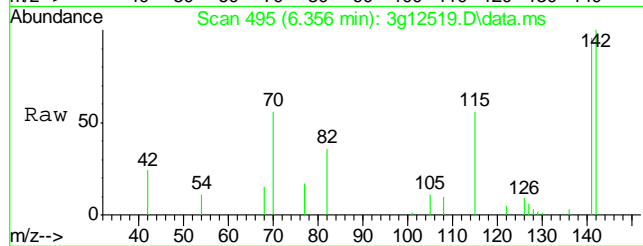
#7
2-Fluorobiphenyl
Concen: 28.1085 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

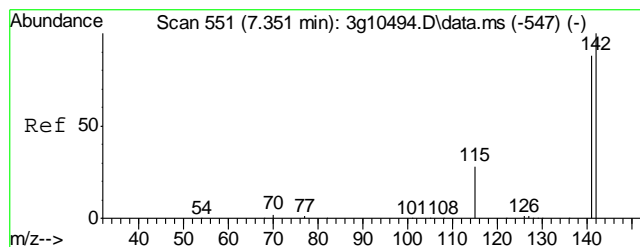
Tgt Ion: 172 Resp: 1228752
Ion Ratio Lower Upper
172 100
171 32.2 13.7 53.7



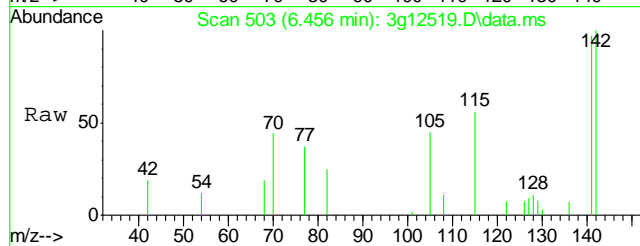
#8
2-Methylnaphthalene
Concen: 2.4545 ug/mL
RT: 6.356 min Scan# 495
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

Tgt Ion: 142 Resp: 84926
Ion Ratio Lower Upper
142 100
141 105.8 65.6 105.6#
115 36.2 12.2 52.2

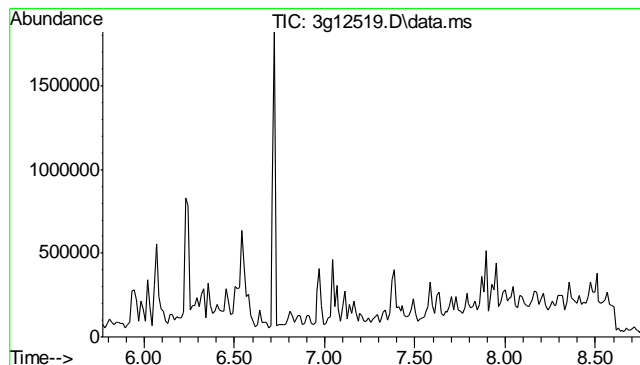
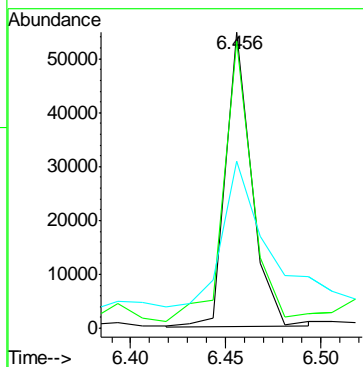
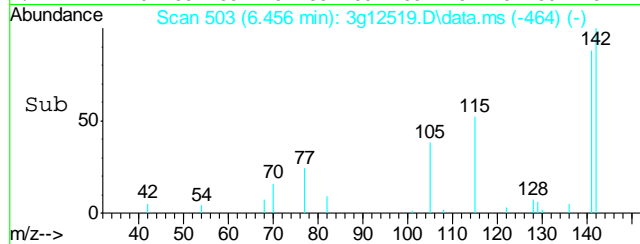




#9
1-Methylnaphthalene
Concen: 1.5178 ug/mL m
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

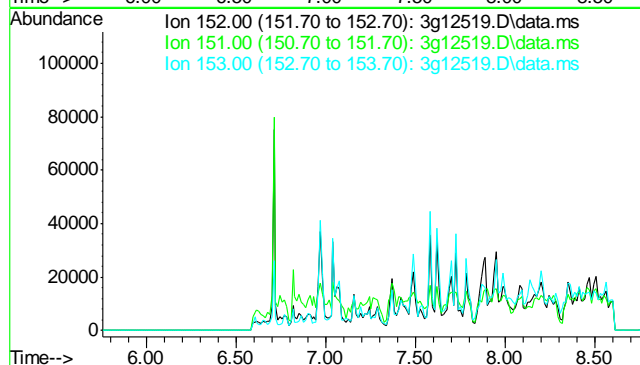


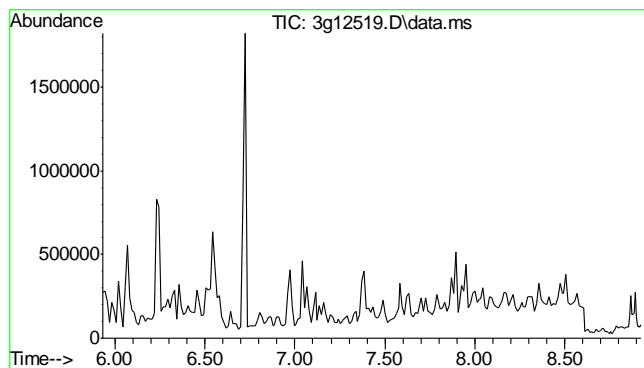
Tgt Ion: 142 Resp: 52048
Ion Ratio Lower Upper
142 100
141 172.7 67.0 107.0#
115 59.1 9.3 49.3#



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 7.26 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

Tgt Ion: 152
Sig Exp Ratio
152 100
151 19.5
153 13.0

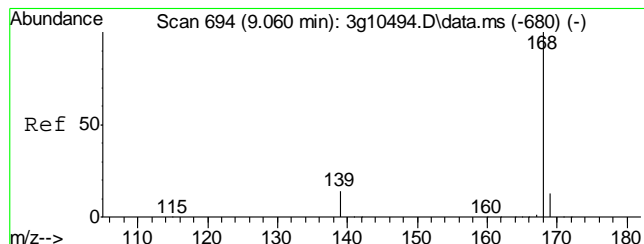
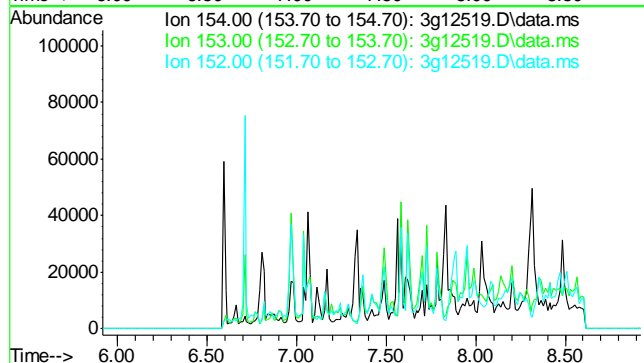




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 7.42 min

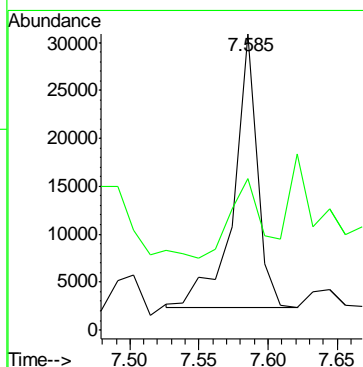
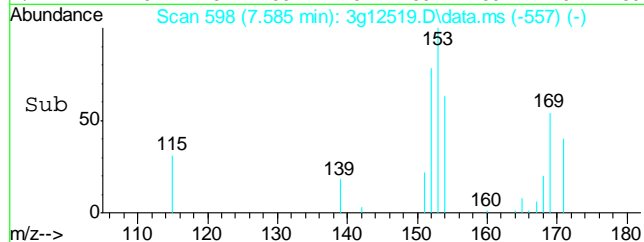
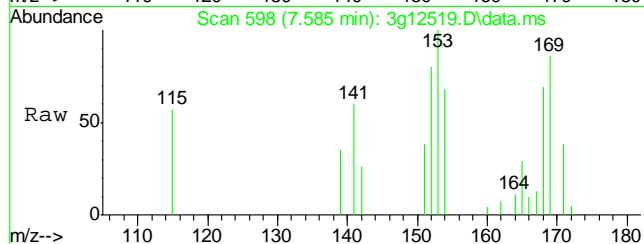
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

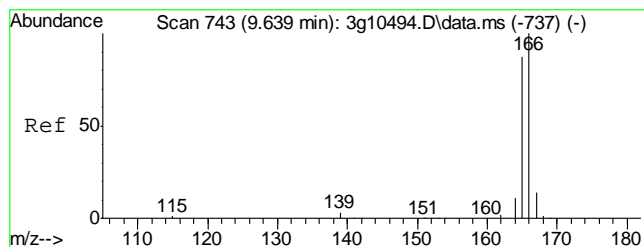
Tgt Ion: 154
Sig Exp Ratio
154 100
153 104.7
152 50.2



#12
Dibenzofuran
Concen: 0.6084 ug/mL
RT: 7.585 min Scan# 598
Delta R.T. -0.016 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

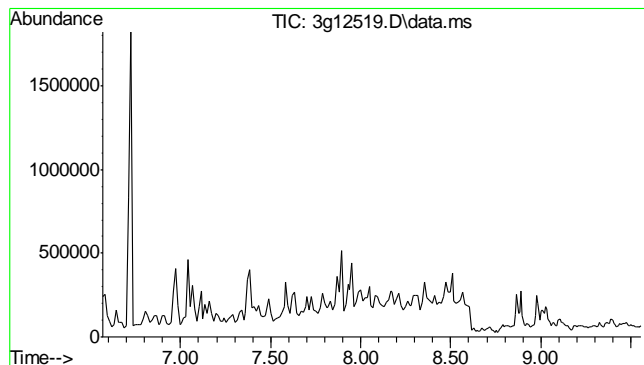
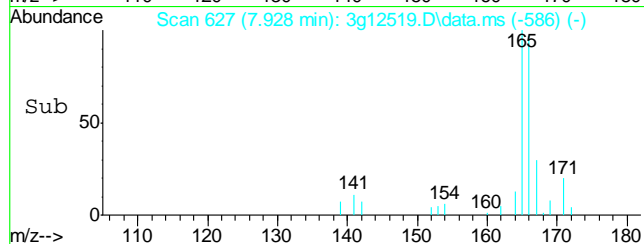
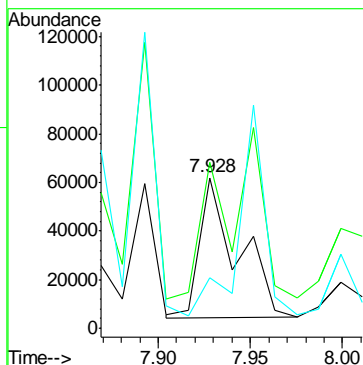
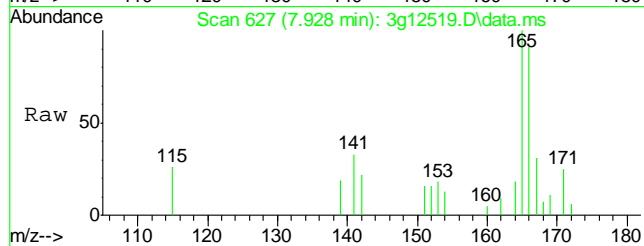
Tgt Ion: 168 Resp: 34069
Ion Ratio Lower Upper
168 100
139 38.4 12.0 52.0





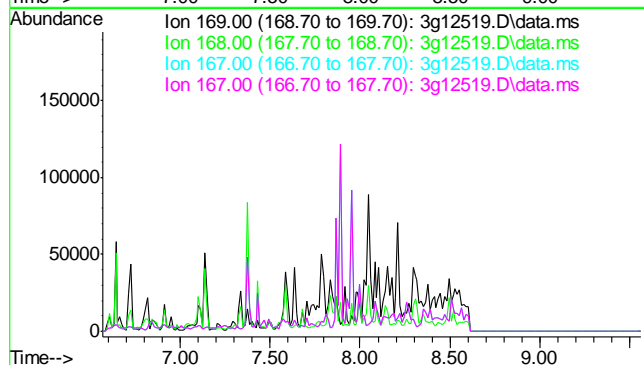
#13
Fluorene
Concen: 1.9084 ug/mL
RT: 7.928 min Scan# 627
Delta R.T. -0.016 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

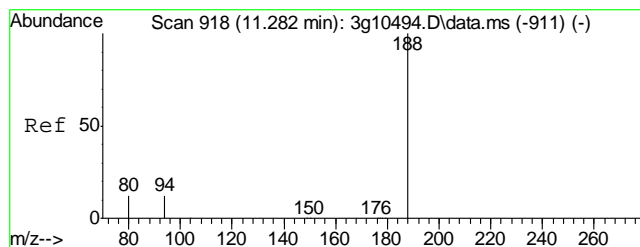
Tgt Ion:	166	Resp:	82779
Ion Ratio	Lower	Upper	
166	100		
165	132.5	70.1	110.1#
167	102.3	0.0	33.4#



#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

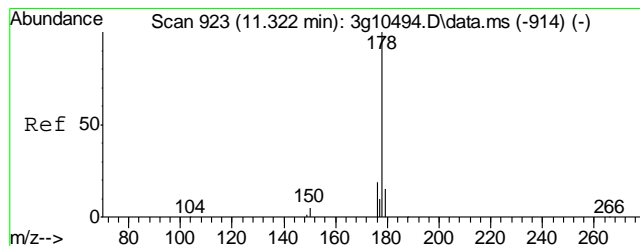
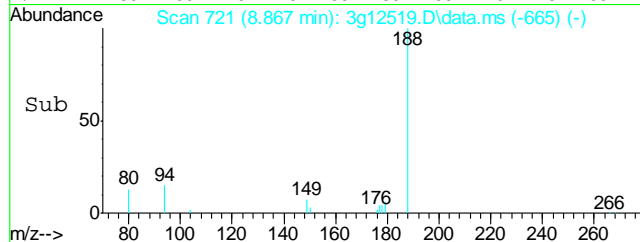
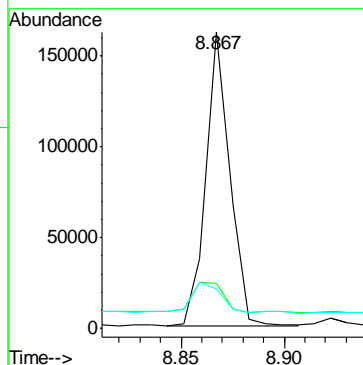
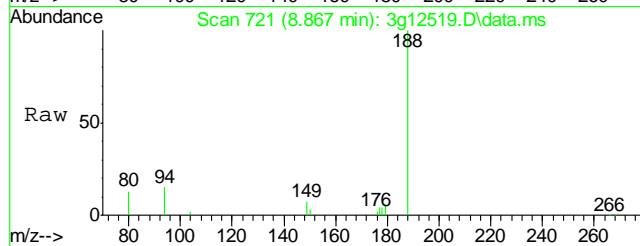
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





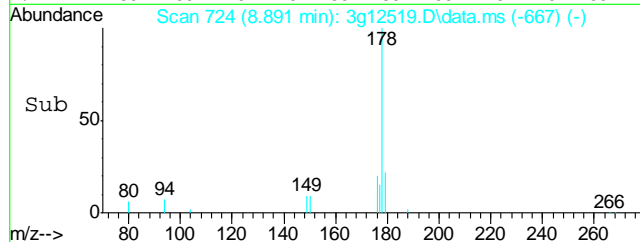
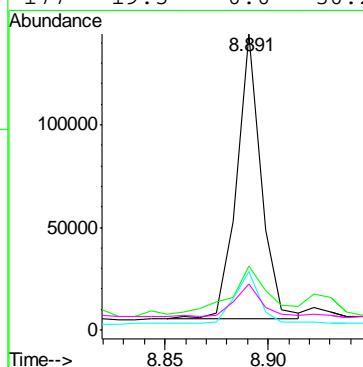
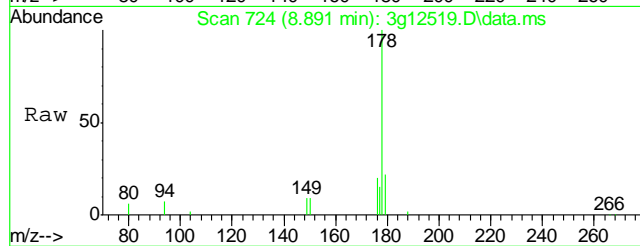
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 721
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

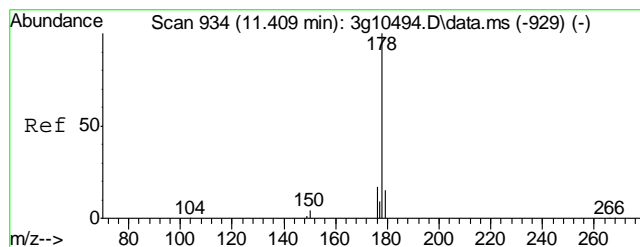
Tgt Ion:188	Resp:	129370
Ion Ratio	Lower	Upper
188	100	
94	16.0	0.0 33.4
80	19.0	0.0 28.9



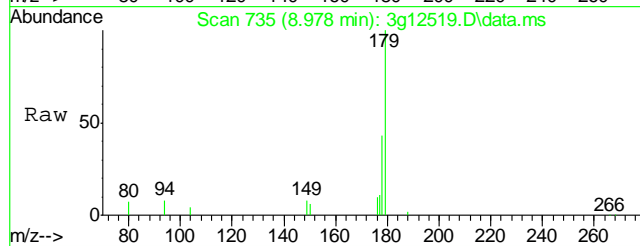
#16
Phenanthrene
Concen: 2.1692 ug/mL
RT: 8.891 min Scan# 724
Delta R.T. -0.011 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

Tgt Ion:178	Resp:	115141
Ion Ratio	Lower	Upper
178	100	
179	46.8	0.0 35.3#
176	20.6	0.0 38.6
177	19.5	0.0 30.2

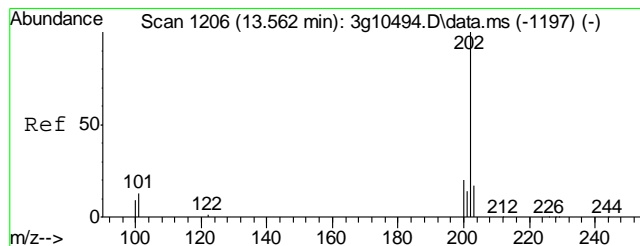
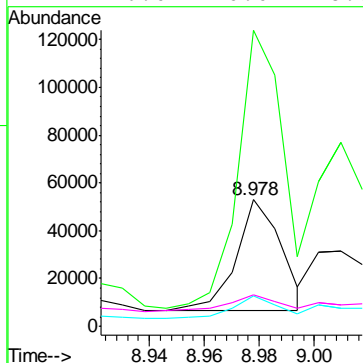
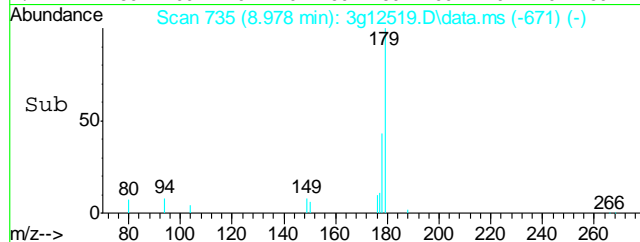




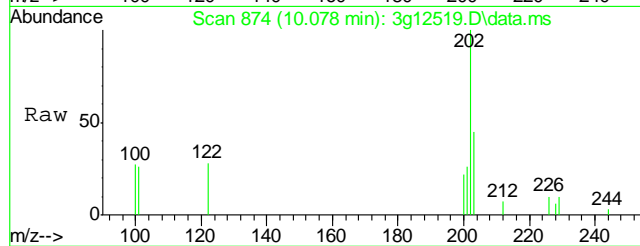
#17
 Anthracene
 Concen: 0.9832 ug/mL
 RT: 8.978 min Scan# 735
 Delta R.T. 0.028 min
 Lab File: 3g12519.D
 Acq: 10 Dec 12 4:13 pm



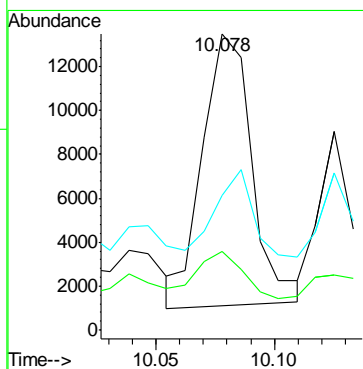
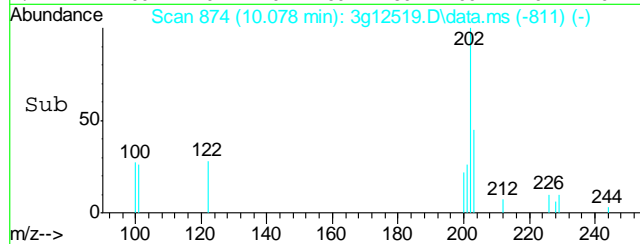
Tgt Ion: 178 Resp: 53452
 Ion Ratio Lower Upper
 178 100
 179 262.5 0.0 35.1#
 176 19.9 0.0 38.2
 177 16.0 0.0 28.8

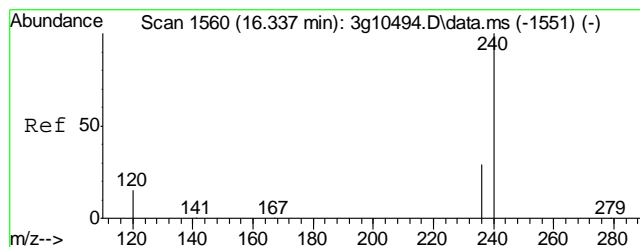


#18
 Fluoranthene
 Concen: 0.3110 ug/mL
 RT: 10.078 min Scan# 874
 Delta R.T. -0.004 min
 Lab File: 3g12519.D
 Acq: 10 Dec 12 4:13 pm



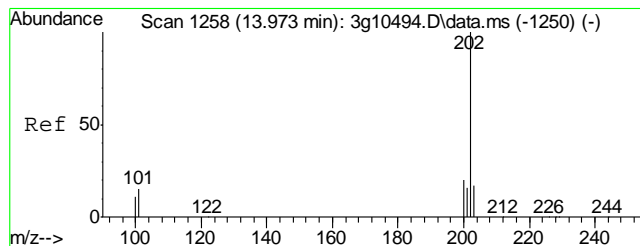
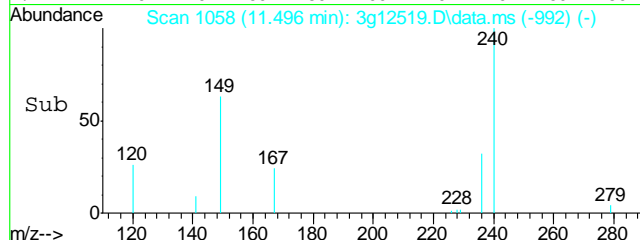
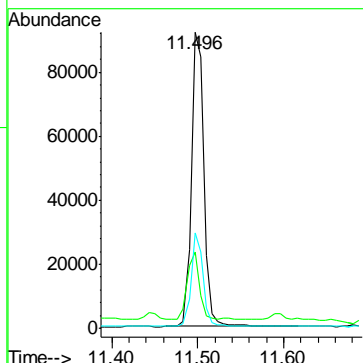
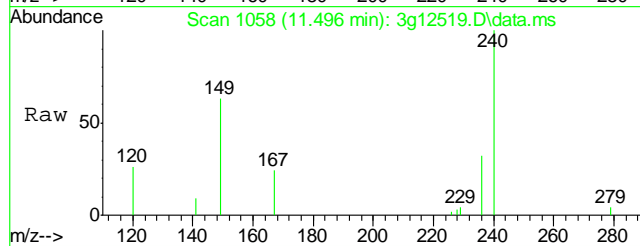
Tgt Ion: 202 Resp: 18080
 Ion Ratio Lower Upper
 202 100
 101 27.4 0.0 32.5
 203 51.0 0.0 37.3#





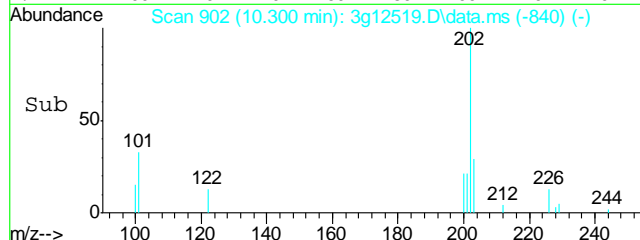
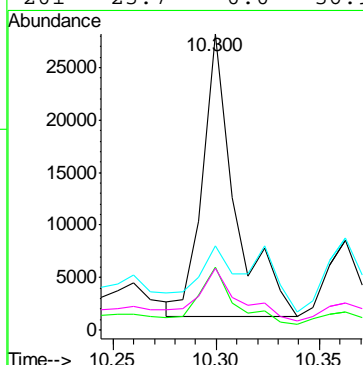
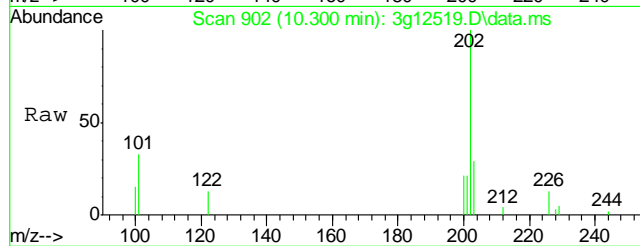
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.496 min Scan# 1058
Delta R.T. -0.019 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

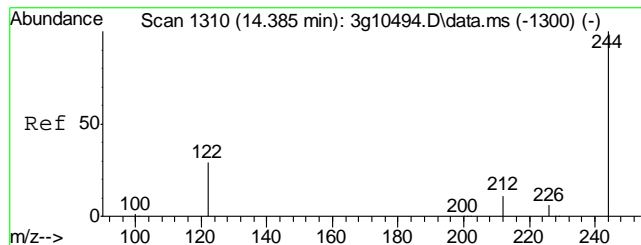
Tgt Ion	Ratio	Lower	Upper
240	100		
120	22.1	0.0	39.7
236	29.8	11.1	51.1



#20
Pyrene
Concen: 0.5665 ug/mL
RT: 10.300 min Scan# 902
Delta R.T. -0.012 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

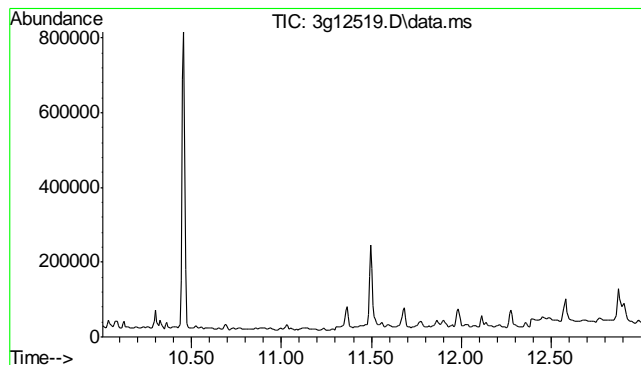
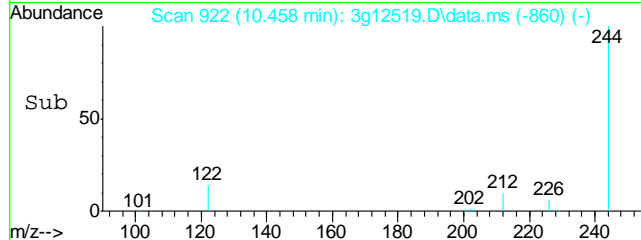
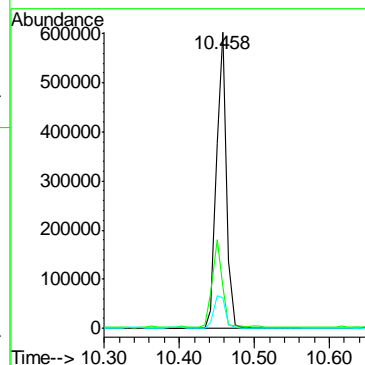
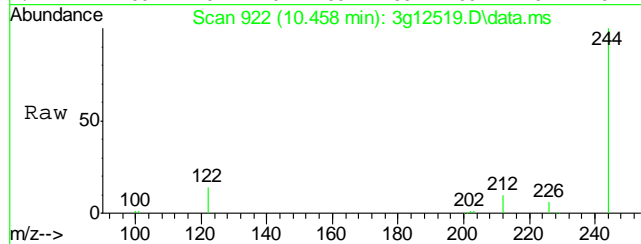
Tgt Ion	Ratio	Lower	Upper
202	100		
200	22.5	0.7	40.7
203	45.1	0.0	37.8
201	23.7	0.0	36.9





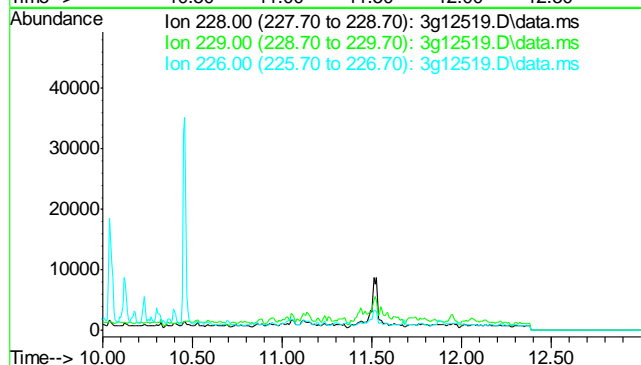
#21
Terphenyl-d14
Concen: 40.8022 ug/mL
RT: 10.458 min Scan# 922
Delta R.T. -0.012 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

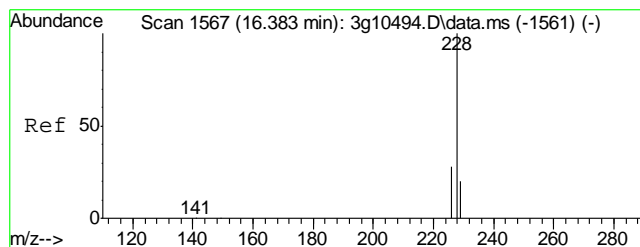
Tgt Ion:	244	Resp:	554108
Ion Ratio	Lower	Upper	
244	100		
122	28.7	6.8	46.8
212	12.6	0.0	32.3



#22
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 11.50 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

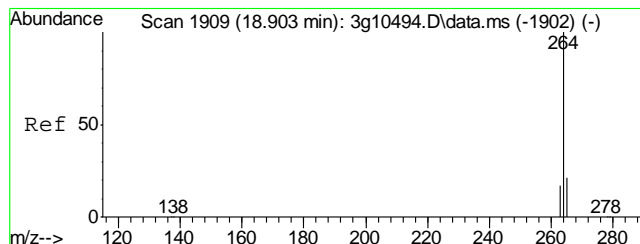
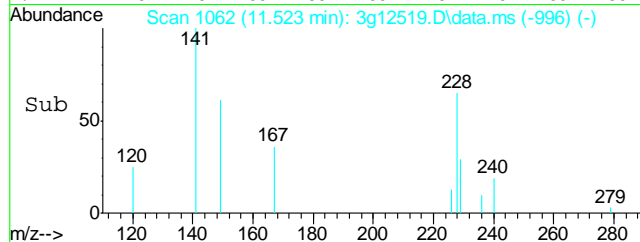
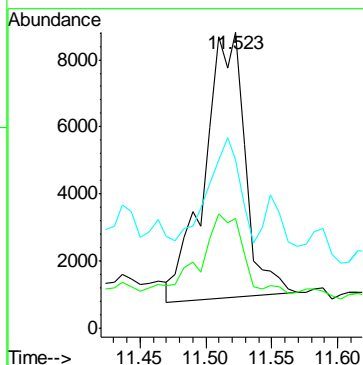
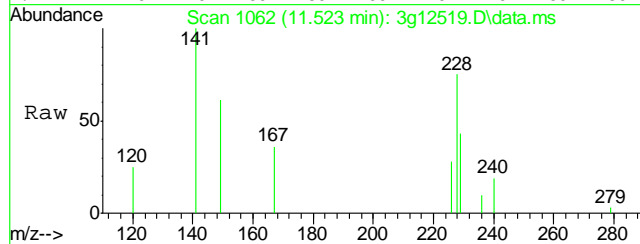
Tgt Ion:	228
Sig	Exp Ratio
228	100
229	19.4
226	26.8





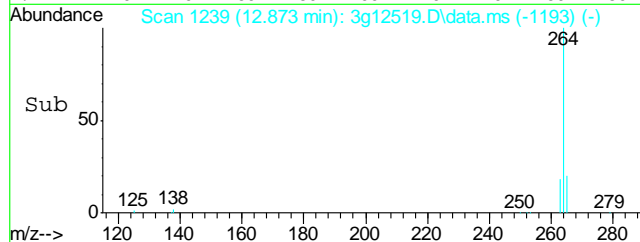
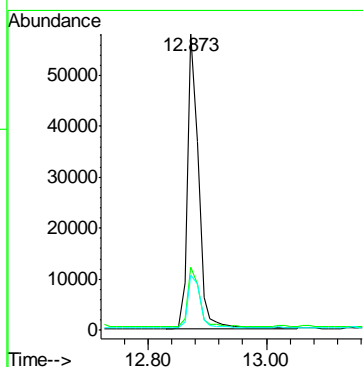
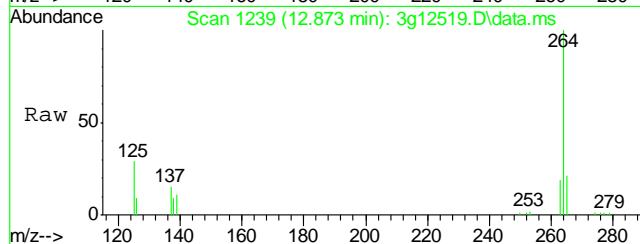
#23
Chrysene
Concen: 0.3862 ug/mL
RT: 11.523 min Scan# 1062
Delta R.T. -0.019 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

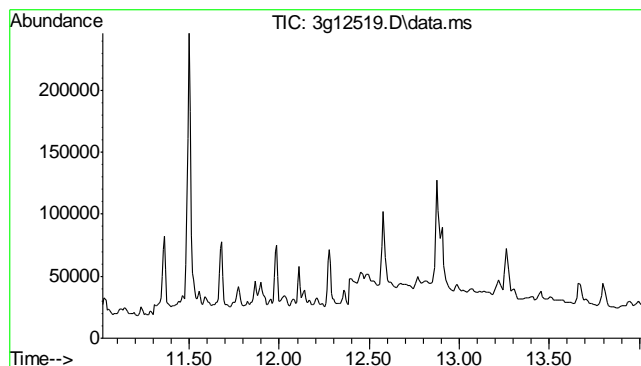
Tgt Ion:	228	Resp:	16949
Ion Ratio	Lower	Upper	
228	100		
226	36.5	9.2	49.2
229	36.2	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.873 min Scan# 1239
Delta R.T. -0.019 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

Tgt Ion:	264	Resp:	73437
Ion Ratio	Lower	Upper	
264	100		
265	21.7	0.6	40.6
263	20.4	0.0	39.7

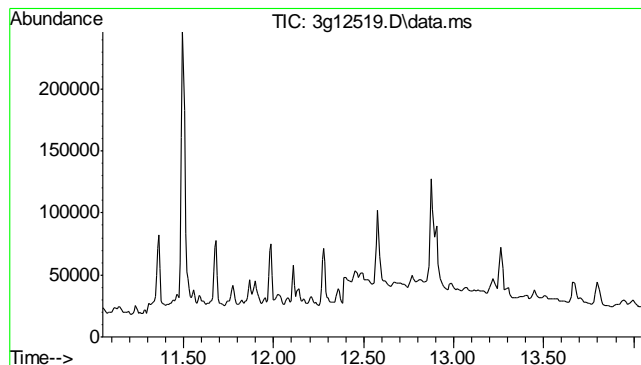
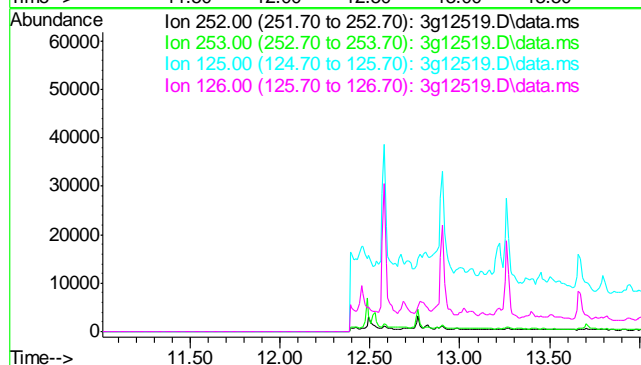




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.51 min

Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

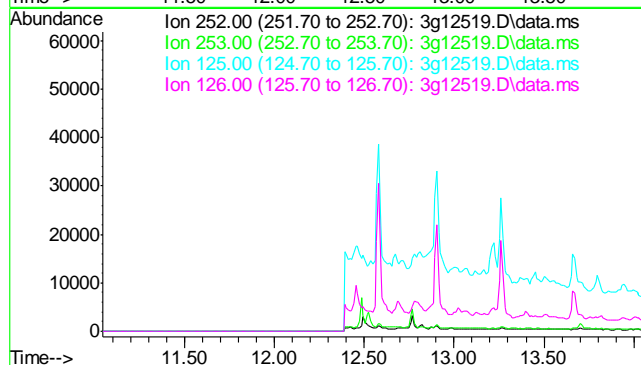
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	27.0
125	29.0
126	41.6

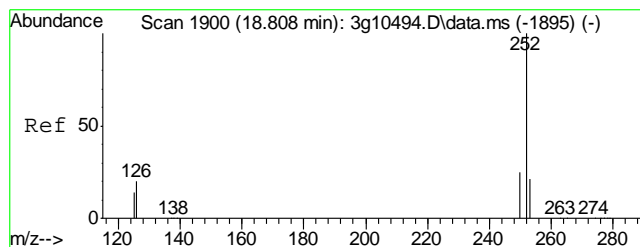


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.54 min

Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

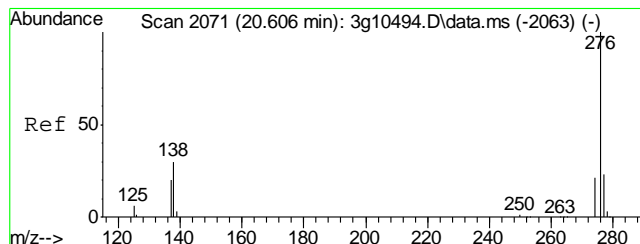
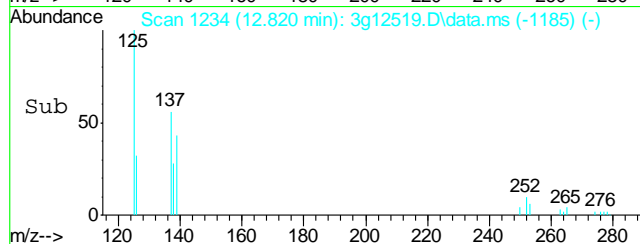
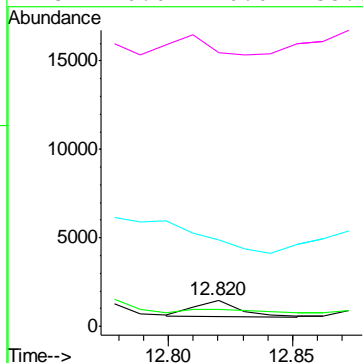
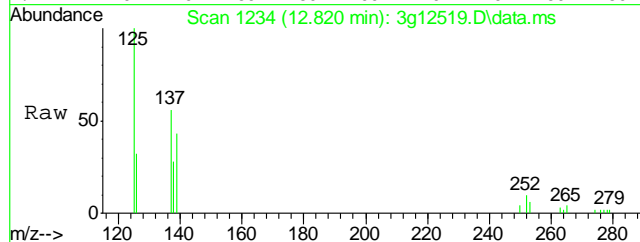
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	24.0
125	15.3
126	20.8





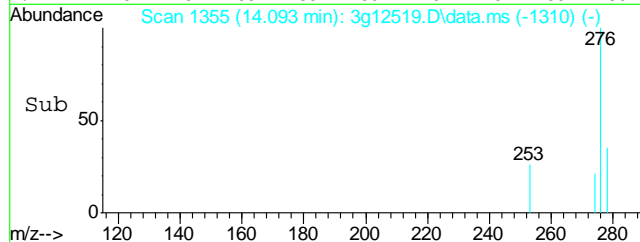
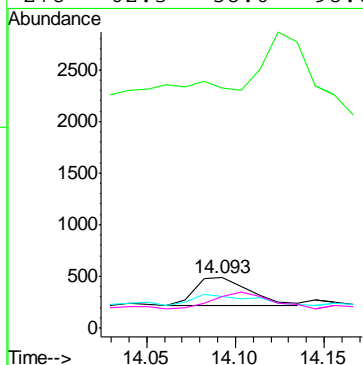
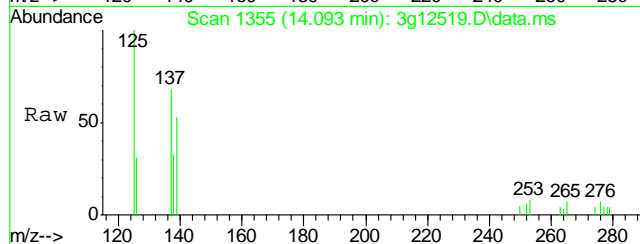
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.820 min Scan# 1234
Delta R.T. -0.019 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

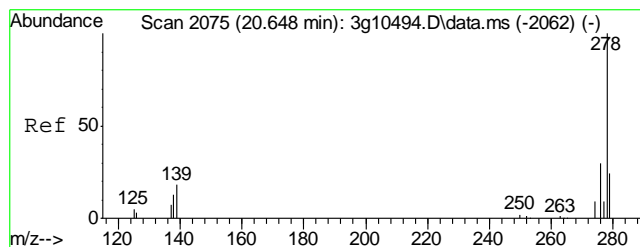
Tgt Ion:	252	Resp:	1217
Ion Ratio	Lower	Upper	
252	100		
253	0.0	1.5	41.5#
126	0.0	0.0	38.4
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.093 min Scan# 1355
Delta R.T. -0.030 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

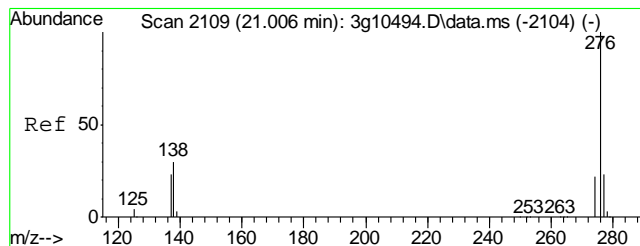
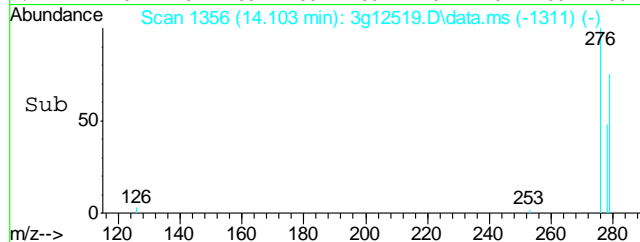
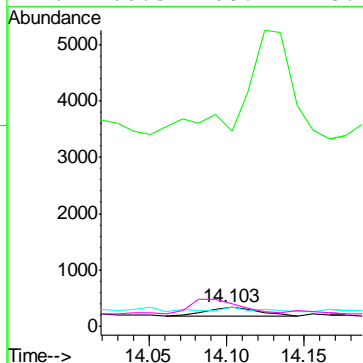
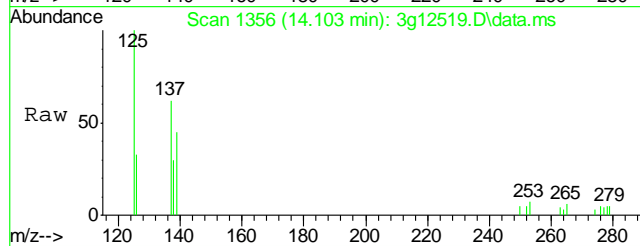
Tgt Ion:	276	Resp:	586
Ion Ratio	Lower	Upper	
276	100		
138	262.5	16.0	56.0#
277	45.7	4.9	44.9#
278	62.3	58.0	98.0





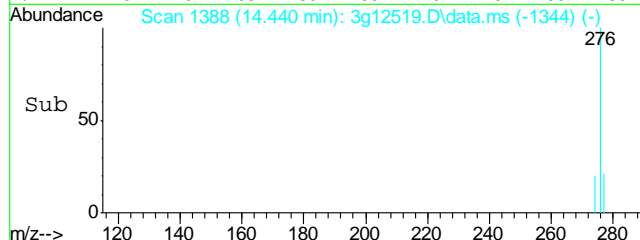
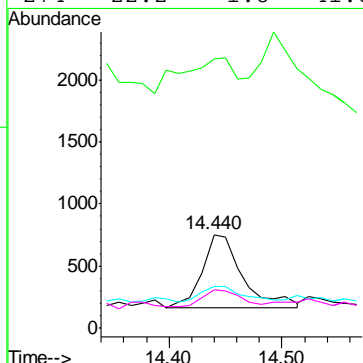
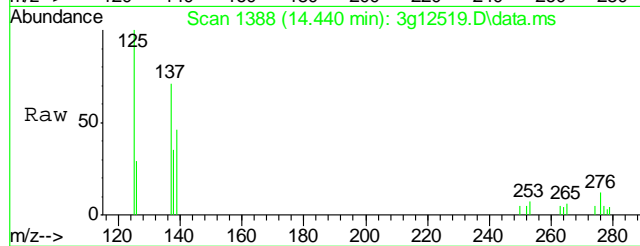
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.103 min Scan# 1356
Delta R.T. -0.030 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

Tgt Ion: 278 Resp: 365
Ion Ratio Lower Upper
278 100
139 1241.9 7.4 47.4#
279 23.0 2.8 42.8
276 160.5 108.1 148.1#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.440 min Scan# 1388
Delta R.T. -0.040 min
Lab File: 3g12519.D
Acq: 10 Dec 12 4:13 pm

Tgt Ion: 276 Resp: 1485
Ion Ratio Lower Upper
276 100
138 67.7 10.9 50.9#
277 21.1 3.2 43.2
274 22.2 1.8 41.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
Data File : 3g12508.D
Acq On : 10 Dec 2012 11:52 am
Operator : DONC
Sample : OP7075-MB
Misc : OP7075,E3G593,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 10 13:58:13 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.670	136	153335	4.0000	ug/mL	-0.01
6) Acenaphthene-d10	7.385	164	92403	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.867	188	160356	4.0000	ug/mL	-0.01
19) Chrysene-d12	11.503	240	115791	4.0000	ug/mL	-0.01
24) Perylene-d12	12.883	264	94737	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.985	82	677706	44.2147	ug/mL	-0.01
Spiked Amount	50.000	Range	25 - 135	Recovery	=	88.42%
7) 2-Fluorobiphenyl	6.723	172	1592975	39.4888	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	78.98%
21) Terphenyl-d14	10.458	244	774374	45.4337	ug/mL	-0.01
Spiked Amount	50.000	Range	25 - 135	Recovery	=	90.86%

Target Compounds

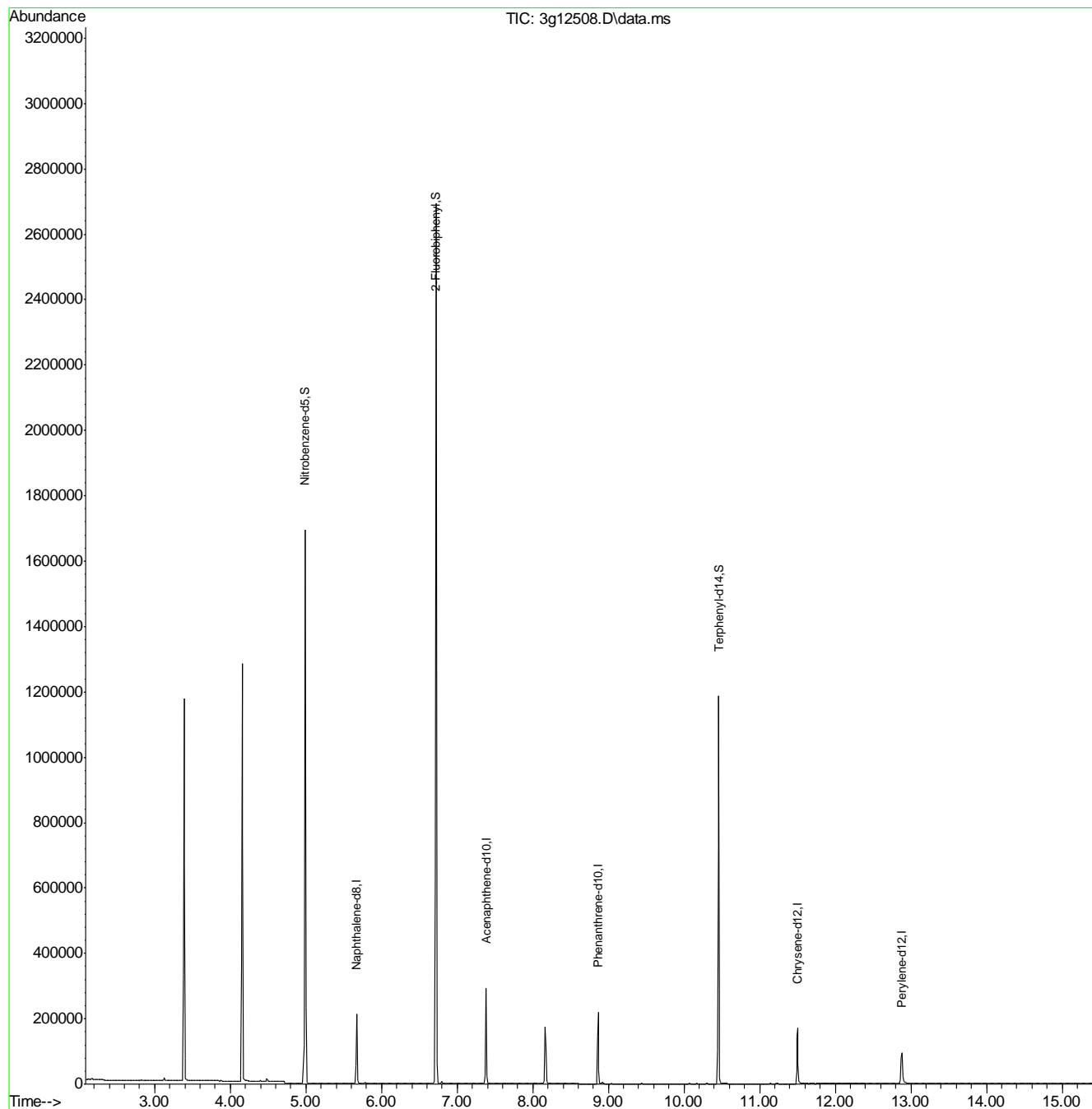
					Qvalue
3) N-Nitrosodimethylamine	2.334	74	50	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.683	128	491	N.D.	
8) 2-Methylnaphthalene	6.356	142	179	N.D.	
9) 1-Methylnaphthalene	6.456	142	126	N.D.	
10) Acenaphthylene	7.243	152	198	N.D.	
11) Acenaphthene	7.113	154	75	Below	Cal 87
12) Dibenzofuran	7.585	168	152	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.891	178	540	N.D.	
17) Anthracene	8.938	178	357	N.D.	
18) Fluoranthene	10.070	202	778	N.D.	
20) Pyrene	10.299	202	864	N.D.	
22) Benzo(a)anthracene	11.496	228	1148	N.D.	
23) Chrysene	11.523	228	724	N.D.	
25) Benzo(b)fluoranthene	12.494	252	1411	N.D.	
26) Benzo(k)fluoranthene	12.494	252	1411	N.D.	
27) Benzo(a)pyrene	12.820	252	509	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.093	276	459	N.D.	
29) Dibenz(a,h)anthracene	14.114	278	376	N.D.	
30) Benzo(g,h,i)perylene	14.450	276	479	N.D.	

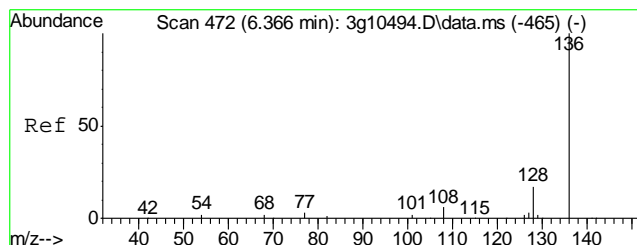
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
Data File : 3g12508.D
Acq On : 10 Dec 2012 11:52 am
Operator : DONC
Sample : OP7075-MB
Misc : OP7075,E3G593,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

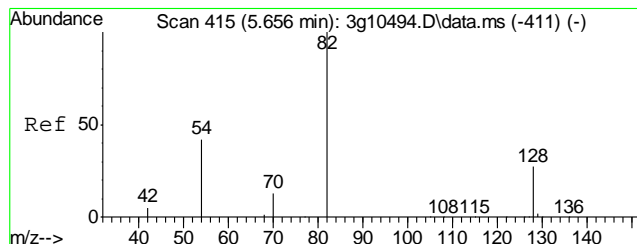
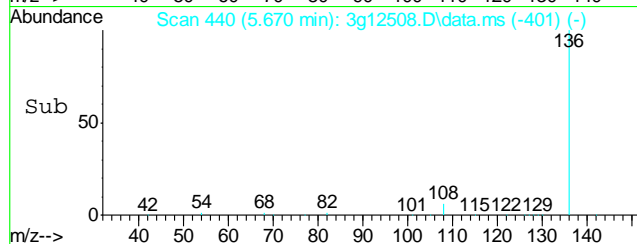
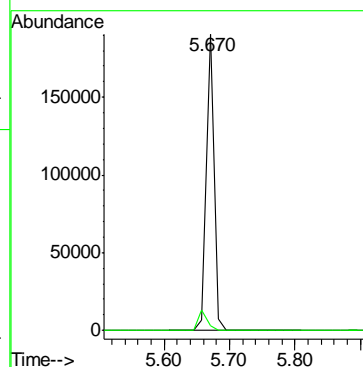
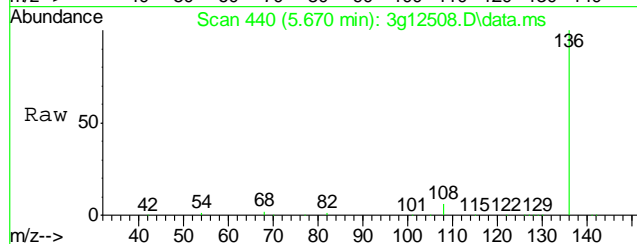
Quant Time: Dec 10 13:58:13 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





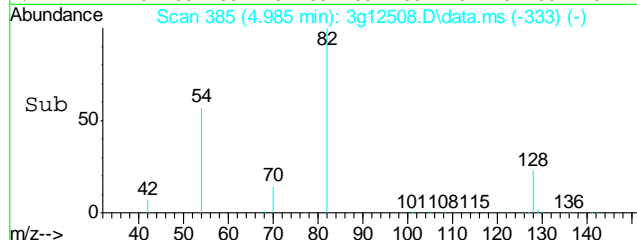
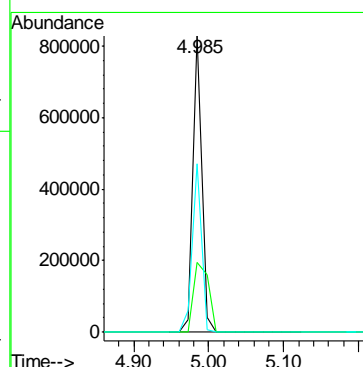
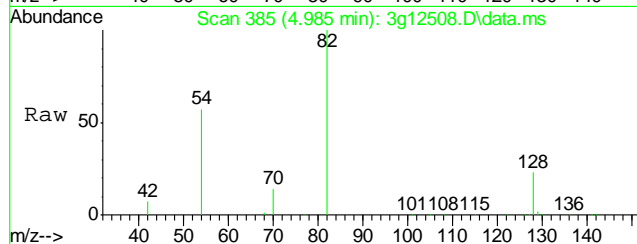
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

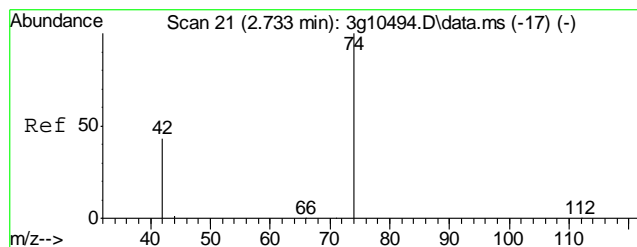
Tgt Ion:	136	Resp:	153335
Ion Ratio	Lower	Upper	
136	100		
68	7.6	0.0	28.4



#2
Nitrobenzene-d5
Concen: 44.2147 ug/mL
RT: 4.985 min Scan# 385
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

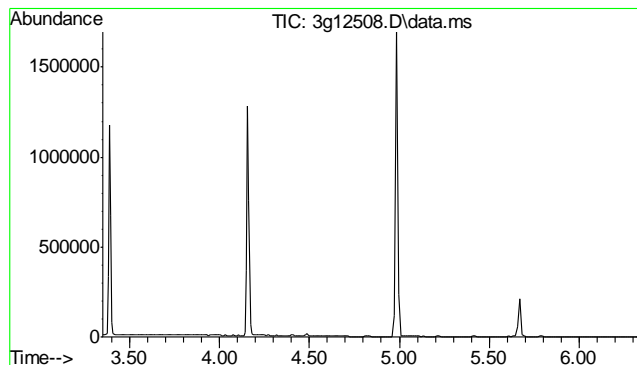
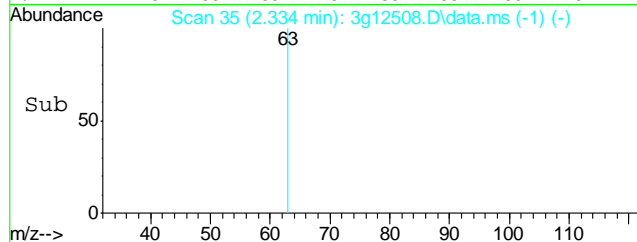
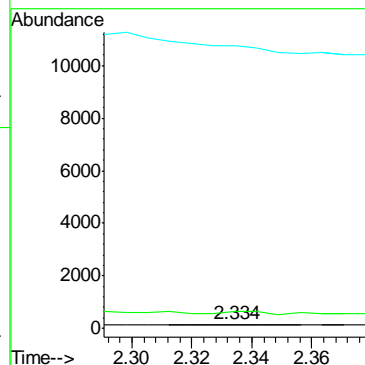
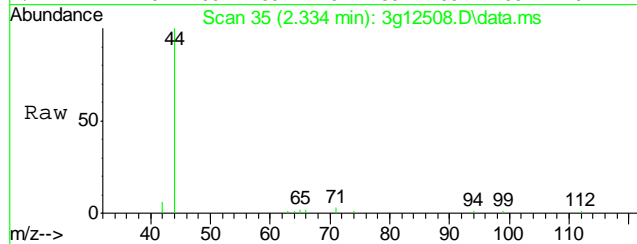
Tgt Ion:	82	Resp:	677706
Ion Ratio	Lower	Upper	
82	100		
128	39.2	31.8	71.8
54	59.4	29.2	69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.334 min Scan# 35
Delta R.T. -0.044 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

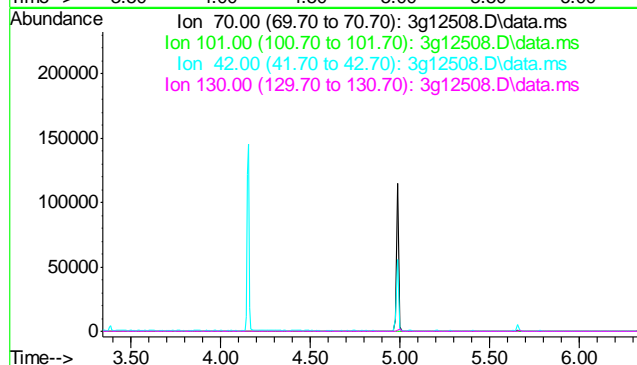
Tgt Ion	74	Resp	50
Ion Ratio	100		
42	168.0	52.5	92.5#
44	0.0	0.0	24.1

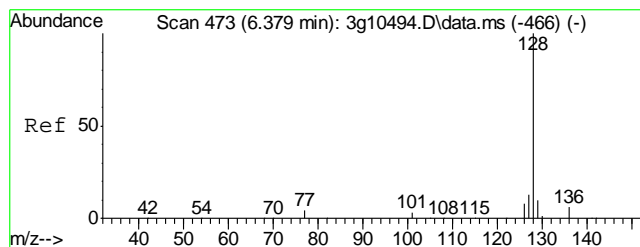


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

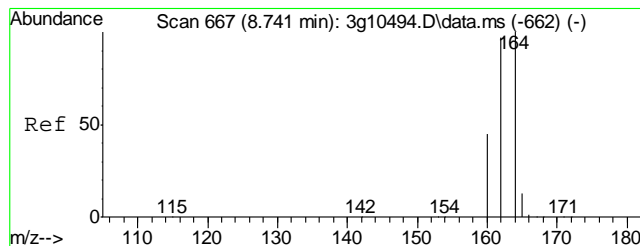
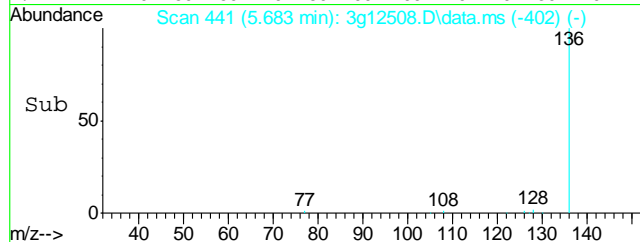
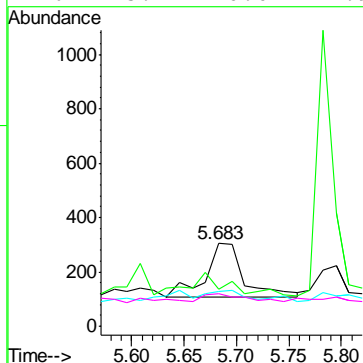
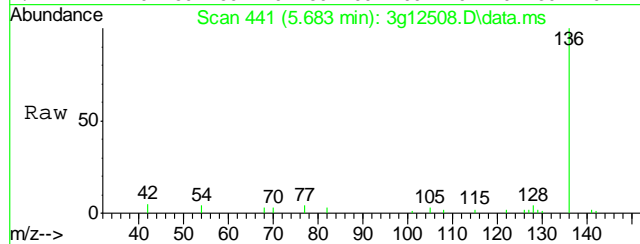
Tgt Ion	70
Sig	Exp Ratio
70	100
101	12.2
42	67.9
130	33.2





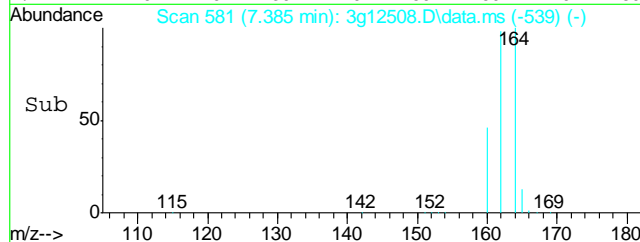
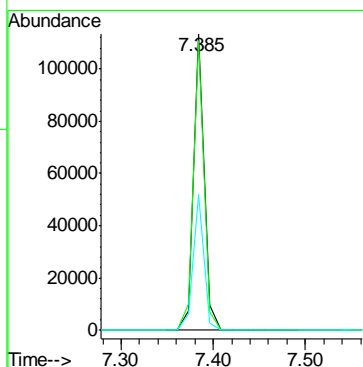
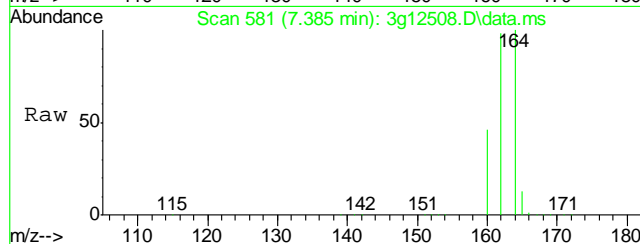
#5
Naphthalene
Concen: Below ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

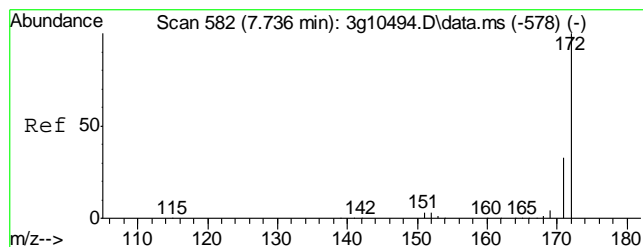
Tgt Ion	128	Ratio	100	Resp	491
Ion	128	100			
	129	43.2	0.0		30.7#
	127	24.8	0.0		33.2
	126	15.1	0.0		27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

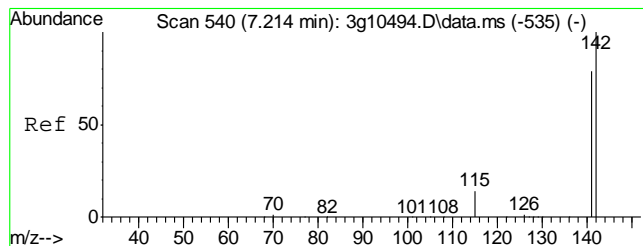
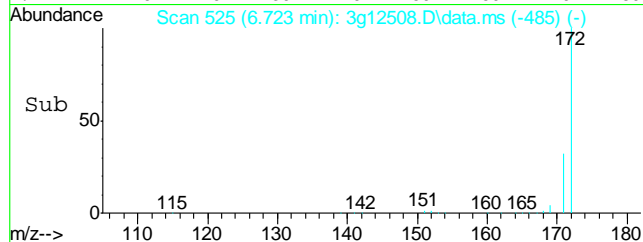
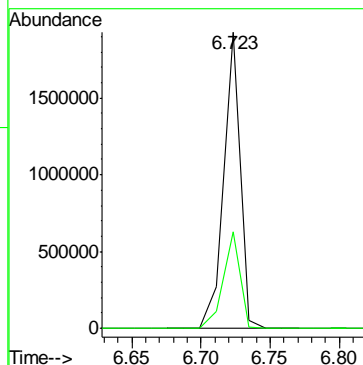
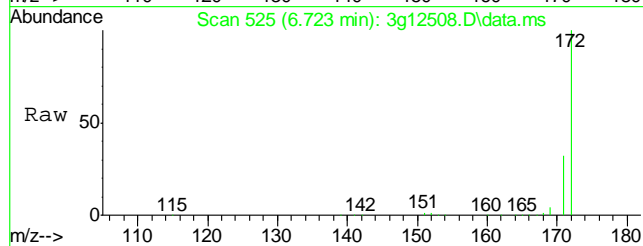
Tgt Ion	164	Ratio	100	Resp	92403
Ion	164	100			
	162	98.1	78.0		118.0
	160	46.6	27.3		67.3





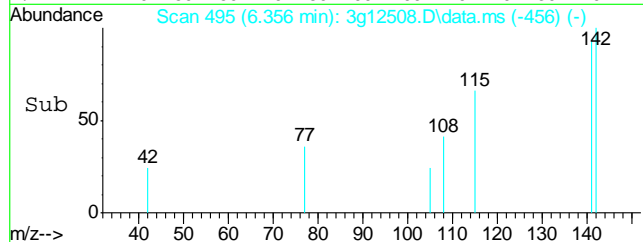
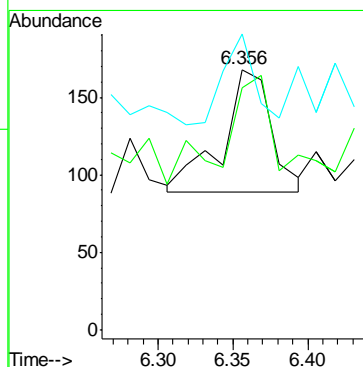
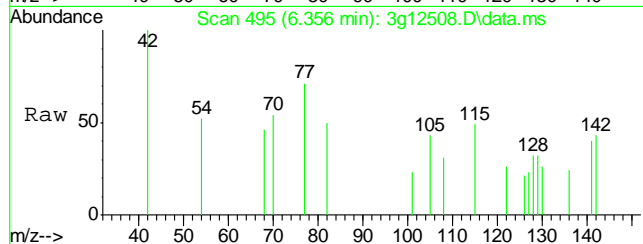
#7
2-Fluorobiphenyl
Concen: 39.4888 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

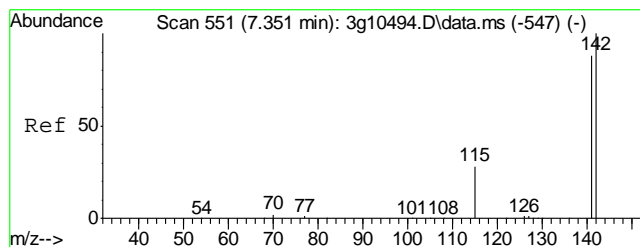
Tgt Ion:172 Resp: 1592975
Ion Ratio Lower Upper
172 100
171 33.4 13.7 53.7



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.356 min Scan# 495
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

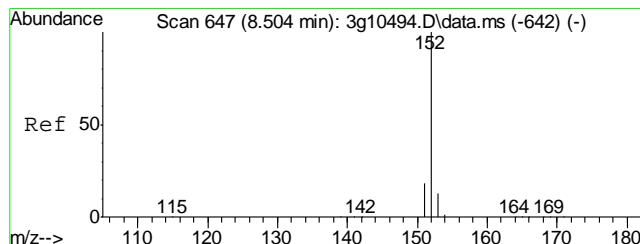
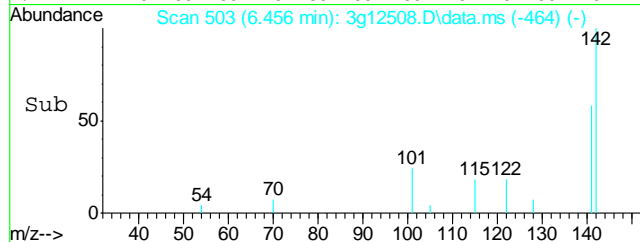
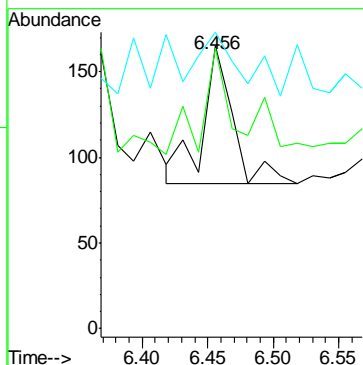
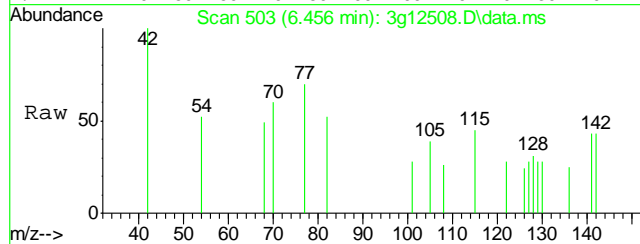
Tgt Ion:142 Resp: 179
Ion Ratio Lower Upper
142 100
141 40.2 65.6 105.6#
115 0.0 12.2 52.2#





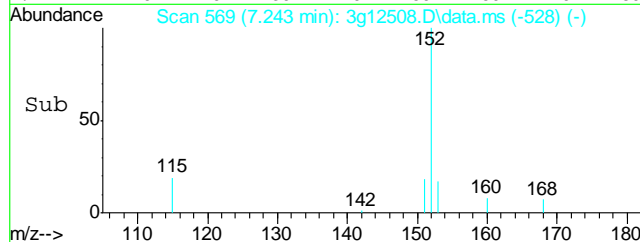
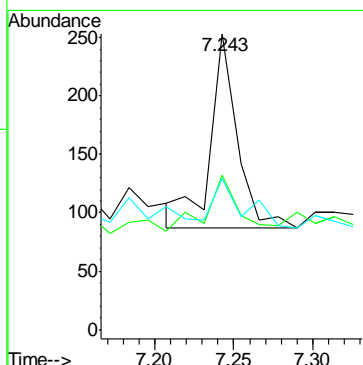
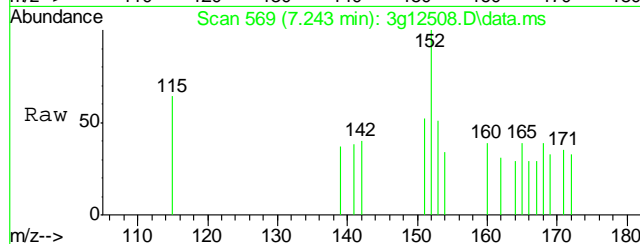
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

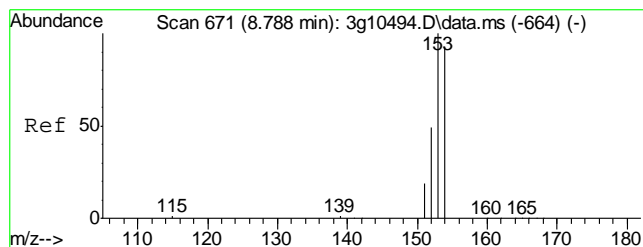
Tgt Ion: 142 Resp: 126
Ion Ratio Lower Upper
142 100
141 69.8 67.0 107.0
115 0.0 9.3 49.3#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.243 min Scan# 569
Delta R.T. -0.016 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

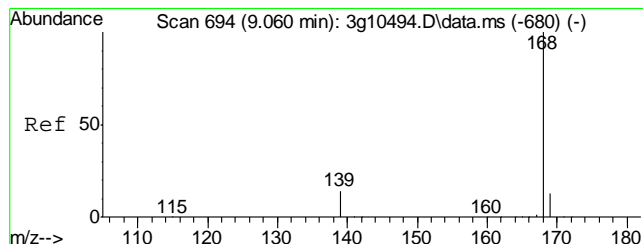
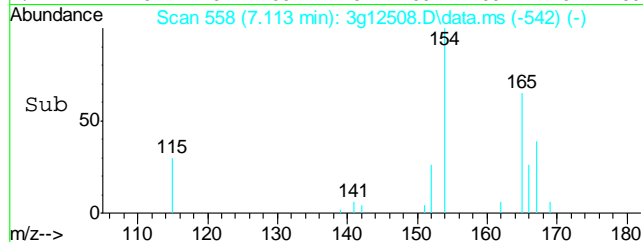
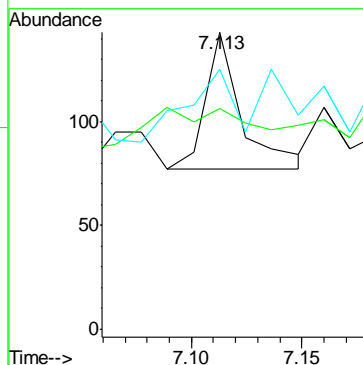
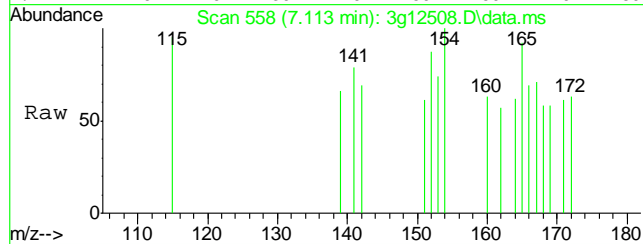
Tgt Ion: 152 Resp: 198
Ion Ratio Lower Upper
152 100
151 34.3 0.0 39.5
153 27.8 0.0 33.0





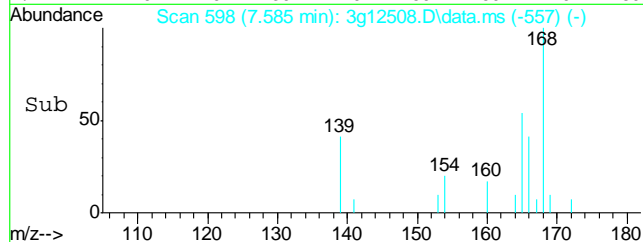
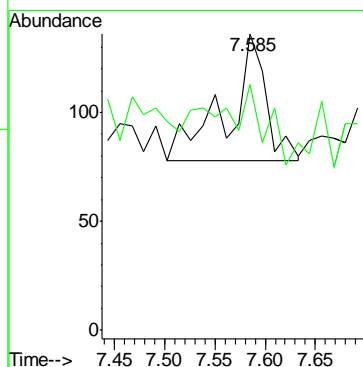
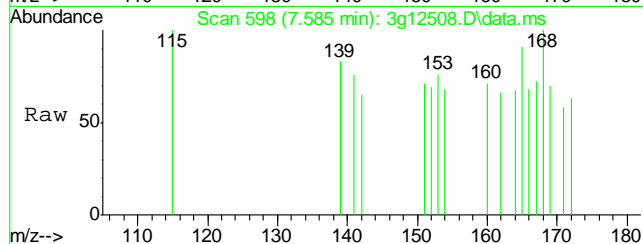
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.113 min Scan# 558
Delta R.T. -0.311 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

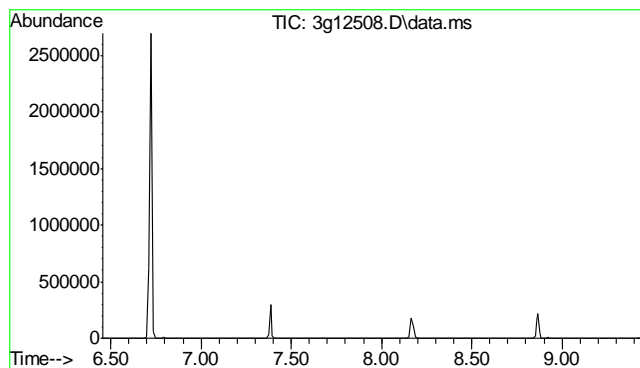
Tgt Ion	154	Resp	75
Ion Ratio	100		
Lower	84.7		
Upper	124.7		
153	98.7		
152	69.3		



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.585 min Scan# 598
Delta R.T. -0.016 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion	168	Resp	152
Ion Ratio <td>100</td> <td></td> <td></td>	100		
Lower <td>12.0</td> <td></td> <td></td>	12.0		
Upper <td>52.0</td> <td></td> <td></td>	52.0		
139	13.2		

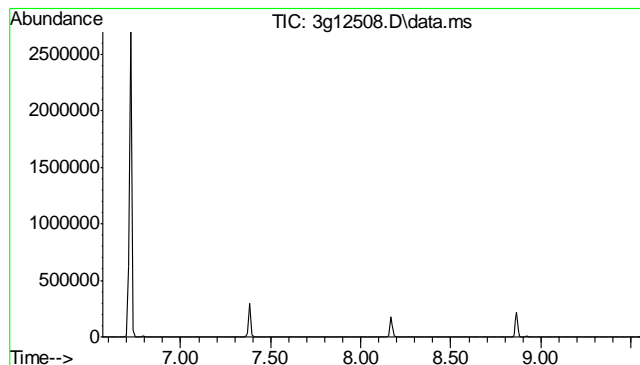
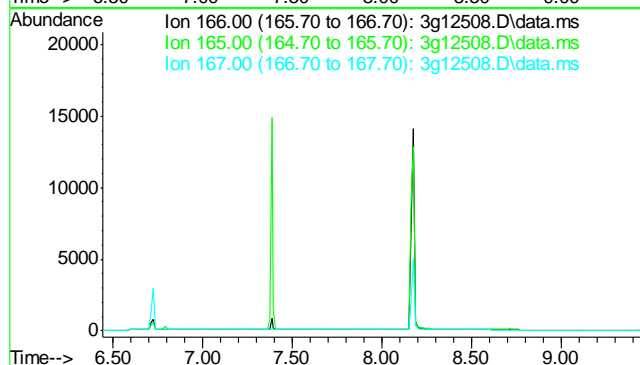




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.94 min

Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

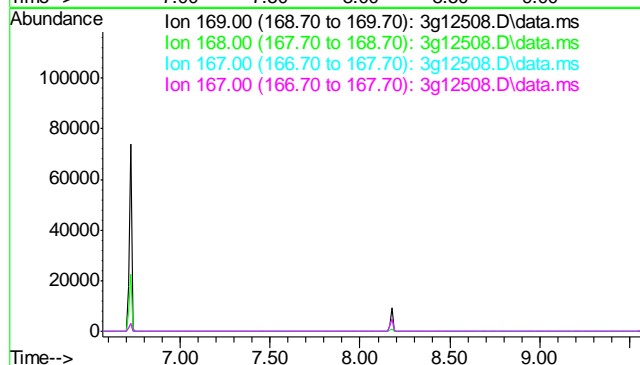
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	90.1
167	13.4

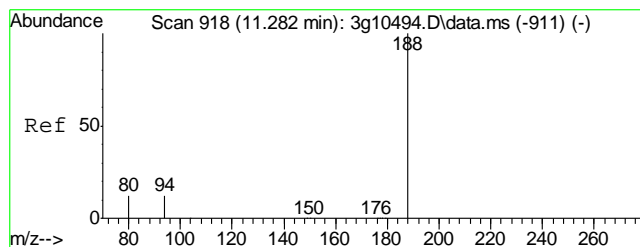


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

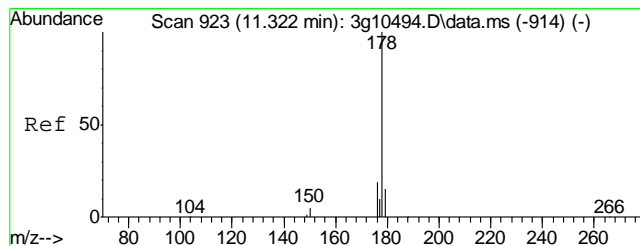
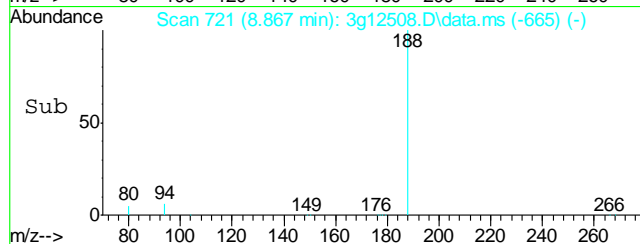
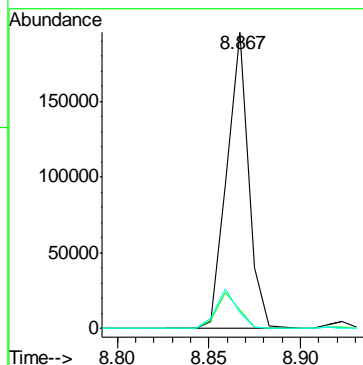
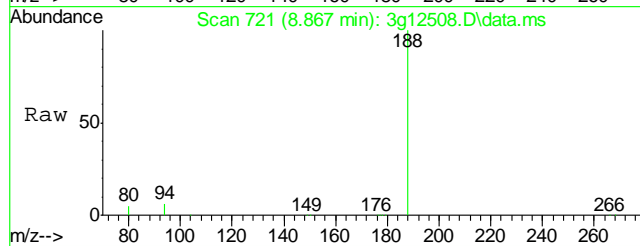
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





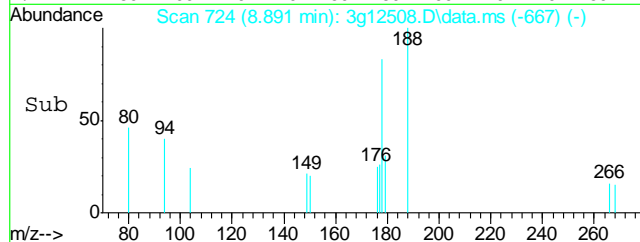
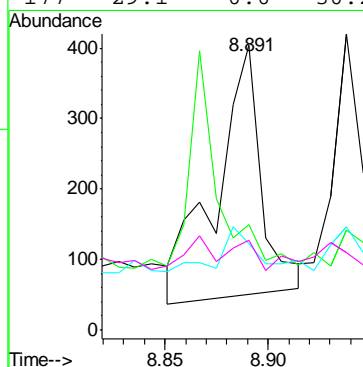
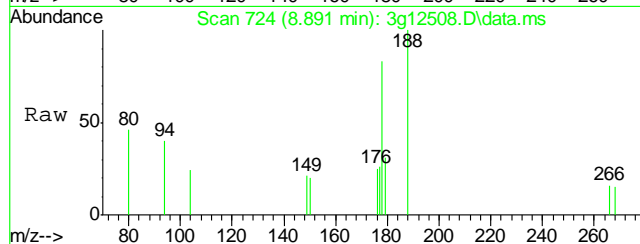
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 721
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

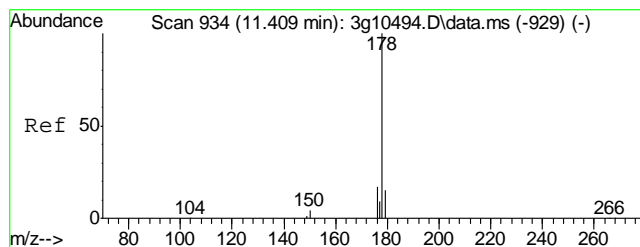
Tgt Ion	Ratio	Lower	Upper
188	100		
94	12.2	0.0	33.4
80	12.9	0.0	28.9



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.891 min Scan# 724
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

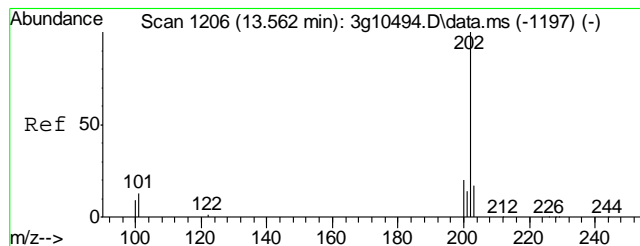
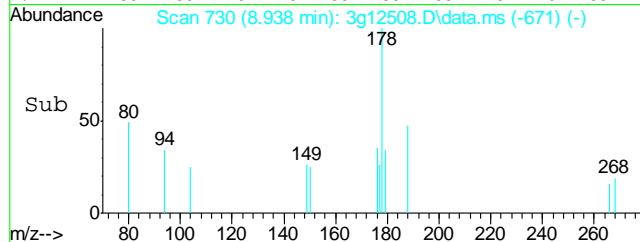
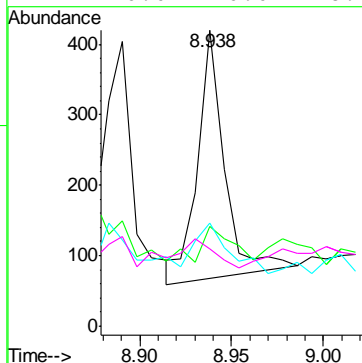
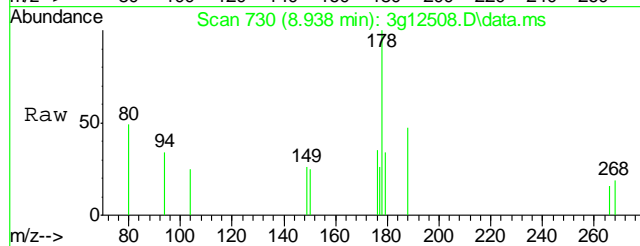
Tgt Ion	Ratio	Lower	Upper
178	100		
179	84.3	0.0	35.3#
176	9.6	0.0	38.6
177	29.1	0.0	30.2





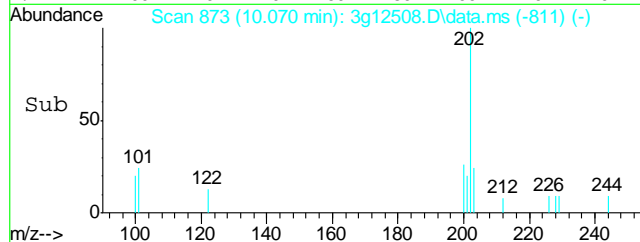
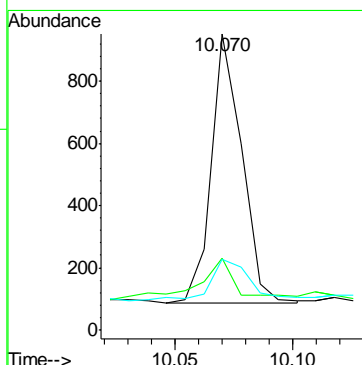
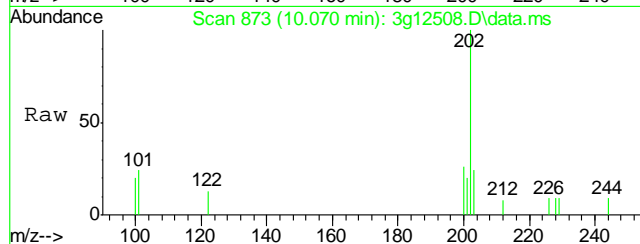
#17
Anthracene
Concen: Below ug/mL
RT: 8.938 min Scan# 730
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

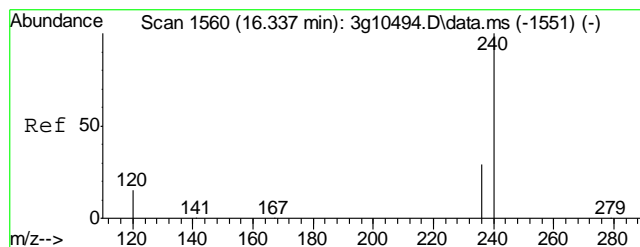
Tgt Ion:	178	Resp:	357
Ion Ratio	Lower	Upper	
178	100		
179	17.6	0.0	35.1
176	20.7	0.0	38.2
177	0.0	0.0	28.8



#18
Fluoranthene
Concen: Below ug/mL
RT: 10.070 min Scan# 873
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

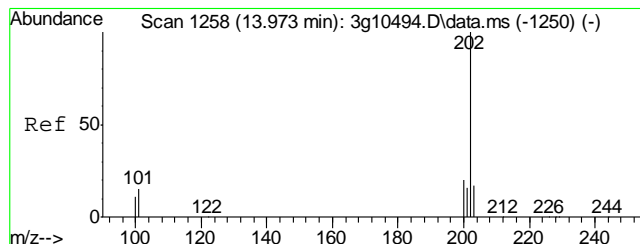
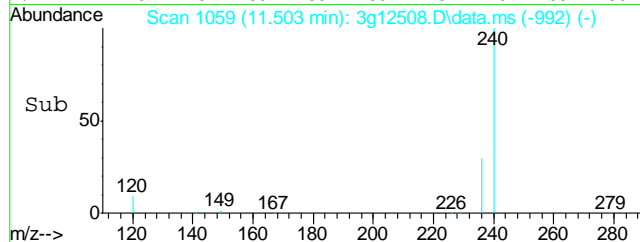
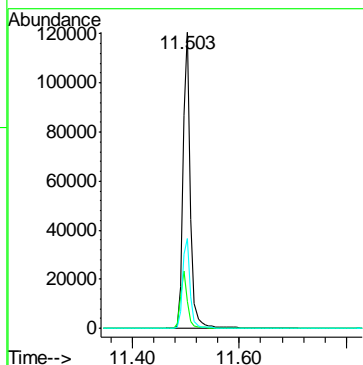
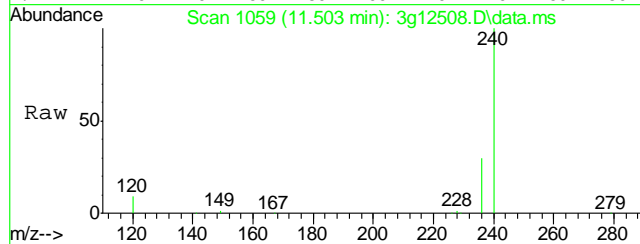
Tgt Ion:	202	Resp:	778
Ion Ratio	Lower	Upper	
202	100		
101	11.4	0.0	32.5
203	16.1	0.0	37.3





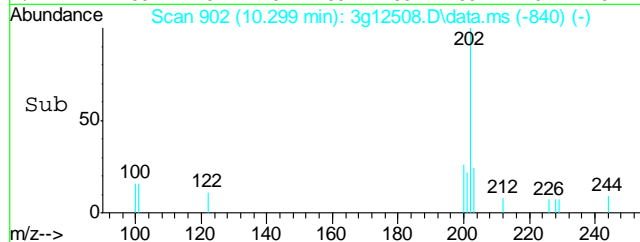
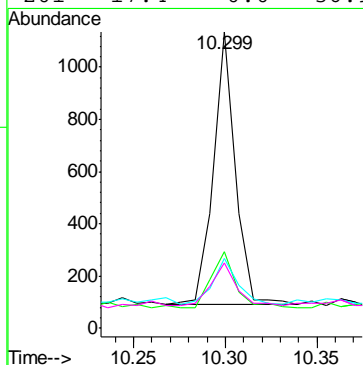
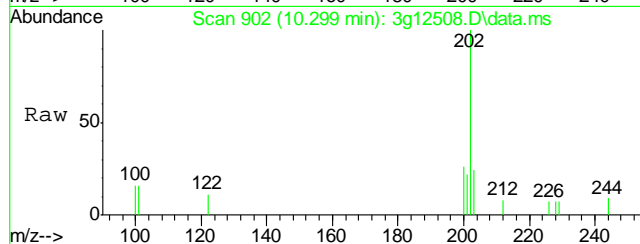
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.503 min Scan# 1059
Delta R.T. -0.013 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

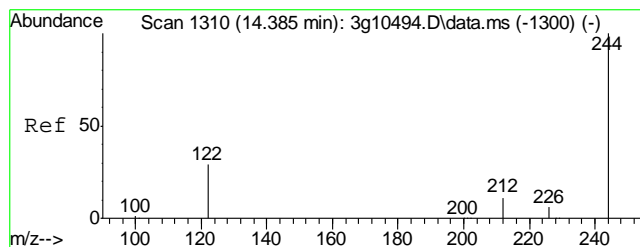
Tgt Ion:	240	Resp:	115791
Ion Ratio	Lower	Upper	
240	100		
120	18.3	0.0	39.7
236	31.8	11.1	51.1



#20
Pyrene
Concen: Below ug/mL
RT: 10.299 min Scan# 902
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

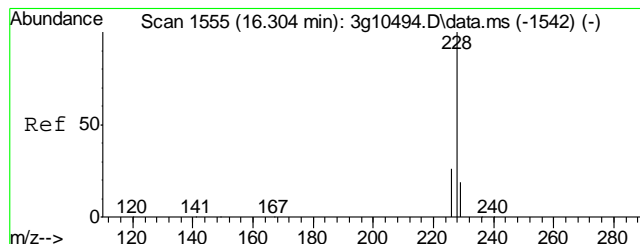
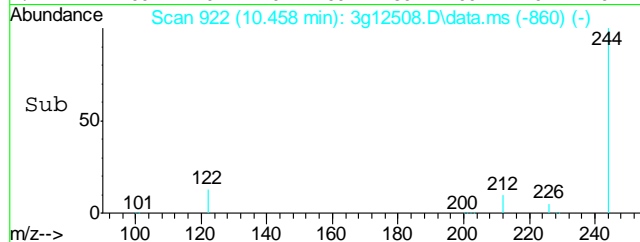
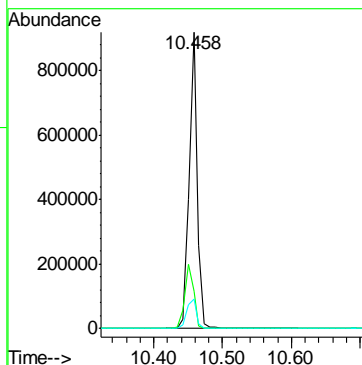
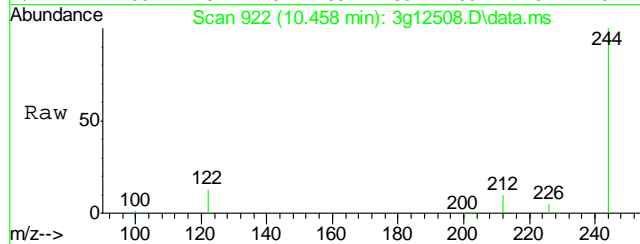
Tgt Ion:	202	Resp:	864
Ion Ratio	Lower	Upper	
202	100		
200	22.9	0.7	40.7
203	19.7	0.0	37.8
201	17.4	0.0	36.9





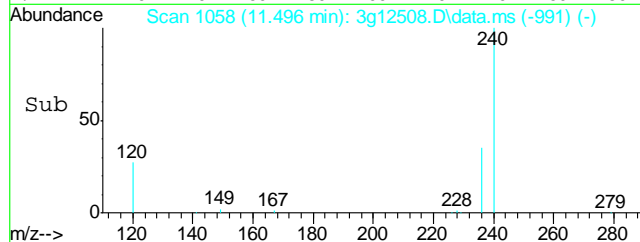
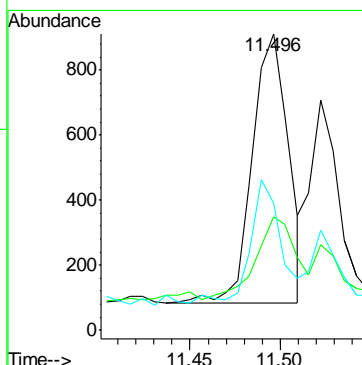
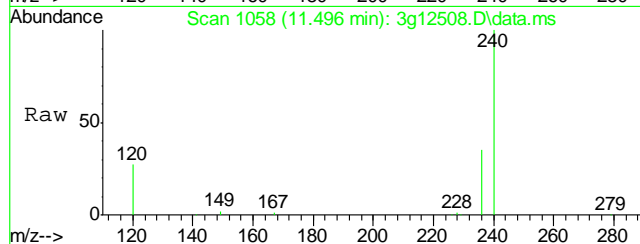
#21
Terphenyl-d14
Concen: 45.4337 ug/mL
RT: 10.458 min Scan# 922
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

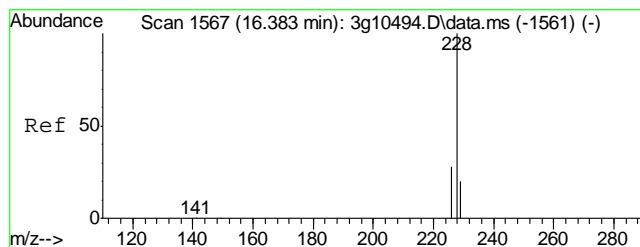
Tgt Ion:	244	Resp:	774374
Ion Ratio	Lower	Upper	
244	100		
122	23.6	6.8	46.8
212	11.7	0.0	32.3



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.496 min Scan# 1058
Delta R.T. -0.006 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

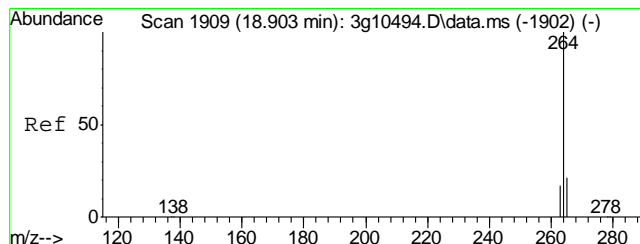
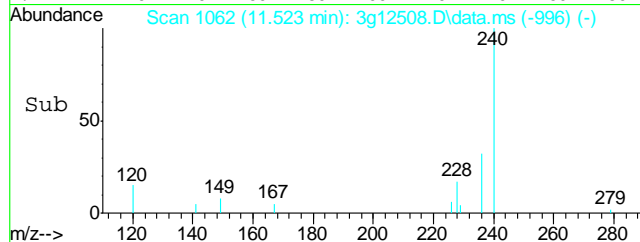
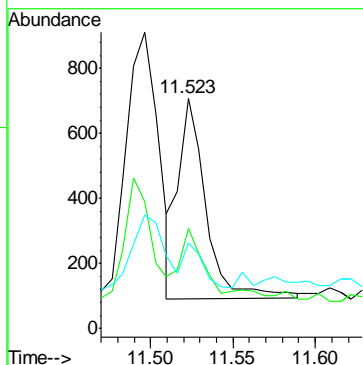
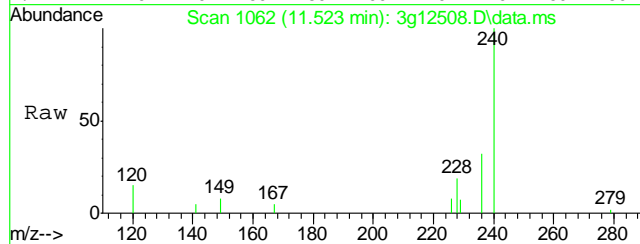
Tgt Ion:	228	Resp:	1148
Ion Ratio	Lower	Upper	
228	100		
229	34.7	0.0	39.4
226	38.0	6.8	46.8





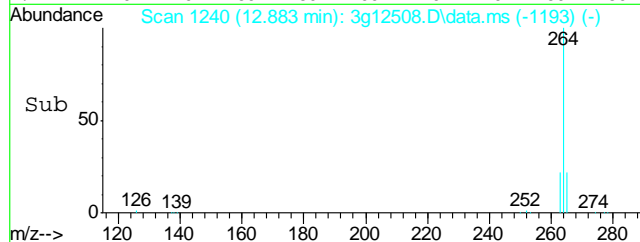
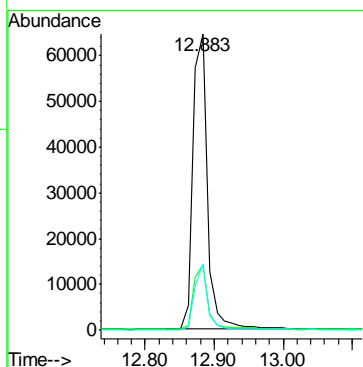
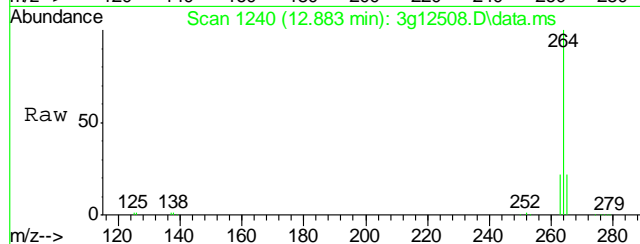
#23
Chrysene
Concen: Below ug/mL
RT: 11.523 min Scan# 1062
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

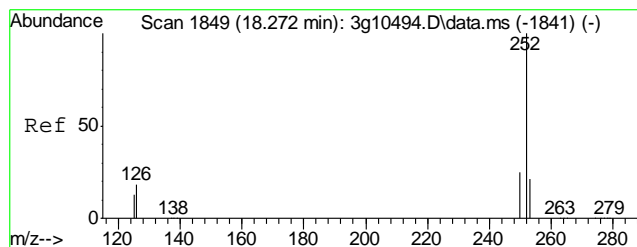
Tgt Ion:	228	Resp:	724
Ion Ratio	100	Lower	Upper
228	100		
226	25.1	9.2	49.2
229	2.9	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.883 min Scan# 1240
Delta R.T. -0.009 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

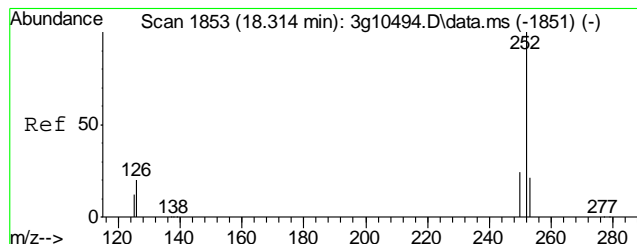
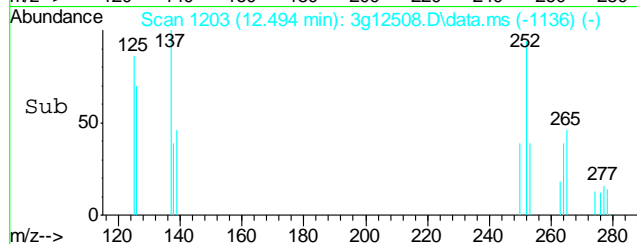
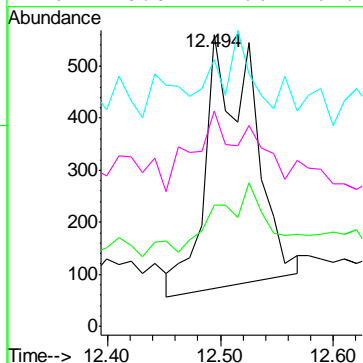
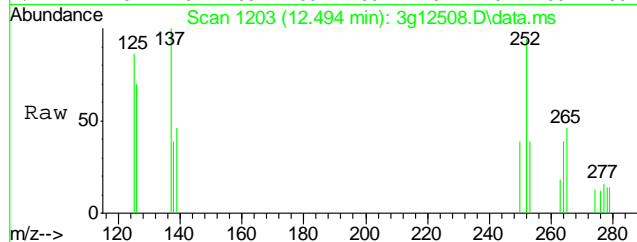
Tgt Ion:	264	Resp:	94737
Ion Ratio	100	Lower	Upper
264	100		
265	20.6	0.6	40.6
263	20.3	0.0	39.7





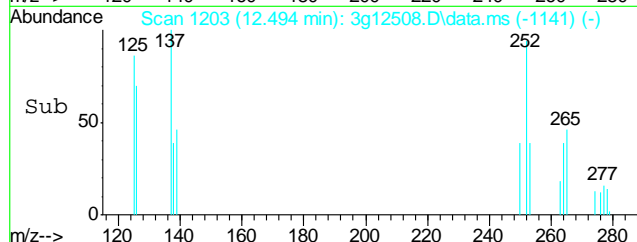
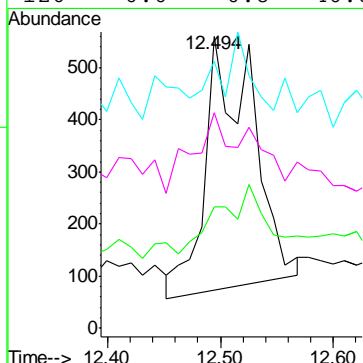
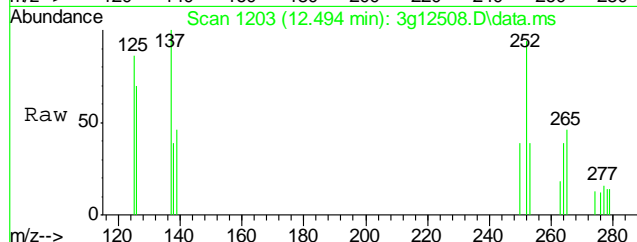
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

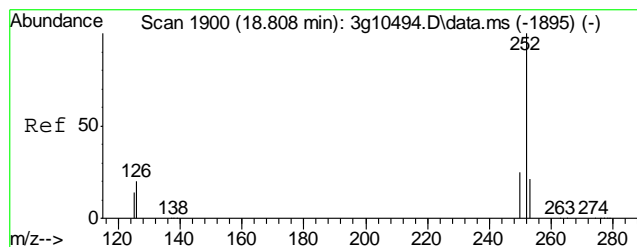
Tgt Ion:	252	Resp:	1411
Ion Ratio	100	Lower	Upper
252	100		
253	45.0	7.0	47.0
125	0.0	9.0	49.0#
126	0.0	21.6	61.6#



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.051 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

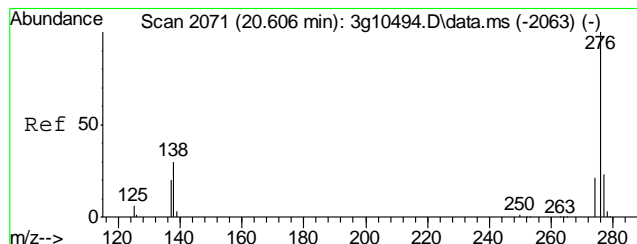
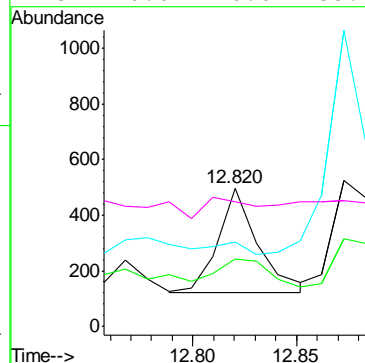
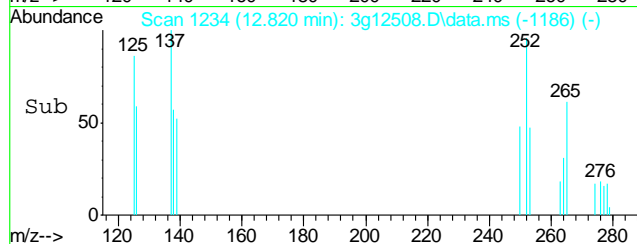
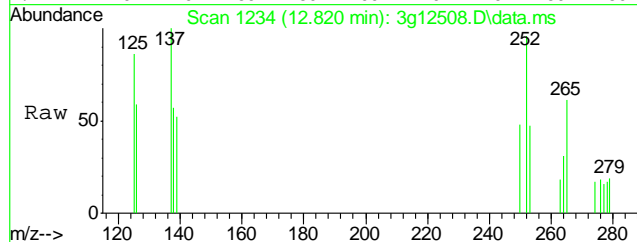
Tgt Ion:	252	Resp:	1411
Ion Ratio	100	Lower	Upper
252	100		
253	45.0	4.0	44.0#
125	0.0	0.0	35.3
126	0.0	0.8	40.8#





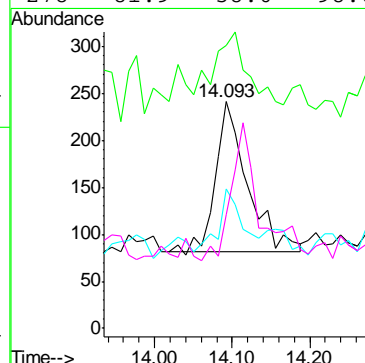
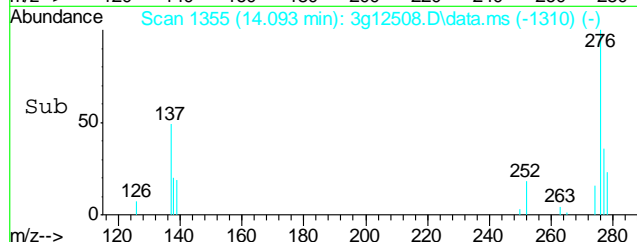
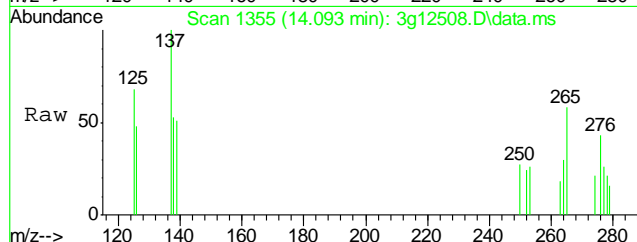
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.820 min Scan# 1234
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

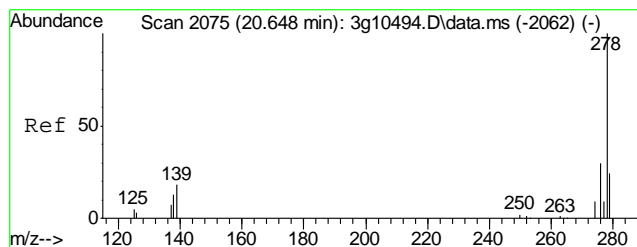
Tgt Ion:	252	Resp:	509
Ion Ratio	100	Lower	Upper
252	100		
253	34.4	1.5	41.5
126	0.0	0.0	38.4
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.093 min Scan# 1355
Delta R.T. -0.030 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

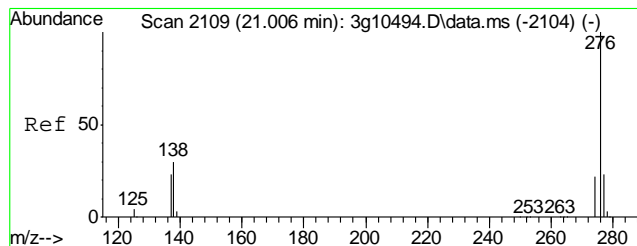
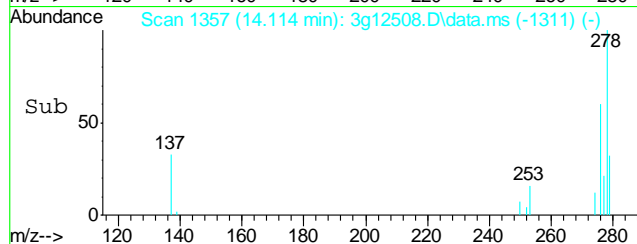
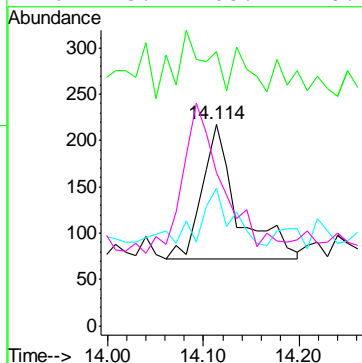
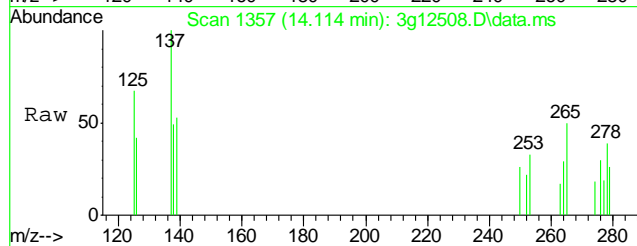
Tgt Ion:	276	Resp:	459
Ion Ratio	100	Lower	Upper
276	100		
138	66.2	16.0	56.0#
277	29.6	4.9	44.9
278	81.9	58.0	98.0





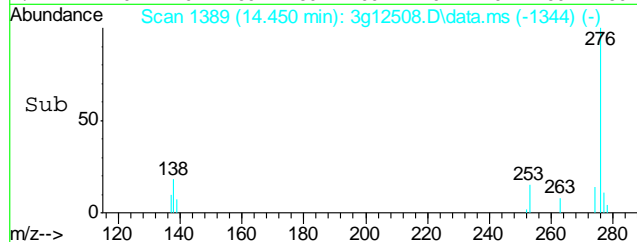
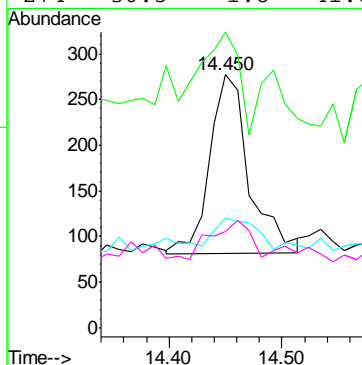
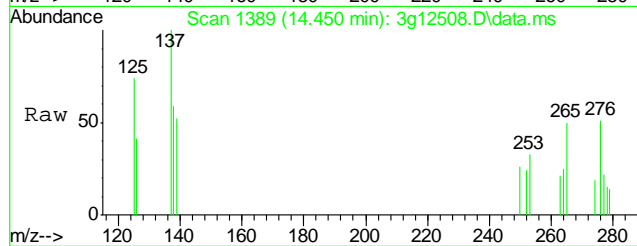
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.114 min Scan# 1357
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion: 278 Resp: 376
Ion Ratio Lower Upper
278 100
139 46.8 7.4 47.4
279 34.3 2.8 42.8
276 123.4 108.1 148.1



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.450 min Scan# 1389
Delta R.T. -0.030 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion: 276 Resp: 479
Ion Ratio Lower Upper
276 100
138 56.8 10.9 50.9#
277 15.9 3.2 43.2
274 30.5 1.8 41.8



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1026-MB	GB18841.D	1	12/10/12	SK	n/a	n/a	GGB1026

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

D41662-1

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	81% 60-140%

10.1.1
10

Blank Spike Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1026-BS	GB18842.D	1	12/10/12	SK	n/a	n/a	GGB1026

The QC reported here applies to the following samples:

Method: SW846 8015B

D41662-1

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

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	101%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41665-1MS	GB18844.D	1	12/10/12	SK	n/a	n/a	GGB1026
D41665-1MSD	GB18845.D	1	12/10/12	SK	n/a	n/a	GGB1026
D41665-1	GB18843.D	1	12/10/12	SK	n/a	n/a	GGB1026

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

D41662-1

CAS No.	Compound	D41665-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		143	152	106	152	106	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D41665-1	Limits
120-82-1	1,2,4-Trichlorobenzene	93%	93%	90%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121012\GB18850.D\FID1A.CH Vial: 12
Signal #2 : Y:\1\DATA\121012\GB18850.D\FID2B.CH
Acq On : 10 Dec 2012 5:37 pm Operator: StephK
Sample : D41662-1, 50X Inst : GC/MS Ins
Misc : GC3285,GGB1026,5.043,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 11 08:49:09 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Dec 10 12:03:38 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	14.38	3078445	98.246 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.38	19172565	117.965 %	
Target Compounds					
1) H	TVH-Gasoline	7.23	9422738	0.116 mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	4.16	103103	0.256 ug/L	
6) T	Toluene	7.68	173309	0.437 ug/L	
7) T	Ethylbenzene	10.30	86770	0.257 ug/L	
8) T	m,p-Xylene	10.49	339695	0.557 ug/L	
9) T	o-Xylene	10.98	97101	0.296 ug/L	
11) T	Naphthalene	14.58	9730155	49.314 ug/L	

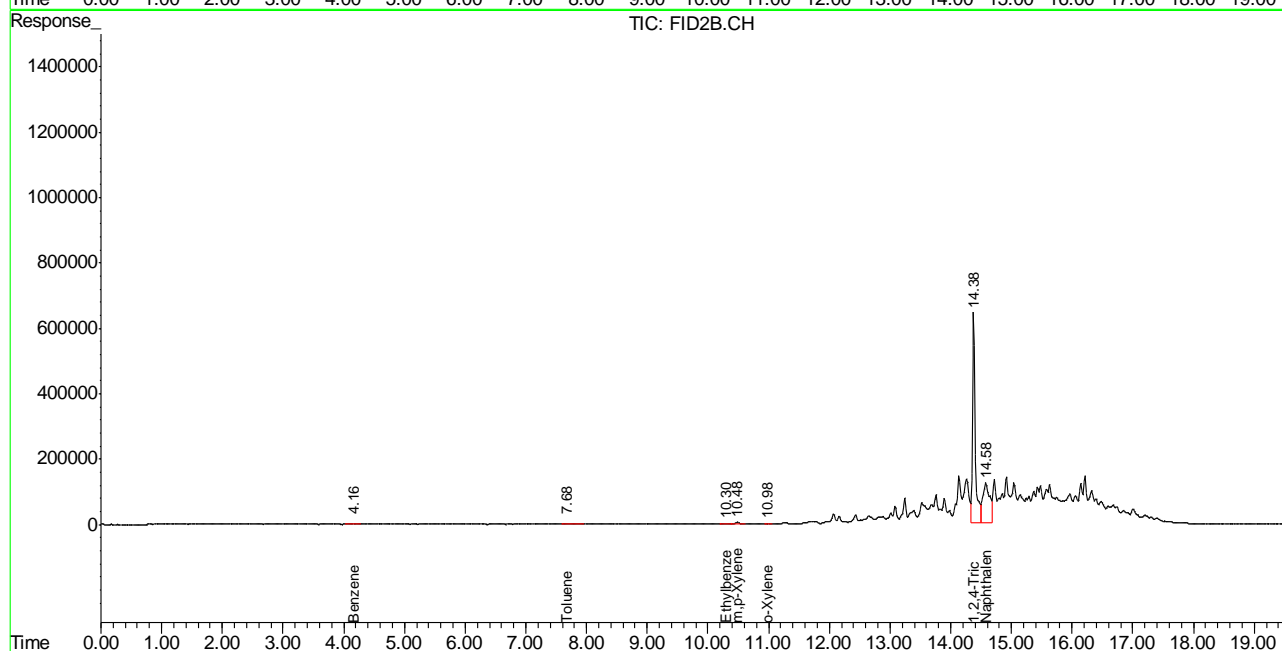
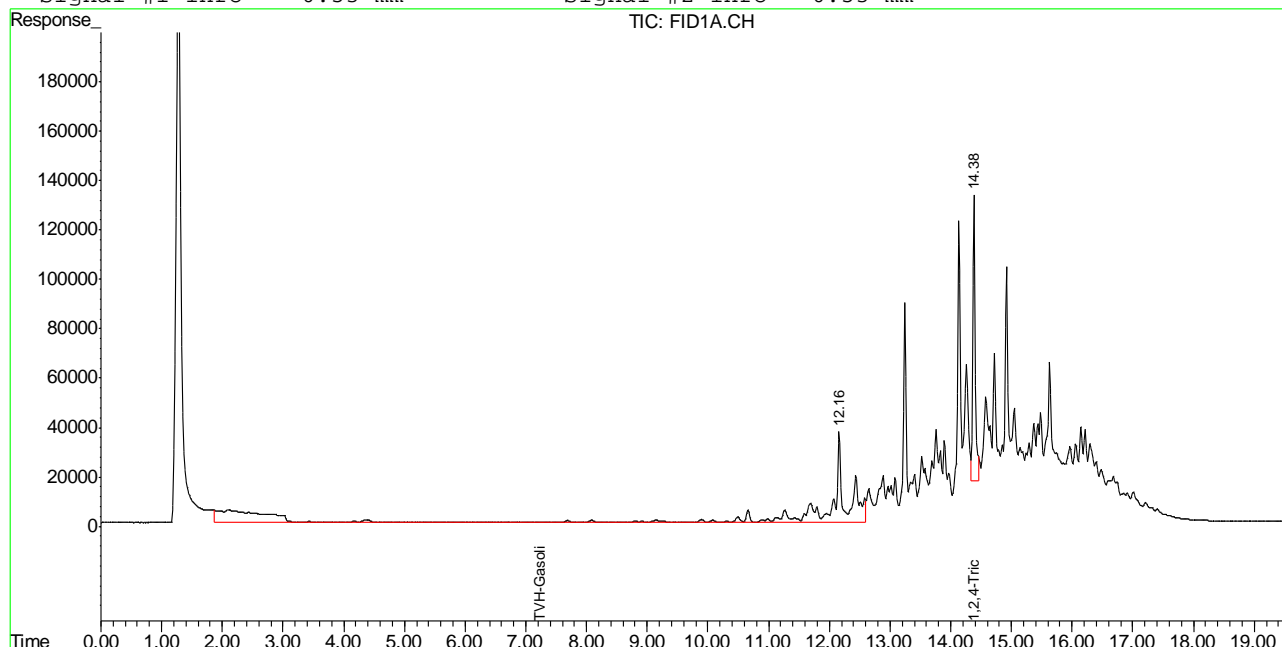
11.1.1
11

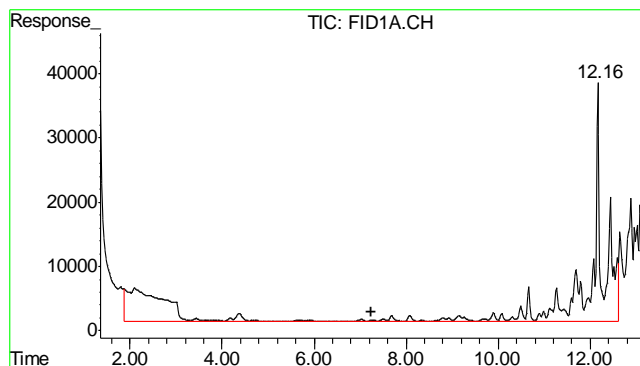
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121012\GB18850.D\FID1A.CH Vial: 12
 Signal #2 : Y:\1\DATA\121012\GB18850.D\FID2B.CH
 Acq On : 10 Dec 2012 5:37 pm Operator: StephK
 Sample : D41662-1, 50X Inst : GC/MS Ins
 Misc : GC3285,GGB1026,5.043,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 11 8:51 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Dec 10 12:03:38 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

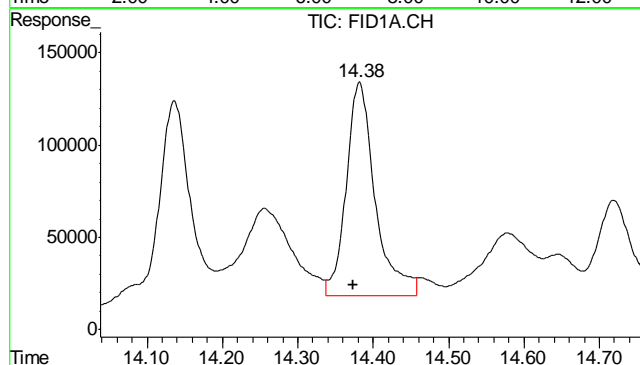
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





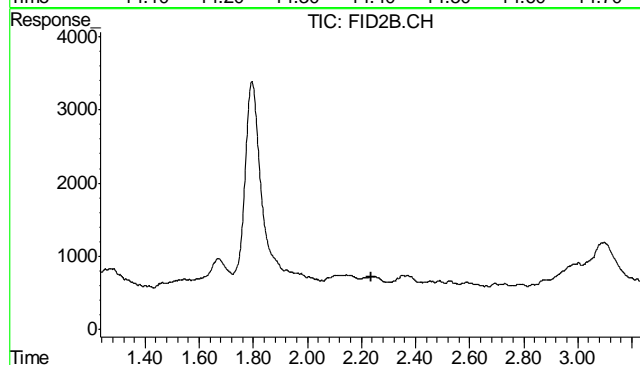
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 9422738
Conc: 0.12 mg/L m



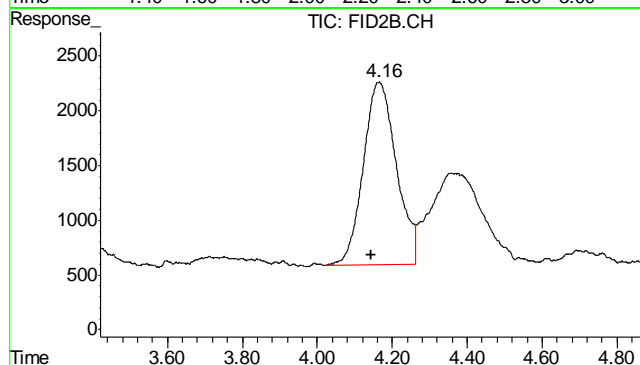
#2 1,2,4-Trichlorobenzene

R.T.: 14.381 min
Delta R.T.: 0.008 min
Response: 3078445
Conc: 98.25 % m



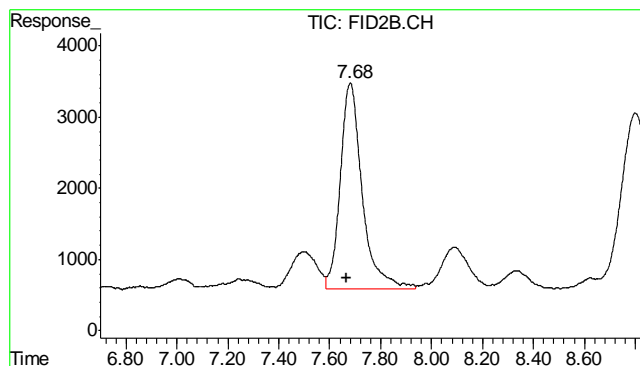
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.235 min
Response: 0
Conc: N.D.



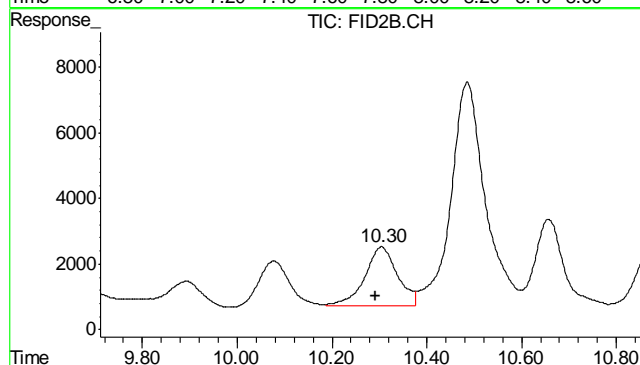
#5 Benzene

R.T.: 4.164 min
Delta R.T.: 0.021 min
Response: 103103
Conc: 0.26 ug/L



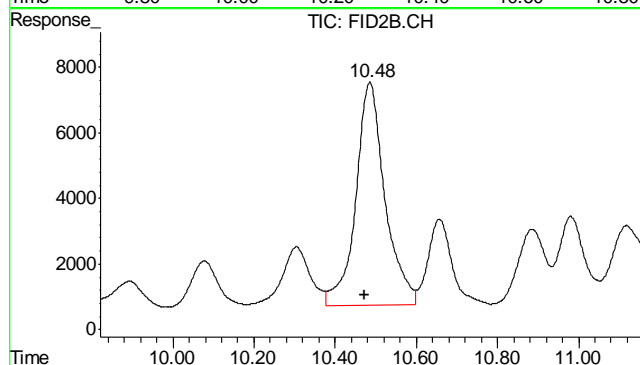
#6 Toluene

R.T.: 7.681 min
Delta R.T.: 0.016 min
Response: 173309
Conc: 0.44 ug/L



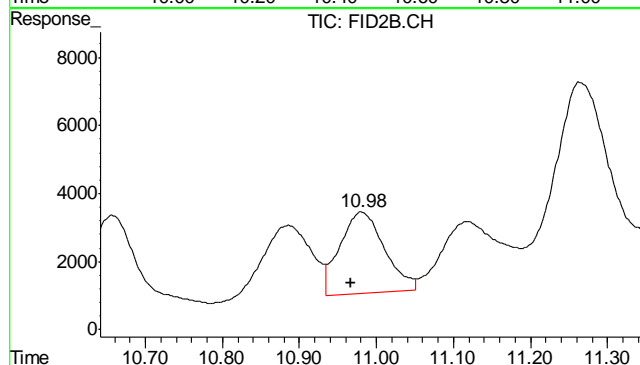
#7 Ethylbenzene

R.T.: 10.305 min
Delta R.T.: 0.013 min
Response: 86770
Conc: 0.26 ug/L



#8 m,p-Xylene

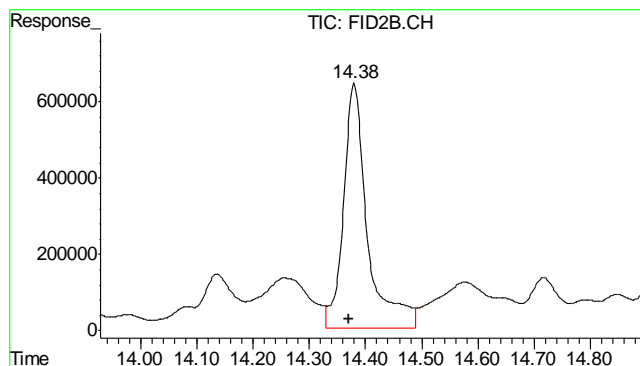
R.T.: 10.485 min
Delta R.T.: 0.013 min
Response: 339695
Conc: 0.56 ug/L



#9 o-Xylene

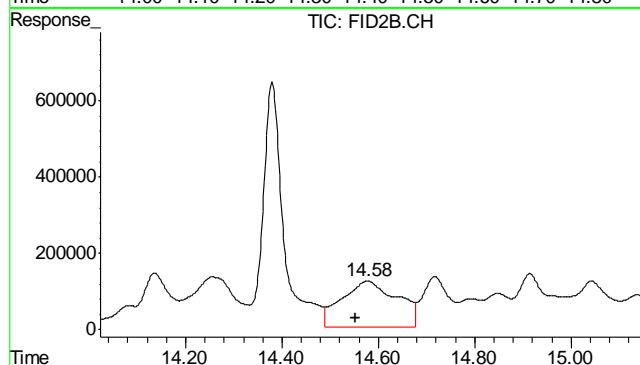
R.T.: 10.981 min
Delta R.T.: 0.013 min
Response: 97101
Conc: 0.30 ug/L

11.1.1
11



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

R.T.: 14.380 min
 Delta R.T.: 0.009 min
 Response: 19172565
 Conc: 117.97 %



#11 Naphthalene

R.T.: 14.577 min
 Delta R.T.: 0.024 min
 Response: 9730155
 Conc: 49.31 ug/L

11.1.1

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121012\GB18841.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\121012\GB18841.D\FID2B.CH
Acq On : 10 Dec 2012 12:19 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3285,GGB1026,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 10 13:05:48 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Dec 10 12:03:38 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	14.38	2524506	80.568	%
10) S	1,2,4-Trichlorobenzene (P)	14.38	13270381	81.650	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4157305	<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	7.68	148843	0.376	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.56	184721	0.936	ug/L

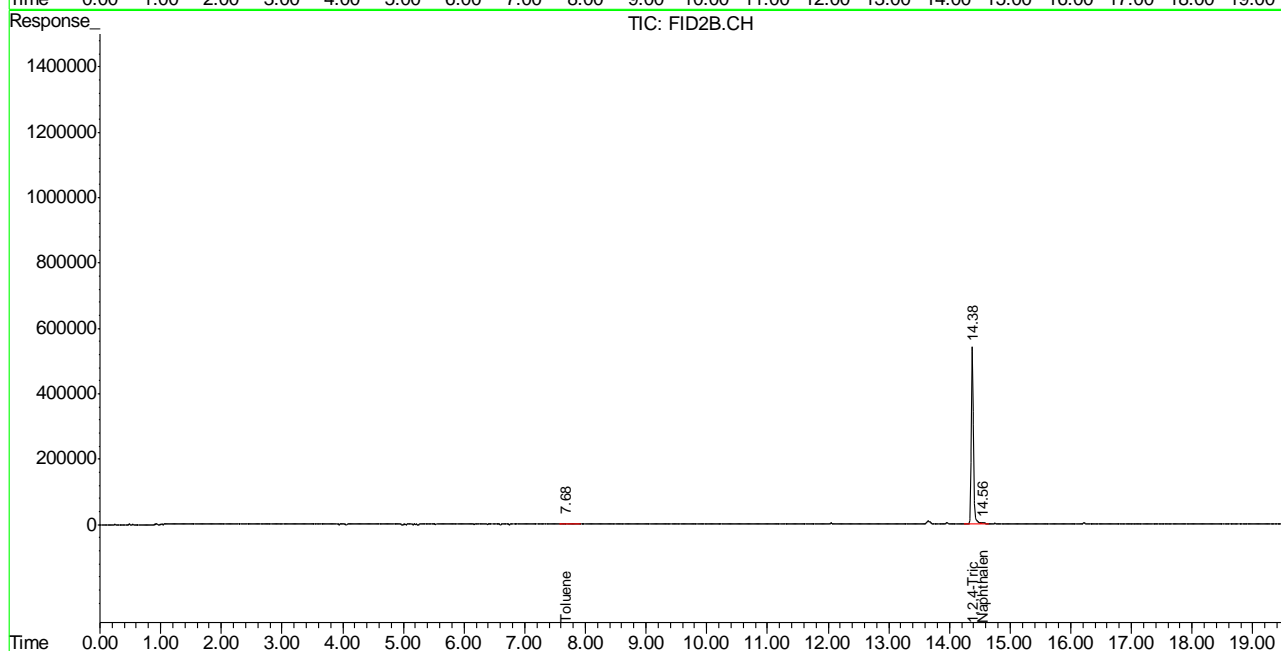
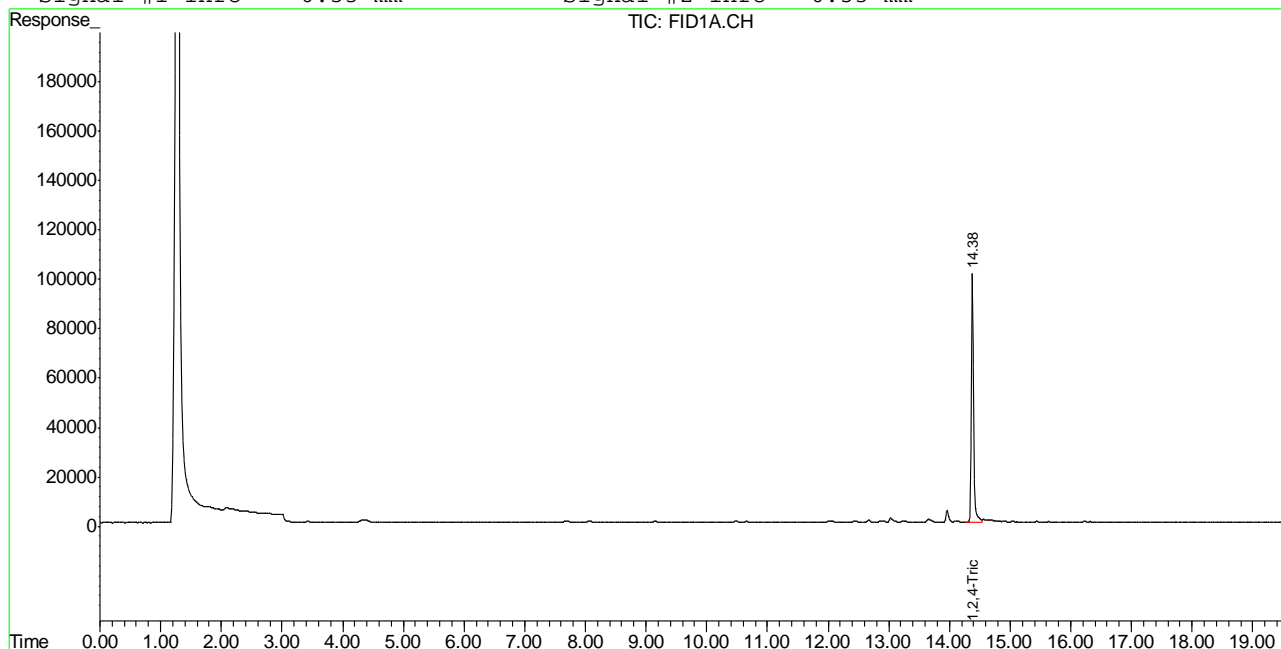
(f)=RT Delta > 1/2 Window (m)=manual int.
GB18841.D TB868GB868SOIL.M Tue Dec 11 08:54:25 2012 GC

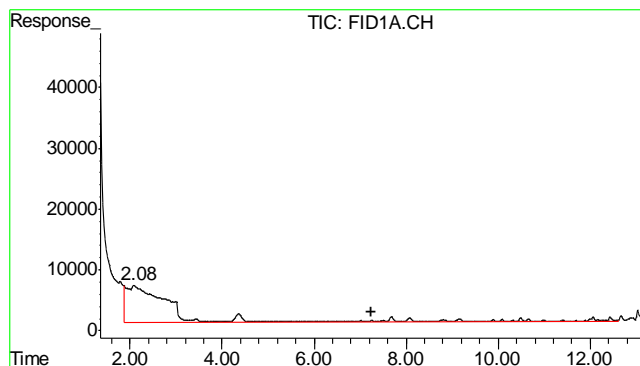
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121012\GB18841.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\121012\GB18841.D\FID2B.CH
Acq On : 10 Dec 2012 12:19 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3285,GGB1026,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 10 13:05 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Dec 10 12:03:38 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

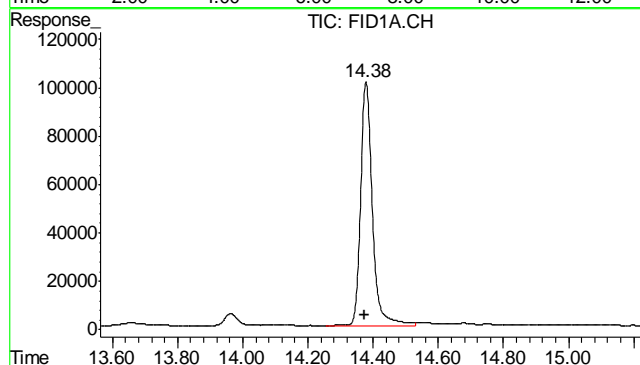
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





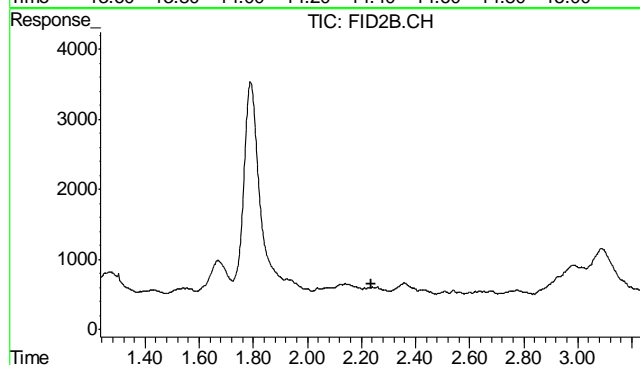
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4157305
Conc: N.D.



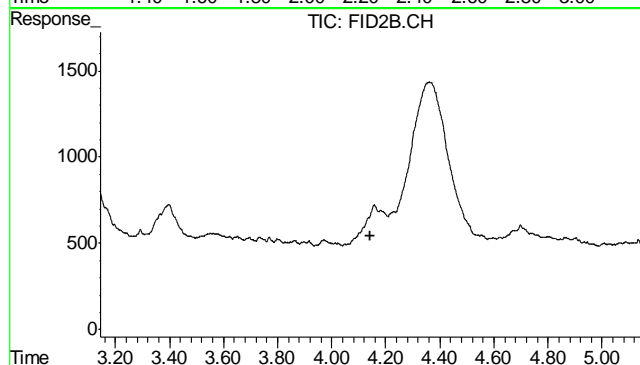
#2 1,2,4-Trichlorobenzene

R.T.: 14.379 min
Delta R.T.: 0.005 min
Response: 2524506
Conc: 80.57 %



#4 Methyl-t-butyl-ether

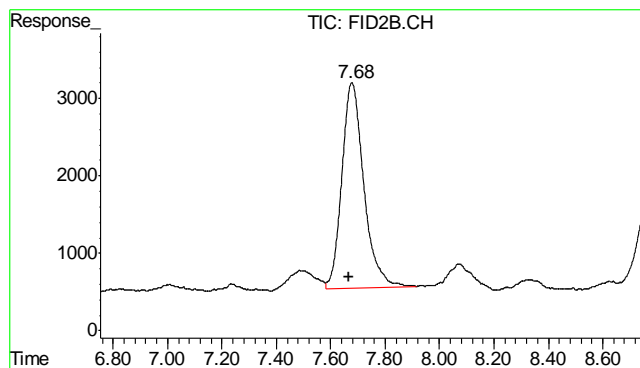
R.T.: 0.000 min
Exp R.T.: 2.235 min
Response: 0
Conc: N.D.



#5 Benzene

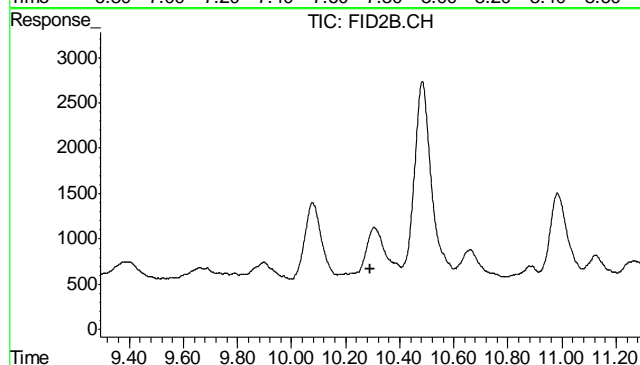
R.T.: 0.000 min
Exp R.T.: 4.144 min
Response: 0
Conc: N.D.

11.21
11



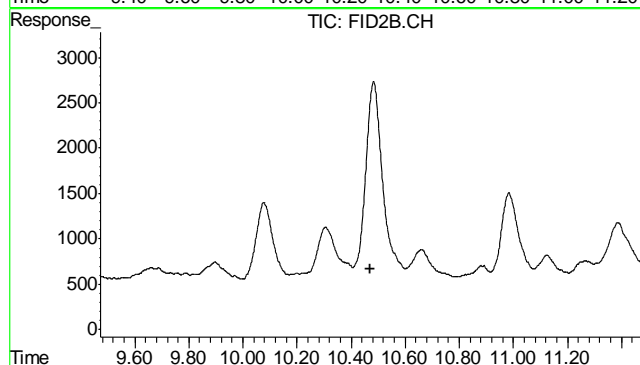
#6 Toluene

R.T.: 7.677 min
Delta R.T.: 0.012 min
Response: 148843
Conc: 0.38 ug/L



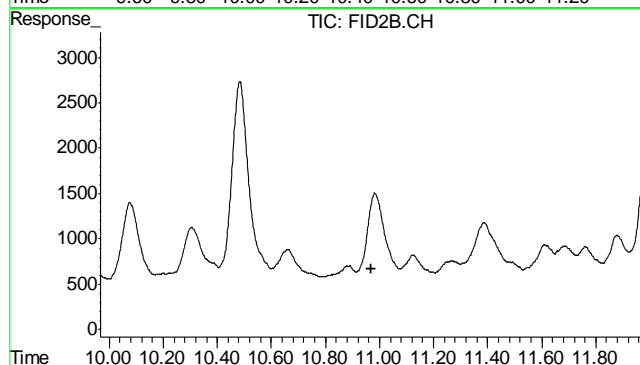
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.292 min
Response: 0
Conc: N.D.



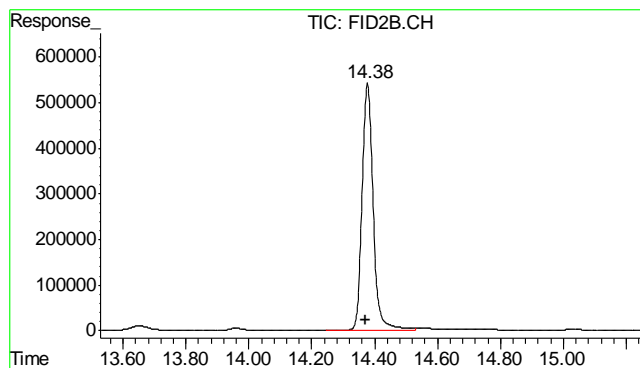
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T.: 10.472 min
Response: 0
Conc: N.D.



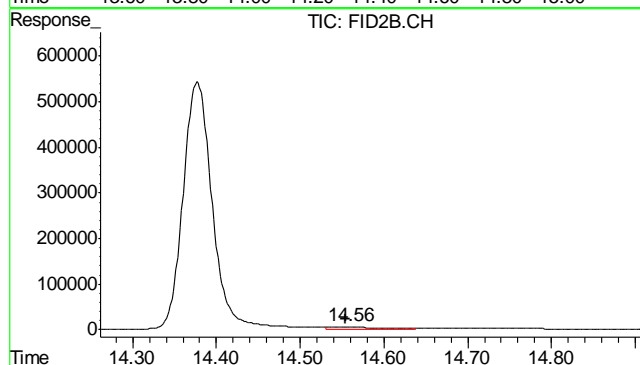
#9 o-Xylene

R.T.: 0.000 min
Exp R.T.: 10.968 min
Response: 0
Conc: N.D.



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

R.T.: 14.377 min
Delta R.T.: 0.006 min
Response: 13270381
Conc: 81.65 %



#11 Naphthalene

R.T.: 14.558 min
Delta R.T.: 0.004 min
Response: 184721
Conc: 0.94 ug/L

11.2.1
11

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7086-MB	FD20451.D	1	12/11/12	AV	12/11/12	OP7086	GFD1023

The QC reported here applies to the following samples:

Method: SW846-8015B

D41662-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	4.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	71% 35-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7086-BS	FD20453.D	1	12/11/12	AV	12/11/12	OP7086	GFD1023

The QC reported here applies to the following samples:

Method: SW846-8015B

D41662-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	550	83	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	68%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41662
Account: XTOKRWR XTO Energy
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7086-MS	FD20455.D	1	12/12/12	AV	12/11/12	OP7086	GFD1023
OP7086-MSD	FD20457.D	1	12/12/12	AV	12/11/12	OP7086	GFD1023
D41662-1	FD20459.D	1	12/12/12	AV	12/11/12	OP7086	GFD1023

The QC reported here applies to the following samples:

Method: SW846-8015B

D41662-1

CAS No.	Compound	D41662-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	560		749	1480	123	1030	63	36* a	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D41662-1	Limits
84-15-1	o-Terphenyl	66%	51%	45%	35-130%

(a) Variability of recovery may be due to sample matrix/homogeneity.

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD121112.SEC\FD20459.D Vial: 79
Acq On : 12 Dec 2012 12:56 am Operator: ashleyv
Sample : D41662-1 Inst : FID5
Misc : OP7086,GFD1023,30.03,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 12 09:11:09 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Wed Dec 12 09:10:21 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.01	46225508	904.082 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	6.93	551304670	14916.843 mg/L

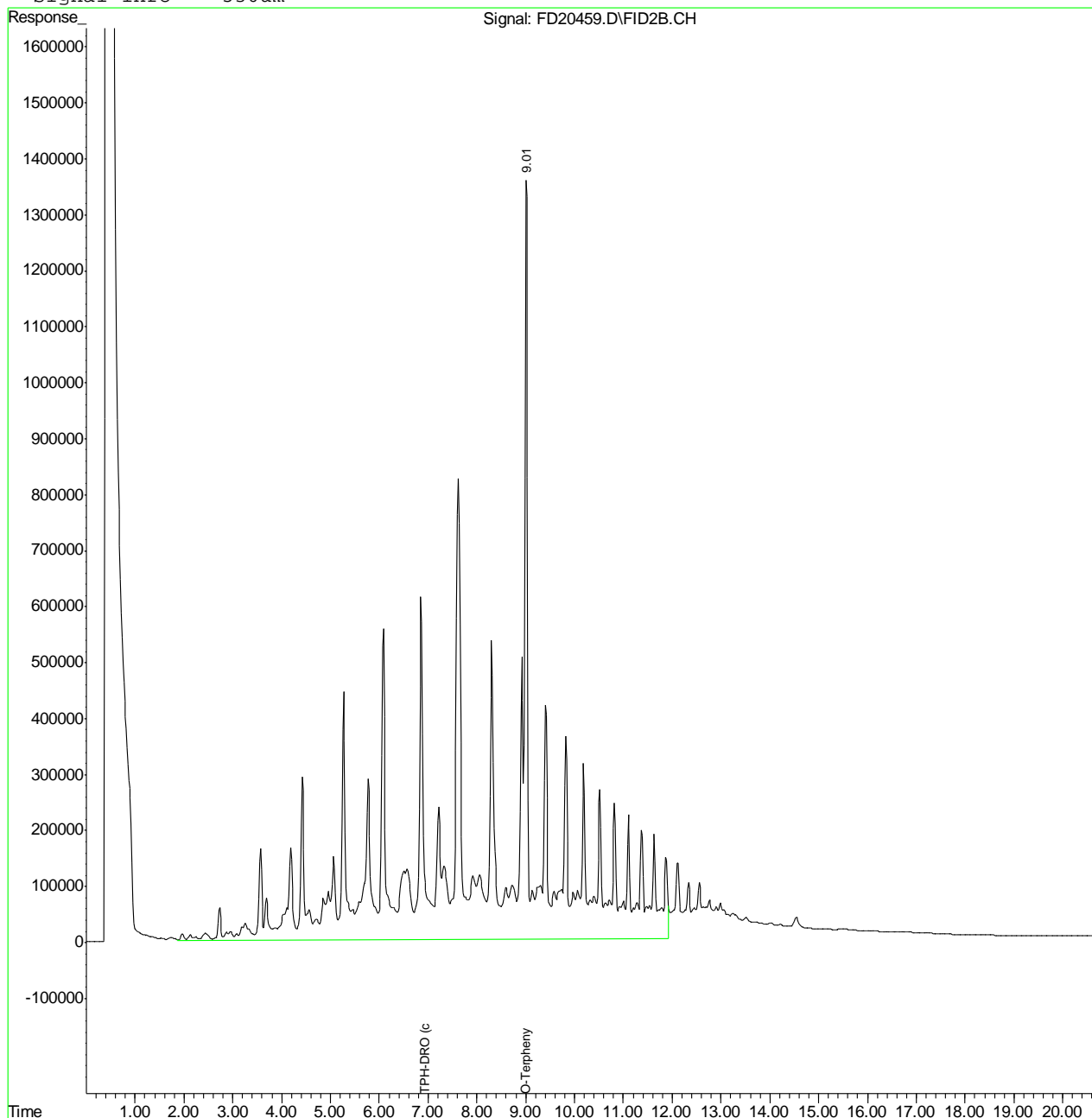
13.1.1
13

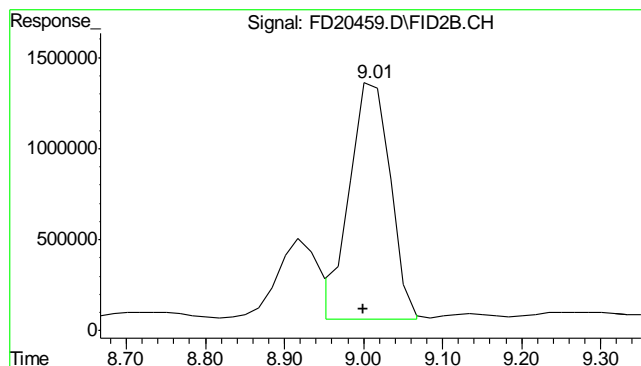
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD121112.SEC\FD20459.D Vial: 79
Acq On : 12 Dec 2012 12:56 am Operator: ashleyv
Sample : D41662-1 Inst : FID5
Misc : OP7086,GFD1023,30.03,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 12 9:32 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Wed Dec 12 09:10:21 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

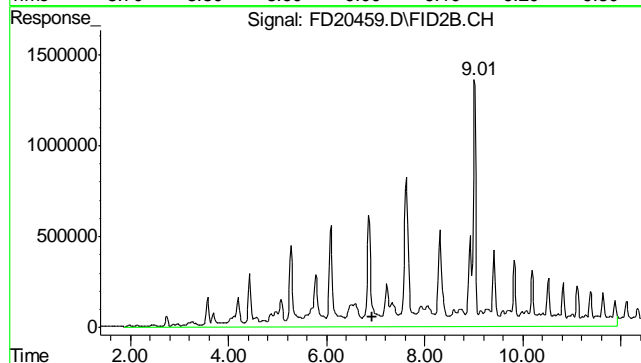
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.008 min
 Delta R.T.: 0.008 min
 Response: 46225508
 Conc: 904.08 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 6.935 min
 Delta R.T.: 0.000 min
 Response: 551304670
 Conc: 14916.84 mg/L m

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD121112.SEC\FD20451.D Vial: 75
Acq On : 11 Dec 2012 11:08 pm Operator: ashleyv
Sample : OP7086-MB Inst : FID5
Misc : OP7086,GFD1023,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 12 09:11:05 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Wed Dec 12 09:10:21 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.02	72319602	1414.433 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	6.93	2507298	67.841 mg/L

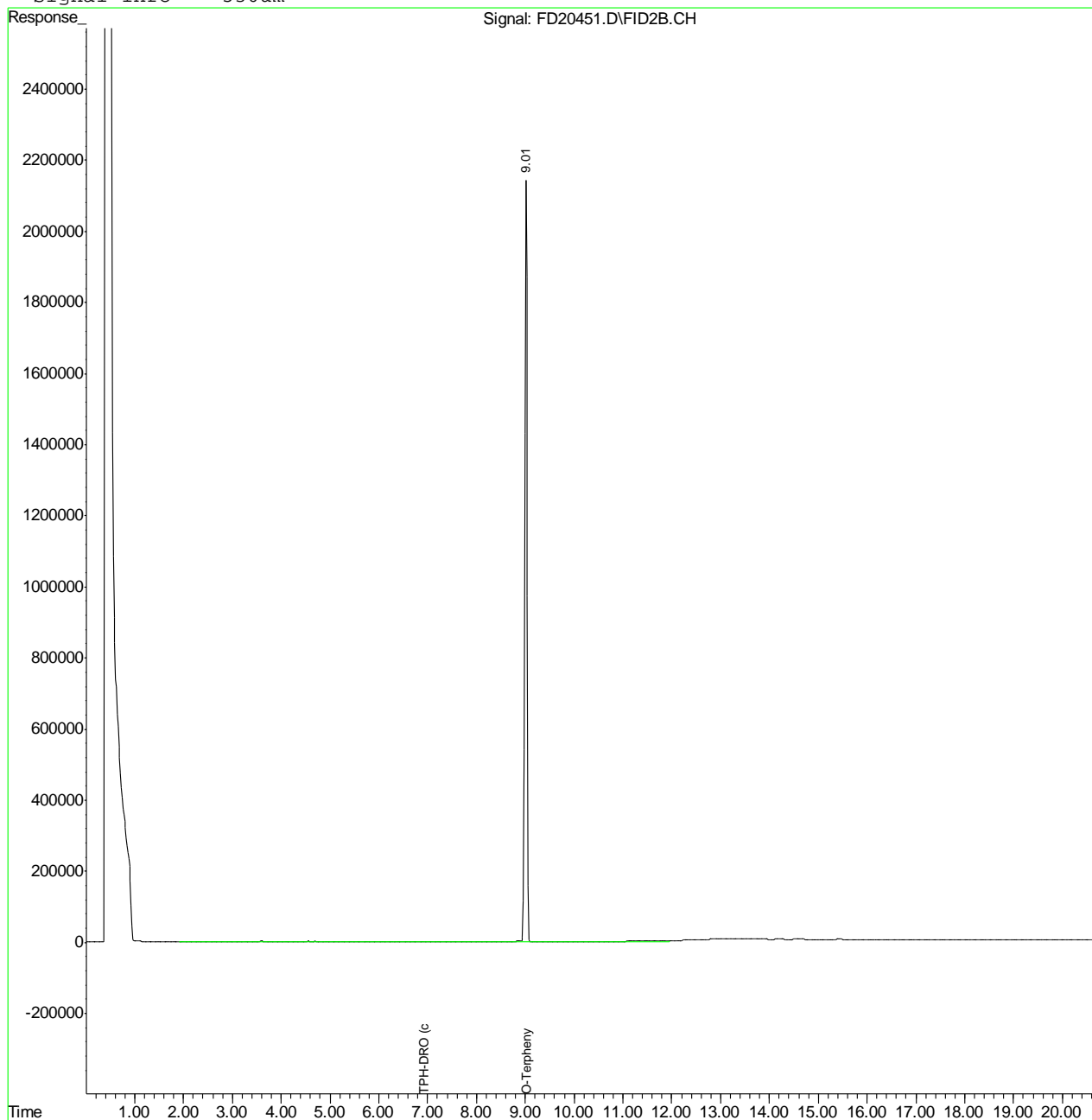
(f)=RT Delta > 1/2 Window (m)=manual int.
FD20451.D DRO-GFD983R.M Wed Dec 12 10:15:18 2012 GC

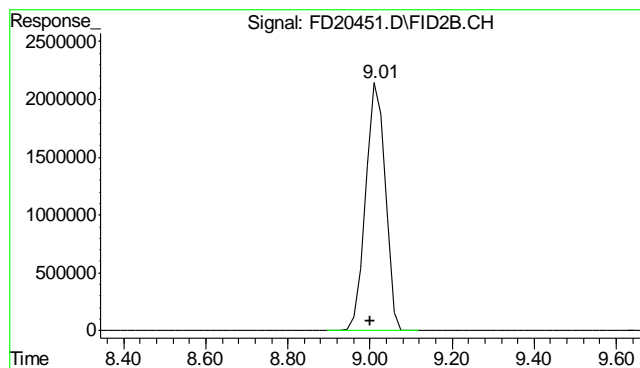
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD121112.SEC\FD20451.D Vial: 75
Acq On : 11 Dec 2012 11:08 pm Operator: ashleyv
Sample : OP7086-MB Inst : FID5
Misc : OP7086,GFD1023,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 12 9:11 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Wed Dec 12 09:10:21 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

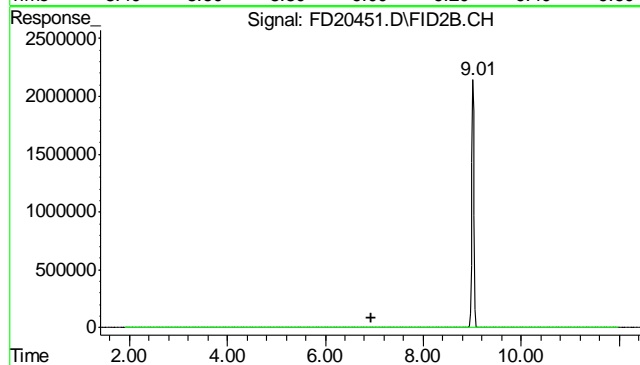
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.021 min
Delta R.T.: 0.021 min
Response: 72319602
Conc: 1414.43 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 6.935 min
Delta R.T.: 0.000 min
Response: 2507298
Conc: 67.84 mg/L m

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/10/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.11	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.020	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.020	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.0	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	-0.42	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	-0.080	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	0.22	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	0.020	<3.0
Sodium	40	.59	1.9		
Strontium	5.0	.004	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.22	.26		
Vanadium	1.0	.02	.036		
Zinc	3.0	.05	.37	0.13	<3.0

Associated samples MP9037: D41662-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/10/12

Metal	D41644-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	2970	3540	242	236.0(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	50.8	60.4	84.1	75-125
Calcium					
Chromium	30.1	79.7	60.4	82.1	75-125
Cobalt					
Copper	9.3	60.9	60.4	85.4	75-125
Iron					
Lead	7.3	108	121	83.4	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	15.3	60.8	60.4	78.7	75-125
Phosphorus	anr				
Potassium					
Selenium	0.0	109	121	90.3	75-125
Silicon					
Silver	0.0	22.5	24.2	93.1	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	28.7	73.0	60.4	73.4N(b)	75-125

Associated samples MP9037: D41662-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/10/12

Metal	D41644-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	2970	4880	239	798.6(a)	31.8 (b)	20
Beryllium						
Boron						
Cadmium	0.0	48.3	59.8	80.8	5.0	20
Calcium						
Chromium	30.1	75.2	59.8	75.4	5.8	20
Cobalt						
Copper	9.3	59.4	59.8	83.8	2.5	20
Iron						
Lead	7.3	103	120	80.0	4.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	15.3	57.4	59.8	73.8N(c)	5.8	20
Phosphorus	anr					
Potassium						
Selenium	0.0	104	120	87.0	4.7	20
Silicon						
Silver	0.0	21.6	23.9	90.3	4.1	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	28.7	70.0	59.8	69.1N(d)	4.2	20

Associated samples MP9037: D41662-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41662
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP9037
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 12/10/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	201	200	100.5	80-120
Beryllium				
Boron				
Cadmium	46.1	50	92.2	80-120
Calcium				
Chromium	49.8	50	99.6	80-120
Cobalt				
Copper	45.4	50	90.8	80-120
Iron				
Lead	96.5	100	96.5	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	46.9	50	93.8	80-120
Phosphorus	anr			
Potassium				
Selenium	97.1	100	97.1	80-120
Silicon				
Silver	19.9	20	99.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.7	50	95.4	80-120

Associated samples MP9037: D41662-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/10/12

Metal	D41644-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	20900	22100	10.0	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	249	276	10.9*(a)	0-10
Cobalt				
Copper	77.0	74.5	3.6	0-10
Iron				
Lead	60.5	54.5	9.9	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	110	125	13.3*(a)	0-10
Phosphorus	anr			
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	4.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	277	286	20.2*(a)	0-10

Associated samples MP9037: D41662-1

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9037
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

14.1.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9038
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/10/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0093	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP9038: D41662-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9038
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/10/12

Metal	D41644-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	3.8	123	121	98.7
Barium				75-125
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 MP9038: D41662-1

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

14.2.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP9038
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 12/10/12

Metal	D41644-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	3.8	120	120	97.2	2.5	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 MP9038: D41662-1

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

14.2.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9038
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/10/12

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

Associated samples MP9038: D41662-1

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

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41662
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP9038
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 12/10/12

Metal	D41644-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	31.6	31.2	1.4	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 MP9038: D41662-1

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

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9051
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 12/11/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	-0.0013	<0.10

Associated samples MP9051: D41662-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP9051
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/11/12

Metal	D41644-1		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.020	0.39	0.396	93.4	75-125

Associated samples MP9051: D41662-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP9051
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/11/12

Metal	D41644-1		Spikelot		MSD	QC
	Original	MSD	HGWSR1	% Rec		
Mercury	0.020	0.43	0.431	95.1	9.8	20

Associated samples MP9051: D41662-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41662
 Account: XTOKRWR - XTO Energy
 Project: XTO Love Ranch 8

QC Batch ID: MP9051
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/11/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.41	0.4	102.5	80-120

Associated samples MP9051: D41662-1

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: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date: 12/12/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	130		
Antimony	150	8.5	18		
Arsenic	130	22	42		
Barium	50	.5	9		
Beryllium	50	6.5	16		
Boron	250	5	22		
Cadmium	50	3	3		
Calcium	2000	27	80	3.5	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	6	100		
Lead	250	9.5	15		
Lithium	10	2.5			
Magnesium	1000	33	110	-2.0	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	310	750		
Selenium	250	24	55		
Silicon	250	15			
Silver	150	2	4.9		
Sodium	2000	30	490	1400	* (a)
Strontium	25	.2	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	11	23		
Vanadium	50	1	2.4		
Zinc	150	2.5	12		

Associated samples MP9064: D41662-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested
(a) All sample results >10x method blank concentration.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date: 12/13/12

Metal	MC16439-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	1750000	1760000	125000	184.0(a)	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	556000	711000	125000	124.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	7680000	8480000	125000	640.0(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9064: D41662-1A

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(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: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date: 12/13/12

Metal	MC16439-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	1750000	1720000	125000	152.0(a)	2.3	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	556000	697000	125000	112.8	2.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	7680000	8000000	125000	256.0(a)	5.8	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9064: D41662-1A

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (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: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date: 12/12/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	133000	125000	106.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	122000	125000	97.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	127000	125000	101.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9064: D41662-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date: 12/13/12

Metal		MC16439-1 Original SDL 1:5		%DIF	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	305000	320000	4.8	0-10	
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	111000	112000	0.4	0-10	
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	1470000	1570000	2.0	0-10	
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9064: D41662-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

QC Batch ID: MP9064
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.4.4
14

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8865/GN18037	1.0	0.0	mg/kg	176.0	167	95.0	80-120%
Specific Conductivity	GP8890/GN18070			umhos/cm	9992	9990	100.0	90-110%
pH	GN18017			su	8.00	7.95	99.4	99.3-100.7%

Associated Samples:
Batch GP8865: D41662-1
Batch GP8890: D41662-1
Batch GN18017: D41662-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8865/GN18037	D41644-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN18022	D41662-1	mv	112	112	0.0	0-20%

Associated Samples:
Batch GP8865: D41662-1
Batch GN18022: D41662-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8865/GN18037	D41644-1	mg/kg	0.0	40.0	39.8	99.4	75-125%

Associated Samples:

Batch GP8865: D41662-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41662
Account: XTOKRWR - XTO Energy
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8865/GN18037	D41644-1	mg/kg	0.0	40.0	40.4	1.6	20%

Associated Samples:
Batch GP8865: D41662-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits