



12/05/12

Technical Report for

XTO Energy

PCU 296-6A

1211-02

Accutest Job Number: D41248

Sampling Date: 11/26/12


Report to:

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Total number of pages in report: 141



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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Laboratory Director

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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: D41248

PCU 296-6A
Project No: 1211-02

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D41248-1	11/26/12	12:30	DS	11/28/12	SO	Soil	FW SUBLINER(COMP)
D41248-1A	11/26/12	12:30	DS	11/28/12	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 D41248

Site: PCU 296-6A

Report Date 12/5/2012 8:09:30 AM

On 11/28/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.8 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D41248 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: V3V1278

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41220-1MS, D41220-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP7031

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D41248-1MS, D41248-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The blank spike (BS) recovery(s) of Benzo(k)fluoranthene are outside control limits.
- OP7031-BS for Benzo(k)fluoranthene: Compound ND in associated samples.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB1015

- All samples were analyzed within the recommended method holding time.
- Sample(s) D41202-1MS, D41202-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP7028

- All samples were extracted 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) D41248-1MS, D41248-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP8975

- 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) D41248-1AMS, D41248-1AMSD, D41248-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Sodium are outside control limits for sample MP8975-SD1. Probable cause due to sample homogeneity.
- MP8975-SD1 for Sodium: Serial dilution indicates possible matrix interference.

Matrix SO

Batch ID: MP8961

- 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) D41248-1MS, D41248-1MSD, D41248-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike recovery indicates possible matrix interference.
- The serial dilution RPD(s) for Cadmium, Lead, Selenium, Silver, Barium, Copper, Nickel, Zinc are outside control limits for sample MP8961-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8961-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP8961-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP8961-SD1 for Copper: Serial dilution indicates possible matrix interference.
- MP8961-SD1 for Barium: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP8962

- 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) D41248-1MS, D41248-1MSD, D41248-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP8965

- 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) D41219-3MS, D41219-3MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN17851

- Sample(s) D41217-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN17853

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R15315

- The data for SW846 3060/7196A M meets quality control requirements.
- D41248-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP8775

- 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) D41258-1ADUP, D41258-1AMS, D41258-1AMSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN17849

- The following samples were run outside of holding time for method SW846 9045D: D41248-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP8975

- D41248-1A 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: D41248
Account: XTO Energy
Project: PCU 296-6A
Collected: 11/26/12



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

D41248-1 FW SUBLINER(COMP)

Arsenic	7.6	0.12	mg/kg	SW846 6020A
Barium	354	1.2	mg/kg	SW846 6010C
Chromium	40.6	1.2	mg/kg	SW846 6010C
Copper	8.4	1.2	mg/kg	SW846 6010C
Lead	9.4	5.9	mg/kg	SW846 6010C
Nickel	15.1	3.5	mg/kg	SW846 6010C
Zinc	40.2	3.5	mg/kg	SW846 6010C
Specific Conductivity	365	1.0	umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	40.6	2.2	mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	60.1		mv	ASTM D1498-76M
pH	9.57		su	SW846 9045D

D41248-1A FW SUBLINER(COMP)

Calcium	14.3	2.0	mg/l	SW846 6010C
Magnesium	5.51	1.0	mg/l	SW846 6010C
Sodium	54.7	2.0	mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	3.11		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

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Client Sample ID:	FW SUBLINER(COMP)			Date Sampled:	11/26/12
Lab Sample ID:	D41248-1			Date Received:	11/28/12
Matrix:	SO - Soil			Percent Solids:	87.1
Method:	SW846 8260B				
Project:	PCU 296-6A				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V21868.D	1	11/28/12	BD	n/a	n/a	V3V1278
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.065	0.032	mg/kg	
108-88-3	Toluene	ND	0.13	0.065	mg/kg	
100-41-4	Ethylbenzene	ND	0.13	0.025	mg/kg	
1330-20-7	Xylene (total)	ND	0.26	0.13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	96%		64-130%
460-00-4	4-Bromofluorobenzene	101%		62-131%
17060-07-0	1,2-Dichloroethane-D4	95%		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

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Report of Analysis

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Client Sample ID:	FW SUBLINER(COMP)	Date Sampled:	11/26/12
Lab Sample ID:	D41248-1	Date Received:	11/28/12
Matrix:	SO - Soil	Percent Solids:	87.1
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU 296-6A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12379.D	1	12/03/12	DC	11/30/12	OP7031	E3G586
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0096	0.0050	mg/kg	
120-12-7	Anthracene	ND	0.0096	0.0050	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0096	0.0050	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0096	0.0050	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0096	0.0050	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0096	0.0050	mg/kg	
218-01-9	Chrysene	ND	0.0096	0.0050	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0096	0.0050	mg/kg	
206-44-0	Fluoranthene	ND	0.0096	0.0050	mg/kg	
86-73-7	Fluorene	ND	0.0096	0.0050	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0096	0.0050	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	ND	0.0096	0.0050	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	69%		10-159%
321-60-8	2-Fluorobiphenyl	66%		19-131%
1718-51-0	Terphenyl-d14	77%		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

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Report of Analysis

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Client Sample ID:	FW SUBLINER(COMP)			Date Sampled:	11/26/12
Lab Sample ID:	D41248-1			Date Received:	11/28/12
Matrix:	SO - Soil			Percent Solids:	87.1
Method:	SW846 8015B				
Project:	PCU 296-6A				

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18633.D	1	11/29/12	SK	n/a	n/a	GGB1015
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	84%		60-140%		

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

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

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Report of Analysis

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Client Sample ID:	FW SUBLINER(COMP)			Date Sampled:	11/26/12
Lab Sample ID:	D41248-1			Date Received:	11/28/12
Matrix:	SO - Soil			Percent Solids:	87.1
Method:	SW846-8015B SW846 3546				
Project:	PCU 296-6A				

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD20074.D	1	11/30/12	AV	11/29/12	OP7028	GFD1008
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	7.6	4.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	58%		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)
 Lab Sample ID: D41248-1
 Matrix: SO - Soil
 Project: PCU 296-6A

Date Sampled: 11/26/12
 Date Received: 11/28/12
 Percent Solids: 87.1

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Arsenic	7.6	0.12	mg/kg	5	11/29/12	12/04/12 JM	SW846 6020A ³	SW846 3050B ⁵
Barium	354	1.2	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Cadmium	< 1.2	1.2	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Chromium	40.6	1.2	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Copper	8.4	1.2	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Lead	9.4	5.9	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Mercury	< 0.099	0.099	mg/kg	1	11/30/12	11/30/12 JM	SW846 7471B ¹	SW846 7471B ⁶
Nickel	15.1	3.5	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Selenium	< 5.9	5.9	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Silver	< 3.5	3.5	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴
Zinc	40.2	3.5	mg/kg	1	11/29/12	11/30/12 JM	SW846 6010C ²	SW846 3050B ⁴

- (1) Instrument QC Batch: MA3037
 (2) Instrument QC Batch: MA3038
 (3) Instrument QC Batch: MA3049
 (4) Prep QC Batch: MP8961
 (5) Prep QC Batch: MP8962
 (6) Prep QC Batch: MP8965

RL = Reporting Limit

Report of Analysis

Client Sample ID: FW SUBLINER(COMP)
 Lab Sample ID: D41248-1
 Matrix: SO - Soil
 Project: PCU 296-6A

Date Sampled: 11/26/12
 Date Received: 11/28/12
 Percent Solids: 87.1

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	365	1.0	umhos/cm	1	12/04/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	11/29/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	40.6	2.2	mg/kg	1	11/30/12 11:11	JM	SW846 3060/7196A M
Redox Potential Vs H2	60.1		mv	1	11/28/12	JD	ASTM D1498-76M
Solids, Percent	87.1		%	1	11/29/12	SWT	SM19 2540B M
pH	9.57		su	1	11/28/12 13:30	CT	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FW SUBLINER(COMP)	Date Sampled:	11/26/12
Lab Sample ID:	D41248-1A	Date Received:	11/28/12
Matrix:	SO - Soil	Percent Solids:	87.1
Project:	PCU 296-6A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	14.3	2.0	mg/l	1	11/30/12	11/30/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	5.51	1.0	mg/l	1	11/30/12	11/30/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Sodium	54.7	2.0	mg/l	1	11/30/12	11/30/12 JM	SW846 6010C ¹	SW846 3010A/M ²

- (1) Instrument QC Batch: MA3038
(2) Prep QC Batch: MP8975

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID:	FW SUBLINER(COMP)	Date Sampled:	11/26/12
Lab Sample ID:	D41248-1A	Date Received:	11/28/12
Matrix:	SO - Soil	Percent Solids:	87.1
Project:	PCU 296-6A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	3.11		ratio	1	11/30/12 14:09	JM	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



CHAIN OF CUSTODY

PAGE 1 OF 1

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

FED-EX Tracking #	Boiler Order Control #
Accutest Quote #	Accutest Job # D41248

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)										Matrix Codes	
Company Name KRW Consulting		Project Name XTO PCU 296-6A		<div>910</div>										<div>DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank</div>	
Street Address 8000 West 14th Street; Suite 200		Street													
City Lakewood, CO 80214		City State													
Project Contact Dwayne Knudson		Project # 1211-82													
Phone # 970-488-1098		Client Purchase Order #													
Sampler(s) Name(s) DAVID SANDERS		Project Manager Joe Hess		Billing Information (if different from Report to) Company Name XTO Energy		Street Address 21459 CR 5		City Rifle, CO 81650		Attention: Jessica Dooling		LAB USE ONLY			
Field ID / Point of Collection FW SUBLINER (COMP)		MEOH/DI Vial #		Date 11-26-12		Time 12:30		Sampled by AS		# of bottles SO 5					
Turnaround Time (Business days)		Approved By (Accutest PM): / Date:		Data Deliverable Information										Comments / Special Instructions	
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 5 Business Days (By contract only) <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency <input type="checkbox"/> Emergency & Rush T/A data available VIA Lablink		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> COMMBN <input type="checkbox"/> COMMBN+ Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC/Narrative (+ = chromatograms)		<input type="checkbox"/> State Forms Required <input type="checkbox"/> Send Forms to State <input type="checkbox"/> Report by Fax <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> EDD Format										Please email to: KRW Piceance Team	
Sample Custody must be documented below each time samples change possession, including courier delivery.															
Relinquished by Sampler: 1 Dr. Anderson		Date Time: 11/27/12 11:30		Received By: 1 Service Center		Date Time:		Relinquished By: 2		Date Time:		Received By: 2 B D R 11/28 12:16			
Relinquished by Sampler: 3		Date Time:		Received By: 3		Date Time:		Relinquished By: 4		Date Time:		Received By: 4			
Relinquished by: 5		Date Time:		Received By: 5		Date Time:		Custody Seal # HBCO		<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable <input type="checkbox"/>			
										<input checked="" type="checkbox"/> On Ice <input type="checkbox"/>		Cooler Temp. 3.8			

D41248: Chain of Custody

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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: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1278-MB	3V21863.D	1	11/28/12	BD	n/a	n/a	V3V1278

The QC reported here applies to the following samples:

Method: SW846 8260B

D41248-1

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

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	101% 64-130%
460-00-4	4-Bromofluorobenzene	95% 62-131%
17060-07-0	1,2-Dichloroethane-D4	102% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1278-BS	3V21864.D	1	11/28/12	BD	n/a	n/a	V3V1278

The QC reported here applies to the following samples:

Method: SW846 8260B

D41248-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.8	98	70-130
100-41-4	Ethylbenzene	50	50.8	102	70-130
108-88-3	Toluene	50	48.5	97	70-130
1330-20-7	Xylene (total)	150	152	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	64-130%
460-00-4	4-Bromofluorobenzene	101%	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: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41220-1MS	3V21866.D	1	11/28/12	BD	n/a	n/a	V3V1278
D41220-1MSD	3V21867.D	1	11/28/12	BD	n/a	n/a	V3V1278
D41220-1	3V21865.D	1	11/28/12	BD	n/a	n/a	V3V1278

The QC reported here applies to the following samples:

Method: SW846 8260B

D41248-1

CAS No.	Compound	D41220-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		2940	2750	94	2840	97	3	64-139/30
100-41-4	Ethylbenzene	ND		2940	2960	101	2980	101	1	68-136/30
108-88-3	Toluene	ND		2940	2650	90	2660	91	0	60-130/30
1330-20-7	Xylene (total)	ND		8810	8870	101	9020	102	2	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D41220-1	Limits
2037-26-5	Toluene-D8	94%	94%	95%	64-130%
460-00-4	4-Bromofluorobenzene	106%	105%	102%	62-131%
17060-07-0	1,2-Dichloroethane-D4	93%	96%	97%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112812.S\
 Data File : 3V21868.D
 Acq On : 28 Nov 2012 4:30 pm
 Operator : BRETD
 Sample : D41248-1
 Misc : MS5028,V3V1278,5.013,,100,5,1
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 29 08:28:08 2012
 Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
 Quant Title : 8260
 QLast Update : Wed Nov 28 14:20:19 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.863	168	206536	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.656	114	345928	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	368412	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.288	152	195036	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.248	102	23762	47.39	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	94.78%
61) Toluene-d8	14.051	98	424176	47.76	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	95.52%
69) 4-Bromofluorobenzene	16.245	95	184623	50.58	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.16%

Target Compounds

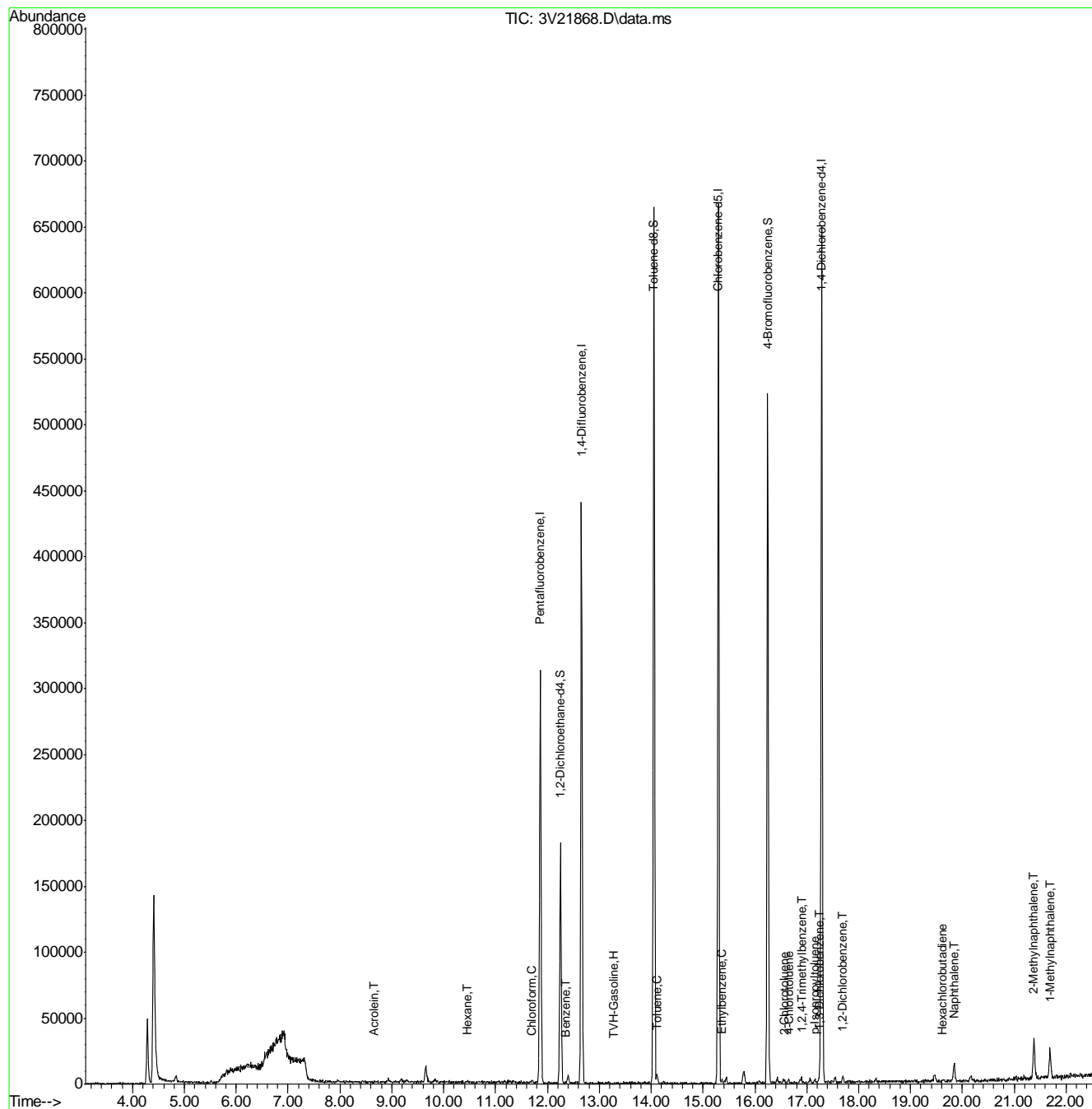
						Qvalue
1) TVH-Gasoline	13.285	TIC	66589m	161.21	ug/l	
11) Acrolein	8.656	56	72	0.12	ug/l	# 1
29) Chloroform	11.703	83	76	0.01	ug/l	84
41) Hexane	10.462	57	148	0.03	ug/l	100
50) Benzene	12.348	78	226	0.02	ug/l	100
62) Toluene	14.109	92	1901	0.24	ug/l	99
66) Ethylbenzene	15.369	91	1078m	0.07	ug/l	
78) 2-Chlorotoluene	16.563	91	1690	0.15	ug/l	92
79) 4-Chlorotoluene	16.656	91	2173	0.23	ug/l	90
82) 1,2,4-Trimethylbenzene	16.899	105	2300	0.20	ug/l	# 70
84) 1,3-Dichlorobenzene	17.236	146	2039	0.30	ug/l	# 90
86) p-Isopropyltoluene	17.156	119	2359	0.19	ug/l	# 89
87) 1,2-Dichlorobenzene	17.692	146	2212	0.35	ug/l	98
91) Naphthalene	19.838	128	16835	4.76	ug/l	100
92) Hexachlorobutadiene	19.607	225	134	0.07	ug/l	# 85
94) 2-Methylnaphthalene	21.374	142	22994	6.05	ug/l	97
95) 1-Methylnaphthalene	21.692	142	16046	4.60	ug/l	95

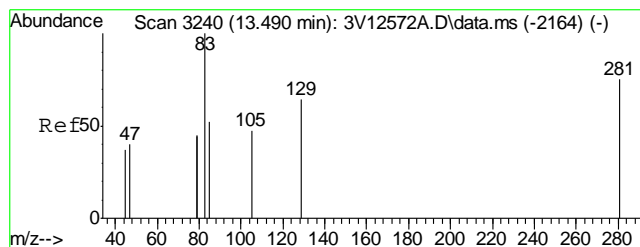
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112812.S\
Data File : 3V21868.D
Acq On : 28 Nov 2012 4:30 pm
Operator : BRETD
Sample : D41248-1
Misc : MS5028,V3V1278,5.013,,100,5,1
ALS Vial : 8 Sample Multiplier: 1

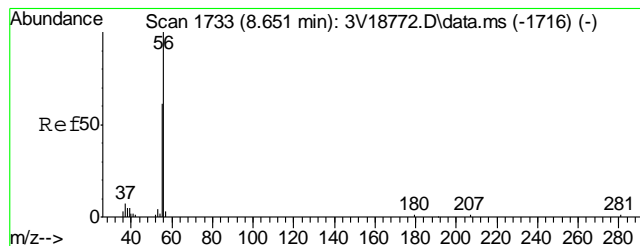
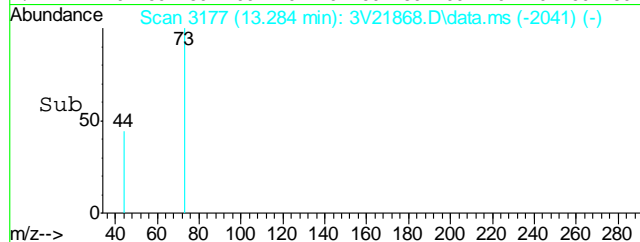
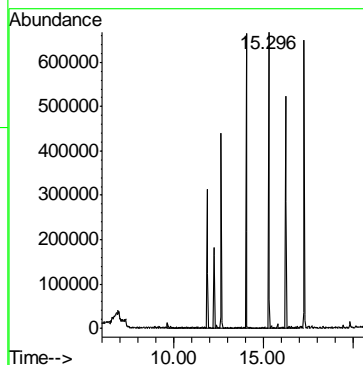
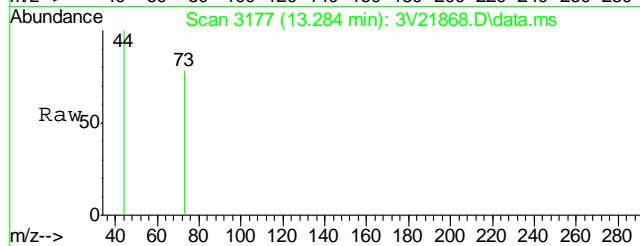
Quant Time: Nov 29 08:28:08 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





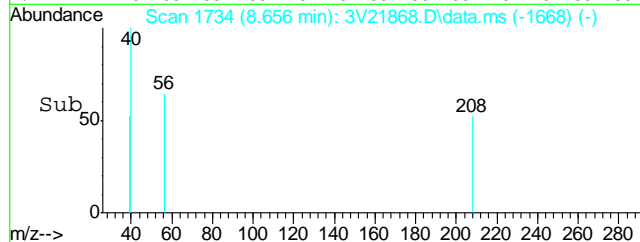
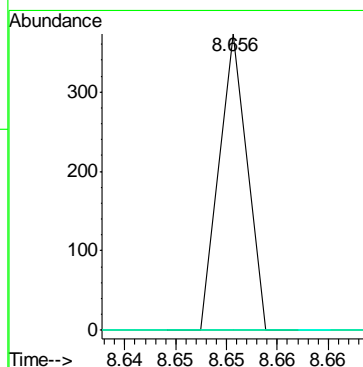
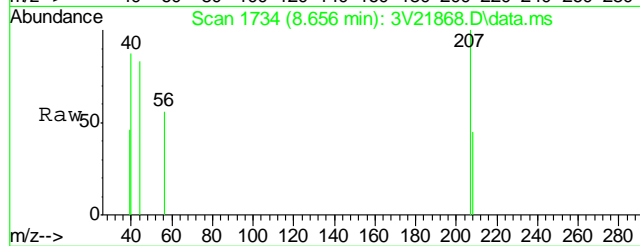
#1
TVH-Gasoline
Concen: 161.21 ug/l m
RT: 13.285 min Scan# 3177
Delta R.T. 0.000 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

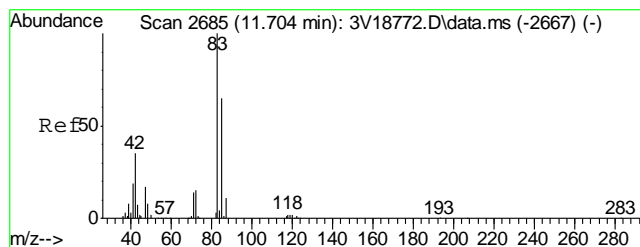
Tgt Ion:TIC Resp: 66589



#11
Acrolein
Concen: 0.12 ug/l
RT: 8.656 min Scan# 1734
Delta R.T. 0.013 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

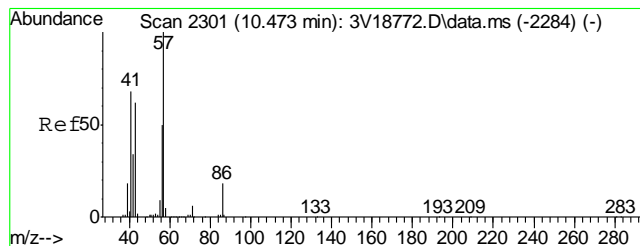
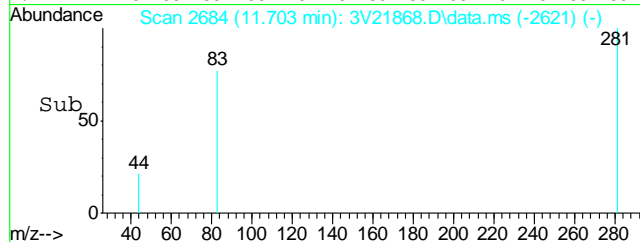
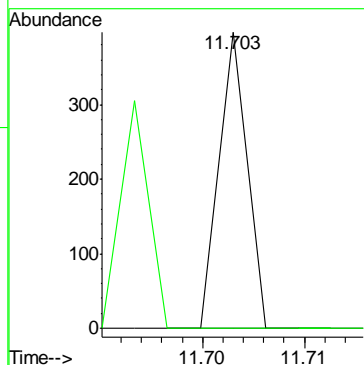
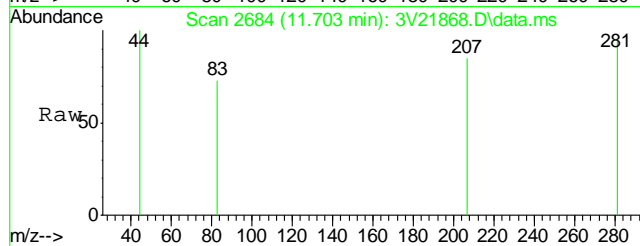
Tgt Ion: 56 Resp: 72
Ion Ratio Lower Upper
56 100
55 163.9 57.0 85.4#
58 0.0 0.1 0.1#





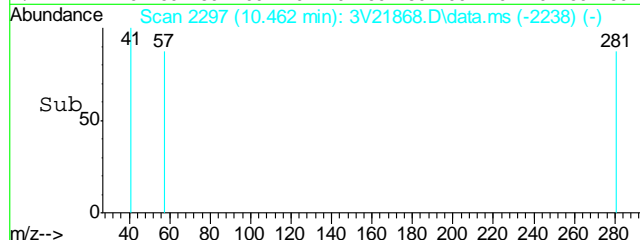
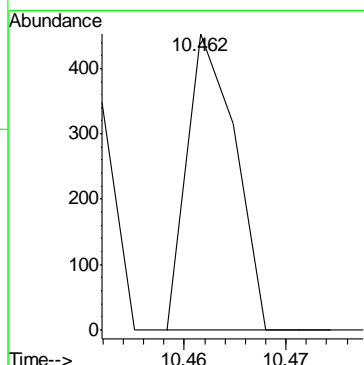
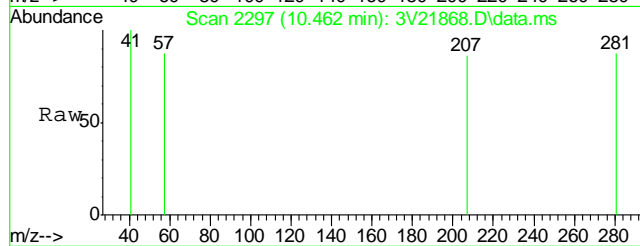
#29
Chloroform
Concen: 0.01 ug/l
RT: 11.703 min Scan# 2684
Delta R.T. 0.003 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

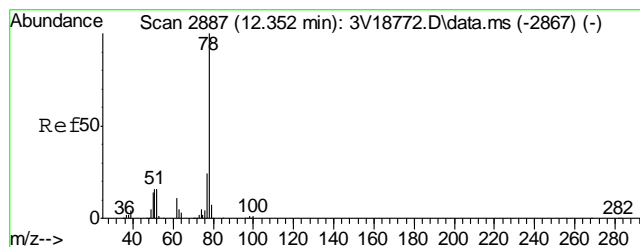
Tgt Ion: 83 Resp: 76
Ion Ratio Lower Upper
83 100
85 77.6 44.7 84.7



#41
Hexane
Concen: 0.03 ug/l
RT: 10.462 min Scan# 2297
Delta R.T. -0.010 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

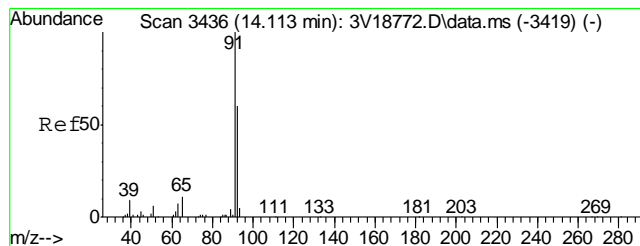
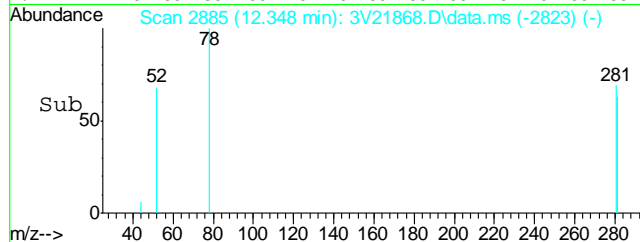
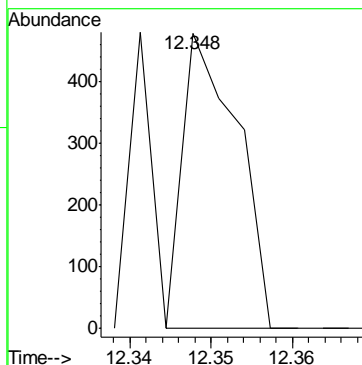
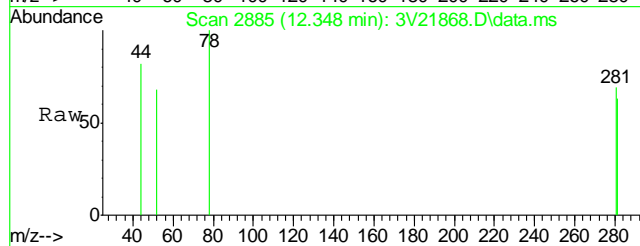
Tgt Ion: 57 Resp: 148





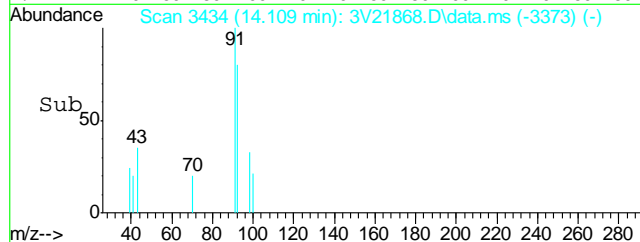
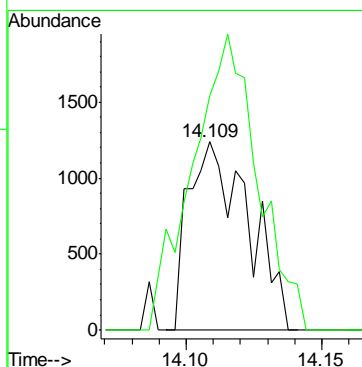
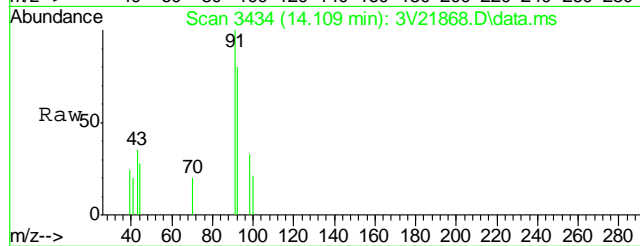
#50
Benzene
Concen: 0.02 ug/l
RT: 12.348 min Scan# 2885
Delta R.T. -0.001 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

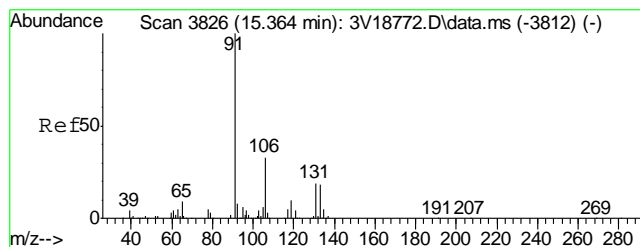
Tgt Ion: 78 Resp: 226



#62
Toluene
Concen: 0.24 ug/l
RT: 14.109 min Scan# 3434
Delta R.T. -0.004 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

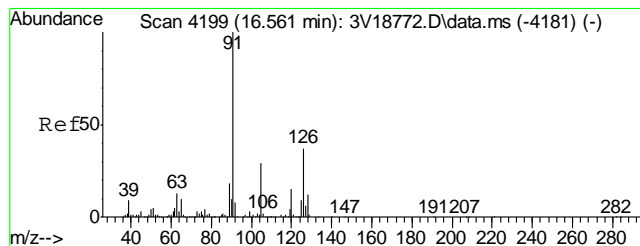
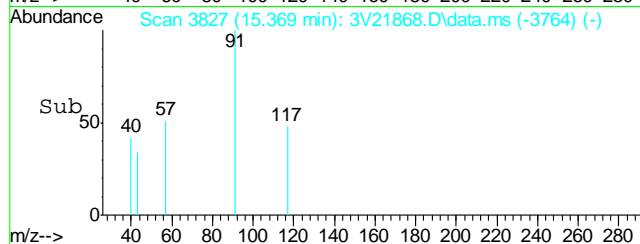
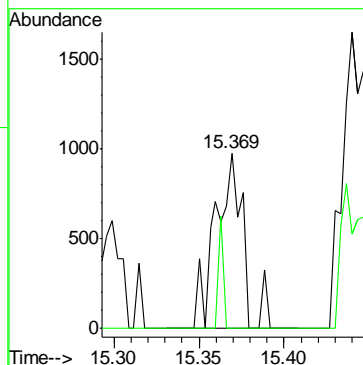
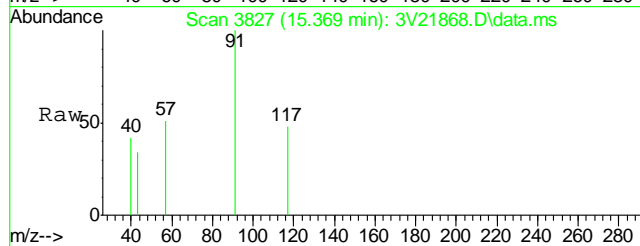
Tgt Ion: 92 Resp: 1901
Ion Ratio Lower Upper
92 100
91 172.1 150.2 190.2





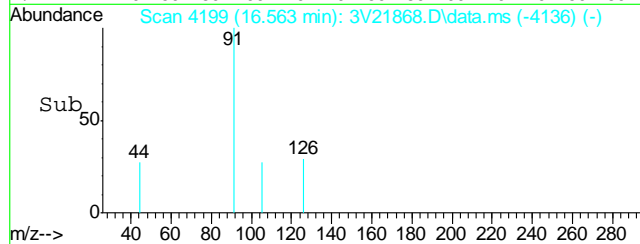
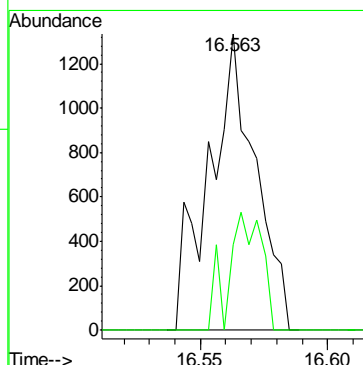
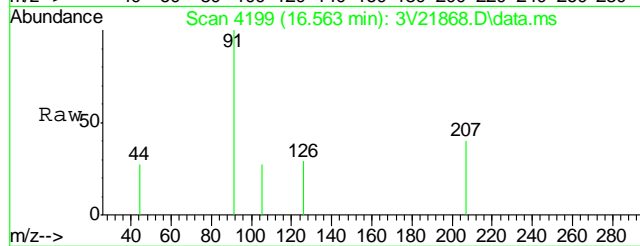
#66
Ethylbenzene
Concen: 0.07 ug/l m
RT: 15.369 min Scan# 3827
Delta R.T. 0.003 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

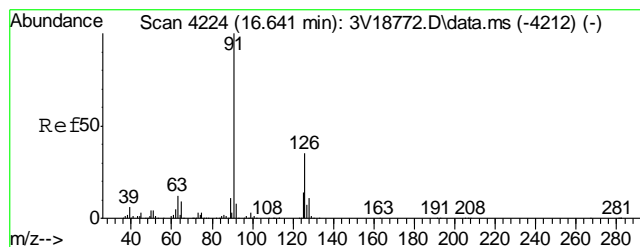
Tgt Ion: 91 Resp: 1078
Ion Ratio Lower Upper
91 100
106 60.4 13.2 53.2#



#78
2-Chlorotoluene
Concen: 0.15 ug/l
RT: 16.563 min Scan# 4199
Delta R.T. 0.003 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

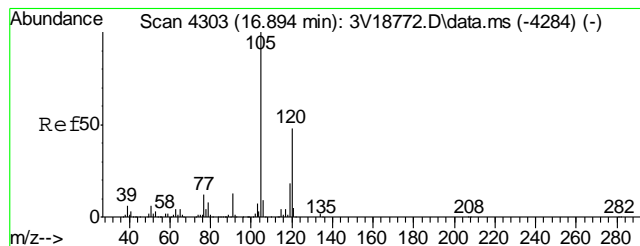
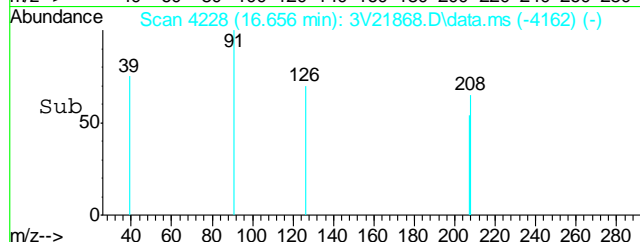
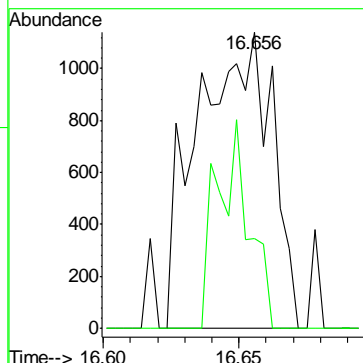
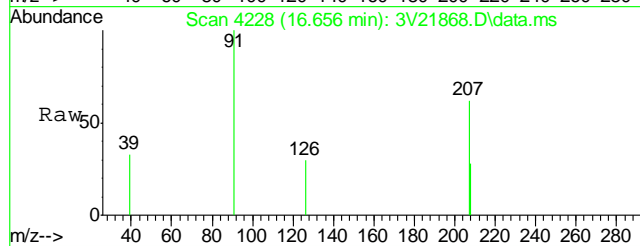
Tgt Ion: 91 Resp: 1690
Ion Ratio Lower Upper
91 100
126 28.6 26.6 39.8





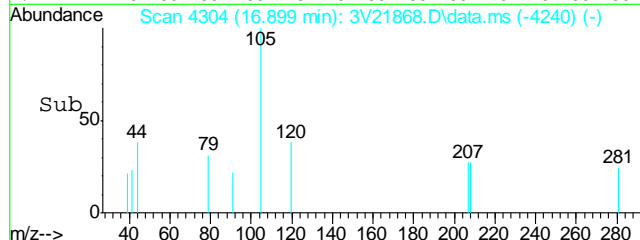
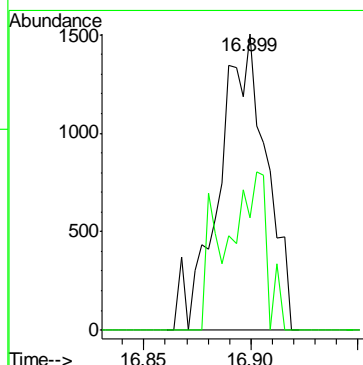
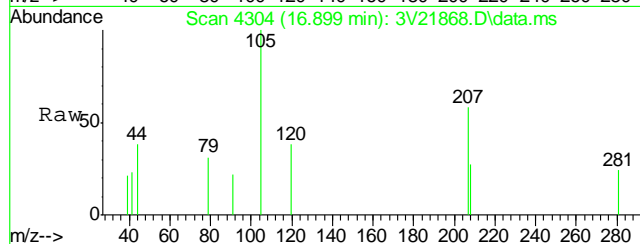
#79
4-Chlorotoluene
Concen: 0.23 ug/l
RT: 16.656 min Scan# 4228
Delta R.T. 0.012 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

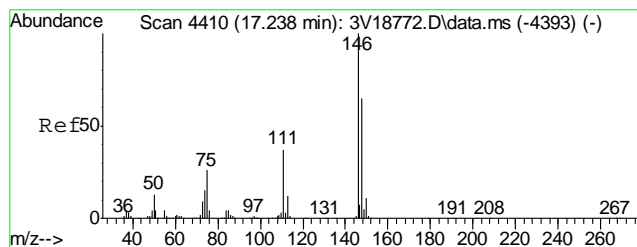
Tgt Ion: 91 Resp: 2173
Ion Ratio Lower Upper
91 100
126 30.2 29.1 43.7



#82
1,2,4-Trimethylbenzene
Concen: 0.20 ug/l
RT: 16.899 min Scan# 4304
Delta R.T. 0.006 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

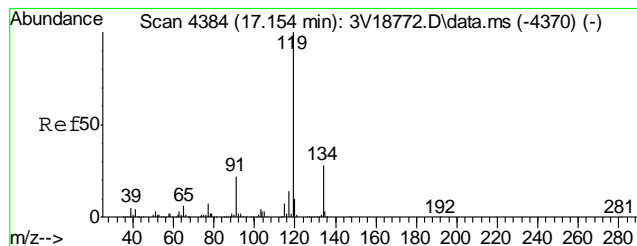
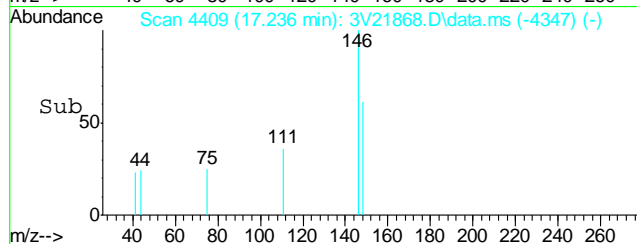
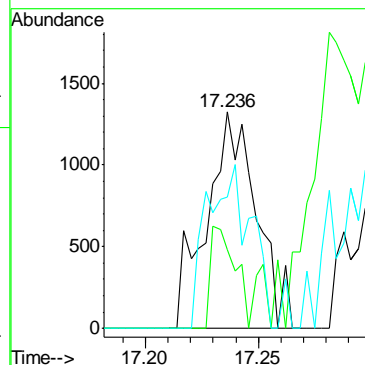
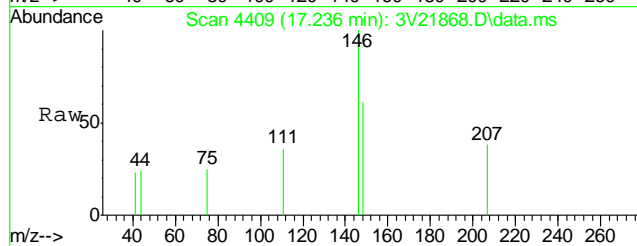
Tgt Ion: 105 Resp: 2300
Ion Ratio Lower Upper
105 100
120 34.5 45.1 67.7#





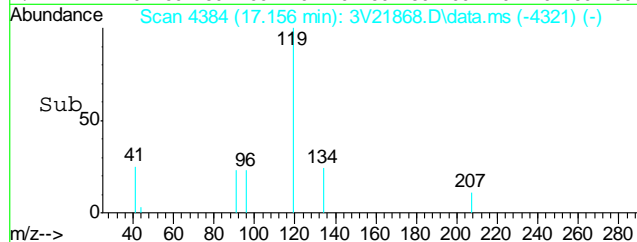
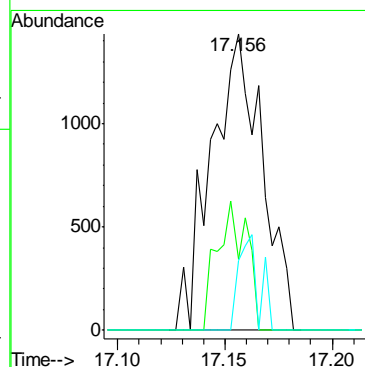
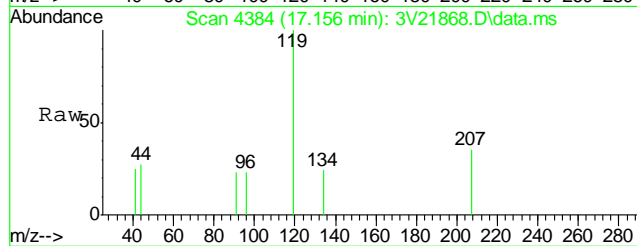
#84
1,3-Dichlorobenzene
Concen: 0.30 ug/l
RT: 17.236 min Scan# 4409
Delta R.T. -0.001 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

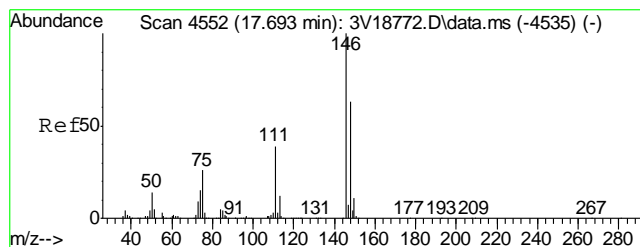
Tgt Ion	Ratio	Lower	Upper
146	100		
111	23.1	29.7	44.5#
148	66.0	51.4	77.0



#86
p-Isopropyltoluene
Concen: 0.19 ug/l
RT: 17.156 min Scan# 4384
Delta R.T. 0.003 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

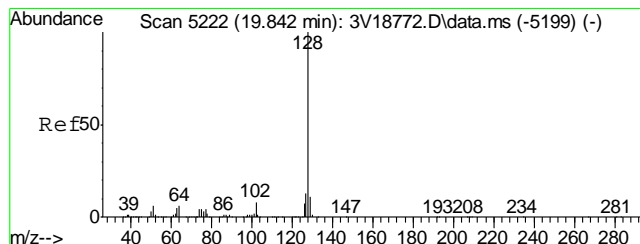
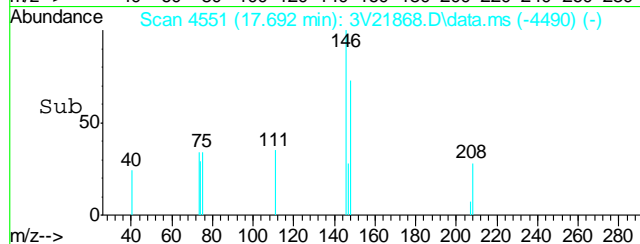
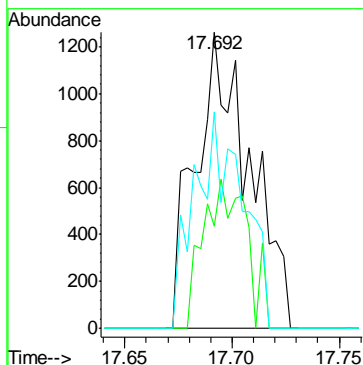
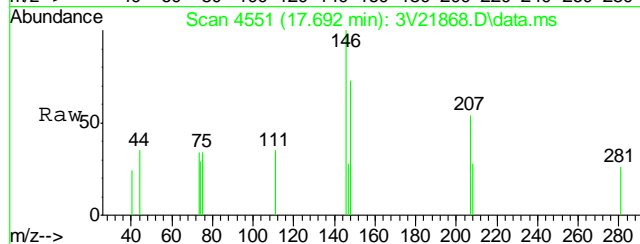
Tgt Ion	Ratio	Lower	Upper
119	100		
134	25.2	22.3	33.5
91	12.8	17.4	26.2#





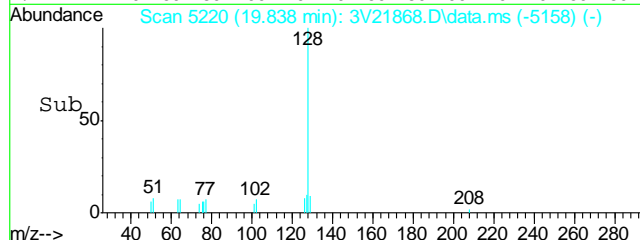
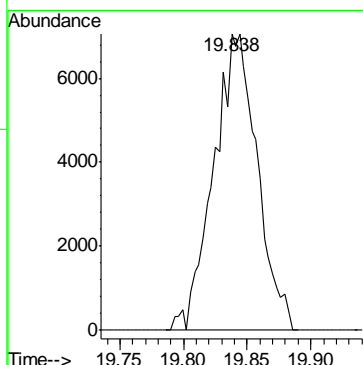
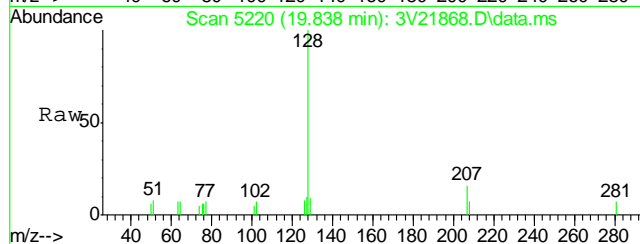
#87
1,2-Dichlorobenzene
Concen: 0.35 ug/l
RT: 17.692 min Scan# 4551
Delta R.T. -0.004 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

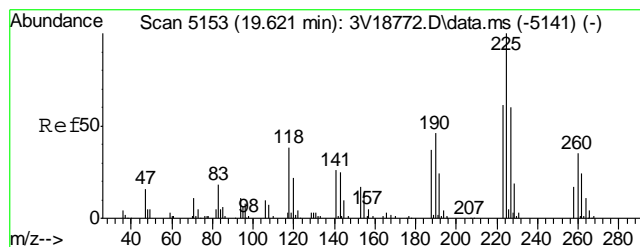
Tgt Ion	Ratio	Lower	Upper
146	100		
111	40.7	31.0	46.6
148	65.2	51.4	77.2



#91
Naphthalene
Concen: 4.76 ug/l
RT: 19.838 min Scan# 5220
Delta R.T. -0.000 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

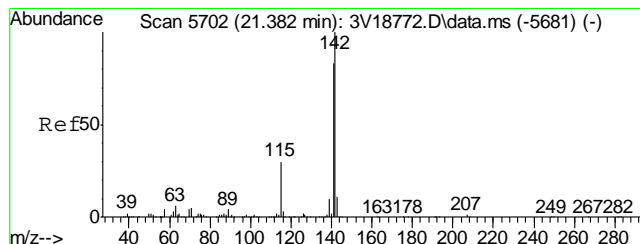
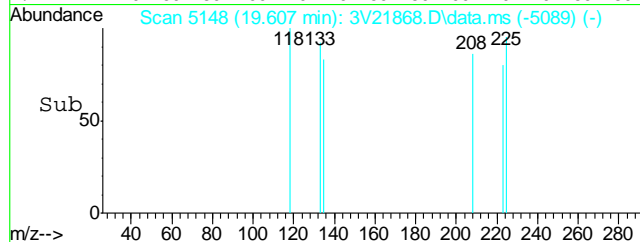
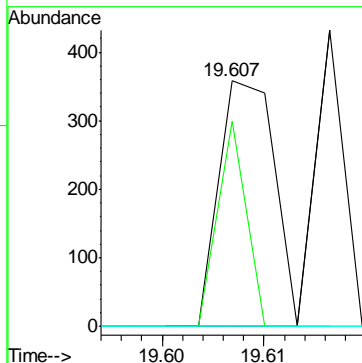
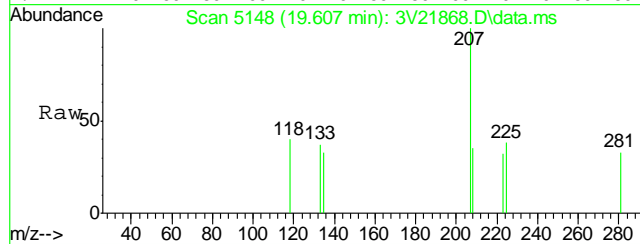
Tgt Ion	Ratio	Lower	Upper
128	100		





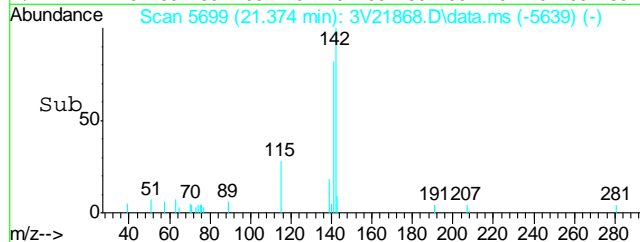
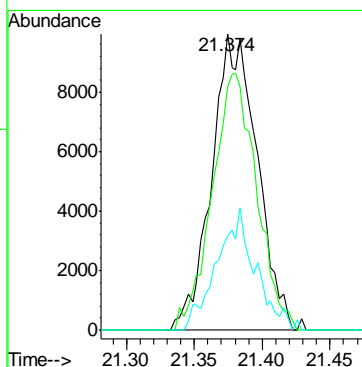
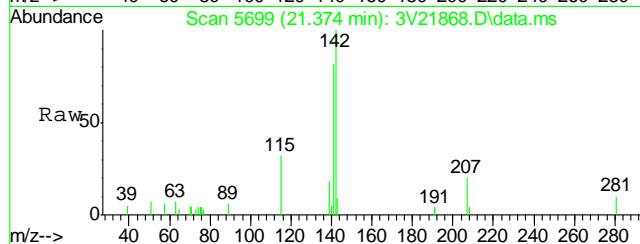
#92
Hexachlorobutadiene
Concen: 0.07 ug/l
RT: 19.607 min Scan# 5148
Delta R.T. -0.010 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

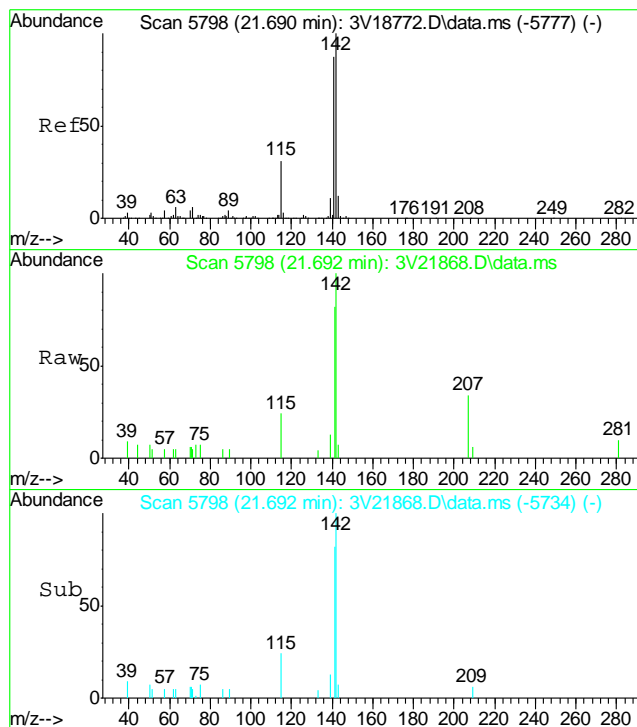
Tgt Ion	Ratio	Lower	Upper
225	100		
223	43.3	45.0	67.4
227	53.7	51.1	76.7



#94
2-Methylnaphthalene
Concen: 6.05 ug/l
RT: 21.374 min Scan# 5699
Delta R.T. -0.007 min
Lab File: 3V21868.D
Acq: 28 Nov 2012 4:30 pm

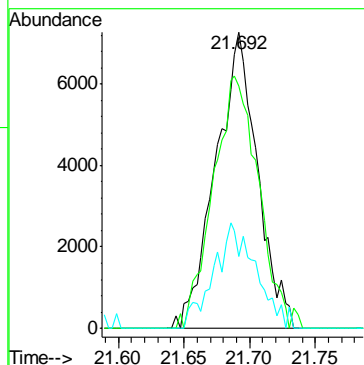
Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.5	68.6	103.0
115	35.2	23.8	35.6





#95
 1-Methylnaphthalene
 Concen: 4.60 ug/l
 RT: 21.692 min Scan# 5798
 Delta R.T. 0.006 min
 Lab File: 3V21868.D
 Acq: 28 Nov 2012 4:30 pm

Tgt Ion:	142	Resp:	16046
Ion Ratio	Lower	Upper	
142	100		
141	91.9	70.6	106.0
115	35.9	25.4	38.2



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112812.S\
Data File : 3V21863.D
Acq On : 28 Nov 2012 1:52 pm
Operator : BRETD
Sample : MB
Misc : MS5028,V3V1278,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 29 11:54:48 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.865	168	193257	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.658	114	323817	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.298	117	326116	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.286	152	173382	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.253	102	23817	50.77	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.54%
61) Toluene-d8	14.053	98	397880	50.61	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.22%
69) 4-Bromofluorobenzene	16.244	95	153428	47.48	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	94.96%

Target Compounds

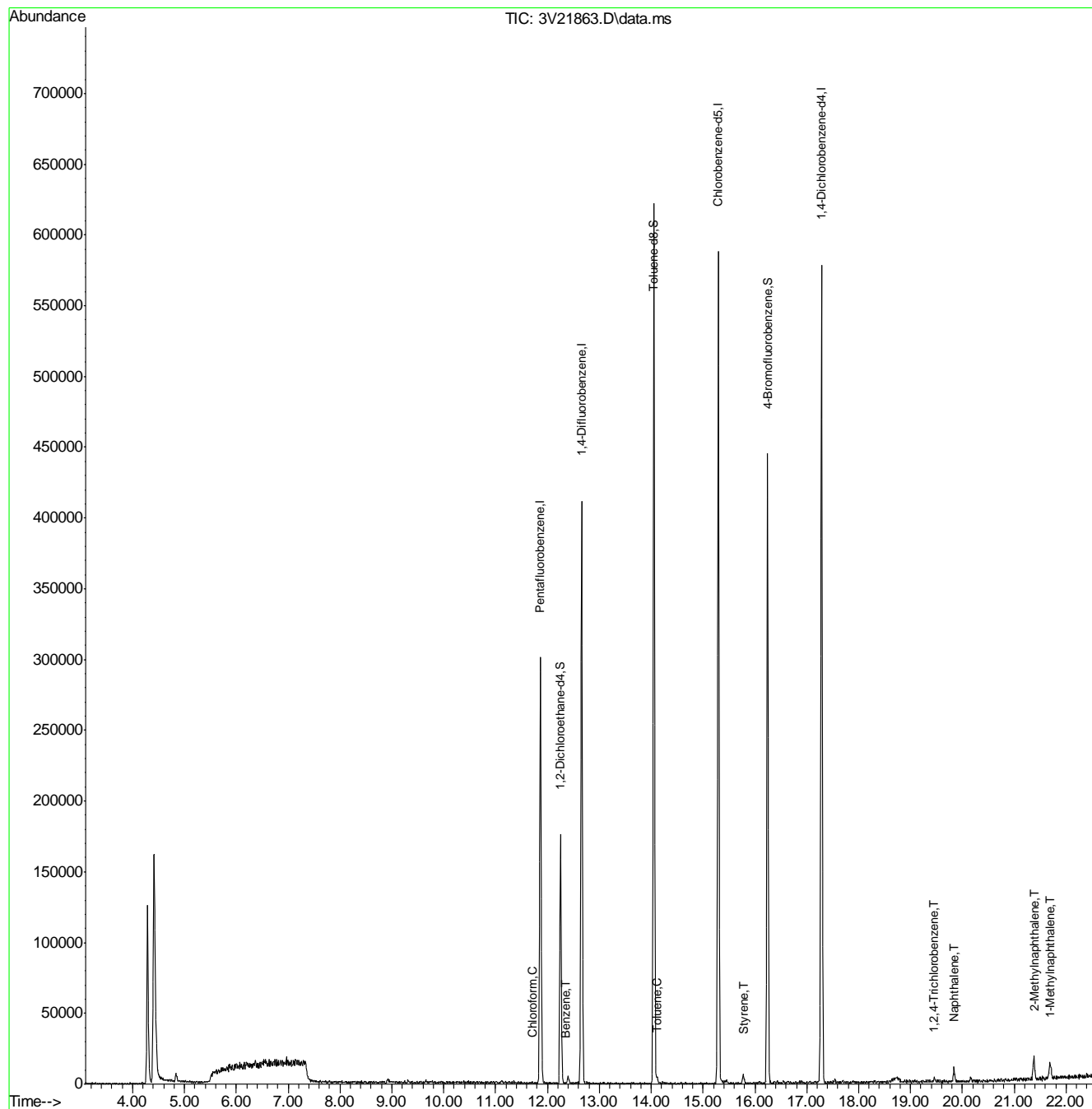
						Qvalue
29) Chloroform	11.698	83	69	0.01	ug/l	75
50) Benzene	12.353	78	138	0.01	ug/l	100
62) Toluene	14.111	92	1757	0.25	ug/l	90
71) Styrene	15.798	104	479	0.21	ug/l	98
90) 1,2,4-Trichlorobenzene	19.464	180	1536	0.44	ug/l #	91
91) Naphthalene	19.837	128	11402	4.41	ug/l	100
94) 2-Methylnaphthalene	21.376	142	12267	3.63	ug/l #	95
95) 1-Methylnaphthalene	21.691	142	10025	3.24	ug/l #	88

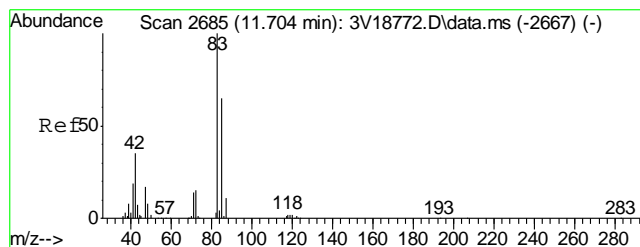
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112812.S\
Data File : 3V21863.D
Acq On : 28 Nov 2012 1:52 pm
Operator : BRETD
Sample : MB
Misc : MS5028,V3V1278,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

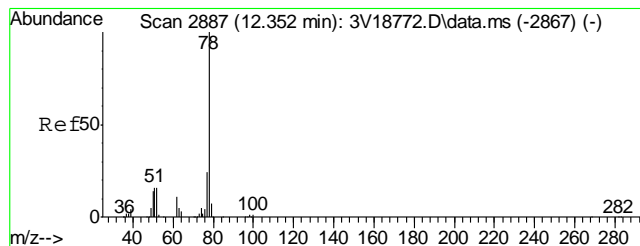
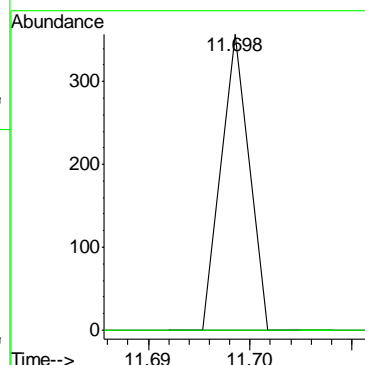
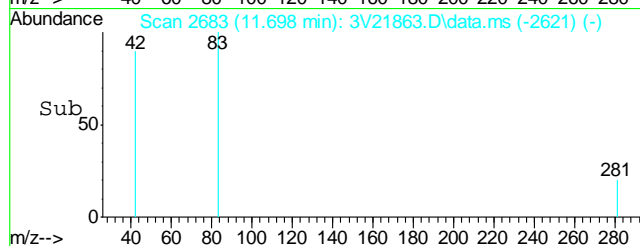
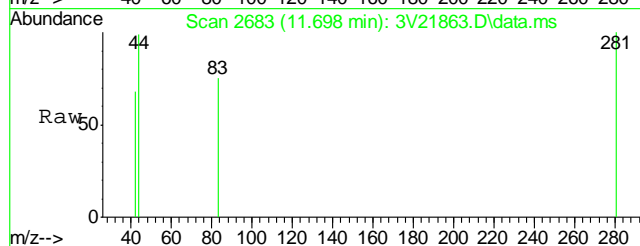
Quant Time: Nov 29 11:54:48 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





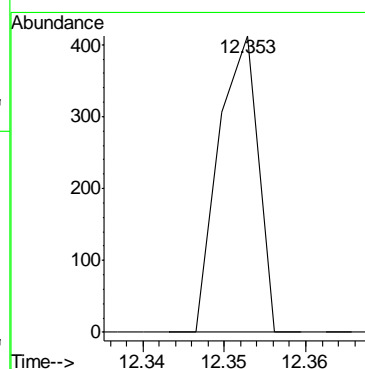
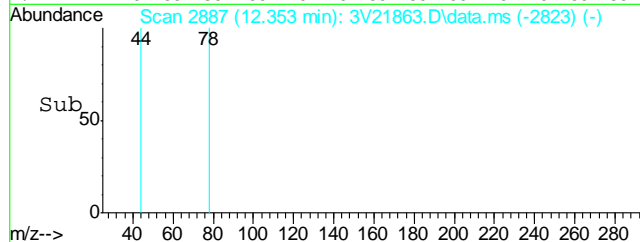
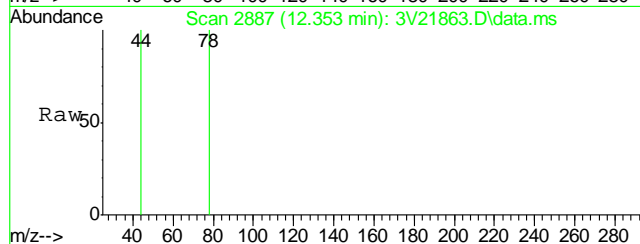
#29
Chloroform
Concen: 0.01 ug/l
RT: 11.698 min Scan# 2683
Delta R.T. -0.002 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

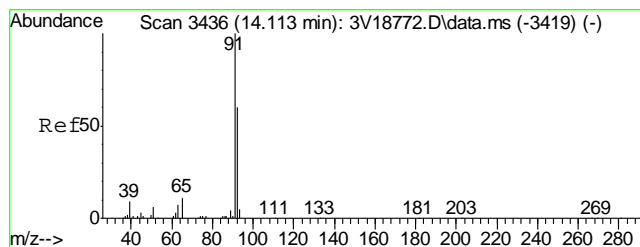
Tgt Ion: 83 Resp: 69
Ion Ratio Lower Upper
83 100
85 84.1 44.7 84.7



#50
Benzene
Concen: 0.01 ug/l
RT: 12.353 min Scan# 2887
Delta R.T. 0.004 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

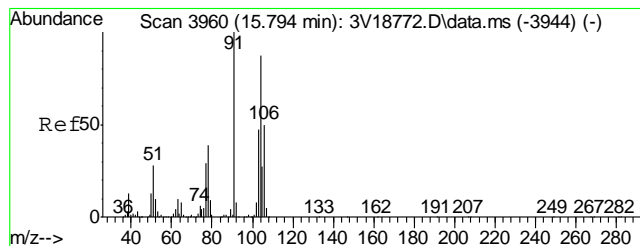
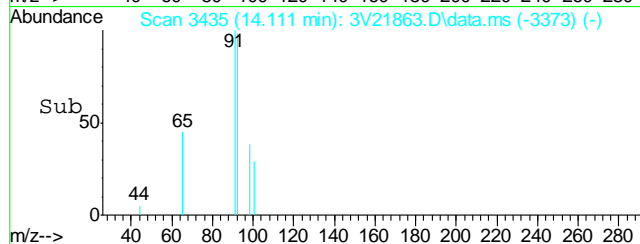
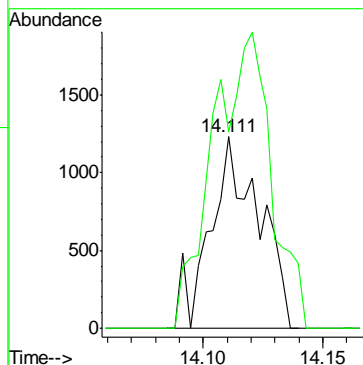
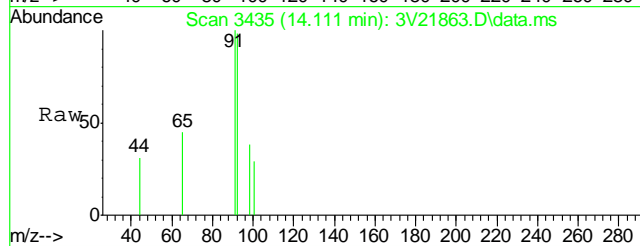
Tgt Ion: 78 Resp: 138





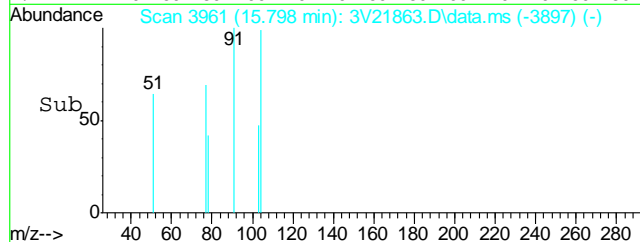
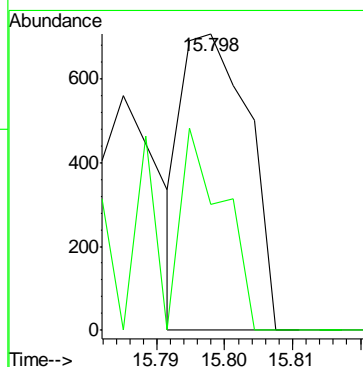
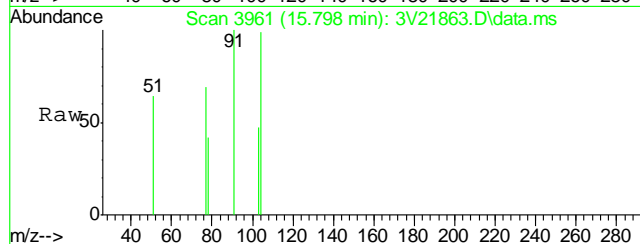
#62
Toluene
Concen: 0.25 ug/l
RT: 14.111 min Scan# 3435
Delta R.T. -0.002 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

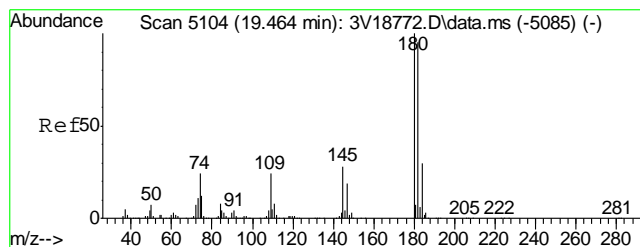
Tgt Ion: 92 Resp: 1757
Ion Ratio Lower Upper
92 100
91 183.4 150.2 190.2



#71
Styrene
Concen: 0.21 ug/l
RT: 15.798 min Scan# 3961
Delta R.T. 0.005 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

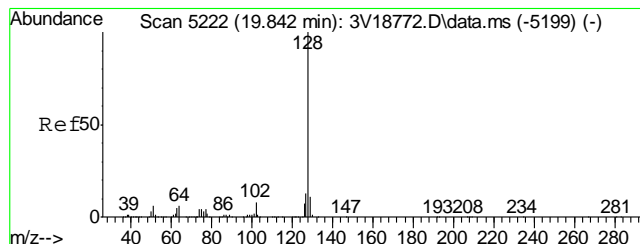
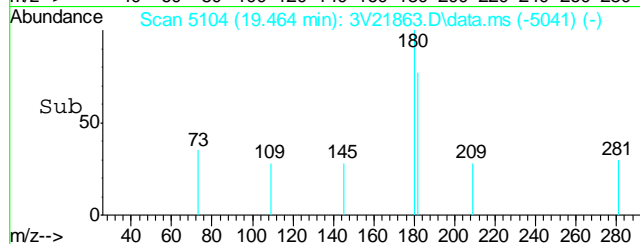
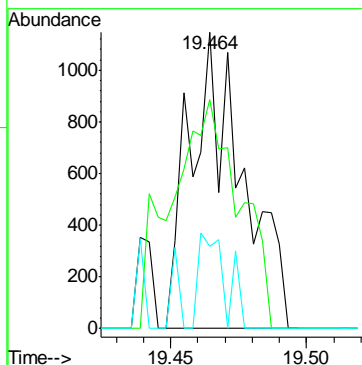
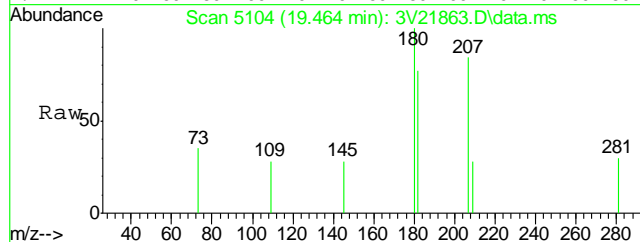
Tgt Ion: 104 Resp: 479
Ion Ratio Lower Upper
104 100
78 44.1 25.4 65.4





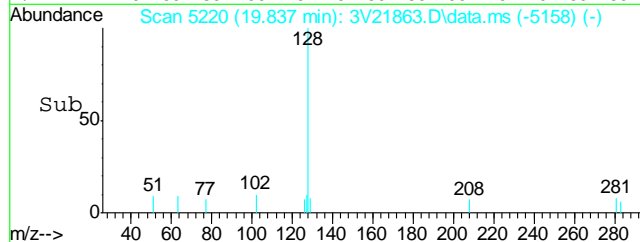
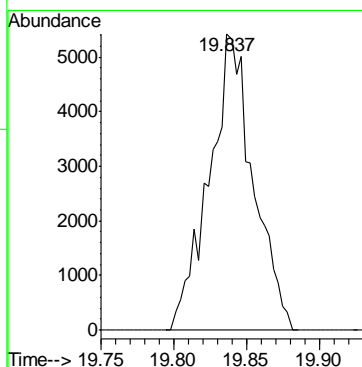
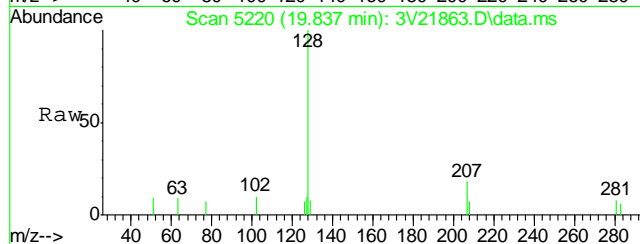
#90
1,2,4-Trichlorobenzene
Concen: 0.44 ug/l
RT: 19.464 min Scan# 5104
Delta R.T. 0.001 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

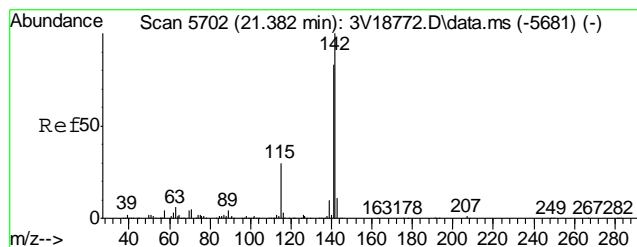
Tgt Ion	180	182	145
Resp:	1536		
Ion Ratio	100	100.7	16.7
Lower		76.4	22.9
Upper		114.6	34.3#



#91
Naphthalene
Concen: 4.41 ug/l
RT: 19.837 min Scan# 5220
Delta R.T. -0.001 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

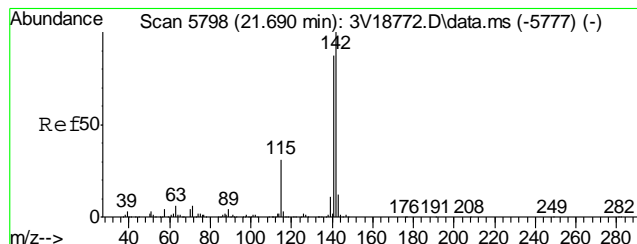
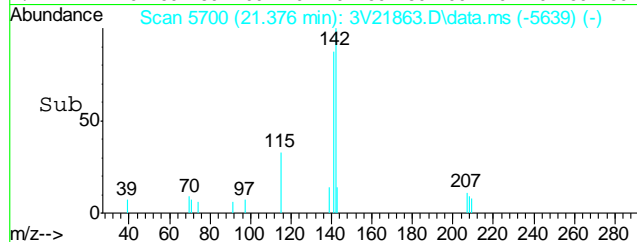
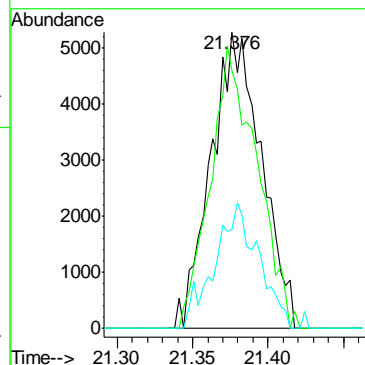
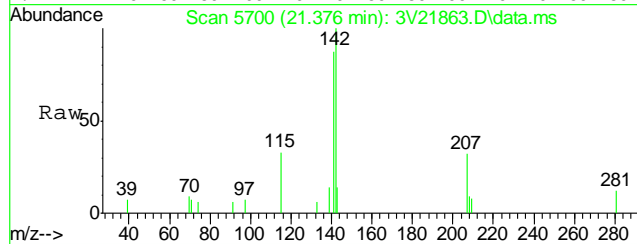
Tgt Ion:128 Resp: 11402





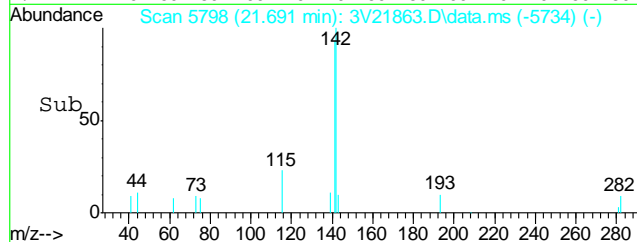
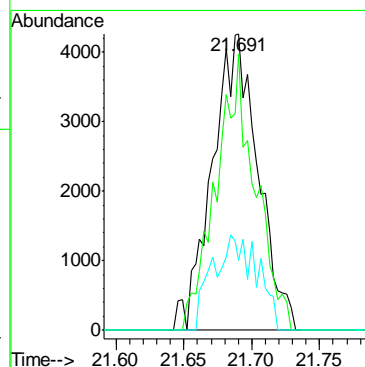
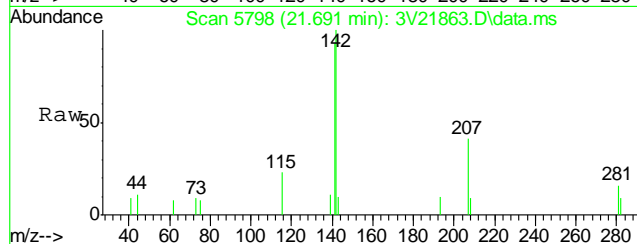
#94
2-Methylnaphthalene
Concen: 3.63 ug/l
RT: 21.376 min Scan# 5700
Delta R.T. -0.005 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

Tgt Ion:142	Resp:	12267
Ion Ratio	Lower	Upper
142	100	
141	87.9	68.6 103.0
115	36.7	23.8 35.6#



#95
1-Methylnaphthalene
Concen: 3.24 ug/l
RT: 21.691 min Scan# 5798
Delta R.T. 0.005 min
Lab File: 3V21863.D
Acq: 28 Nov 2012 1:52 pm

Tgt Ion:142	Resp:	10025
Ion Ratio	Lower	Upper
142	100	
141	79.5	70.6 106.0
115	21.6	25.4 38.2#



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: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7031-MB	3G12377.D	1	12/03/12	DC	11/30/12	OP7031	E3G586

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41248-1

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	89% 10-159%
321-60-8	2-Fluorobiphenyl	78% 19-131%
1718-51-0	Terphenyl-d14	84% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7031-BS	3G12378.D	1	12/03/12	DC	11/30/12	OP7031	E3G586

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41248-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	77.3	93	68-130
120-12-7	Anthracene	83.3	72.9	87	67-130
56-55-3	Benzo(a)anthracene	83.3	68.8	83	65-130
205-99-2	Benzo(b)fluoranthene	83.3	97.4	117	44-130
207-08-9	Benzo(k)fluoranthene	83.3	113	136* a	56-131
50-32-8	Benzo(a)pyrene	83.3	107	128	62-130
218-01-9	Chrysene	83.3	75.9	91	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	102	122	55-130
206-44-0	Fluoranthene	83.3	70.1	84	70-130
86-73-7	Fluorene	83.3	65.4	78	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	104	125	56-130
91-20-3	Naphthalene	83.3	84.6	102	70-130
129-00-0	Pyrene	83.3	75.8	91	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	91%	10-159%
321-60-8	2-Fluorobiphenyl	80%	19-131%
1718-51-0	Terphenyl-d14	82%	18-150%

(a) Compound ND in associated samples.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7031-MS	3G12380.D	1	12/03/12	DC	11/30/12	OP7031	E3G586
OP7031-MSD	3G12381.D	1	12/03/12	DC	11/30/12	OP7031	E3G586
D41248-1	3G12379.D	1	12/03/12	DC	11/30/12	OP7031	E3G586

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41248-1

CAS No.	Compound	D41248-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		95.4	75.9	80	73.5	77	3	25-151/30
120-12-7	Anthracene	ND		95.4	72.7	76	78.8	83	8	39-159/30
56-55-3	Benzo(a)anthracene	ND		95.4	70.4	74	81.7	86	15	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		95.4	96.3	101	111	117	14	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		95.4	109	114	125	131	14	10-188/30
50-32-8	Benzo(a)pyrene	ND		95.4	104	109	120	126	14	32-144/30
218-01-9	Chrysene	ND		95.4	73.9	77	85.3	90	14	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		95.4	97.6	102	113	119	15	21-152/30
206-44-0	Fluoranthene	ND		95.4	70.7	74	80.8	85	13	36-157/30
86-73-7	Fluorene	ND		95.4	66.7	70	65.4	69	2	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		95.4	99.6	104	115	121	14	20-154/30
91-20-3	Naphthalene	ND		95.4	78.1	82	76.0	80	3	10-163/30
129-00-0	Pyrene	ND		95.4	76.8	81	88.2	93	14	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D41248-1	Limits
4165-60-0	Nitrobenzene-d5	79%	65%	69%	10-159%
321-60-8	2-Fluorobiphenyl	74%	60%	66%	19-131%
1718-51-0	Terphenyl-d14	79%	77%	77%	18-150%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120312\
 Data File : 3g12379.D
 Acq On : 3 Dec 2012 8:45 pm
 Operator : DONC
 Sample : D41248-1
 Misc : OP7031,E3G586,30.00,,,1,1
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 04 09:13:12 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	5.682	136	136535	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.389	164	89861	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.871	188	132509	4.0000	ug/mL	0.00
19) Chrysene-d12	11.509	240	104044	4.0000	ug/mL	0.00
24) Perylene-d12	12.892	264	58182	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.996	82	471766	34.5660	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	69.14%		
7) 2-Fluorobiphenyl	6.727	172	1312113	32.7808	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	65.56%		
21) Terphenyl-d14	10.462	244	589560	38.4958	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	77.00%		

Target Compounds

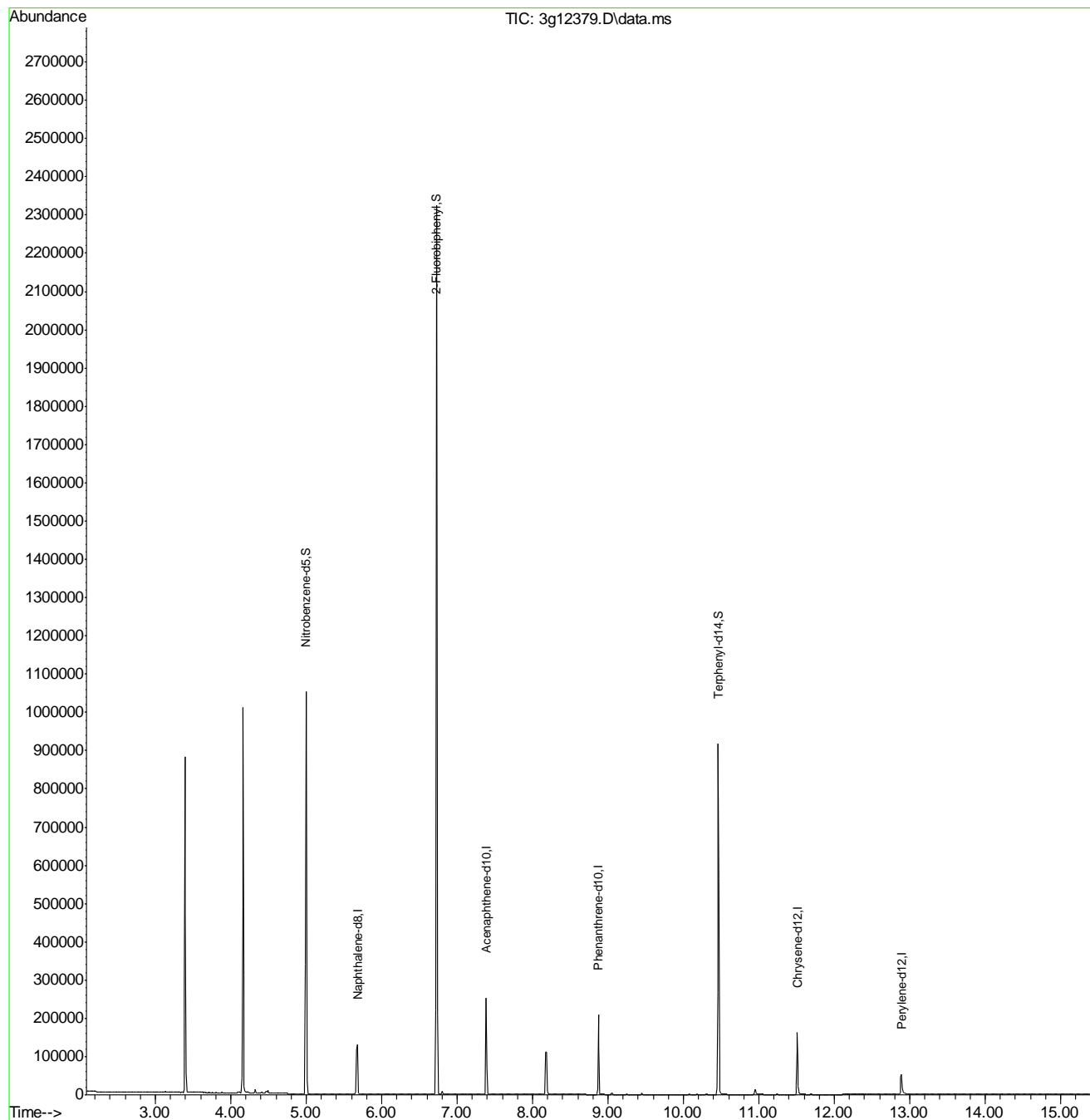
					Qvalue
3) N-Nitrosodimethylamine	2.407	74	83	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.694	128	726	N.D.	
8) 2-Methylnaphthalene	6.368	142	385	N.D.	
9) 1-Methylnaphthalene	6.467	142	287	N.D.	
10) Acenaphthylene	7.247	152	120	N.D.	
11) Acenaphthene	7.637	154	55	Below Cal	90
12) Dibenzofuran	7.696	168	60	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.895	178	806	N.D.	
17) Anthracene	8.950	178	288	N.D.	
18) Fluoranthene	10.082	202	628	N.D.	
20) Pyrene	10.303	202	493	N.D.	
22) Benzo(a)anthracene	11.503	228	798	N.D.	
23) Chrysene	11.503	228	806	N.D.	
25) Benzo(b)fluoranthene	12.503	252	807	N.D.	
26) Benzo(k)fluoranthene	12.503	252	807	N.D.	
27) Benzo(a)pyrene	12.829	252	252	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.102	276	262	N.D.	
29) Dibenz(a,h)anthracene	14.123	278	213	N.D.	
30) Benzo(g,h,i)perylene	14.459	276	323	N.D.	

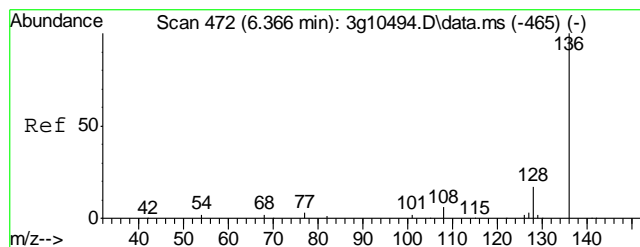
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120312\
Data File : 3g12379.D
Acq On : 3 Dec 2012 8:45 pm
Operator : DONC
Sample : D41248-1
Misc : OP7031,E3G586,30.00,,,1,1
ALS Vial : 14 Sample Multiplier: 1

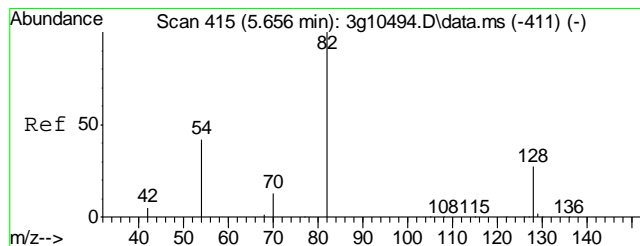
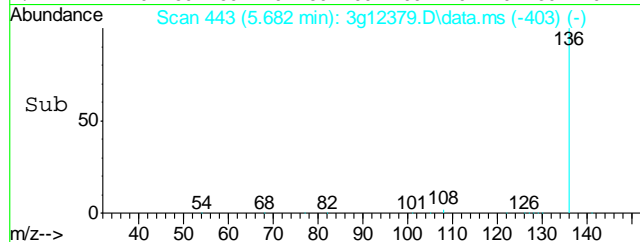
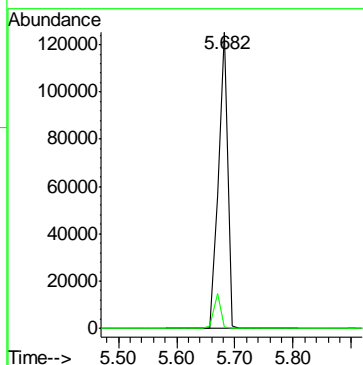
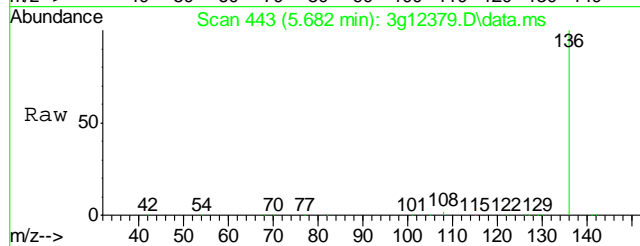
Quant Time: Dec 04 09:13:12 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





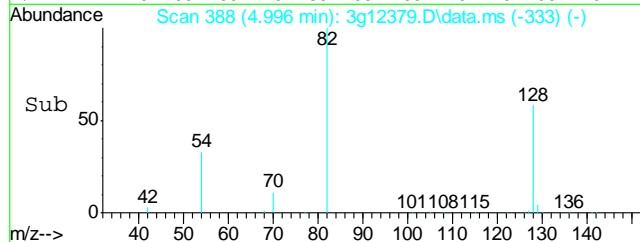
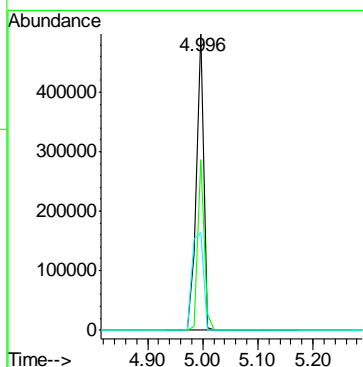
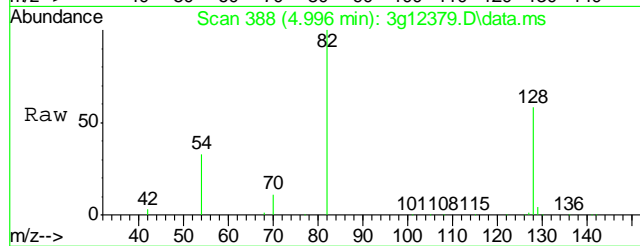
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

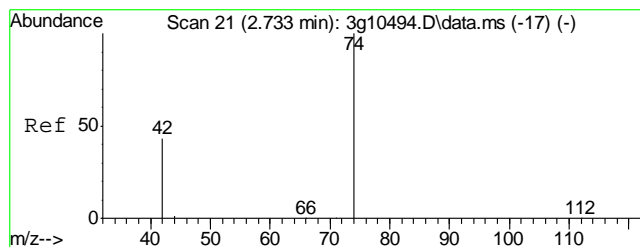
Tgt Ion: 136 Resp: 136535
Ion Ratio Lower Upper
136 100
68 9.0 0.0 28.4



#2
Nitrobenzene-d5
Concen: 34.5660 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

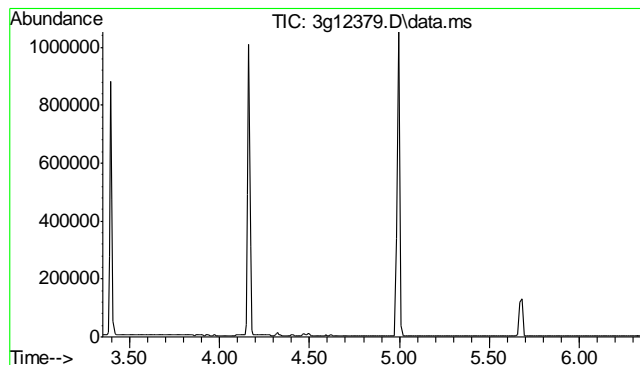
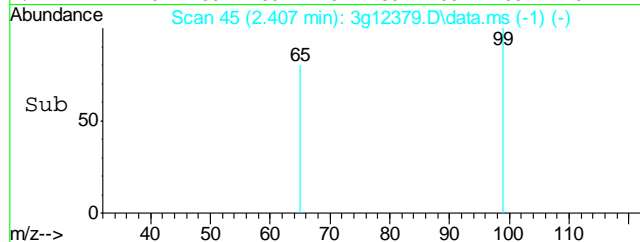
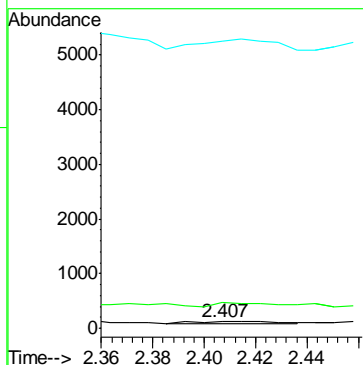
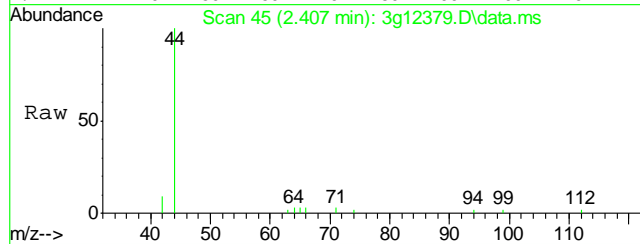
Tgt Ion: 82 Resp: 471766
Ion Ratio Lower Upper
82 100
128 50.7 31.8 71.8
54 50.5 29.2 69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.407 min Scan# 45
Delta R.T. 0.029 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

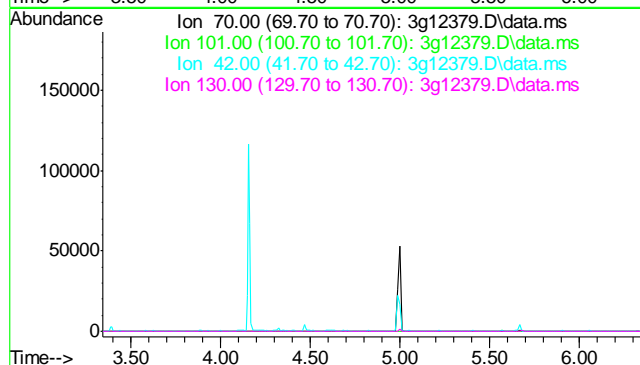
Tgt Ion: 74 Resp: 83
Ion Ratio Lower Upper
74 100
42 183.1 52.5 92.5#
44 395.2 0.0 24.1#

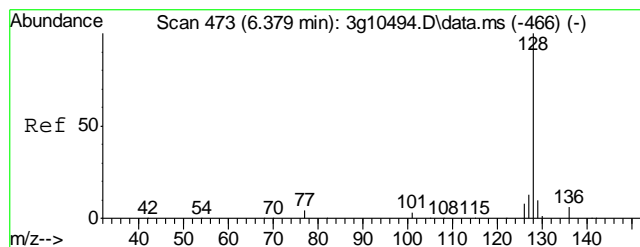


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

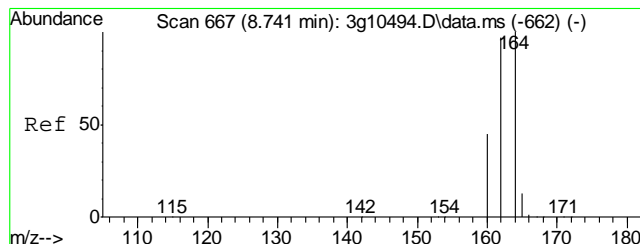
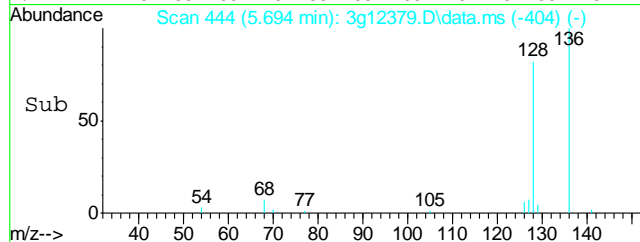
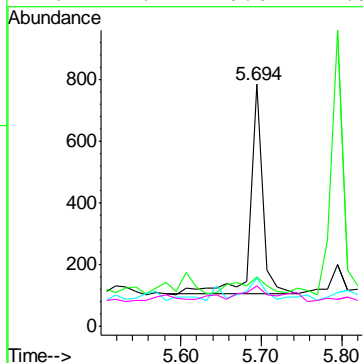
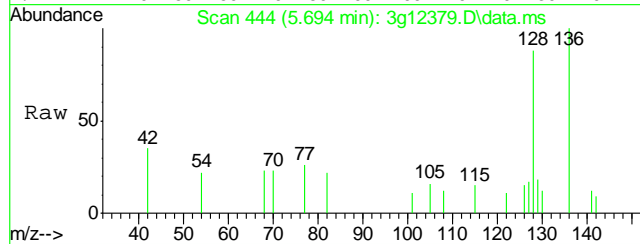
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.2
42 67.9
130 33.2





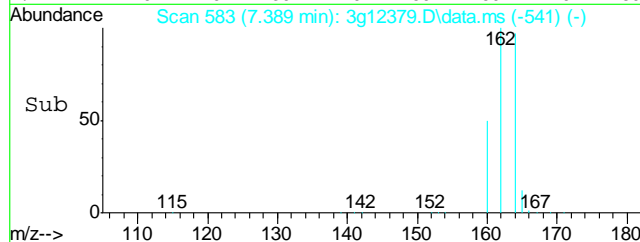
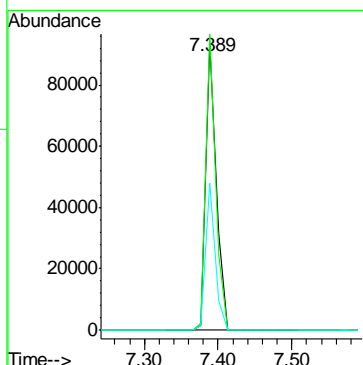
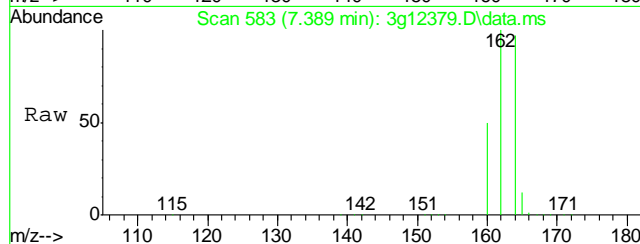
#5
Naphthalene
Concen: Below ug/mL
RT: 5.694 min Scan# 444
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

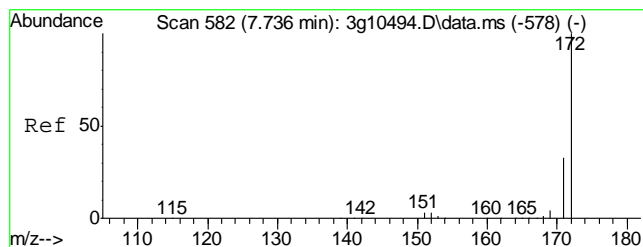
Tgt Ion	128	129	127	126
Resp	726	18.9	13.8	12.7
Ratio	100			
Lower		0.0	0.0	0.0
Upper		30.7	33.2	27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.389 min Scan# 583
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

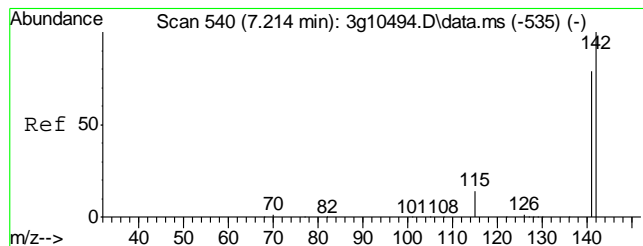
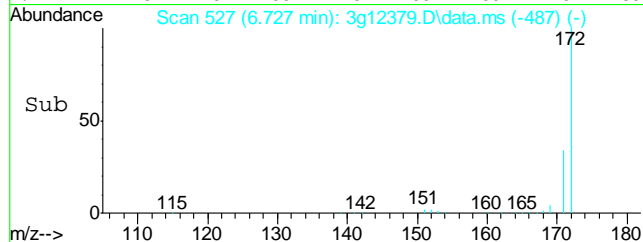
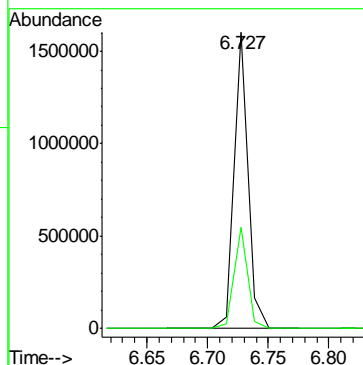
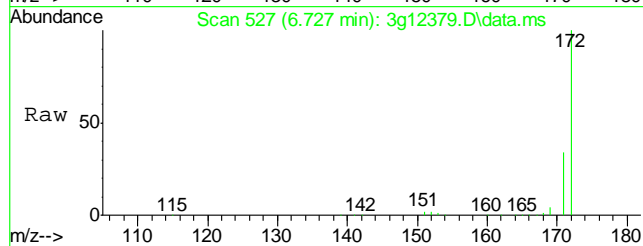
Tgt Ion	164	162	160
Resp	89861	97.4	46.5
Ratio	100		
Lower		78.0	27.3
Upper		118.0	67.3





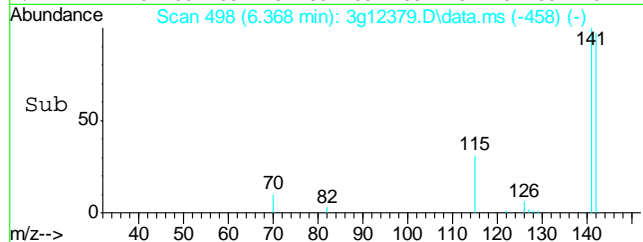
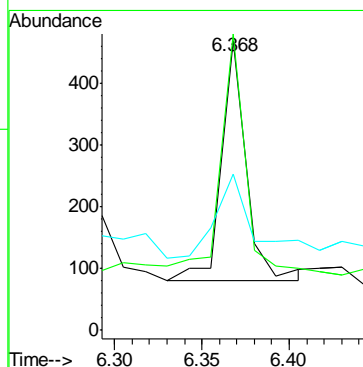
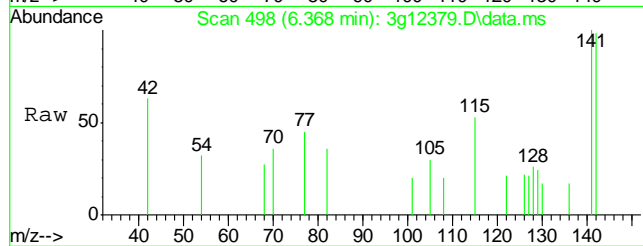
#7
2-Fluorobiphenyl
Concen: 32.7808 ug/mL
RT: 6.727 min Scan# 527
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

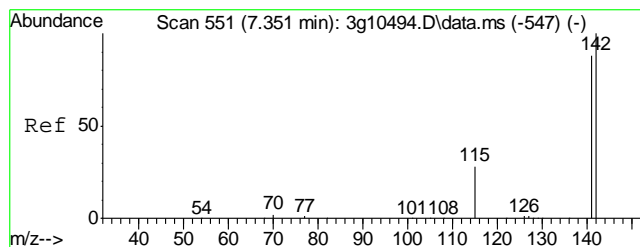
Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.5	13.7	53.7



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.368 min Scan# 498
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

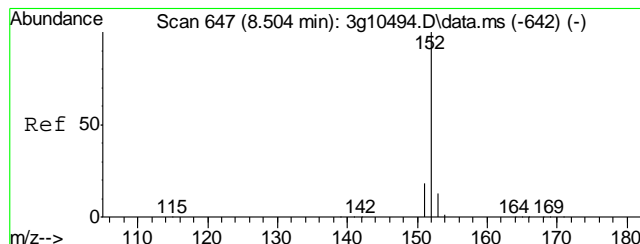
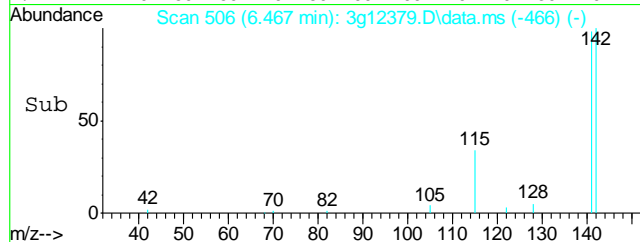
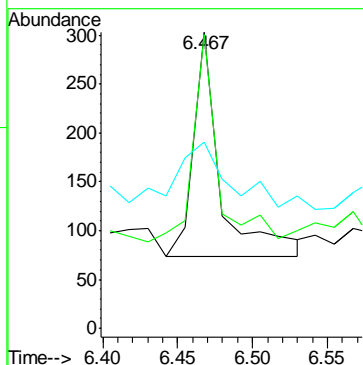
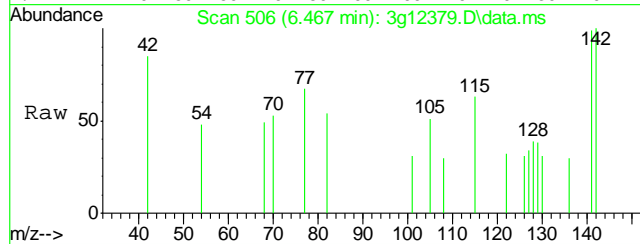
Tgt Ion	Ratio	Lower	Upper
142	100		
141	110.4	65.6	105.6#
115	55.8	12.2	52.2#





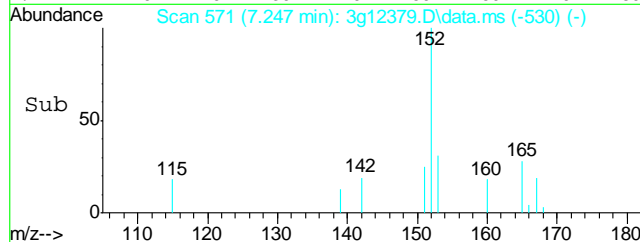
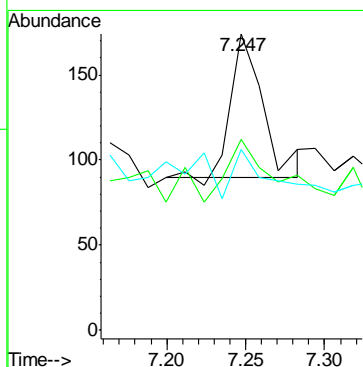
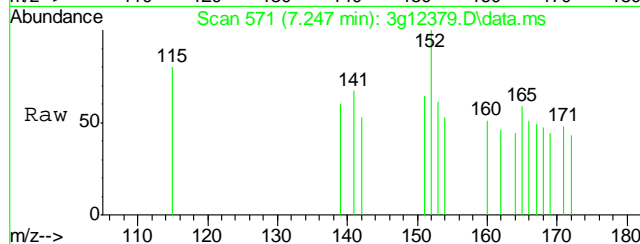
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.467 min Scan# 506
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

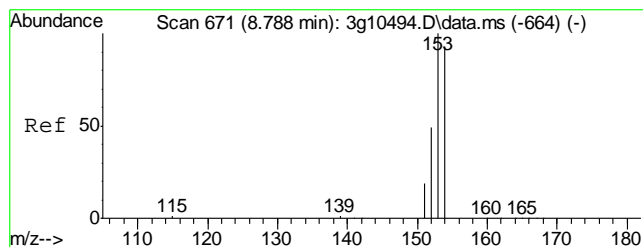
Tgt Ion	Ratio	Lower	Upper
142	100		
141	82.6	67.0	107.0
115	69.3	9.3	49.3



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.247 min Scan# 571
Delta R.T. -0.012 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

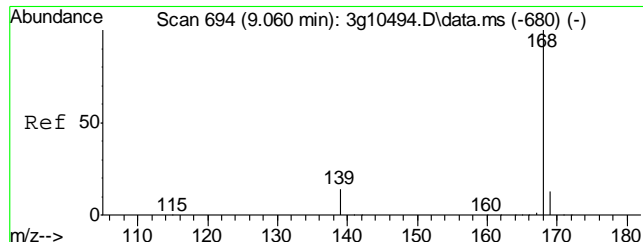
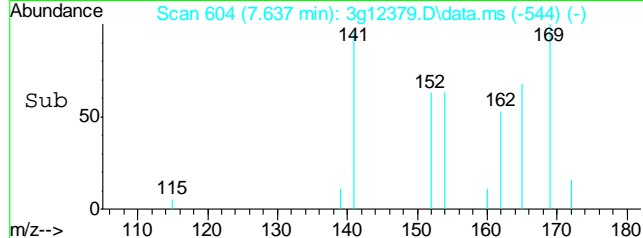
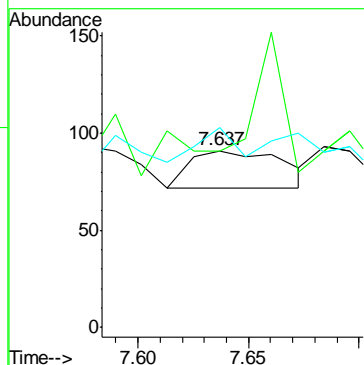
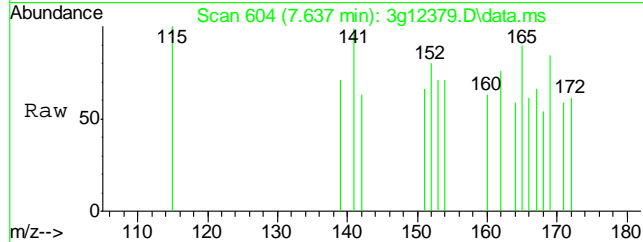
Tgt Ion	Ratio	Lower	Upper
152	100		
151	65.8	0.0	39.5
153	43.3	0.0	33.0





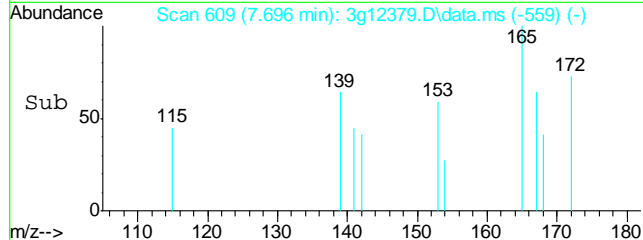
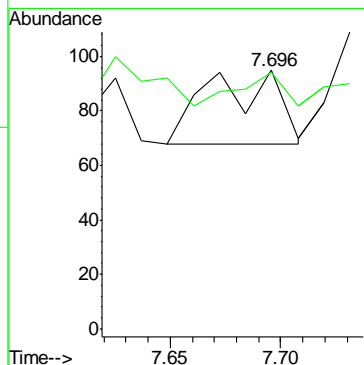
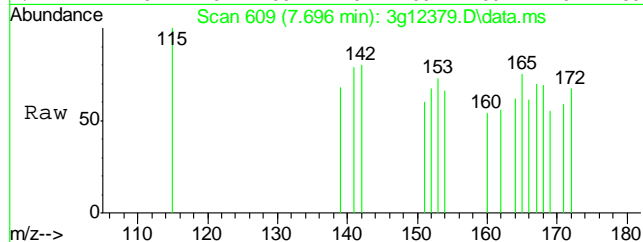
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.637 min Scan# 604
Delta R.T. 0.213 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

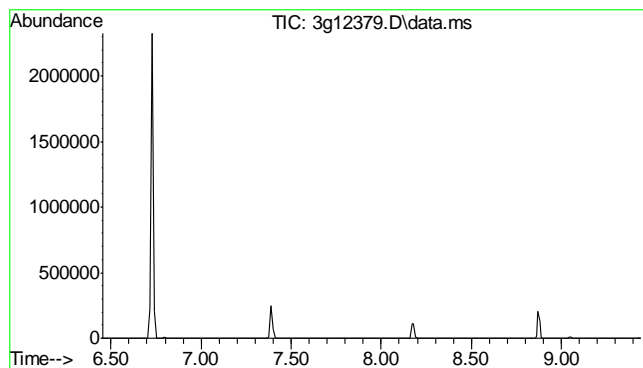
Tgt Ion	Ratio	Lower	Upper
154	100		
153	110.9	84.7	124.7
152	38.2	30.2	70.2



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.696 min Scan# 609
Delta R.T. 0.095 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

Tgt Ion	Ratio	Lower	Upper
168	100		
139	26.7	12.0	52.0

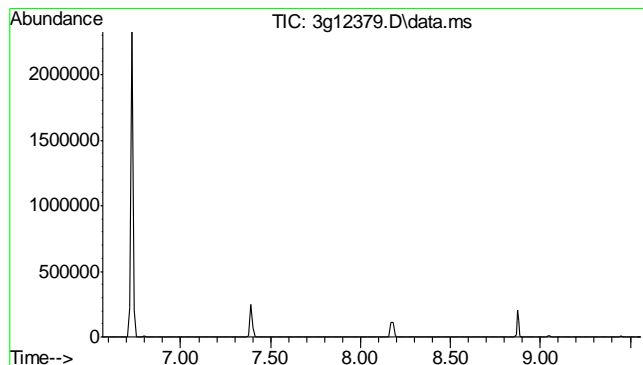
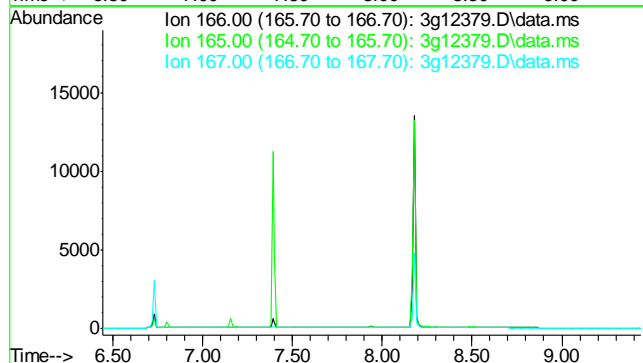




#13
 Fluorene
 Concen: N.D. ug/mL
 Expected RT: 7.94 min

 Lab File: 3g12379.D
 Acq: 3 Dec 12 8:45 pm

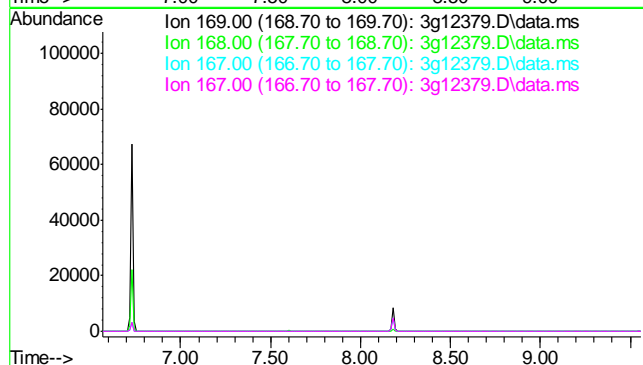
Tgt Ion	Exp Ratio
166	100
165	90.1
167	13.4

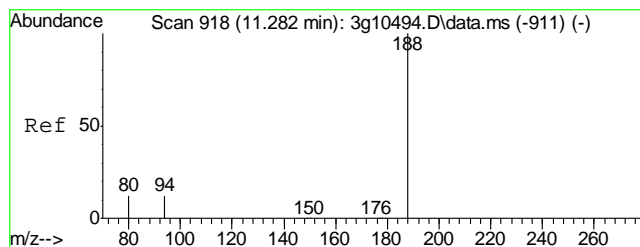


#14
 Diphenylamine
 Concen: N.D. ug/mL
 Expected RT: 8.06 min

 Lab File: 3g12379.D
 Acq: 3 Dec 12 8:45 pm

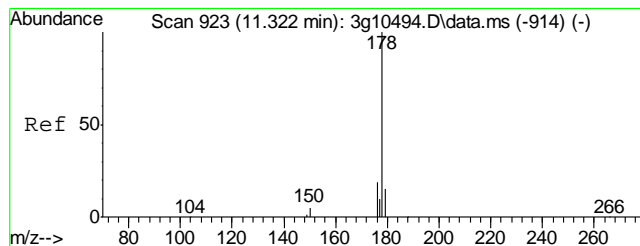
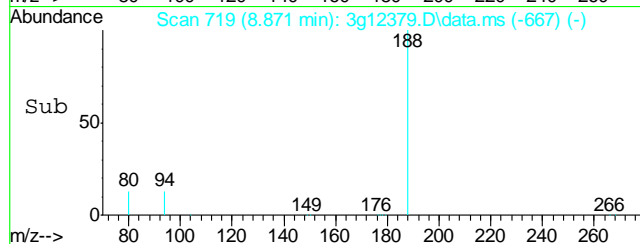
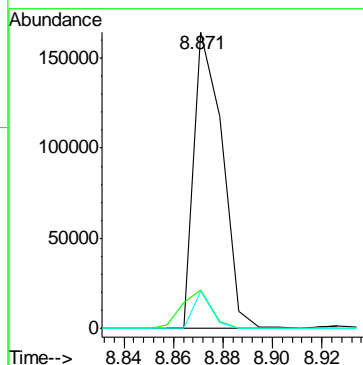
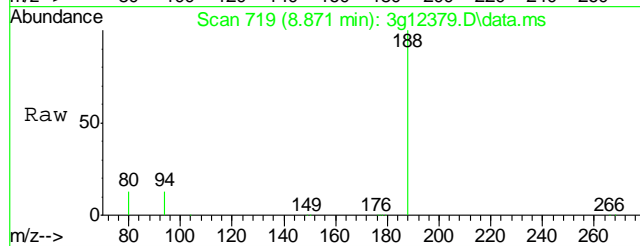
Tgt Ion	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





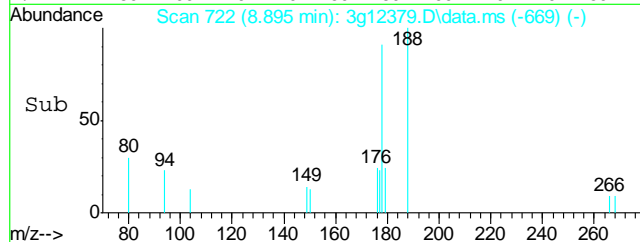
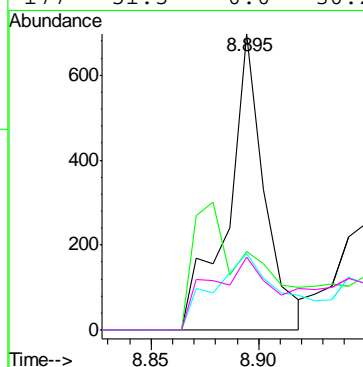
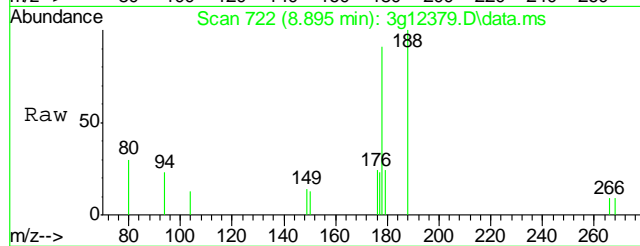
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.871 min Scan# 719
Delta R.T. -0.008 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

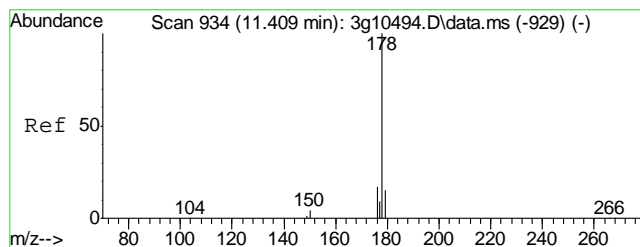
Tgt Ion	Ratio	Lower	Upper
188	100		
94	13.7	0.0	33.4
80	8.4	0.0	28.9



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.895 min Scan# 722
Delta R.T. -0.007 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

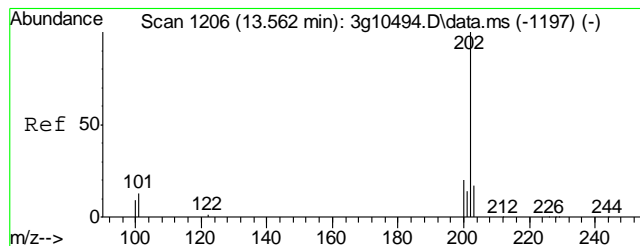
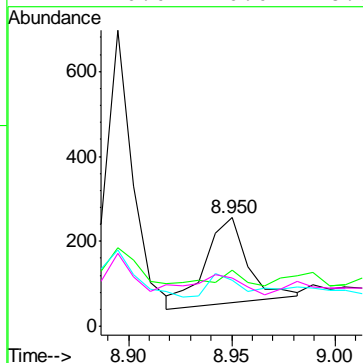
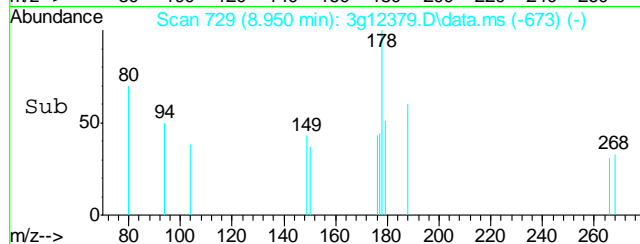
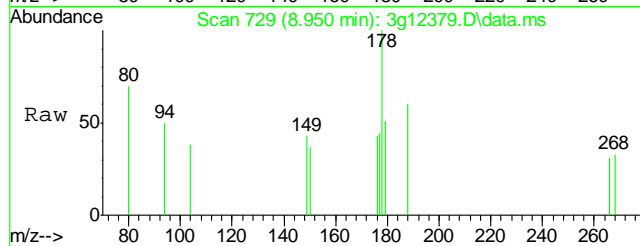
Tgt Ion	Ratio	Lower	Upper
178	100		
179	70.5	0.0	35.3#
176	48.9	0.0	38.6#
177	51.5	0.0	30.2#





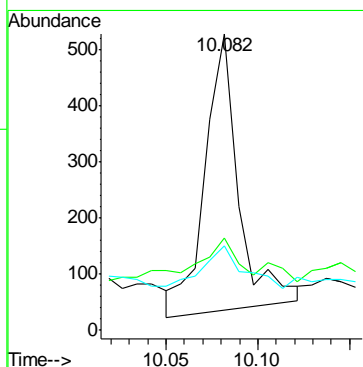
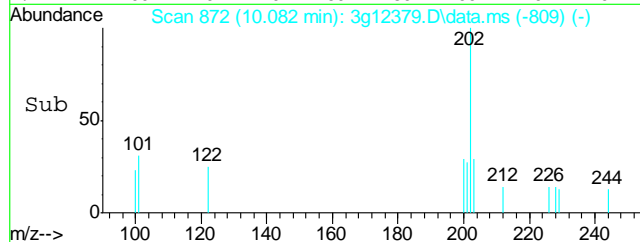
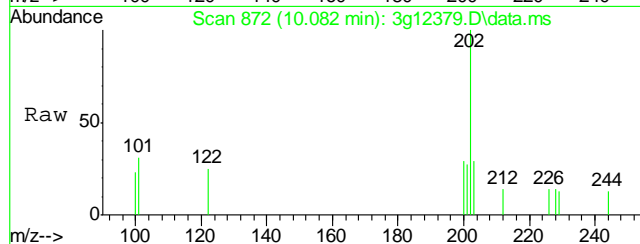
#17
 Anthracene
 Concen: Below ug/mL
 RT: 8.950 min Scan# 729
 Delta R.T. 0.000 min
 Lab File: 3g12379.D
 Acq: 3 Dec 12 8:45 pm

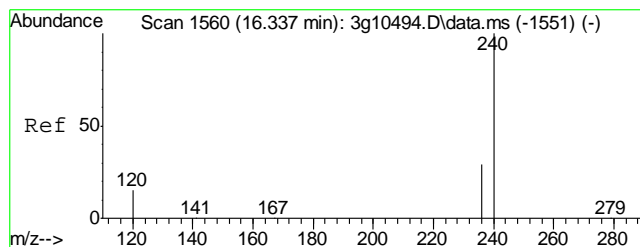
Tgt Ion:	178	Resp:	288
Ion Ratio	Lower	Upper	
178	100		
179	0.0	0.0	35.1
176	33.3	0.0	38.2
177	0.0	0.0	28.8



#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 10.082 min Scan# 872
 Delta R.T. 0.000 min
 Lab File: 3g12379.D
 Acq: 3 Dec 12 8:45 pm

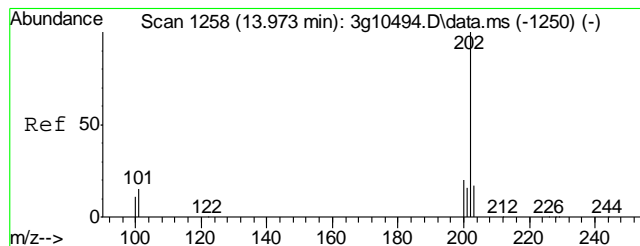
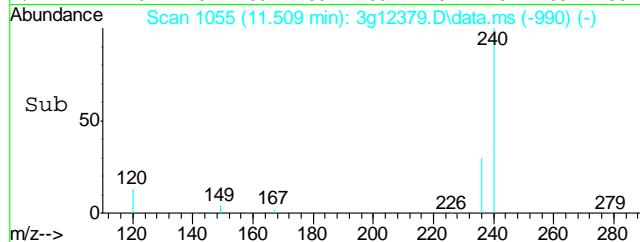
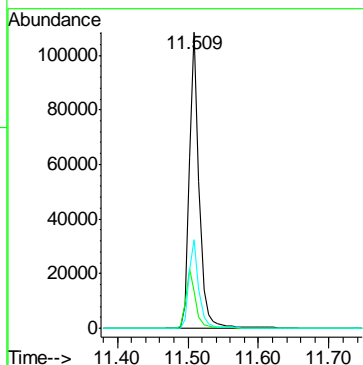
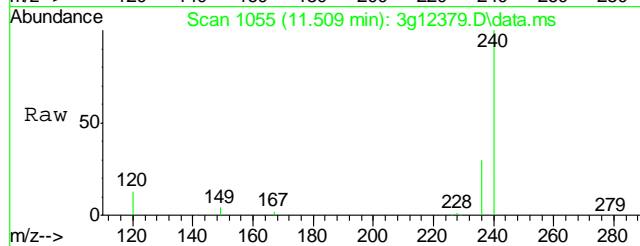
Tgt Ion:	202	Resp:	628
Ion Ratio	Lower	Upper	
202	100		
101	17.8	0.0	32.5
203	30.3	0.0	37.3





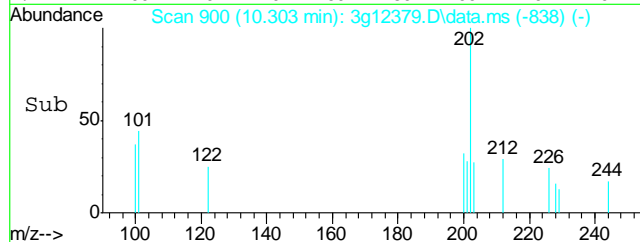
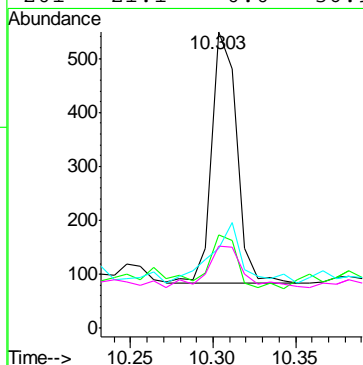
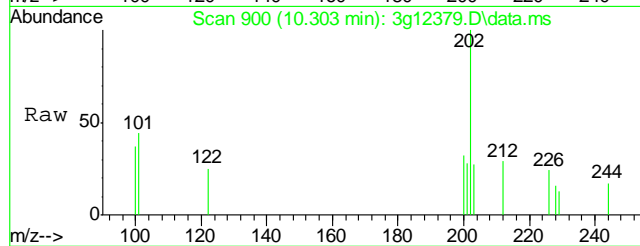
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.509 min Scan# 1055
Delta R.T. -0.006 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

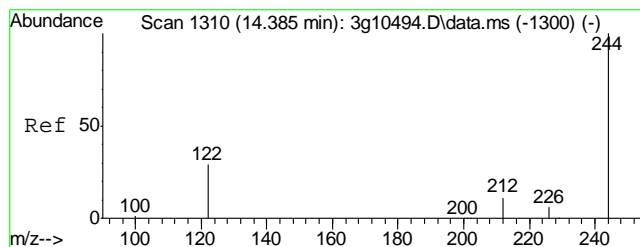
Tgt Ion	Ratio	Lower	Upper
240	100		
120	20.1	0.0	39.7
236	30.5	11.1	51.1



#20
Pyrene
Concen: Below ug/mL
RT: 10.303 min Scan# 900
Delta R.T. -0.008 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

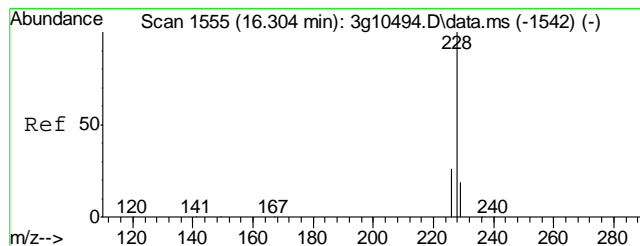
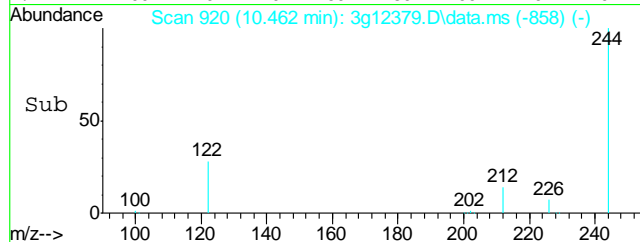
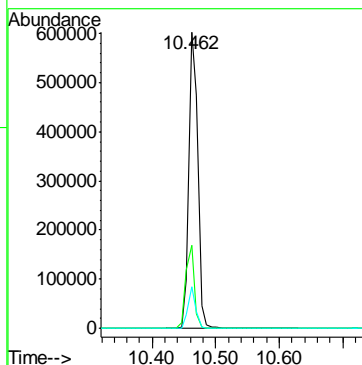
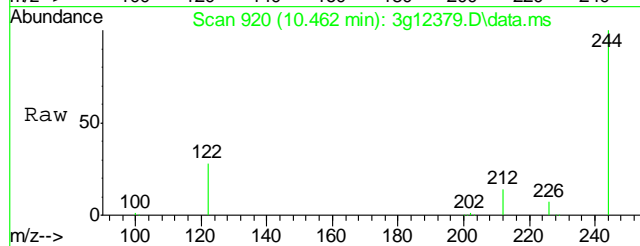
Tgt Ion	Ratio	Lower	Upper
202	100		
200	21.3	0.7	40.7
203	29.8	0.0	37.8
201	21.1	0.0	36.9





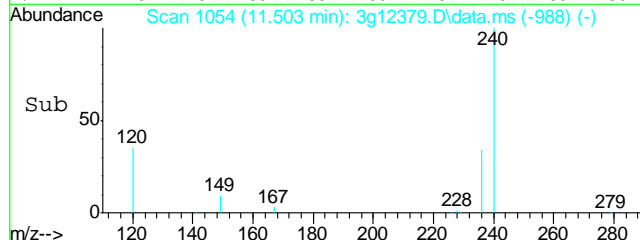
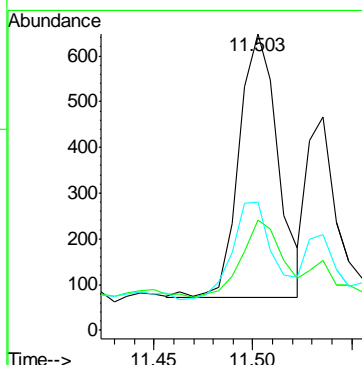
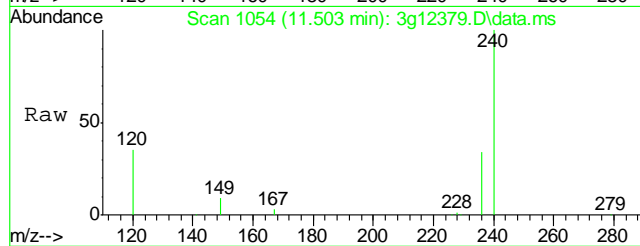
#21
Terphenyl-d14
Concen: 38.4958 ug/mL
RT: 10.462 min Scan# 920
Delta R.T. -0.008 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

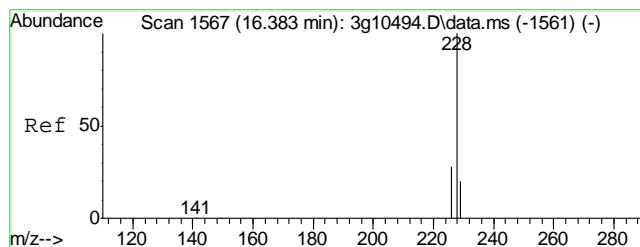
Tgt Ion	Ratio	Lower	Upper
244	100		
122	26.8	6.8	46.8
212	12.3	0.0	32.3



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.503 min Scan# 1054
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

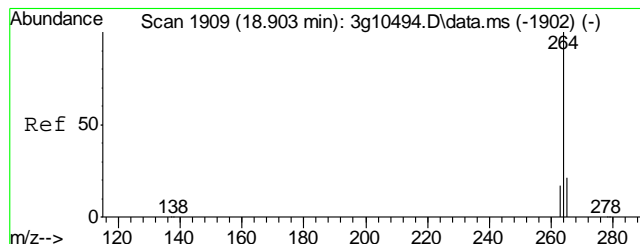
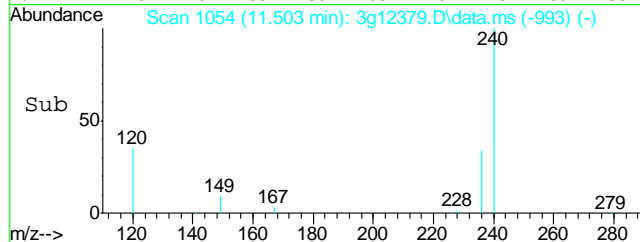
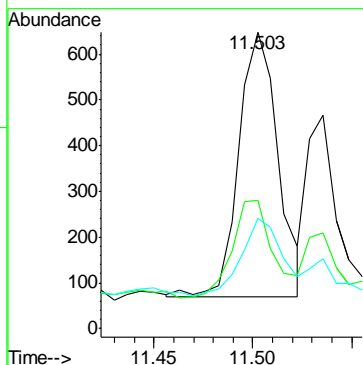
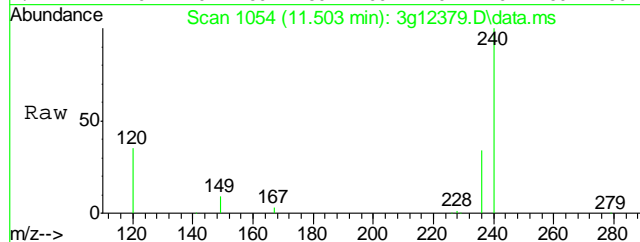
Tgt Ion	Ratio	Lower	Upper
228	100		
229	30.2	0.0	39.4
226	38.7	6.8	46.8





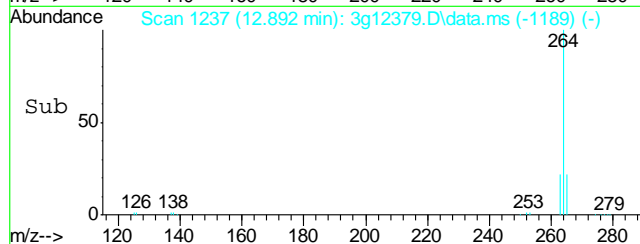
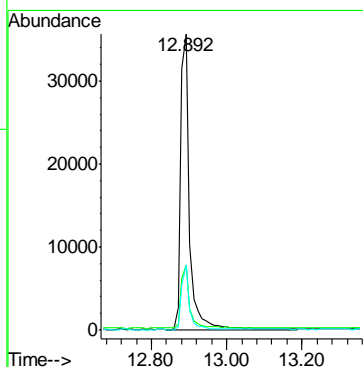
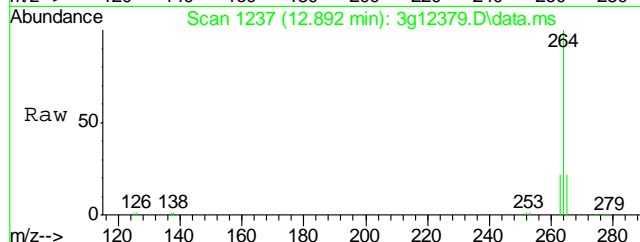
#23
Chrysene
Concen: Below ug/mL
RT: 11.503 min Scan# 1054
Delta R.T. -0.040 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

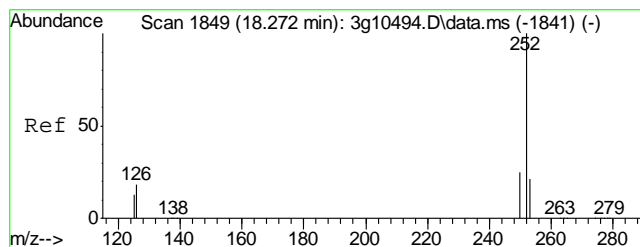
Tgt Ion:	228	Resp:	806
Ion Ratio	Lower	Upper	
228	100		
226	38.3	9.2	49.2
229	29.9	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.892 min Scan# 1237
Delta R.T. 0.000 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

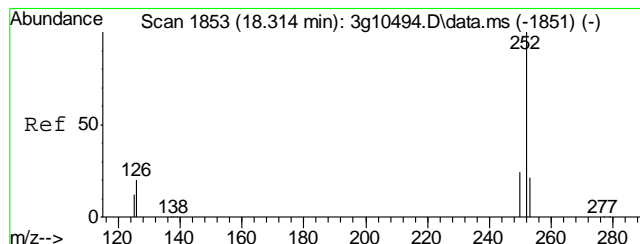
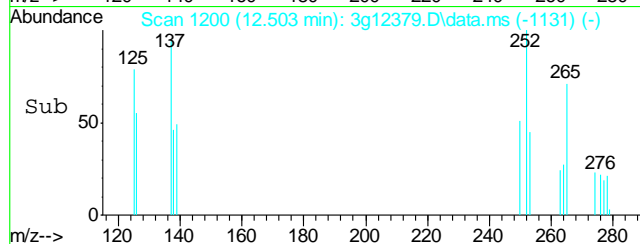
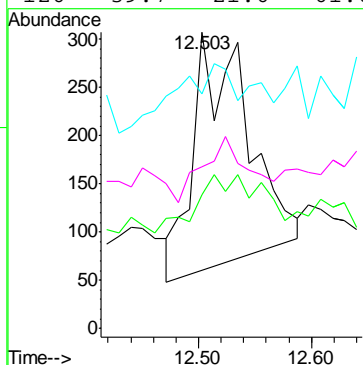
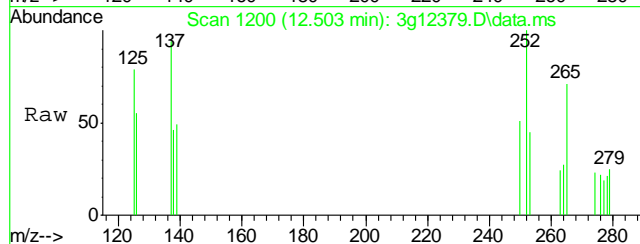
Tgt Ion:	264	Resp:	58182
Ion Ratio	Lower	Upper	
264	100		
265	20.0	0.6	40.6
263	19.7	0.0	39.7





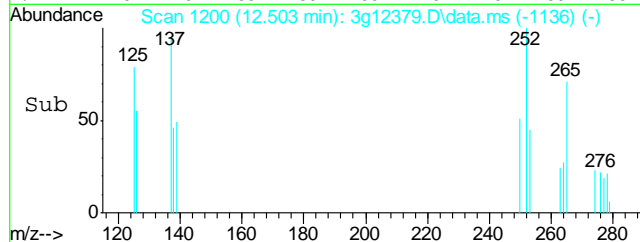
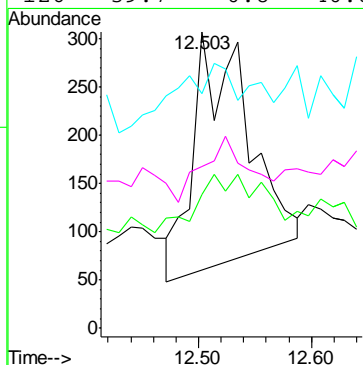
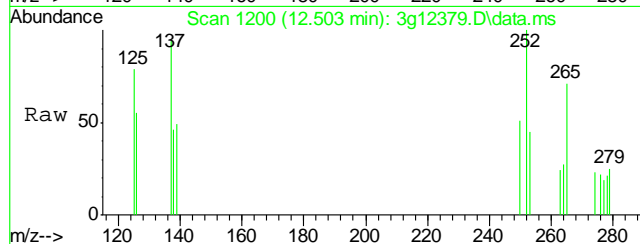
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.503 min Scan# 1200
Delta R.T. -0.010 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

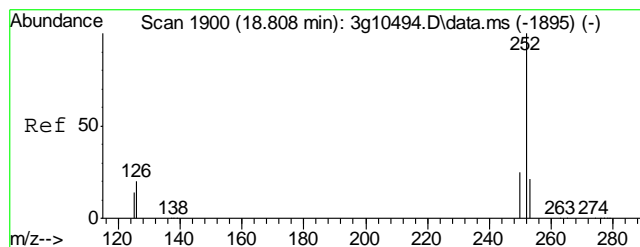
Tgt Ion	Ratio	Lower	Upper
252	100		
253	19.1	7.0	47.0
125	0.0	9.0	49.0#
126	39.7	21.6	61.6



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.503 min Scan# 1200
Delta R.T. -0.042 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

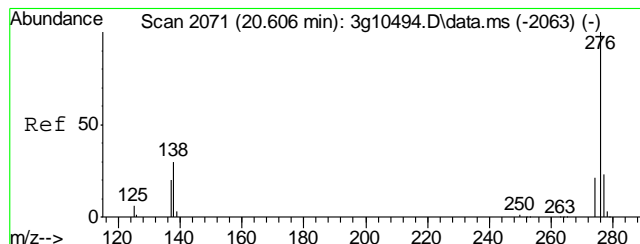
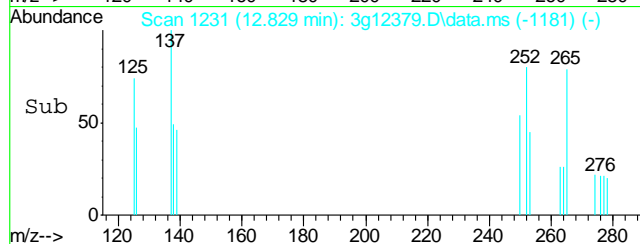
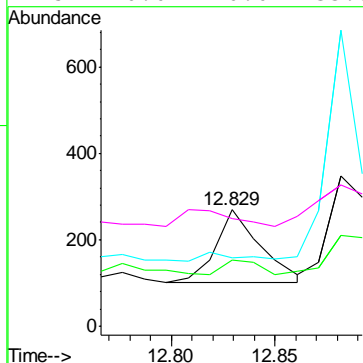
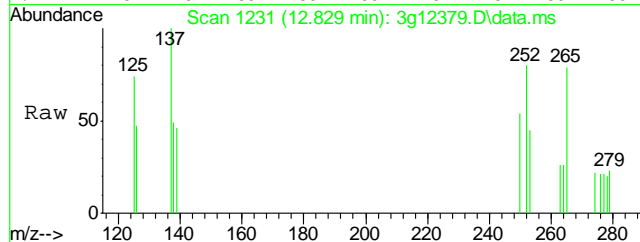
Tgt Ion	Ratio	Lower	Upper
252	100		
253	19.1	4.0	44.0
125	0.0	0.0	35.3
126	39.7	0.8	40.8





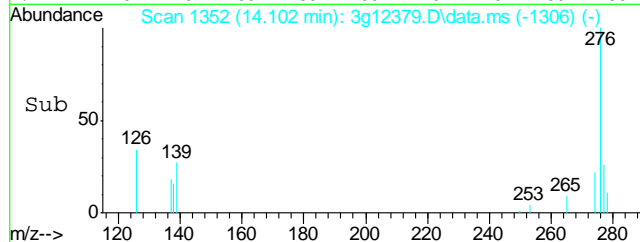
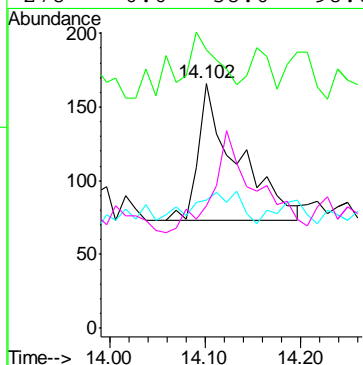
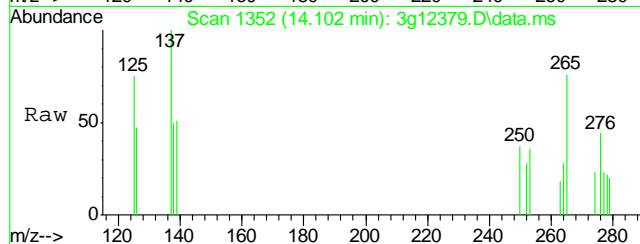
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.829 min Scan# 1231
Delta R.T. -0.010 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

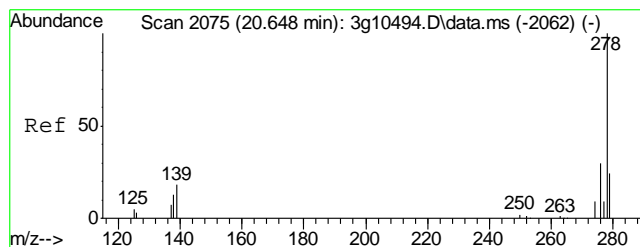
Tgt Ion:	252	Resp:	252
Ion Ratio	Lower	Upper	
252	100		
253	0.0	1.5	41.5#
126	0.0	0.0	38.4
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.102 min Scan# 1352
Delta R.T. -0.021 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

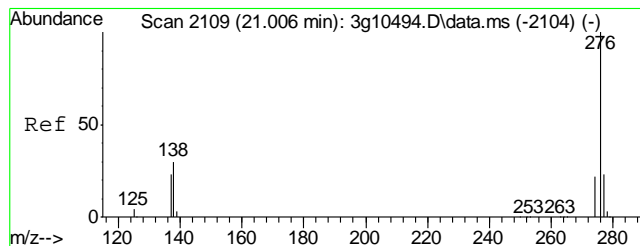
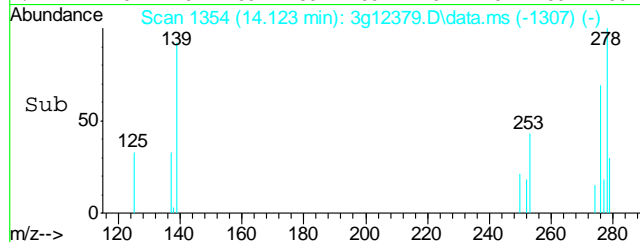
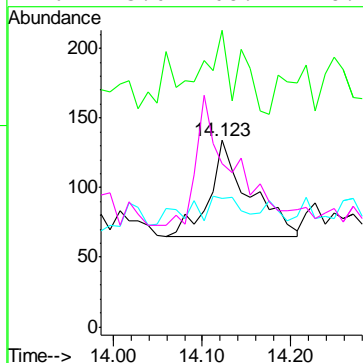
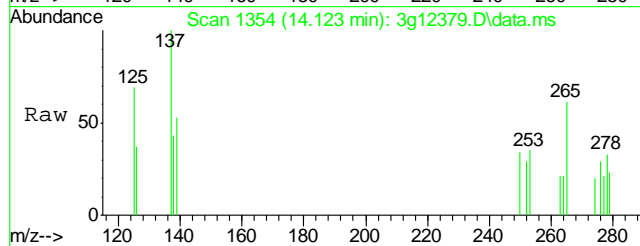
Tgt Ion:	276	Resp:	262
Ion Ratio	Lower	Upper	
276	100		
138	56.5	16.0	56.0#
277	0.0	4.9	44.9#
278	0.0	58.0	98.0#





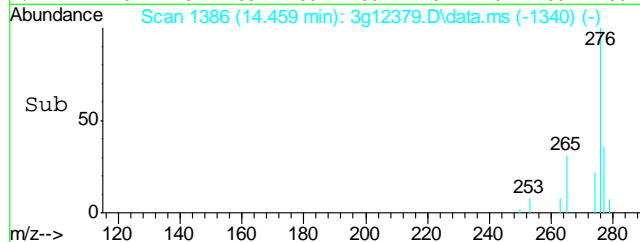
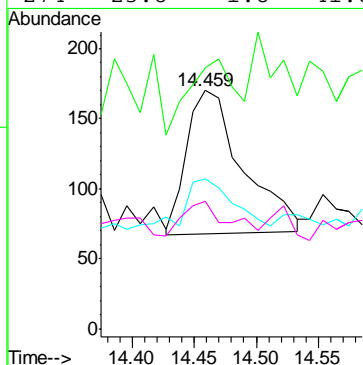
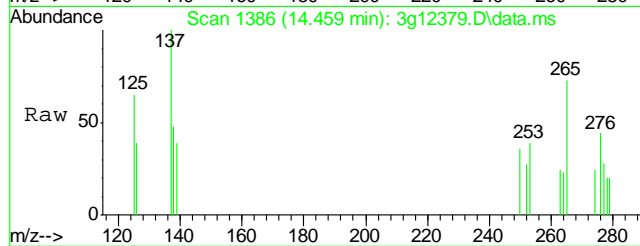
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.123 min Scan# 1354
Delta R.T. -0.010 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

Tgt Ion: 278 Resp: 213
Ion Ratio Lower Upper
278 100
139 64.8 7.4 47.4#
279 37.6 2.8 42.8
276 123.0 108.1 148.1



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.459 min Scan# 1386
Delta R.T. -0.021 min
Lab File: 3g12379.D
Acq: 3 Dec 12 8:45 pm

Tgt Ion: 276 Resp: 323
Ion Ratio Lower Upper
276 100
138 43.3 10.9 50.9
277 38.7 3.2 43.2
274 23.8 1.8 41.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120312\
 Data File : 3g12377.D
 Acq On : 3 Dec 2012 7:58 pm
 Operator : DONC
 Sample : OP7031-MB
 Misc : OP7031,E3G586,30.00,,,1,1
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 04 09:12:04 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	5.682	136	151768	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.389	164	95999	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.871	188	147491	4.0000	ug/mL	0.00
19) Chrysene-d12	11.509	240	108551	4.0000	ug/mL	0.00
24) Perylene-d12	12.892	264	61443	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.996	82	677227	44.6396	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	89.28%		
7) 2-Fluorobiphenyl	6.727	172	1643542	39.1796	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	78.36%		
21) Terphenyl-d14	10.469	244	668273	41.8237	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	83.64%		

Target Compounds

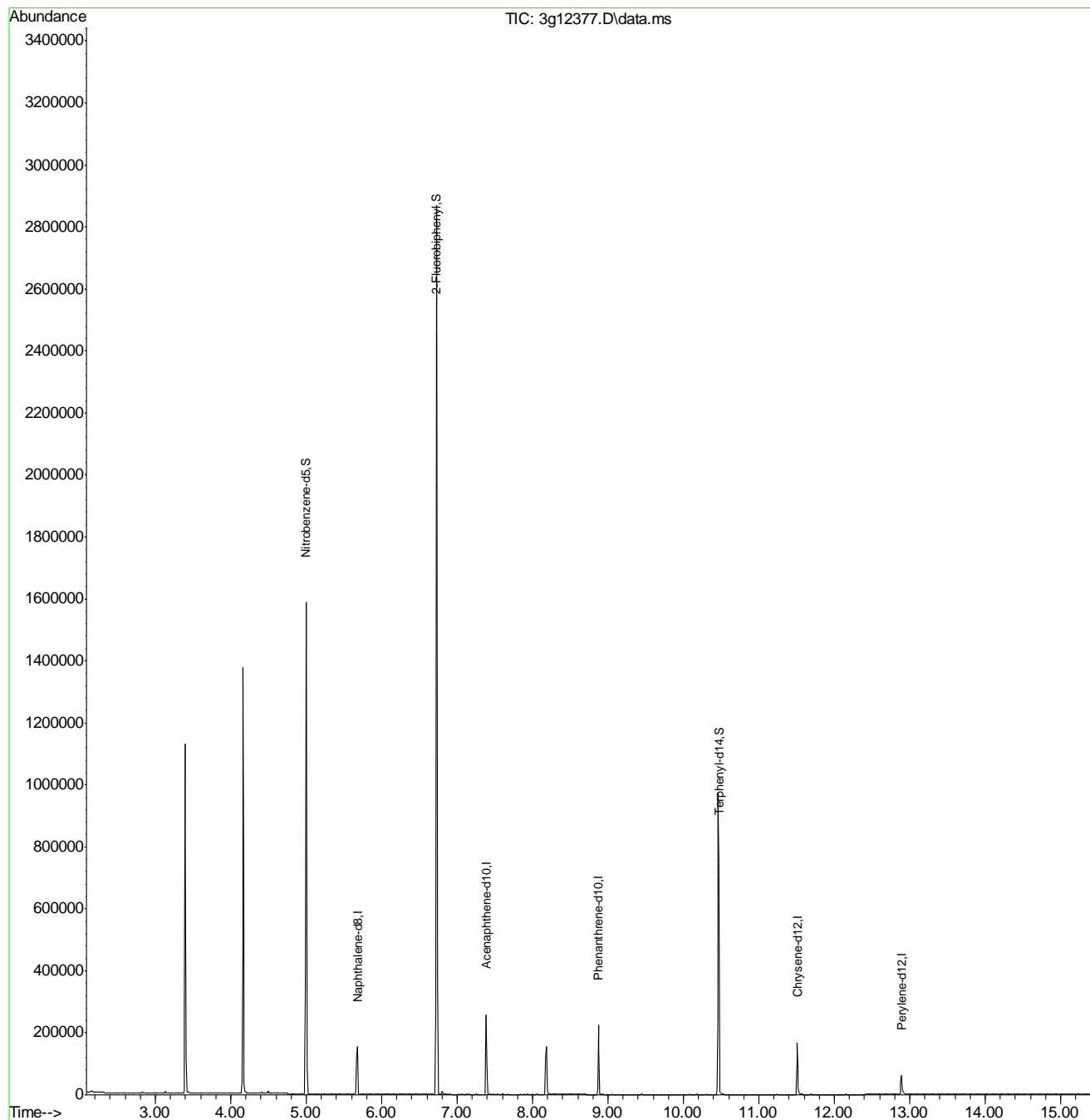
					Qvalue
3) N-Nitrosodimethylamine	2.385	74	41	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.694	128	493	N.D.	
8) 2-Methylnaphthalene	6.368	142	288	N.D.	
9) 1-Methylnaphthalene	6.467	142	169	N.D.	
10) Acenaphthylene	7.117	152	305	N.D.	
11) Acenaphthene	7.389	154	560	Below Cal # 23	
12) Dibenzofuran	7.601	168	175	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.894	178	658	N.D.	
17) Anthracene	8.950	178	238	N.D.	
18) Fluoranthene	10.303	202	448	N.D.	
20) Pyrene	10.303	202	448	N.D.	
22) Benzo(a)anthracene	11.502	228	794	N.D.	
23) Chrysene	11.535	228	348	N.D.	
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d
26) Benzo(k)fluoranthene	12.535	252	1693	N.D.	
27) Benzo(a)pyrene	12.829	252	290	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.017	276	122	N.D.	
29) Dibenz(a,h)anthracene	14.122	278	173	N.D.	
30) Benzo(g,h,i)perylene	14.459	276	245	N.D.	

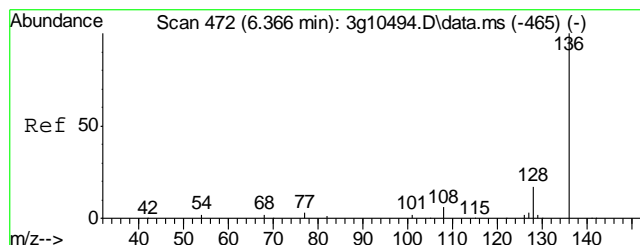
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120312\
Data File : 3g12377.D
Acq On : 3 Dec 2012 7:58 pm
Operator : DONC
Sample : OP7031-MB
Misc : OP7031,E3G586,30.00,,,1,1
ALS Vial : 12 Sample Multiplier: 1

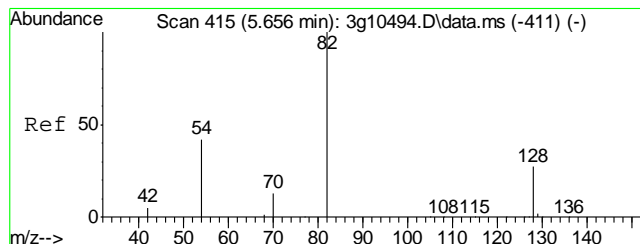
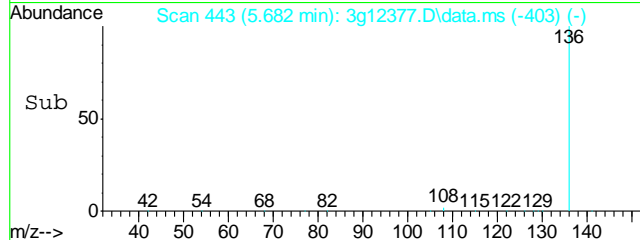
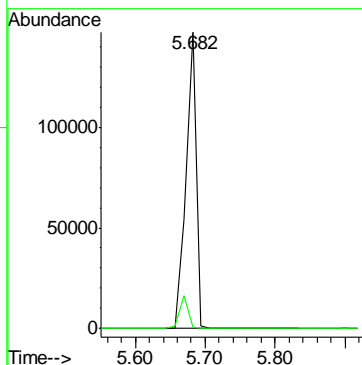
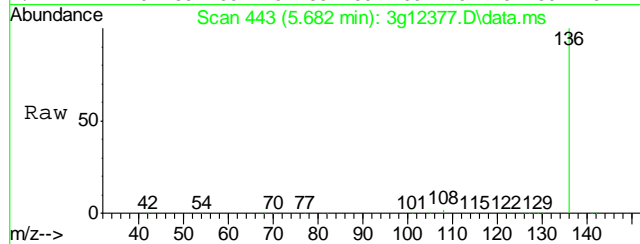
Quant Time: Dec 04 09:12:04 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





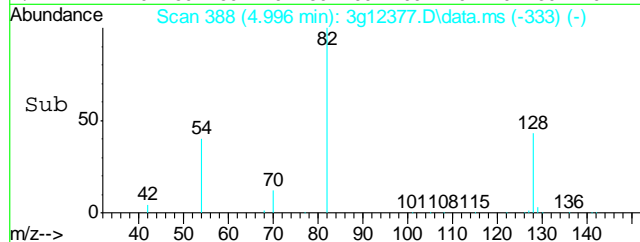
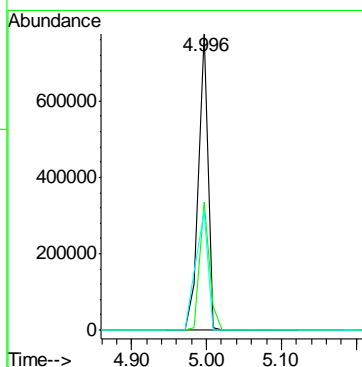
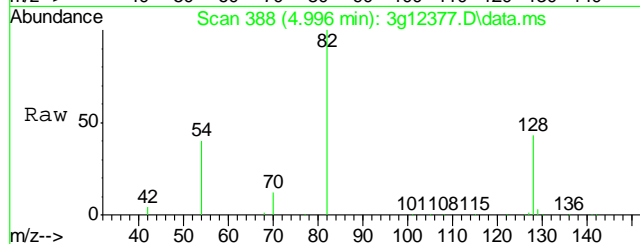
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.682 min Scan# 443
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

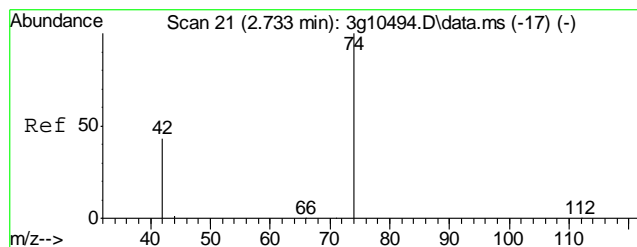
Tgt Ion: 136 Resp: 151768
Ion Ratio Lower Upper
136 100
68 8.7 0.0 28.4



#2
Nitrobenzene-d5
Concen: 44.6396 ug/mL
RT: 4.996 min Scan# 388
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

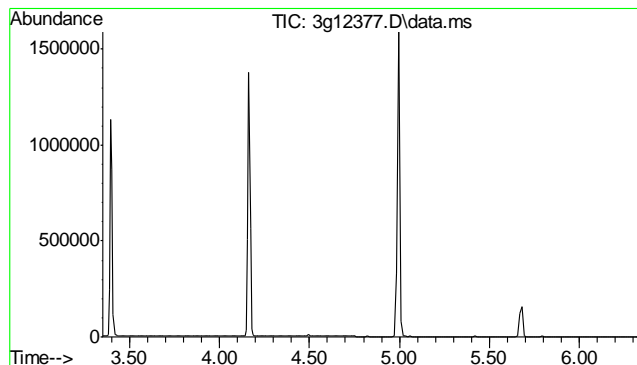
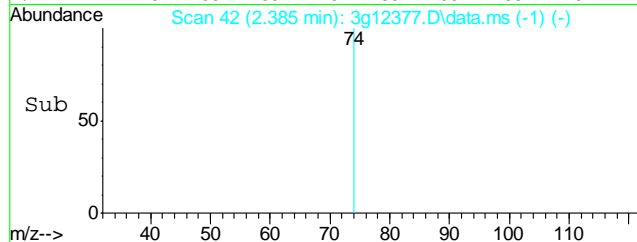
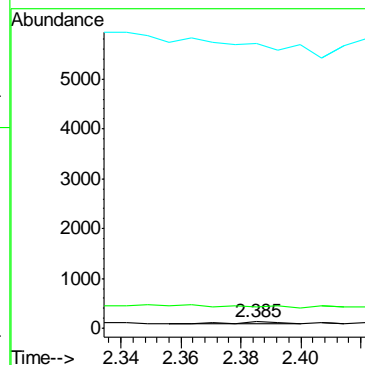
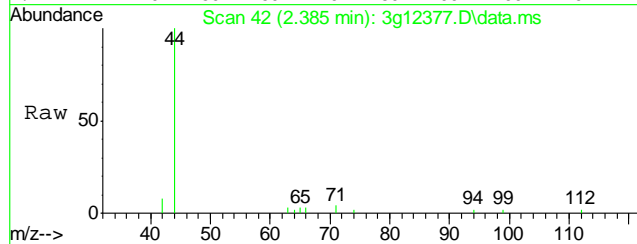
Tgt Ion: 82 Resp: 677227
Ion Ratio Lower Upper
82 100
128 44.6 31.8 71.8
54 51.5 29.2 69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.385 min Scan# 42
Delta R.T. 0.007 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

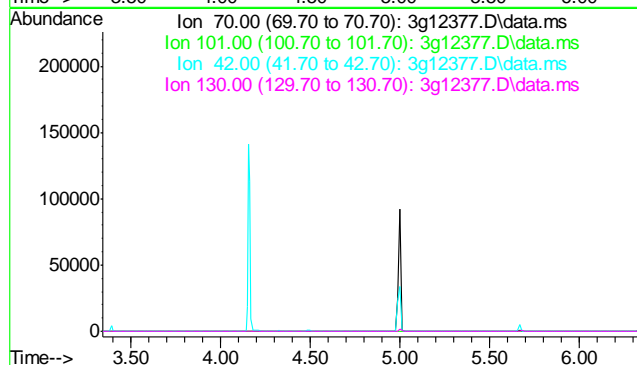
Tgt Ion: 74 Resp: 41
Ion Ratio Lower Upper
74 100
42 209.8 52.5 92.5#
44 0.0 0.0 24.1

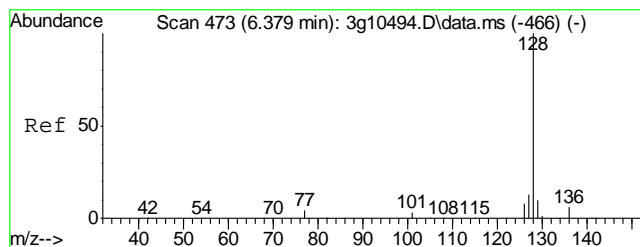


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

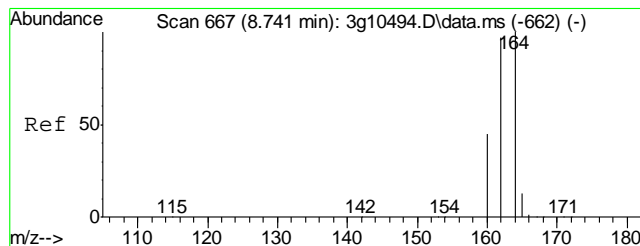
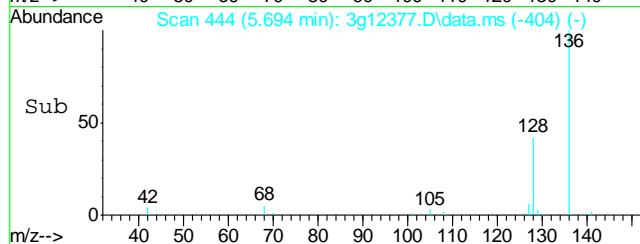
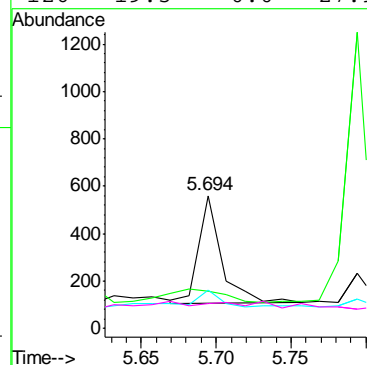
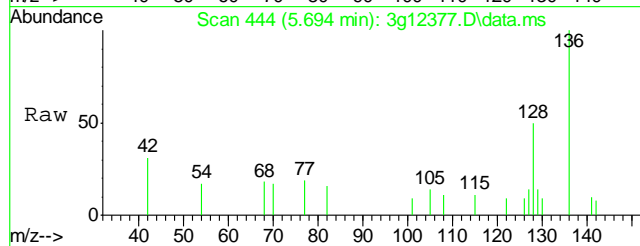
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.2
42 67.9
130 33.2





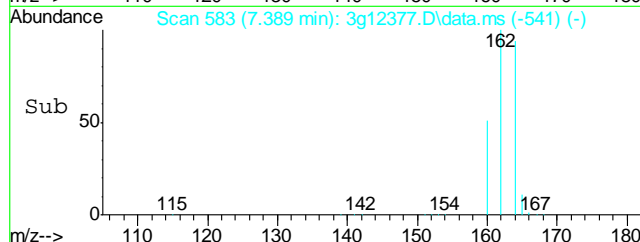
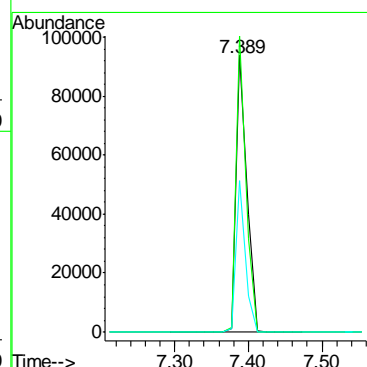
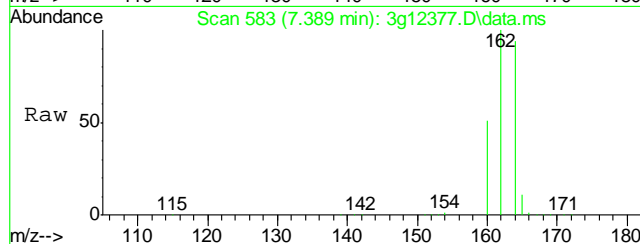
#5
Naphthalene
Concen: Below ug/mL
RT: 5.694 min Scan# 444
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

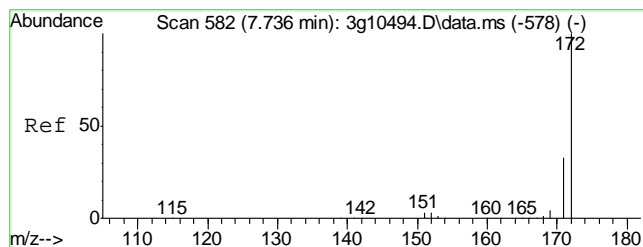
Tgt Ion	128	129	127	126
Resp	493	32.3	28.4	19.5
Ratio	100			
Lower		0.0	0.0	0.0
Upper		30.7#	33.2	27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.389 min Scan# 583
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

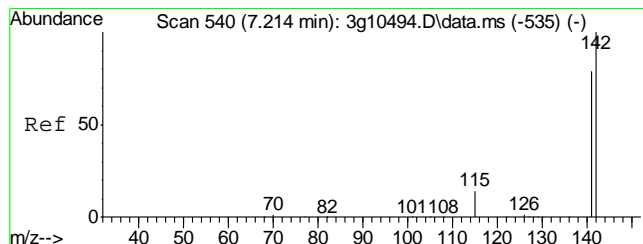
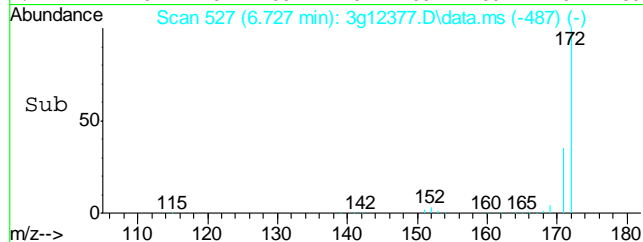
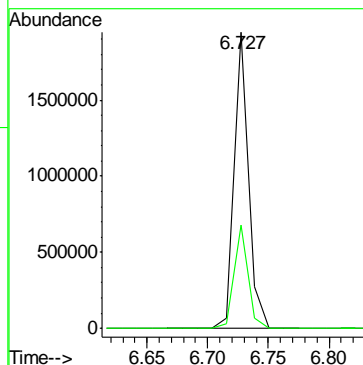
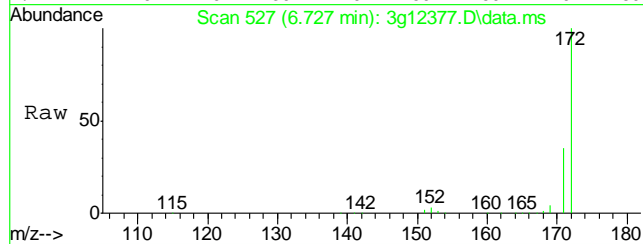
Tgt Ion	164	162	160
Resp	95999	98.8	47.9
Ratio	100		
Lower		78.0	27.3
Upper		118.0	67.3





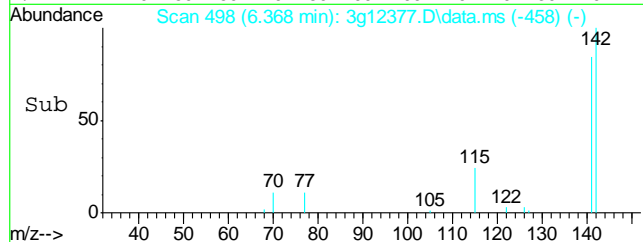
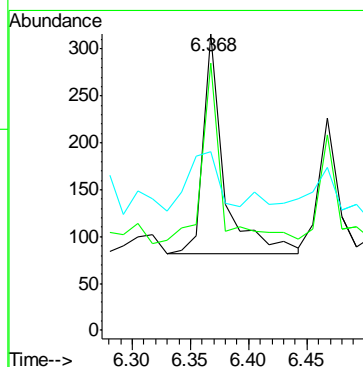
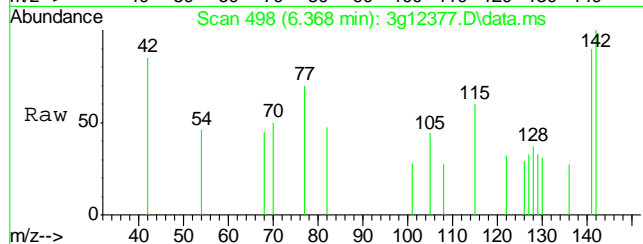
#7
2-Fluorobiphenyl
Concen: 39.1796 ug/mL
RT: 6.727 min Scan# 527
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

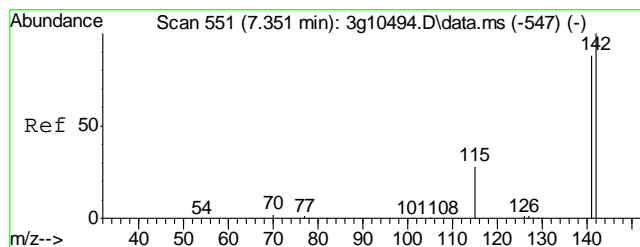
Tgt Ion:172 Resp: 1643542
Ion Ratio Lower Upper
172 100
171 33.9 13.7 53.7



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.368 min Scan# 498
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

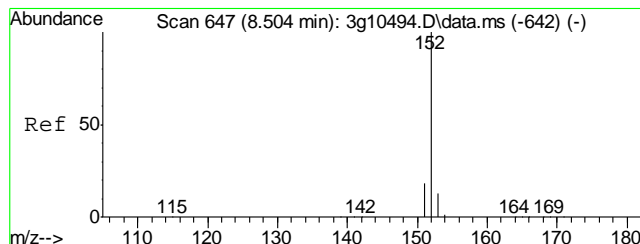
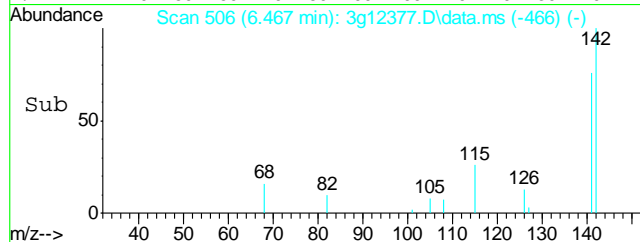
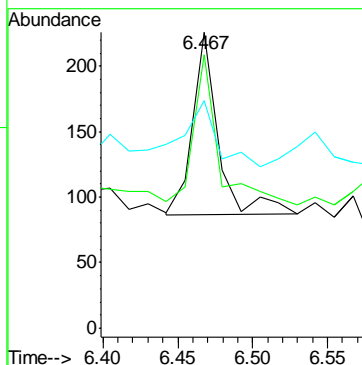
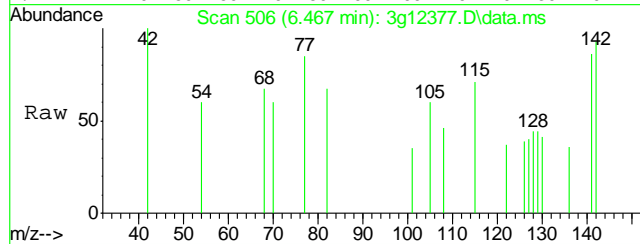
Tgt Ion:142 Resp: 288
Ion Ratio Lower Upper
142 100
141 77.8 65.6 105.6
115 0.0 12.2 52.2#





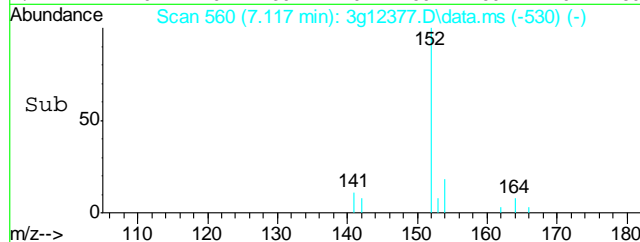
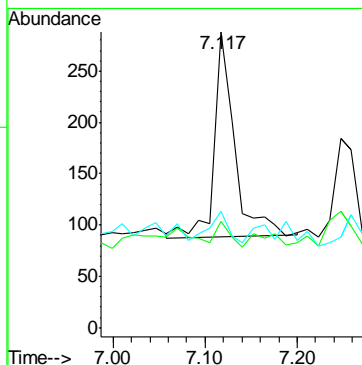
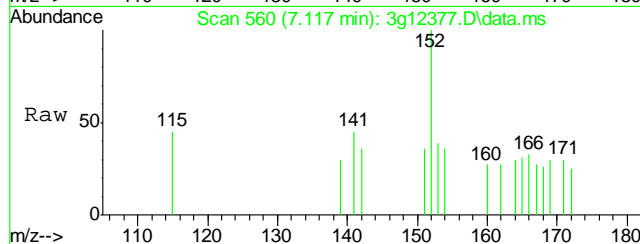
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.467 min Scan# 506
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

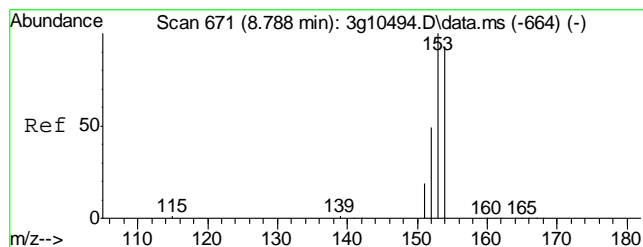
Tgt Ion: 142 Resp: 169
Ion Ratio Lower Upper
142 100
141 76.9 67.0 107.0
115 0.0 9.3 49.3#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.117 min Scan# 560
Delta R.T. -0.142 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

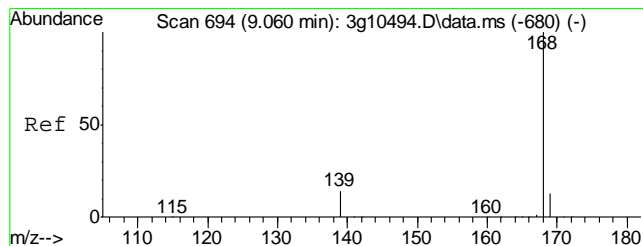
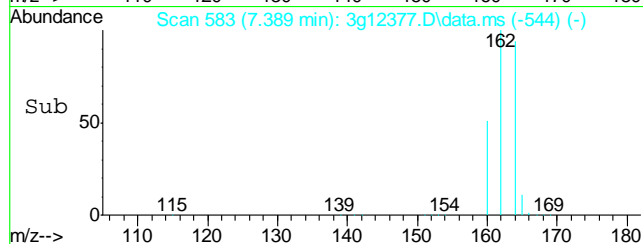
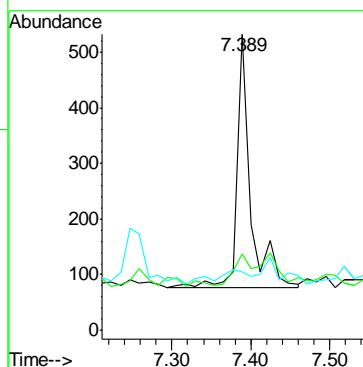
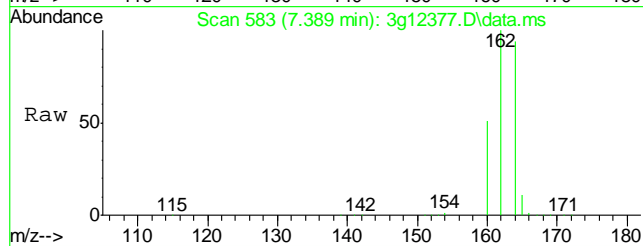
Tgt Ion: 152 Resp: 305
Ion Ratio Lower Upper
152 100
151 8.5 0.0 39.5
153 13.4 0.0 33.0





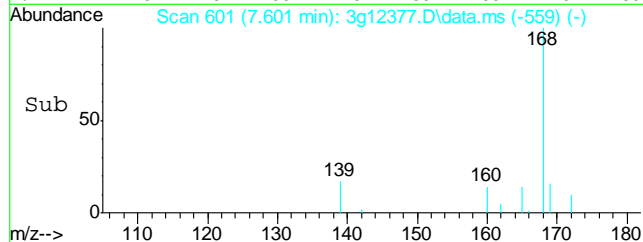
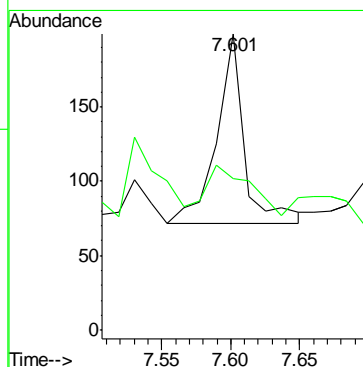
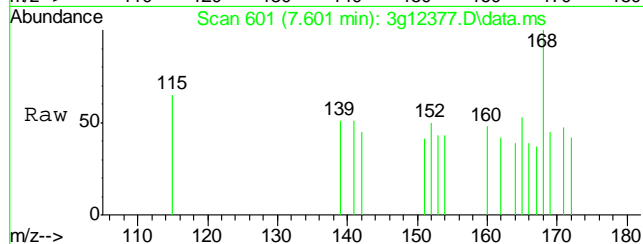
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.389 min Scan# 583
Delta R.T. -0.035 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

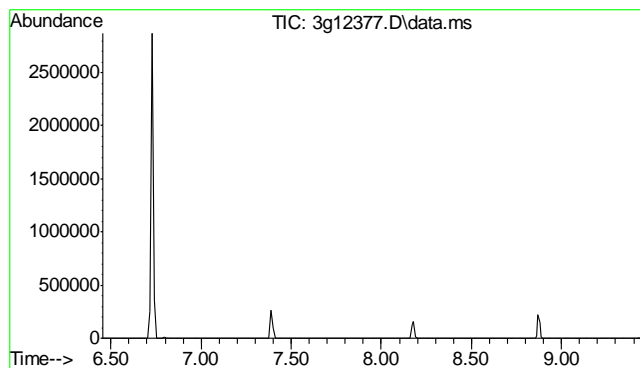
Tgt Ion:154 Resp: 560
Ion Ratio Lower Upper
154 100
153 14.3 84.7 124.7#
152 13.2 30.2 70.2#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.601 min Scan# 601
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

Tgt Ion:168 Resp: 175
Ion Ratio Lower Upper
168 100
139 48.0 12.0 52.0

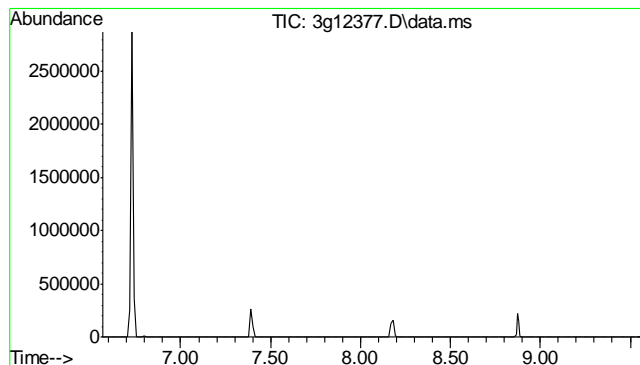
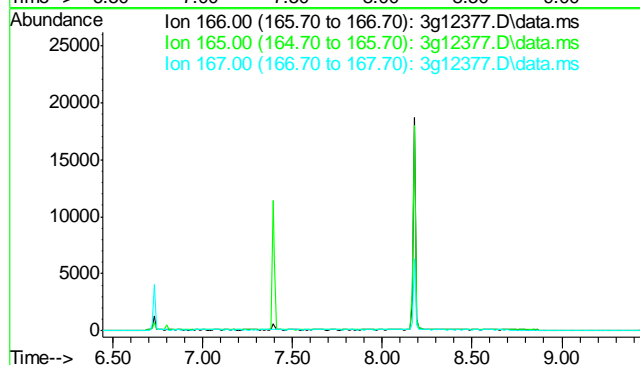




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.94 min

Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

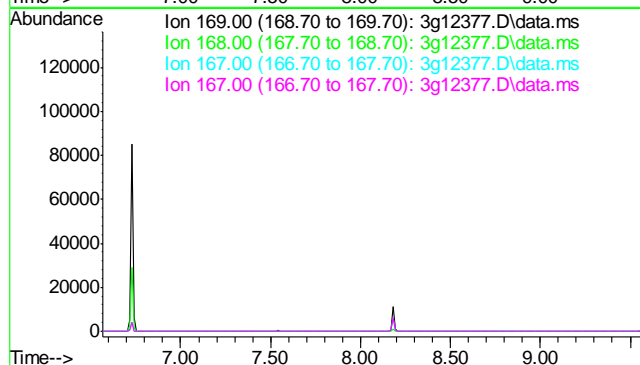
Tgt Ion: 166
Sig Exp Ratio
166 100
165 90.1
167 13.4

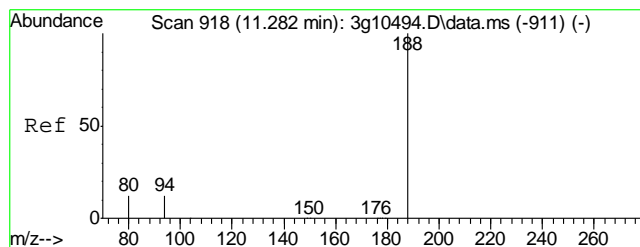


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

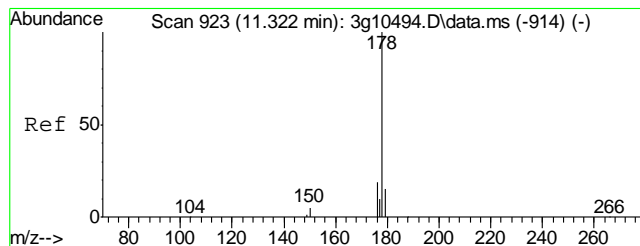
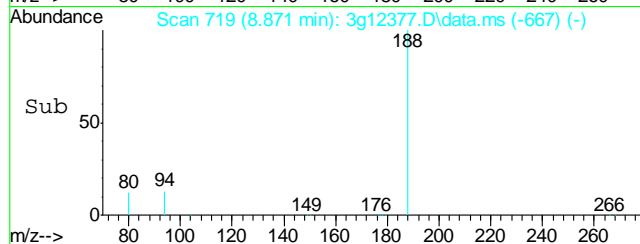
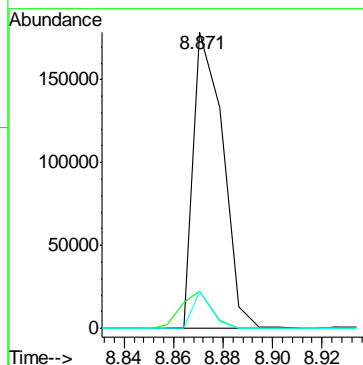
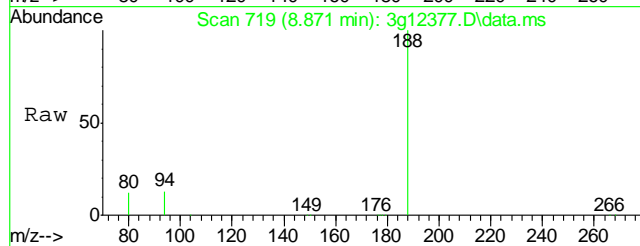
Tgt Ion: 169
Sig Exp Ratio
169 100
168 60.1
167 32.1
167 32.1





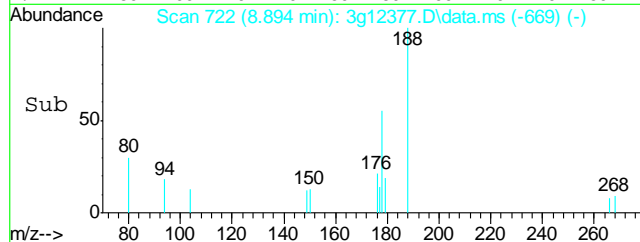
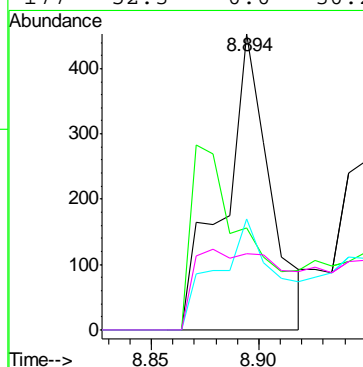
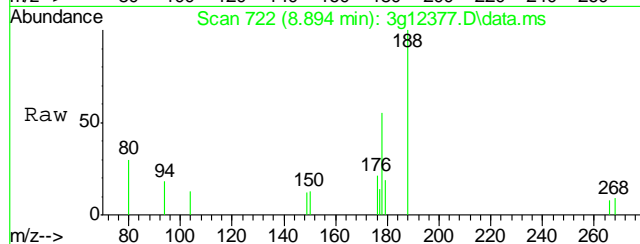
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.871 min Scan# 719
Delta R.T. -0.008 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

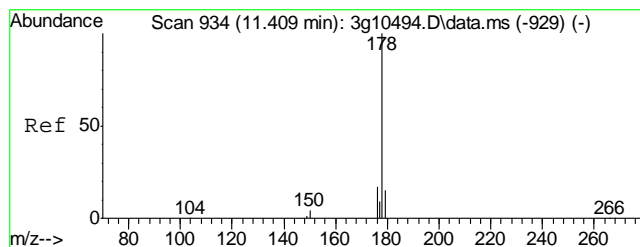
Tgt Ion	Ratio	Lower	Upper
188	100		
94	13.7	0.0	33.4
80	8.4	0.0	28.9



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.894 min Scan# 722
Delta R.T. -0.008 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

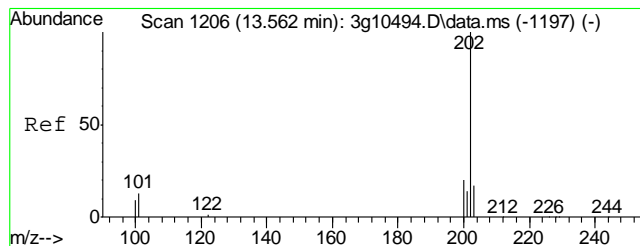
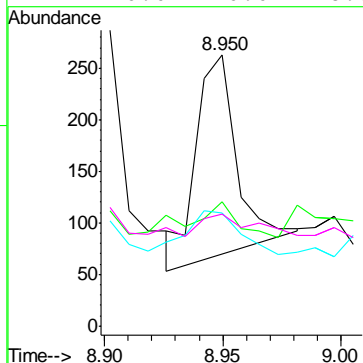
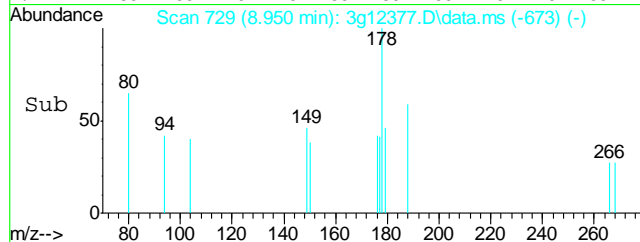
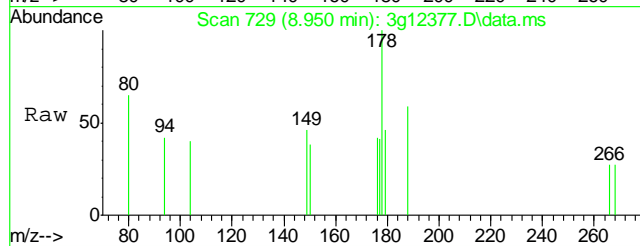
Tgt Ion	Ratio	Lower	Upper
178	100		
179	79.5	0.0	35.3#
176	47.7	0.0	38.6#
177	52.3	0.0	30.2#





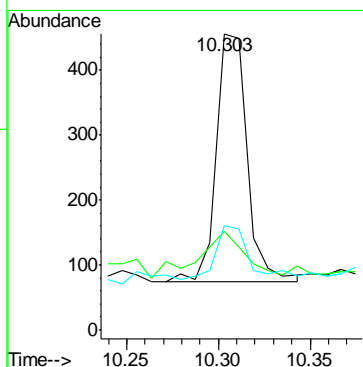
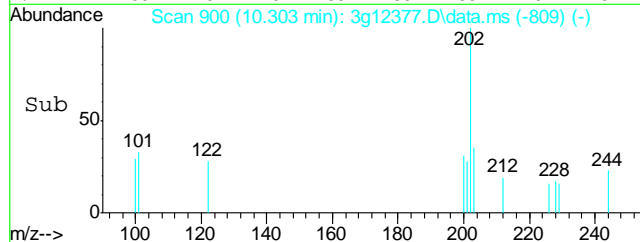
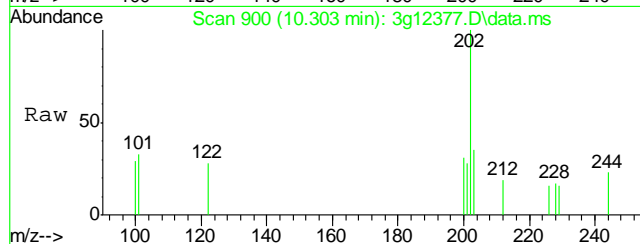
#17
Anthracene
Concen: Below ug/mL
RT: 8.950 min Scan# 729
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

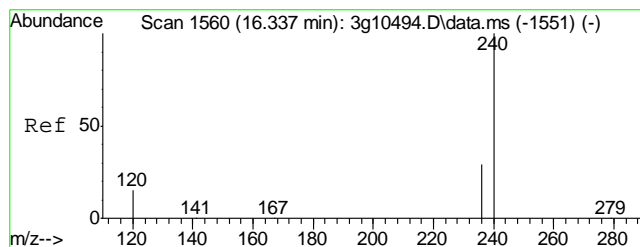
Tgt Ion	178	Ratio	100	Lower	Upper
178	100				
179	18.9		0.0	35.1	
176	53.4		0.0	38.2	
177	0.0		0.0	28.8	



#18
Fluoranthene
Concen: Below ug/mL
RT: 10.303 min Scan# 900
Delta R.T. 0.222 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

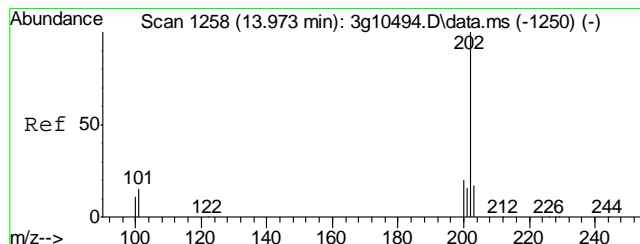
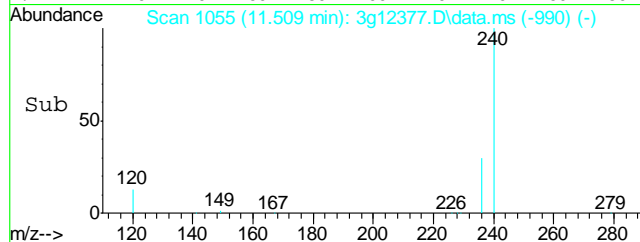
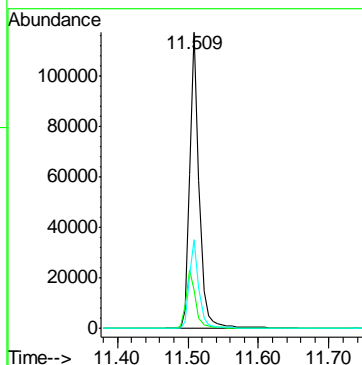
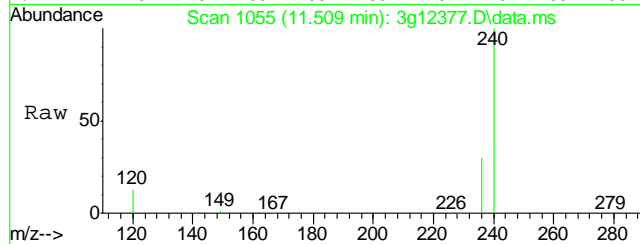
Tgt Ion	202	Ratio	100	Lower	Upper
202	100				
101	20.3		0.0	32.5	
203	25.7		0.0	37.3	





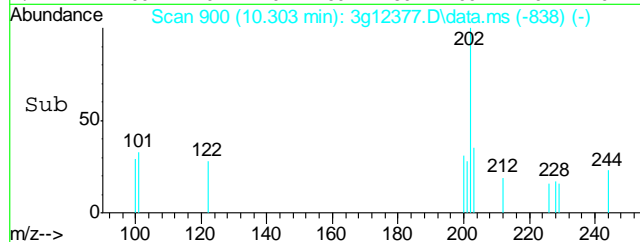
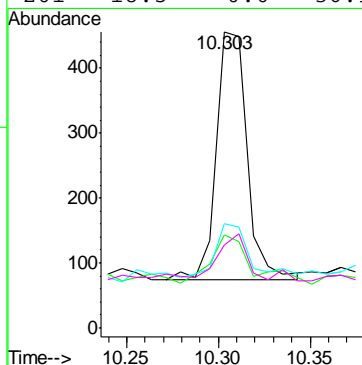
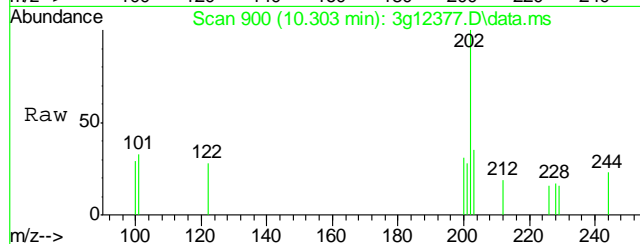
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.509 min Scan# 1055
Delta R.T. -0.007 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

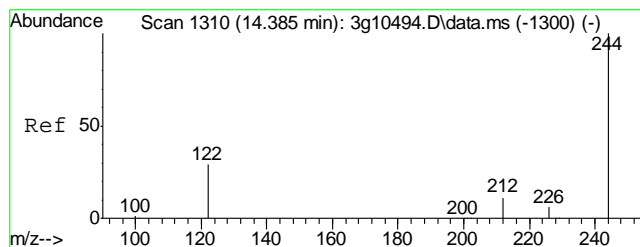
Tgt Ion:	240	Resp:	108551
Ion Ratio	Lower	Upper	
240	100		
120	19.8	0.0	39.7
236	30.6	11.1	51.1



#20
Pyrene
Concen: Below ug/mL
RT: 10.303 min Scan# 900
Delta R.T. -0.008 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

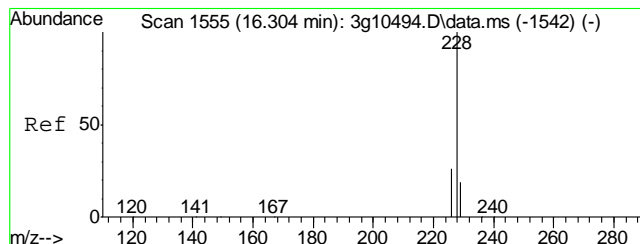
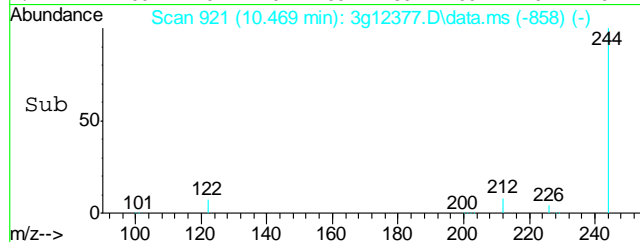
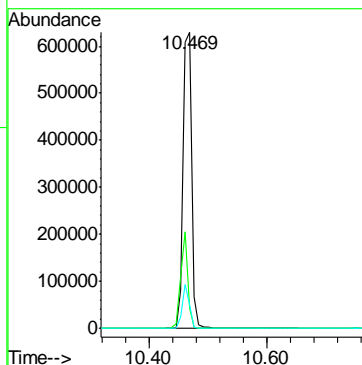
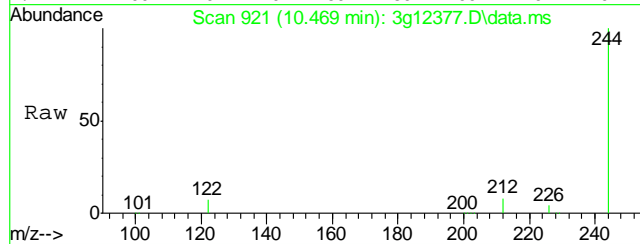
Tgt Ion:	202	Resp:	448
Ion Ratio	Lower	Upper	
202	100		
200	25.7	0.7	40.7
203	25.7	0.0	37.8
201	18.5	0.0	36.9





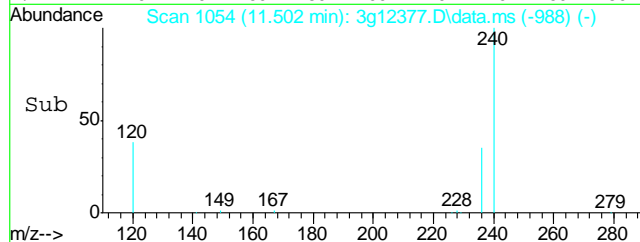
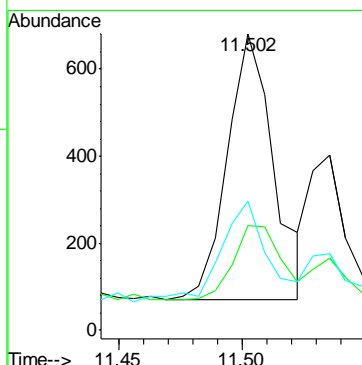
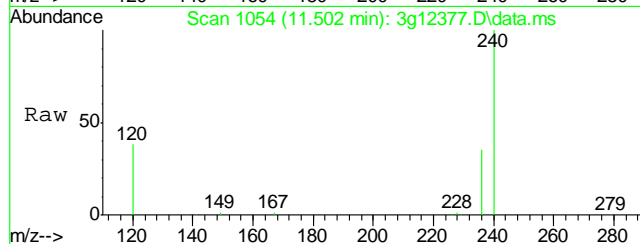
#21
Terphenyl-d14
Concen: 41.8237 ug/mL
RT: 10.469 min Scan# 921
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

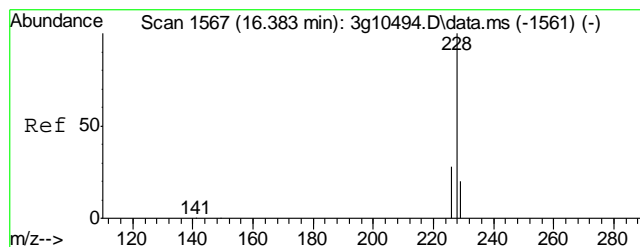
Tgt Ion	Ratio	Lower	Upper
244	100		
122	26.4	6.8	46.8
212	12.1	0.0	32.3



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.502 min Scan# 1054
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

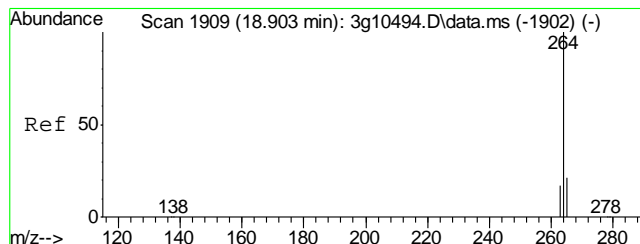
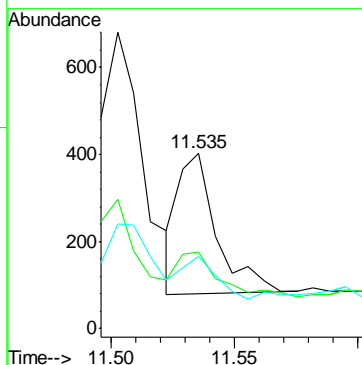
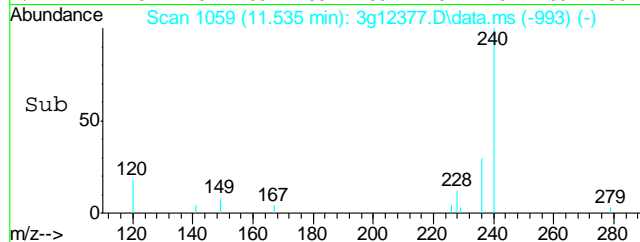
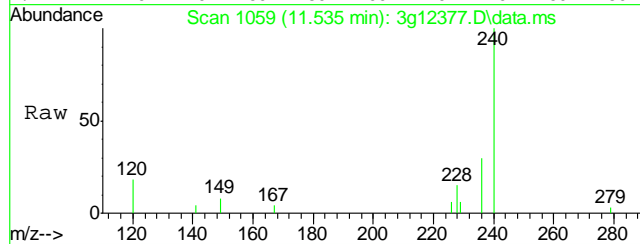
Tgt Ion	Ratio	Lower	Upper
228	100		
229	29.0	0.0	39.4
226	39.4	6.8	46.8





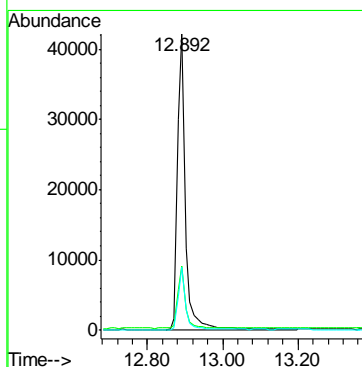
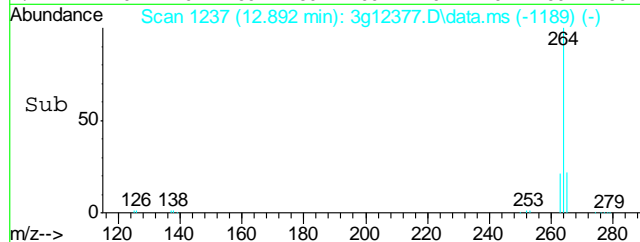
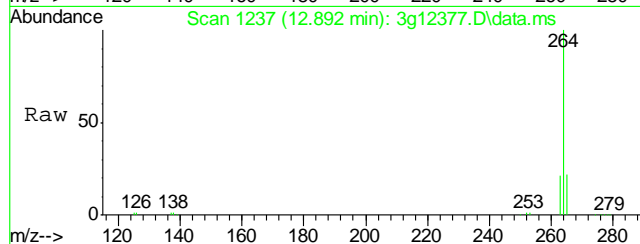
#23
Chrysene
Concen: Below ug/mL
RT: 11.535 min Scan# 1059
Delta R.T. -0.007 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

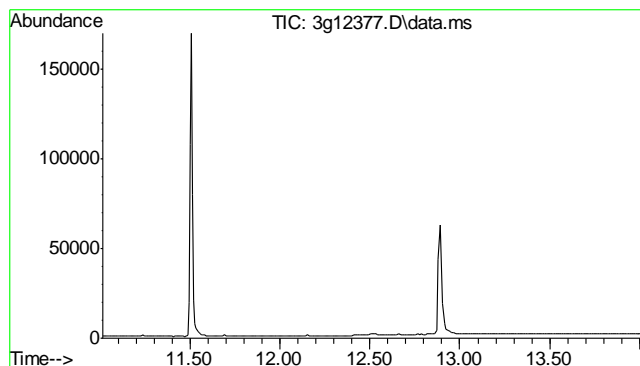
Tgt Ion: 228	Resp:	348
Ion Ratio	Lower	Upper
228	100	
226	35.9	9.2 49.2
229	13.5	0.0 39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.892 min Scan# 1237
Delta R.T. 0.000 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

Tgt Ion: 264	Resp:	61443
Ion Ratio	Lower	Upper
264	100	
265	20.3	0.6 40.6
263	20.1	0.0 39.7

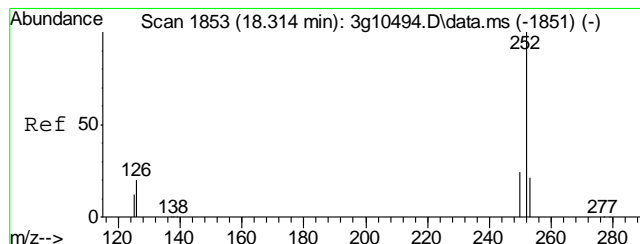
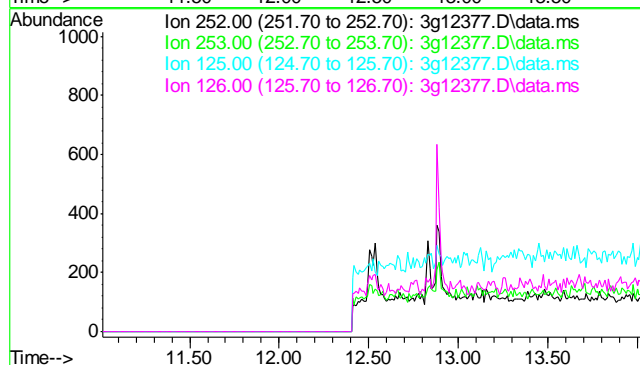




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.51 min

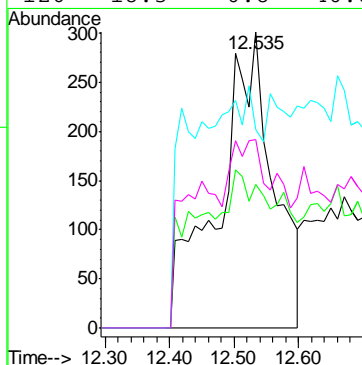
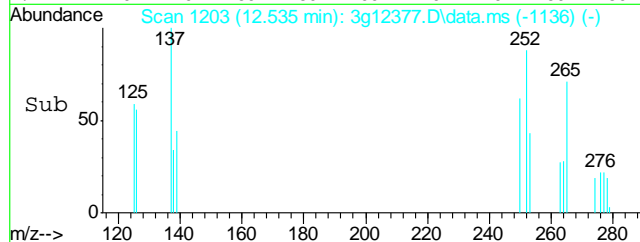
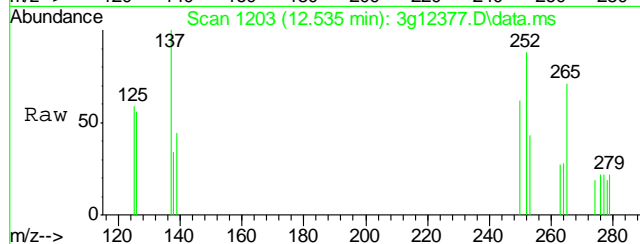
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

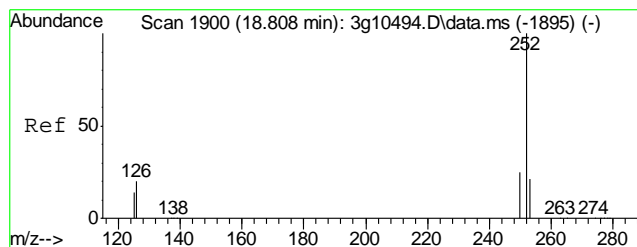
Tgt Ion: 252
Sig Exp Ratio
252 100
253 27.0
125 29.0
126 41.6



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.535 min Scan# 1203
Delta R.T. -0.010 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

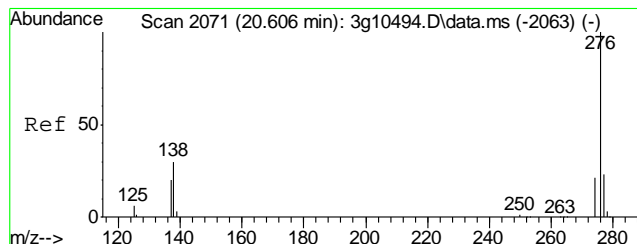
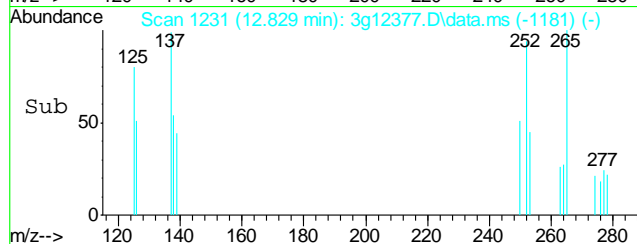
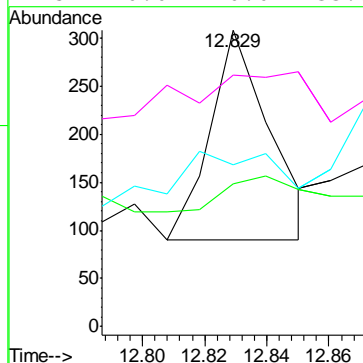
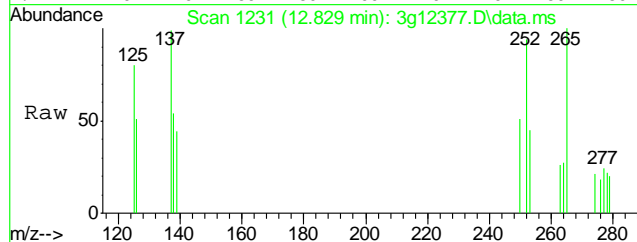
Tgt Ion: 252 Resp: 1693
Ion Ratio Lower Upper
252 100
253 9.9 4.0 44.0
125 0.0 0.0 35.3
126 18.3 0.8 40.8





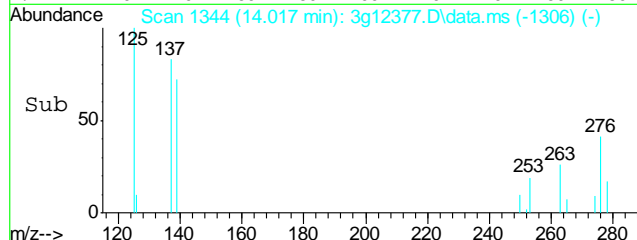
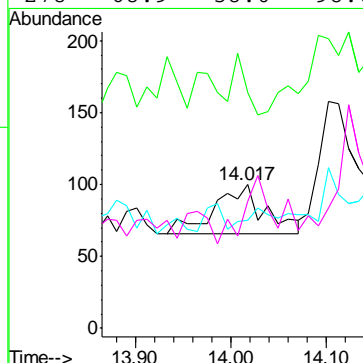
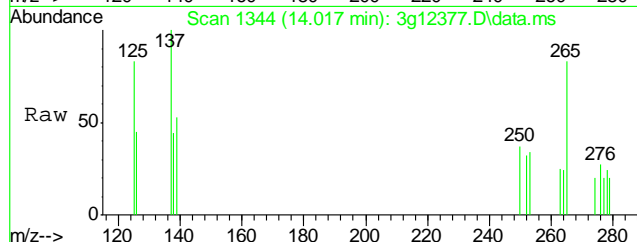
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.829 min Scan# 1231
Delta R.T. -0.010 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

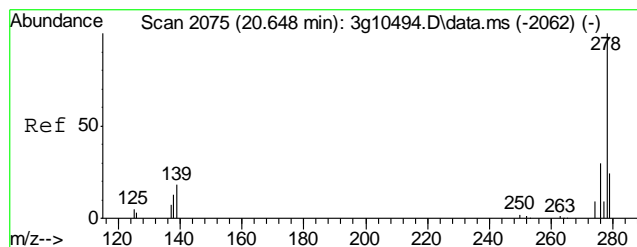
Tgt Ion:	252	Resp:	290
Ion Ratio	Lower	Upper	
252	100		
253	24.8	1.5	41.5
126	34.5	0.0	38.4
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.017 min Scan# 1344
Delta R.T. -0.105 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

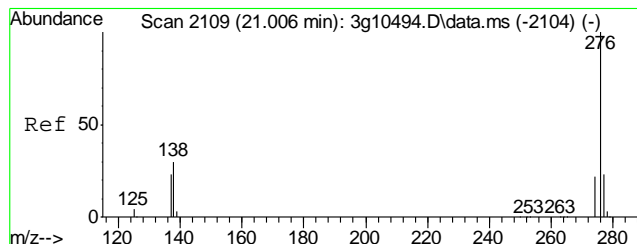
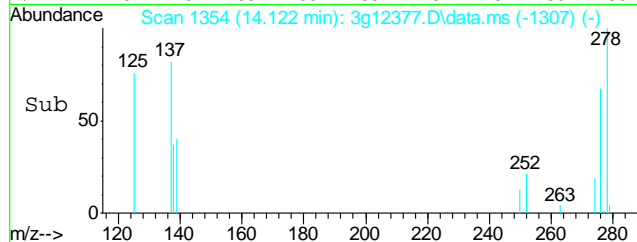
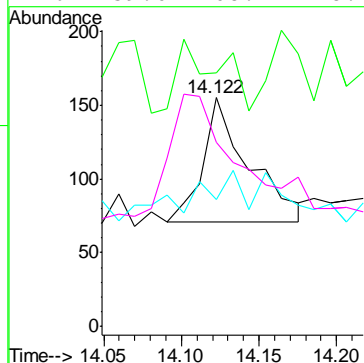
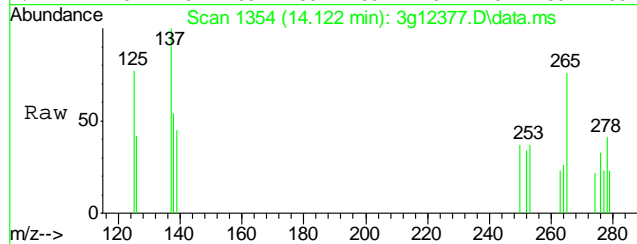
Tgt Ion:	276	Resp:	122
Ion Ratio	Lower	Upper	
276	100		
138	30.3	16.0	56.0
277	9.8	4.9	44.9
278	68.9	58.0	98.0





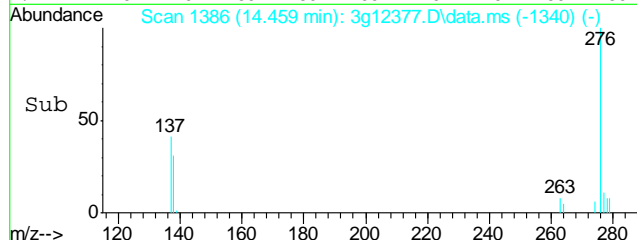
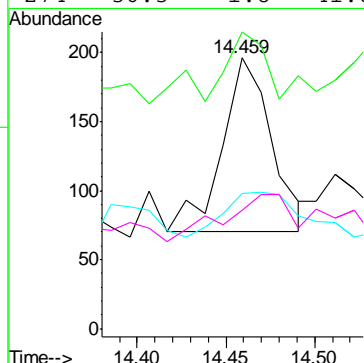
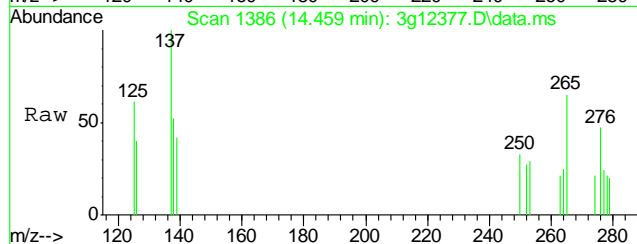
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.122 min Scan# 1354
Delta R.T. -0.010 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

Tgt Ion: 278 Resp: 173
Ion Ratio Lower Upper
278 100
139 53.8 7.4 47.4#
279 45.1 2.8 42.8#
276 159.0 108.1 148.1#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.459 min Scan# 1386
Delta R.T. -0.021 min
Lab File: 3g12377.D
Acq: 3 Dec 12 7:58 pm

Tgt Ion: 276 Resp: 245
Ion Ratio Lower Upper
276 100
138 57.1 10.9 50.9#
277 41.2 3.2 43.2
274 36.3 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: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1015-MB	GB18613.D	1	11/28/12	SK	n/a	n/a	GGB1015

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

D41248-1

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	92% 60-140%

10.1.1
10

Blank Spike Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1015-BS	GB18614.D	1	11/28/12	SK	n/a	n/a	GGB1015

The QC reported here applies to the following samples:

Method: SW846 8015B

D41248-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	122	111	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	106%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41202-1MS	GB18616.D	1	11/28/12	SK	n/a	n/a	GGB1015
D41202-1MSD	GB18617.D	1	11/28/12	SK	n/a	n/a	GGB1015
D41202-1	GB18615.D	1	11/28/12	SK	n/a	n/a	GGB1015

The QC reported here applies to the following samples:

Method: SW846 8015B

D41248-1

CAS No.	Compound	D41202-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		128	143	112	142	111	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D41202-1	Limits
120-82-1	1,2,4-Trichlorobenzene	109%	108%	94%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112812\GB18633.D\FID1A.CH Vial: 22
 Signal #2 : Y:\1\DATA\112812\GB18633.D\FID2B.CH
 Acq On : 29 Nov 2012 1:45 am Operator: StephK
 Sample : D41248-1, 50X Inst : GC/MS Ins
 Misc : GC3257,GGB1015,5.013,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 29 09:09:28 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Nov 29 09:08:53 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

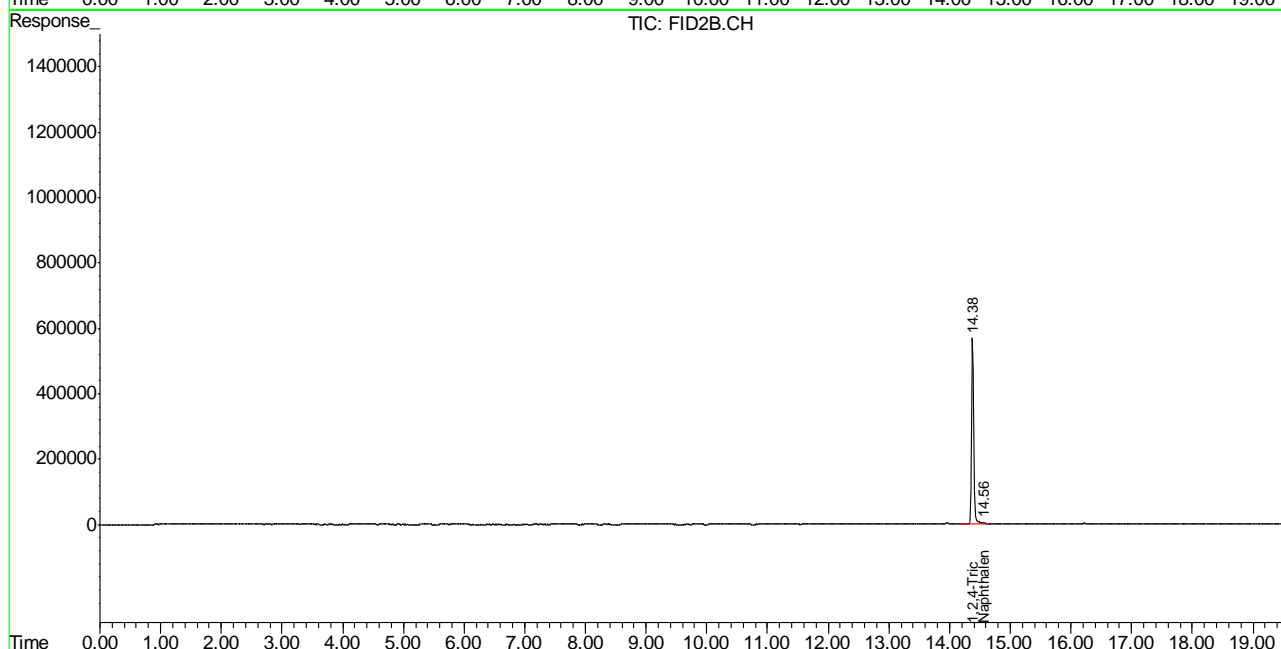
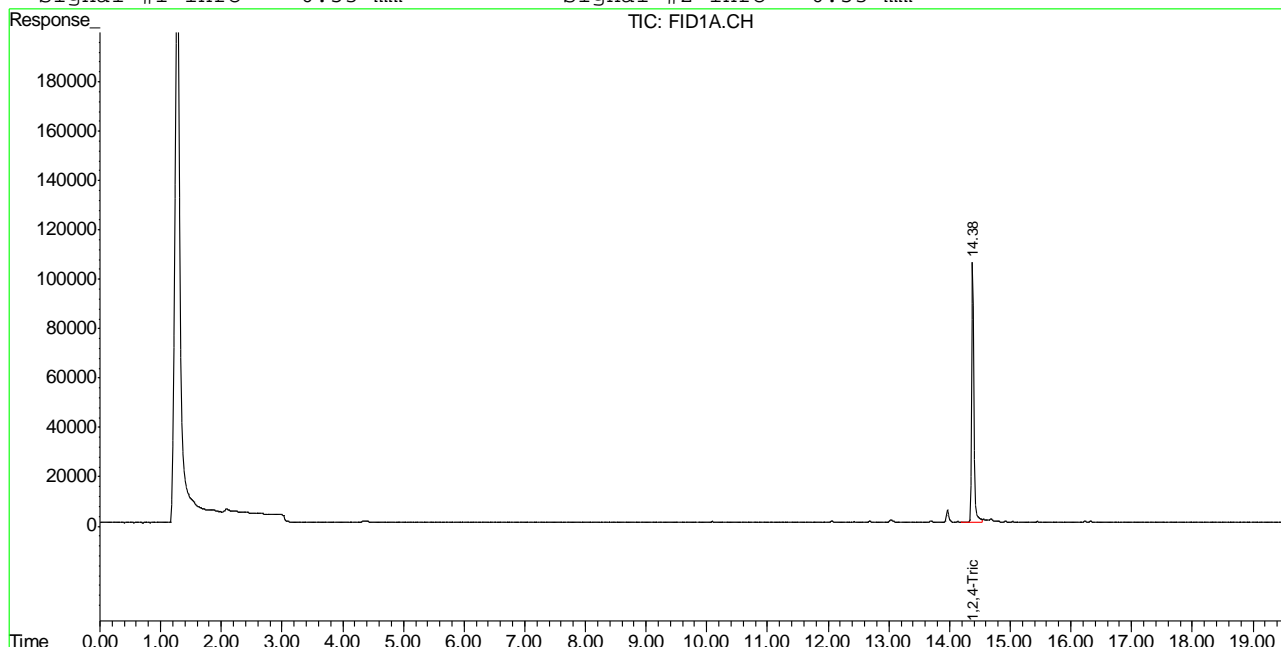
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.38	2622819	83.705	%
10) S	1,2,4-Trichlorobenzene (P)	14.38	13810392	84.973	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3516354	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	0.00	0	N.D.	ug/L d
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.56	175831	0.891	ug/L

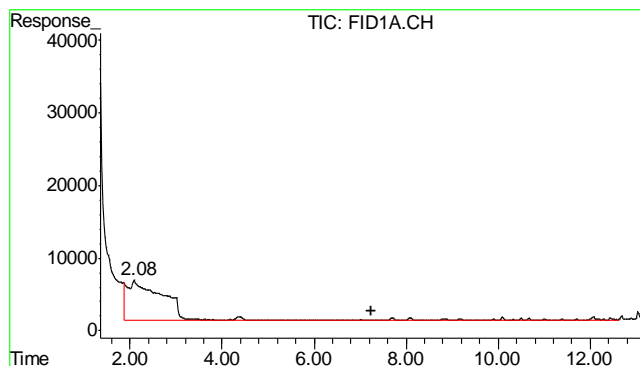
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112812\GB18633.D\FID1A.CH Vial: 22
 Signal #2 : Y:\1\DATA\112812\GB18633.D\FID2B.CH
 Acq On : 29 Nov 2012 1:45 am Operator: StephK
 Sample : D41248-1, 50X Inst : GC/MS Ins
 Misc : GC3257,GGB1015,5.013,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 29 9:13 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Nov 29 09:08:53 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

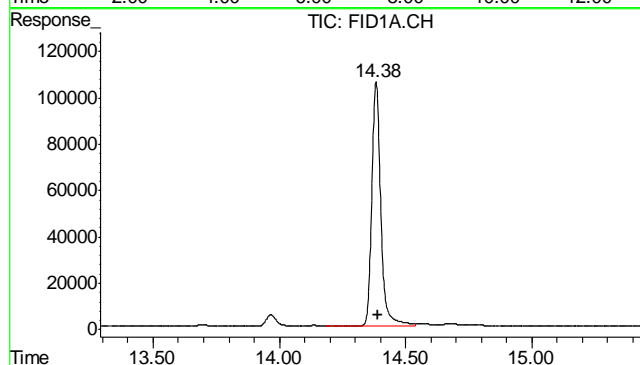
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





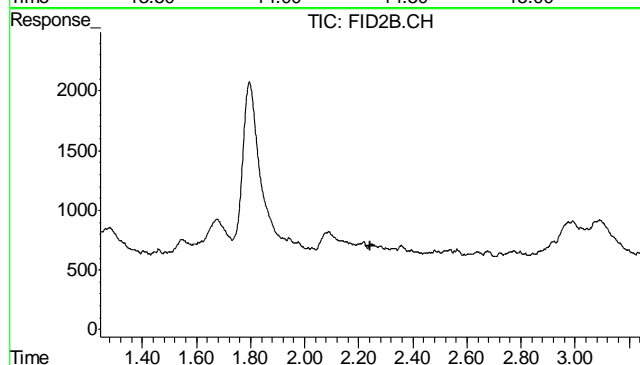
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3516354
Conc: N.D.



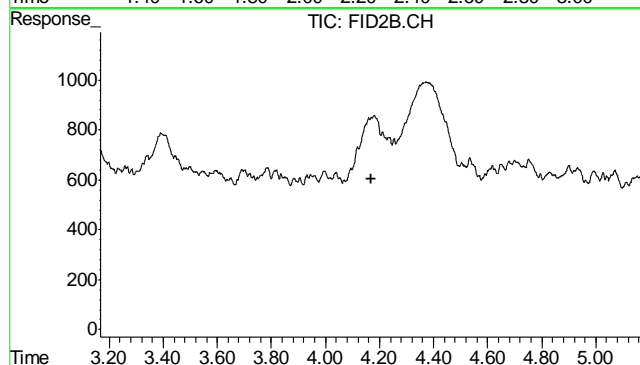
#2 1,2,4-Trichlorobenzene

R.T.: 14.383 min
Delta R.T.: -0.006 min
Response: 2622819
Conc: 83.71 %



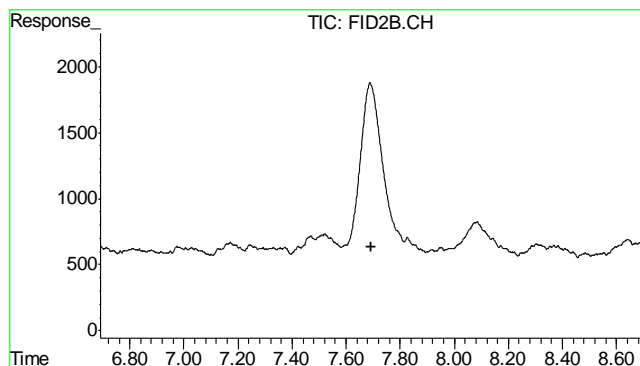
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.244 min
Response: 0
Conc: N.D.

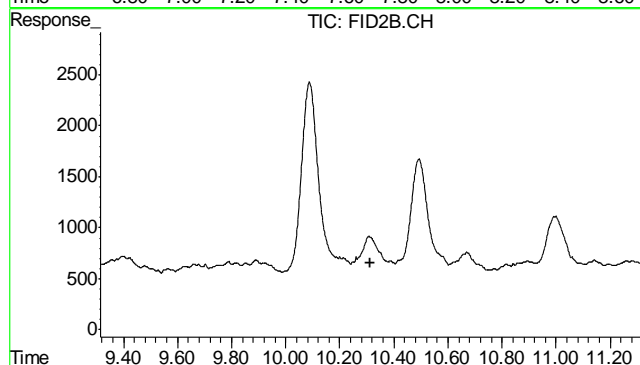


#5 Benzene

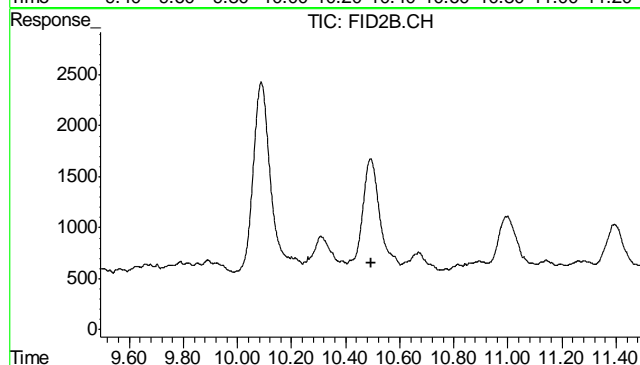
R.T.: 0.000 min
Exp R.T.: 4.168 min
Response: 0
Conc: N.D.



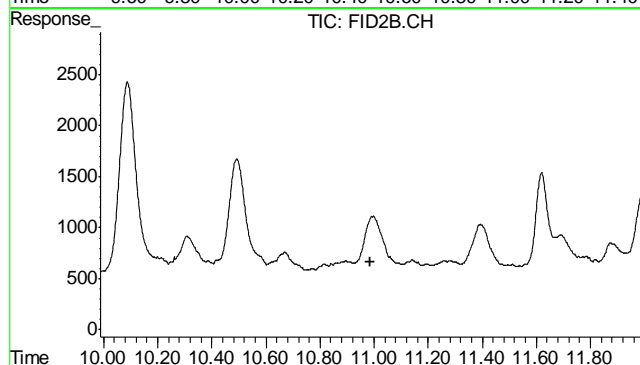
#6 Toluene
 R.T.: 0.000 min
 Exp R.T. : 7.691 min
 Response: 0
 Conc: N.D.



#7 Ethylbenzene
 R.T.: 0.000 min
 Exp R.T. : 10.314 min
 Response: 0
 Conc: N.D.

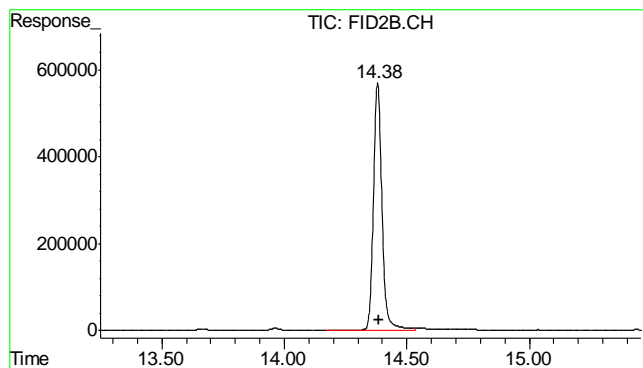


#8 m,p-Xylene
 R.T.: 0.000 min
 Exp R.T. : 10.493 min
 Response: 0
 Conc: N.D.



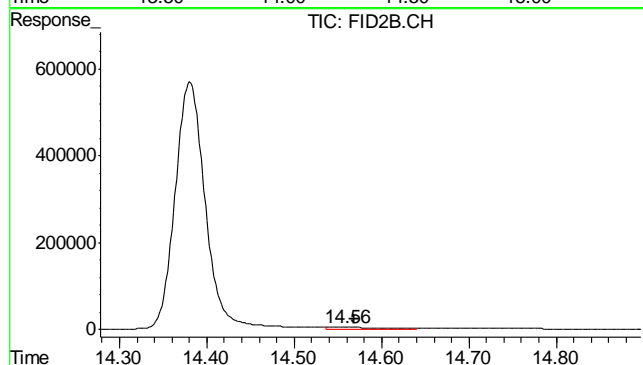
#9 o-Xylene
 R.T.: 0.000 min
 Exp R.T. : 10.987 min
 Response: 0
 Conc: N.D.

11.11



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

R.T.: 14.381 min
 Delta R.T.: -0.005 min
 Response: 13810392
 Conc: 84.97 %



#11 Naphthalene

R.T.: 14.560 min
 Delta R.T.: -0.009 min
 Response: 175831
 Conc: 0.89 ug/L

11.1.1
 11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112812\GB18613.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\112812\GB18613.D\FID2B.CH
Acq On : 28 Nov 2012 1:53 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3257,GGB1015,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 28 15:32:59 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Nov 28 15:32:42 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	14.39	2886104	92.108	%
10) S	1,2,4-Trichlorobenzene (P)	14.39	15284153	94.040	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3767544	<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	7.71	111716	0.282	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	14.58	520139	2.636	ug/L

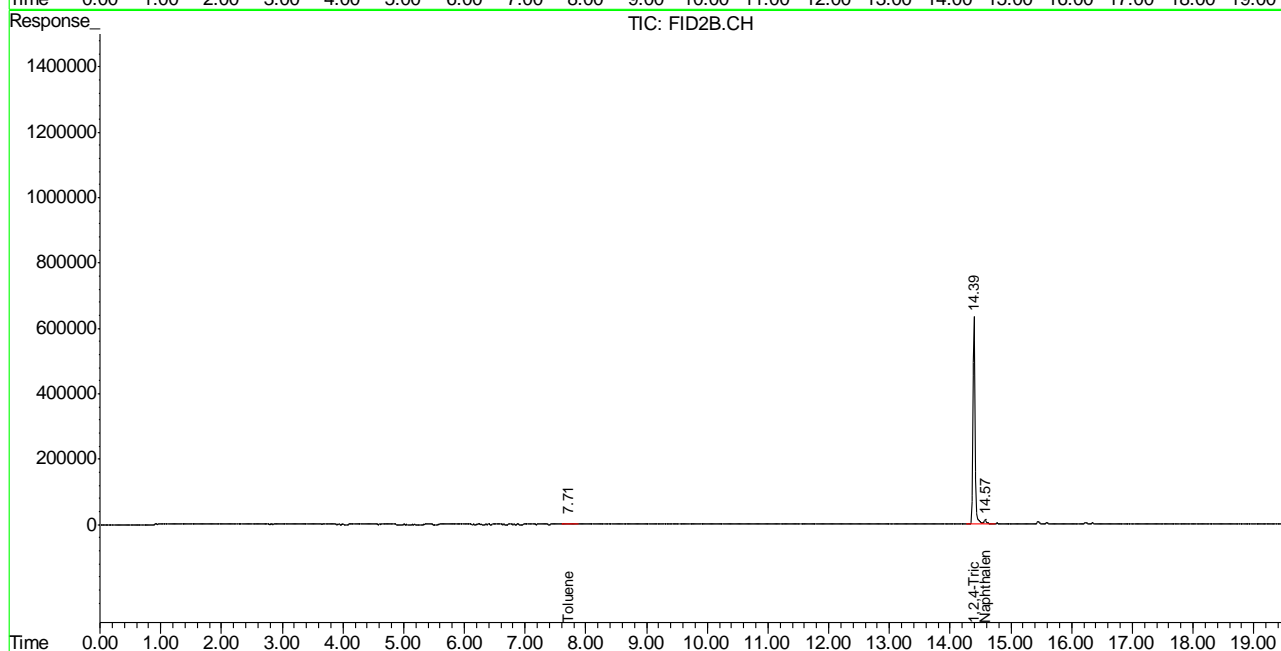
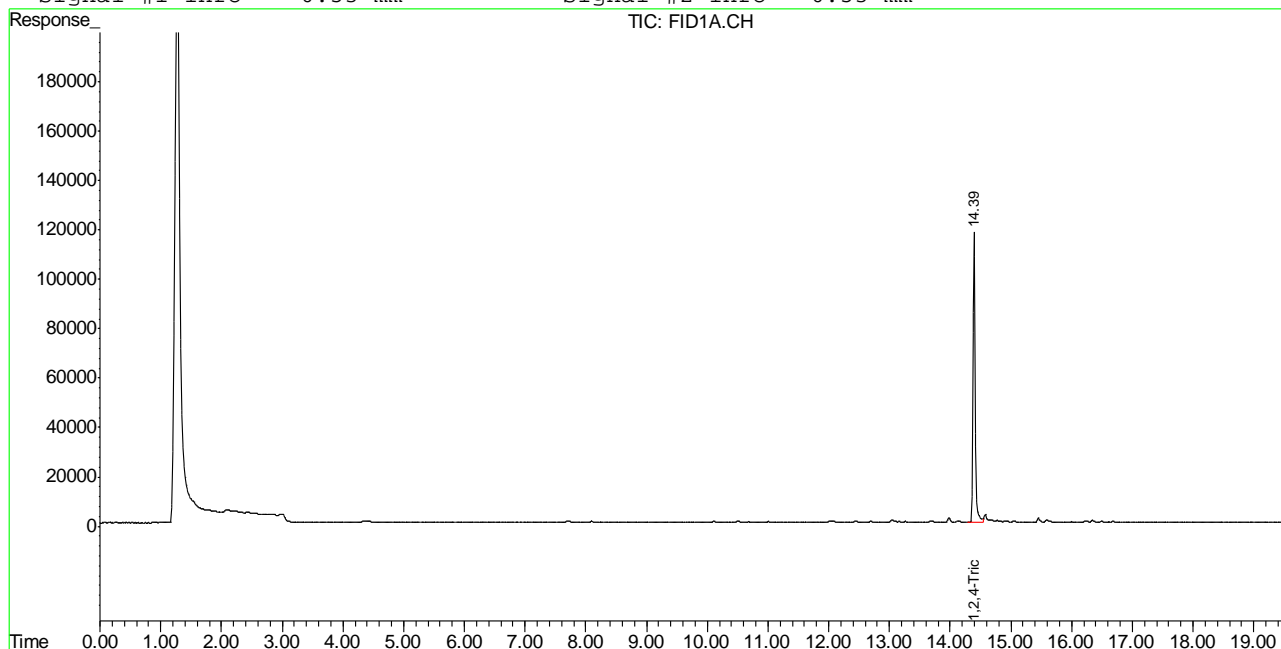
(f)=RT Delta > 1/2 Window (m)=manual int.
GB18613.D TB868GB868SOIL.M Thu Nov 29 09:14:43 2012 GC

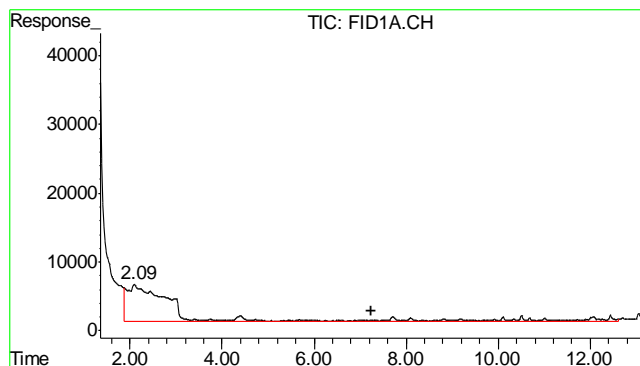
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112812\GB18613.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\112812\GB18613.D\FID2B.CH
Acq On : 28 Nov 2012 1:53 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3257,GGB1015,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 28 16:02 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Nov 28 15:32:42 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

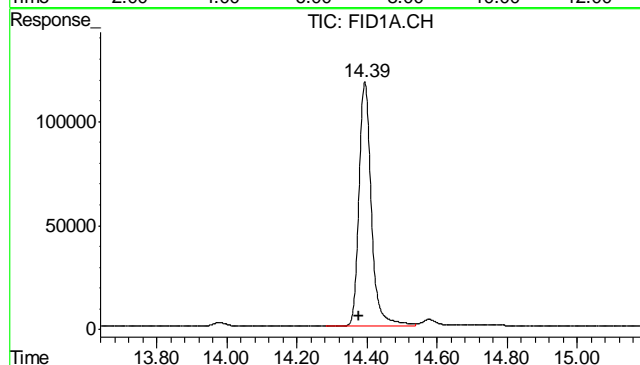
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





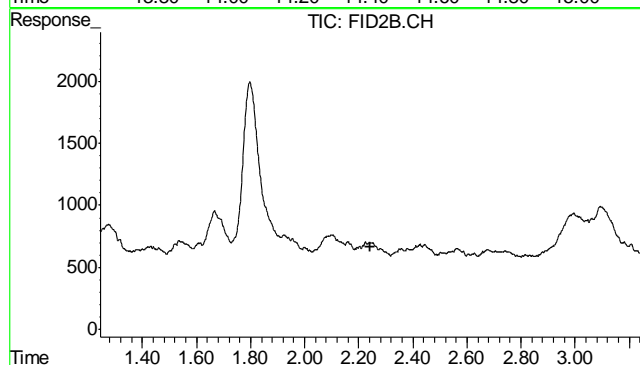
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3767544
Conc: N.D.



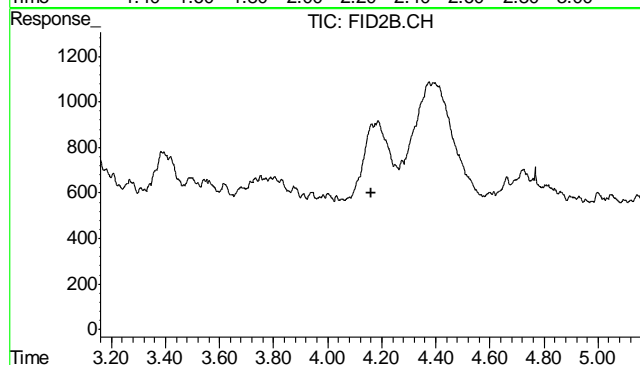
#2 1,2,4-Trichlorobenzene

R.T.: 14.394 min
Delta R.T.: 0.017 min
Response: 2886104
Conc: 92.11 %



#4 Methyl-t-butyl-ether

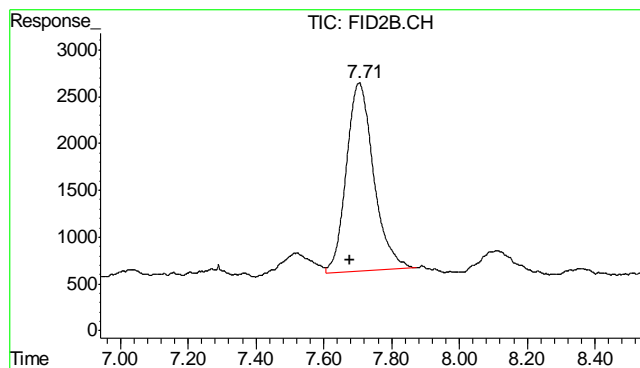
R.T.: 0.000 min
Exp R.T.: 2.244 min
Response: 0
Conc: N.D.



#5 Benzene

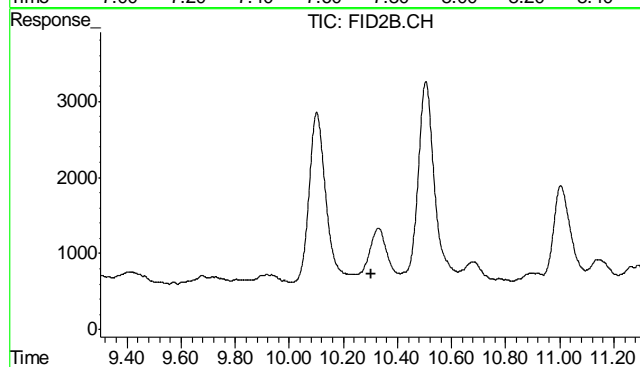
R.T.: 0.000 min
Exp R.T.: 4.159 min
Response: 0
Conc: N.D.

11.21
11



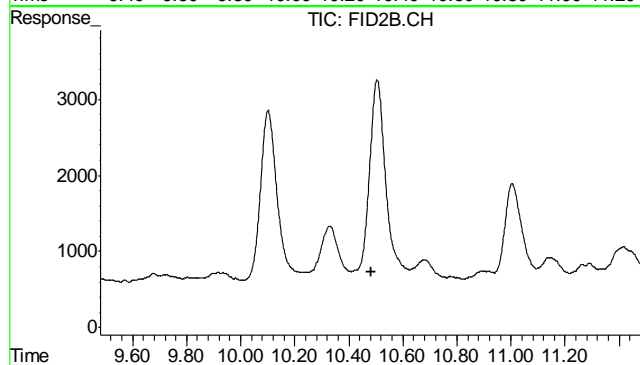
#6 Toluene

R.T.: 7.705 min
Delta R.T.: 0.027 min
Response: 111716
Conc: 0.28 ug/L



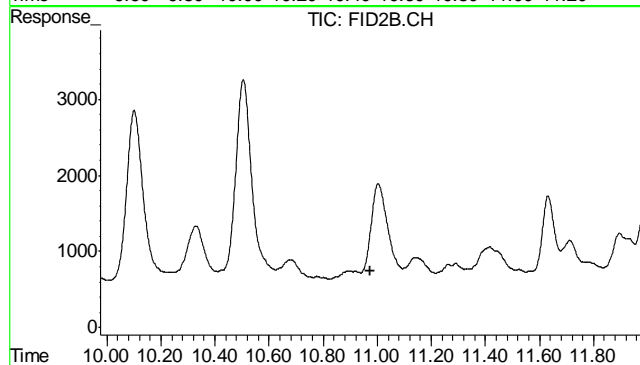
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.302 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

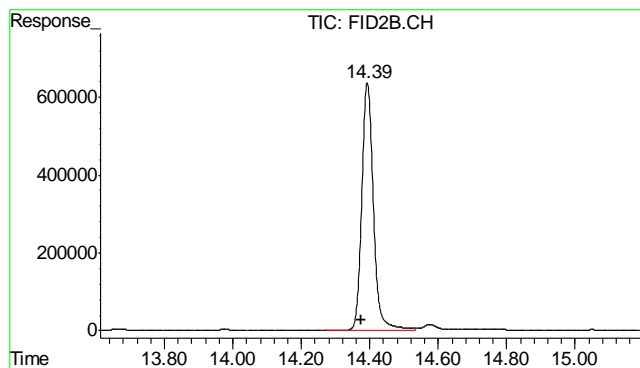
R.T.: 0.000 min
Exp R.T.: 10.481 min
Response: 0
Conc: N.D.



#9 o-Xylene

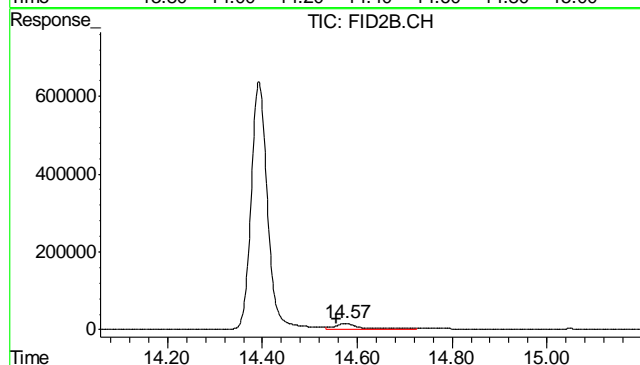
R.T.: 0.000 min
Exp R.T.: 10.976 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.393 min
Delta R.T.: 0.018 min
Response: 15284153
Conc: 94.04 %



#11 Naphthalene

R.T.: 14.575 min
Delta R.T.: 0.018 min
Response: 520139
Conc: 2.64 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: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7028-MB	FD20066.D	1	11/30/12	AV	11/29/12	OP7028	GFD1008

The QC reported here applies to the following samples:

Method: SW846-8015B

D41248-1

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	64% 35-130%

12.1.1
12

Blank Spike Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7028-BS	FD20068.D	1	11/30/12	AV	11/29/12	OP7028	GFD1008

The QC reported here applies to the following samples:

Method: SW846-8015B

D41248-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	474	71	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	64%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41248
Account: XTOKRWR XTO Energy
Project: PCU 296-6A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7028-MS	FD20070.D	1	11/30/12	AV	11/29/12	OP7028	GFD1008
OP7028-MSD	FD20072.D	1	11/30/12	AV	11/29/12	OP7028	GFD1008
D41248-1	FD20074.D	1	11/30/12	AV	11/29/12	OP7028	GFD1008

The QC reported here applies to the following samples:

Method: SW846-8015B

D41248-1

CAS No.	Compound	D41248-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		763	527	69	533	70	1	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D41248-1	Limits
84-15-1	o-Terphenyl	69%	66%	58%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD113012.SEC\FD20074.D Vial: 57
Acq On : 30 Nov 2012 10:10 am Operator: ashleyv
Sample : D41248-1 Inst : FID5
Misc : OP7028,GFD1008,30.14,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 30 10:32:22 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 29 16:04:31 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

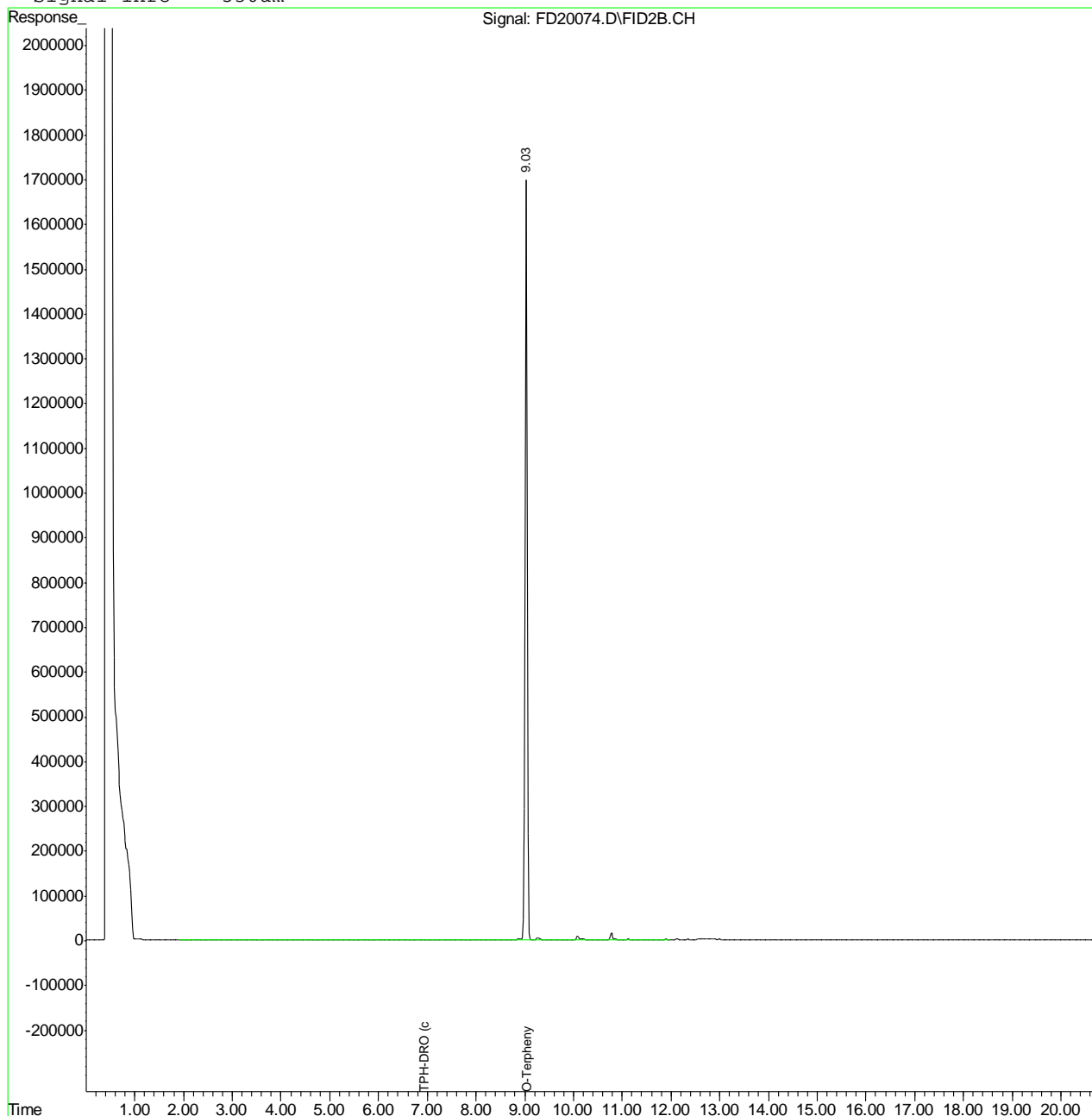
System Monitoring Compounds			
1) S O-Terphenyl	9.04	59314285	1160.074 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	6.93	2838398	76.800 mg/L

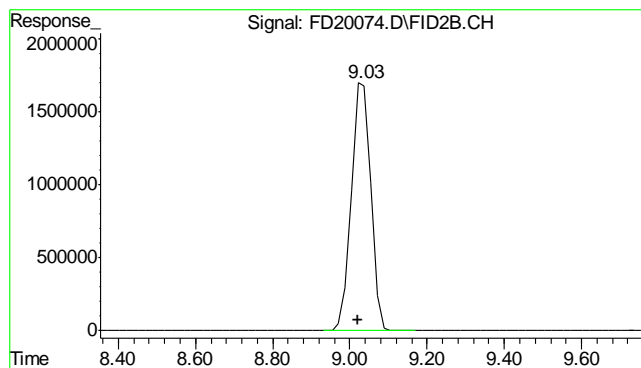
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD113012.SEC\FD20074.D Vial: 57
 Acq On : 30 Nov 2012 10:10 am Operator: ashleyv
 Sample : D41248-1 Inst : FID5
 Misc : OP7028,GFD1008,30.14,,,1,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Nov 30 10:32 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
 Title : 8015B TEH
 Last Update : Thu Nov 29 16:04:31 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : DRODUAL.M

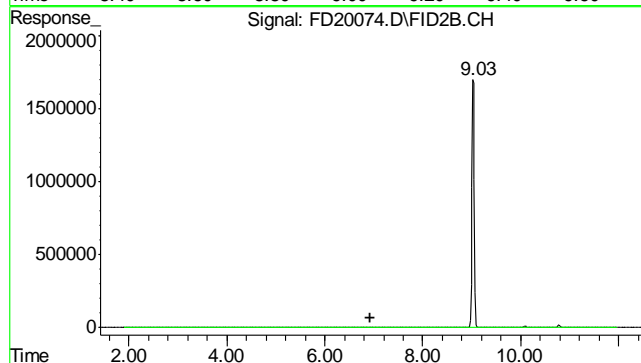
Volume Inj. : 1ul
 Signal Phase : RTX-5
 Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.035 min
 Delta R.T.: 0.015 min
 Response: 59314285
 Conc: 1160.07 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 6.935 min
 Delta R.T.: 0.000 min
 Response: 2838398
 Conc: 76.80 mg/L m

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD113012.SEC\FD20066.D Vial: 53
Acq On : 11-30-2012 08:23:10 AM Operator: ashleyv
Sample : OP7028-MB Inst : FID5
Misc : OP7028,GFD1008,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 30 08:46:57 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 29 16:04:31 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	9.04	65888527	1288.654 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	6.93	463969	12.554 mg/L

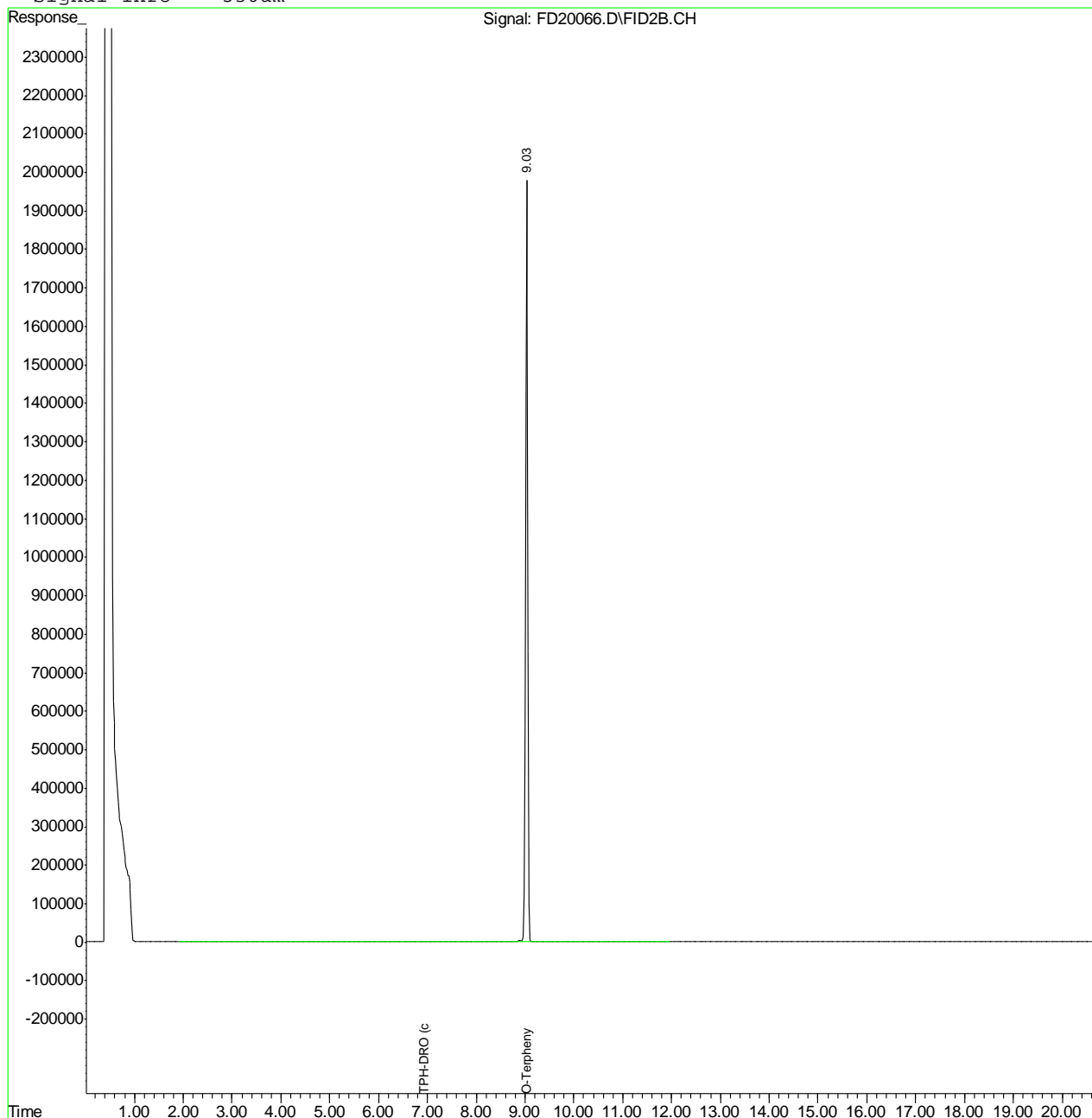
(f)=RT Delta > 1/2 Window (m)=manual int.
FD20066.D DRO-GFD983R.M Fri Nov 30 12:04:44 2012 GC

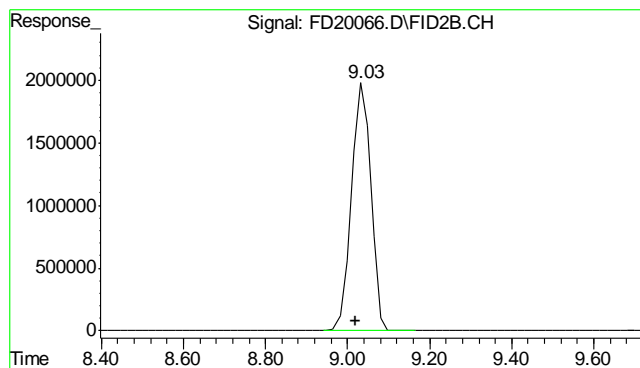
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD113012.SEC\FD20066.D Vial: 53
Acq On : 11-30-2012 08:23:10 AM Operator: ashleyv
Sample : OP7028-MB Inst : FID5
Misc : OP7028,GFD1008,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 30 8:46 2012 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 29 16:04:31 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

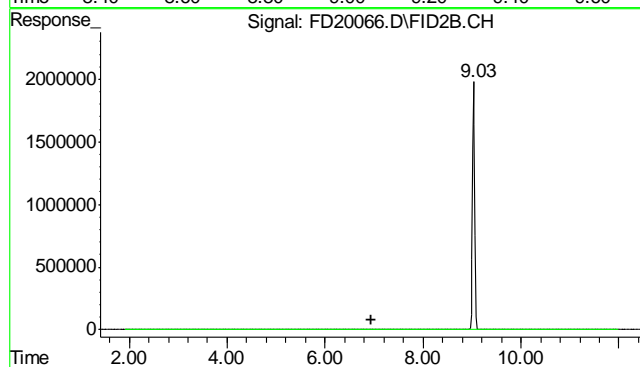
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.040 min
Delta R.T.: 0.020 min
Response: 65888527
Conc: 1288.65 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 6.935 min
Delta R.T.: 0.000 min
Response: 463969
Conc: 12.55 mg/L m

13.2.1
13

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/29/12

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	0.20	<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	-0.070	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.11	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	-0.11	<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	0.050	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.090	<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	0.12	<3.0

Associated samples MP8961: D41248-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/29/12

Metal	D41248-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	354	470	232	50.0N(a)	75-125
Beryllium	anr				
Boron					
Cadmium	0.16	49.3	58	84.7	75-125
Calcium	anr				
Chromium	40.6	89.9	58	85.0	75-125
Cobalt	anr				
Copper	8.4	61.6	58	91.7	75-125
Iron					
Lead	9.4	107	116	84.2	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	15.1	61.3	58	79.7	75-125
Phosphorus	anr				
Potassium	anr				
Selenium	0.61	102	116	87.4	75-125
Silicon					
Silver	0.21	21.1	23.2	90.1	75-125
Sodium	anr				
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium					
Vanadium	anr				
Zinc	40.2	87.0	58	80.7	75-125

Associated samples MP8961: D41248-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
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 recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/29/12

Metal	D41248-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	354	573	237	92.5	19.8	20
Beryllium	anr					
Boron						
Cadmium	0.16	50.1	59.2	84.4	1.6	20
Calcium	anr					
Chromium	40.6	90.0	59.2	83.5	0.1	20
Cobalt	anr					
Copper	8.4	62.2	59.2	90.9	1.0	20
Iron						
Lead	9.4	109	118	84.1	1.9	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	15.1	62.1	59.2	79.4	1.3	20
Phosphorus	anr					
Potassium	anr					
Selenium	0.61	103	118	86.5	1.0	20
Silicon						
Silver	0.21	21.3	23.7	89.1	0.9	20
Sodium	anr					
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium	anr					
Zinc	40.2	88.1	59.2	80.9	1.3	20

Associated samples MP8961: D41248-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/29/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	203	200	101.5	80-120
Beryllium	anr			
Boron				
Cadmium	46.3	50	92.6	80-120
Calcium	anr			
Chromium	49.1	50	98.2	80-120
Cobalt	anr			
Copper	46.6	50	93.2	80-120
Iron				
Lead	95.4	100	95.4	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	46.5	50	93.0	80-120
Phosphorus	anr			
Potassium	anr			
Selenium	94.7	100	94.7	80-120
Silicon				
Silver	19.8	20	99.0	80-120
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	47.7	50	95.4	80-120

Associated samples MP8961: D41248-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/29/12

Metal	D41248-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	3020	3660	21.3*(a)	0-10
Beryllium	anr			
Boron				
Cadmium	1.40	0.00	100.0(b)	0-10
Calcium	anr			
Chromium	347	380	9.4	0-10
Cobalt	anr			
Copper	72.0	63.0	12.5*(a)	0-10
Iron				
Lead	80.5	64.0	20.5 (b)	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	129	146	13.4*(a)	0-10
Phosphorus	anr			
Potassium	anr			
Selenium	5.20	0.00	100.0(b)	0-10
Silicon				
Silver	1.80	3.00	66.7 (b)	0-10
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	343	405	17.9*(a)	0-10

Associated samples MP8961: D41248-1

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8961
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8962
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/29/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0061	<0.10
Barium	1.0	.0065	.037		
Boron	20	1.2	1.2		
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		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP8962: D41248-1

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

14.2.1
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8962
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/29/12

Metal	D41248-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	7.6	122	116	98.6
Barium	anr			75-125
Boron				
Calcium	anr			
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	anr			
Strontium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP8962: D41248-1

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8962
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/29/12

Metal	D41248-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	7.6	131	118	104.3	7.1	20
Barium	anr					
Boron						
Calcium	anr					
Chromium	anr					
Cobalt						
Copper	anr					
Iron	anr					
Lead						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Phosphorus	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium	anr					
Strontium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP8962: D41248-1

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8962
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/29/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	104	100	104.0	80-120
Barium	anr			
Boron				
Calcium	anr			
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	anr			
Strontium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP8962: D41248-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8962
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 11/29/12

Metal	D41248-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	64.6	62.4	3.4	0-10
Barium	anr			
Boron				
Calcium	anr			
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	anr			
Strontium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP8962: D41248-1

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8965
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 11/30/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.083	.00088	.00075	0.0024	<0.083

Associated samples MP8965: D41248-1

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: D41248
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8965
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/30/12

Metal	D41219-3		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.022	0.34	0.336	94.5	75-125

Associated samples MP8965: D41248-1

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: D41248
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8965
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/30/12

Metal	D41219-3 Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.022 0.34	0.336	94.5	0.0	20

Associated samples MP8965: D41248-1

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: D41248
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-6A

QC Batch ID: MP8965
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/30/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.32	0.333	96.0	80-120

Associated samples MP8965: D41248-1

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date: 11/30/12

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	20.5	<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	4.5	<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	727	<2000
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 MP8975: D41248-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date: 11/30/12

Metal	D41248-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	14300	147000	125000	106.2	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	5510	130000	125000	99.6	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	54700	179000	125000	99.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8975: D41248-1A

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date: 11/30/12

Metal	D41248-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	14300	146000	125000	105.4	0.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	5510	129000	125000	98.8	0.8	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	54700	176000	125000	97.0	1.7	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8975: D41248-1A

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
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

14.4.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date: 11/30/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	135000	125000	108.0	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	123000	125000	98.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	126000	125000	100.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8975: D41248-1A

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

14.4.3
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date: 11/30/12

D41248-1A		QC		
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	2860	2740	4.0	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1100	1190	8.0	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	10900	12200	11.6*(a)	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8975: D41248-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

QC Batch ID: MP8975
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

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: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8775/GN17865	1.0	0.0	mg/kg	176.0	175	99.3	80-120%
Specific Conductivity	GP8815/GN17934			umhos/cm	9992	9910	99.2	90-110%
pH	GN17849			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:
Batch GP8775: D41248-1
Batch GP8815: D41248-1
Batch GN17849: D41248-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8775/GN17865	D41258-1A	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN17851	D41217-1	mv	-140	-130	12.6	0-20%

Associated Samples:
Batch GP8775: D41248-1
Batch GN17851: D41248-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8775/GN17865	D41258-1A	mg/kg	0.0	40.0	35.1	88.0	75-125%

Associated Samples:

Batch GP8775: D41248-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41248
Account: XTOKRWR - XTO Energy
Project: PCU 296-6A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8775/GN17865	D41258-1A	mg/kg	0.0	40.0	35.8	2.0	20%

Associated Samples:
Batch GP8775: D41248-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits