



12/12/12

Technical Report for

XTO Energy

PCU 296-5A

1210-04

Accutest Job Number: D41448

Sampling Date: 11/30/12

Report to:

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Total number of pages in report: 146



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


Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

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

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D41448

PCU 296-5A
Project No: 1210-04

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D41448-1	11/30/12	11:15	DK	12/04/12	SO	Soil	RP POST SOLIDIFICATION
D41448-1A	11/30/12	11:15	DK	12/04/12	SO	Soil	RP POST SOLIDIFICATION

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D41448

Site: PCU 296-5A

Report Date 12/10/2012 4:14:27 PM

On 12/04/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.8 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D41448 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: V3V1284

- All samples were analyzed within the recommended method holding time.
- Sample(s) D41448-1MS, D41448-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP7075

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

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB1023

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41506-1MS, D41506-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP7053

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

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP9015

- 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) D41381-1AMS, D41381-1AMSD, D41381-1ASDL were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP9006

- 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) D41381-1MS, D41381-1MSD, D41381-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium, Cadmium, Lead, Nickel are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Cadmium, Lead, Nickel are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Cadmium, Silver, Chromium, Nickel, Zinc are outside control limits for sample MP9006-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP9006-MB1 for Barium: All sample results >10x method blank concentration or <RL.
- MP9006-S1 for Nickel: Spike recovery indicates possible matrix interference.
- MP9006-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP9006-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP9006-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP9006-S1 for Cadmium: Spike recovery indicates possible matrix interference.
- MP9006-S1 for Lead: Spike recovery indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP9007

- 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) D41381-1MS, D41381-1MSD, D41381-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP9008

- 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.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN17965

- The data for ASTM D1498-76M meets quality control requirements.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN17944

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP8845

- 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) D41506-1DUP, D41506-1MS, D41506-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.
- D41448-1 for Chromium, Hexavalent: Dilution required due to matrix interference.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix SO

Batch ID: R15368

- The data for SW846 3060A/7196A M meets quality control requirements.
- D41448-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN17962

- The following samples were run outside of holding time for method SW846 9045D: D41448-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP9015

- D41448-1A 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

Page 1 of 1

Job Number: D41448
Account: XTO Energy
Project: PCU 296-5A
Collected: 11/30/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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D41448-1 RP POST SOLIDIFICATION

Benzene	0.128	0.11	0.056	mg/kg	SW846 8260B
Toluene	0.327	0.22	0.11	mg/kg	SW846 8260B
Ethylbenzene	0.0466 J	0.22	0.042	mg/kg	SW846 8260B
Xylene (total)	0.399 J	0.45	0.22	mg/kg	SW846 8260B
Chrysene	0.0107 J	0.013	0.0070	mg/kg	SW846 8270C BY SIM
Fluorene	0.0149	0.013	0.0070	mg/kg	SW846 8270C BY SIM
Naphthalene	0.0576	0.019	0.017	mg/kg	SW846 8270C BY SIM
Pyrene	0.0080 J	0.013	0.0070	mg/kg	SW846 8270C BY SIM
TPH-GRO (C6-C10)	12.3 J	22	11	mg/kg	SW846 8015B
TPH-DRO (C10-C28)	159	11	6.5	mg/kg	SW846-8015B
Arsenic	9.9	0.16		mg/kg	SW846 6020A
Barium	11400	16		mg/kg	SW846 6010C
Chromium	14.1	1.6		mg/kg	SW846 6010C
Copper	28.4	1.6		mg/kg	SW846 6010C
Lead	15.5	8.1		mg/kg	SW846 6010C
Nickel	112	4.9		mg/kg	SW846 6010C
Zinc	33.8	4.9		mg/kg	SW846 6010C
Specific Conductivity	8770	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	14.1	6.6		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	173			mv	ASTM D1498-76M
pH	12.32			su	SW846 9045D

D41448-1A RP POST SOLIDIFICATION

Calcium	393	2.0		mg/l	SW846 6010C
Sodium	981	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	13.6			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

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Report of Analysis

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Client Sample ID:	RP POST SOLIDIFICATION	
Lab Sample ID:	D41448-1	Date Sampled: 11/30/12
Matrix:	SO - Soil	Date Received: 12/04/12
Method:	SW846 8260B	Percent Solids: 61.7
Project:	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V21984.D	1	12/06/12	BD	n/a	n/a	V3V1284
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.02 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.128	0.11	0.056	mg/kg	
108-88-3	Toluene	0.327	0.22	0.11	mg/kg	
100-41-4	Ethylbenzene	0.0466	0.22	0.042	mg/kg	J
1330-20-7	Xylene (total)	0.399	0.45	0.22	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	98%		64-130%
460-00-4	4-Bromofluorobenzene	94%		62-131%
17060-07-0	1,2-Dichloroethane-D4	111%		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:	RP POST SOLIDIFICATION	
Lab Sample ID:	D41448-1	Date Sampled: 11/30/12
Matrix:	SO - Soil	Date Received: 12/04/12
Method:	SW846 8270C BY SIM SW846 3546	Percent Solids: 61.7
Project:	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12515.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.013	0.0070	mg/kg	
120-12-7	Anthracene	ND	0.013	0.0070	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.013	0.0070	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.013	0.0070	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.013	0.0070	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.013	0.0070	mg/kg	
218-01-9	Chrysene	0.0107	0.013	0.0070	mg/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	0.013	0.0070	mg/kg	
206-44-0	Fluoranthene	ND	0.013	0.0070	mg/kg	
86-73-7	Fluorene	0.0149	0.013	0.0070	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.013	0.0070	mg/kg	
91-20-3	Naphthalene	0.0576	0.019	0.017	mg/kg	
129-00-0	Pyrene	0.0080	0.013	0.0070	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	53%		10-159%
321-60-8	2-Fluorobiphenyl	50%		19-131%
1718-51-0	Terphenyl-d14	69%		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:	RP POST SOLIDIFICATION					Date Sampled:	11/30/12
Lab Sample ID:	D41448-1					Date Received:	12/04/12
Matrix:	SO - Soil					Percent Solids:	61.7
Method:	SW846 8015B						
Project:	PCU 296-5A						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18767.D	1	12/06/12	SK	n/a	n/a	GGB1023
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	12.3	22	11	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	83%		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:	RP POST SOLIDIFICATION			Date Sampled:	11/30/12
Lab Sample ID:	D41448-1			Date Received:	12/04/12
Matrix:	SO - Soil			Percent Solids:	61.7
Method:	SW846-8015B SW846 3546				
Project:	PCU 296-5A				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH008082.D	1	12/06/12	TR	12/05/12	OP7053	GFH446
Run #2							

	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)	159	11	6.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	64%		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:	RP POST SOLIDIFICATION	Date Sampled:	11/30/12
Lab Sample ID:	D41448-1	Date Received:	12/04/12
Matrix:	SO - Soil	Percent Solids:	61.7
Project:	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	9.9	0.16	mg/kg	5	12/05/12	12/07/12 JM	SW846 6020A ³	SW846 3050B ⁶
Barium	11400	16	mg/kg	10	12/05/12	12/07/12 JB	SW846 6010C ⁴	SW846 3050B ⁵
Cadmium	< 1.6	1.6	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Chromium	14.1	1.6	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Copper	28.4	1.6	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Lead	15.5	8.1	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Mercury	< 0.13	0.13	mg/kg	1	12/06/12	12/06/12 JB	SW846 7471B ²	SW846 7471B ⁷
Nickel	112	4.9	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Selenium	< 8.1	8.1	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Silver	< 4.9	4.9	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵
Zinc	33.8	4.9	mg/kg	1	12/05/12	12/06/12 JB	SW846 6010C ¹	SW846 3050B ⁵

(1) Instrument QC Batch: MA3055

(2) Instrument QC Batch: MA3057

(3) Instrument QC Batch: MA3061

(4) Instrument QC Batch: MA3062

(5) Prep QC Batch: MP9006

(6) Prep QC Batch: MP9007

(7) Prep QC Batch: MP9008

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP POST SOLIDIFICATION	Date Sampled:	11/30/12
Lab Sample ID:	D41448-1	Date Received:	12/04/12
Matrix:	SO - Soil	Percent Solids:	61.7
Project:	PCU 296-5A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	8770	1.0	umhos/cm	1	12/07/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent ^a	< 5.0	5.0	mg/kg	5	12/07/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^b	14.1	6.6	mg/kg	1	12/07/12	KB	SW846 3060A/7196A M
Redox Potential Vs H2	173		mv	1	12/05/12	JD	ASTM D1498-76M
Solids, Percent	61.7		%	1	12/05/12	SWT	SM19 2540B M
pH	12.32		su	1	12/05/12 15:00	JD	SW846 9045D

(a) Dilution required due to matrix interference.

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: RP POST SOLIDIFICATION
Lab Sample ID: D41448-1A
Matrix: SO - Soil
Project: PCU 296-5A

Date Sampled: 11/30/12
Date Received: 12/04/12
Percent Solids: 61.7

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	393	2.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	< 1.0	1.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²
Sodium	981	2.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²

(1) Instrument QC Batch: MA3069
(2) Prep QC Batch: MP9015

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID:	RP POST SOLIDIFICATION	Date Sampled:	11/30/12
Lab Sample ID:	D41448-1A	Date Received:	12/04/12
Matrix:	SO - Soil	Percent Solids:	61.7
Project:	PCU 296-5A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	13.6		ratio	1	12/10/12 10:06	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



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

FEI-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # D41448	
Client / Reporting Information		Project Information	
Company Name KRW Consulting		Project Name XTO #296-5A	
Street Address 8000 West 14th Street, Suite 200		Billing Information (If different from Report to)	
City Lakewood, CO 80214		Company Name XTO Energy	
Project Contact Dwayne Knudson		Street Address 21459 CR 5	
Phone # 970-488-1098		City Rifle, CO 81650	
Sampler(s) Name(s) DWAYNE KNUDSON 970-488-1098		Project Manager Joe Hess	
		Attention: Jessica Dooling	
Turnaround Time (Business Days)		Data Deliverable Information	
<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+ <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 Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC/Narrative (+ = chromatograms)	
Comments / Special Instructions		Please email to: KRW Piceance Team	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished by Supplier: 1 Lori Albright	Date Time: 1/13/12 15:30	Received By: 1 Fine Service Center	Date Time: 1/13/12 15:30
Relinquished by Sampler: 3	Date Time:	Received By: 3	Date Time:
Relinquished by: 5	Date Time:	Received By: 5	Date Time:
Custody Seal # HPCO		<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	
Preserved where applicable <input type="checkbox"/>		On Ice <input checked="" type="checkbox"/>	
Cooler Temp. 2.8			

D41448: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D41448

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 12/4/2012 12:20:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU296-5A

Airbill #'s: HDCO

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

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

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

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

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

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

Comments

 Accutest Laboratories
 V:(303) 425-6021

 4036 Youngfield Street
 F: (303) 425-6854

 Wheat Ridge, CO
 www.accutest.com

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1284-MB	3V21977.D	1	12/06/12	BD	n/a	n/a	V3V1284

The QC reported here applies to the following samples:

Method: SW846 8260B

D41448-1

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	103% 64-130%
460-00-4	4-Bromofluorobenzene	86% 62-131%
17060-07-0	1,2-Dichloroethane-D4	118% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D41448

Account: XTOKRWR XTO Energy

Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1284-BS	3V21981.D	1	12/06/12	BD	n/a	n/a	V3V1284

The QC reported here applies to the following samples:

Method: SW846 8260B

D41448-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.3	97	70-130
100-41-4	Ethylbenzene	50	46.4	93	70-130
108-88-3	Toluene	50	44.5	89	70-130
1330-20-7	Xylene (total)	150	139	93	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	99%	64-130%
460-00-4	4-Bromofluorobenzene	94%	62-131%
17060-07-0	1,2-Dichloroethane-D4	114%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41448-1MS	3V21982.D	1	12/06/12	BD	n/a	n/a	V3V1284
D41448-1MSD	3V21983.D	1	12/06/12	BD	n/a	n/a	V3V1284
D41448-1	3V21984.D	1	12/06/12	BD	n/a	n/a	V3V1284

The QC reported here applies to the following samples:

Method: SW846 8260B

D41448-1

CAS No.	Compound	D41448-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	128		5590	5620	98	5970	104	6	64-139/30
100-41-4	Ethylbenzene	46.6	J	5590	5520	98	5860	104	6	68-136/30
108-88-3	Toluene	327		5590	5210	87	5460	92	5	60-130/30
1330-20-7	Xylene (total)	399	J	16800	16600	97	17600	103	6	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D41448-1	Limits
2037-26-5	Toluene-D8	95%	95%	98%	64-130%
460-00-4	4-Bromofluorobenzene	96%	96%	94%	62-131%
17060-07-0	1,2-Dichloroethane-D4	112%	115%	111%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
 Data File : 3V21984.D
 Acq On : 6 Dec 2012 3:20 pm
 Operator : BRETD
 Sample : D41448-1
 Misc : MS5060,V3V1284,5.015,,100,5,1
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 07 08:33:55 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	140932	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.656	114	244735	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	274569	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.281	152	149790	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.251	102	19031	55.63	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	111.26%
61) Toluene-d8	14.048	98	325346	49.15	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	98.30%
69) 4-Bromofluorobenzene	16.242	95	127254	46.78	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.56%

Target Compounds

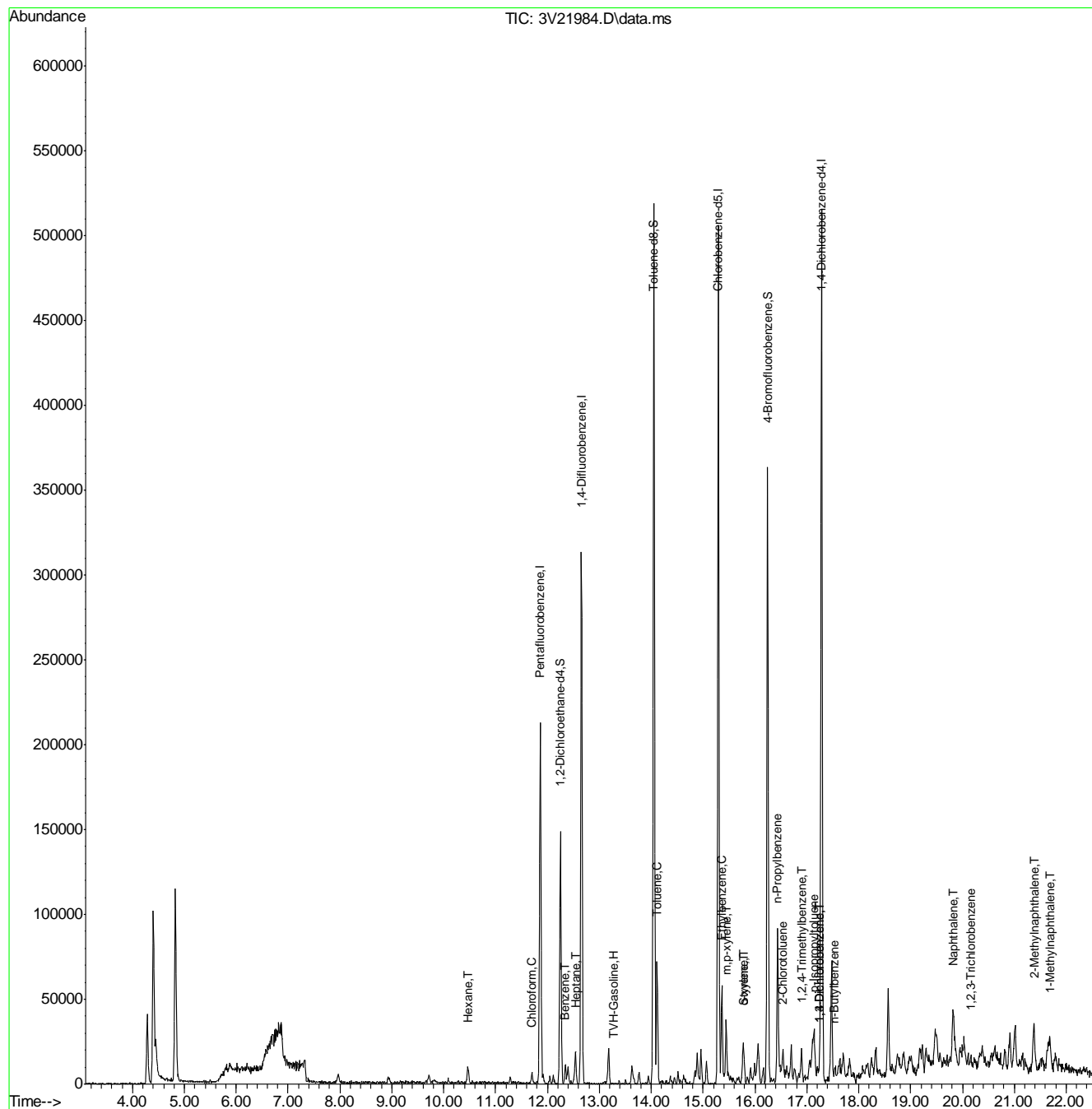
						Qvalue
1) TVH-Gasoline	13.285	TIC	888792m	187.86	ug/l	
29) Chloroform	11.703	83	4615	1.29	ug/l	99
41) Hexane	10.471	57	4856	1.36	ug/l	100
43) Heptane	12.537	43	8730	1.94	ug/l	87
50) Benzene	12.354	78	9491	1.15	ug/l	100
62) Toluene	14.112	92	17551	2.93	ug/l	99
66) Ethylbenzene	15.360	91	4686	0.42	ug/l	99
71) Styrene	15.793	104	1924	0.45	ug/l	97
72) m,p-xylene	15.446	106	11659	2.54	ug/l	94
73) o-xylene	15.796	106	2337	1.03	ug/l	95
77) n-Propylbenzene	16.421	91	4777	0.38	ug/l #	89
78) 2-Chlorotoluene	16.534	91	503	0.06	ug/l	89
82) 1,2,4-Trimethylbenzene	16.893	105	8748	0.97	ug/l	91
84) 1,3-Dichlorobenzene	17.233	146	2080	0.40	ug/l #	85
85) 1,4-Dichlorobenzene	17.233	146	2079	0.38	ug/l	90
86) p-Isopropyltoluene	17.153	119	9040	0.95	ug/l #	86
88) n-Butylbenzene	17.538	91	4977	0.57	ug/l #	85
91) Naphthalene	19.834	128	22111	5.80	ug/l	100
93) 1,2,3-Trichlorobenzene	20.165	180	2704	0.94	ug/l	94
94) 2-Methylnaphthalene	21.381	142	18930	6.49	ug/l #	95
95) 1-Methylnaphthalene	21.689	142	13979	5.22	ug/l #	93

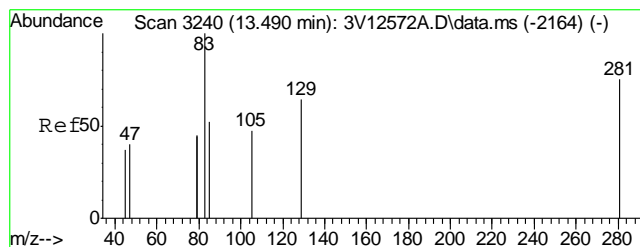
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
Data File : 3V21984.D
Acq On : 6 Dec 2012 3:20 pm
Operator : BRETD
Sample : D41448-1
Misc : MS5060,V3V1284,5.015,,100,5,1
ALS Vial : 11 Sample Multiplier: 1

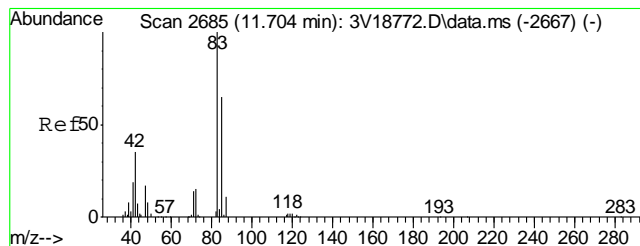
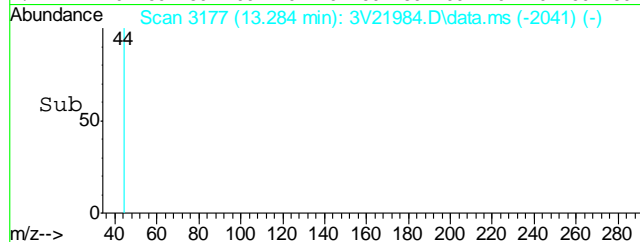
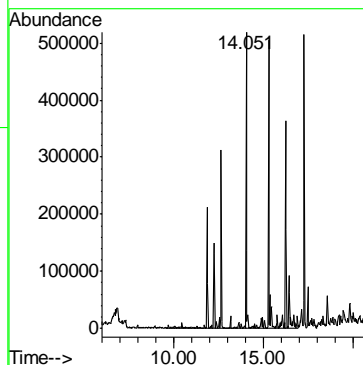
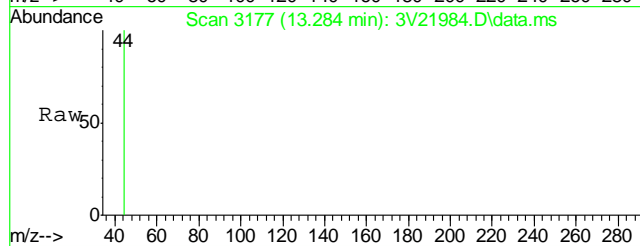
Quant Time: Dec 07 08:33:55 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





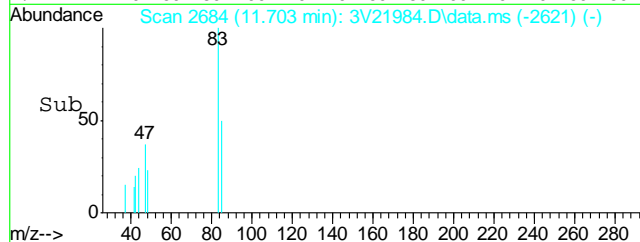
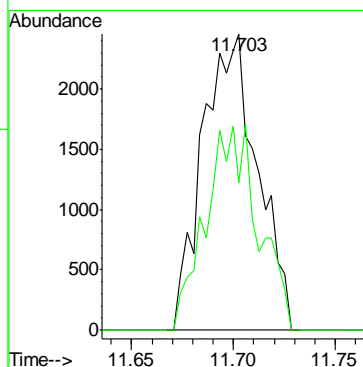
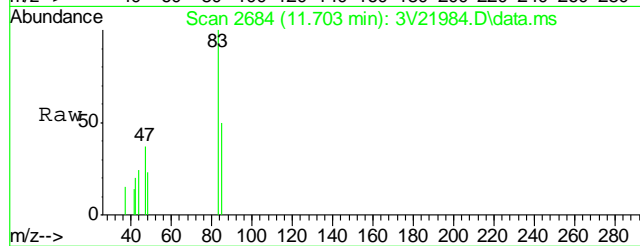
#1
TVH-Gasoline
Concen: 187.86 ug/l m
RT: 13.285 min Scan# 3177
Delta R.T. 0.000 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

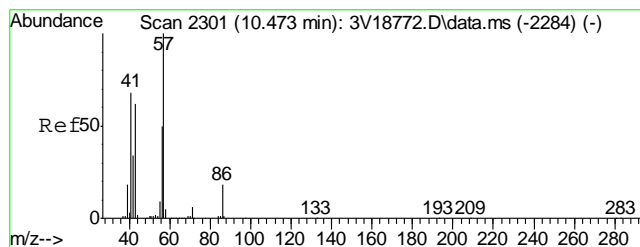
Tgt Ion:TIC Resp: 888792



#29
Chloroform
Concen: 1.29 ug/l
RT: 11.703 min Scan# 2684
Delta R.T. 0.002 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

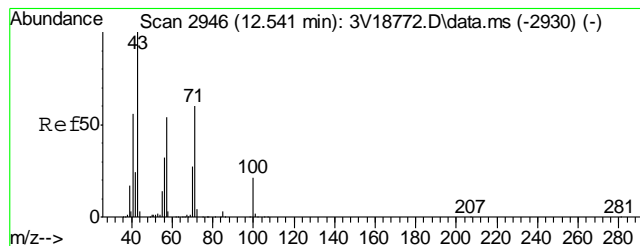
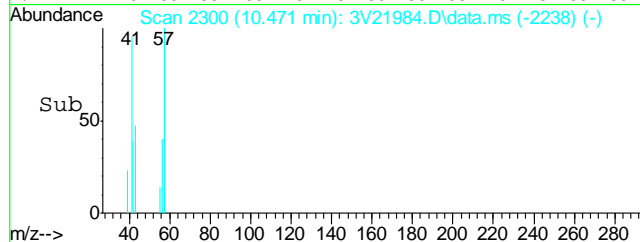
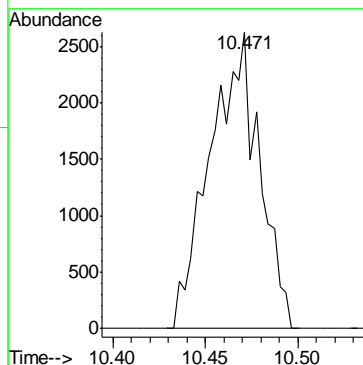
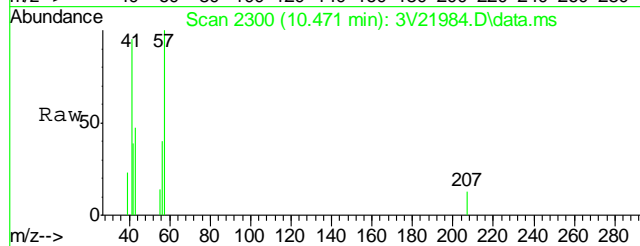
Tgt Ion: 83 Resp: 4615
Ion Ratio Lower Upper
83 100
85 65.8 44.7 84.7





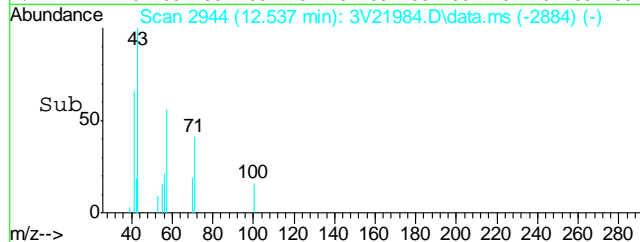
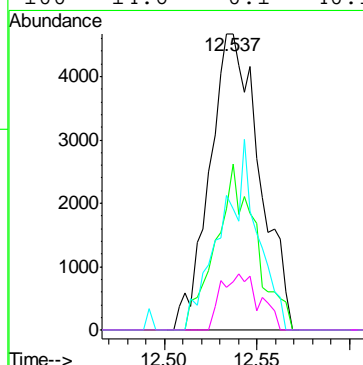
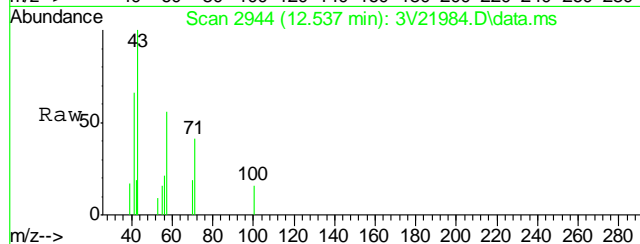
#41
Hexane
Concen: 1.36 ug/l
RT: 10.471 min Scan# 2300
Delta R.T. -0.001 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

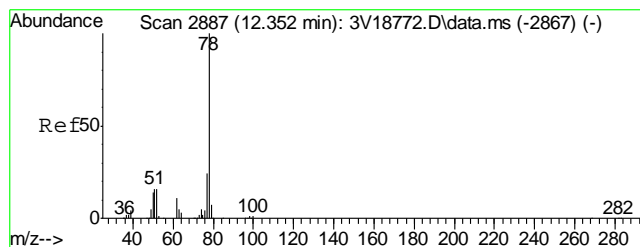
Tgt Ion: 57 Resp: 4856



#43
Heptane
Concen: 1.94 ug/l
RT: 12.537 min Scan# 2944
Delta R.T. -0.007 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

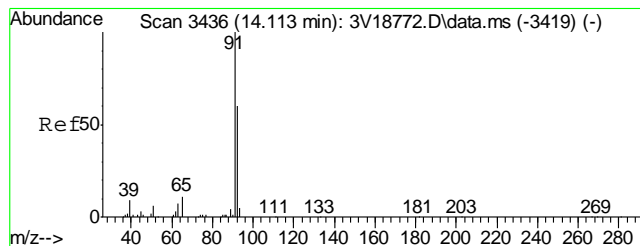
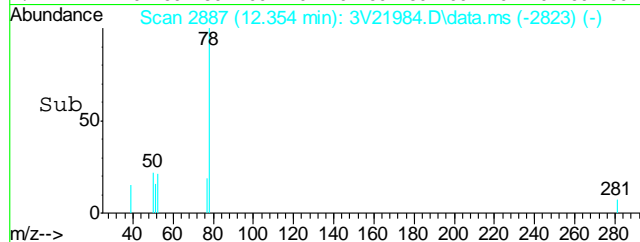
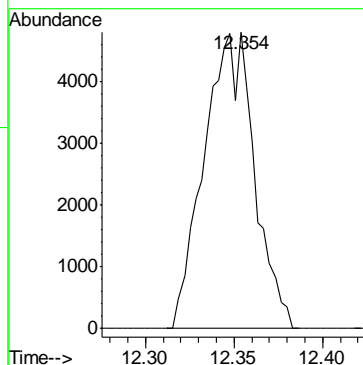
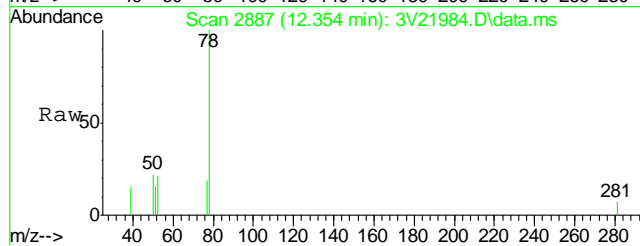
Tgt Ion: 43 Resp: 8730
Ion Ratio Lower Upper
43 100
57 45.0 32.1 72.1
71 46.9 39.6 79.6
100 14.6 0.1 40.1





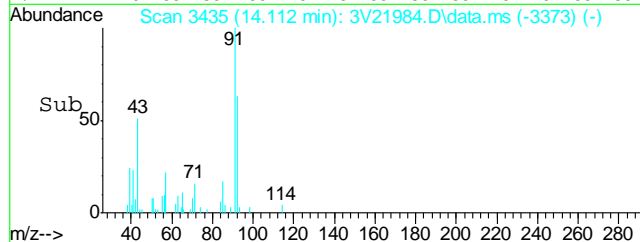
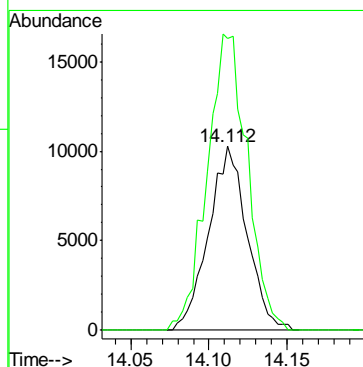
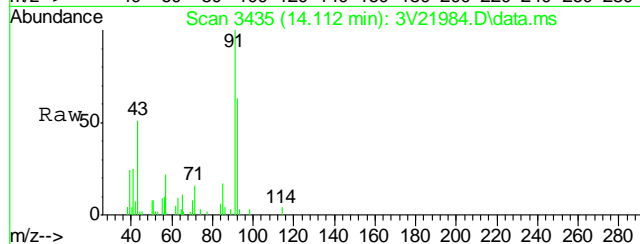
#50
Benzene
Concen: 1.15 ug/l
RT: 12.354 min Scan# 2887
Delta R.T. 0.006 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

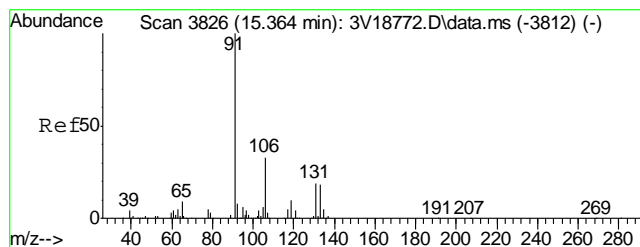
Tgt Ion: 78 Resp: 9491



#62
Toluene
Concen: 2.93 ug/l
RT: 14.112 min Scan# 3435
Delta R.T. -0.001 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

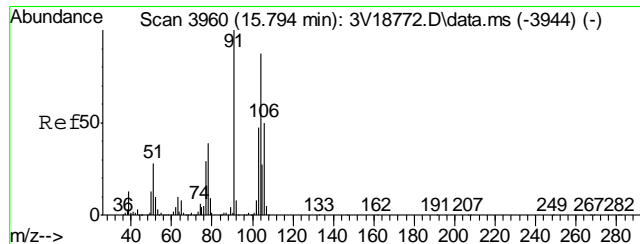
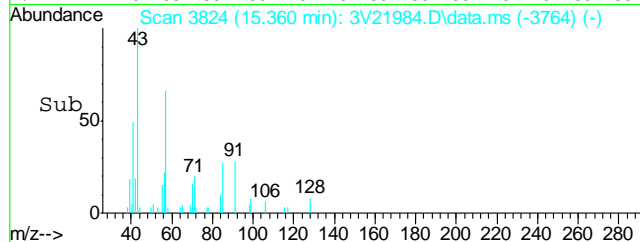
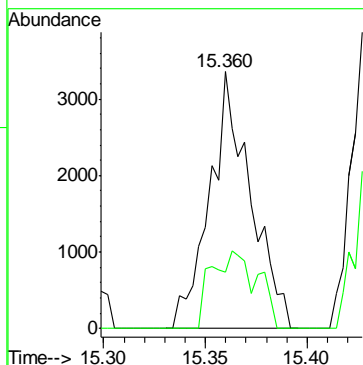
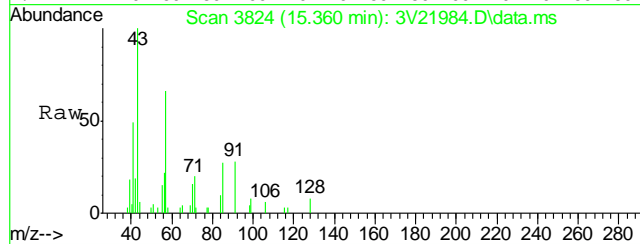
Tgt Ion: 92 Resp: 17551
Ion Ratio Lower Upper
92 100
91 168.2 150.2 190.2





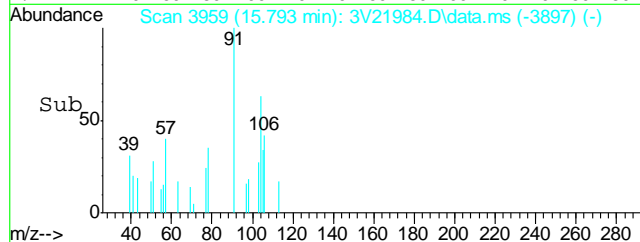
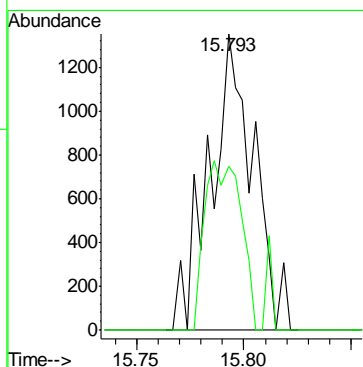
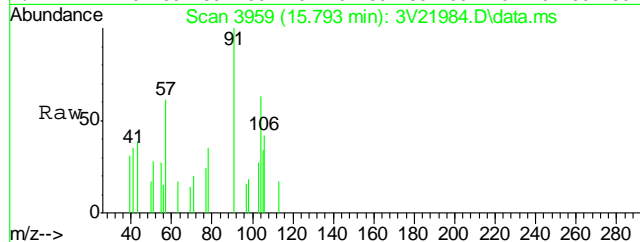
#66
Ethylbenzene
Concen: 0.42 ug/l
RT: 15.360 min Scan# 3824
Delta R.T. -0.007 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

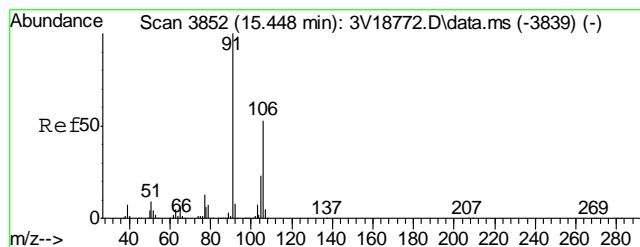
Tgt Ion: 91 Resp: 4686
Ion Ratio Lower Upper
91 100
106 33.9 13.2 53.2



#71
Styrene
Concen: 0.45 ug/l
RT: 15.793 min Scan# 3959
Delta R.T. -0.000 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

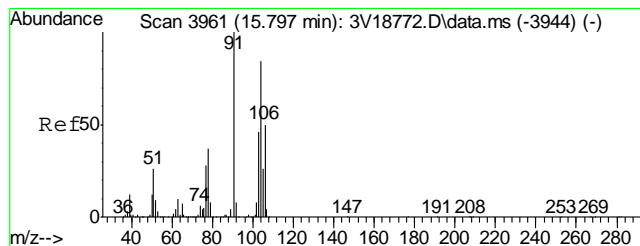
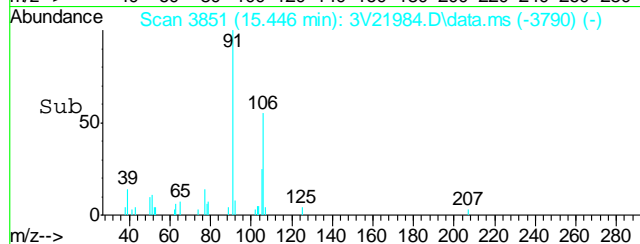
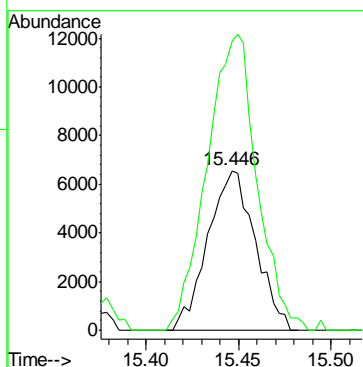
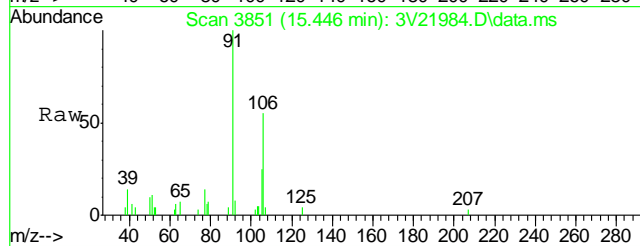
Tgt Ion: 104 Resp: 1924
Ion Ratio Lower Upper
104 100
78 47.6 25.4 65.4





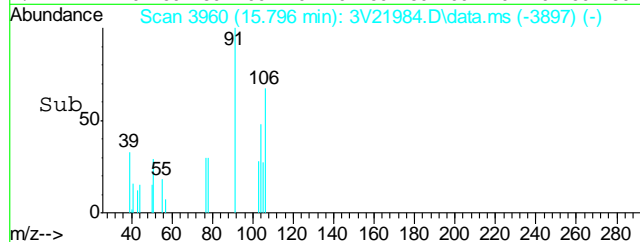
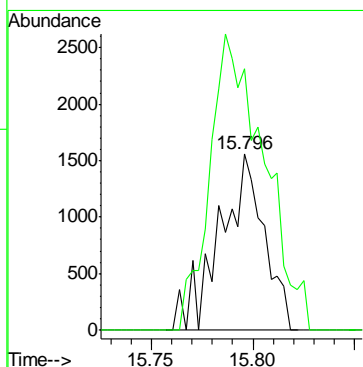
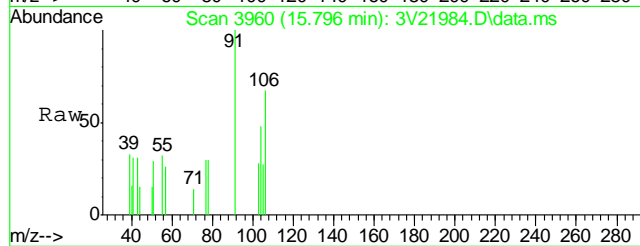
#72
m,p-xylene
Concen: 2.54 ug/l
RT: 15.446 min Scan# 3851
Delta R.T. -0.004 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

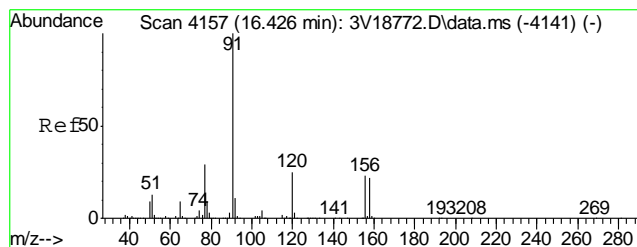
Tgt Ion:106 Resp: 11659
Ion Ratio Lower Upper
106 100
91 196.2 168.1 208.1



#73
o-xylene
Concen: 1.03 ug/l
RT: 15.796 min Scan# 3960
Delta R.T. 0.003 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

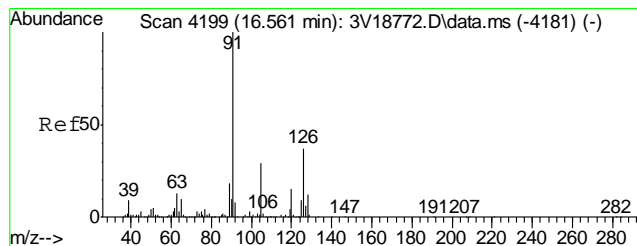
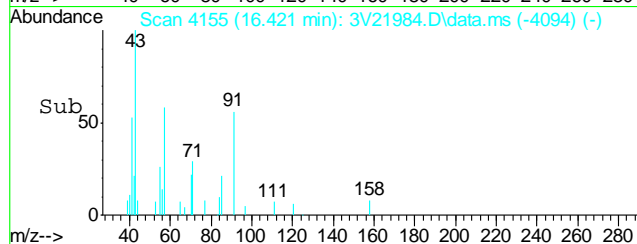
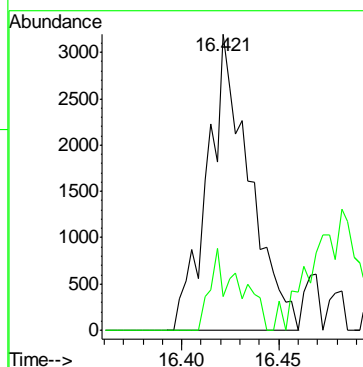
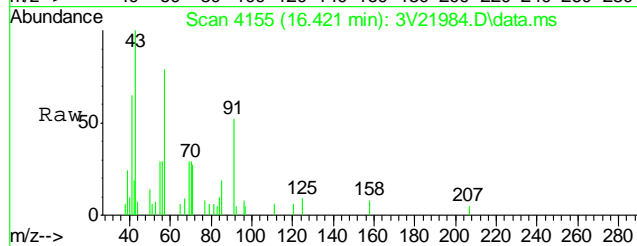
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Ion Ratio Lower Upper
106 100
91 207.2 160.2 240.4





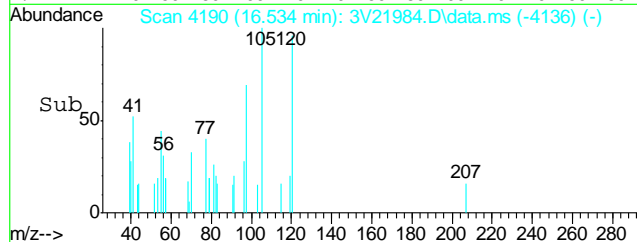
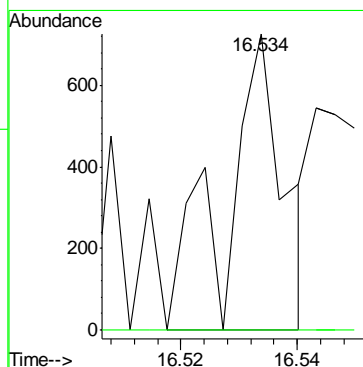
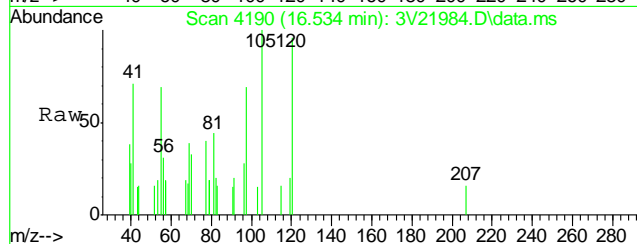
#77
n-Propylbenzene
Concen: 0.38 ug/l
RT: 16.421 min Scan# 4155
Delta R.T. -0.004 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

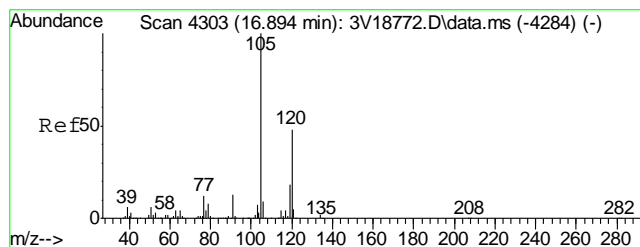
Tgt Ion: 91 Resp: 4777
Ion Ratio Lower Upper
91 100
120 19.4 19.9 29.9#



#78
2-Chlorotoluene
Concen: 0.06 ug/l
RT: 16.534 min Scan# 4190
Delta R.T. -0.026 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

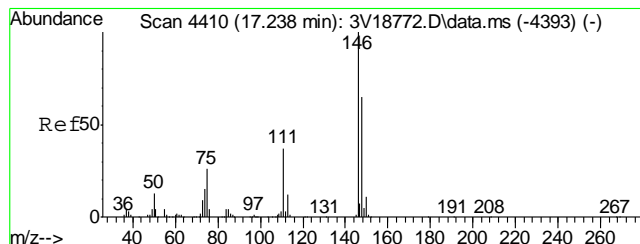
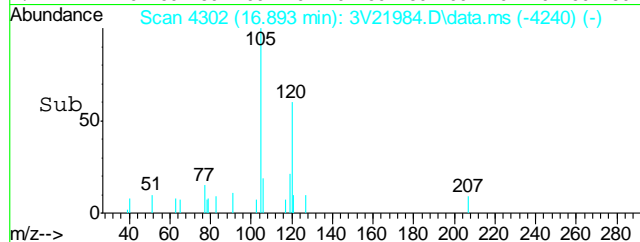
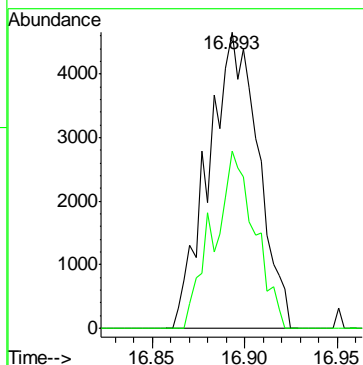
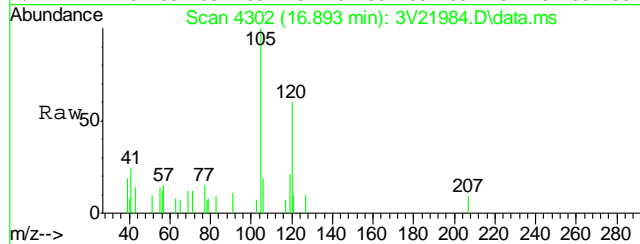
Tgt Ion: 91 Resp: 503
Ion Ratio Lower Upper
91 100
126 27.2 26.6 39.8





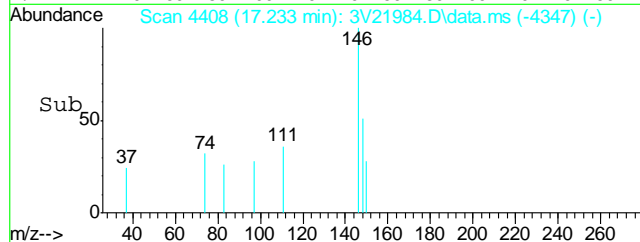
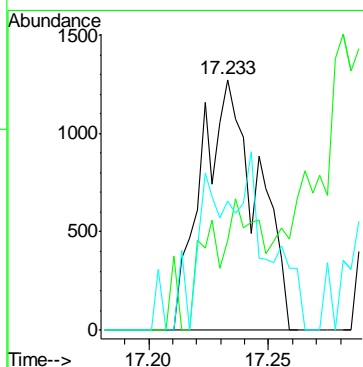
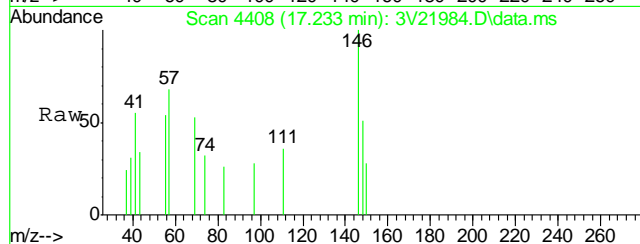
#82
1,2,4-Trimethylbenzene
Concen: 0.97 ug/l
RT: 16.893 min Scan# 4302
Delta R.T. -0.001 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

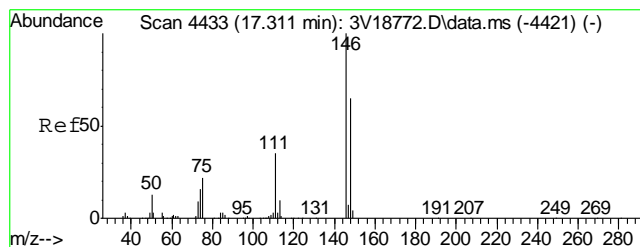
Tgt Ion	Ratio	Lower	Upper
105	100		
120	49.5	45.1	67.7



#84
1,3-Dichlorobenzene
Concen: 0.40 ug/l
RT: 17.233 min Scan# 4408
Delta R.T. -0.004 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

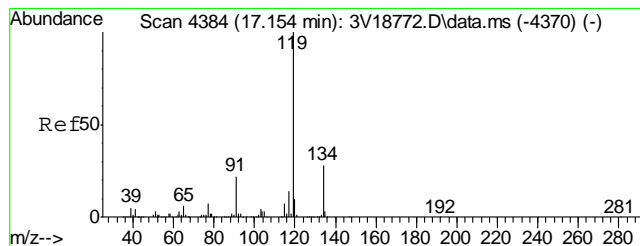
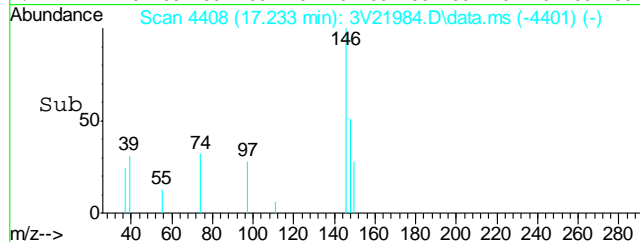
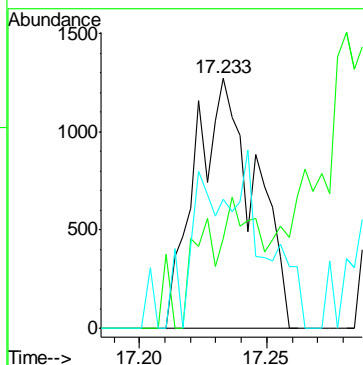
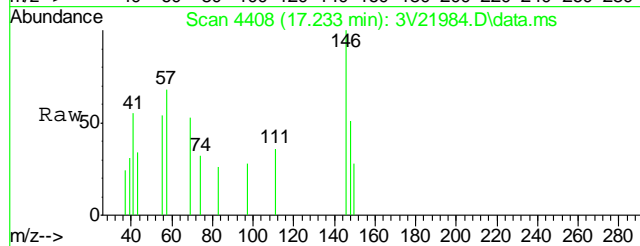
Tgt Ion	Ratio	Lower	Upper
146	100		
111	23.3	29.7	44.5#
148	72.2	51.4	77.0





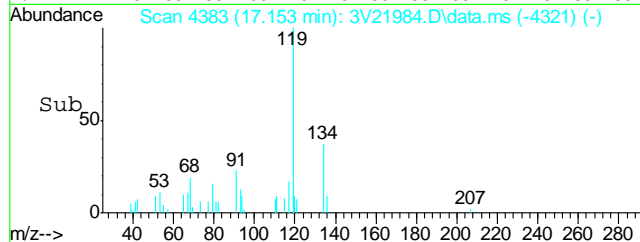
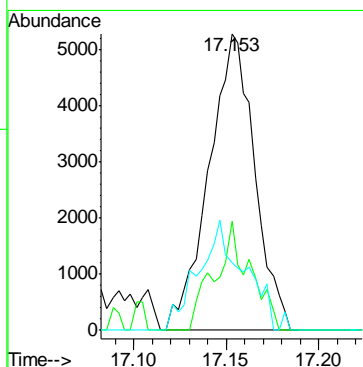
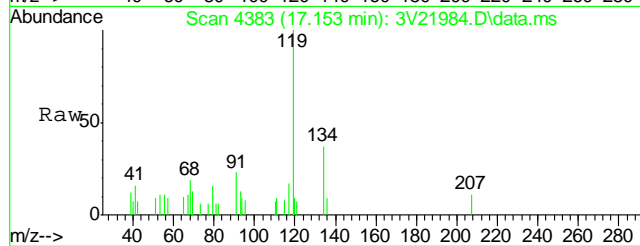
#85
1,4-Dichlorobenzene
Concen: 0.38 ug/l
RT: 17.233 min Scan# 4408
Delta R.T. -0.078 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

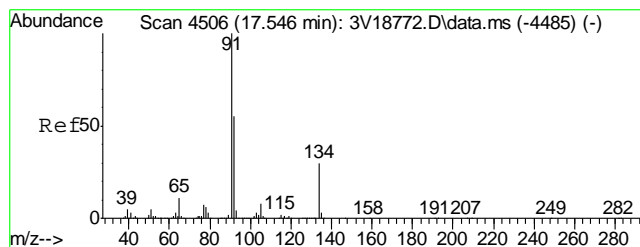
Tgt Ion	Ratio	Lower	Upper
146	100		
111	42.4	29.0	43.6
148	72.2	51.5	77.3



#86
p-Isopropyltoluene
Concen: 0.95 ug/l
RT: 17.153 min Scan# 4383
Delta R.T. -0.001 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

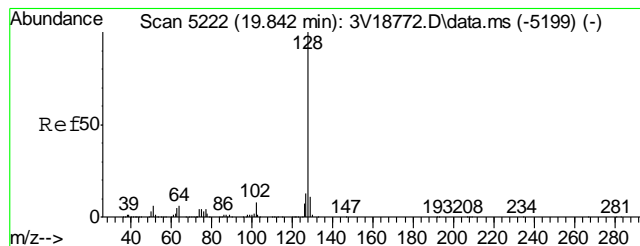
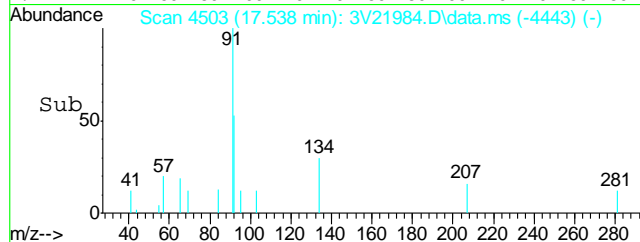
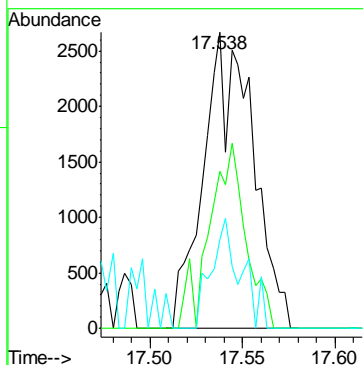
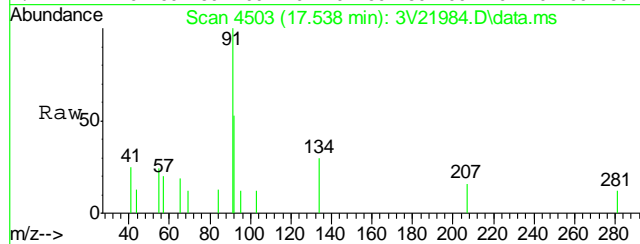
Tgt Ion	Ratio	Lower	Upper
119	100		
134	28.2	22.3	33.5
91	36.5	17.4	26.2





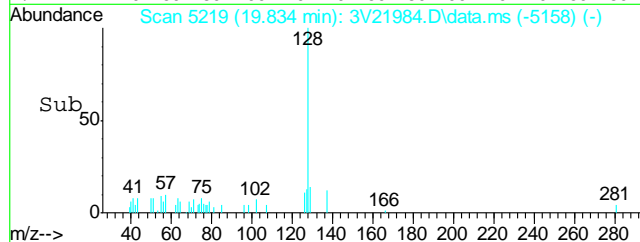
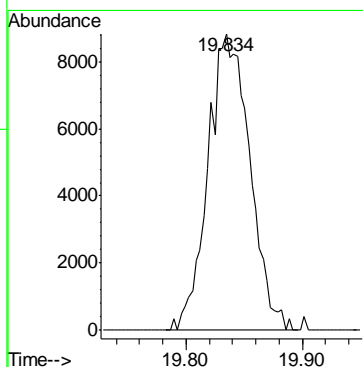
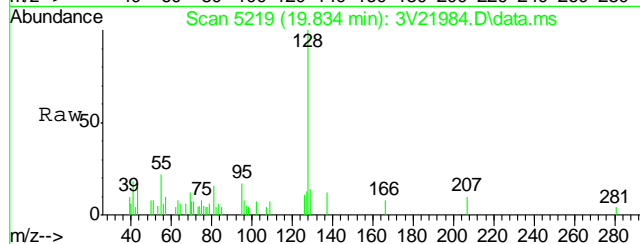
#88
n-Butylbenzene
Concen: 0.57 ug/l
RT: 17.538 min Scan# 4503
Delta R.T. -0.007 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

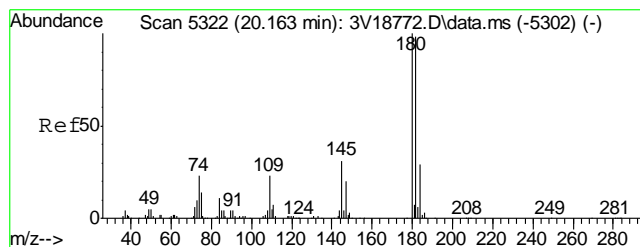
Tgt Ion	Ratio	Lower	Upper
91	100		
92	42.5	43.8	65.8#
134	22.6	23.1	34.7#



#91
Naphthalene
Concen: 5.80 ug/l
RT: 19.834 min Scan# 5219
Delta R.T. -0.004 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

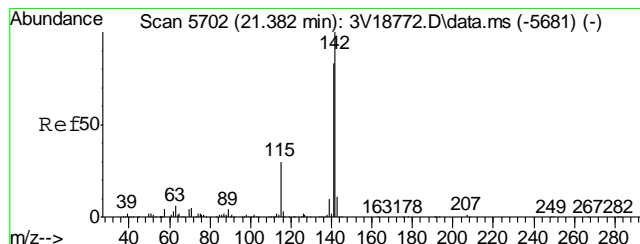
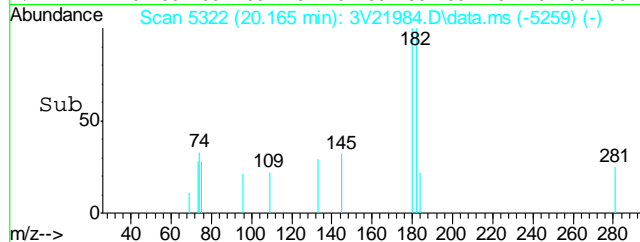
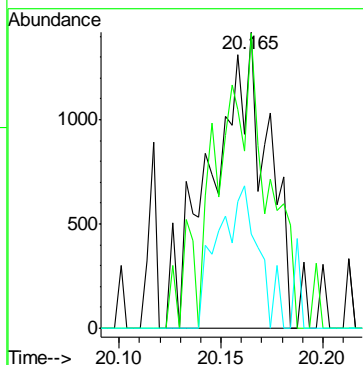
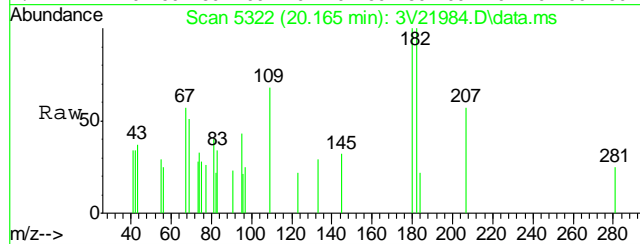
Tgt Ion: 128 Resp: 22111





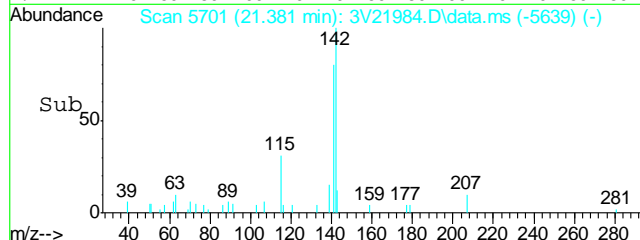
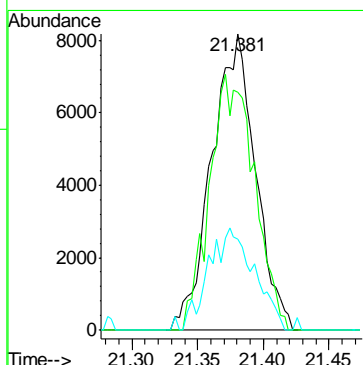
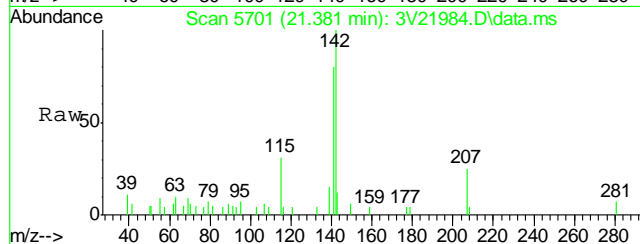
#93
1,2,3-Trichlorobenzene
Concen: 0.94 ug/l
RT: 20.165 min Scan# 5322
Delta R.T. 0.002 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

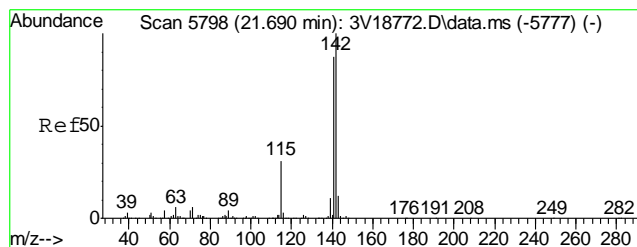
Tgt Ion	Ratio	Lower	Upper
180	100		
182	90.3	76.5	114.7
145	35.1	24.2	36.4



#94
2-Methylnaphthalene
Concen: 6.49 ug/l
RT: 21.381 min Scan# 5701
Delta R.T. -0.001 min
Lab File: 3V21984.D
Acq: 6 Dec 2012 3:20 pm

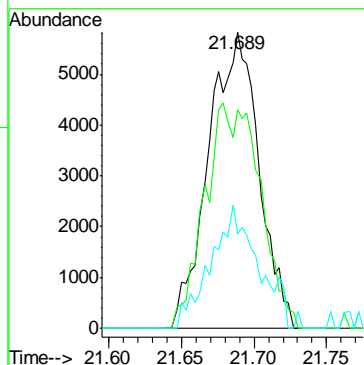
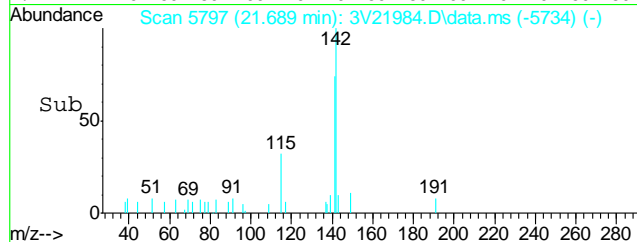
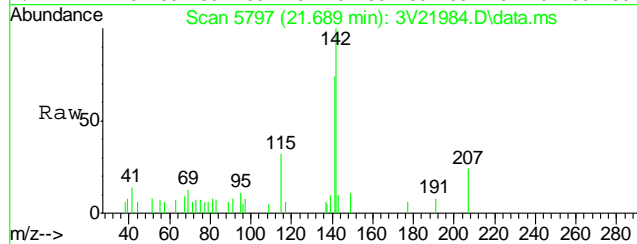
Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.4	68.6	103.0
115	35.8	23.8	35.6#





#95
 1-Methylnaphthalene
 Concen: 5.22 ug/l
 RT: 21.689 min Scan# 5797
 Delta R.T. 0.003 min
 Lab File: 3V21984.D
 Acq: 6 Dec 2012 3:20 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	84.1	70.6	106.0
115	39.0	25.4	38.2#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
 Data File : 3V21977.D
 Acq On : 6 Dec 2012 11:41 am
 Operator : BRETD
 Sample : MB
 Misc : MS5060,V3V1284,5.00,,100,5,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 07 08:18:07 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	11.858	168	134900	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.653	114	239166	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.290	117	253145	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.279	152	133239	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.249	102	19278	58.87	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	117.74%
61) Toluene-d8	14.045	98	314722	51.57	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	103.14%
69) 4-Bromofluorobenzene	16.239	95	108246	43.16	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	86.32%

Target Compounds

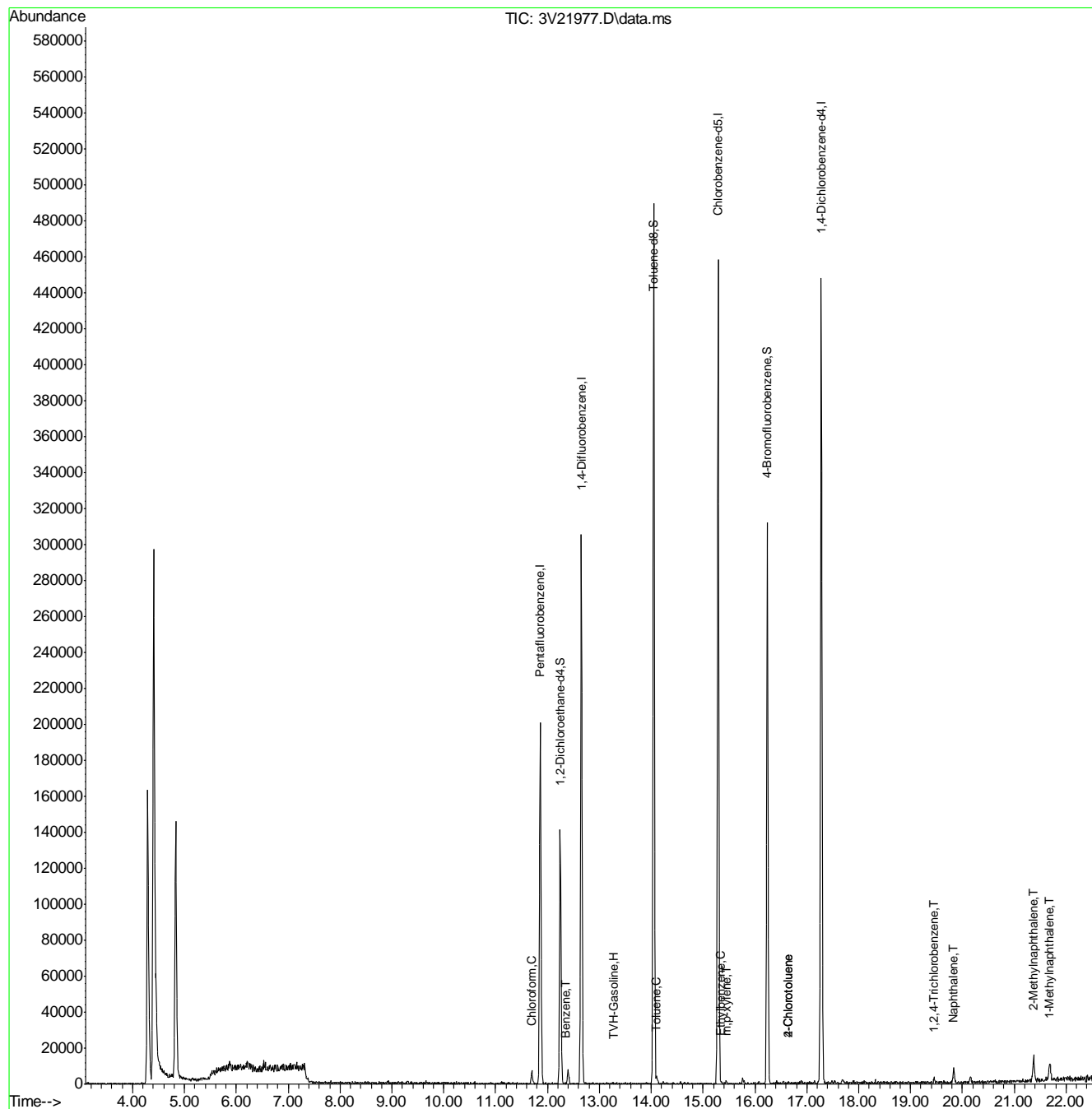
						Qvalue
1) TVH-Gasoline	13.285	TIC	36710m	160.24	ug/l	
29) Chloroform	11.697	83	4791	1.40	ug/l	87
50) Benzene	12.345	78	178	0.02	ug/l	100
62) Toluene	14.106	92	1520	0.27	ug/l	88
66) Ethylbenzene	15.354	91	401	0.04	ug/l	69
72) m,p-xylene	15.457	106	548	0.13	ug/l #	65
78) 2-Chlorotoluene	16.643	91	406	0.05	ug/l	99
79) 4-Chlorotoluene	16.643	91	406	0.06	ug/l	95
90) 1,2,4-Trichlorobenzene	19.453	180	1330	0.50	ug/l #	82
91) Naphthalene	19.832	128	11253	4.73	ug/l	100
94) 2-Methylnaphthalene	21.368	142	10507	4.05	ug/l	95
95) 1-Methylnaphthalene	21.673	142	7775	3.27	ug/l #	92

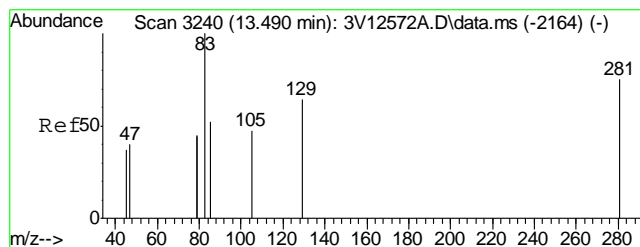
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
Data File : 3V21977.D
Acq On : 6 Dec 2012 11:41 am
Operator : BRETD
Sample : MB
Misc : MS5060,V3V1284,5.00,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

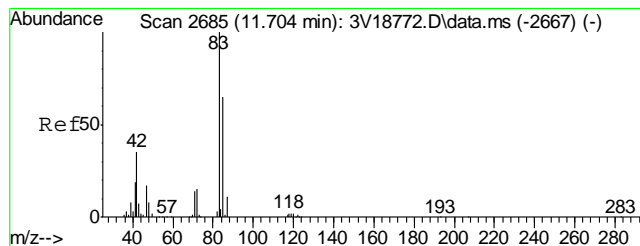
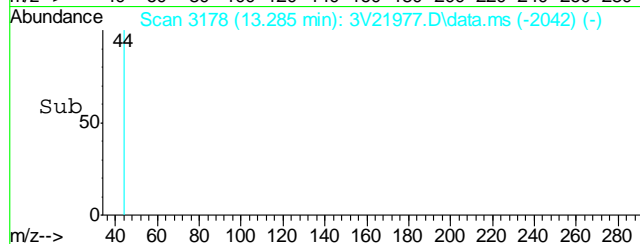
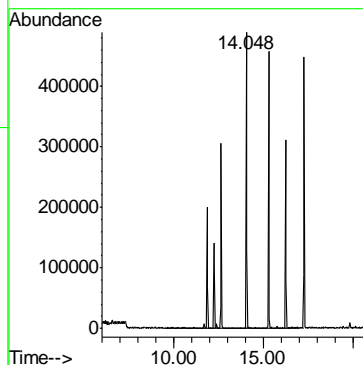
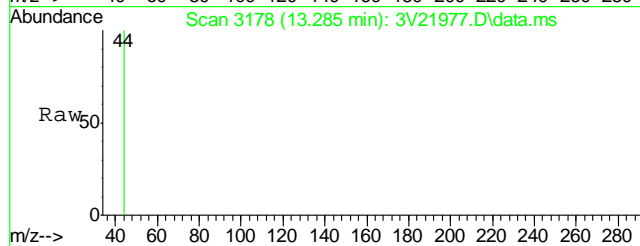
Quant Time: Dec 07 08:18:07 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





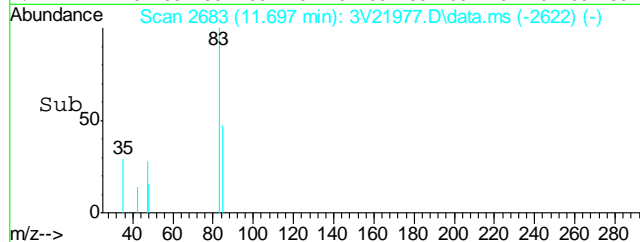
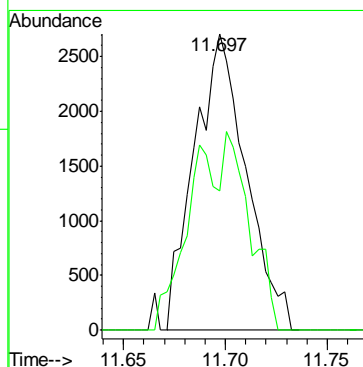
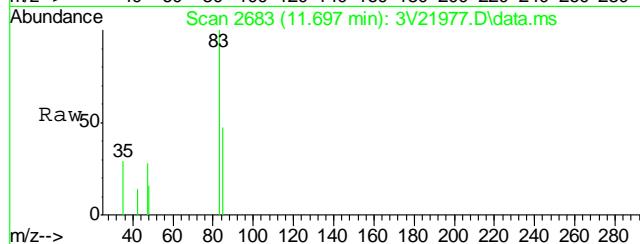
#1
TVH-Gasoline
Concen: 160.24 ug/l m
RT: 13.285 min Scan# 3178
Delta R.T. 0.000 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

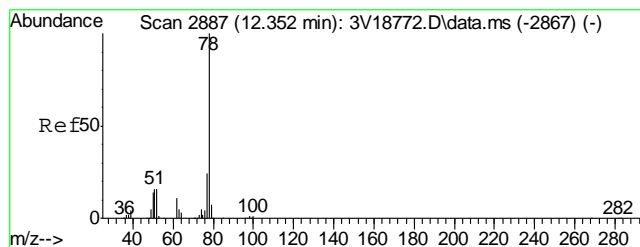
Tgt Ion:TIC Resp: 36710



#29
Chloroform
Concen: 1.40 ug/l
RT: 11.697 min Scan# 2683
Delta R.T. -0.003 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

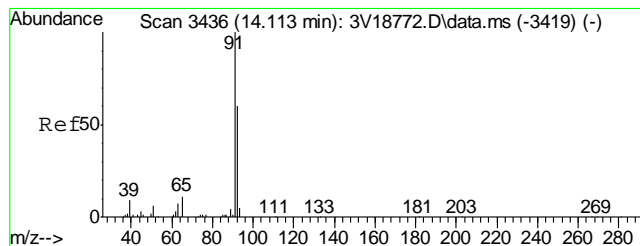
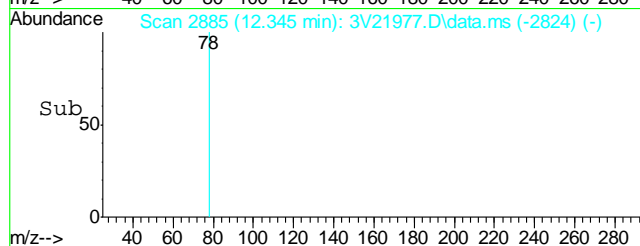
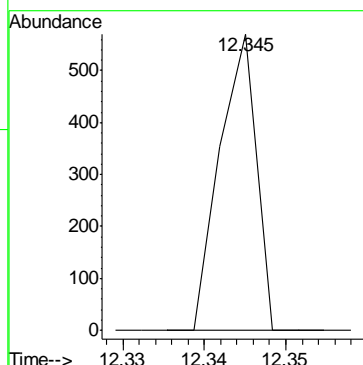
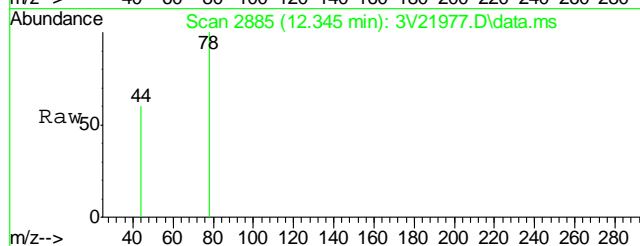
Tgt Ion: 83 Resp: 4791
Ion Ratio Lower Upper
83 100
85 74.8 44.7 84.7





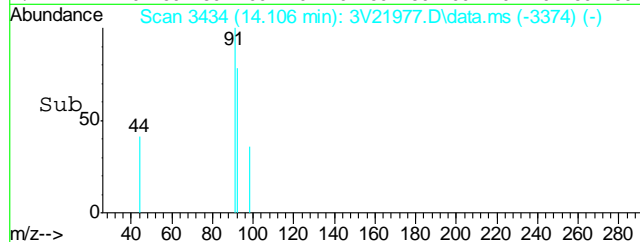
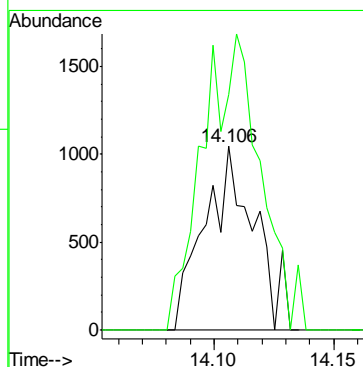
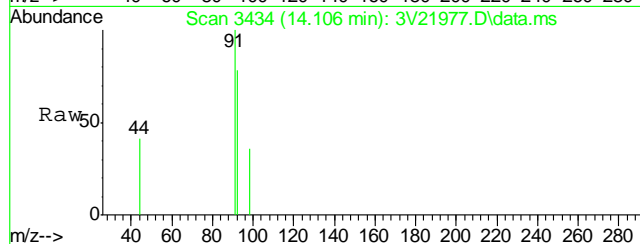
#50
Benzene
Concen: 0.02 ug/l
RT: 12.345 min Scan# 2885
Delta R.T. -0.003 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

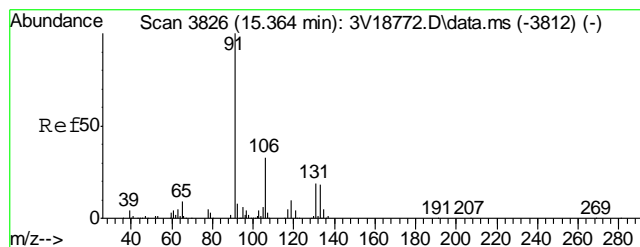
Tgt Ion: 78 Resp: 178



#62
Toluene
Concen: 0.27 ug/l
RT: 14.106 min Scan# 3434
Delta R.T. -0.007 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

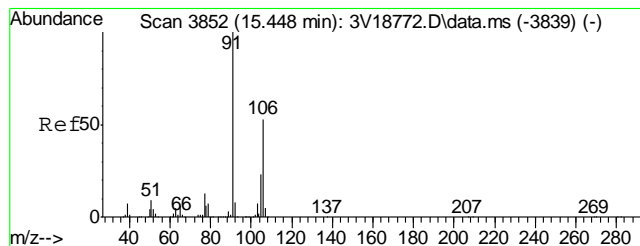
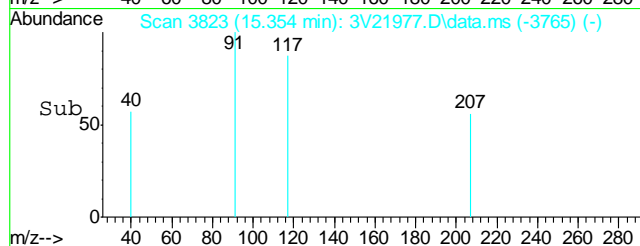
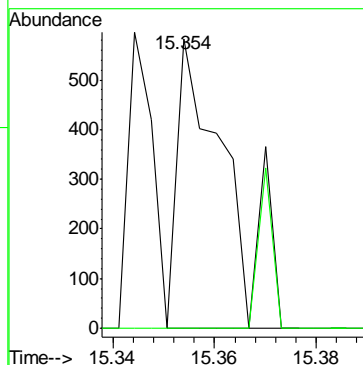
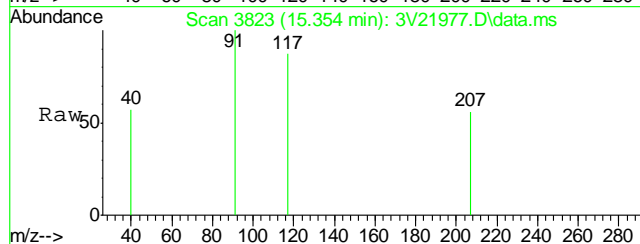
Tgt Ion: 92 Resp: 1520
Ion Ratio Lower Upper
92 100
91 186.2 150.2 190.2





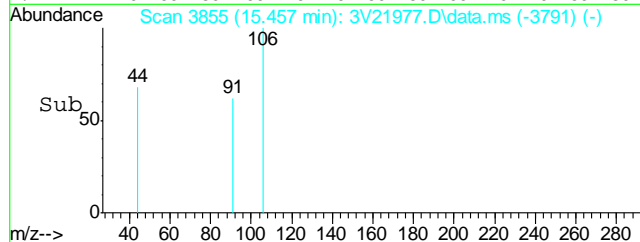
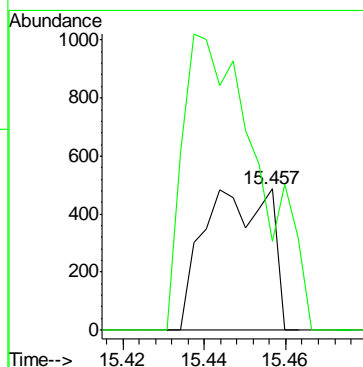
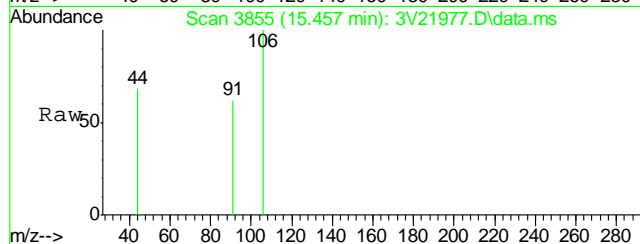
#66
Ethylbenzene
Concen: 0.04 ug/l
RT: 15.354 min Scan# 3823
Delta R.T. -0.013 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

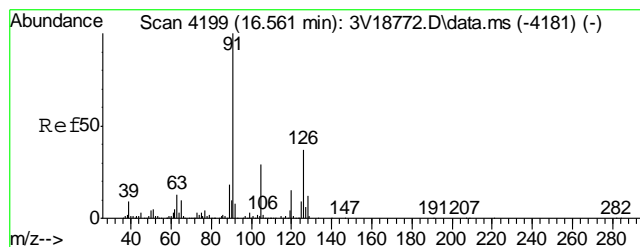
Tgt Ion: 91 Resp: 401
Ion Ratio Lower Upper
91 100
106 15.5 13.2 53.2



#72
m,p-xylene
Concen: 0.13 ug/l
RT: 15.457 min Scan# 3855
Delta R.T. 0.006 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

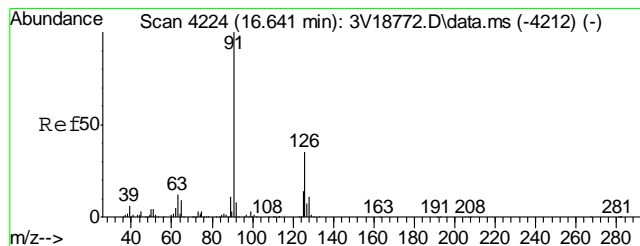
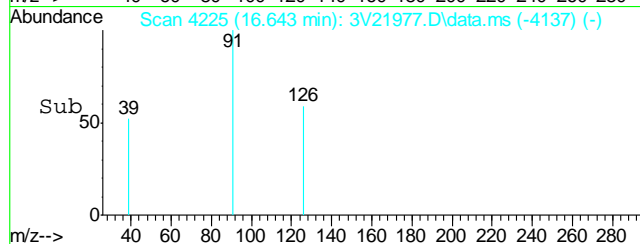
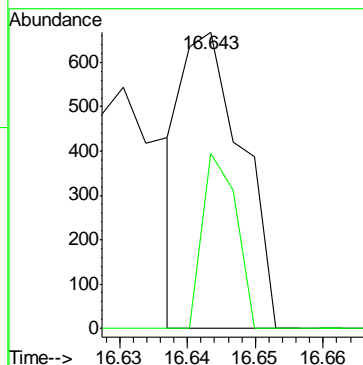
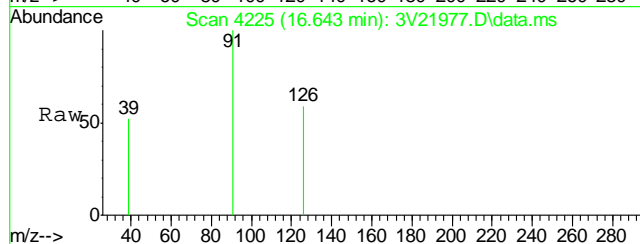
Tgt Ion: 106 Resp: 548
Ion Ratio Lower Upper
106 100
91 238.5 168.1 208.1#





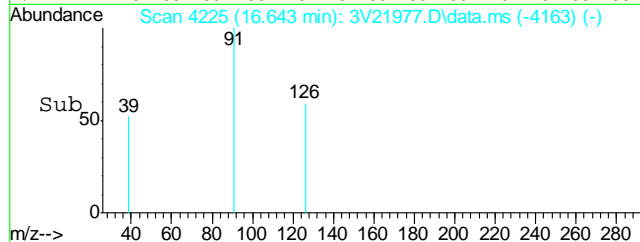
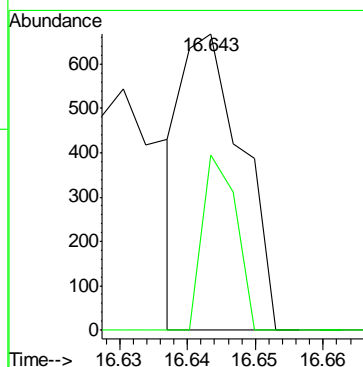
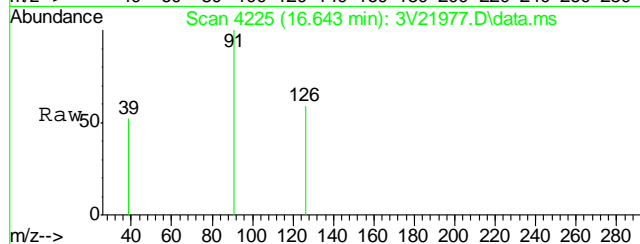
#78
2-Chlorotoluene
Concen: 0.05 ug/l
RT: 16.643 min Scan# 4225
Delta R.T. 0.083 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

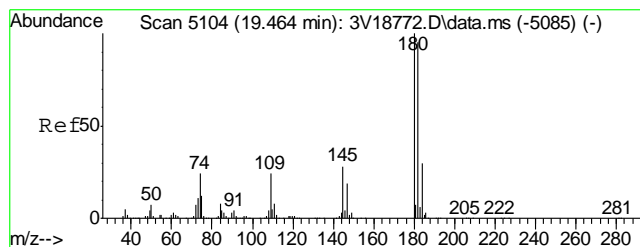
Tgt Ion: 91 Resp: 406
Ion Ratio Lower Upper
91 100
126 33.5 26.6 39.8



#79
4-Chlorotoluene
Concen: 0.06 ug/l
RT: 16.643 min Scan# 4225
Delta R.T. -0.000 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

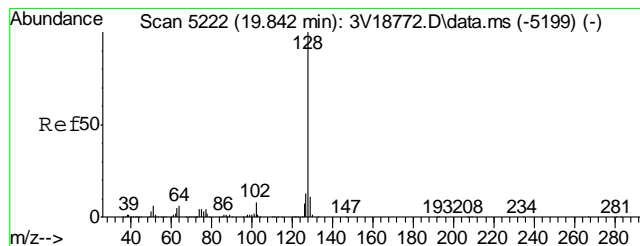
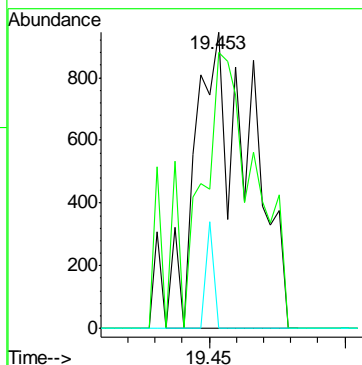
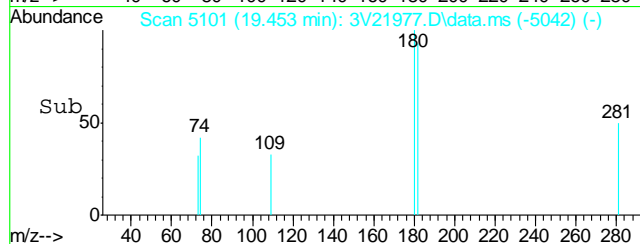
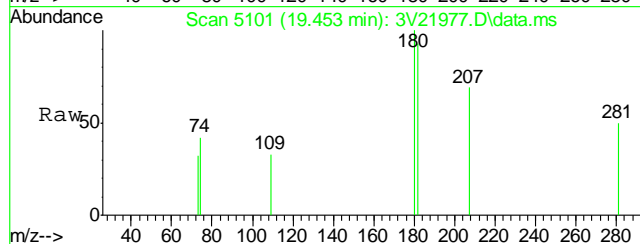
Tgt Ion: 91 Resp: 406
Ion Ratio Lower Upper
91 100
126 33.5 29.1 43.7





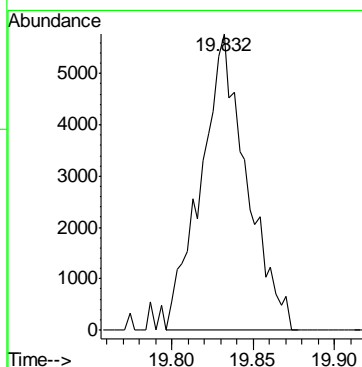
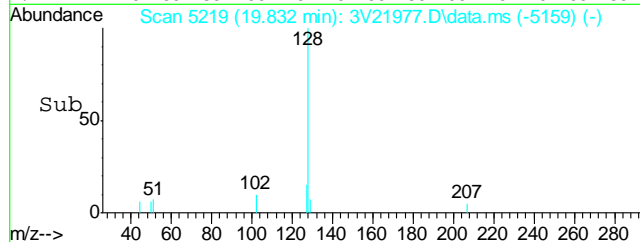
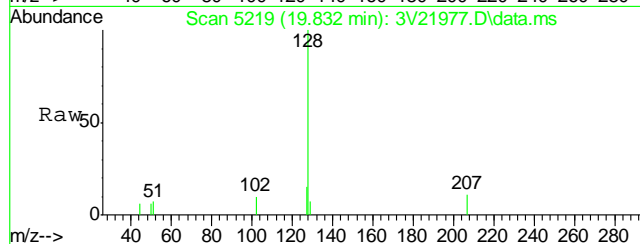
#90
1,2,4-Trichlorobenzene
Concen: 0.50 ug/l
RT: 19.453 min Scan# 5101
Delta R.T. -0.010 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

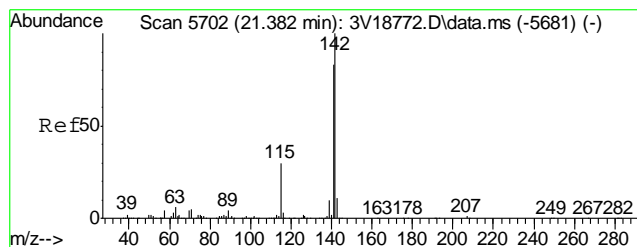
Tgt Ion:	180	Resp:	1330
Ion Ratio	Lower	Upper	
180	100		
182	85.9	76.4	114.6
145	5.0	22.9	34.3#



#91
Naphthalene
Concen: 4.73 ug/l
RT: 19.832 min Scan# 5219
Delta R.T. -0.006 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

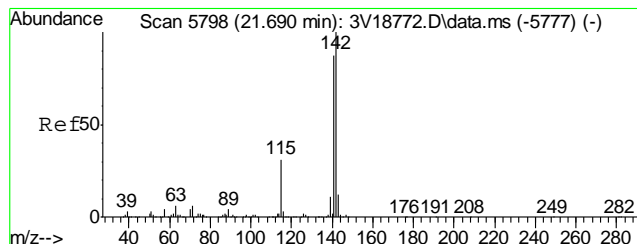
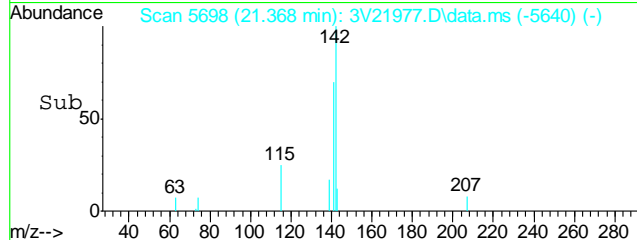
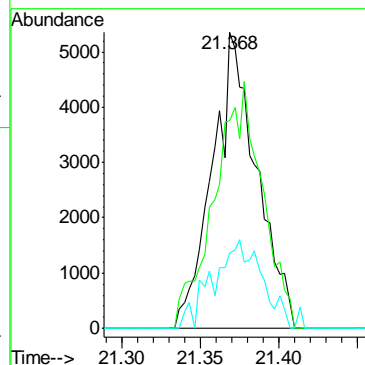
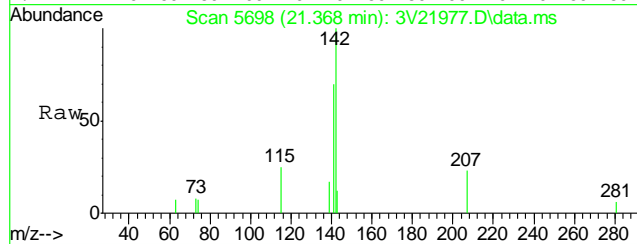
Tgt Ion:	128	Resp:	11253
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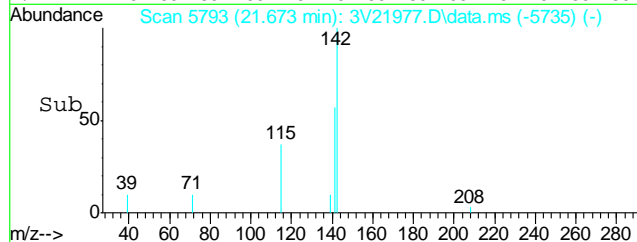
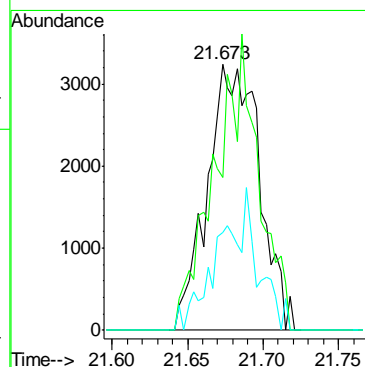
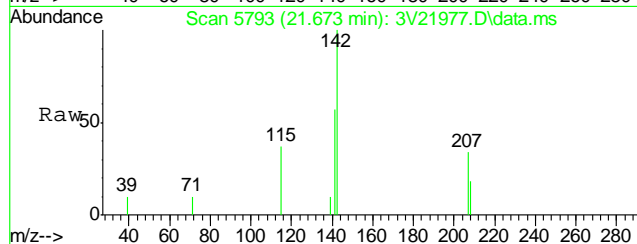
#94
2-Methylnaphthalene
Concen: 4.05 ug/l
RT: 21.368 min Scan# 5698
Delta R.T. -0.013 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

Tgt Ion:	142	Resp:	10507
Ion Ratio	Lower	Upper	
142	100		
141	89.7	68.6	103.0
115	25.8	23.8	35.6



#95
1-Methylnaphthalene
Concen: 3.27 ug/l
RT: 21.673 min Scan# 5793
Delta R.T. -0.013 min
Lab File: 3V21977.D
Acq: 6 Dec 2012 11:41 am

Tgt Ion:	142	Resp:	7775
Ion Ratio	Lower	Upper	
142	100		
141	94.0	70.6	106.0
115	39.3	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: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

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

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

D41448-1

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

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	88% 10-159%
321-60-8	2-Fluorobiphenyl	79% 19-131%
1718-51-0	Terphenyl-d14	91% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

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

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41448-1

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

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

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

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41448-1

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

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

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
 Data File : 3g12515.D
 Acq On : 10 Dec 2012 2:38 pm
 Operator : DONC
 Sample : D41448-1
 Misc : OP7075,E3G593,30.02,,,1,1
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 10 14:58:19 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	5.671	136	139161	4.0000	ug/mL	-0.01
6) Acenaphthene-d10	7.385	164	90213	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.859	188	152658	4.0000	ug/mL	-0.02
19) Chrysene-d12	11.496	240	102798	4.0000	ug/mL	-0.02
24) Perylene-d12	12.873	264	83929	4.0000	ug/mL	-0.02

System Monitoring Compounds

2) Nitrobenzene-d5	4.985	82	367269	26.4018	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	52.80%		
7) 2-Fluorobiphenyl	6.723	172	1027104	24.9801	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	49.96%		
21) Terphenyl-d14	10.450	244	523060	34.5676	ug/mL	-0.02
Spiked Amount 50.000	Range 25 - 135		Recovery =	69.14%		

Target Compounds

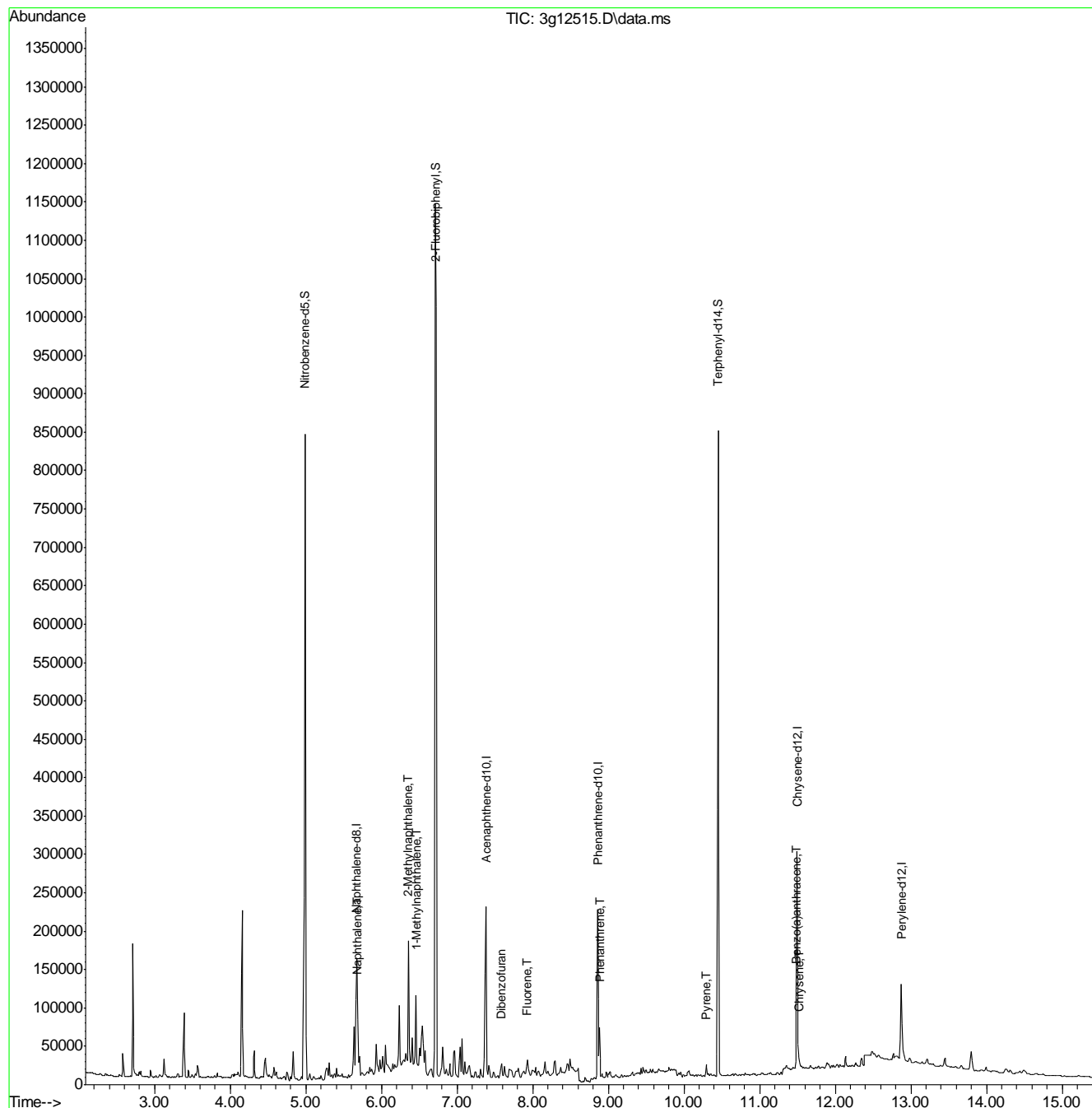
						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.683	128	44924	1.0670	ug/mL	94
8) 2-Methylnaphthalene	6.356	142	63460	1.9679	ug/mL	98
9) 1-Methylnaphthalene	6.456	142	34385	1.0759	ug/mL	94
10) Acenaphthylene	7.243	152	1350	N.D.		
11) Acenaphthene	7.408	154	778	Below Cal	#	1
12) Dibenzofuran	7.586	168	7529	0.1443	ug/mL	93
13) Fluorene	7.928	166	11166	0.2762	ug/mL#	90
14) Diphenylamine	0.000	169	0	N.D.	d	
16) Phenanthrene	8.883	178	39297	0.6274	ug/mL	97
17) Anthracene	0.000	178	0	N.D.	d	
18) Fluoranthene	0.000	202	0	N.D.	d	
20) Pyrene	10.292	202	8564	0.1484	ug/mL#	45
22) Benzo(a)anthracene	11.483	228	3742	0.0758	ug/mL#	76
23) Chrysene	11.523	228	9657	0.1975	ug/mL#	76
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d	
27) Benzo(a)pyrene	0.000	252	0	N.D.	d	
28) Indeno(1,2,3-cd)pyrene	14.093	276	1306	N.D.		
29) Dibenz(a,h)anthracene	14.103	278	1086	N.D.		
30) Benzo(g,h,i)perylene	14.093	276	1277	N.D.		

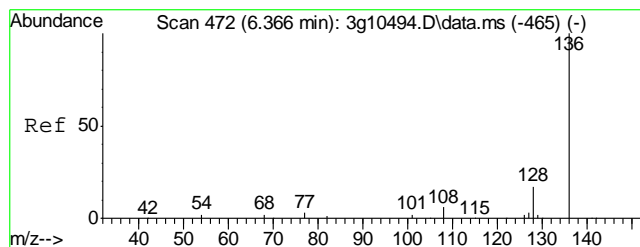
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
Data File : 3g12515.D
Acq On : 10 Dec 2012 2:38 pm
Operator : DONC
Sample : D41448-1
Misc : OP7075,E3G593,30.02,,,1,1
ALS Vial : 11 Sample Multiplier: 1

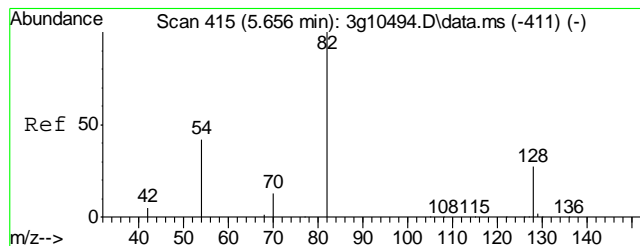
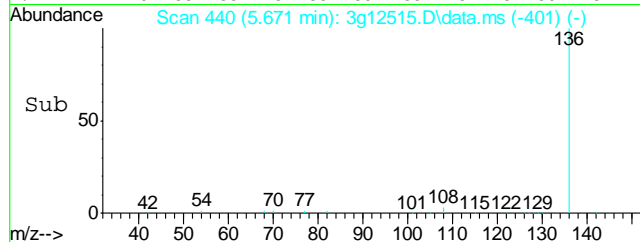
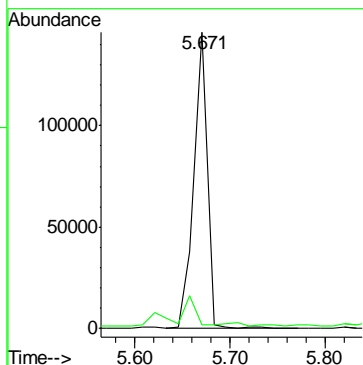
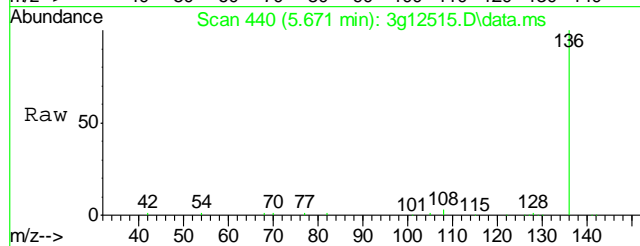
Quant Time: Dec 10 14:58:19 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





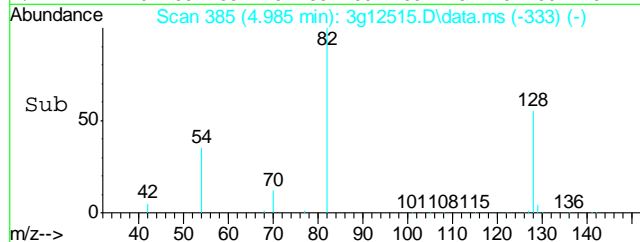
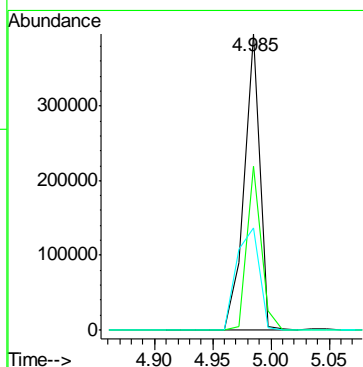
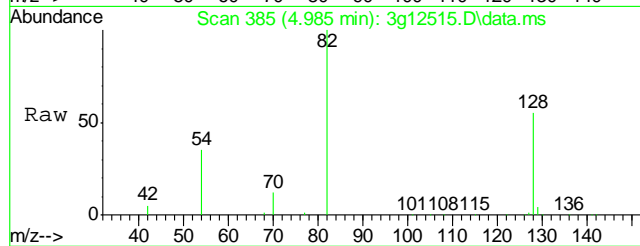
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.671 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

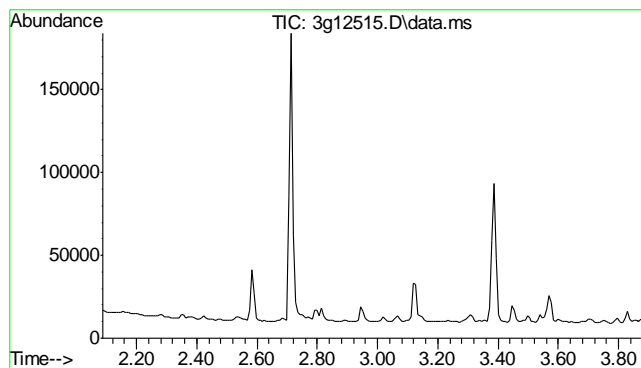
Tgt Ion	Ratio	Lower	Upper
136	100		
68	15.9	0.0	28.4



#2
Nitrobenzene-d5
Concen: 26.4018 ug/mL
RT: 4.985 min Scan# 385
Delta R.T. -0.011 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

Tgt Ion	Ratio	Lower	Upper
82	100		
128	50.7	31.8	71.8
54	50.6	29.2	69.2

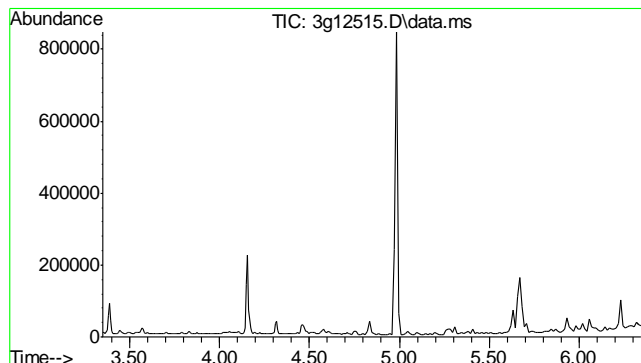
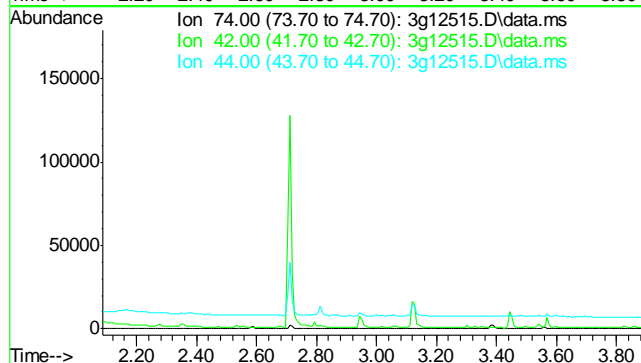




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.38 min

Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

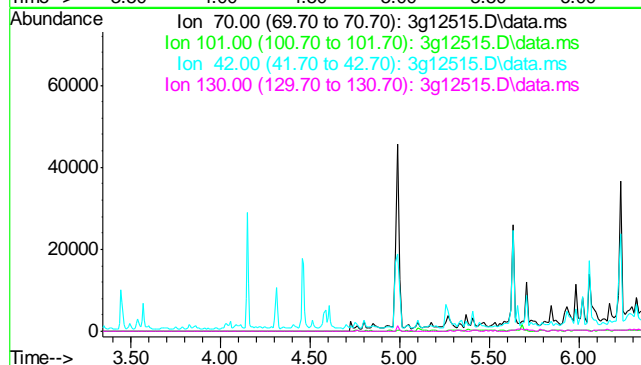
Tgt Ion	Exp Ratio
74	100
42	72.5
44	4.1

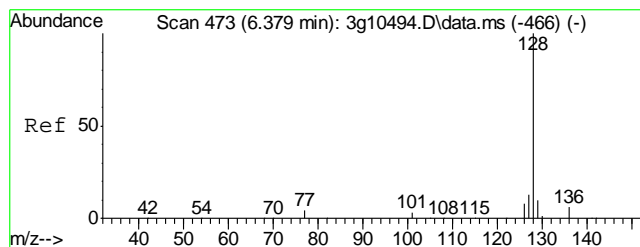


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

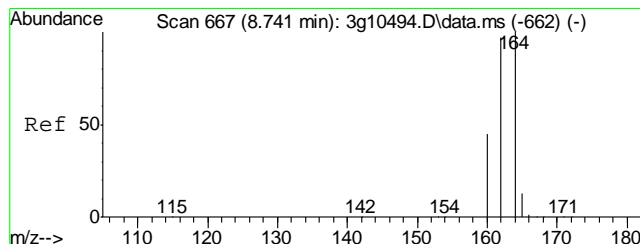
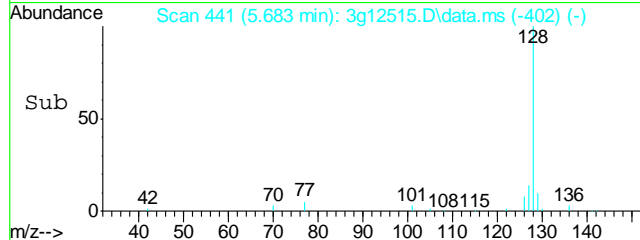
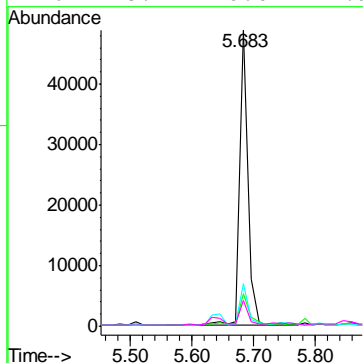
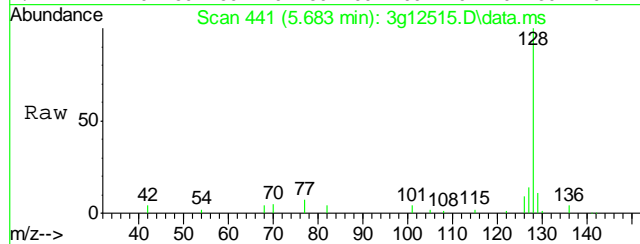
Tgt Ion	Exp Ratio
70	100
101	12.2
42	67.9
130	33.2





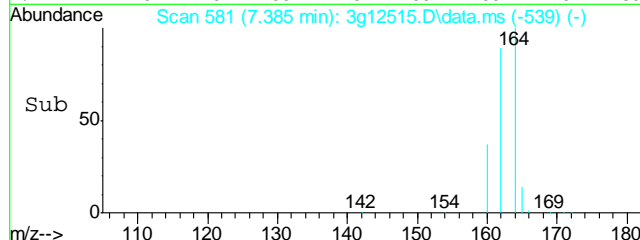
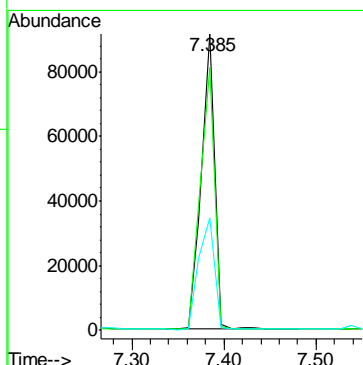
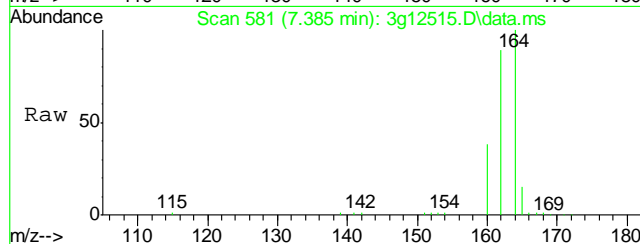
#5
Naphthalene
Concen: 1.0670 ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

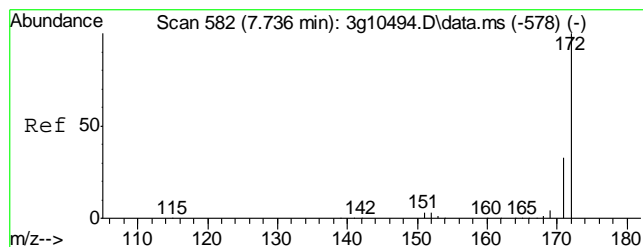
Tgt Ion	Ratio	Lower	Upper
128	100		
129	15.4	0.0	30.7
127	14.2	0.0	33.2
126	8.7	0.0	27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

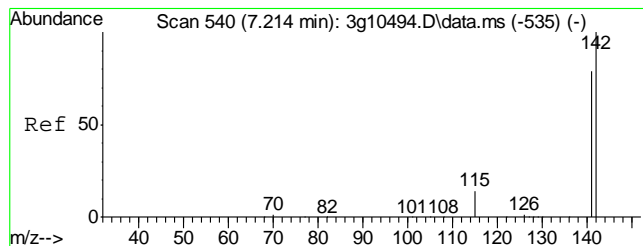
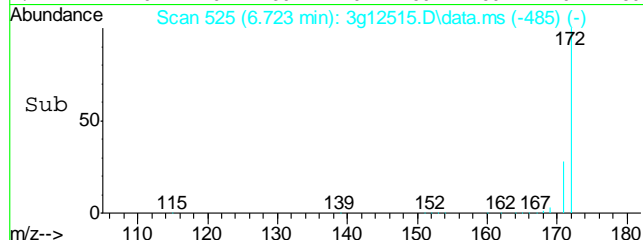
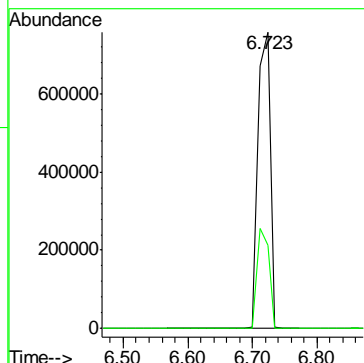
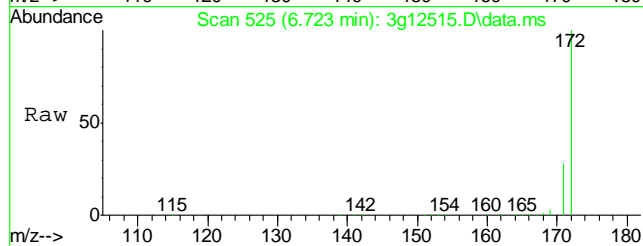
Tgt Ion	Ratio	Lower	Upper
164	100		
162	95.3	78.0	118.0
160	45.3	27.3	67.3





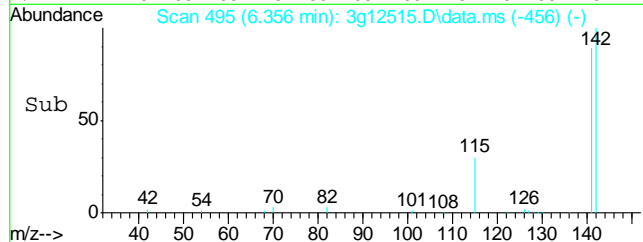
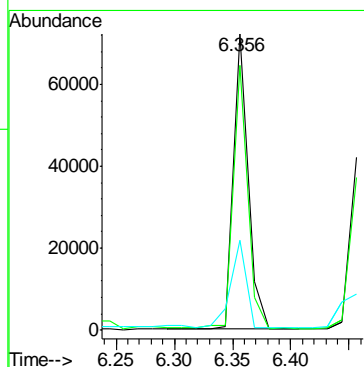
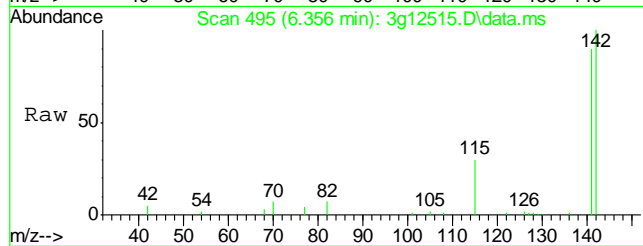
#7
2-Fluorobiphenyl
Concen: 24.9801 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

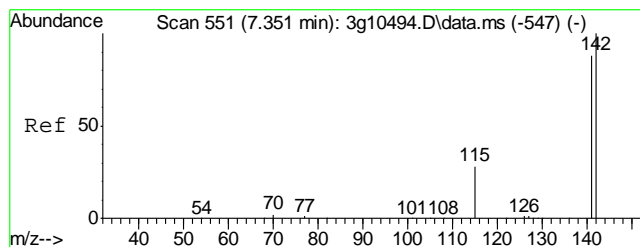
Tgt Ion:172 Resp: 1027104
Ion Ratio Lower Upper
172 100
171 32.5 13.7 53.7



#8
2-Methylnaphthalene
Concen: 1.9679 ug/mL
RT: 6.356 min Scan# 495
Delta R.T. -0.011 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

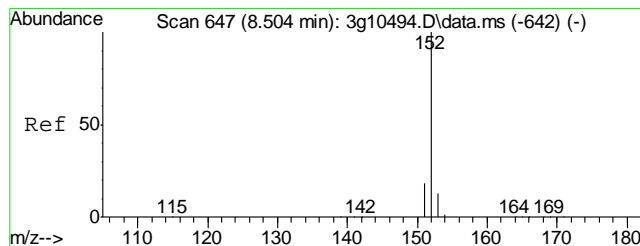
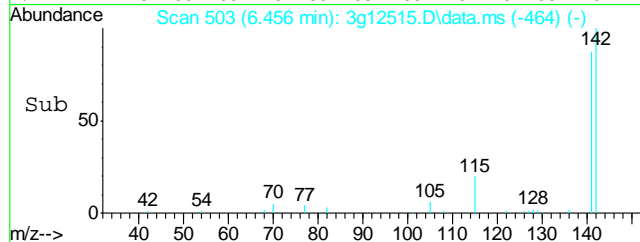
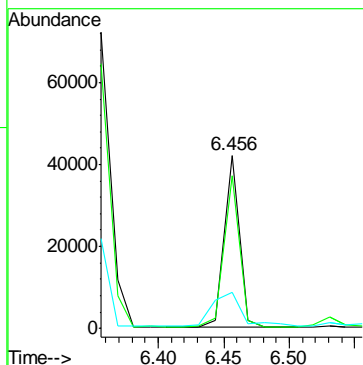
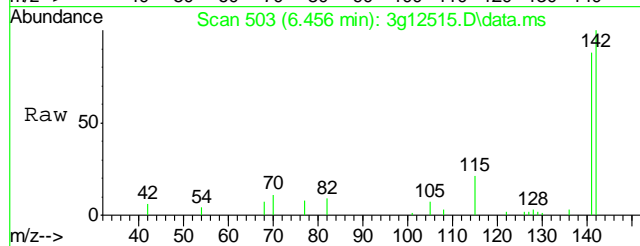
Tgt Ion:142 Resp: 63460
Ion Ratio Lower Upper
142 100
141 88.2 65.6 105.6
115 31.5 12.2 52.2





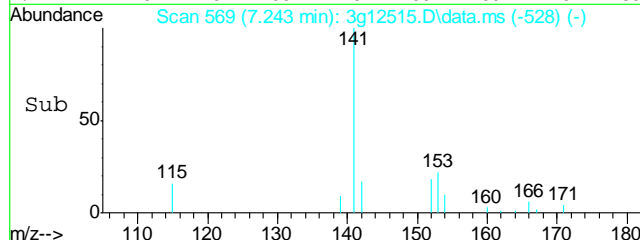
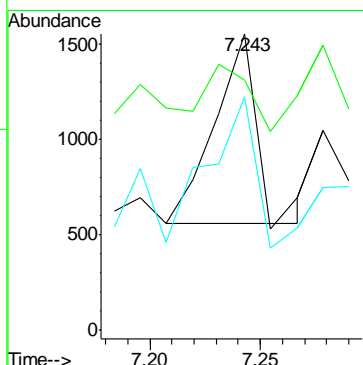
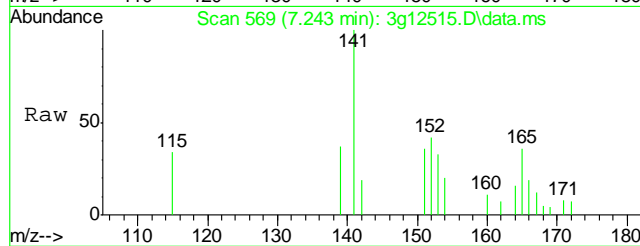
#9
1-Methylnaphthalene
Concen: 1.0759 ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

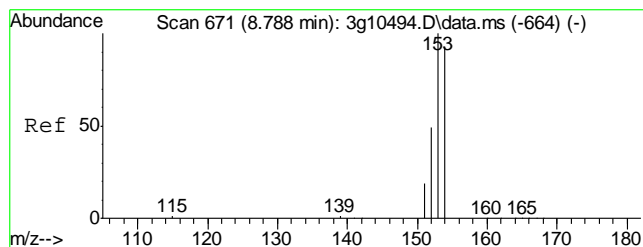
Tgt Ion	Ratio	Lower	Upper
142	100		
141	89.8	67.0	107.0
115	37.4	9.3	49.3



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.243 min Scan# 569
Delta R.T. -0.016 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

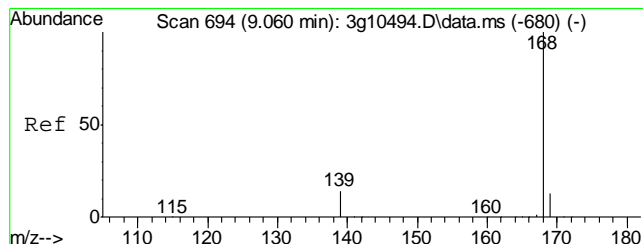
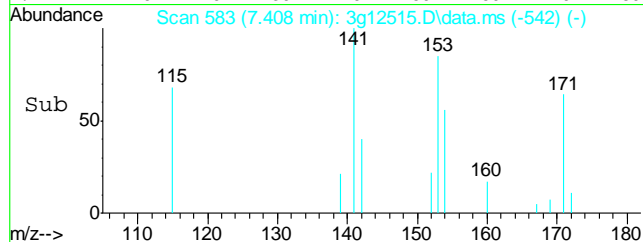
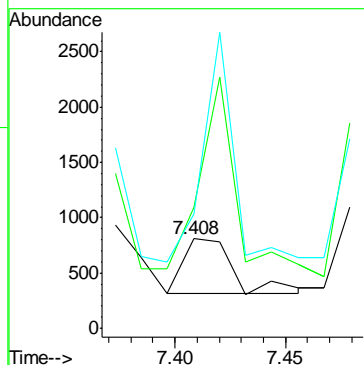
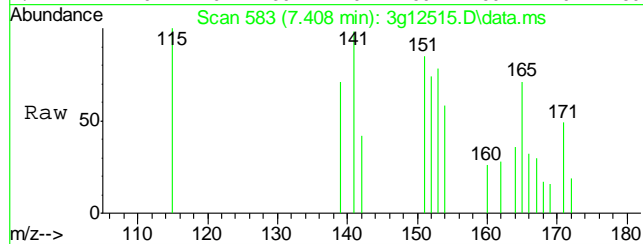
Tgt Ion	Ratio	Lower	Upper
152	100		
151	0.0	0.0	39.5
153	85.9	0.0	33.0#





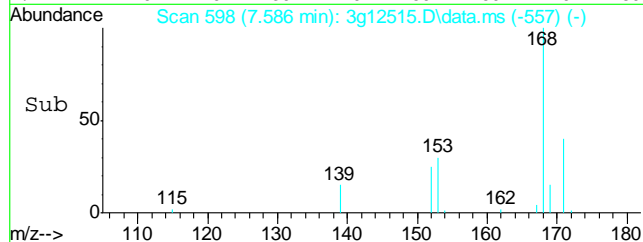
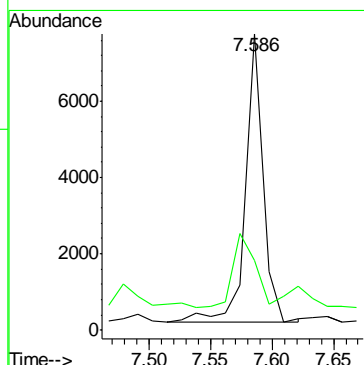
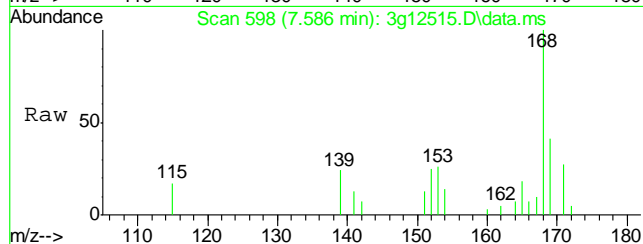
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.408 min Scan# 583
Delta R.T. -0.016 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

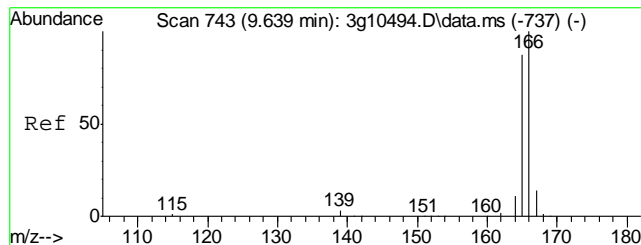
Tgt Ion	Ratio	Lower	Upper
154	100		
153	258.1	84.7	124.7#
152	274.2	30.2	70.2#



#12
Dibenzofuran
Concen: 0.1443 ug/mL
RT: 7.586 min Scan# 598
Delta R.T. -0.016 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

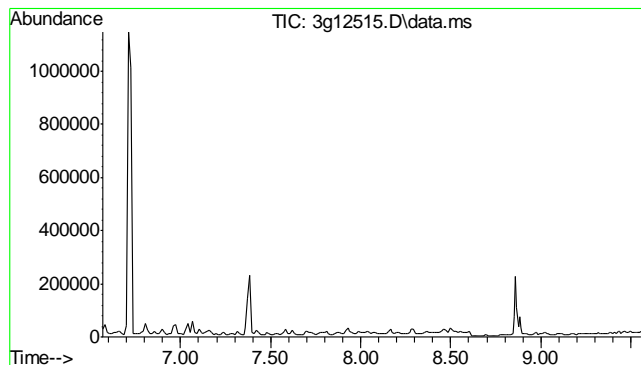
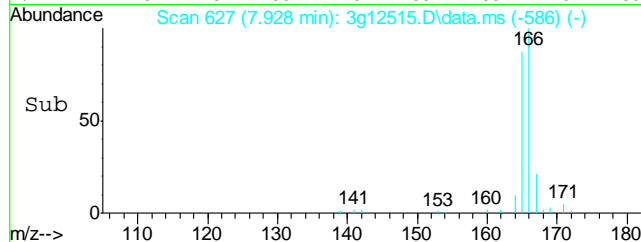
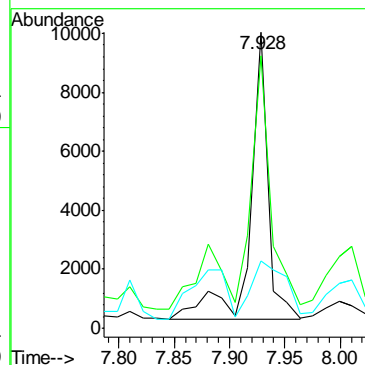
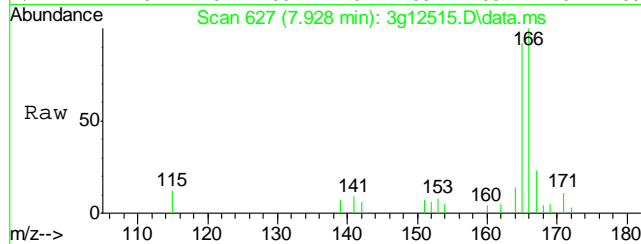
Tgt Ion	Ratio	Lower	Upper
168	100		
139	36.0	12.0	52.0





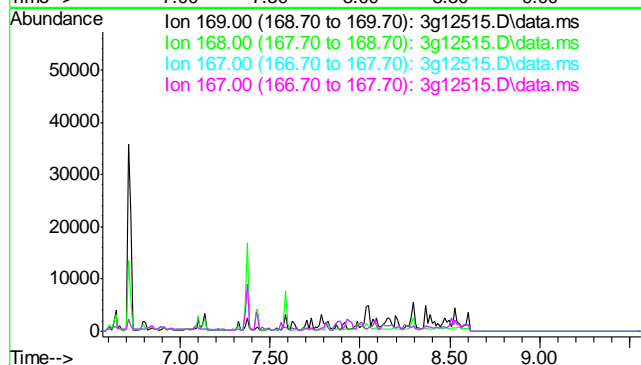
#13
Fluorene
Concen: 0.2762 ug/mL
RT: 7.928 min Scan# 627
Delta R.T. -0.016 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

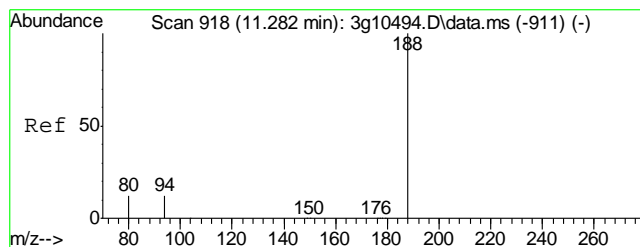
Tgt Ion: 166	Resp: 11166
Ion Ratio	Lower Upper
166	100
165	88.0 70.1 110.1
167	38.0 0.0 33.4



#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

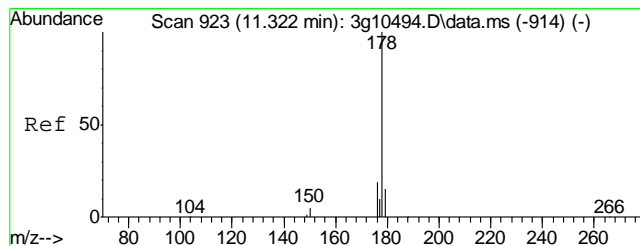
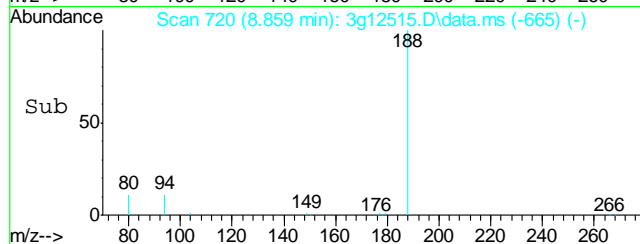
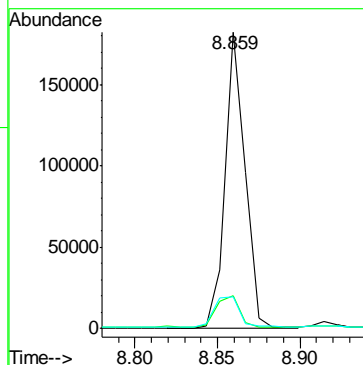
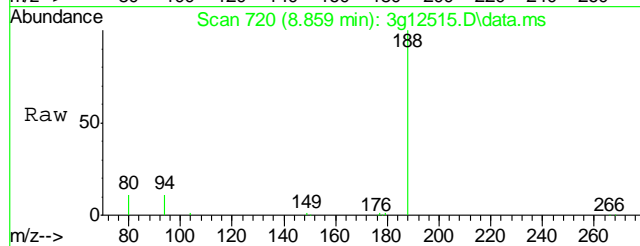
Tgt Ion: 169	
Sig	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





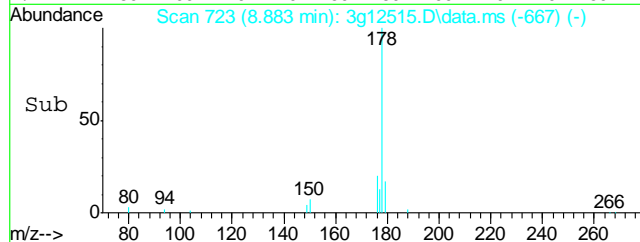
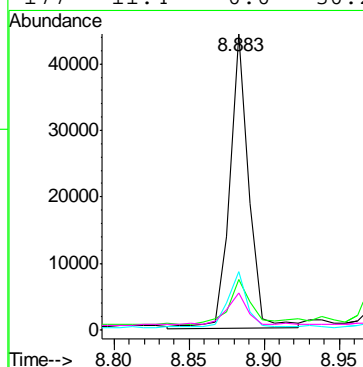
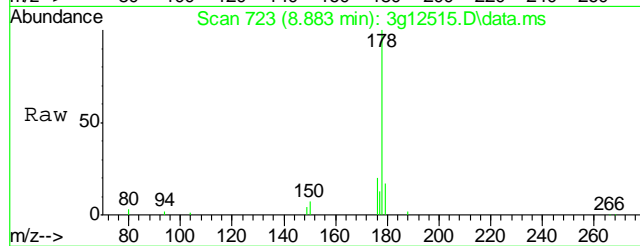
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.859 min Scan# 720
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

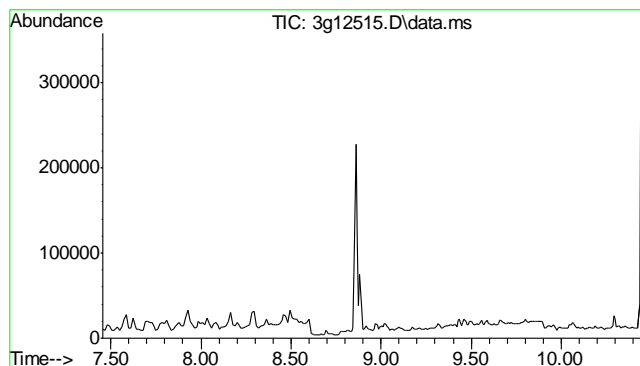
Tgt Ion:188	Resp:	152658
Ion Ratio	Lower	Upper
188 100		
94 12.1	0.0	33.4
80 13.2	0.0	28.9



#16
Phenanthrene
Concen: 0.6274 ug/mL
RT: 8.883 min Scan# 723
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

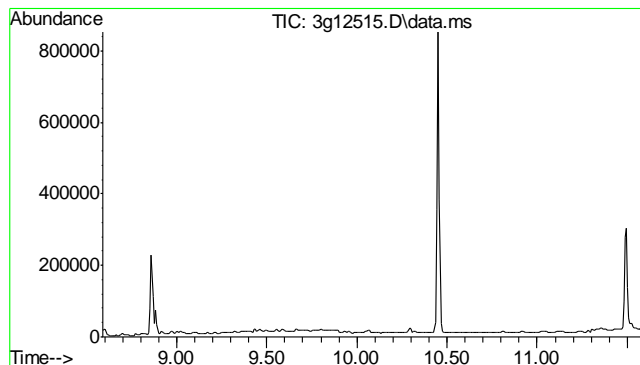
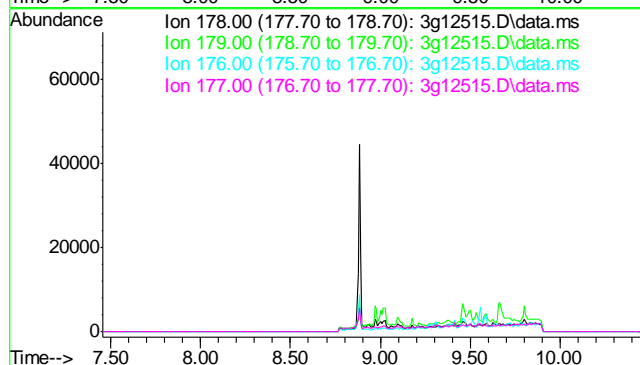
Tgt Ion:178	Resp:	39297
Ion Ratio	Lower	Upper
178 100		
179 17.4	0.0	35.3
176 18.7	0.0	38.6
177 11.4	0.0	30.2





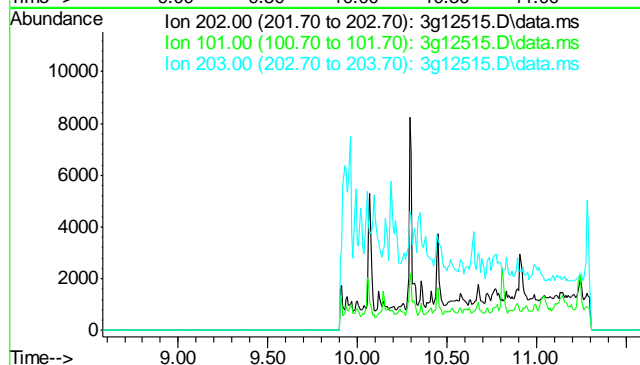
#17
 Anthracene
 Concen: N.D. ug/mL
 Expected RT: 8.95 min
 Lab File: 3g12515.D
 Acq: 10 Dec 12 2:38 pm

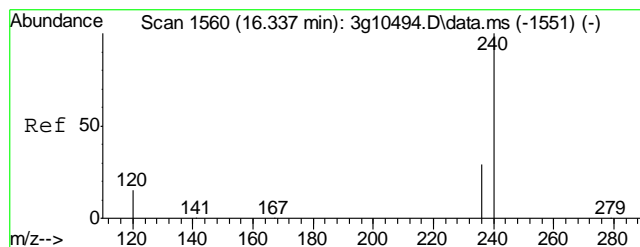
Tgt Ion	Exp Ratio
178	100
179	15.1
176	18.2
177	8.8



#18
 Fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 10.08 min
 Lab File: 3g12515.D
 Acq: 10 Dec 12 2:38 pm

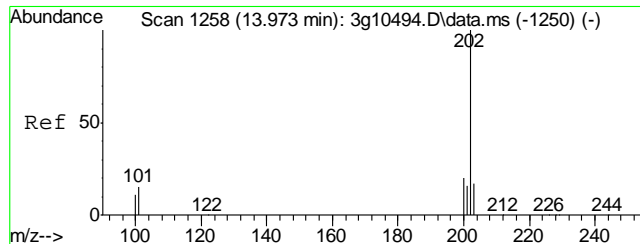
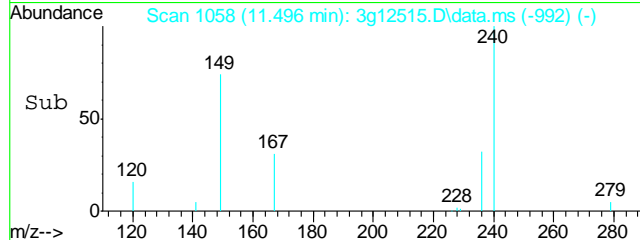
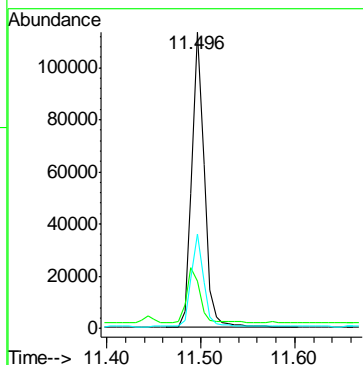
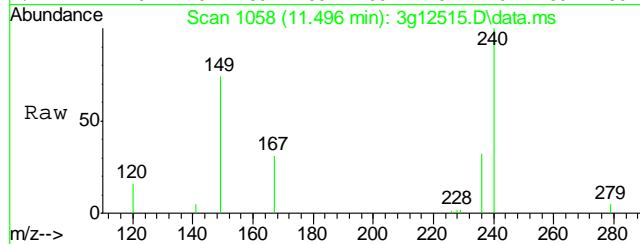
Tgt Ion	Exp Ratio
202	100
101	12.5
203	17.3





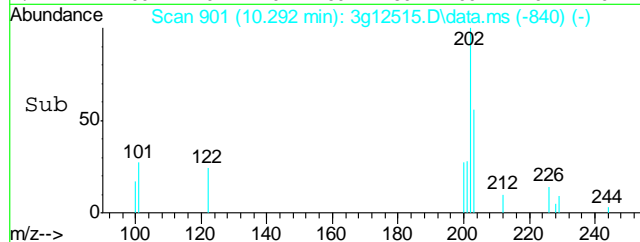
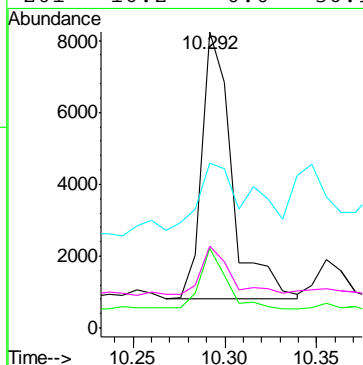
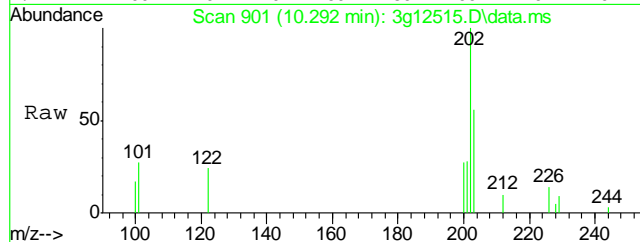
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.496 min Scan# 1058
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

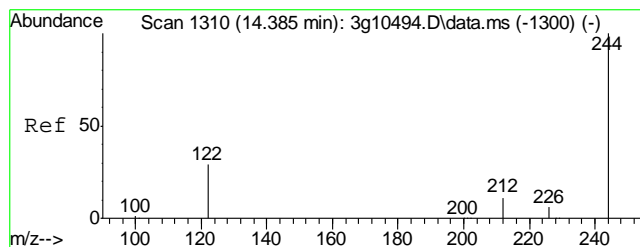
Tgt Ion:	240	Resp:	102798
Ion Ratio	Lower	Upper	
240	100		
120	20.4	0.0	39.7
236	30.9	11.1	51.1



#20
Pyrene
Concen: 0.1484 ug/mL
RT: 10.292 min Scan# 901
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

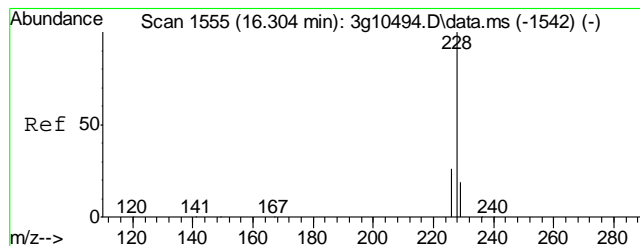
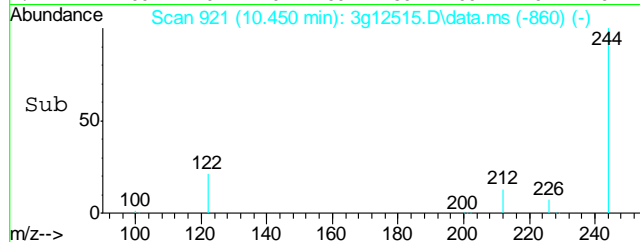
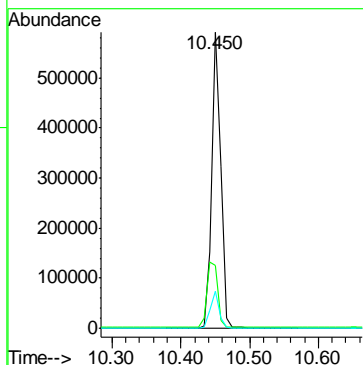
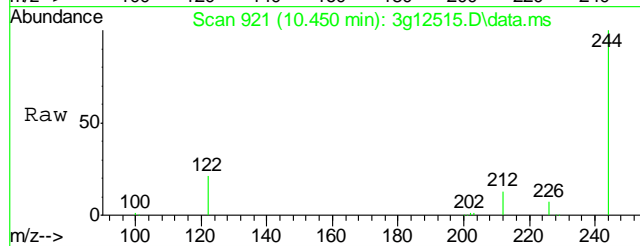
Tgt Ion:	202	Resp:	8564
Ion Ratio	Lower	Upper	
202	100		
200	20.2	0.7	40.7
203	92.4	0.0	37.8#
201	16.2	0.0	36.9





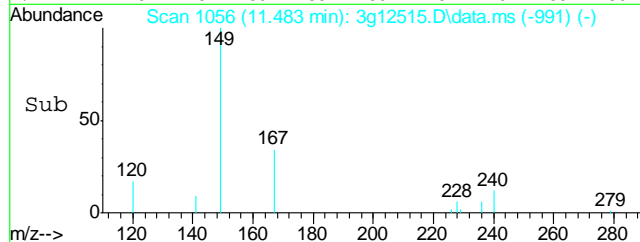
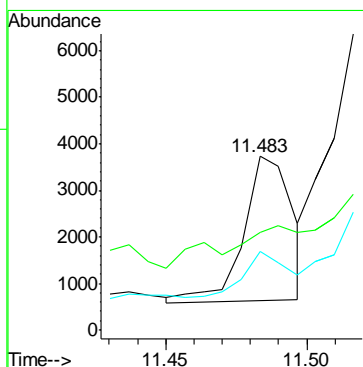
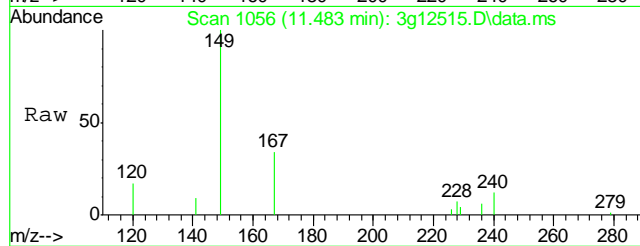
#21
Terphenyl-d14
Concen: 34.5676 ug/mL
RT: 10.450 min Scan# 921
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

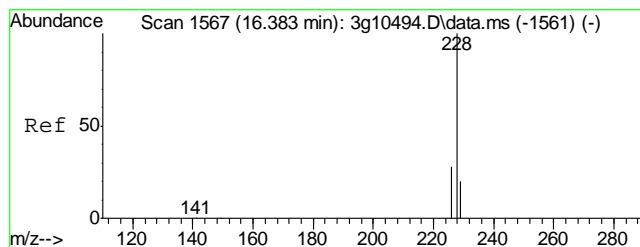
Tgt Ion:	244	Resp:	523060
Ion Ratio	Lower	Upper	
244	100		
122	26.5	6.8	46.8
212	12.3	0.0	32.3



#22
Benzo(a)anthracene
Concen: 0.0758 ug/mL
RT: 11.483 min Scan# 1056
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

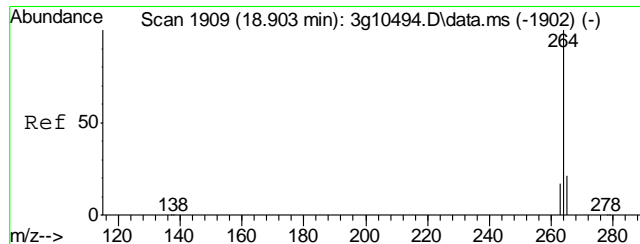
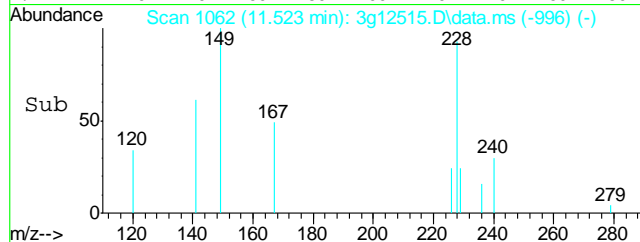
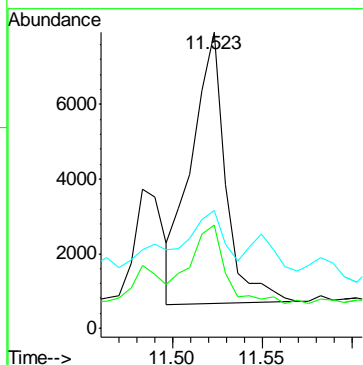
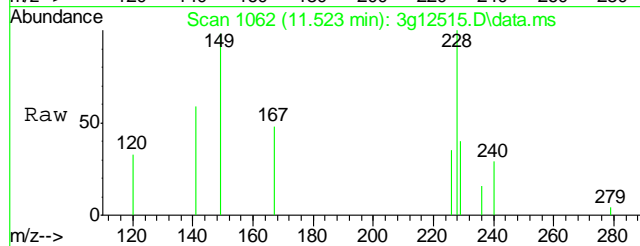
Tgt Ion:	228	Resp:	3742
Ion Ratio	Lower	Upper	
228	100		
229	0.0	0.0	39.4
226	32.1	6.8	46.8





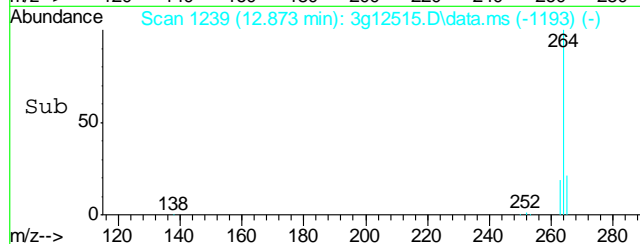
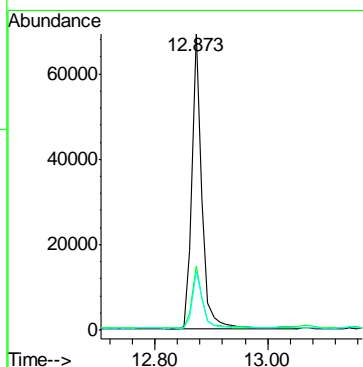
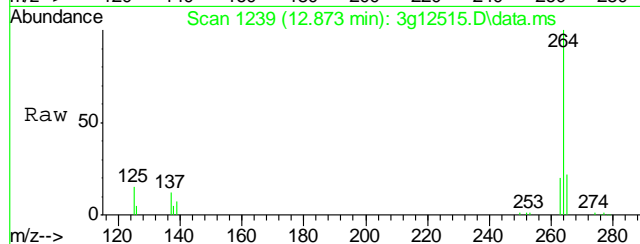
#23
Chrysene
Concen: 0.1975 ug/mL
RT: 11.523 min Scan# 1062
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

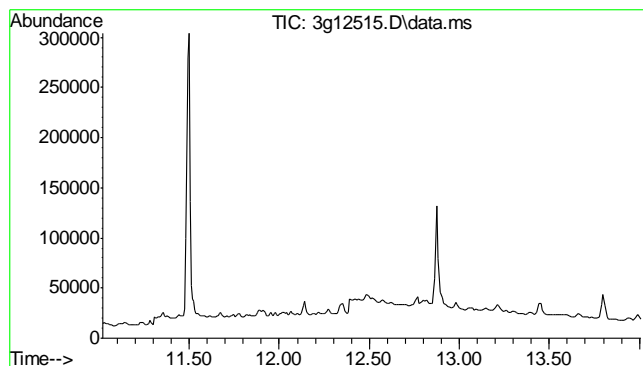
Tgt Ion:	228	Resp:	9657
Ion Ratio	Lower	Upper	
228	100		
226	30.3	9.2	49.2
229	45.0	0.0	39.4#



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.873 min Scan# 1239
Delta R.T. -0.019 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

Tgt Ion:	264	Resp:	83929
Ion Ratio	Lower	Upper	
264	100		
265	22.1	0.6	40.6
263	21.2	0.0	39.7

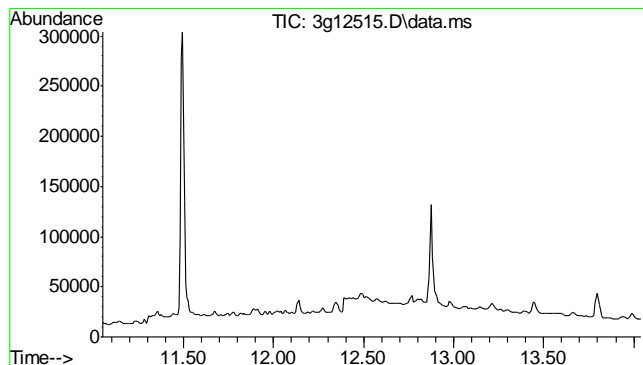
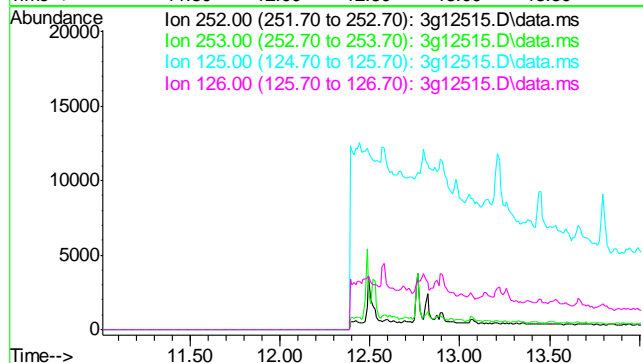




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.51 min

Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

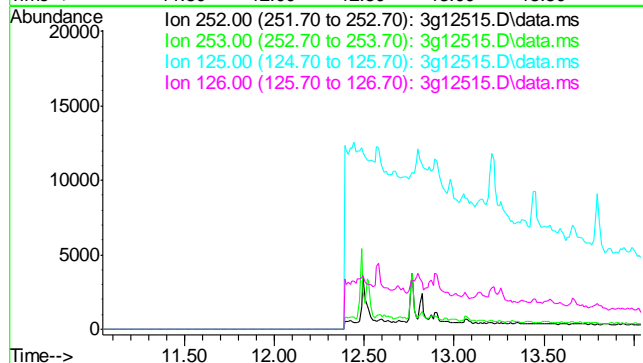
Tgt Ion	Sig	Exp Ratio
252	100	
253	27.0	
125	29.0	
126	41.6	

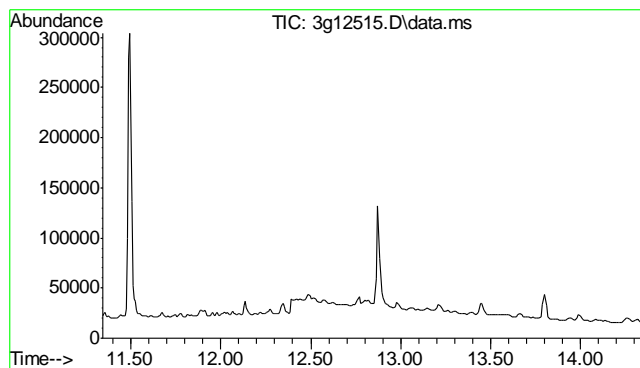


#26
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.54 min

Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

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

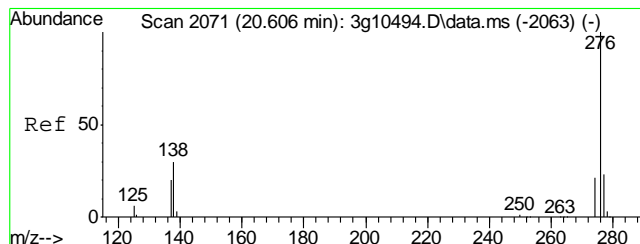
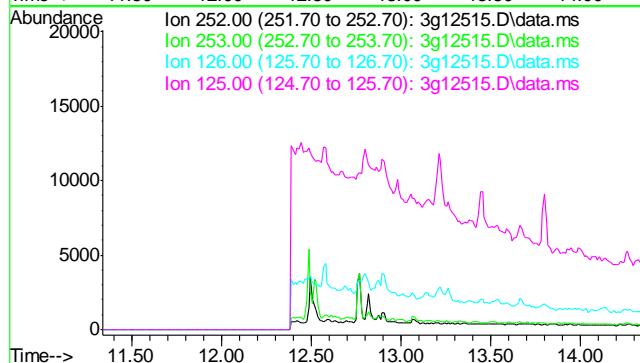




#27
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 12.84 min

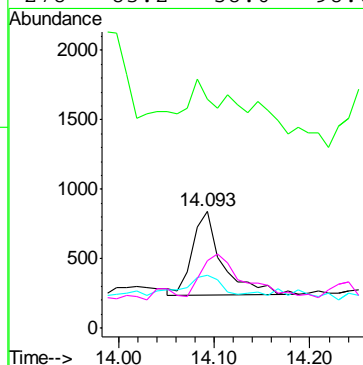
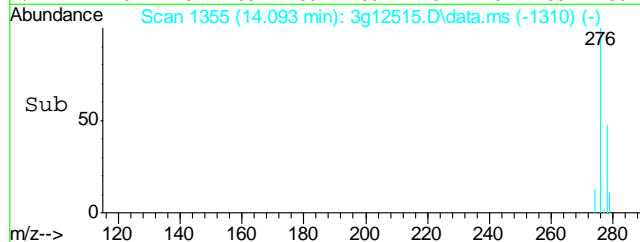
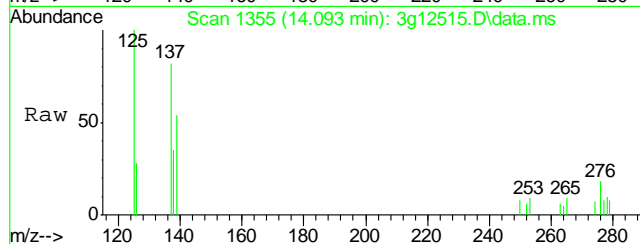
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

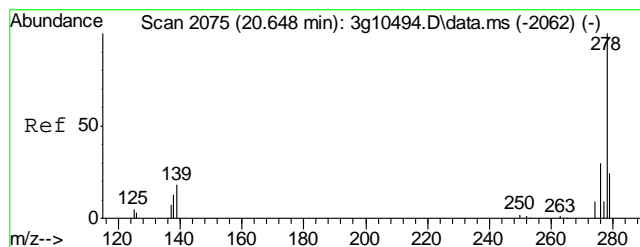
Tgt Ion	Exp Ratio
252	100
253	21.5
126	18.4
125	13.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.093 min Scan# 1355
Delta R.T. -0.030 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

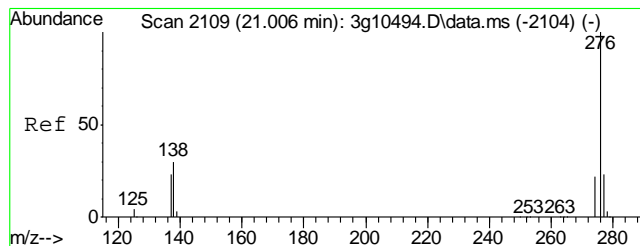
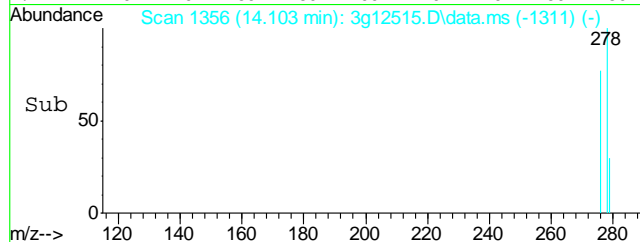
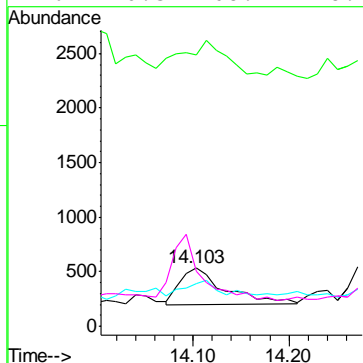
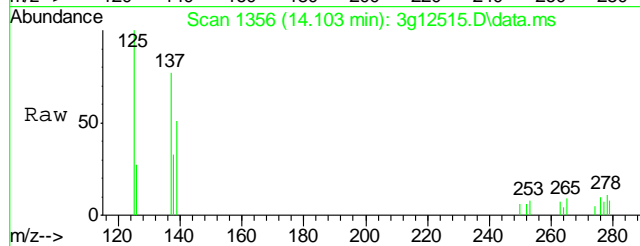
Tgt Ion	Ratio	Lower	Upper
276	100		
138	20.6	16.0	56.0
277	29.2	4.9	44.9
278	83.2	58.0	98.0





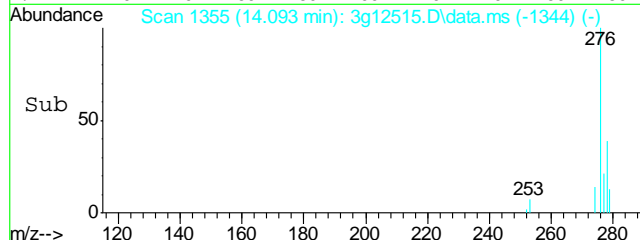
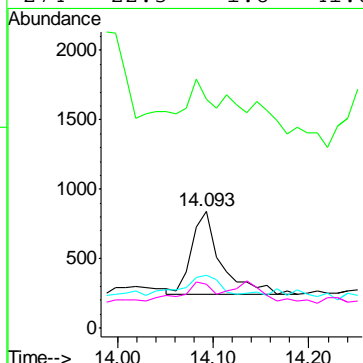
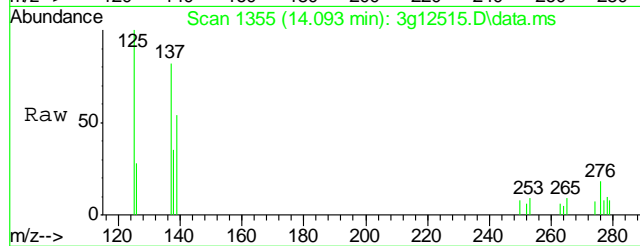
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.103 min Scan# 1356
Delta R.T. -0.030 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

Tgt Ion: 278 Resp: 1086
Ion Ratio Lower Upper
278 100
139 0.0 7.4 47.4#
279 28.0 2.8 42.8
276 120.3 108.1 148.1



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.093 min Scan# 1355
Delta R.T. -0.387 min
Lab File: 3g12515.D
Acq: 10 Dec 12 2:38 pm

Tgt Ion: 276 Resp: 1277
Ion Ratio Lower Upper
276 100
138 21.1 10.9 50.9
277 29.9 3.2 43.2
274 22.3 1.8 41.8



Quantitation Report (QT Reviewed)

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

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

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

System Monitoring Compounds

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

Target Compounds

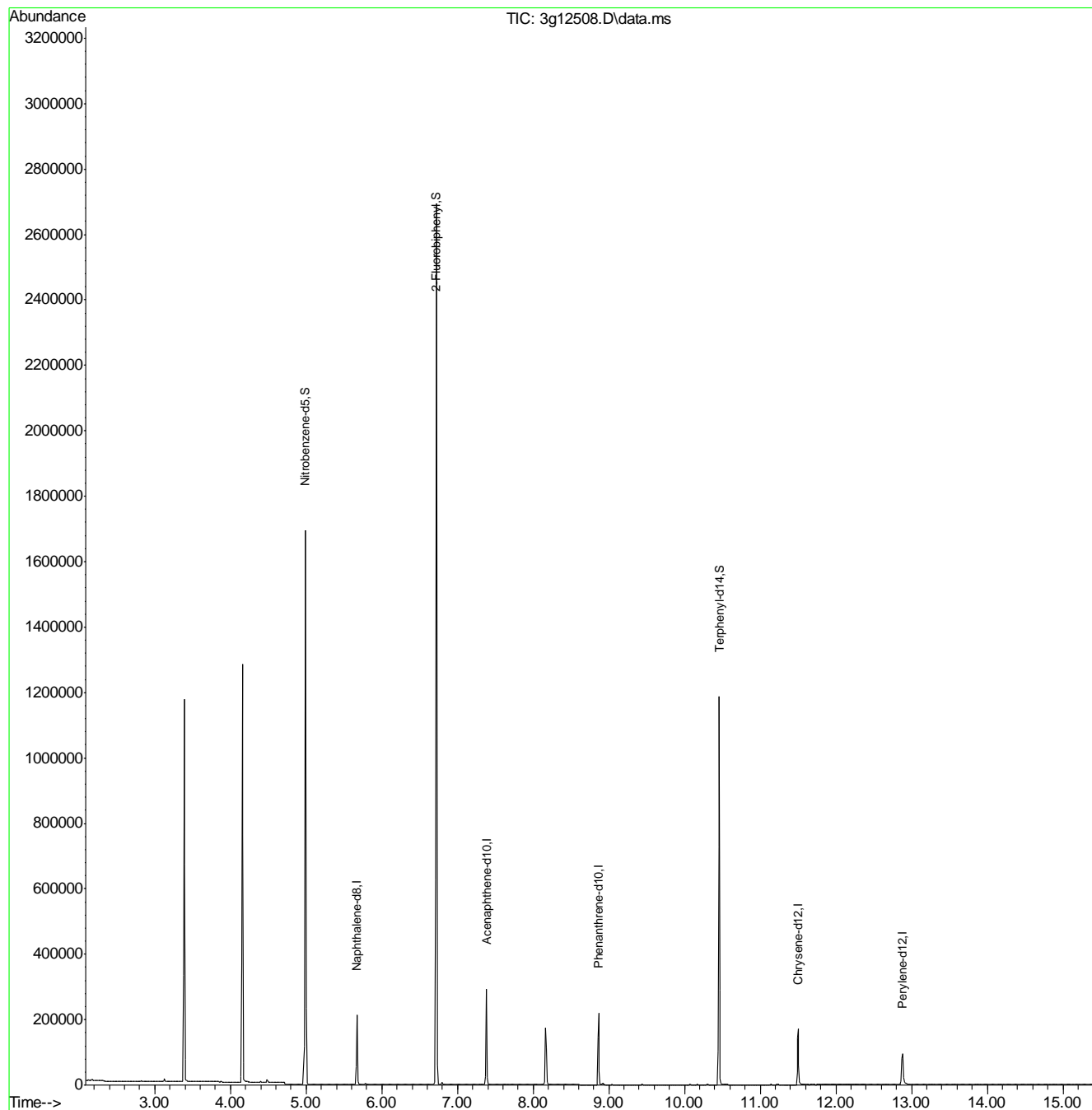
					Qvalue
3) N-Nitrosodimethylamine	2.334	74	50	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.683	128	491	N.D.	
8) 2-Methylnaphthalene	6.356	142	179	N.D.	
9) 1-Methylnaphthalene	6.456	142	126	N.D.	
10) Acenaphthylene	7.243	152	198	N.D.	
11) Acenaphthene	7.113	154	75	Below Cal	87
12)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

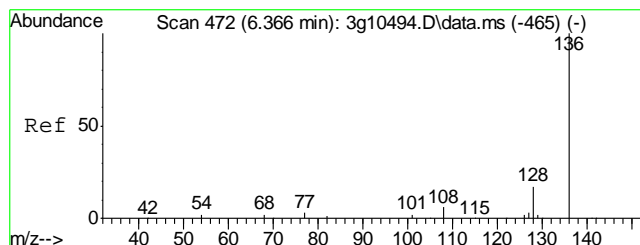
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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

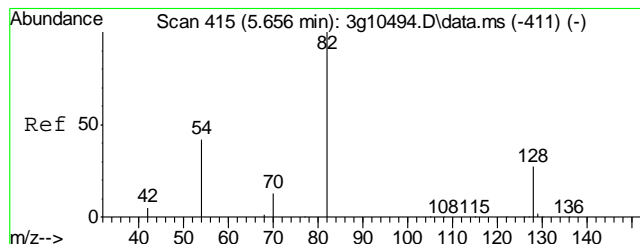
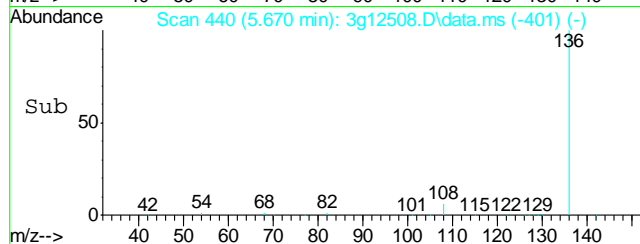
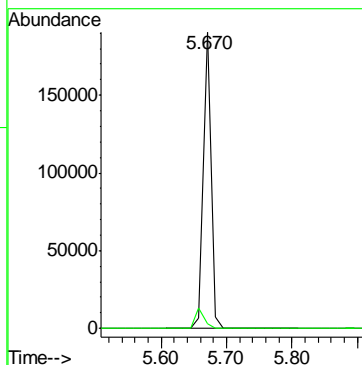
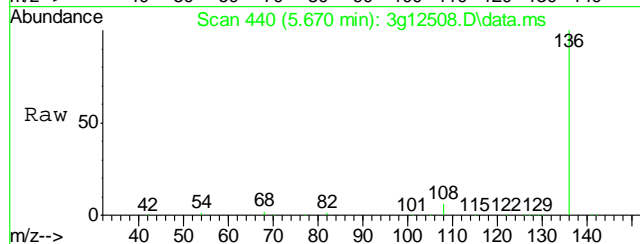
Quant Time: Dec 10 13:58:13 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





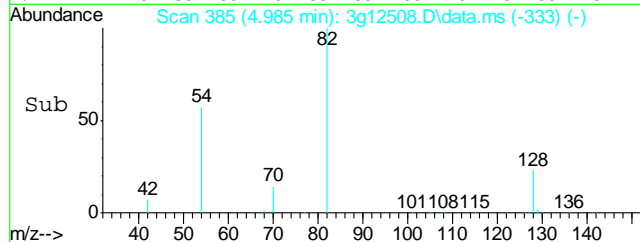
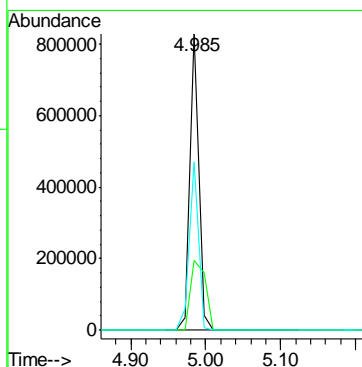
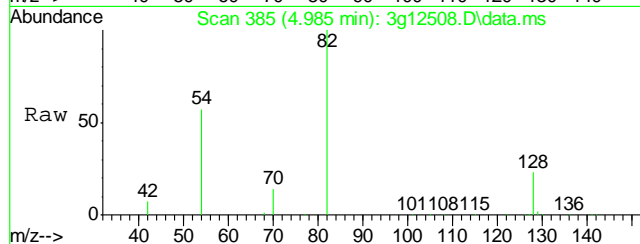
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

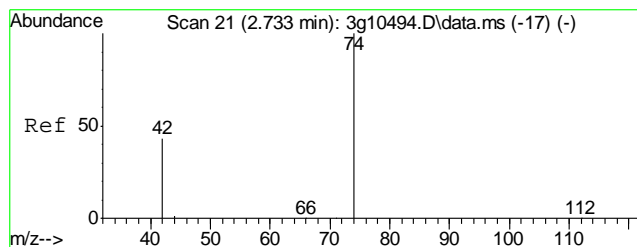
Tgt Ion:	136	Resp:	153335
Ion Ratio	Lower	Upper	
136	100		
68	7.6	0.0	28.4



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

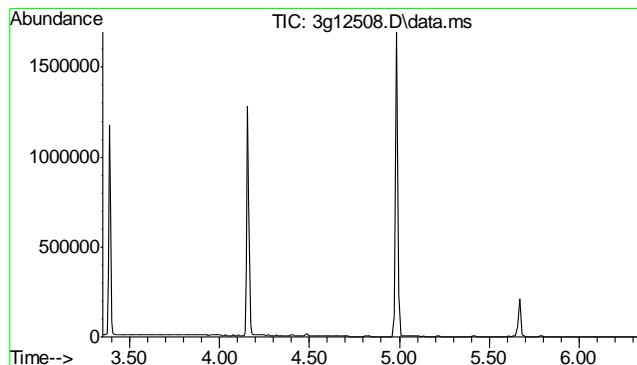
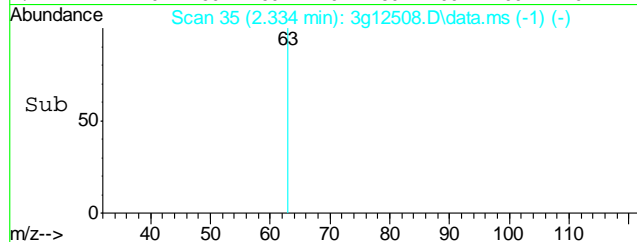
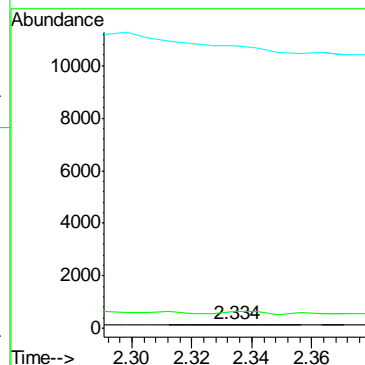
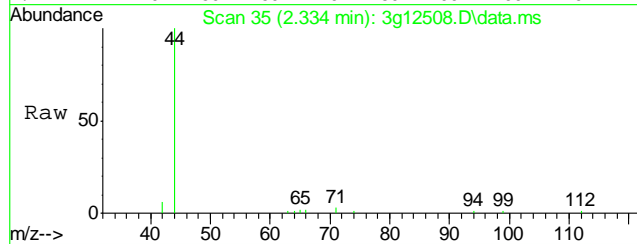
Tgt Ion:	82	Resp:	677706
Ion Ratio	Lower	Upper	
82	100		
128	39.2	31.8	71.8
54	59.4	29.2	69.2





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

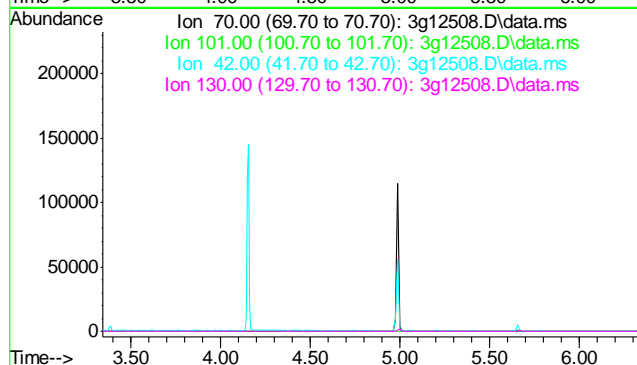
Tgt Ion: 74 Resp: 50
Ion Ratio Lower Upper
74 100
42 168.0 52.5 92.5#
44 0.0 0.0 24.1

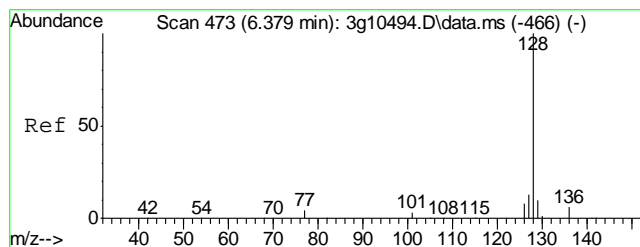


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

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

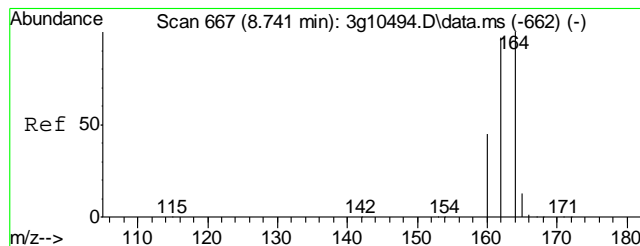
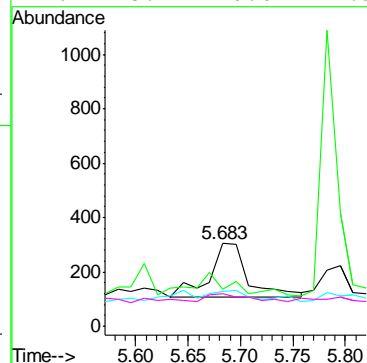
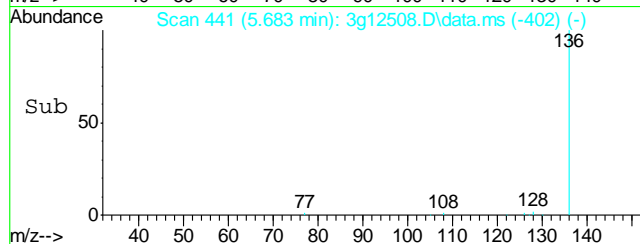
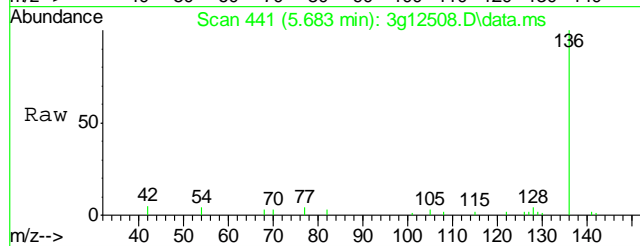
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.2
42 67.9
130 33.2





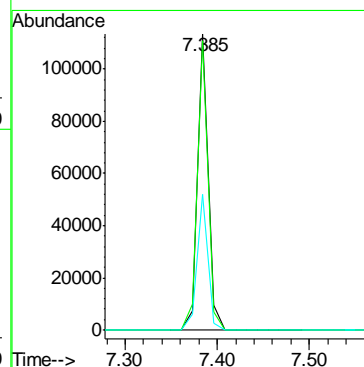
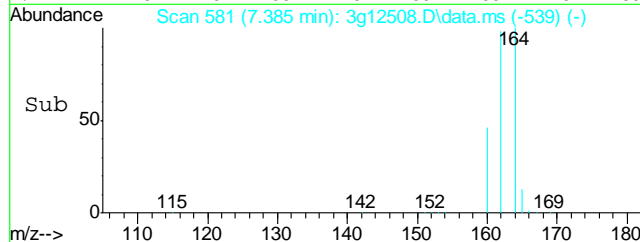
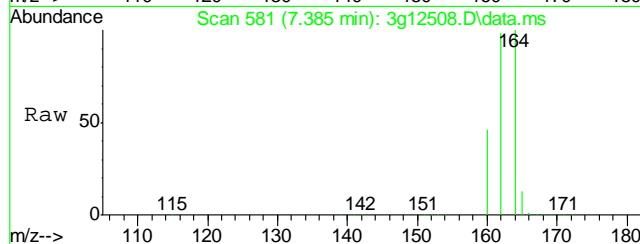
#5
Naphthalene
Concen: Below ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

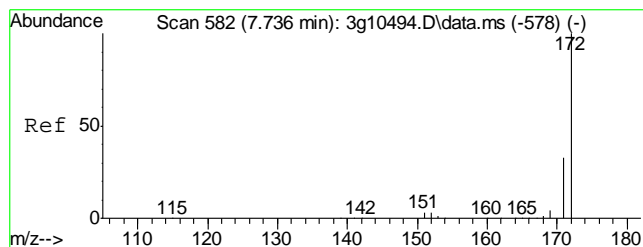
Tgt Ion	Ratio	Lower	Upper
128	100		
129	43.2	0.0	30.7#
127	24.8	0.0	33.2
126	15.1	0.0	27.9



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

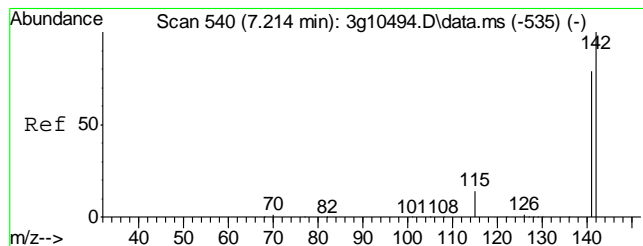
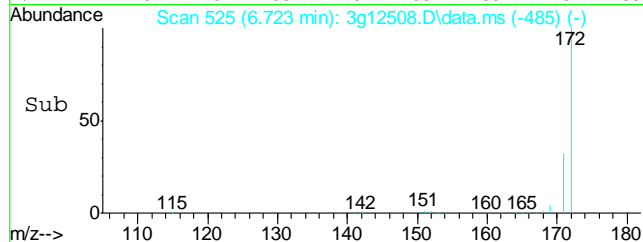
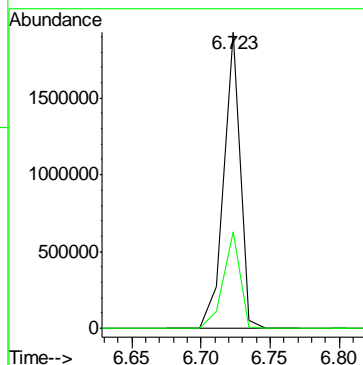
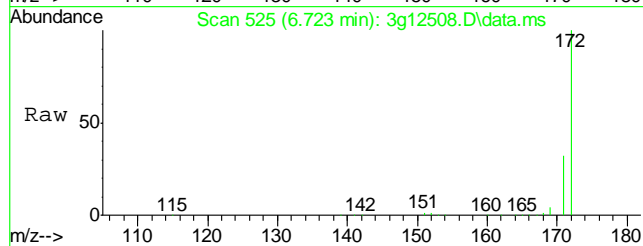
Tgt Ion	Ratio	Lower	Upper
164	100		
162	98.1	78.0	118.0
160	46.6	27.3	67.3





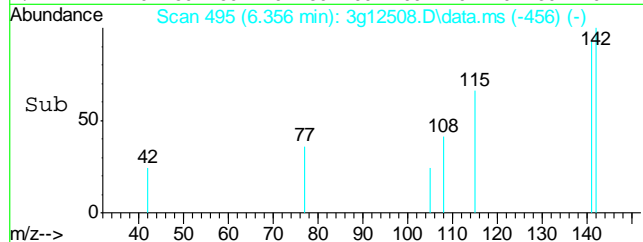
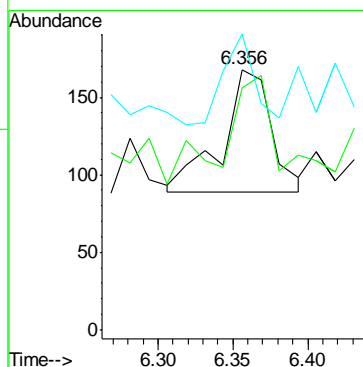
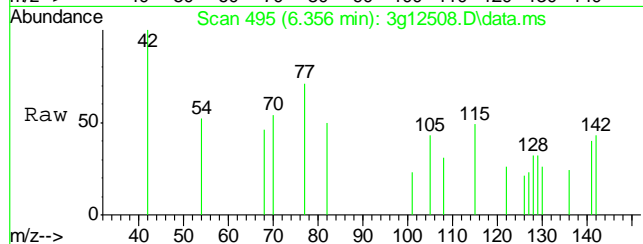
#7
2-Fluorobiphenyl
Concen: 39.4888 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

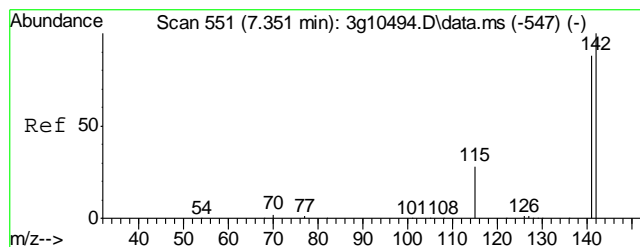
Tgt Ion:172 Resp: 1592975
Ion Ratio Lower Upper
172 100
171 33.4 13.7 53.7



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

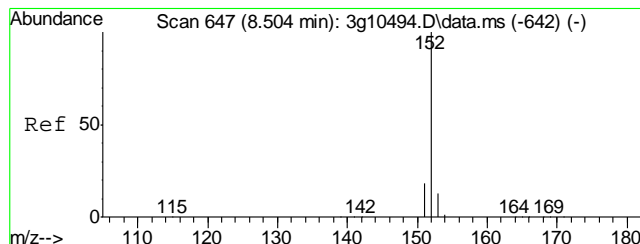
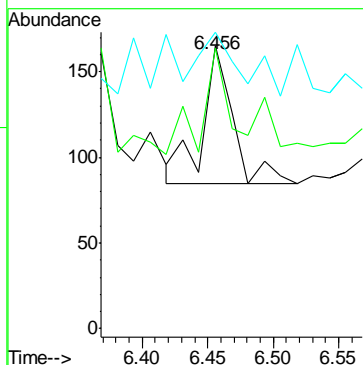
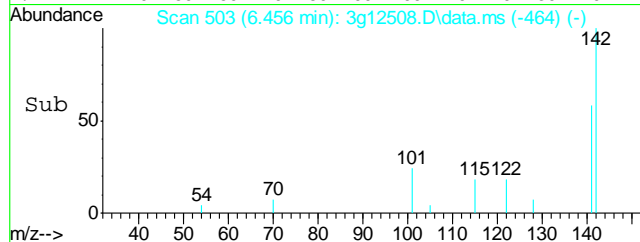
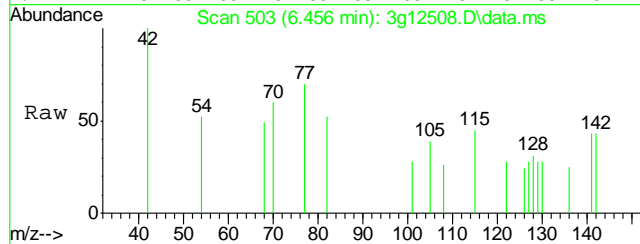
Tgt Ion:142 Resp: 179
Ion Ratio Lower Upper
142 100
141 40.2 65.6 105.6#
115 0.0 12.2 52.2#





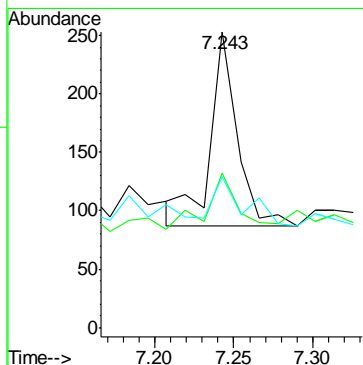
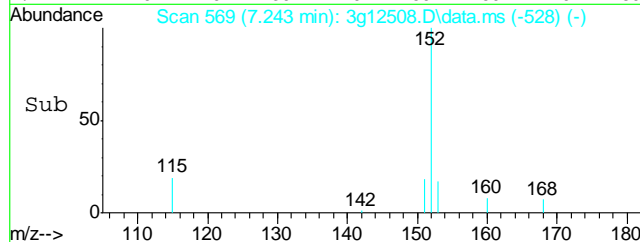
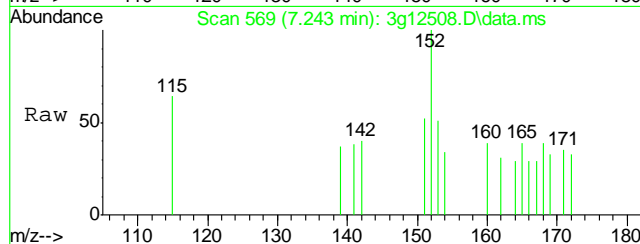
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

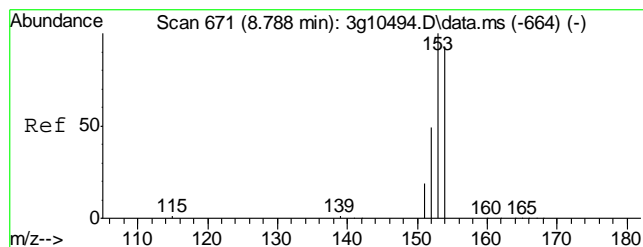
Tgt Ion: 142 Resp: 126
Ion Ratio Lower Upper
142 100
141 69.8 67.0 107.0
115 0.0 9.3 49.3#



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

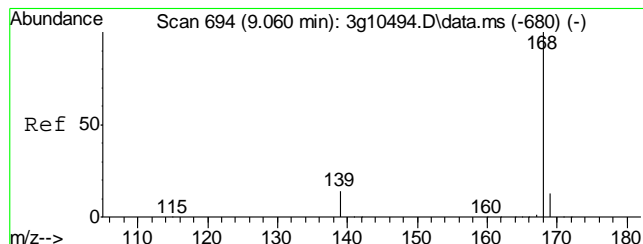
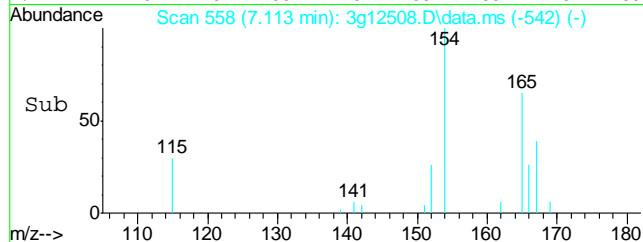
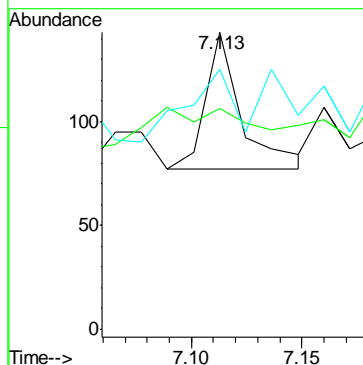
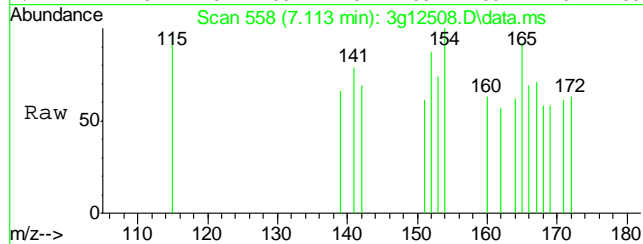
Tgt Ion: 152 Resp: 198
Ion Ratio Lower Upper
152 100
151 34.3 0.0 39.5
153 27.8 0.0 33.0





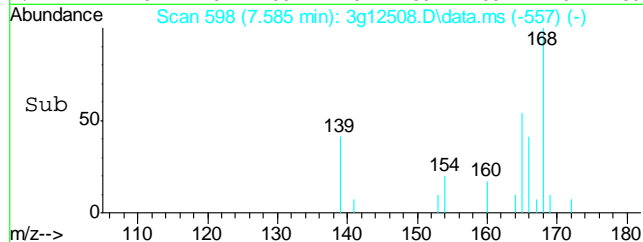
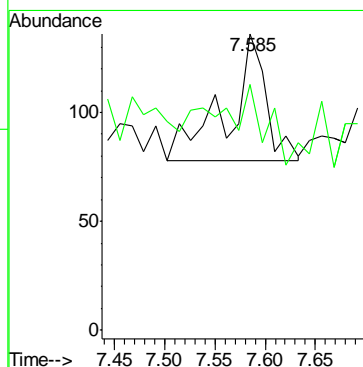
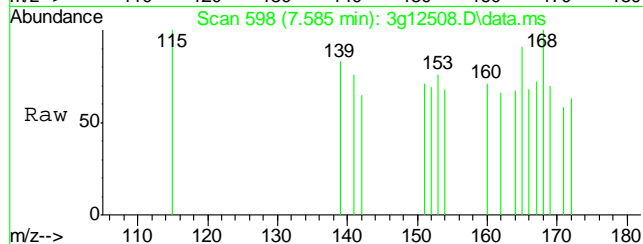
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.113 min Scan# 558
Delta R.T. -0.311 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

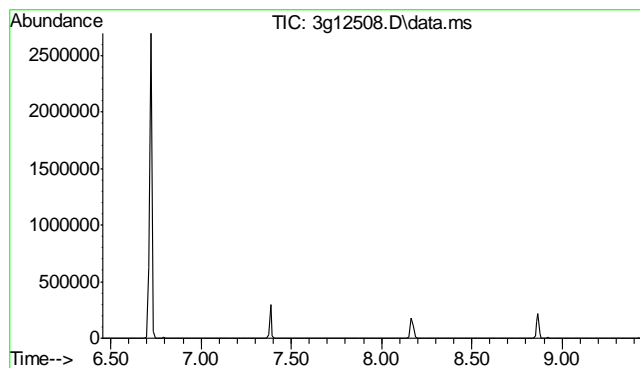
Tgt Ion:154	Resp:	75
Ion Ratio	Lower	Upper
154	100	
153	98.7	84.7 124.7
152	69.3	30.2 70.2



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

Tgt Ion:168	Resp:	152
Ion Ratio	Lower	Upper
168	100	
139	13.2	12.0 52.0

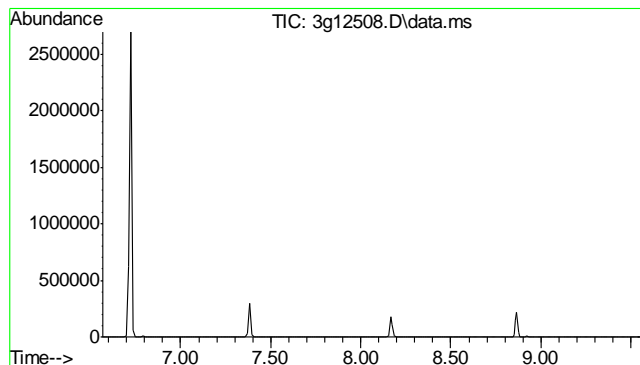
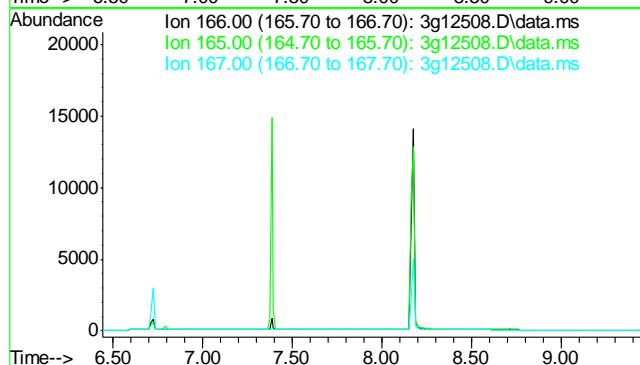




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.94 min

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

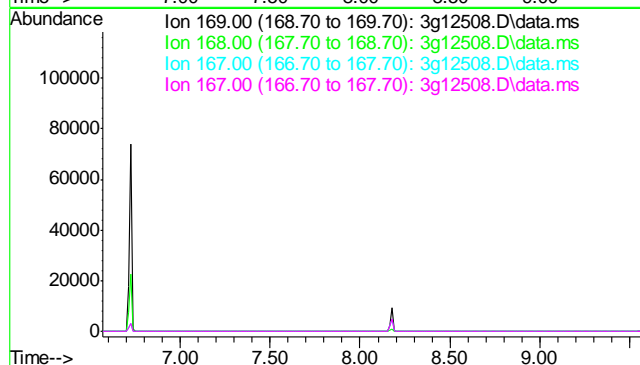
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	90.1
167	13.4

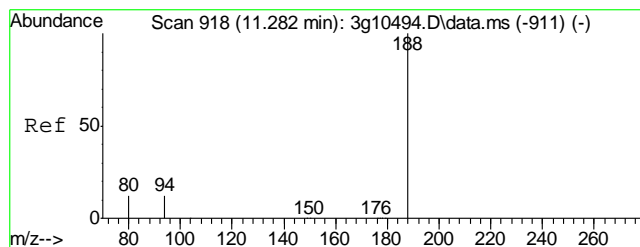


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

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

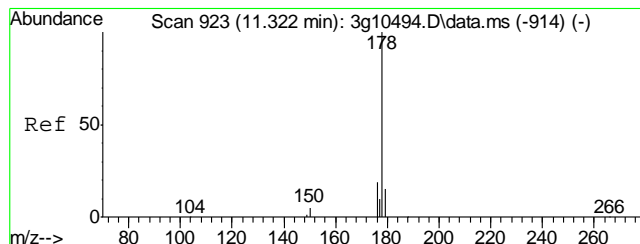
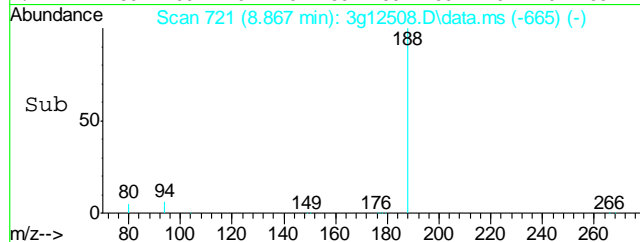
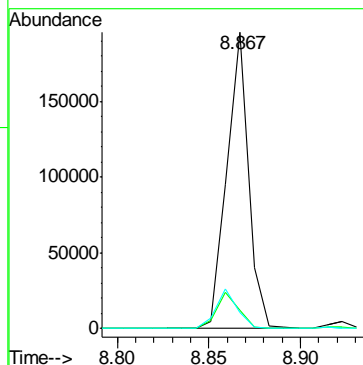
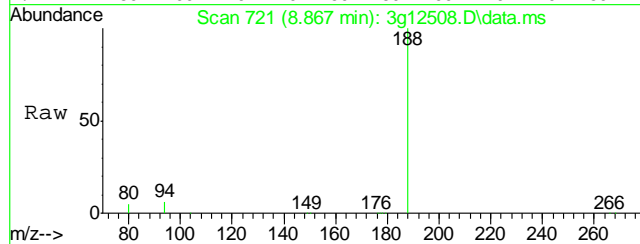
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





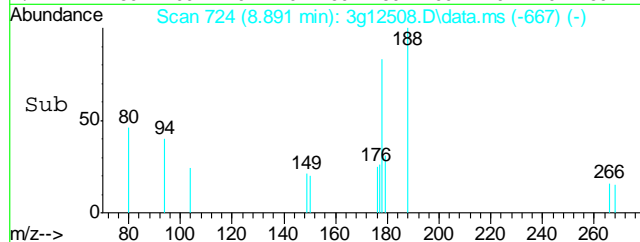
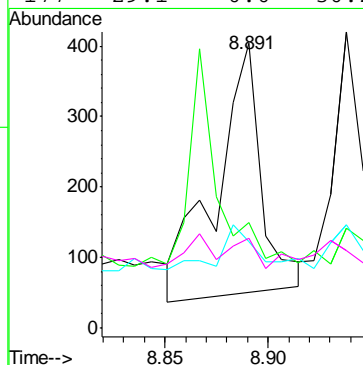
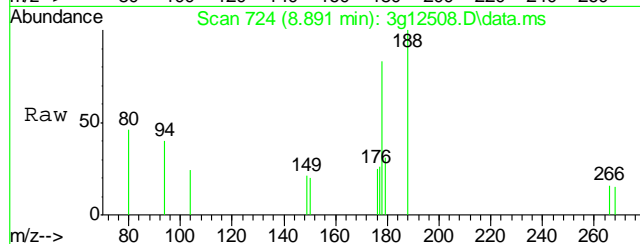
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 721
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

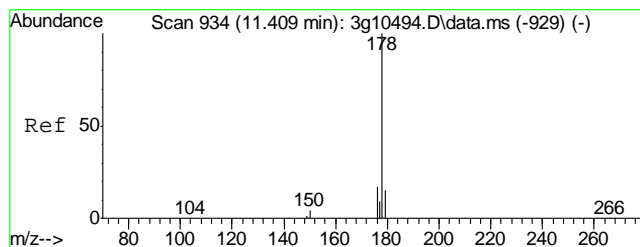
Tgt Ion	Ratio	Lower	Upper
188	100		
94	12.2	0.0	33.4
80	12.9	0.0	28.9



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

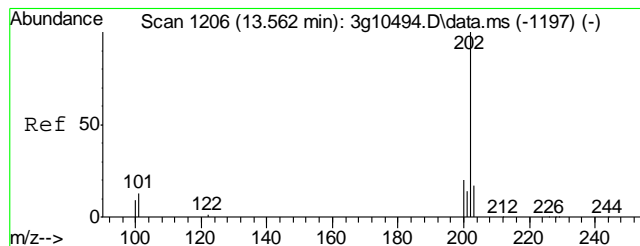
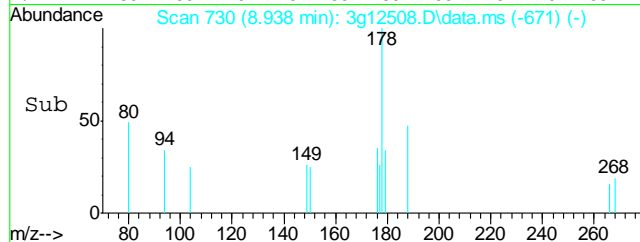
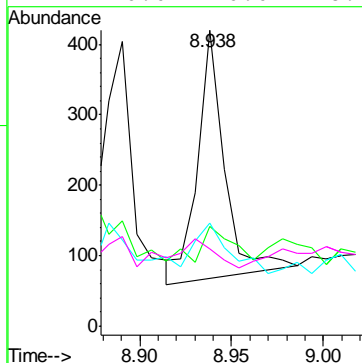
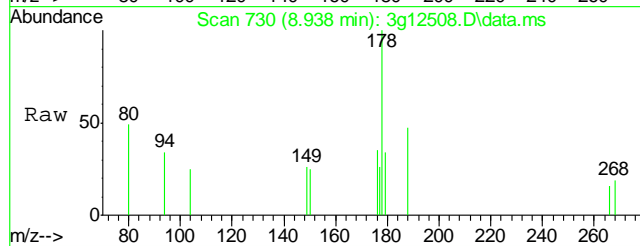
Tgt Ion	Ratio	Lower	Upper
178	100		
179	84.3	0.0	35.3#
176	9.6	0.0	38.6
177	29.1	0.0	30.2





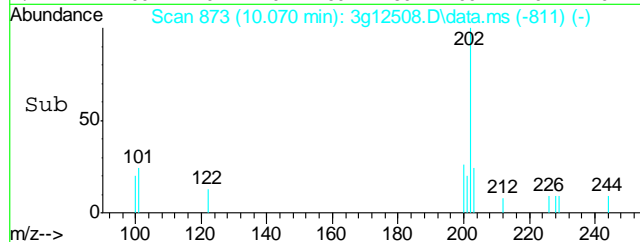
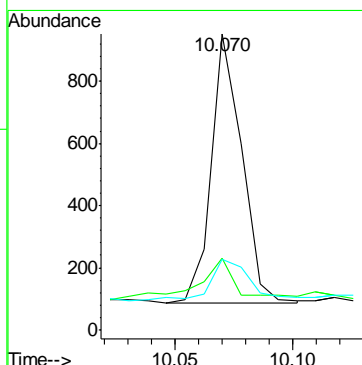
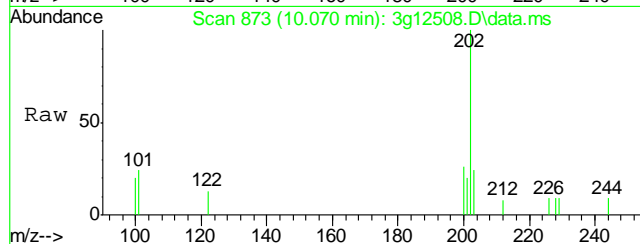
#17
Anthracene
Concen: Below ug/mL
RT: 8.938 min Scan# 730
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

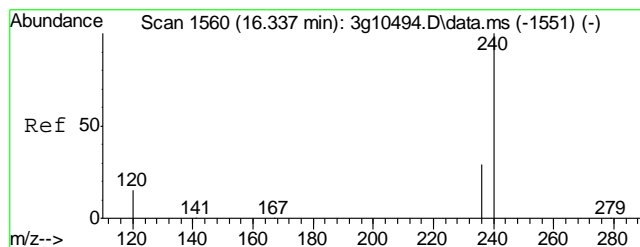
Tgt Ion	Ratio	Lower	Upper
178	100		
179	17.6	0.0	35.1
176	20.7	0.0	38.2
177	0.0	0.0	28.8



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

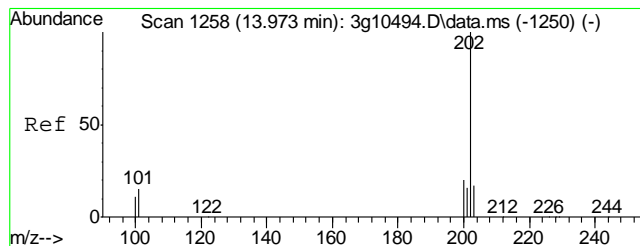
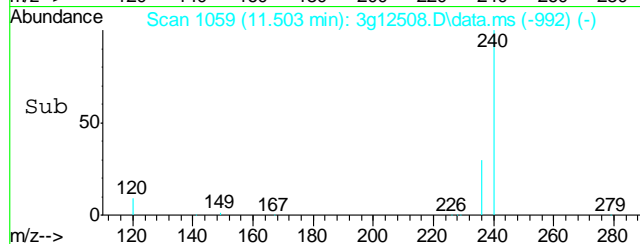
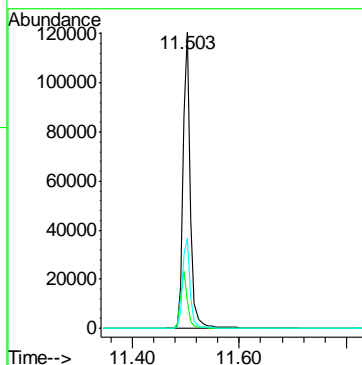
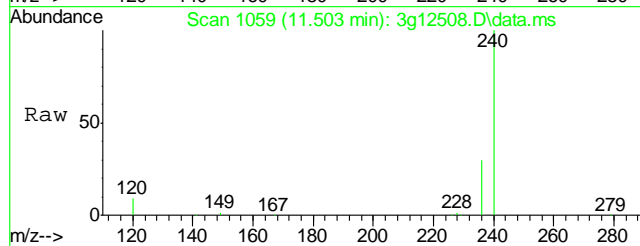
Tgt Ion	Ratio	Lower	Upper
202	100		
101	11.4	0.0	32.5
203	16.1	0.0	37.3





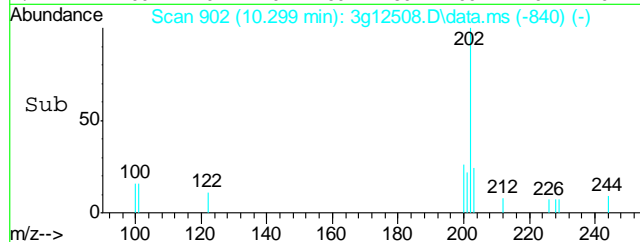
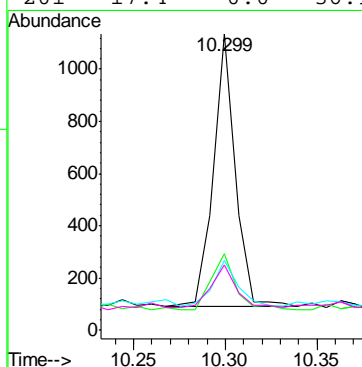
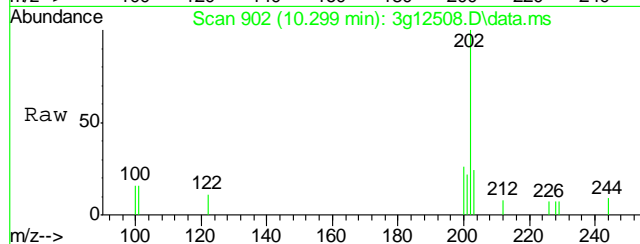
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.503 min Scan# 1059
Delta R.T. -0.013 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

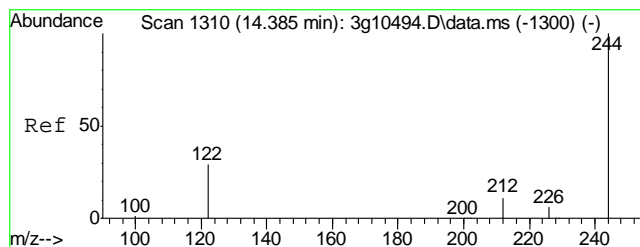
Tgt Ion:	240	Resp:	115791
Ion Ratio	Lower	Upper	
240	100		
120	18.3	0.0	39.7
236	31.8	11.1	51.1



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

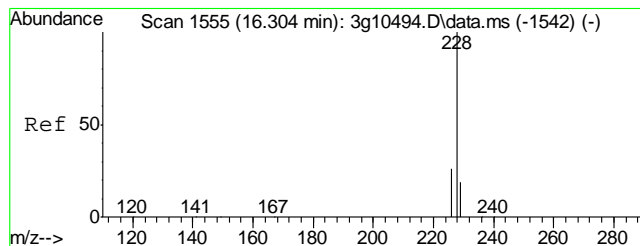
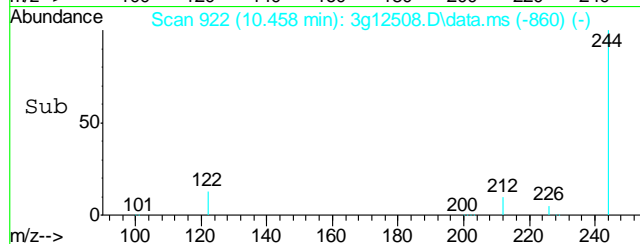
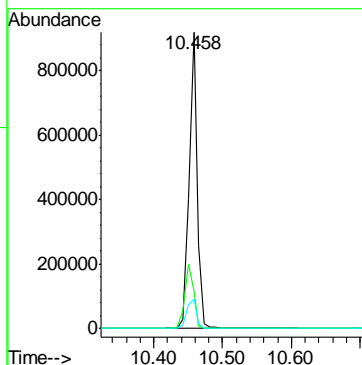
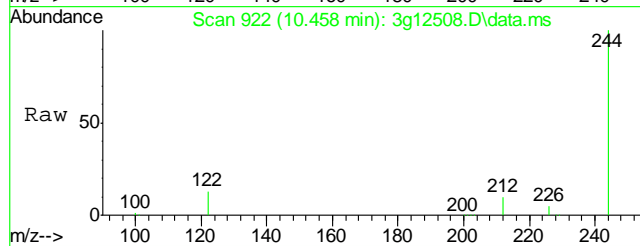
Tgt Ion:	202	Resp:	864
Ion Ratio	Lower	Upper	
202	100		
200	22.9	0.7	40.7
203	19.7	0.0	37.8
201	17.4	0.0	36.9





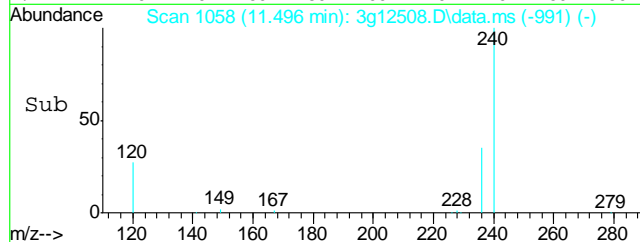
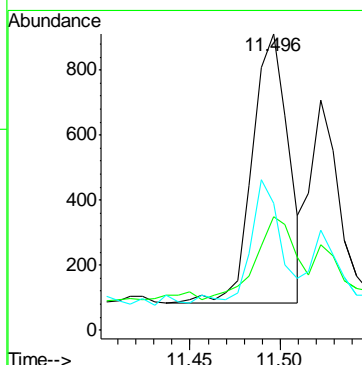
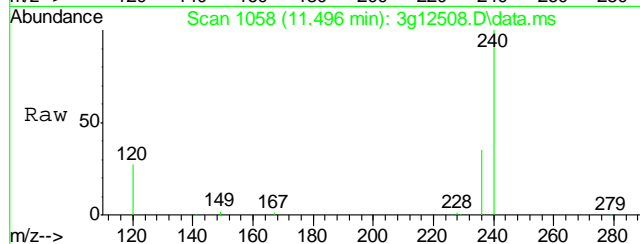
#21
Terphenyl-d14
Concen: 45.4337 ug/mL
RT: 10.458 min Scan# 922
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

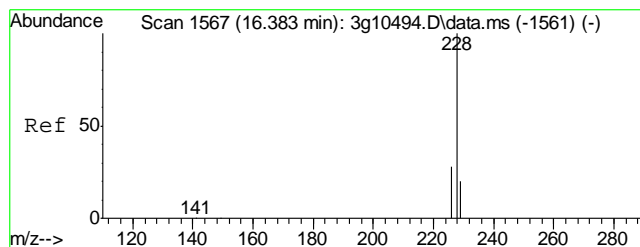
Tgt Ion:	244	Resp:	774374
Ion Ratio	Lower	Upper	
244	100		
122	23.6	6.8	46.8
212	11.7	0.0	32.3



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

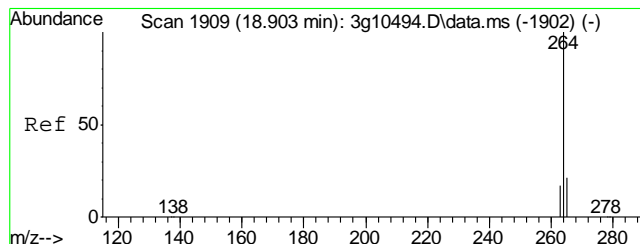
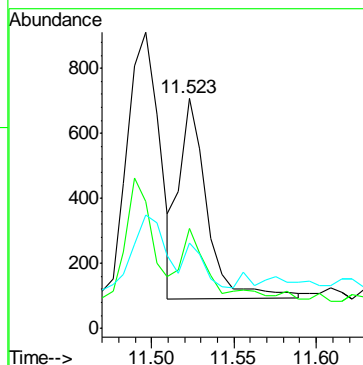
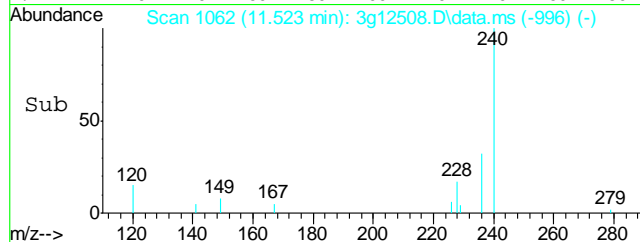
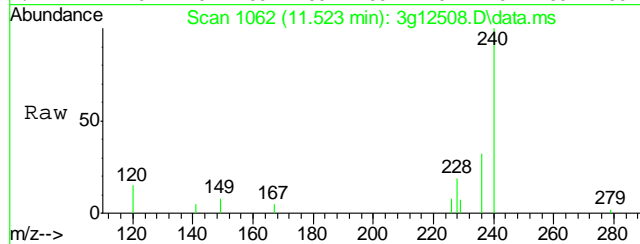
Tgt Ion:	228	Resp:	1148
Ion Ratio	Lower	Upper	
228	100		
229	34.7	0.0	39.4
226	38.0	6.8	46.8





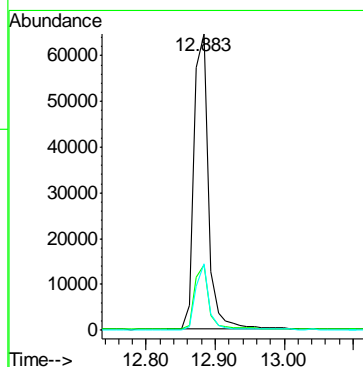
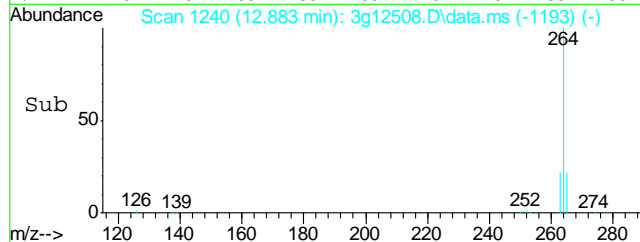
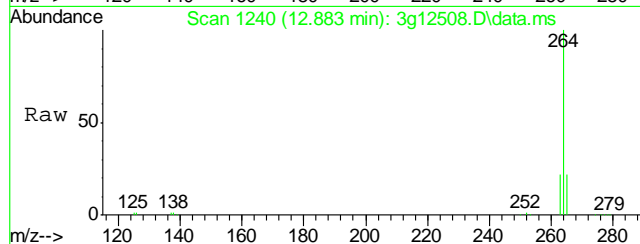
#23
Chrysene
Concen: Below ug/mL
RT: 11.523 min Scan# 1062
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

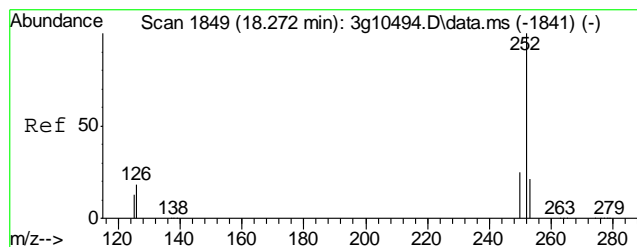
Tgt Ion:	228	Resp:	724
Ion Ratio	100	Lower	Upper
228	100		
226	25.1	9.2	49.2
229	2.9	0.0	39.4



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

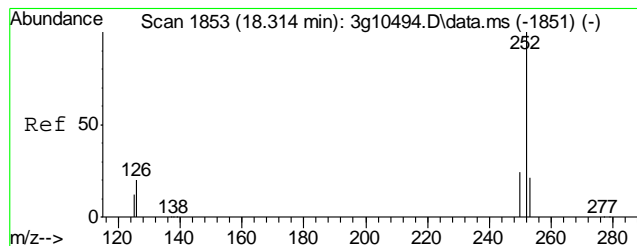
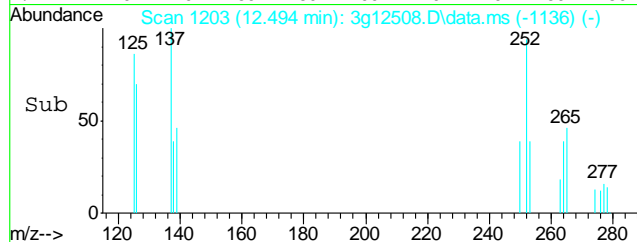
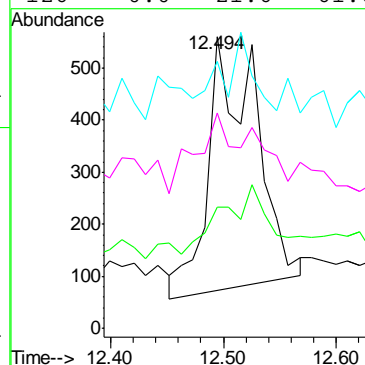
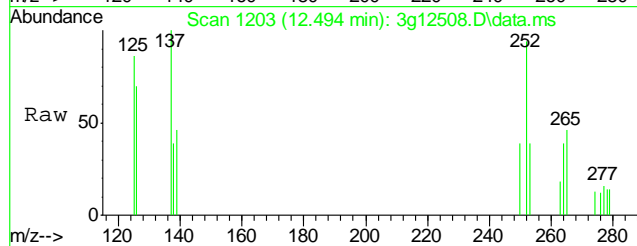
Tgt Ion:	264	Resp:	94737
Ion Ratio	100	Lower	Upper
264	100		
265	20.6	0.6	40.6
263	20.3	0.0	39.7





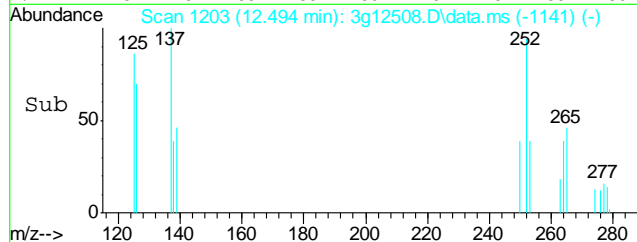
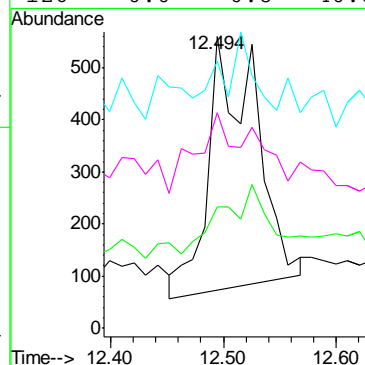
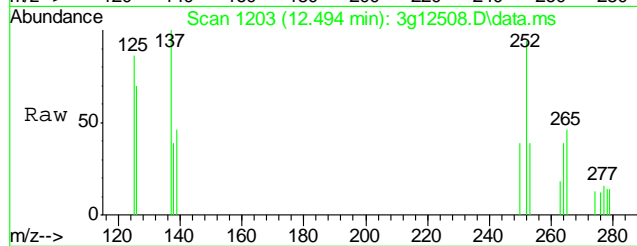
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

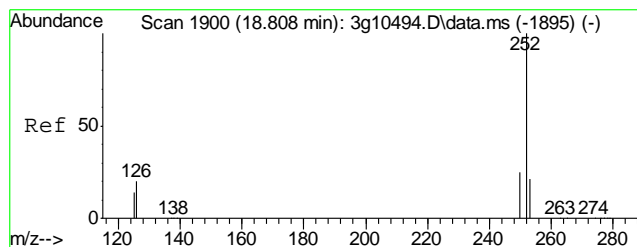
Tgt Ion: 252	Resp: 1411
Ion Ratio	Lower Upper
252	100
253	45.0 7.0 47.0
125	0.0 9.0 49.0#
126	0.0 21.6 61.6#



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

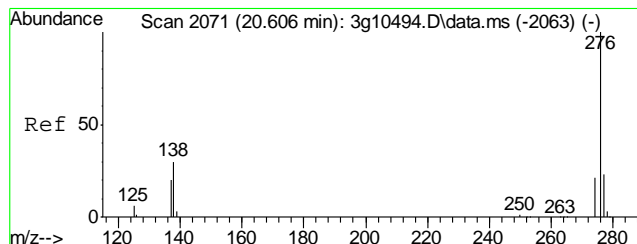
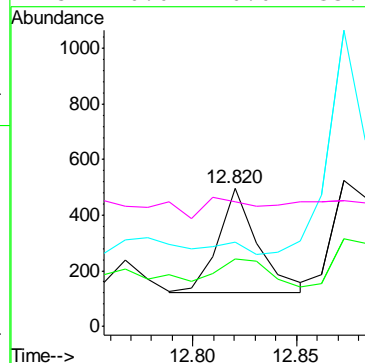
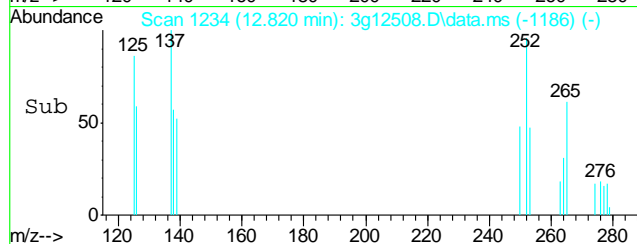
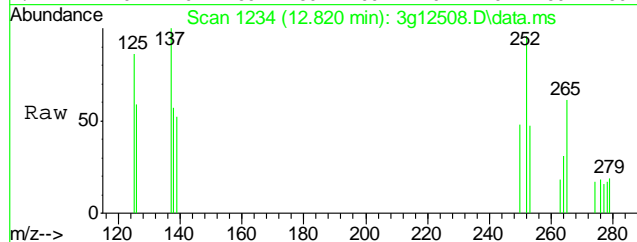
Tgt Ion: 252	Resp: 1411
Ion Ratio	Lower Upper
252	100
253	45.0 4.0 44.0#
125	0.0 0.0 35.3
126	0.0 0.8 40.8#





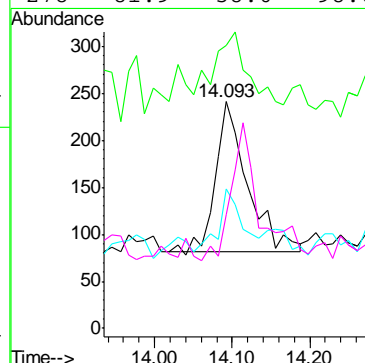
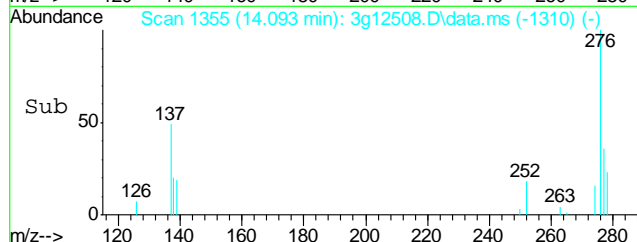
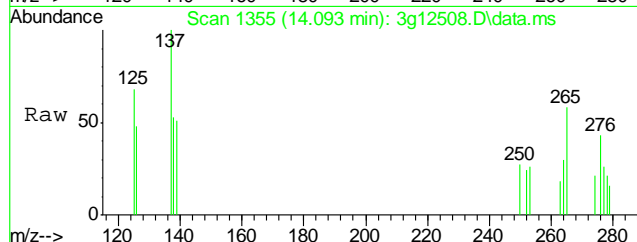
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.820 min Scan# 1234
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

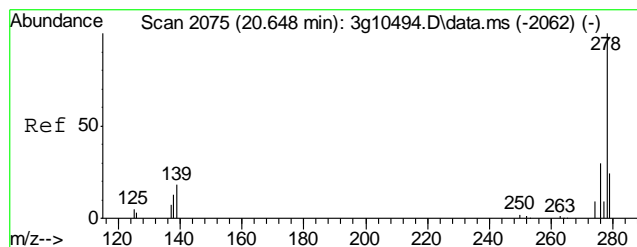
Tgt Ion:	252	Resp:	509
Ion Ratio	Lower	Upper	
252	100		
253	34.4	1.5	41.5
126	0.0	0.0	38.4
125	0.0	0.0	33.5



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

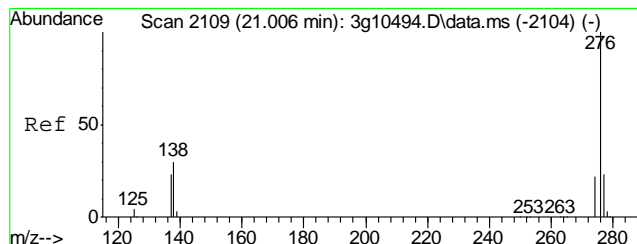
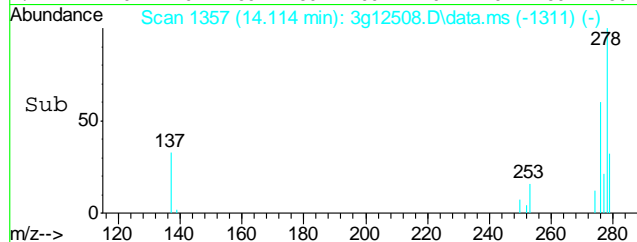
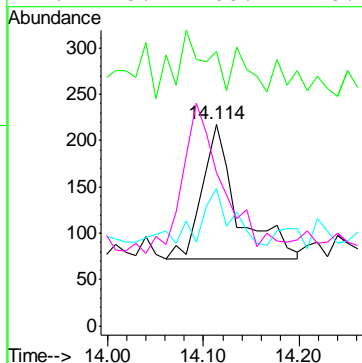
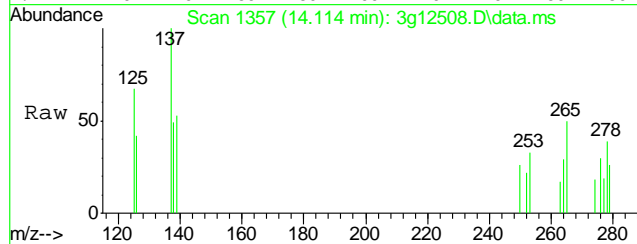
Tgt Ion:	276	Resp:	459
Ion Ratio	Lower	Upper	
276	100		
138	66.2	16.0	56.0#
277	29.6	4.9	44.9
278	81.9	58.0	98.0





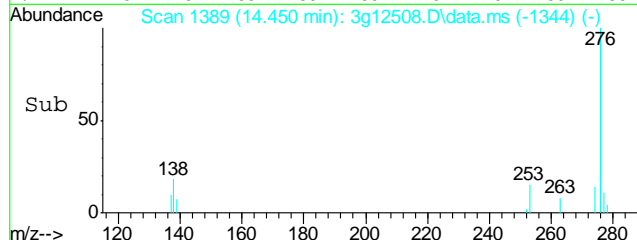
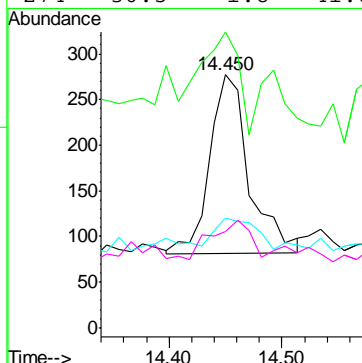
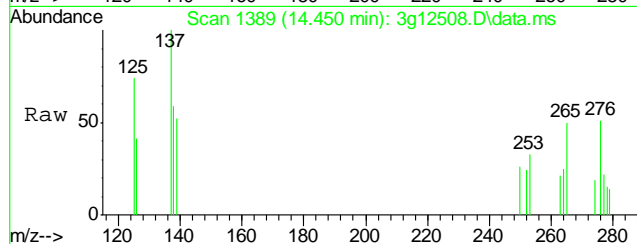
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.114 min Scan# 1357
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion	278	Resp	376
Ion Ratio	100		
Lower		7.4	47.4
Upper		42.8	148.1



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

Tgt Ion	276	Resp	479
Ion Ratio <td>100</td> <td></td> <td></td>	100		
Lower		10.9	50.9#
Upper		43.2	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: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1023-MB	GB18762.D	1	12/06/12	SK	n/a	n/a	GGB1023

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

D41448-1

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	89% 60-140%

10.1.1
10

Blank Spike Summary

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1023-BS	GB18763.D	1	12/06/12	SK	n/a	n/a	GGB1023

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

D41448-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	123	112	70-130

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41506-1MS	GB18765.D	1	12/06/12	SK	n/a	n/a	GGB1023
D41506-1MSD	GB18766.D	1	12/06/12	SK	n/a	n/a	GGB1023
D41506-1	GB18764.D	1	12/06/12	SK	n/a	n/a	GGB1023

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

D41448-1

CAS No.	Compound	D41506-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	132	147	111	148	112	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D41506-1	Limits
120-82-1	1,2,4-Trichlorobenzene	96%	98%	90%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Judy Melson
12/07/12 12:34

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120612\GB18767.D\FID1A.CH Vial: 8
Signal #2 : Y:\1\DATA\120612\GB18767.D\FID2B.CH
Acq On : 6 Dec 2012 3:11 pm Operator: StephK
Sample : D41448-1, 50X Inst : GC/MS Ins
Misc : GC3278,GGB1023,5.015,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 06 17:10:52 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Dec 06 13:37:39 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	14.37	2611576	83.346	% m
10) S	1,2,4-Trichlorobenzene (P)	14.37	15514883	95.460	%
Target Compounds					
1) H	TVH-Gasoline	7.23	9017518	0.110	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	4.14	416527	1.034	ug/L
6) T	Toluene	7.66	1205755	3.043	ug/L
7) T	Ethylbenzene	10.29	166127	0.491	ug/L
8) T	m,p-Xylene	10.47	1268961	3.103	ug/L
9) T	o-Xylene	10.97	228489	0.696	ug/L
11) T	Naphthalene	14.56	3602469	18.258	uq/L

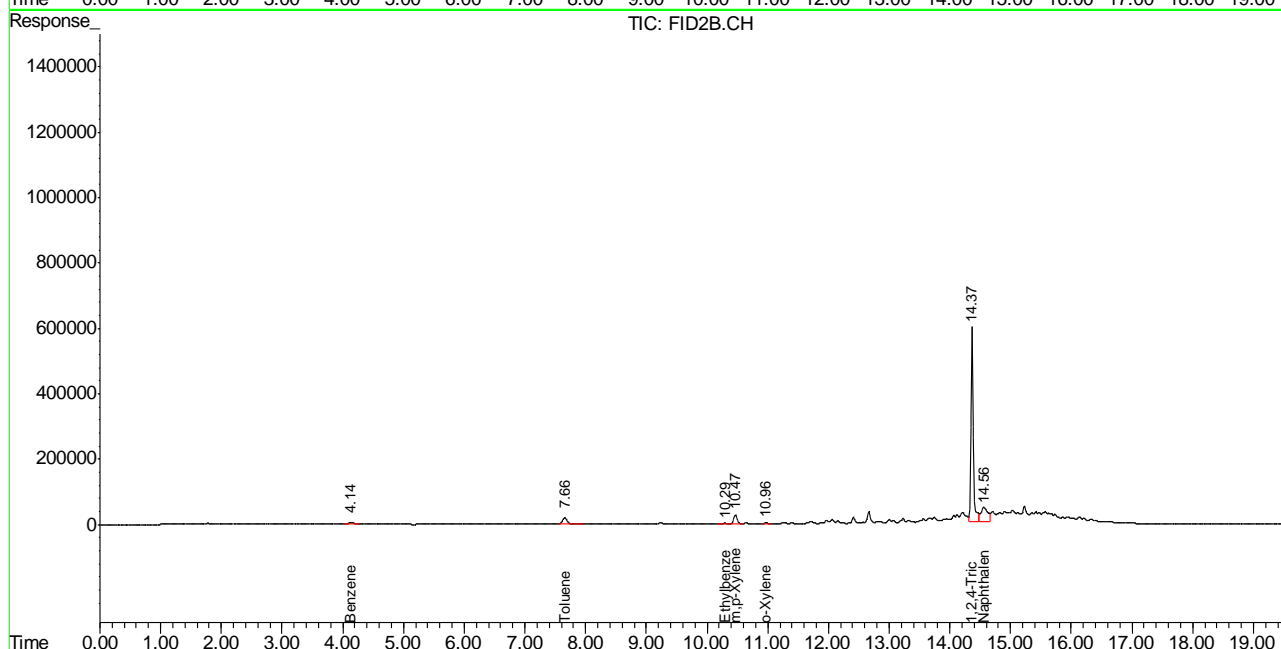
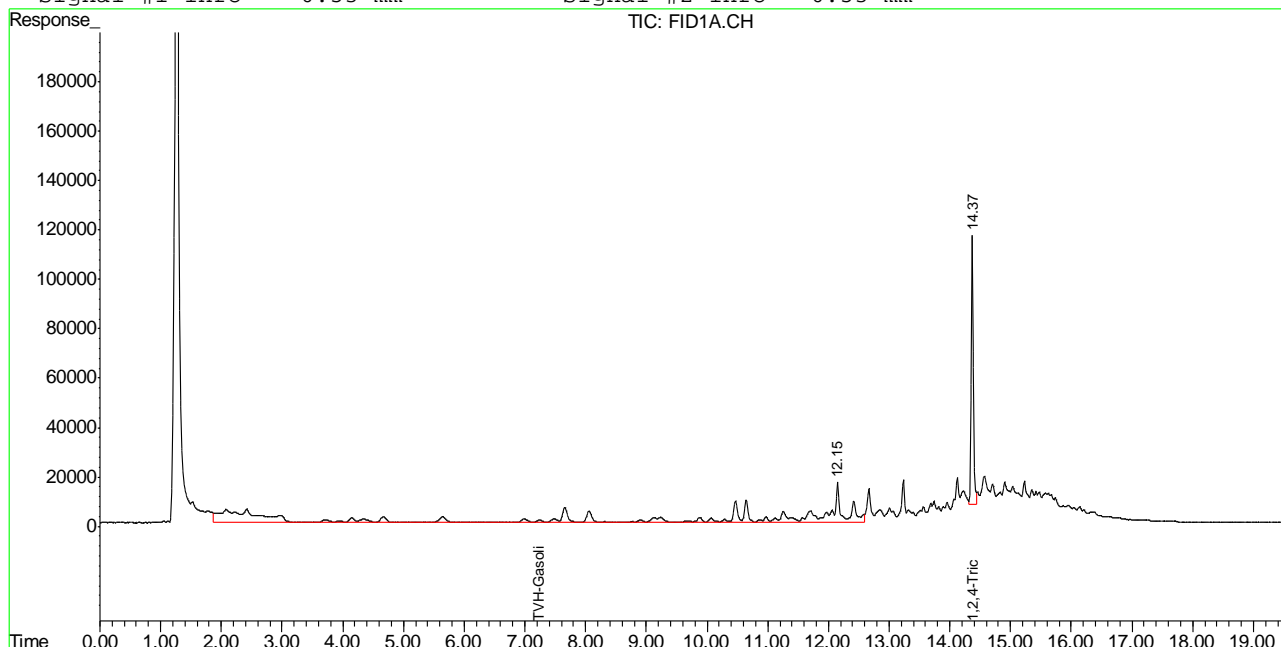
(f)=RT Delta > 1/2 Window (m)=manual int.
GB18767.D TB868GB868SOIL.M Fri Dec 07 09:03:40 2012 GC

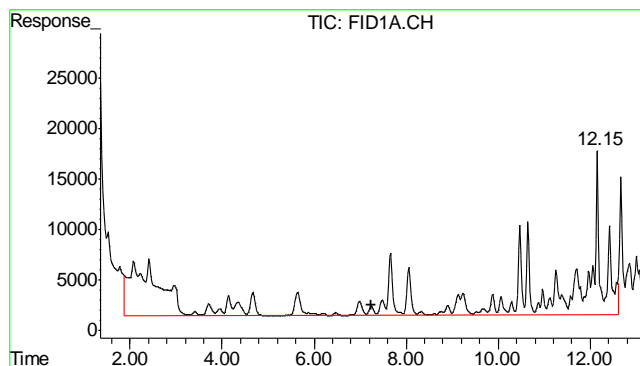
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120612\GB18767.D\FID1A.CH Vial: 8
 Signal #2 : Y:\1\DATA\120612\GB18767.D\FID2B.CH
 Acq On : 6 Dec 2012 3:11 pm Operator: StephK
 Sample : D41448-1, 50X Inst : GC/MS Ins
 Misc : GC3278,GGB1023,5.015,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 6 17:11 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Dec 06 13:37:39 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

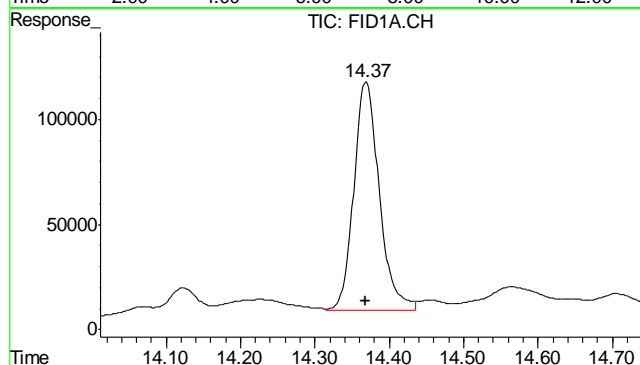
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





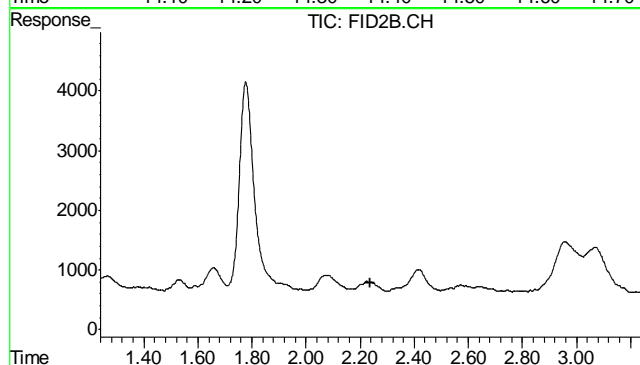
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 9017518
Conc: 0.11 mg/L m



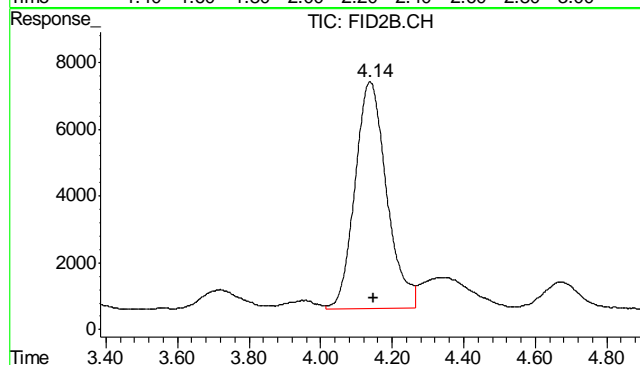
#2 1,2,4-Trichlorobenzene

R.T.: 14.368 min
Delta R.T.: 0.000 min
Response: 2611576
Conc: 83.35 % m



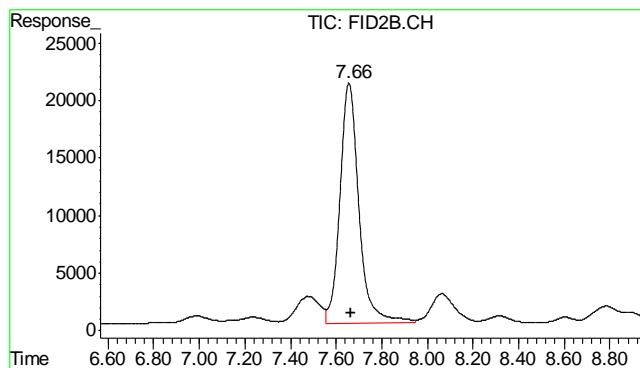
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.239 min
Response: 0
Conc: N.D.



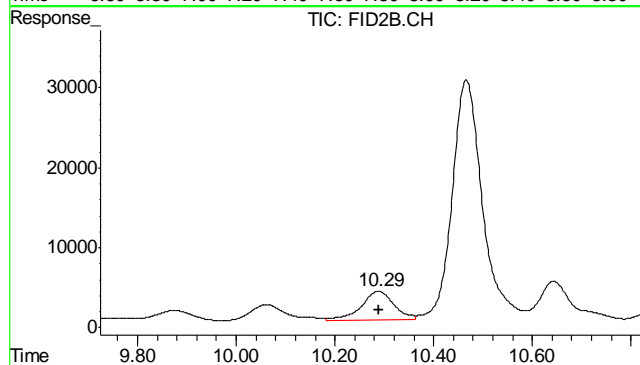
#5 Benzene

R.T.: 4.138 min
Delta R.T.: -0.009 min
Response: 416527
Conc: 1.03 ug/L



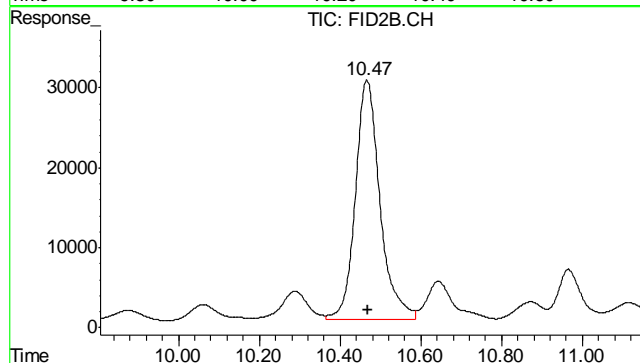
#6 Toluene

R.T.: 7.656 min
Delta R.T.: -0.008 min
Response: 1205755
Conc: 3.04 ug/L



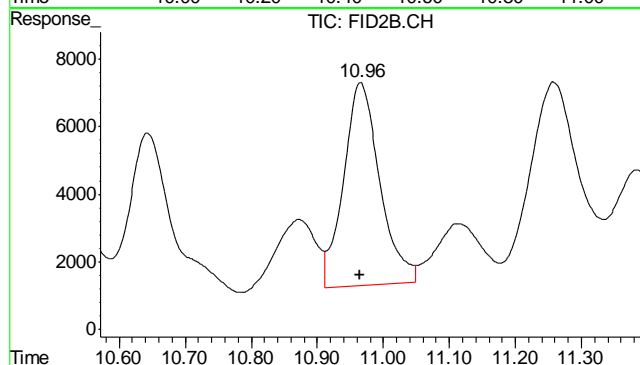
#7 Ethylbenzene

R.T.: 10.289 min
Delta R.T.: 0.000 min
Response: 166127
Conc: 0.49 ug/L



#8 m,p-Xylene

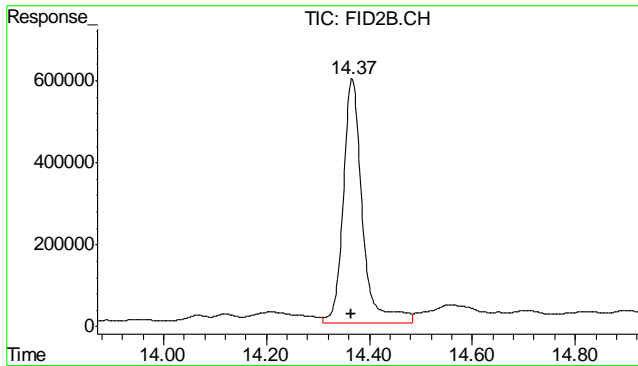
R.T.: 10.466 min
Delta R.T.: -0.003 min
Response: 1268961
Conc: 3.10 ug/L



#9 o-Xylene

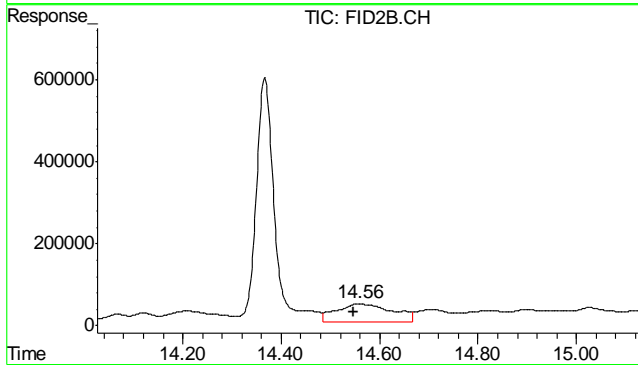
R.T.: 10.965 min
Delta R.T.: 0.000 min
Response: 228489
Conc: 0.70 ug/L

11.11



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

R.T.: 14.367 min
Delta R.T.: 0.001 min
Response: 15514883
Conc: 95.46 %



#11 Naphthalene

R.T.: 14.558 min
Delta R.T.: 0.010 min
Response: 3602469
Conc: 18.26 ug/L

11.1.1
11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120612\GB18762.D\FID1A.CH Vial: 3
 Signal #2 : Y:\1\DATA\120612\GB18762.D\FID2B.CH
 Acq On : 6 Dec 2012 12:14 pm Operator: StephK
 Sample : MB Inst : GC/MS Ins
 Misc : GC3278,GGB1023,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 06 13:37:59 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Thu Dec 06 13:37:39 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	14.37	2778216	88.665	%
10) S	1,2,4-Trichlorobenzene (P)	14.37	14665342	90.233	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3435907	<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	7.67	165737	0.418	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	14.55	199919	1.013	ug/L

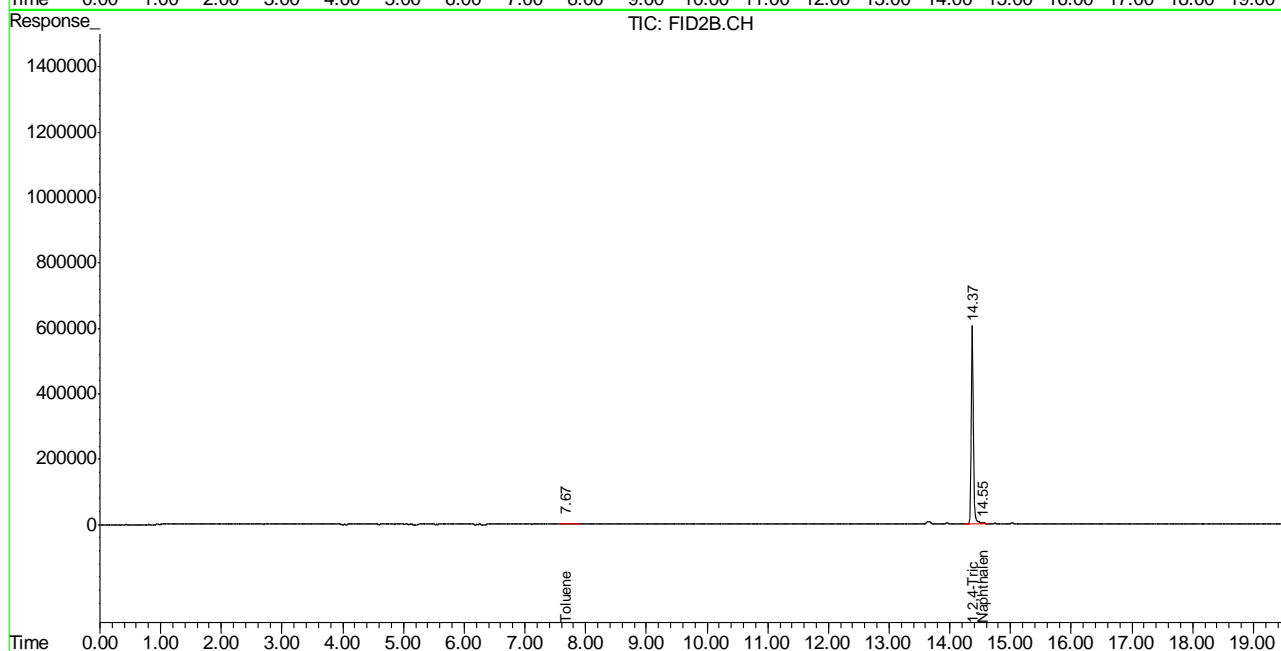
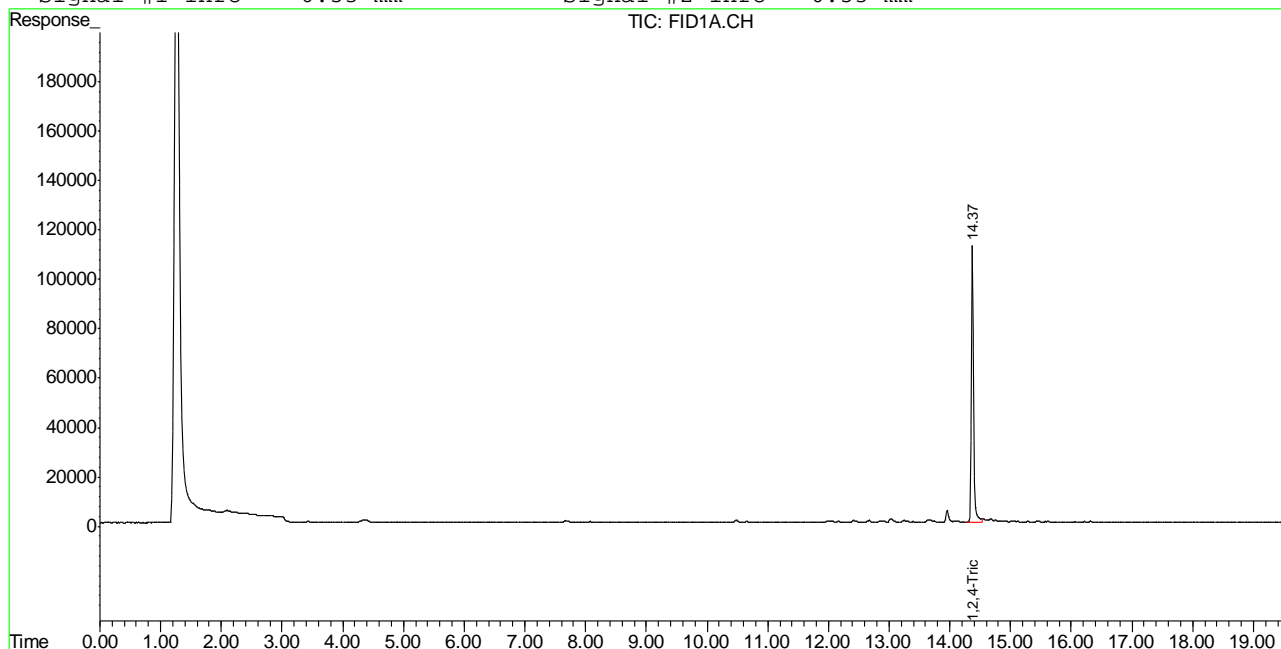
 (f)=RT Delta > 1/2 Window (m)=manual int.
 GB18762.D TB868GB868SOIL.M Fri Dec 07 09:03:25 2012 GC

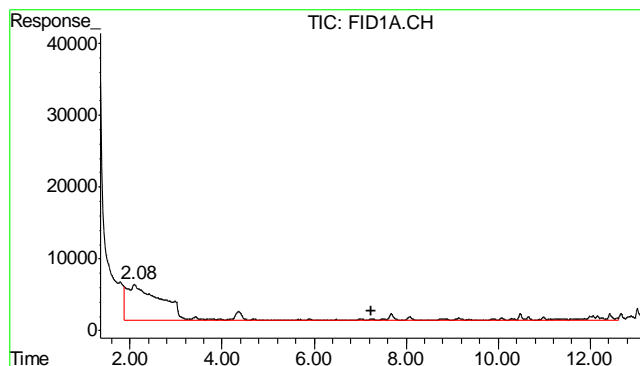
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120612\GB18762.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\120612\GB18762.D\FID2B.CH
Acq On : 6 Dec 2012 12:14 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3278,GGB1023,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 6 13:38 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Thu Dec 06 13:37:39 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

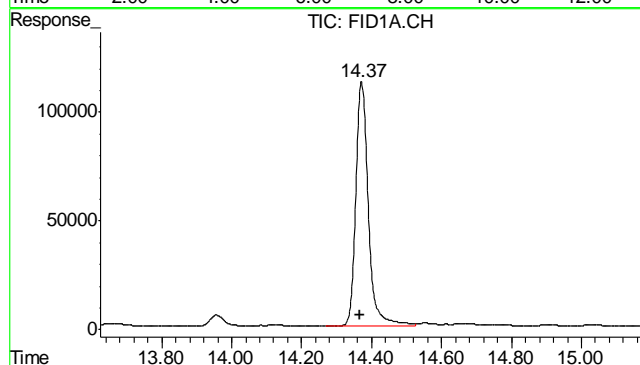
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





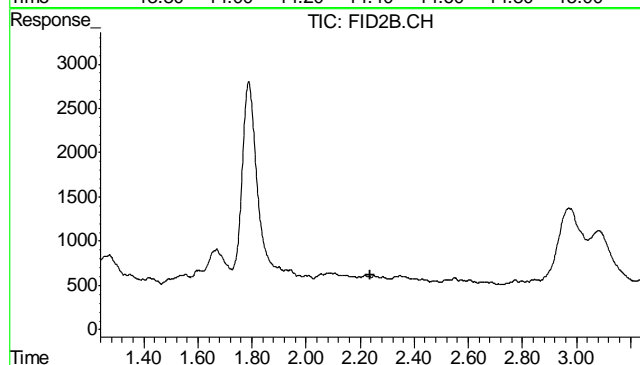
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3435907
Conc: N.D.



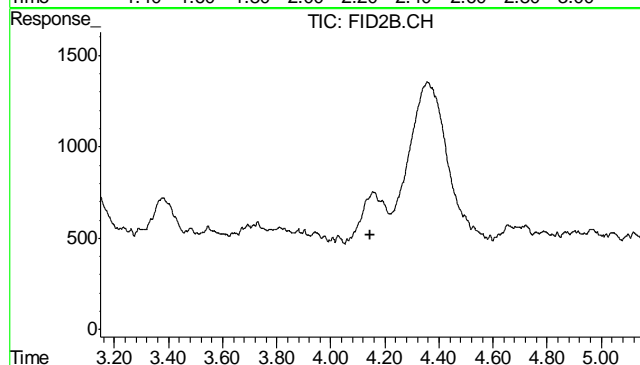
#2 1,2,4-Trichlorobenzene

R.T.: 14.372 min
Delta R.T.: 0.004 min
Response: 2778216
Conc: 88.66 %



#4 Methyl-t-butyl-ether

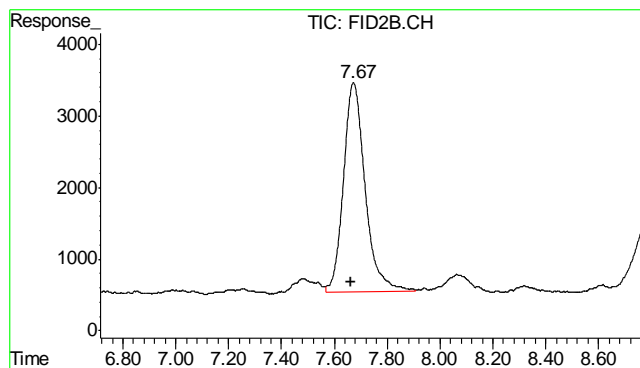
R.T.: 0.000 min
Exp R.T.: 2.239 min
Response: 0
Conc: N.D.



#5 Benzene

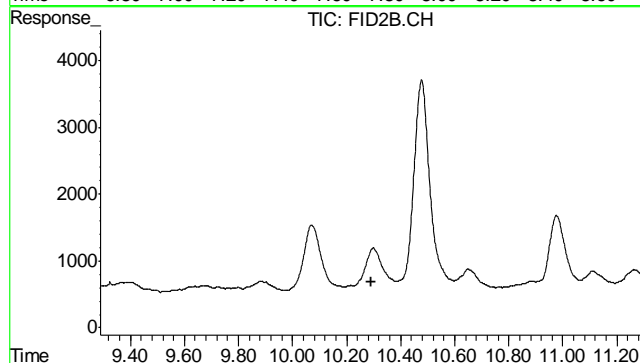
R.T.: 0.000 min
Exp R.T.: 4.147 min
Response: 0
Conc: N.D.

11.21
11



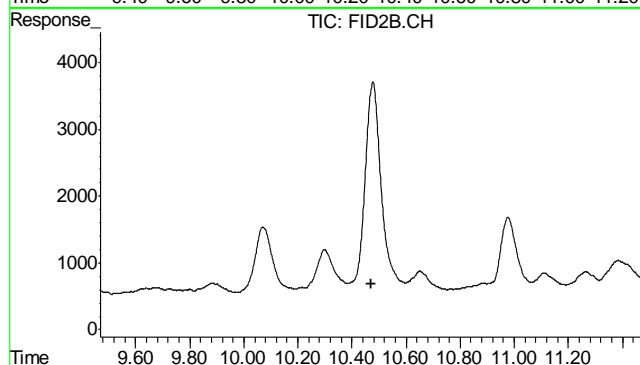
#6 Toluene

R.T.: 7.672 min
Delta R.T.: 0.008 min
Response: 165737
Conc: 0.42 ug/L



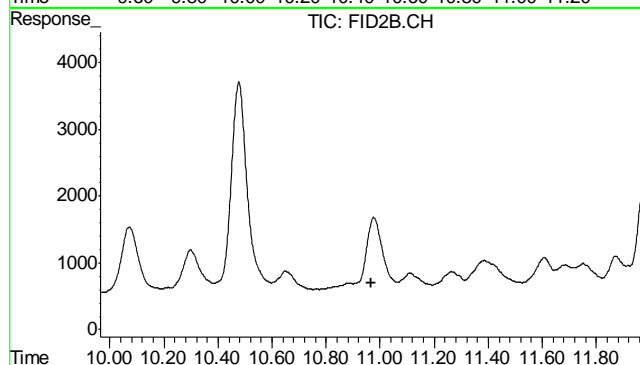
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.290 min
Response: 0
Conc: N.D.



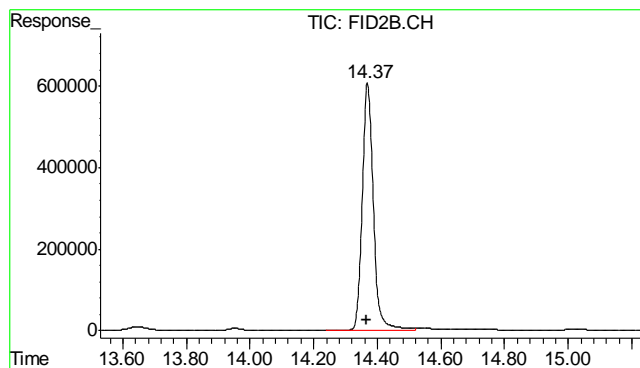
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T.: 10.469 min
Response: 0
Conc: N.D.



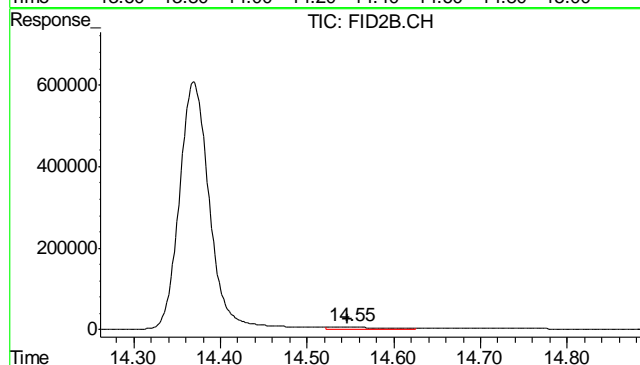
#9 o-Xylene

R.T.: 0.000 min
Exp R.T.: 10.965 min
Response: 0
Conc: N.D.



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

R.T.: 14.370 min
Delta R.T.: 0.004 min
Response: 14665342
Conc: 90.23 %



#11 Naphthalene

R.T.: 14.550 min
Delta R.T.: 0.002 min
Response: 199919
Conc: 1.01 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

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7053-MB	FH008059.D	1	12/05/12	TR	12/05/12	OP7053	GFH446

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

D41448-1

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	78% 35-130%

Blank Spike Summary

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7053-BS	FH008060.D	1	12/05/12	TR	12/05/12	OP7053	GFH446

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

D41448-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	528	79	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	74%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41448
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7053-MS	FH008061.D	1	12/05/12	TR	12/05/12	OP7053	GFH446
OP7053-MSD	FH008062.D	1	12/05/12	TR	12/05/12	OP7053	GFH446
D41381-1	FH008063.D	1	12/05/12	TR	12/05/12	OP7053	GFH446

The QC reported here applies to the following samples:

Method: SW846-8015B

D41448-1

CAS No.	Compound	D41381-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	18.0		752	534	69	478	61	11	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D41381-1	Limits
84-15-1	o-Terphenyl	56%	54%	68%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008082.D
Signal(s) : FID1A.ch
Acq On : 6 Dec 2012 4:13 am
Operator : TEDR
Sample : D41448-1
Misc : OP7053,GFH446,30.07,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 06 09:16:55 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
2) s o-Terphenyl	12.737	1557738850	1273.244 ug/mlm
Target Compounds			
1) H TPH-DRO (C10-C28)	10.422	2900538450	2940.711 ug/ml

(f)=RT Delta > 1/2 Window

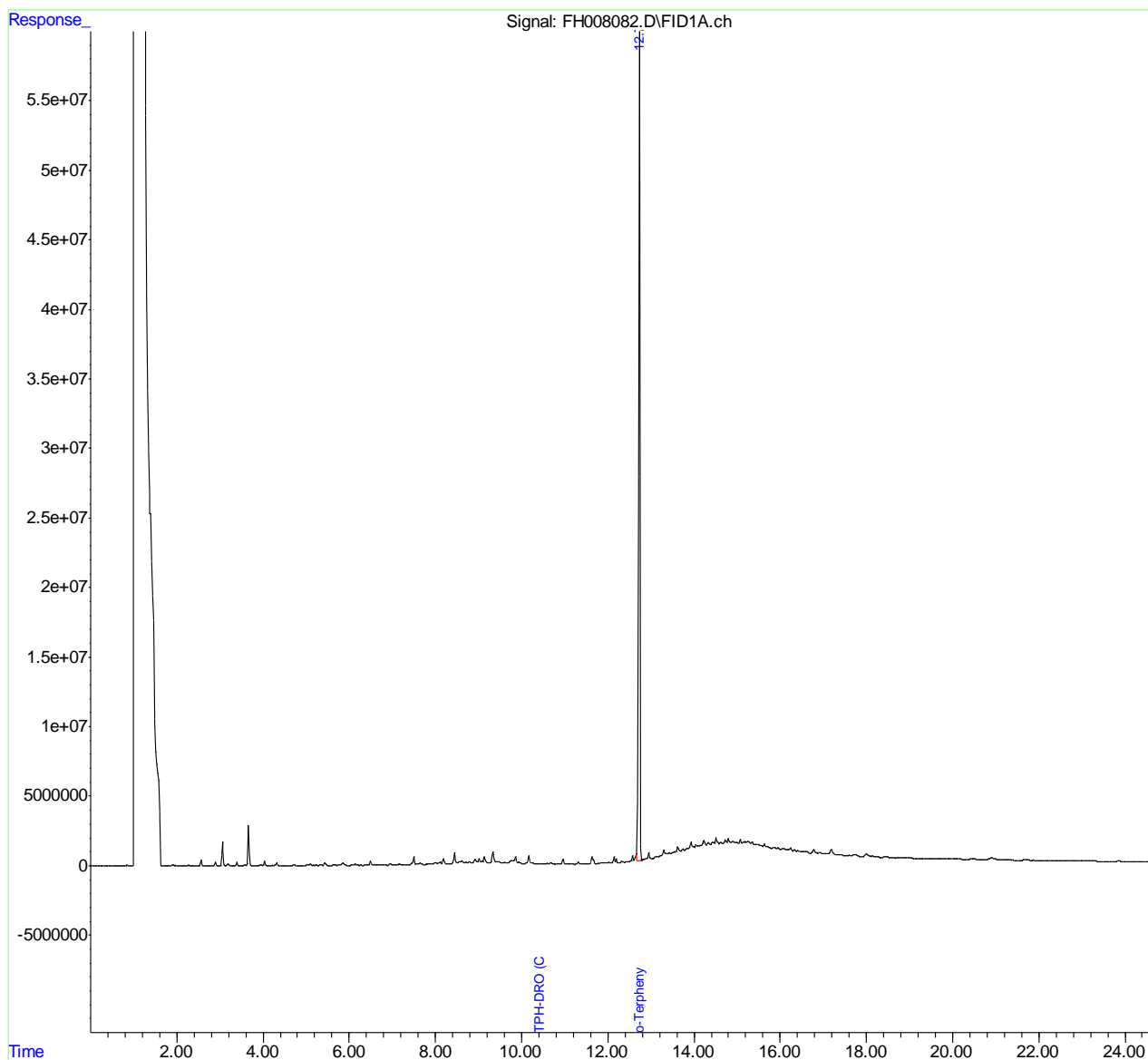
(m)=manual int.

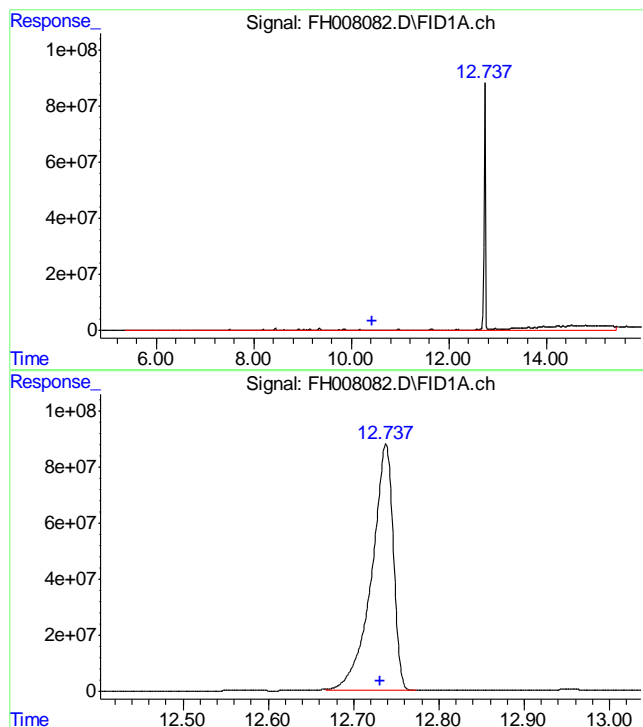
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008082.D
Signal(s) : FID1A.ch
Acq On : 6 Dec 2012 4:13 am
Operator : TEDR
Sample : D41448-1
Misc : OP7053,GFH446,30.07,,,1,1
ALS Vial : 28 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 06 09:16:55 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 10.422 min

Delta R.T.: 0.000 min

Response: 2900538450

Conc: 2940.71 ug/ml m

#2 o-Terphenyl

R.T.: 12.737 min

Delta R.T.: 0.006 min

Response: 1557738850

Conc: 1273.24 ug/ml m

Judy Melson
12/06/12 16:19

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008059.D
Signal(s) : FID1A.ch
Acq On : 5 Dec 2012 2:38 pm
Operator : TEDR
Sample : OP7053-MB
Misc : OP7053,GFH446,30.00,,,1,1
ALS Vial : 5 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 05 15:04:35 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
2) s o-Terphenyl	12.746	1913998694	1564.439 ug/mlm
Target Compounds			
1) H TPH-DRO (C10-C28)	10.422	39324729	39.869 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

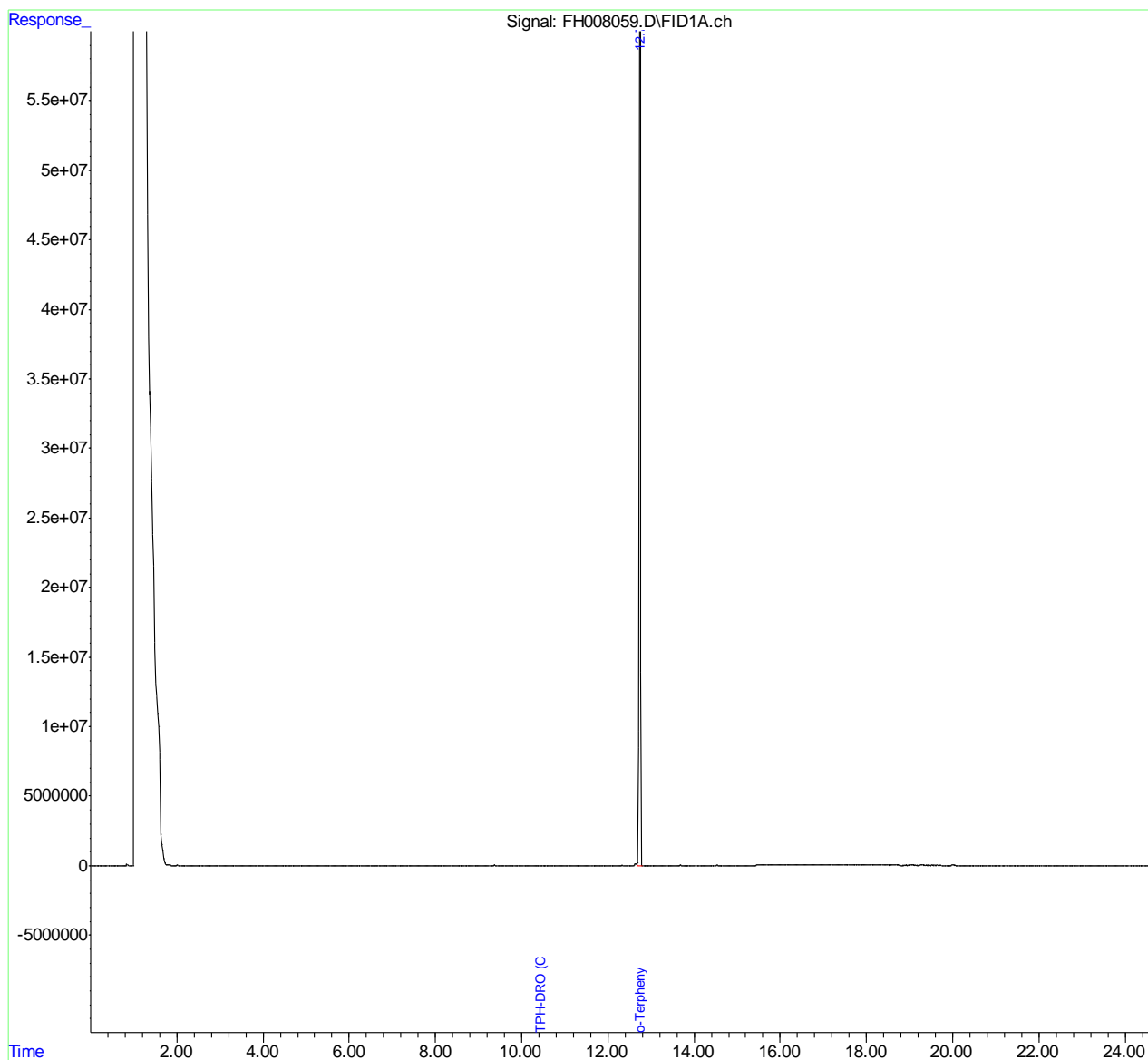
13.2.1
13

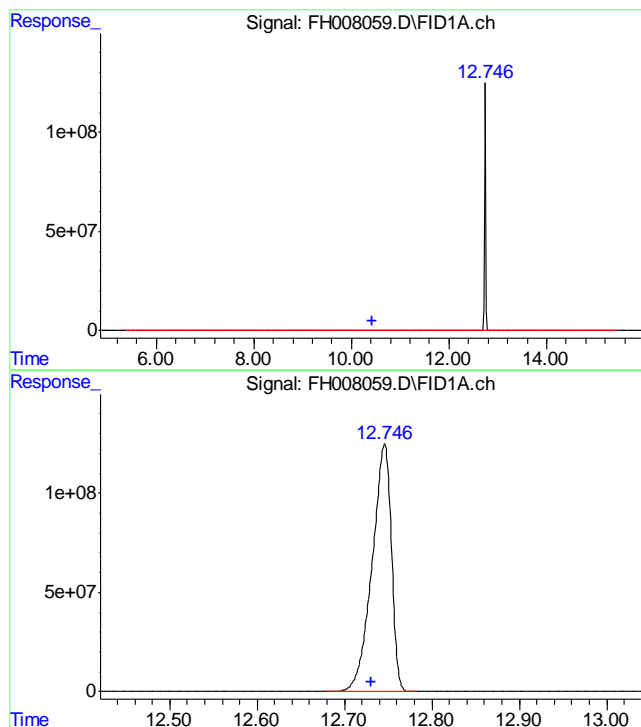
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008059.D
Signal(s) : FID1A.ch
Acq On : 5 Dec 2012 2:38 pm
Operator : TEDR
Sample : OP7053-MB
Misc : OP7053,GFH446,30.00,,,1,1
ALS Vial : 5 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 05 15:04:35 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 10.422 min
Delta R.T.: 0.000 min
Response: 39324729
Conc: 39.87 ug/ml m

#2 o-Terphenyl

R.T.: 12.746 min
Delta R.T.: 0.015 min
Response: 1913998694
Conc: 1564.44 ug/ml 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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

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	0.66	* (a)
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.0	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.080	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.010	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.070	<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	0.13	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.12	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.070	<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	0.21	<3.0

Associated samples MP9006: D41448-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

(a) All sample results >10x method blank concentration or <RL.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	228	294	113	58.5N(a) 75-125
Beryllium	anr			
Boron				
Cadmium	0.0	20.9	28.2	73.7N(b) 75-125
Calcium				
Chromium	29.7	46.6	28.2	75.8 75-125
Cobalt	anr			
Copper	15.5	37.5	28.2	80.1 75-125
Iron	anr			
Lead	12.5	53.2	56.4	72.1N(b) 75-125
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	18.9	35.3	28.2	68.8N(b) 75-125
Phosphorus	anr			
Potassium				
Selenium	0.0	45.9	56.4	81.3 75-125
Silicon				
Silver	0.11	9.0	11.3	78.8 75-125
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	41.4	62.9	28.2	76.2 75-125

Associated samples MP9006: D41448-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
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 and/or sample nonhomogeneity.
- (b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	228	336	113	95.7	13.3	20
Beryllium	anr					
Boron						
Cadmium	0.0	20.8	28.2	73.3N(a)	0.5	20
Calcium						
Chromium	29.7	48.1	28.2	81.2	3.2	20
Cobalt	anr					
Copper	15.5	38.5	28.2	83.6	2.6	20
Iron	anr					
Lead	12.5	54.2	56.4	73.9N(a)	1.9	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	18.9	35.5	28.2	69.5N(a)	0.6	20
Phosphorus	anr					
Potassium						
Selenium	0.0	45.6	56.4	80.8	0.7	20
Silicon						
Silver	0.11	9.0	11.3	78.8	0.0	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium	anr					
Zinc	41.4	65.2	28.2	84.3	3.6	20

Associated samples MP9006: D41448-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
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.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	103	100	103.0	80-120
Beryllium	anr			
Boron				
Cadmium	21.9	25	87.6	80-120
Calcium				
Chromium	23.6	25	94.4	80-120
Cobalt	anr			
Copper	22.8	25	91.2	80-120
Iron	anr			
Lead	45.7	50	91.4	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	22.8	25	91.2	80-120
Phosphorus	anr			
Potassium				
Selenium	48.3	50	96.6	80-120
Silicon				
Silver	9.6	10	96.0	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	23.4	25	93.6	80-120

Associated samples MP9006: D41448-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/05/12

Metal	D41381-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	2020	1950	3.7	0-10
Beryllium	anr			
Boron				
Cadmium	1.00	0.00	100.0(a)	0-10
Calcium				
Chromium	223	267	19.6*(b)	0-10
Cobalt	anr			
Copper	132	142	6.9	0-10
Iron	anr			
Lead	111	122	9.7	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	168	177	25.4*(b)	0-10
Phosphorus	anr			
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	4.00	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	367	477	30.0*(b)	0-10

Associated samples MP9006: D41448-1

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

(b) Serial dilution indicates possible matrix interference.

14.1.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	-0.0047	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP9007: D41448-1

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	4.8	51.6	56.4	82.9
Barium				75-125
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9007: D41448-1

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.8	51.7	56.4	83.1	0.2	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9007: D41448-1

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	46.7	50	93.4	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9007: D41448-1

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

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41448
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9007
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 12/05/12

Metal	D41381-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	42.2	40.8	3.1	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9007: D41448-1

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9008
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 12/06/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	-0.00071	<0.10

Associated samples MP9008: D41448-1

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: D41448
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9008
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/06/12

Metal	D41440-3		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.26	0.96	0.806	86.9	75-125

Associated samples MP9008: D41448-1

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: D41448
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9008
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/06/12

Metal	D41440-3 Original MSD		Spikelot HGWSR1 % Rec		MSD RPD	QC Limit
Mercury	0.26	1.0	0.819	90.4	4.1	20

Associated samples MP9008: D41448-1

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: D41448
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9008
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/06/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.21	0.2	105.0	80-120

Associated samples MP9008: D41448-1

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

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	9.5	<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	26.0	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	310	750		
Selenium	250	24	55		
Silicon	250	15			
Silver	150	2	4.9		
Sodium	2000	30	490	103	<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 MP9015: D41448-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

Metal	D41381-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	32600	168000	125000	108.3	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	8180	132000	125000	99.1	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	35000	161000	125000	100.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9015: D41448-1A

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

Metal	D41381-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	32600	169000	125000	109.1	0.6	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	8180	132000	125000	99.1	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	35000	161000	125000	100.8	0.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9015: D41448-1A

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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

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	122000	125000	97.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	124000	125000	99.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9015: D41448-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
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: D41448
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-5A

QC Batch ID: MP9015
 Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

D41381-1A		QC		
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	6510	6470	0.8	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1640	1720	4.8	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	7000	7390	5.5	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9015: D41448-1A

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

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SERIAL DILUTION RESULTS SUMMARY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.4.4
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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: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8845/GN17994	1.0	0.0	mg/kg	176.0	170	97.0	80-120%
Specific Conductivity	GP8856/GN18003			umhos/cm	9992	10000	100.5	90-110%
pH	GN17962			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:
Batch GP8845: D41448-1
Batch GP8856: D41448-1
Batch GN17962: D41448-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8845/GN17994	D41506-1	mg/kg	0.0	0.0	0.0	0-20%

Associated Samples:
Batch GP8845: D41448-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8845/GN17994	D41506-1	mg/kg	0.0	40.0	35.7	89.2	75-125%

Associated Samples:

Batch GP8845: D41448-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41448
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8845/GN17994	D41506-1	mg/kg	0.0	40.0	38.7	7.9	20%

Associated Samples:
Batch GP8845: D41448-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

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