



12/12/12

Technical Report for

XTO Energy

PCU 296-5A

1210-04

Accutest Job Number: D41506

Sampling Date: 12/03/12

Report to:

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

Total number of pages in report: 139



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: D41506

PCU 296-5A
Project No: 1210-04

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D41506-1	12/03/12	10:20 DS	12/05/12	SO	Soil	RP SUBLINER(COMP)
D41506-1A	12/03/12	10:20 DS	12/05/12	SO	Soil	RP SUBLINER(COMP)

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D41506

Site: PCU 296-5A

Report Date 12/11/2012 2:52:51 PM

On 12/05/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D41506 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: V3V1286

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

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP7061

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D41506-1MS, D41506-1MSD 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: MP9011

- 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) D41506-1MS, D41506-1MSD, D41506-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Lead are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Lead, Nickel, Zinc are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Barium are outside control limits for sample MP9011-S2. High RPD due to possible sample matrix or nonhomogeneity.
- The serial dilution RPD(s) for Cadmium, Selenium, Chromium, Lead, Nickel, Zinc are outside control limits for sample MP9011-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP9011-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP9011-SD1 for Lead: Serial dilution indicates possible matrix interference.
- MP9011-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP9011-SD1 for Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP9012

- 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) D41506-1MS, D41506-1MSD, D41506-1SDL 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: GN17966

- 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.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix SO

Batch ID: R15381

- The data for SW846 3060A/7196A M meets quality control requirements.
- D41506-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN17963

- The following samples were run outside of holding time for method SW846 9045D: D41506-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP9015

- D41506-1A 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: D41506
Account: XTO Energy
Project: PCU 296-5A
Collected: 12/03/12

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

D41506-1 RP SUBLINER(COMP)

TPH-DRO (C10-C28)	33.8	7.4	4.4	mg/kg	SW846-8015B
Arsenic	5.0	0.11		mg/kg	SW846 6020A
Barium	2270	5.5		mg/kg	SW846 6010C
Chromium	23.4	1.1		mg/kg	SW846 6010C
Copper	9.5	1.1		mg/kg	SW846 6010C
Lead	19.9	5.5		mg/kg	SW846 6010C
Nickel	11.9	3.3		mg/kg	SW846 6010C
Zinc	27.7	3.3		mg/kg	SW846 6010C
Specific Conductivity	406	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	23.4	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	168			mv	ASTM D1498-76M
pH	9.93			su	SW846 9045D

D41506-1A RP SUBLINER(COMP)

Calcium	29.1	2.0		mg/l	SW846 6010C
Magnesium	5.60	1.0		mg/l	SW846 6010C
Sodium	109	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	4.84			ratio	USDA HANDBOOK 60

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

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

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Method:	SW846 8260B		
Project:	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V22004.D	1	12/07/12	BD	n/a	n/a	V3V1286
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.060	0.030	mg/kg	
108-88-3	Toluene	ND	0.12	0.060	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.023	mg/kg	
1330-20-7	Xylene (total)	ND	0.24	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	97%		64-130%
460-00-4	4-Bromofluorobenzene	87%		62-131%
17060-07-0	1,2-Dichloroethane-D4	115%		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

Page 1 of 1

Client Sample ID:	RP SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12516.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 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	0.0092	0.0048	mg/kg	
120-12-7	Anthracene	ND	0.0092	0.0048	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0092	0.0048	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0092	0.0048	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0092	0.0048	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0092	0.0048	mg/kg	
218-01-9	Chrysene	ND	0.0092	0.0048	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0092	0.0048	mg/kg	
206-44-0	Fluoranthene	ND	0.0092	0.0048	mg/kg	
86-73-7	Fluorene	ND	0.0092	0.0048	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0092	0.0048	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.011	mg/kg	
129-00-0	Pyrene	ND	0.0092	0.0048	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	85%		10-159%
321-60-8	2-Fluorobiphenyl	71%		19-131%
1718-51-0	Terphenyl-d14	82%		18-150%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Method:	SW846 8015B		
Project:	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18764.D	1	12/06/12	SK	n/a	n/a	GGB1023
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	90%		60-140%		

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

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

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP SUBLINER(COMP)		Date Sampled:	12/03/12
Lab Sample ID:	D41506-1		Date Received:	12/05/12
Matrix:	SO - Soil		Percent Solids:	90.2
Method:	SW846-8015B SW846 3546			
Project:	PCU 296-5A			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD20243.D	1	12/07/12	AV	12/06/12	OP7061	GFD1015
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	33.8	7.4	4.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	68%		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 SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Project:	PCU 296-5A		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.0	0.11	mg/kg	5	12/06/12	12/07/12 JM	SW846 6020A ²	SW846 3050B ⁷
Barium	2270	5.5	mg/kg	5	12/06/12	12/10/12 JB	SW846 6010C ⁴	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Chromium	23.4	1.1	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Copper	9.5	1.1	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Lead	19.9	5.5	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Mercury	< 0.092	0.092	mg/kg	1	12/06/12	12/06/12 JB	SW846 7471B ¹	SW846 7471B ⁵
Nickel	11.9	3.3	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Selenium	< 5.5	5.5	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Silver	< 3.3	3.3	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶
Zinc	27.7	3.3	mg/kg	1	12/06/12	12/07/12 JB	SW846 6010C ³	SW846 3050B ⁶

(1) Instrument QC Batch: MA3057

(2) Instrument QC Batch: MA3061

(3) Instrument QC Batch: MA3062

(4) Instrument QC Batch: MA3069

(5) Prep QC Batch: MP9008

(6) Prep QC Batch: MP9011

(7) Prep QC Batch: MP9012

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Project:	PCU 296-5A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	406	1.0	umhos/cm	1	12/07/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	12/07/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	23.4	2.1	mg/kg	1	12/07/12 15:49	JB	SW846 3060A/7196A M
Redox Potential Vs H2	168		mv	1	12/05/12	JD	ASTM D1498-76M
Solids, Percent	90.2		%	1	12/06/12	SWT	SM19 2540B M
pH	9.93		su	1	12/05/12 15:00	JD	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1A	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Project:	PCU 296-5A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	29.1	2.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	5.60	1.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²
Sodium	109	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 SUBLINER(COMP)	Date Sampled:	12/03/12
Lab Sample ID:	D41506-1A	Date Received:	12/05/12
Matrix:	SO - Soil	Percent Solids:	90.2
Project:	PCU 296-5A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	4.84		ratio	1	12/10/12 10:13	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

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

 ACCUTEST LABORATORIES		4036 Youngfield Street, Wheat Ridge, CO 80033 TEL. 303-425-6021 FAX: 303-425-6854 www.acctest.com						FED-EX Tracking # _____ Accutest Quote # _____		Bottle Order Control # _____ Accutest Job # D41506						
Client / Reporting Information			Project Information						Requested Analysis (see TEST CODE sheet)						Matrix Codes	
Company Name KRW Consulting Street Address 8000 West 14th Street; Suite 200 City Lakewood, CO 80214 Project Contact Dwayne Knudson Phone # 970-488-1098 Sampler(s) Name(s) DAVID SANDERS 970-488-1098			Project Name: XTO PCW 296-SA						DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank							
			Billing Information (if different from Report to) Company Name XTO Energy Street Address 21459 CR 5 City Rifle, CO 81650 Attention: Jessica Dooling													
			Project # 1210-04		Street Address 21459 CR 5 City Rifle, CO 81650 Attention: Jessica Dooling				T-910							
			Client Purchase Order # Joe Hess													
Turnaround Time (Business days) <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 TIA data available VIA Lablink			Approved By (Accutest PM) / Date: _____ _____ _____ _____ _____ _____		Data Deliverable Information <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> State Forms Required <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Send Forms to State <input type="checkbox"/> COMMBN <input type="checkbox"/> Report by Fax <input type="checkbox"/> COMMBN+ <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> <input type="checkbox"/> EDD Format Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC Narrative (+ chromatograms)						Please email to: KRW Piceance Team					
Sample Custody must be documented below each time samples change possession, including courier delivery.			Relinquished by Sampler: 1 Lori Alberson Date Time: 12/12/2000 Received By: [Signature]		Relinquished by Sampler: 3 Date Time: Received By: 3		Relinquished by Sampler: 5 Date Time: Received By: 5		Relinquished by: 2 Date Time: Received By: 2		Relinquished by: 4 Date Time: 12/12/2000 Received By: [Signature]					
Custody Seal # 5 Not Intact <input type="checkbox"/> Preserved where applicable <input checked="" type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. 3.7°																

D41506: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D41506

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 12/5/2012 10:00:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 296-5A

Airbill #'s:

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: D41506
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1286-MB	3V21999.D	1	12/06/12	BD	n/a	n/a	V3V1286

The QC reported here applies to the following samples:

Method: SW846 8260B

D41506-1

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

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	101% 64-130%
460-00-4	4-Bromofluorobenzene	84% 62-131%
17060-07-0	1,2-Dichloroethane-D4	124% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D41506
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1286-BS	3V22000.D	1	12/06/12	BD	n/a	n/a	V3V1286

The QC reported here applies to the following samples:

Method: SW846 8260B

D41506-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.9	100	70-130
100-41-4	Ethylbenzene	50	47.3	95	70-130
108-88-3	Toluene	50	45.4	91	70-130
1330-20-7	Xylene (total)	150	142	95	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	64-130%
460-00-4	4-Bromofluorobenzene	98%	62-131%
17060-07-0	1,2-Dichloroethane-D4	125%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41506
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41506-1MS	3V22002.D	1	12/07/12	BD	n/a	n/a	V3V1286
D41506-1MSD	3V22003.D	1	12/07/12	BD	n/a	n/a	V3V1286
D41506-1	3V22004.D	1	12/07/12	BD	n/a	n/a	V3V1286

The QC reported here applies to the following samples:

Method: SW846 8260B

D41506-1

CAS No.	Compound	D41506-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3000	3130	104	3030	101	3	64-139/30
100-41-4	Ethylbenzene	ND		3000	3010	100	2900	97	4	68-136/30
108-88-3	Toluene	ND		3000	2720	91	2650	88	3	60-130/30
1330-20-7	Xylene (total)	ND		9010	9080	101	8830	98	3	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D41506-1	Limits
2037-26-5	Toluene-D8	97%	95%	97%	64-130%
460-00-4	4-Bromofluorobenzene	97%	98%	87%	62-131%
17060-07-0	1,2-Dichloroethane-D4	122%	114%	115%	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 : 3V22004.D
Acq On : 7 Dec 2012 1:43 am
Operator : BRETD
Sample : D41506-1
Misc : MS5066,V3V1286,5.072,,100,5,1
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Dec 07 11:53:31 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	124817	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.655	114	221305	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.292	117	255859	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.284	152	133689	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.247	102	17367	57.32	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	114.64%
61) Toluene-d8	14.050	98	298056	48.32	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.64%
69) 4-Bromofluorobenzene	16.244	95	110817	43.71	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	87.42%

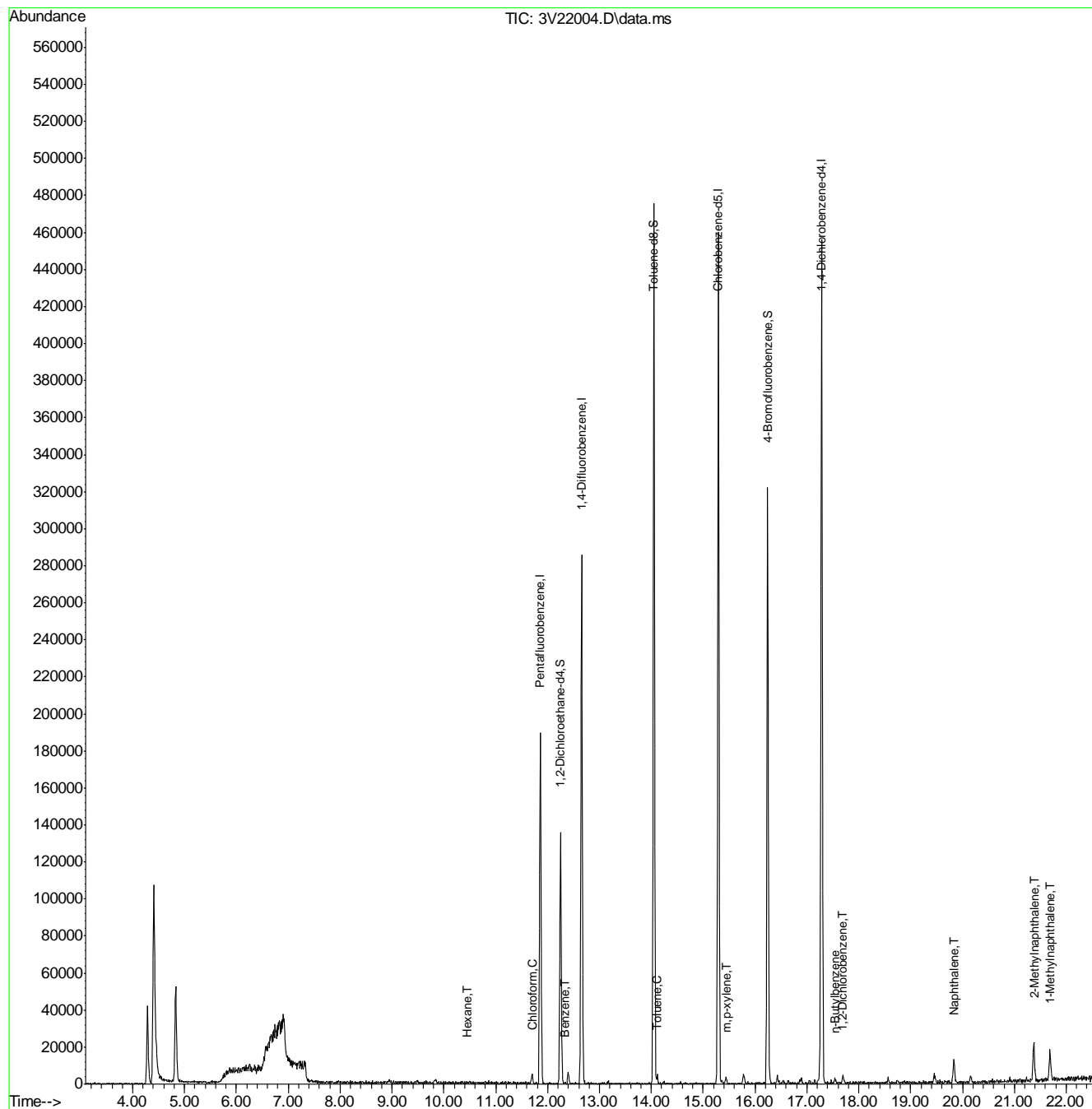
Target Compounds						Qvalue
1) TVH-Gasoline	13.285	TIC	-9125m	158.76	ug/l	
29) Chloroform	11.702	83	4229	1.33	ug/l	91
41) Hexane	10.458	57	132	0.04	ug/l	100
50) Benzene	12.340	78	196	0.03	ug/l	100
62) Toluene	14.114	92	1818	0.33	ug/l	100
72) m,p-xylene	15.446	106	1352	0.32	ug/l	99
87) 1,2-Dichlorobenzene	17.688	146	1906	0.43	ug/l #	93
88) n-Butylbenzene	17.543	91	2407	0.31	ug/l #	85
91) Naphthalene	19.843	128	15427	5.25	ug/l	100
94) 2-Methylnaphthalene	21.377	142	15460	5.94	ug/l	98
95) 1-Methylnaphthalene	21.688	142	12595	5.27	ug/l	98

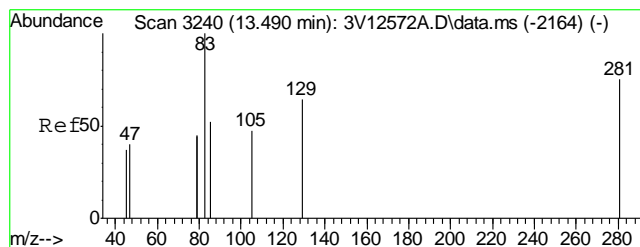
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
Data File : 3V22004.D
Acq On : 7 Dec 2012 1:43 am
Operator : BRETD
Sample : D41506-1
Misc : MS5066,V3V1286,5.072,,100,5,1
ALS Vial : 31 Sample Multiplier: 1

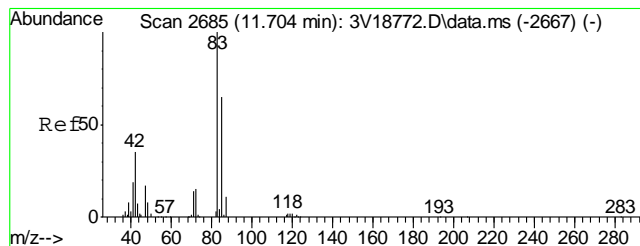
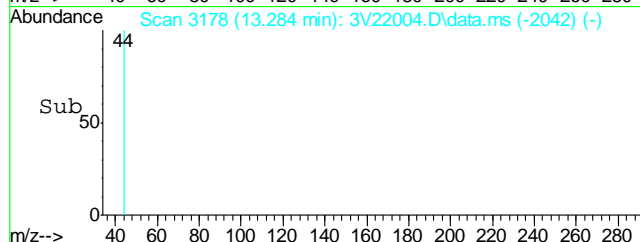
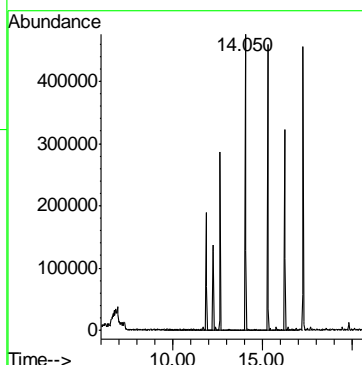
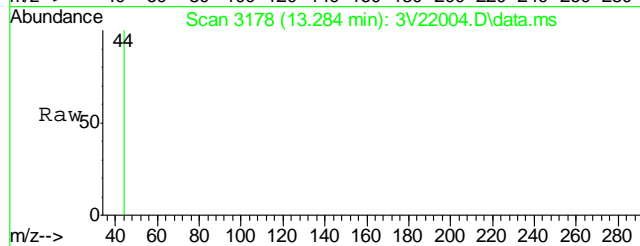
Quant Time: Dec 07 11:53:31 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





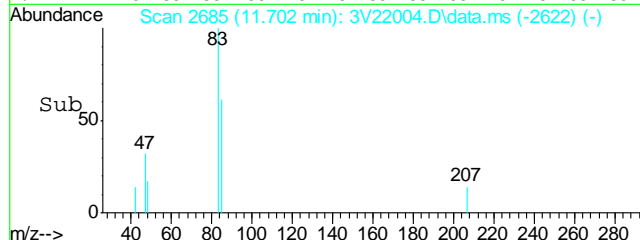
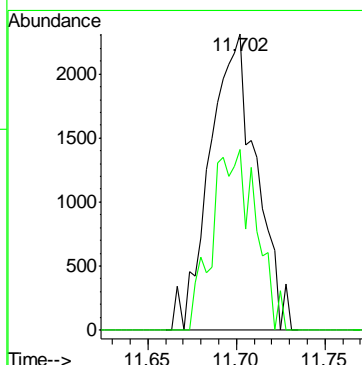
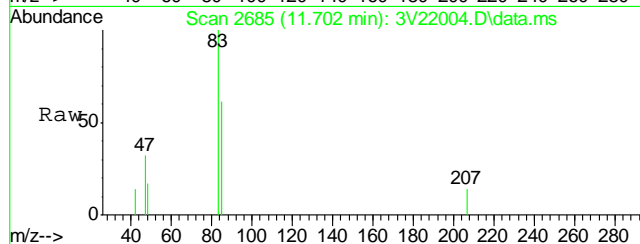
#1
TVH-Gasoline
Concen: 158.76 ug/l m
RT: 13.285 min Scan# 3178
Delta R.T. 0.000 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

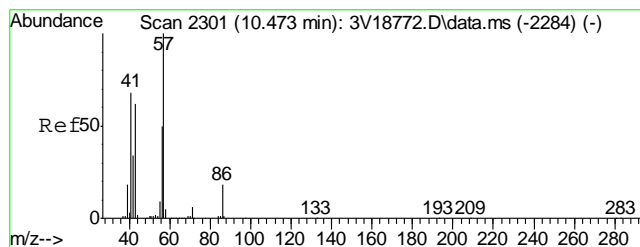
Tgt Ion:TIC Resp: -9125



#29
Chloroform
Concen: 1.33 ug/l
RT: 11.702 min Scan# 2685
Delta R.T. 0.002 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

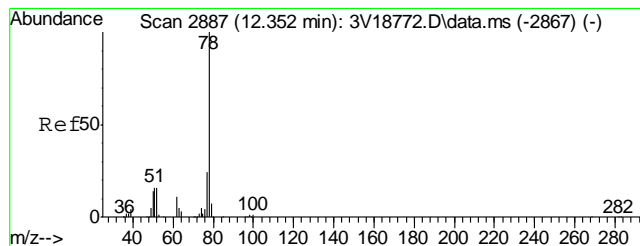
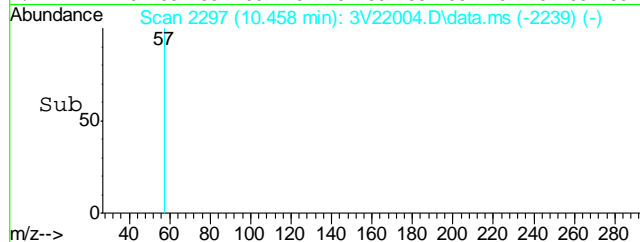
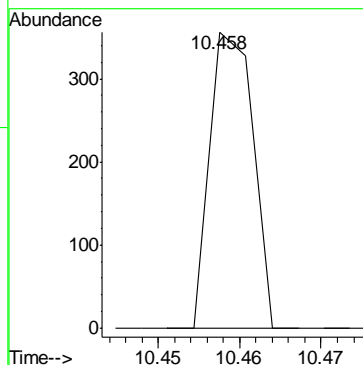
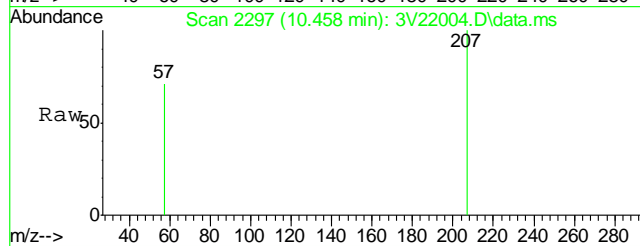
Tgt Ion: 83 Resp: 4229
Ion Ratio Lower Upper
83 100
85 58.0 44.7 84.7





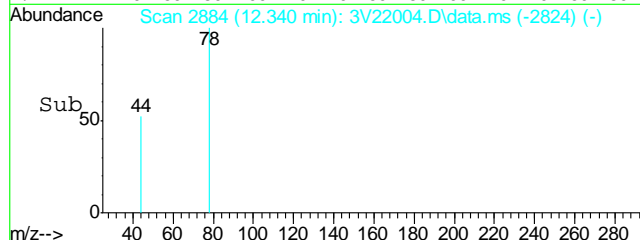
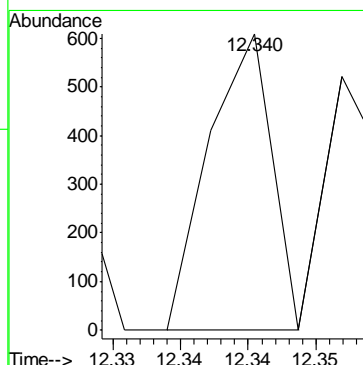
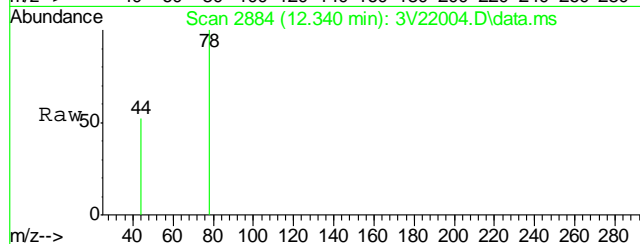
#41
Hexane
Concen: 0.04 ug/l
RT: 10.458 min Scan# 2297
Delta R.T. -0.014 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

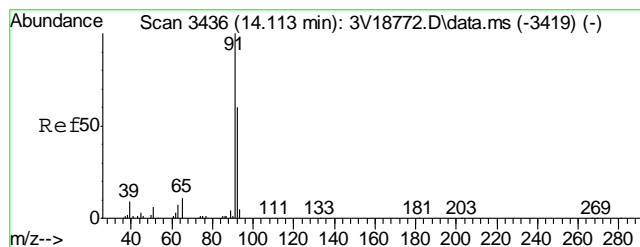
Tgt Ion: 57 Resp: 132



#50
Benzene
Concen: 0.03 ug/l
RT: 12.340 min Scan# 2884
Delta R.T. -0.008 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

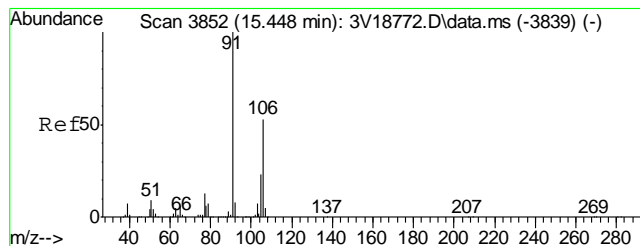
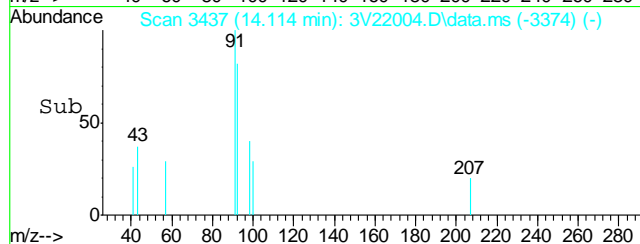
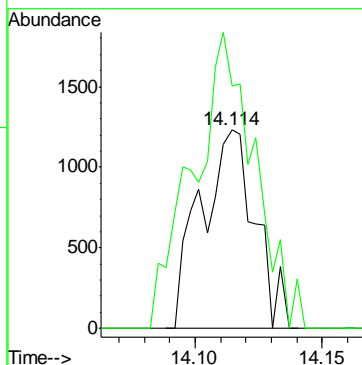
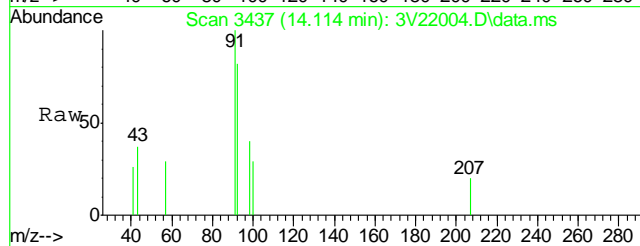
Tgt Ion: 78 Resp: 196





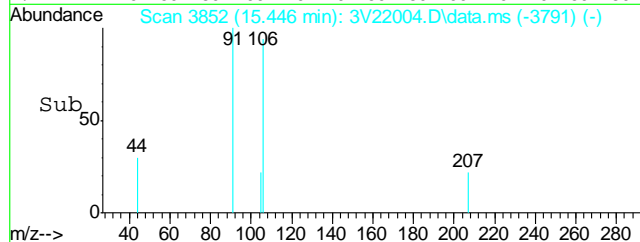
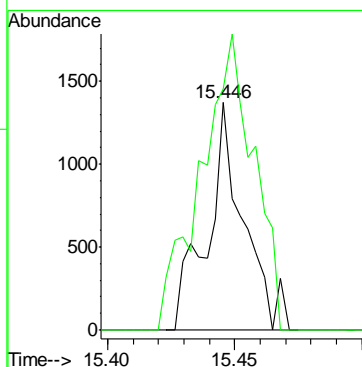
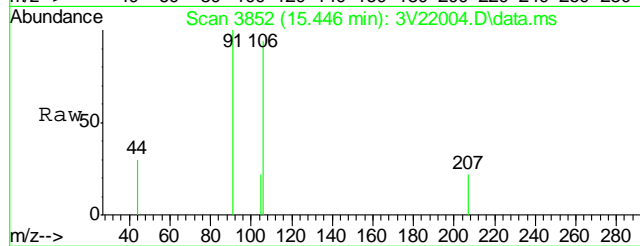
#62
Toluene
Concen: 0.33 ug/l
RT: 14.114 min Scan# 3437
Delta R.T. 0.002 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

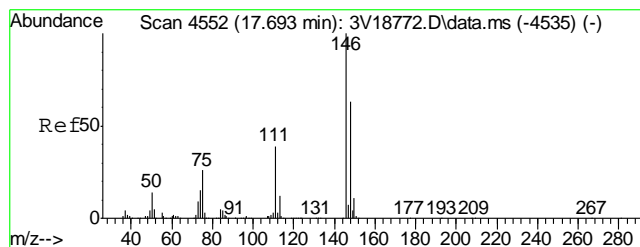
Tgt Ion: 92 Resp: 1818
Ion Ratio Lower Upper
92 100
91 169.7 150.2 190.2



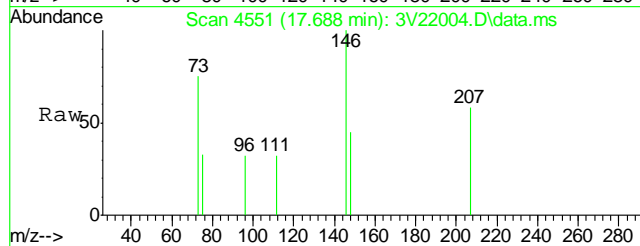
#72
m,p-xylene
Concen: 0.32 ug/l
RT: 15.446 min Scan# 3852
Delta R.T. -0.005 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

Tgt Ion: 106 Resp: 1352
Ion Ratio Lower Upper
106 100
91 189.9 168.1 208.1

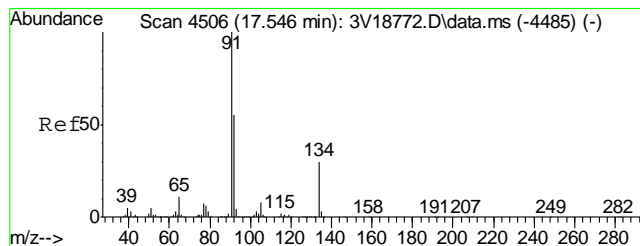
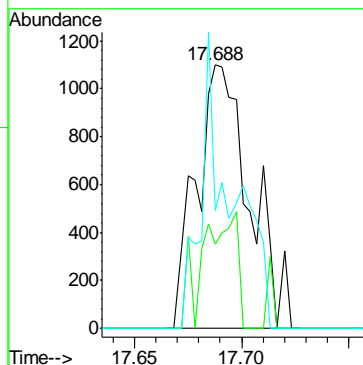
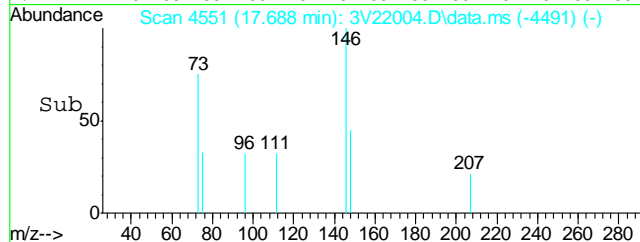




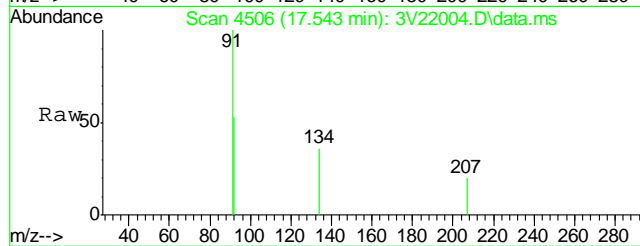
#87
1,2-Dichlorobenzene
Concen: 0.43 ug/l
RT: 17.688 min Scan# 4551
Delta R.T. -0.008 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am



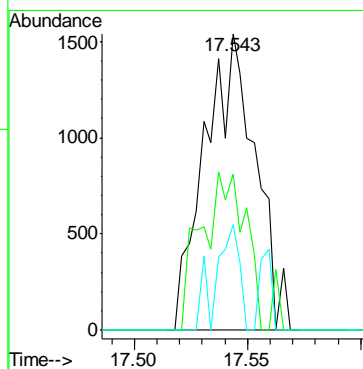
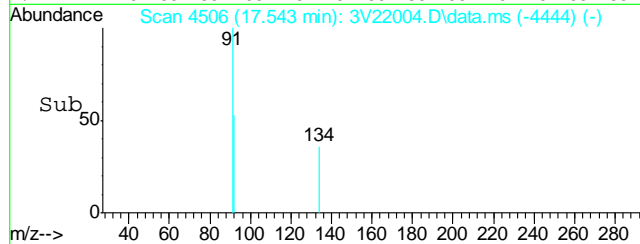
Tgt Ion	Ratio	Lower	Upper
146	100		
111	28.4	31.0	46.6#
148	63.9	51.4	77.2

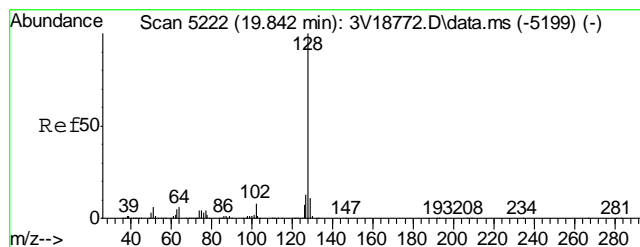


#88
n-Butylbenzene
Concen: 0.31 ug/l
RT: 17.543 min Scan# 4506
Delta R.T. -0.002 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am



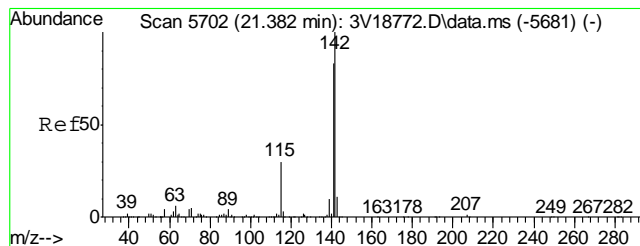
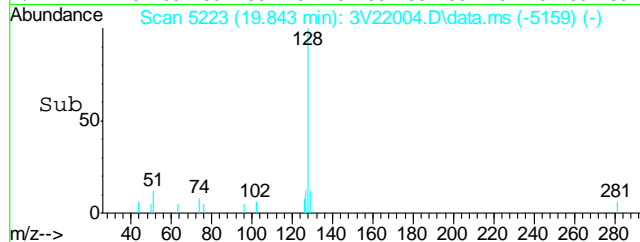
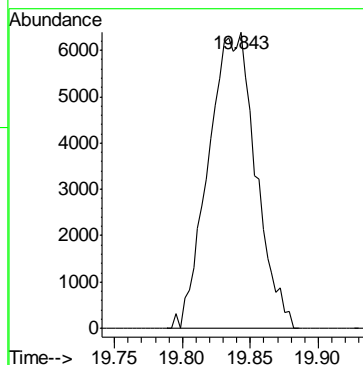
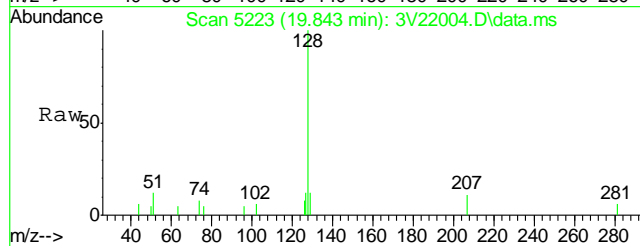
Tgt Ion	Ratio	Lower	Upper
91	100		
92	46.8	43.8	65.8
134	16.7	23.1	34.7#





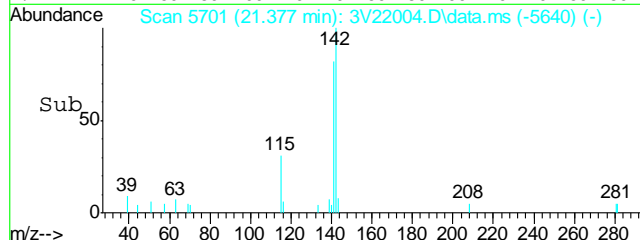
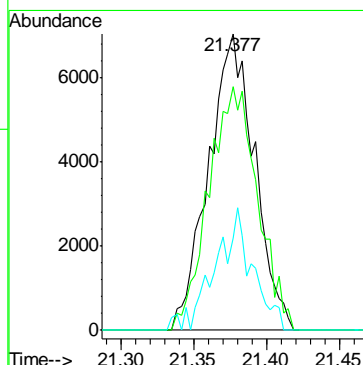
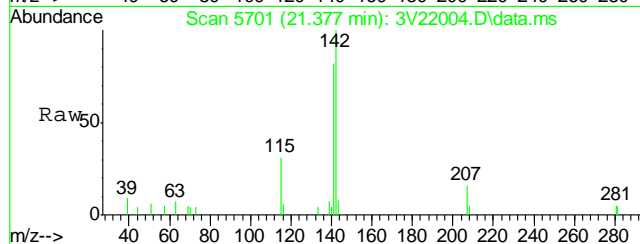
#91
Naphthalene
Concen: 5.25 ug/l
RT: 19.843 min Scan# 5223
Delta R.T. 0.005 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

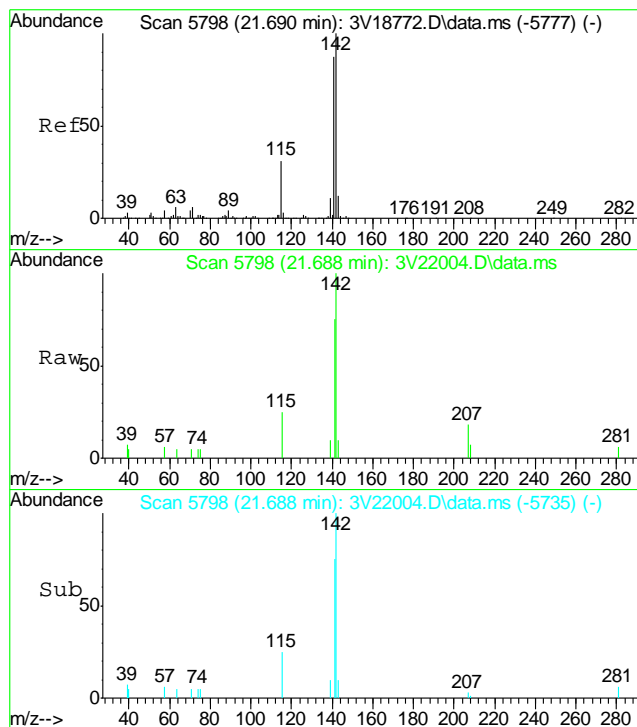
Tgt Ion:128 Resp: 15427



#94
2-Methylnaphthalene
Concen: 5.94 ug/l
RT: 21.377 min Scan# 5701
Delta R.T. -0.005 min
Lab File: 3V22004.D
Acq: 7 Dec 2012 1:43 am

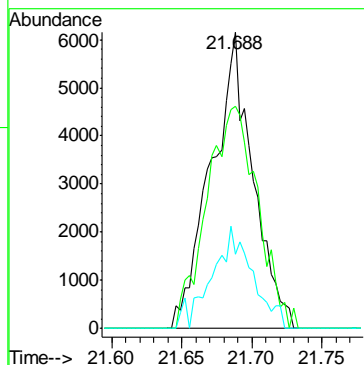
Tgt Ion:142 Resp: 15460
Ion Ratio Lower Upper
142 100
141 87.2 68.6 103.0
115 32.5 23.8 35.6





#95
 1-Methylnaphthalene
 Concen: 5.27 ug/l
 RT: 21.688 min Scan# 5798
 Delta R.T. 0.002 min
 Lab File: 3V22004.D
 Acq: 7 Dec 2012 1:43 am

Tgt Ion:	142	Resp:	12595
Ion Ratio	Lower	Upper	
142	100		
141	91.0	70.6	106.0
115	31.7	25.4	38.2



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
 Data File : 3V21999.D
 Acq On : 6 Dec 2012 11:07 pm
 Operator : BRETD
 Sample : MB
 Misc : MS5066,V3V1286,5.00,,100,5,1
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Dec 07 11:33:59 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	11.864	168	108264	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.660	114	197587	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.293	117	214080	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.282	152	112638	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.249	102	16296	62.00	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	124.00%
61) Toluene-d8	14.049	98	261414	50.65	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.30%
69) 4-Bromofluorobenzene	16.240	95	89291	42.10	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	84.20%

Target Compounds

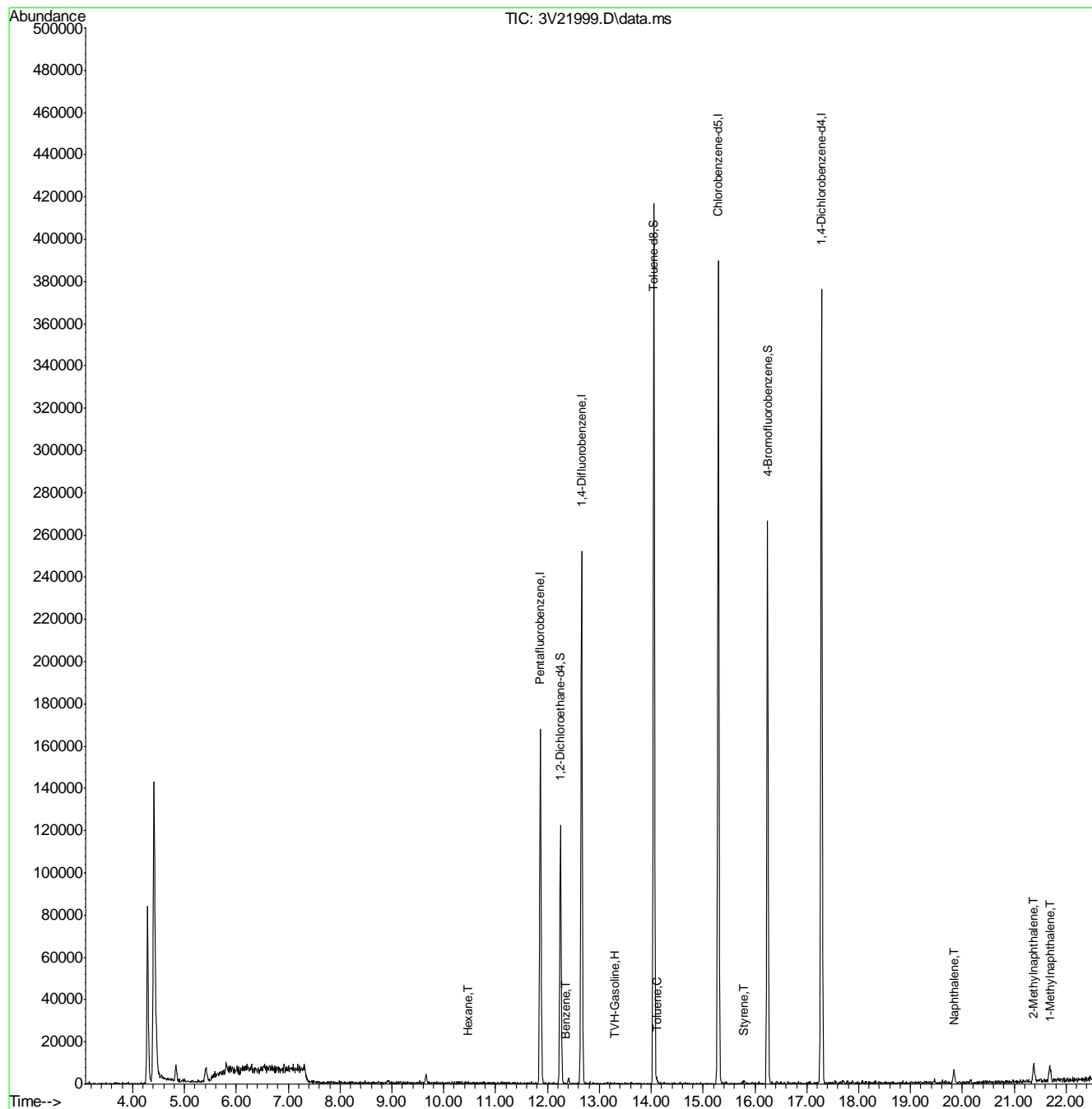
					Qvalue
1) TVH-Gasoline	13.285	TIC	60208m	161.01	ug/l
41) Hexane	10.469	57	148	0.05	ug/l
50) Benzene	12.352	78	73	0.01	ug/l
62) Toluene	14.110	92	1066	0.23	ug/l
71) Styrene	15.781	104	191	0.18	ug/l
91) Naphthalene	19.839	128	7801	4.47	ug/l
94) 2-Methylnaphthalene	21.378	142	7469	3.40	ug/l
95) 1-Methylnaphthalene	21.693	142	5651	2.81	ug/l

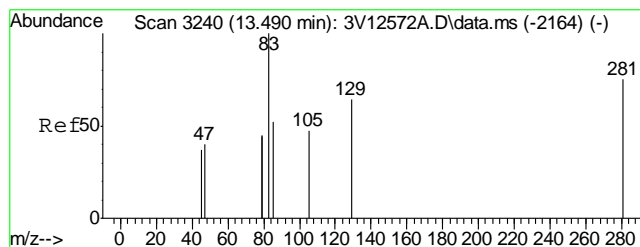
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120612.S\
Data File : 3V21999.D
Acq On : 6 Dec 2012 11:07 pm
Operator : BRETD
Sample : MB
Misc : MS5066,V3V1286,5.00,,100,5,1
ALS Vial : 26 Sample Multiplier: 1

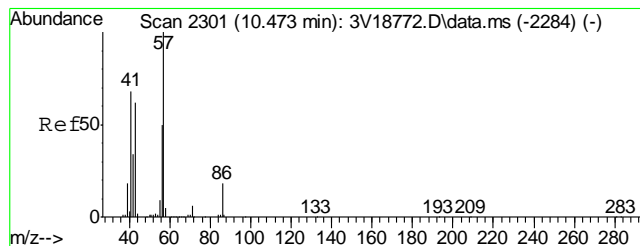
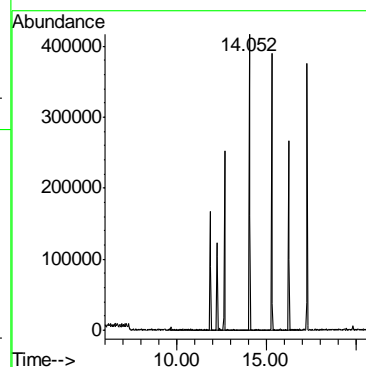
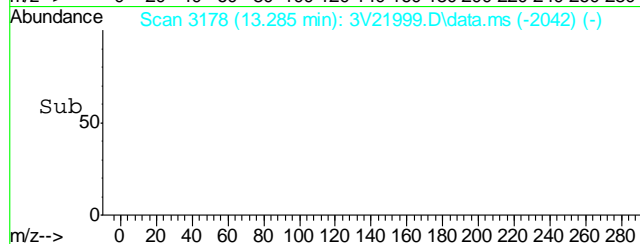
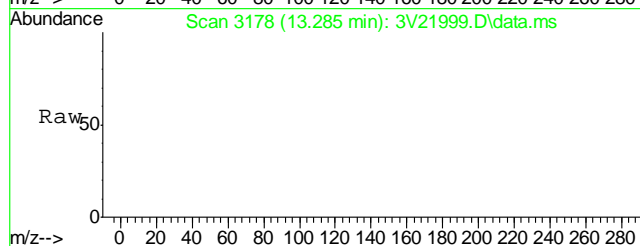
Quant Time: Dec 07 11:33:59 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





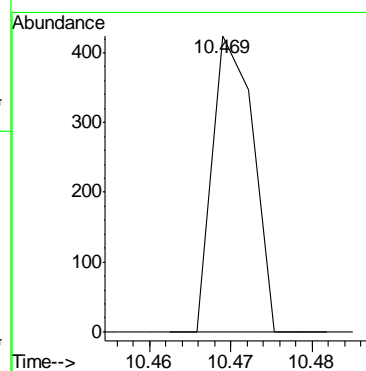
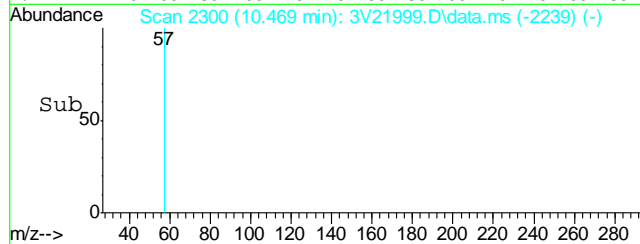
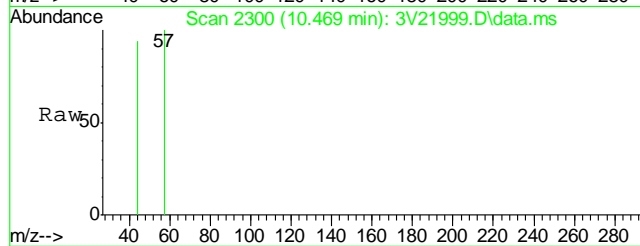
#1
TVH-Gasoline
Concen: 161.01 ug/l m
RT: 13.285 min Scan# 3178
Delta R.T. 0.000 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

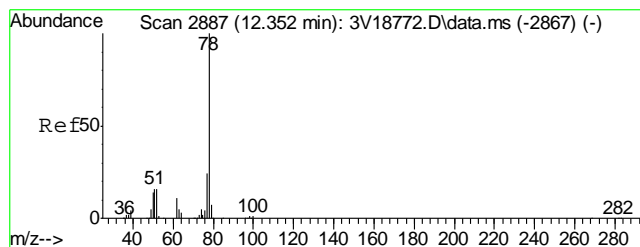
Tgt Ion:TIC Resp: 60208



#41
Hexane
Concen: 0.05 ug/l
RT: 10.469 min Scan# 2300
Delta R.T. -0.003 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

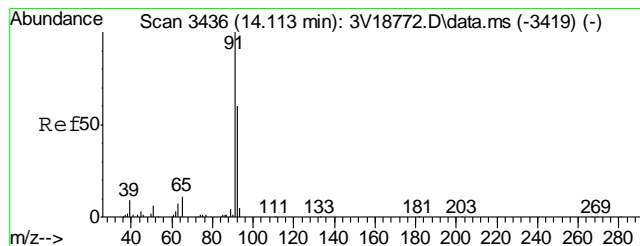
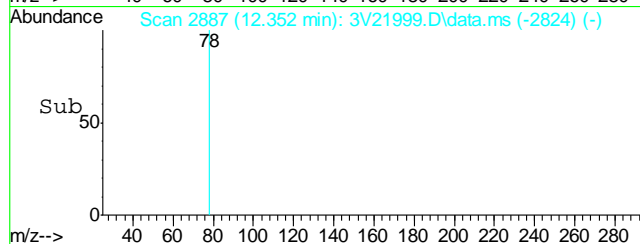
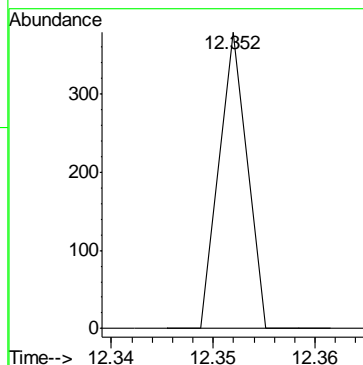
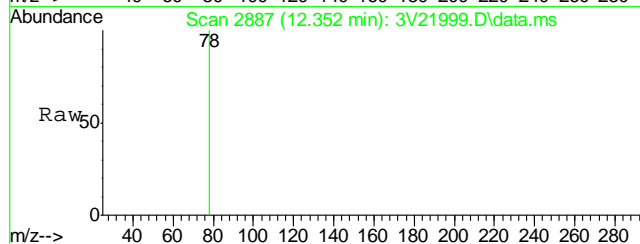
Tgt Ion: 57 Resp: 148





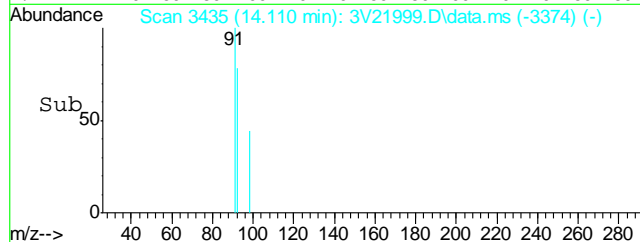
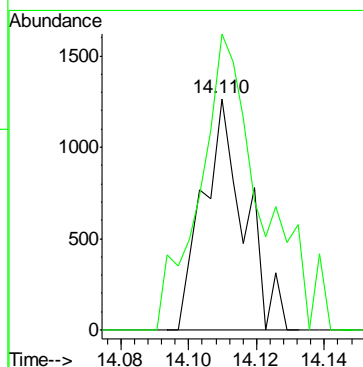
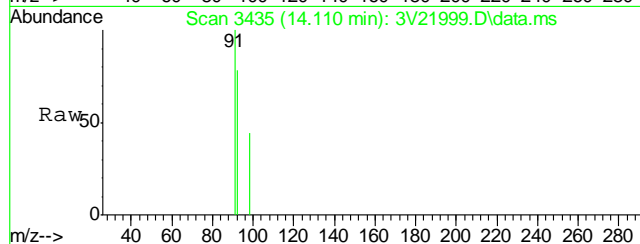
#50
Benzene
Concen: 0.01 ug/l
RT: 12.352 min Scan# 2887
Delta R.T. 0.004 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

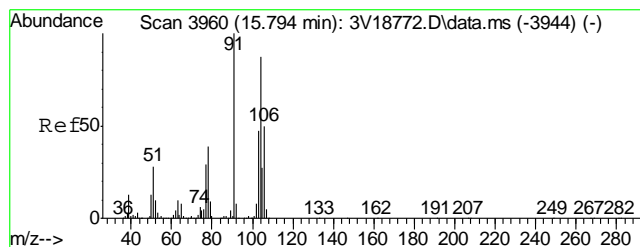
Tgt Ion: 78 Resp: 73



#62
Toluene
Concen: 0.23 ug/l
RT: 14.110 min Scan# 3435
Delta R.T. -0.003 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

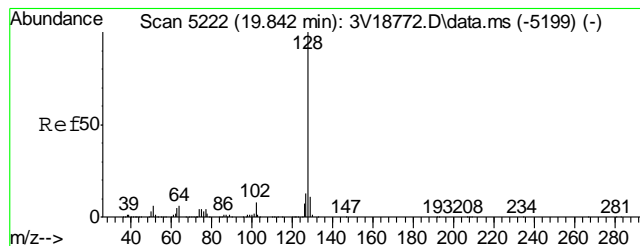
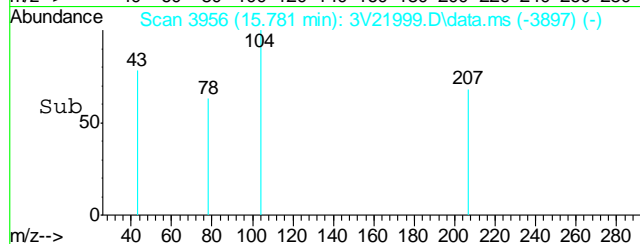
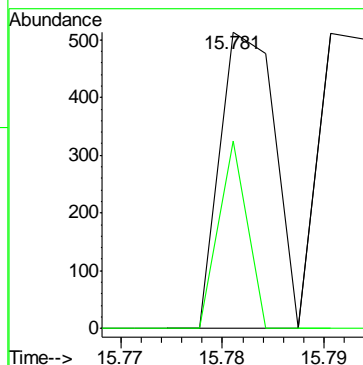
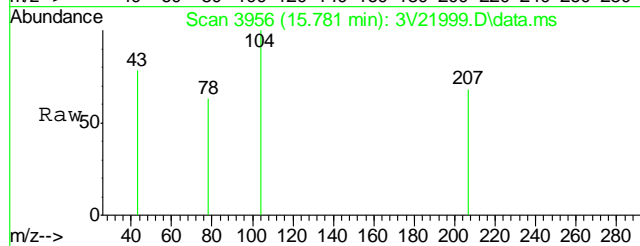
Tgt Ion: 92 Resp: 1066
Ion Ratio Lower Upper
92 100
91 193.2 150.2 190.2#





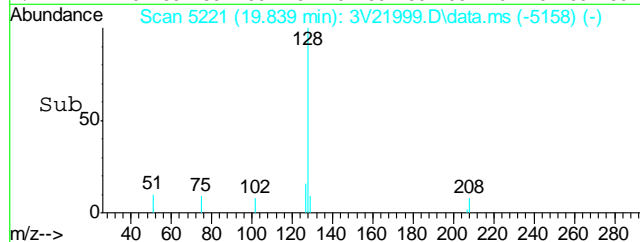
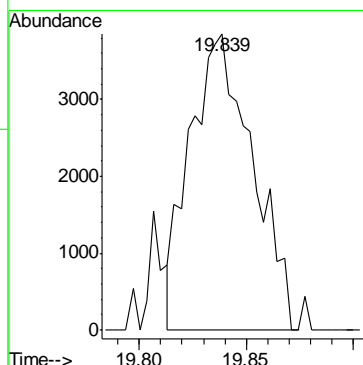
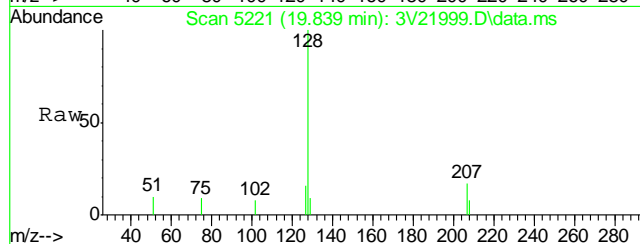
#71
Styrene
Concen: 0.18 ug/l
RT: 15.781 min Scan# 3956
Delta R.T. -0.012 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

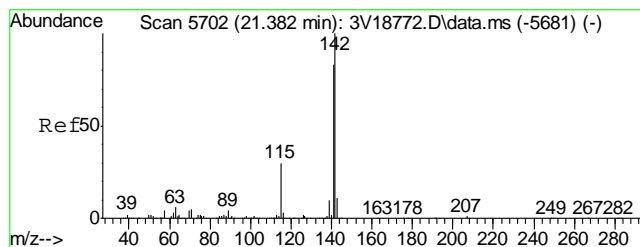
Tgt Ion:104 Resp: 191
Ion Ratio Lower Upper
104 100
78 33.0 25.4 65.4



#91
Naphthalene
Concen: 4.47 ug/l
RT: 19.839 min Scan# 5221
Delta R.T. 0.001 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

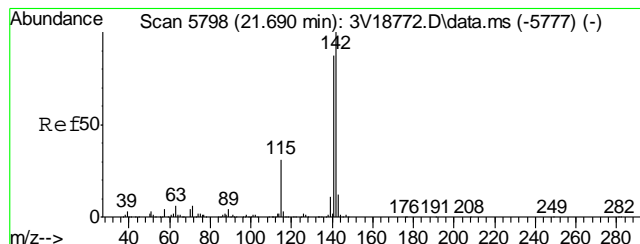
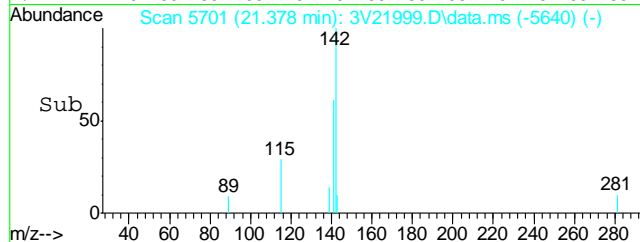
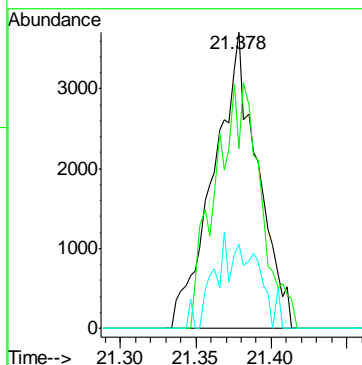
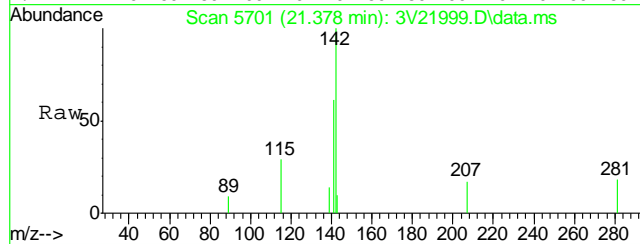
Tgt Ion:128 Resp: 7801





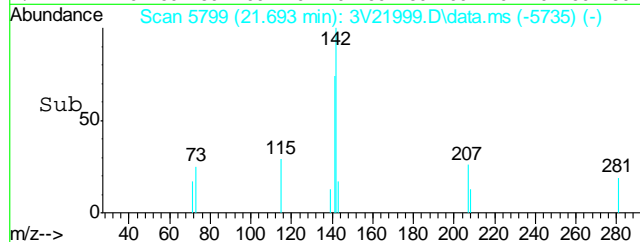
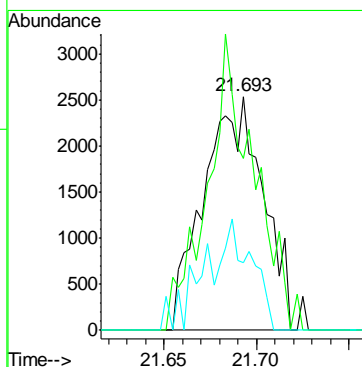
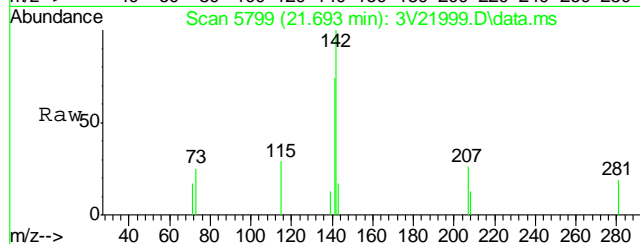
#94
2-Methylnaphthalene
Concen: 3.40 ug/l
RT: 21.378 min Scan# 5701
Delta R.T. -0.003 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.1	68.6	103.0
115	27.3	23.8	35.6



#95
1-Methylnaphthalene
Concen: 2.81 ug/l
RT: 21.693 min Scan# 5799
Delta R.T. 0.007 min
Lab File: 3V21999.D
Acq: 6 Dec 2012 11:07 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	98.8	70.6	106.0
115	23.4	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: D41506
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

D41506-1

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: D41506
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

D41506-1

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: D41506
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

D41506-1

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 : 3g12516.D
 Acq On : 10 Dec 2012 3:02 pm
 Operator : DONC
 Sample : D41506-1
 Misc : OP7075,E3G593,30.16,,,1,1
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 11 13:04:13 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	152027	4.0000	ug/mL	-0.01
6) Acenaphthene-d10	7.384	164	97440	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.859	188	163716	4.0000	ug/mL	-0.02
19) Chrysene-d12	11.496	240	113350	4.0000	ug/mL	-0.02
24) Perylene-d12	12.873	264	88802	4.0000	ug/mL	-0.02

System Monitoring Compounds

2) Nitrobenzene-d5	4.985	82	644794	42.4294	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	84.86%		
7) 2-Fluorobiphenyl	6.723	172	1525264	35.4196	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	70.84%		
21) Terphenyl-d14	10.450	244	684818	41.0446	ug/mL	-0.02
Spiked Amount 50.000	Range 25 - 135		Recovery =	82.08%		

Target Compounds

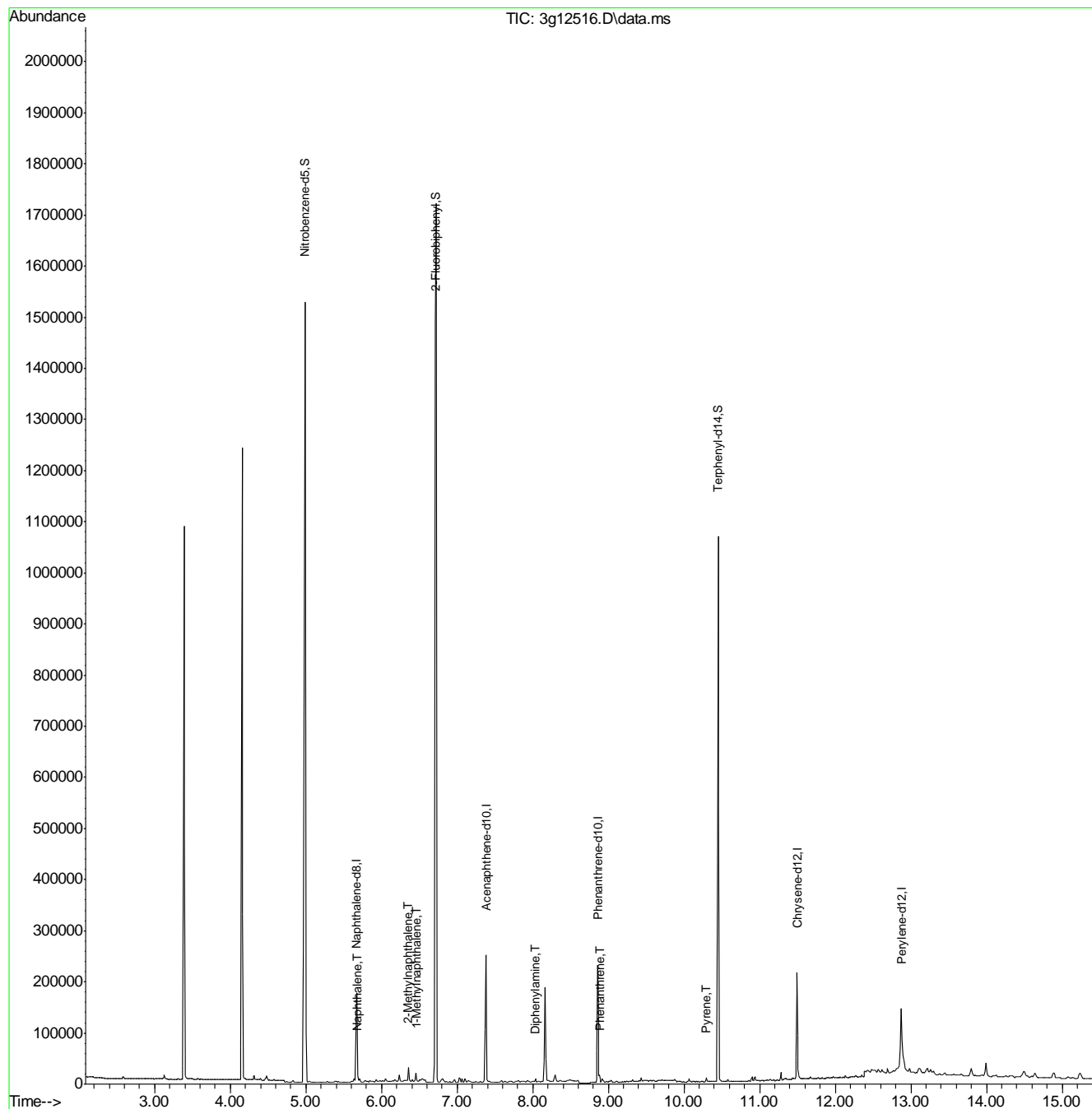
					Qvalue
3) N-Nitrosodimethylamine	2.363	74	25	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.683	128	7201	0.1566	ug/mL 93
8) 2-Methylnaphthalene	6.356	142	10319	0.2963	ug/mL 97
9) 1-Methylnaphthalene	6.456	142	6113	0.1771	ug/mL 94
10) Acenaphthylene	7.243	152	473	N.D.	
11) Acenaphthene	7.384	154	461	Below Cal #	20
12) Dibenzofuran	7.585	168	1530	N.D.	
13) Fluorene	7.928	166	1942	N.D.	
14) Diphenylamine	8.034	169	2919	0.0773	ug/mL 74
16) Phenanthrene	8.883	178	8507	0.1266	ug/mL# 75
17) Anthracene	8.938	178	1598	N.D.	
18) Fluoranthene	10.070	202	3235	N.D.	
20) Pyrene	10.292	202	4179	0.0657	ug/mL 93
22) Benzo(a)anthracene	11.483	228	1750	N.D.	
23) Chrysene	11.516	228	2212	N.D.	
25) Benzo(b)fluoranthene	0.000	252	0	N.D. d	
26) Benzo(k)fluoranthene	12.494	252	2527	N.D.	
27) Benzo(a)pyrene	12.820	252	917	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.082	276	618	N.D.	
29) Dibenz(a,h)anthracene	14.103	278	483	N.D.	
30) Benzo(g,h,i)perylene	14.440	276	1738	N.D.	

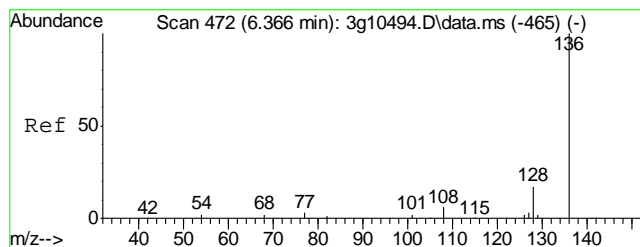
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
Data File : 3g12516.D
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Operator : DONC
Sample : D41506-1
Misc : OP7075,E3G593,30.16,,,1,1
ALS Vial : 12 Sample Multiplier: 1

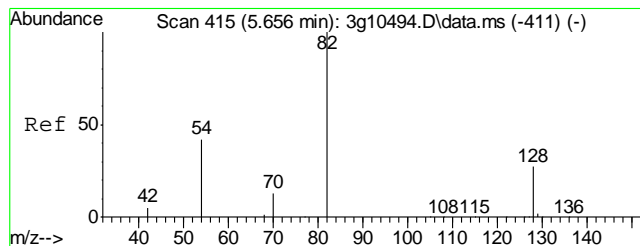
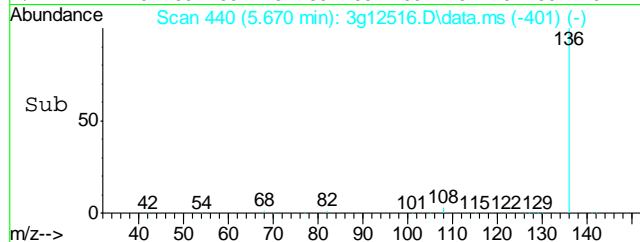
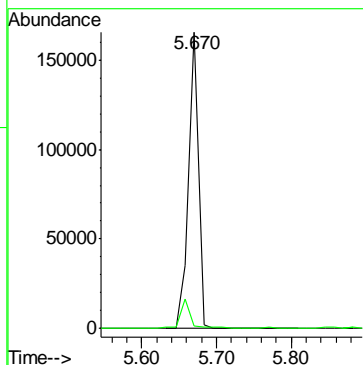
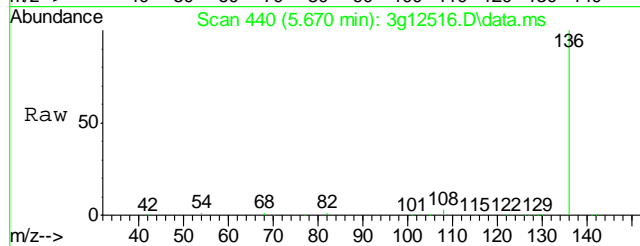
Quant Time: Dec 11 13:04:13 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





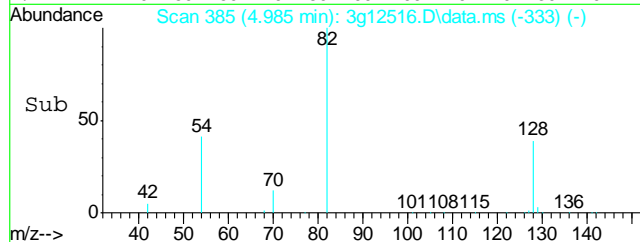
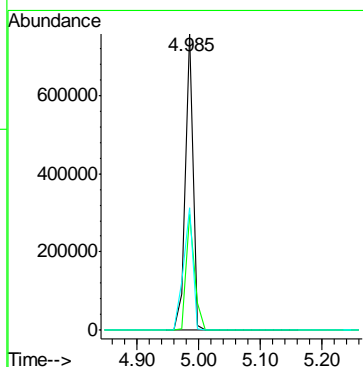
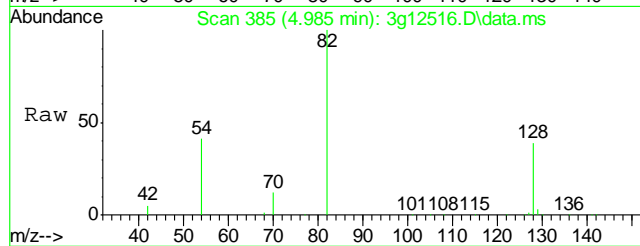
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

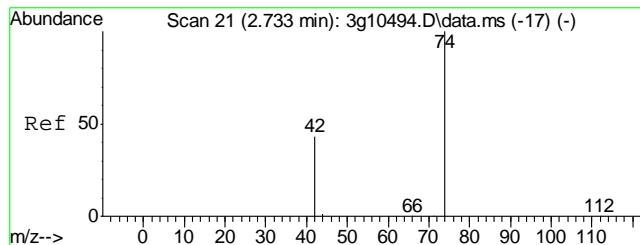
Tgt Ion	Ratio	Lower	Upper
136	100		
68	9.5	0.0	28.4



#2
Nitrobenzene-d5
Concen: 42.4294 ug/mL
RT: 4.985 min Scan# 385
Delta R.T. -0.011 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

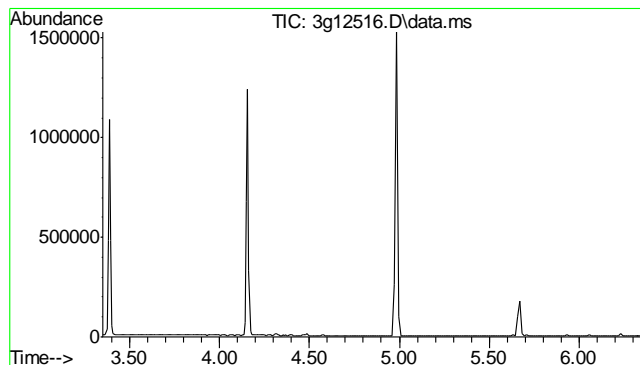
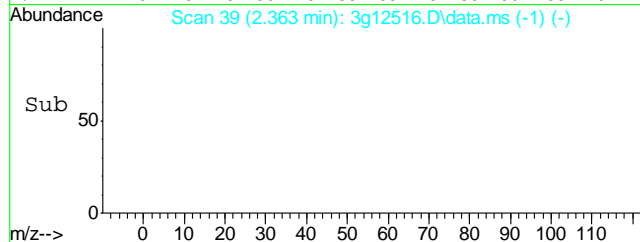
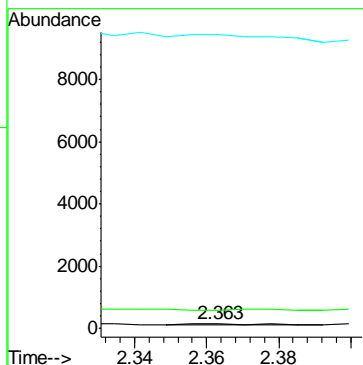
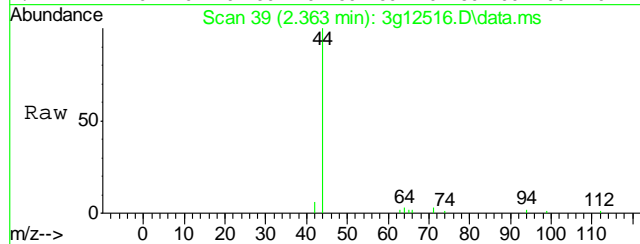
Tgt Ion	Ratio	Lower	Upper
82	100		
128	42.8	31.8	71.8
54	51.2	29.2	69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.363 min Scan# 39
Delta R.T. -0.015 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

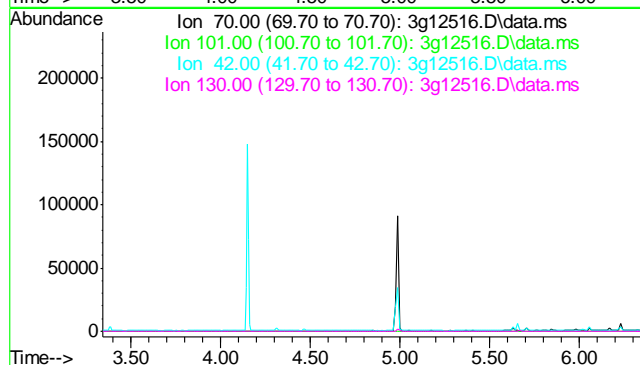
Tgt Ion: 74 Resp: 25
Ion Ratio Lower Upper
74 100
42 288.0 52.5 92.5#
44 0.0 0.0 24.1

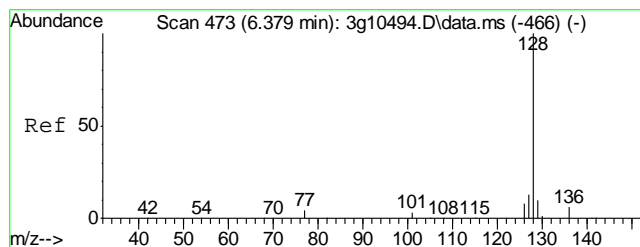


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

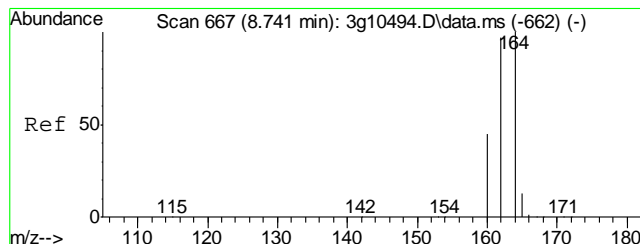
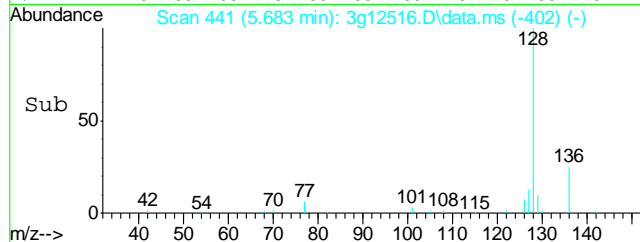
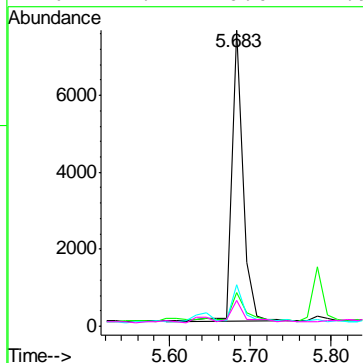
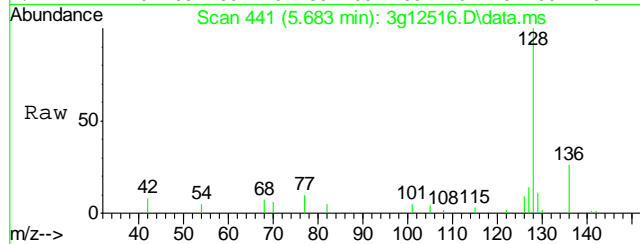
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.2
42 67.9
130 33.2





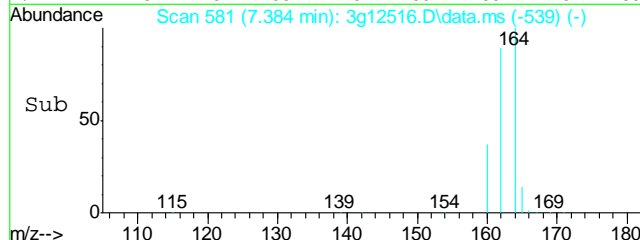
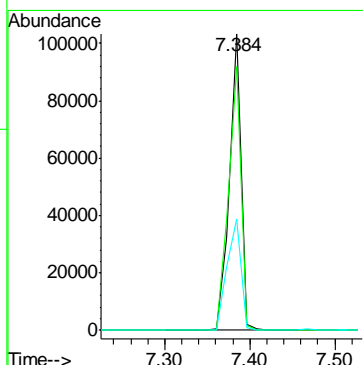
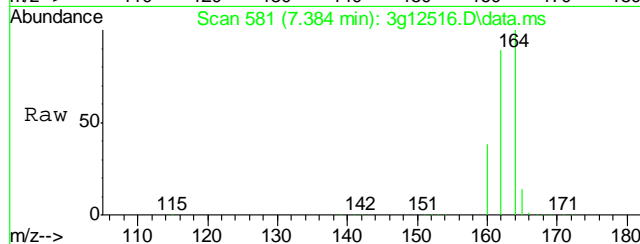
#5
Naphthalene
Concen: 0.1566 ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

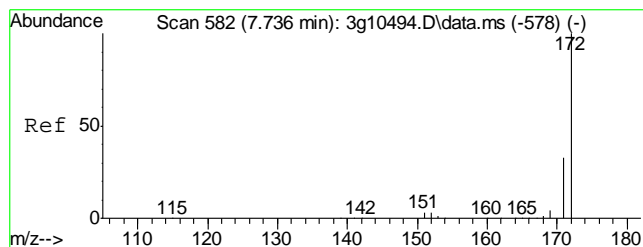
Tgt Ion:	128	Resp:	7201
Ion Ratio	Lower	Upper	
128	100		
129	11.9	0.0	30.7
127	12.0	0.0	33.2
126	14.2	0.0	27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.384 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

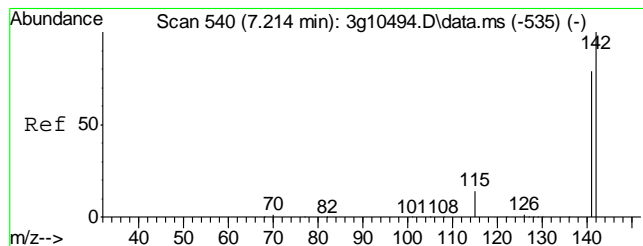
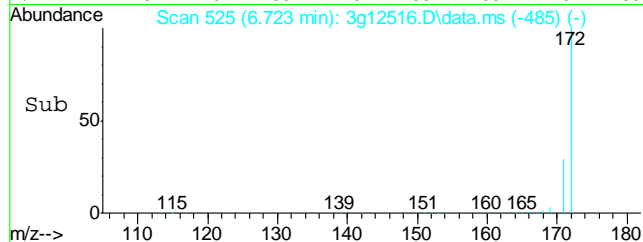
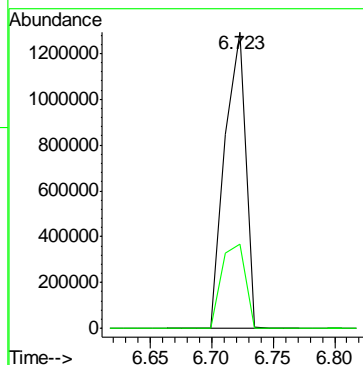
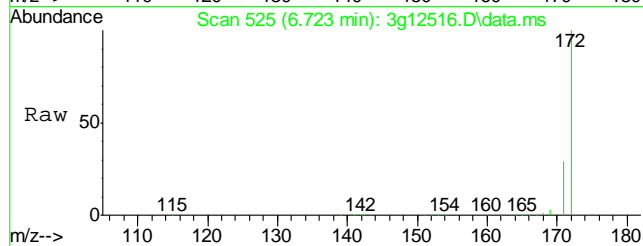
Tgt Ion:	164	Resp:	97440
Ion Ratio	Lower	Upper	
164	100		
162	96.0	78.0	118.0
160	44.5	27.3	67.3





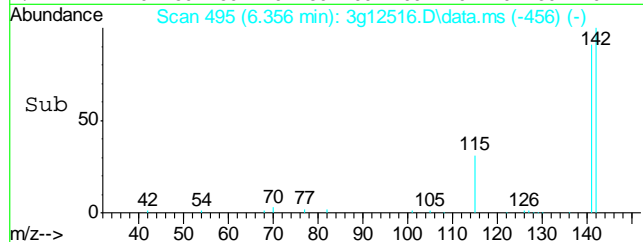
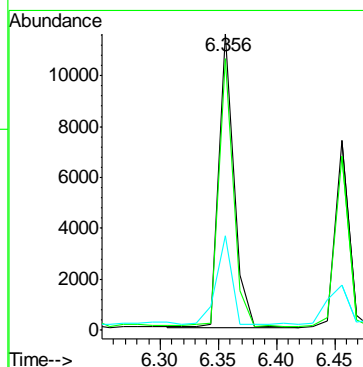
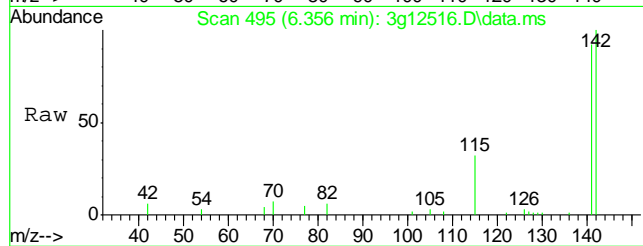
#7
2-Fluorobiphenyl
Concen: 35.4196 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

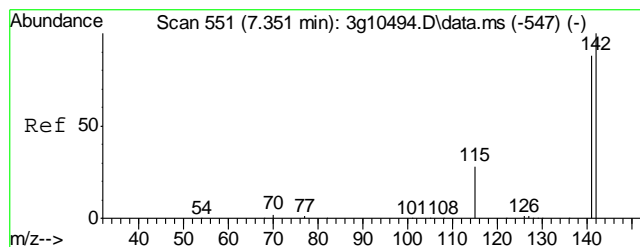
Tgt Ion	Ratio	Lower	Upper
172	100		
171	32.6	13.7	53.7



#8
2-Methylnaphthalene
Concen: 0.2963 ug/mL
RT: 6.356 min Scan# 495
Delta R.T. -0.011 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

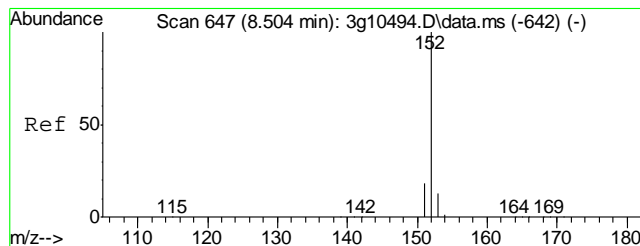
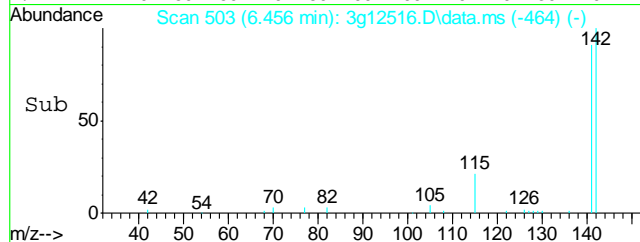
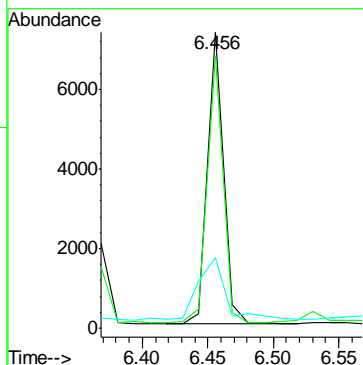
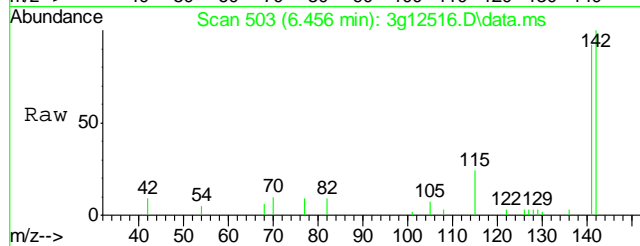
Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.8	65.6	105.6
115	31.3	12.2	52.2





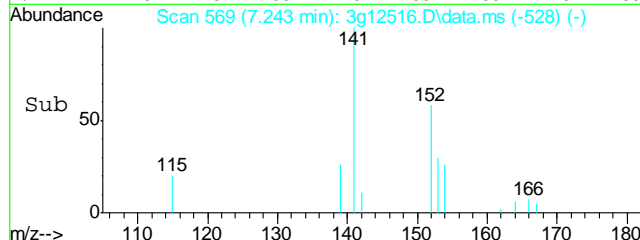
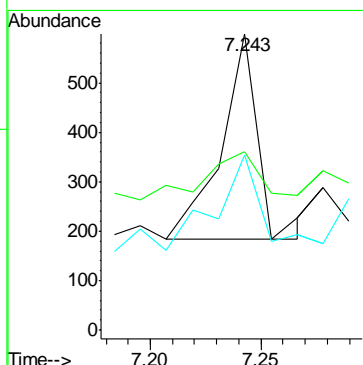
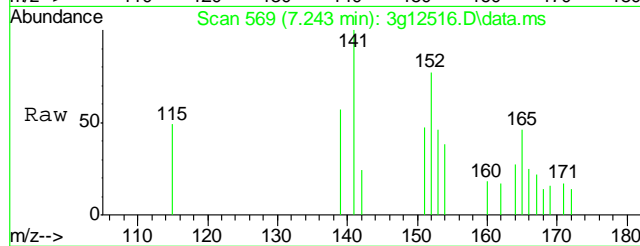
#9
1-Methylnaphthalene
Concen: 0.1771 ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

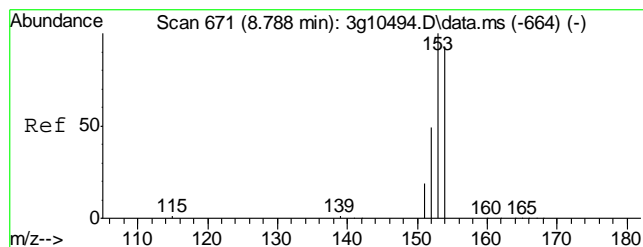
Tgt Ion	Ratio	Lower	Upper
142	100		
141	89.5	67.0	107.0
115	38.0	9.3	49.3



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.243 min Scan# 569
Delta R.T. -0.016 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

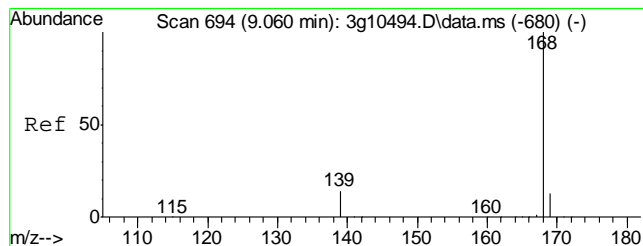
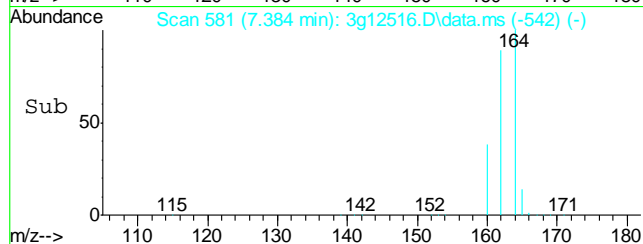
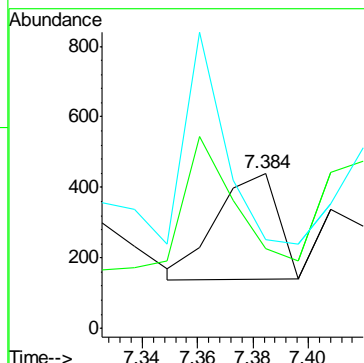
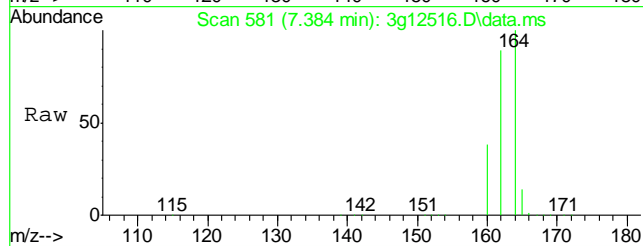
Tgt Ion	Ratio	Lower	Upper
152	100		
151	35.5	0.0	39.5
153	59.4	0.0	33.0





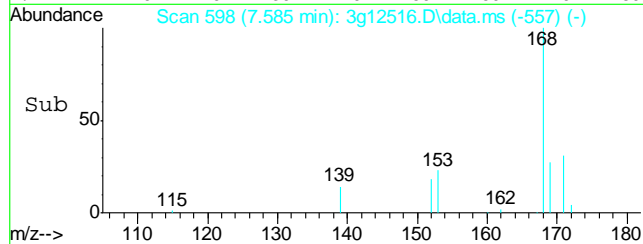
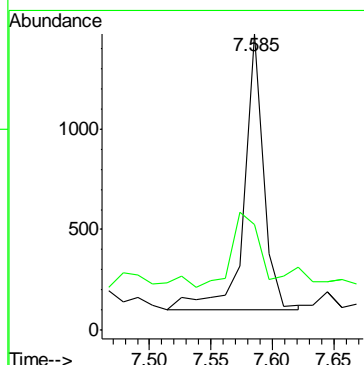
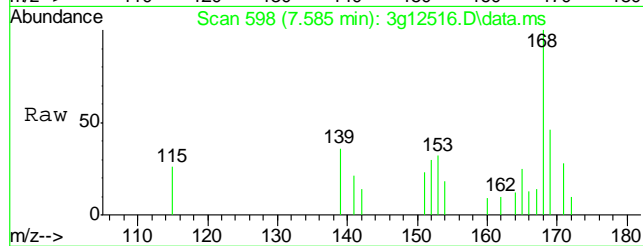
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.384 min Scan# 581
Delta R.T. -0.040 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

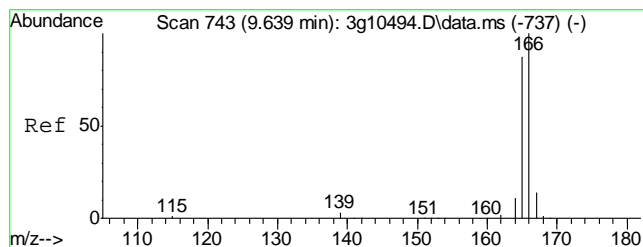
Tgt Ion:154 Resp: 461
Ion Ratio Lower Upper
154 100
153 105.4 84.7 124.7
152 218.7 30.2 70.2#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.585 min Scan# 598
Delta R.T. -0.016 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

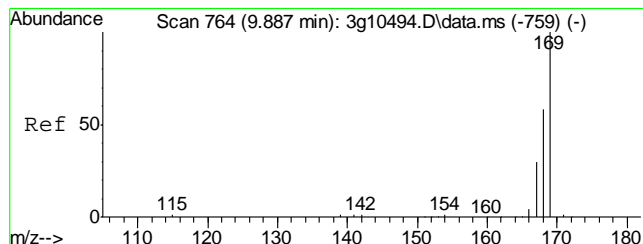
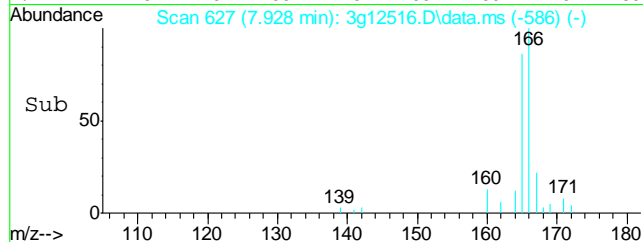
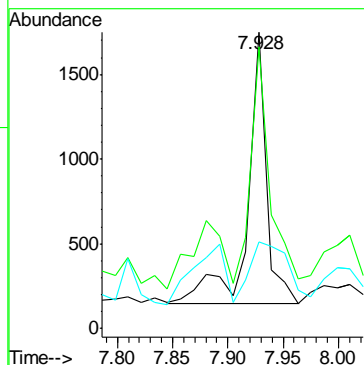
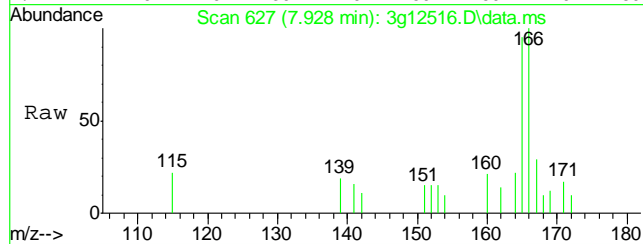
Tgt Ion:168 Resp: 1530
Ion Ratio Lower Upper
168 100
139 39.0 12.0 52.0





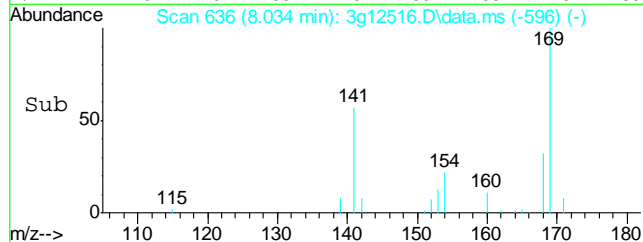
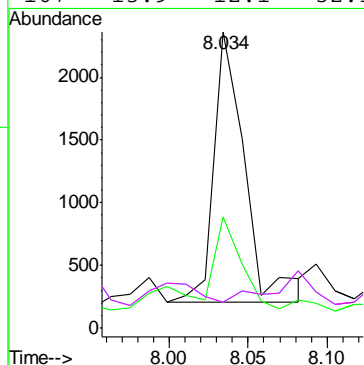
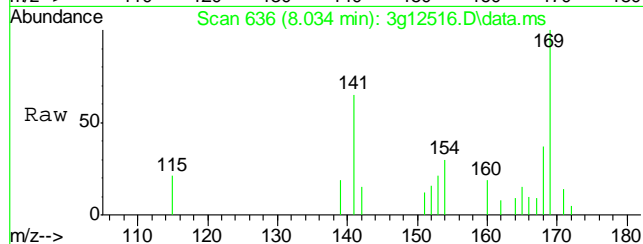
#13
Fluorene
Concen: Below ug/mL
RT: 7.928 min Scan# 627
Delta R.T. -0.016 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

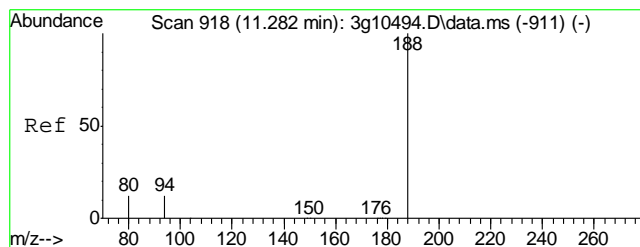
Tgt Ion	Ratio	Lower	Upper
166	100		
165	85.0	70.1	110.1
167	44.2	0.0	33.4



#14
Diphenylamine
Concen: 0.0773 ug/mL
RT: 8.034 min Scan# 636
Delta R.T. -0.028 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

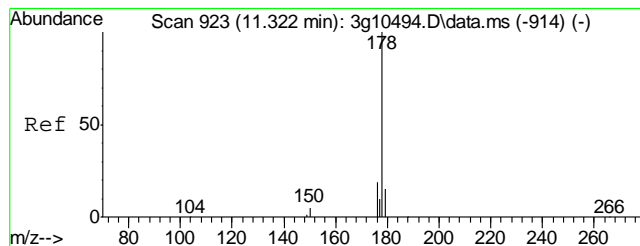
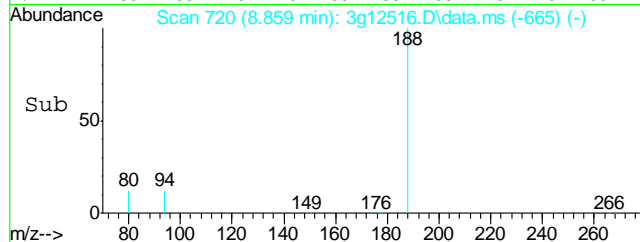
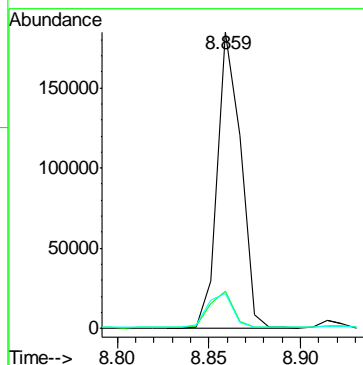
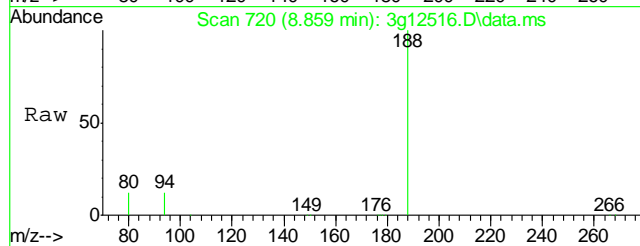
Tgt Ion	Ratio	Lower	Upper
169	100		
168	46.3	40.1	80.1
167	13.9	12.1	52.1
167	13.9	12.1	52.1





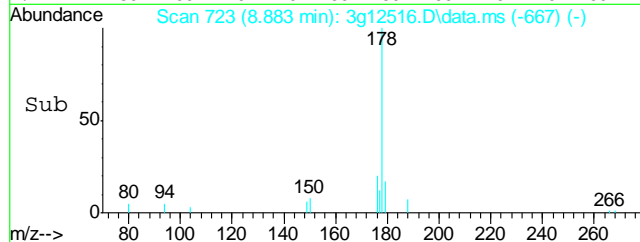
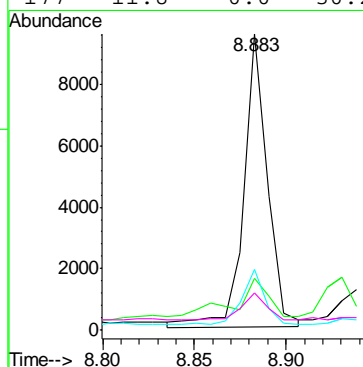
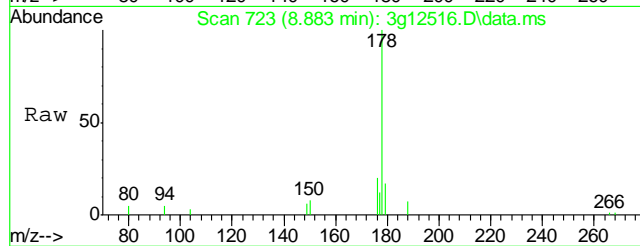
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.859 min Scan# 720
Delta R.T. -0.020 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

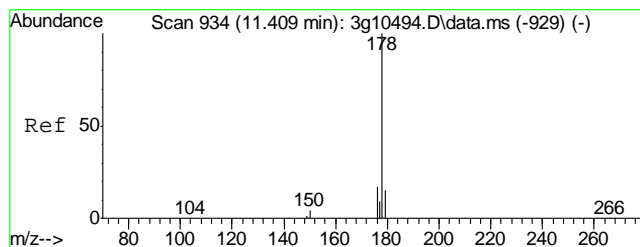
Tgt Ion:188	Resp: 163716
Ion Ratio	Lower Upper
188 100	
94 12.3	0.0 33.4
80 13.1	0.0 28.9



#16
Phenanthrene
Concen: 0.1266 ug/mL
RT: 8.883 min Scan# 723
Delta R.T. -0.019 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

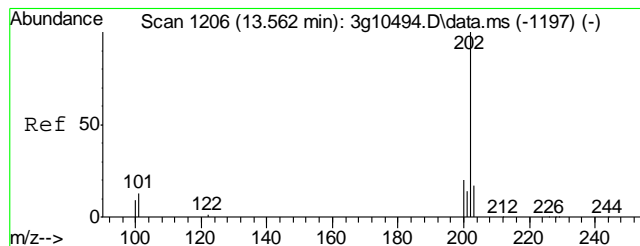
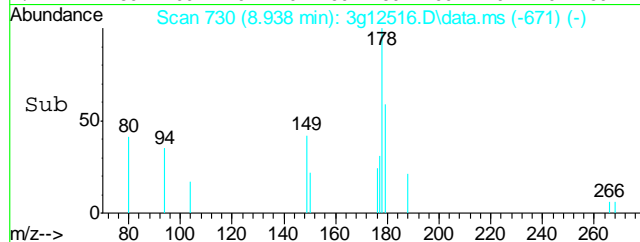
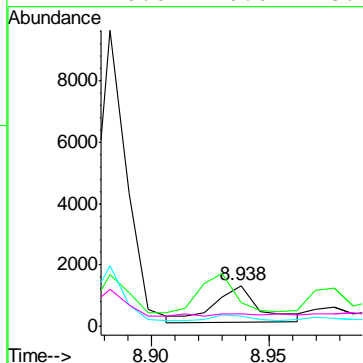
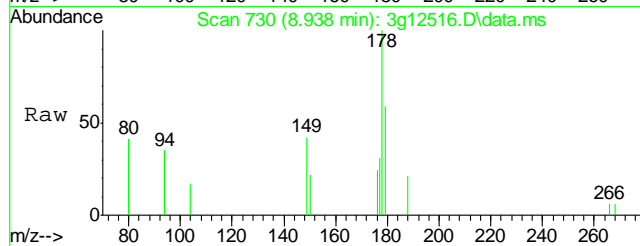
Tgt Ion:178	Resp: 8507
Ion Ratio	Lower Upper
178 100	
179 41.7	0.0 35.3#
176 20.7	0.0 38.6
177 11.8	0.0 30.2





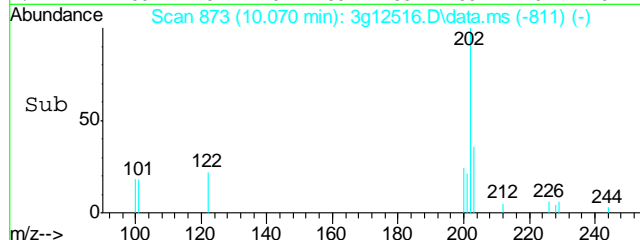
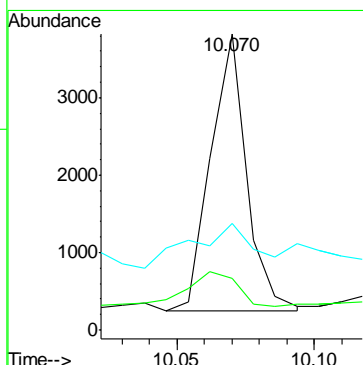
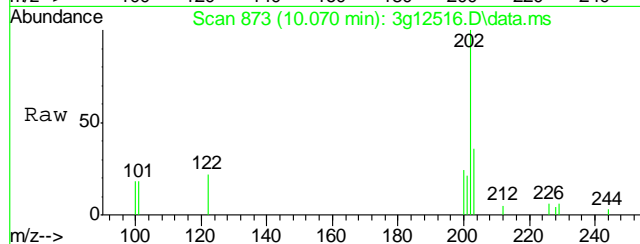
#17
 Anthracene
 Concen: Below ug/mL
 RT: 8.938 min Scan# 730
 Delta R.T. -0.012 min
 Lab File: 3g12516.D
 Acq: 10 Dec 12 3:02 pm

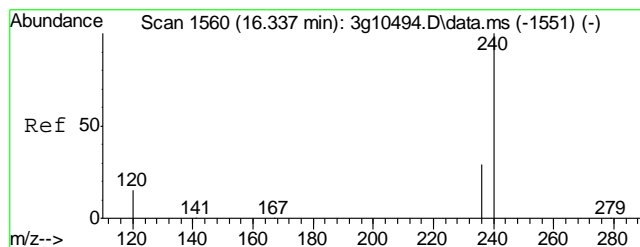
Tgt Ion:178	Resp:	1598
Ion Ratio	Lower	Upper
178	100	
179	129.5	0.0 35.1#
176	14.3	0.0 38.2
177	0.0	0.0 28.8



#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 10.070 min Scan# 873
 Delta R.T. -0.012 min
 Lab File: 3g12516.D
 Acq: 10 Dec 12 3:02 pm

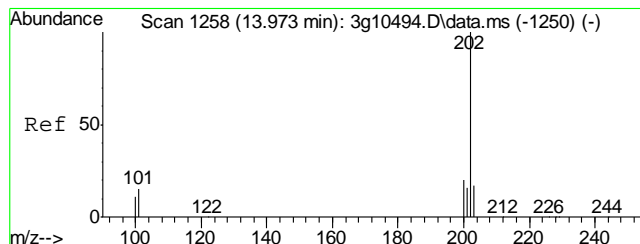
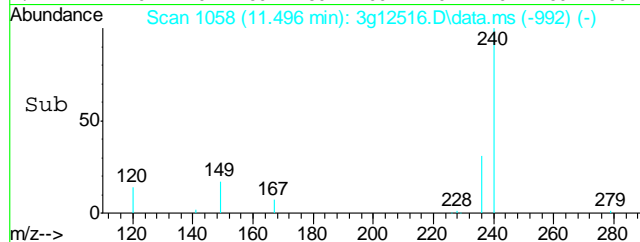
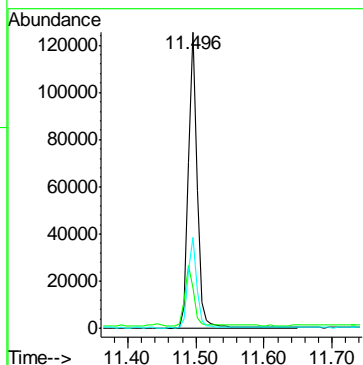
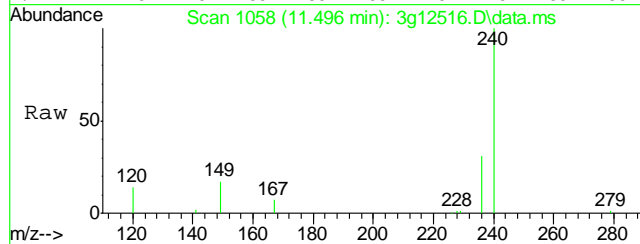
Tgt Ion:202	Resp:	3235
Ion Ratio	Lower	Upper
202	100	
101	18.1	0.0 32.5
203	31.1	0.0 37.3





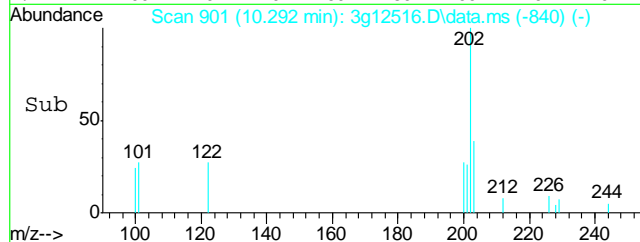
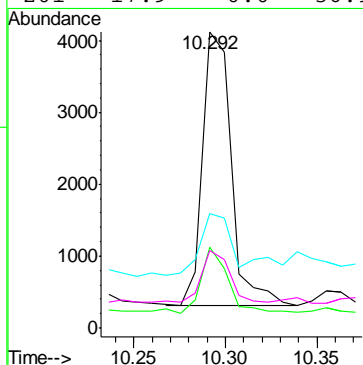
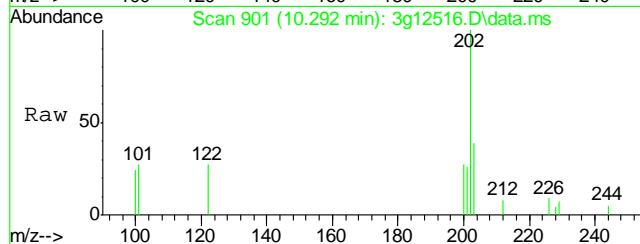
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.496 min Scan# 1058
Delta R.T. -0.019 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

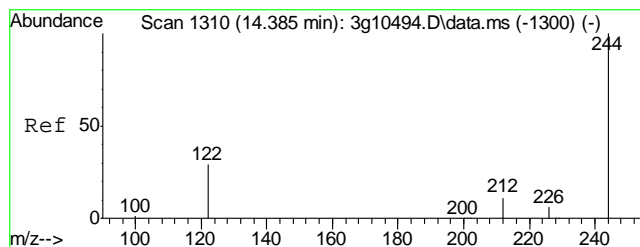
Tgt Ion:	240	Resp:	113350
Ion Ratio	Lower	Upper	
240	100		
120	20.8	0.0	39.7
236	30.4	11.1	51.1



#20
Pyrene
Concen: 0.0657 ug/mL
RT: 10.292 min Scan# 901
Delta R.T. -0.020 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

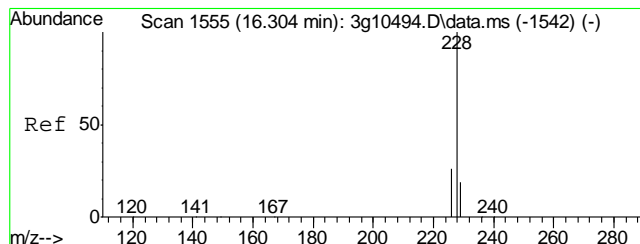
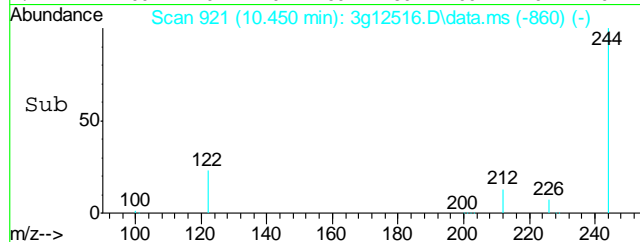
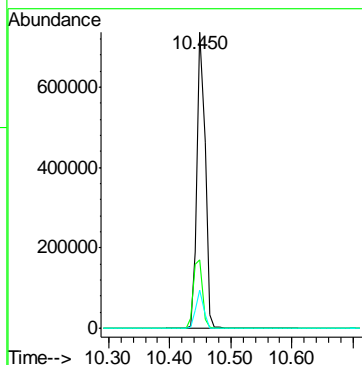
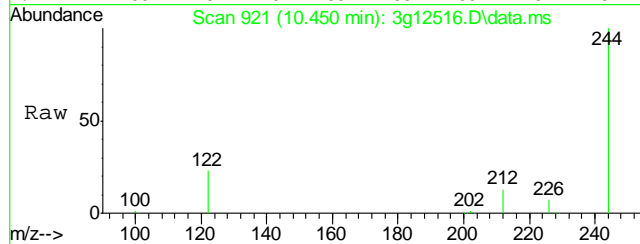
Tgt Ion:	202	Resp:	4179
Ion Ratio	Lower	Upper	
202	100		
200	22.2	0.7	40.7
203	25.1	0.0	37.8
201	17.9	0.0	36.9





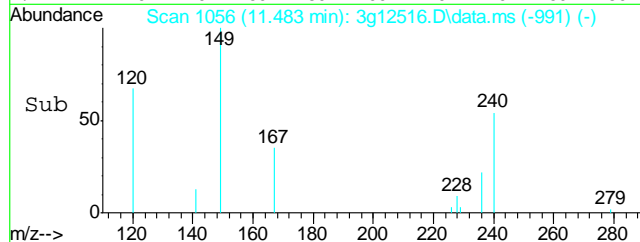
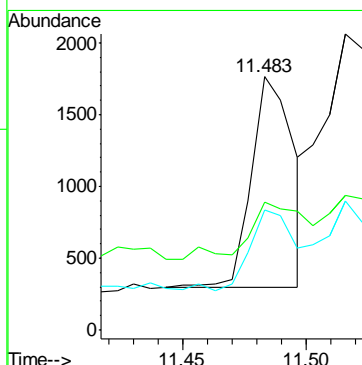
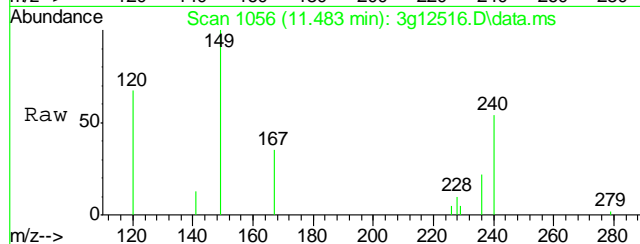
#21
Terphenyl-d14
Concen: 41.0446 ug/mL
RT: 10.450 min Scan# 921
Delta R.T. -0.020 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

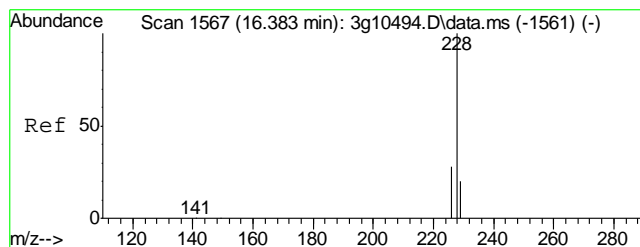
Tgt Ion:	244	Resp:	684818
Ion Ratio	Lower	Upper	
244	100		
122	26.3	6.8	46.8
212	12.3	0.0	32.3



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.483 min Scan# 1056
Delta R.T. -0.019 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

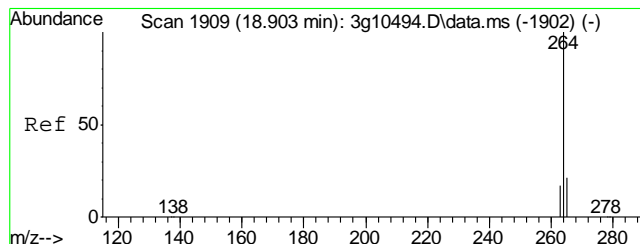
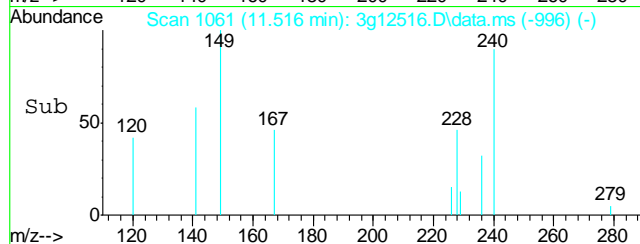
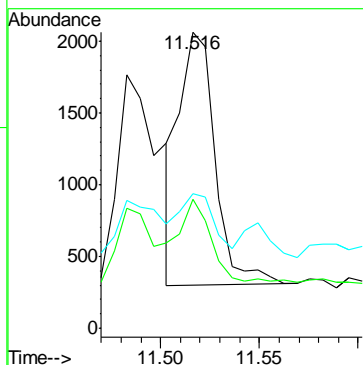
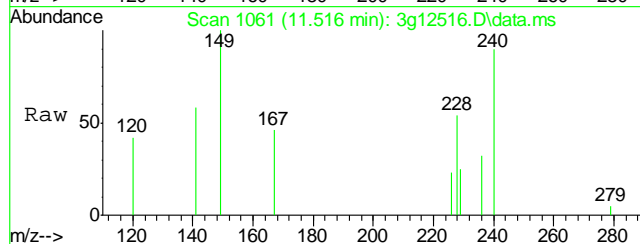
Tgt Ion:	228	Resp:	1750
Ion Ratio	Lower	Upper	
228	100		
229	36.5	0.0	39.4
226	38.5	6.8	46.8





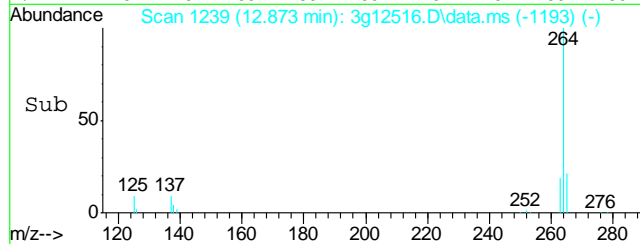
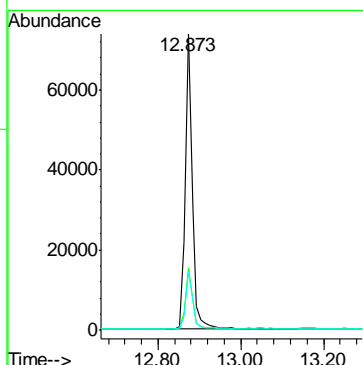
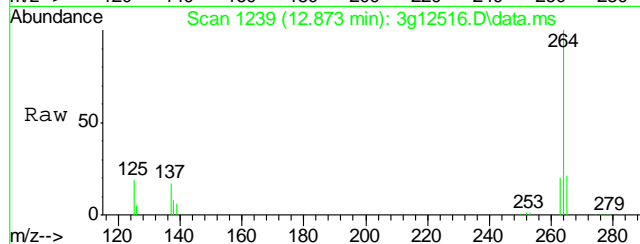
#23
Chrysene
Concen: Below ug/mL
RT: 11.516 min Scan# 1061
Delta R.T. -0.026 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

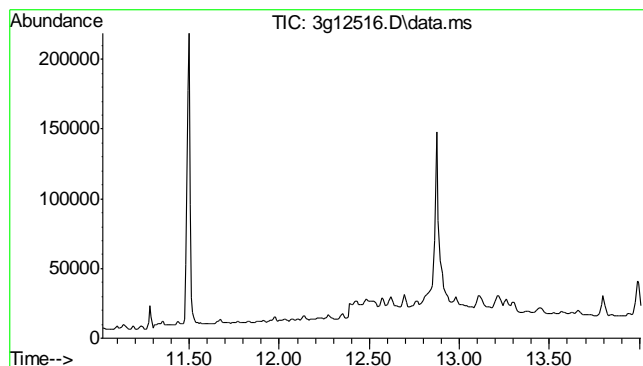
Tgt Ion:	228	Resp:	2212
Ion Ratio	100	Lower	Upper
228	100		
226	27.2	9.2	49.2
229	22.6	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.873 min Scan# 1239
Delta R.T. -0.019 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

Tgt Ion:	264	Resp:	88802
Ion Ratio	100	Lower	Upper
264	100		
265	20.8	0.6	40.6
263	19.8	0.0	39.7

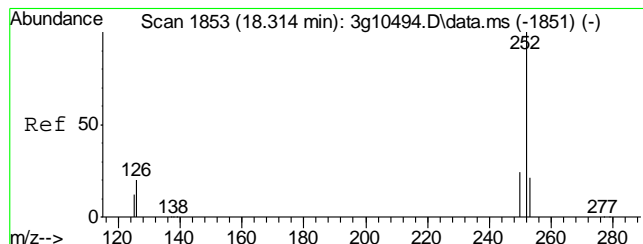
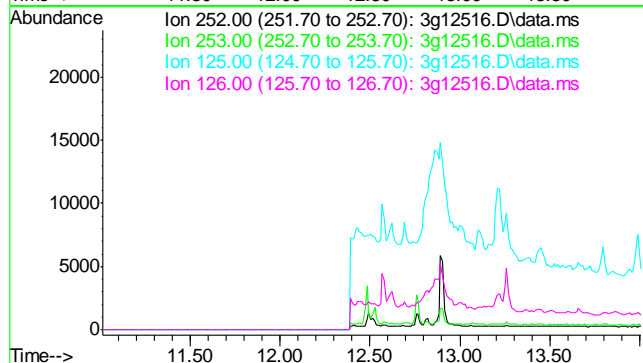




#25
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 12.51 min

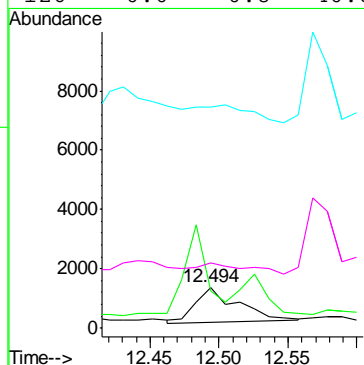
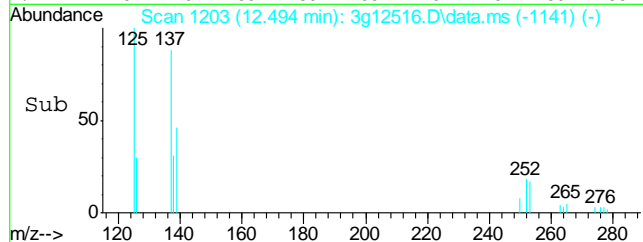
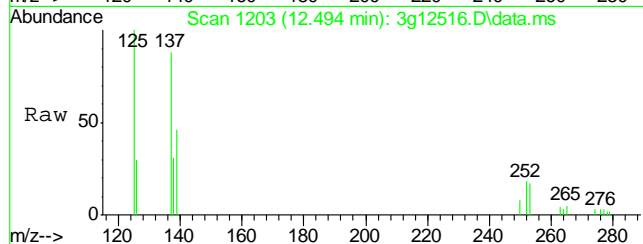
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

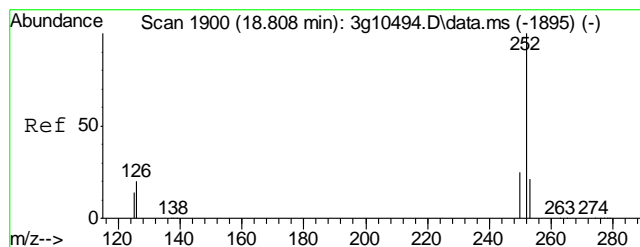
Tgt Ion: 252
Sig Exp Ratio
252 100
253 27.0
125 29.0
126 41.6



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.051 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

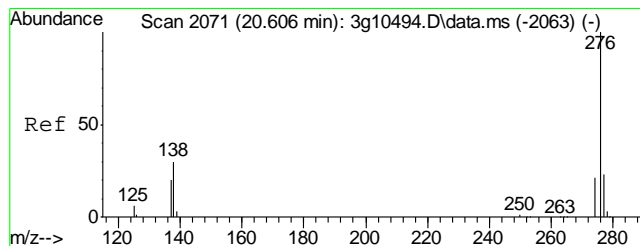
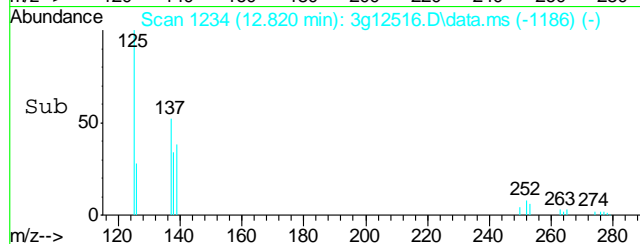
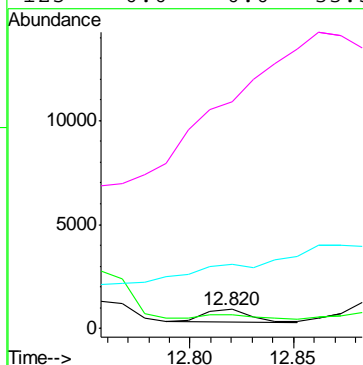
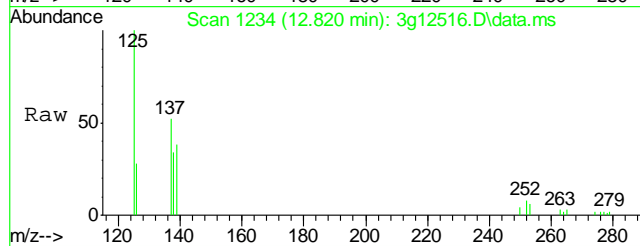
Tgt Ion: 252 Resp: 2527
Ion Ratio Lower Upper
252 100
253 172.9 4.0 44.0#
125 0.0 0.0 35.3
126 0.0 0.8 40.8#





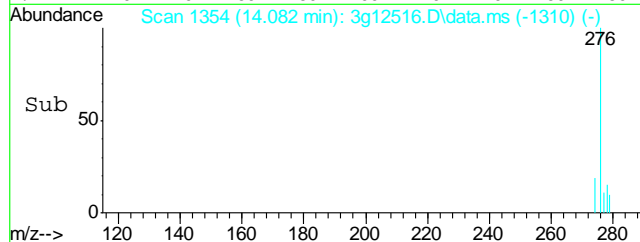
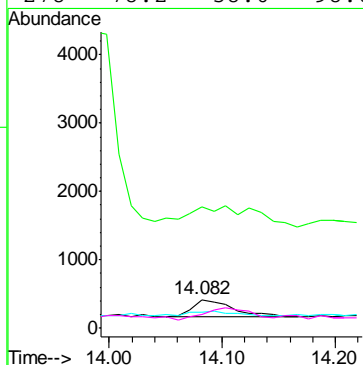
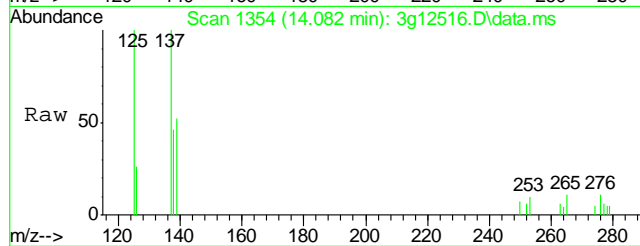
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.820 min Scan# 1234
Delta R.T. -0.019 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

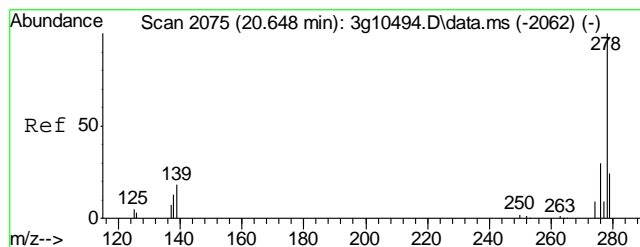
Tgt Ion:	252	Resp:	917
Ion Ratio	100	Lower	Upper
252	100		
253	39.9	1.5	41.5
126	0.0	0.0	38.4
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.082 min Scan# 1354
Delta R.T. -0.040 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

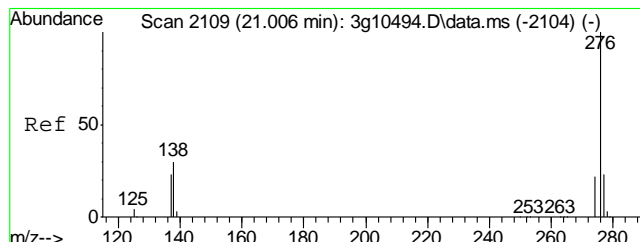
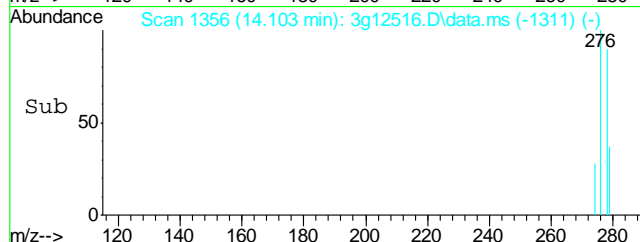
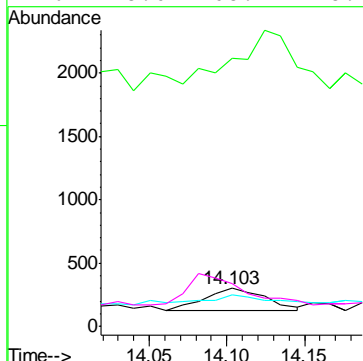
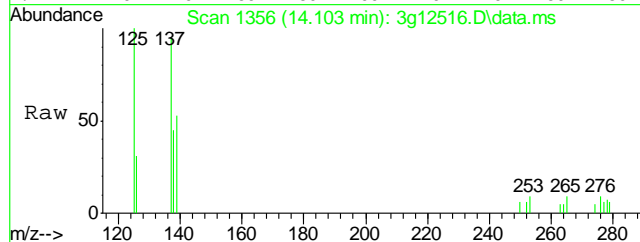
Tgt Ion:	276	Resp:	618
Ion Ratio	100	Lower	Upper
276	100		
138	220.1	16.0	56.0#
277	33.0	4.9	44.9
278	78.2	58.0	98.0





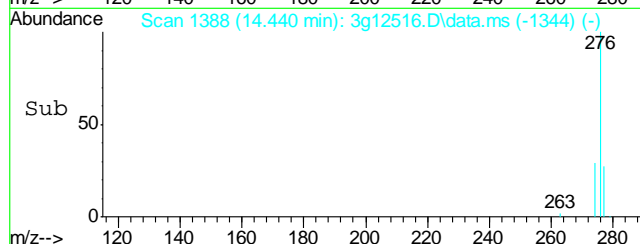
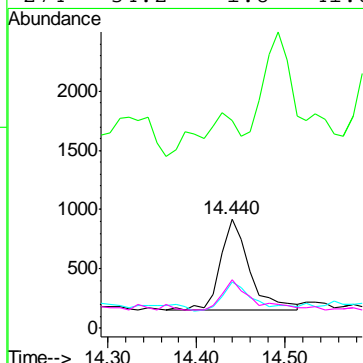
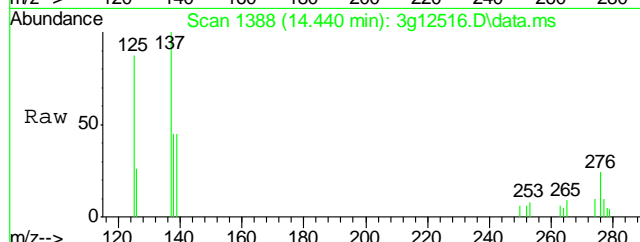
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.103 min Scan# 1356
Delta R.T. -0.030 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

Tgt Ion:	278	Resp:	483
Ion Ratio	Lower	Upper	
278	100		
139	254.5	7.4	47.4#
279	60.2	2.8	42.8#
276	128.0	108.1	148.1



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.440 min Scan# 1388
Delta R.T. -0.040 min
Lab File: 3g12516.D
Acq: 10 Dec 12 3:02 pm

Tgt Ion:	276	Resp:	1738
Ion Ratio	Lower	Upper	
276	100		
138	63.4	10.9	50.9#
277	33.3	3.2	43.2
274	34.2	1.8	41.8



Quantitation Report (QT Reviewed)

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

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

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

System Monitoring Compounds

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

Target Compounds

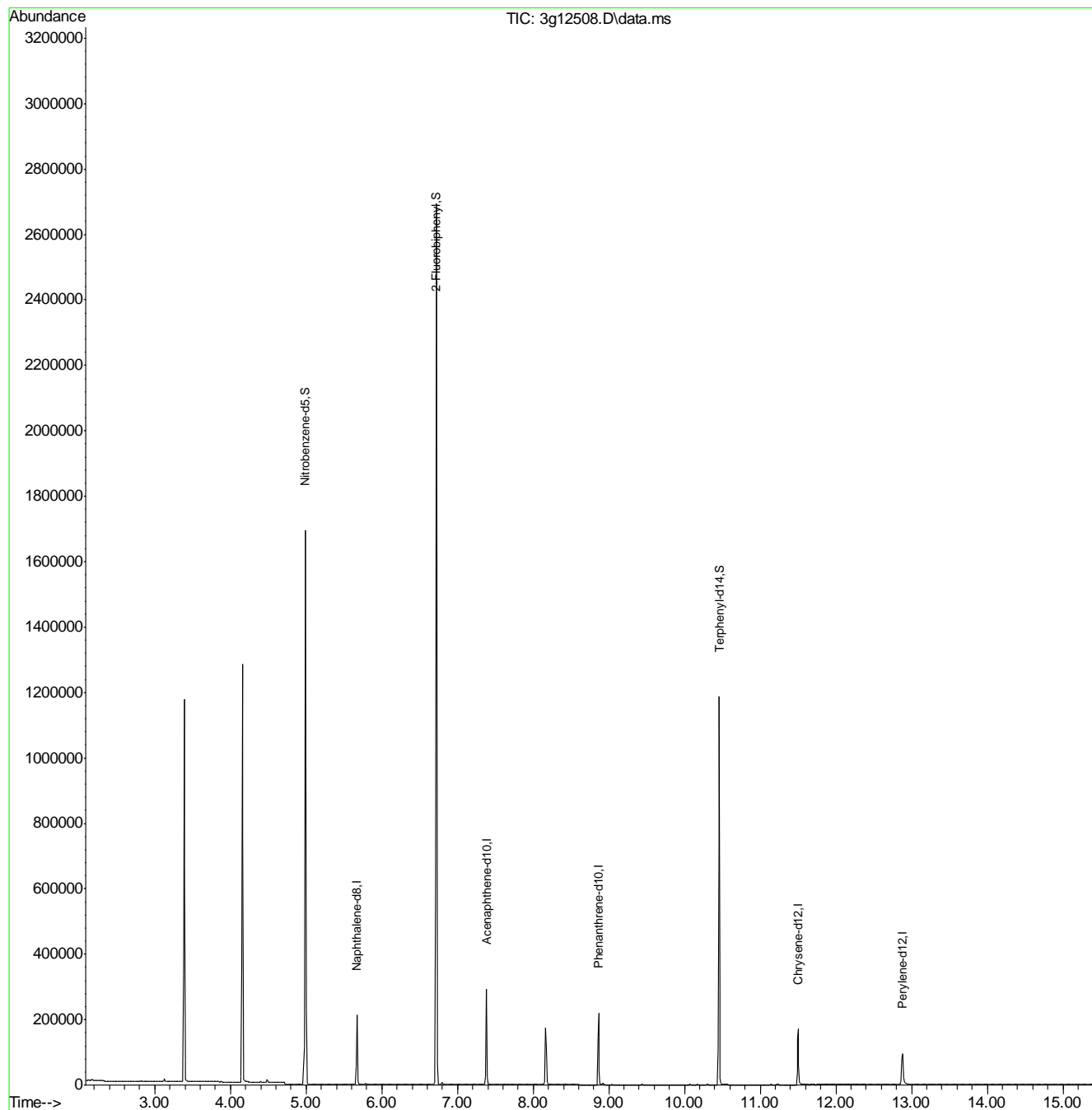
					Qvalue
3) N-Nitrosodimethylamine	2.334	74	50	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.683	128	491	N.D.	
8) 2-Methylnaphthalene	6.356	142	179	N.D.	
9) 1-Methylnaphthalene	6.456	142	126	N.D.	
10) Acenaphthylene	7.243	152	198	N.D.	
11) Acenaphthene	7.113	154	75	Below	Cal 87
12)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

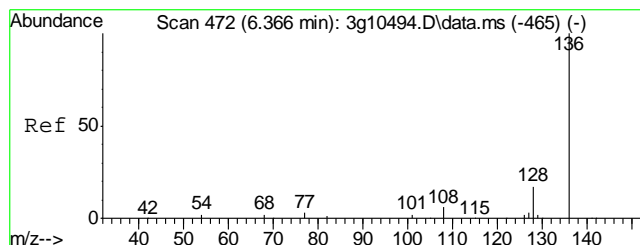
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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

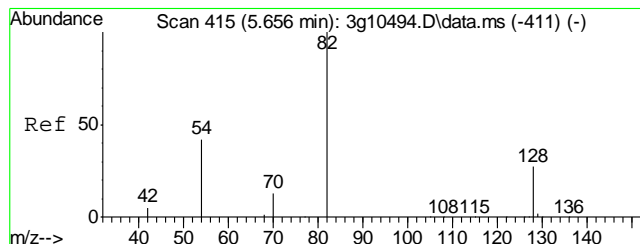
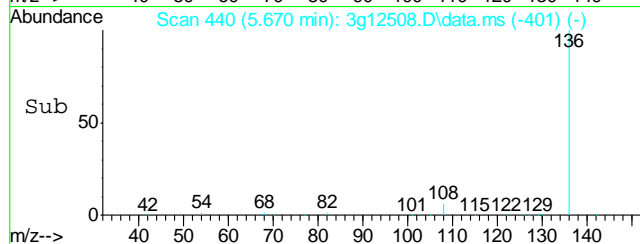
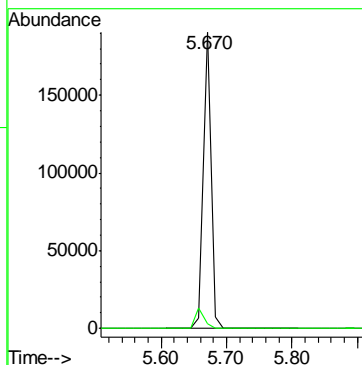
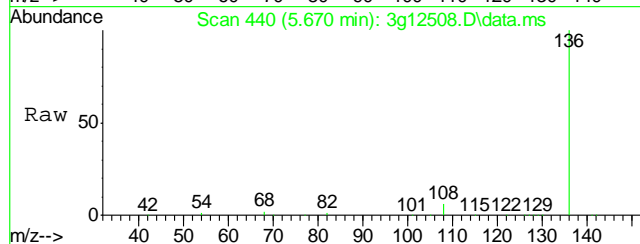
Quant Time: Dec 10 13:58:13 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





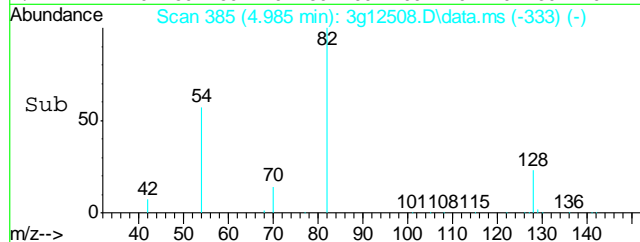
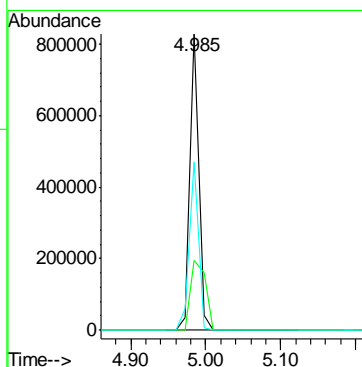
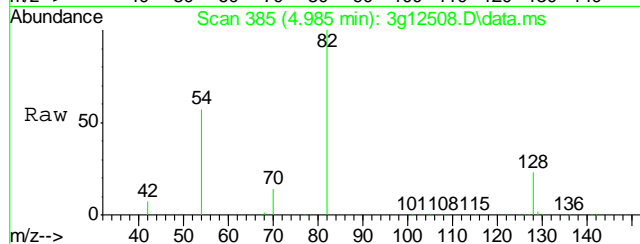
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

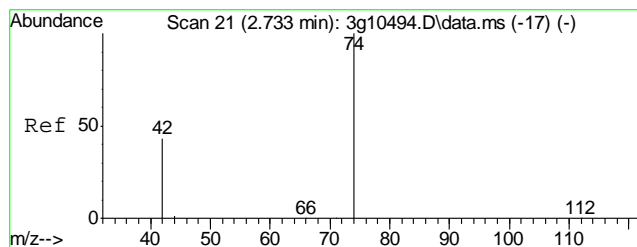
Tgt Ion:	136	Resp:	153335
Ion Ratio	Lower	Upper	
136	100		
68	7.6	0.0	28.4



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

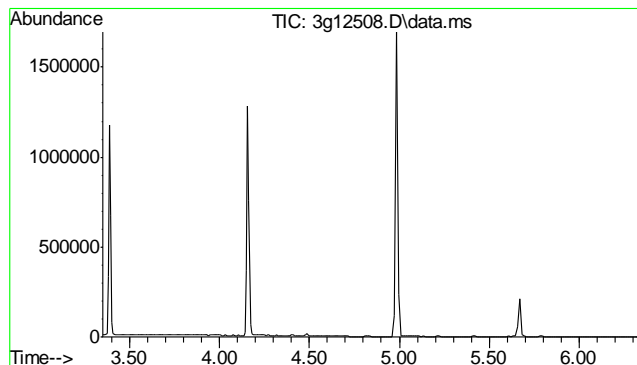
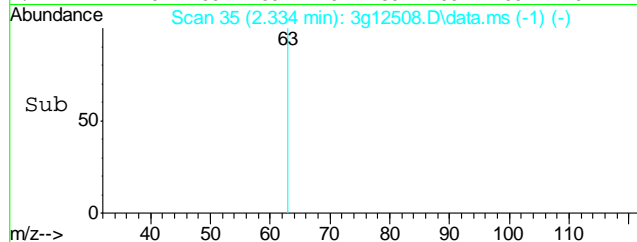
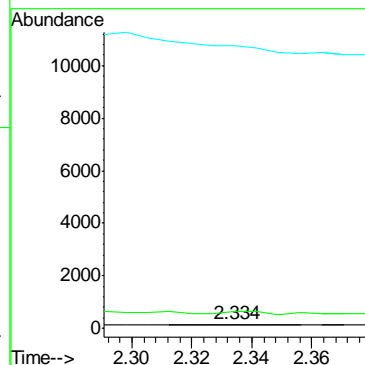
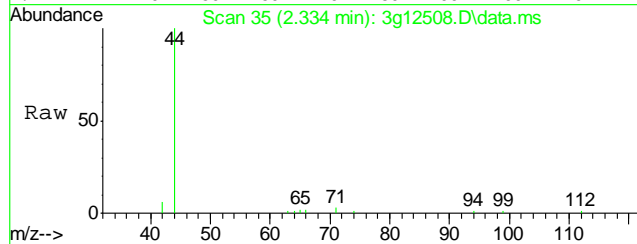
Tgt Ion:	82	Resp:	677706
Ion Ratio	Lower	Upper	
82	100		
128	39.2	31.8	71.8
54	59.4	29.2	69.2





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

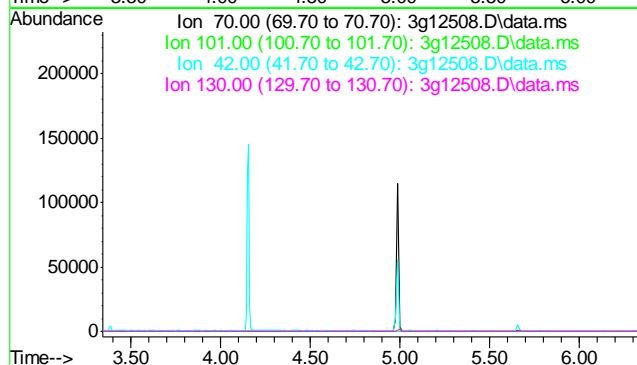
Tgt Ion: 74 Resp: 50
Ion Ratio Lower Upper
74 100
42 168.0 52.5 92.5#
44 0.0 0.0 24.1

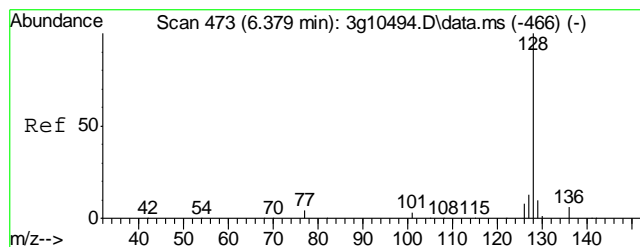


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

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

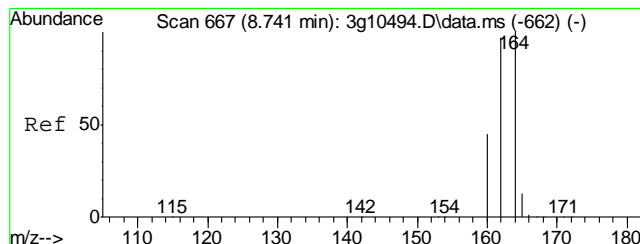
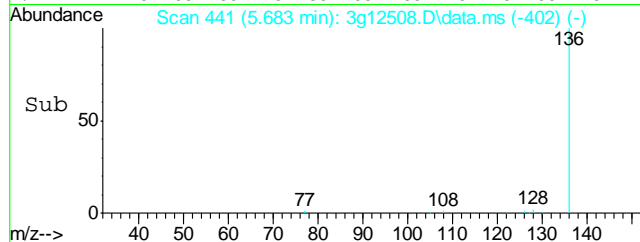
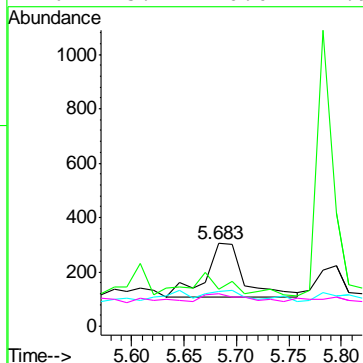
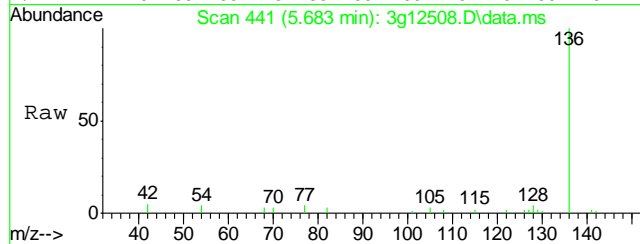




#5
Naphthalene
Concen: Below ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion	128	Resp	491
Ion Ratio	100		
Lower	0.0		
Upper	30.7#		

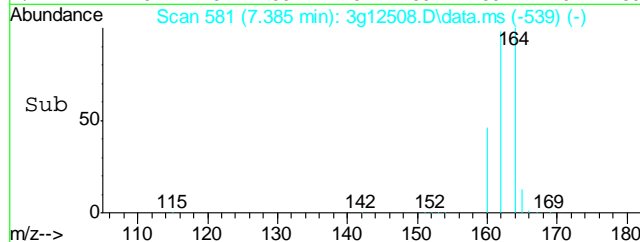
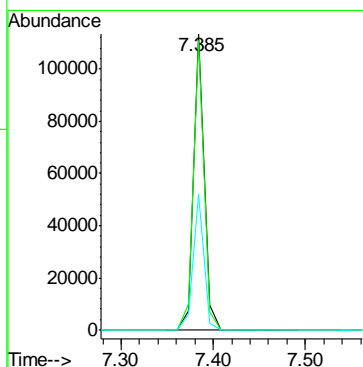
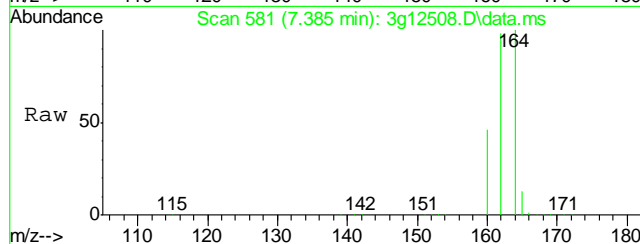
Ion	129	127	126
Ratio	43.2	24.8	15.1
Lower	0.0	0.0	0.0
Upper	33.2	27.9	

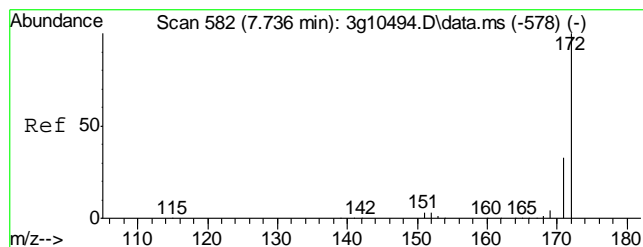


#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion	164	Resp	92403
Ion Ratio	100		
Lower	78.0		
Upper	118.0		

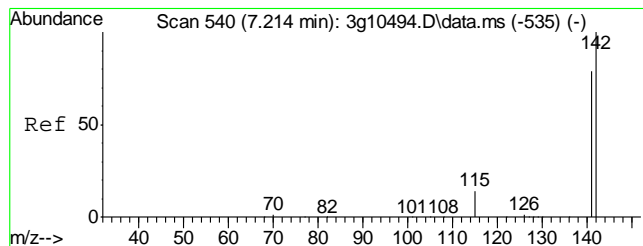
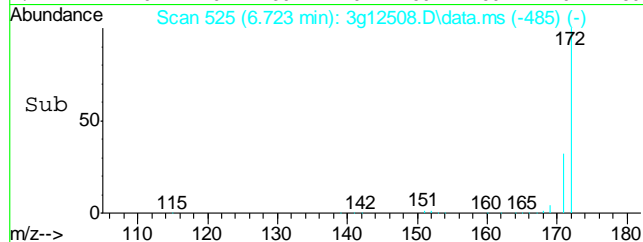
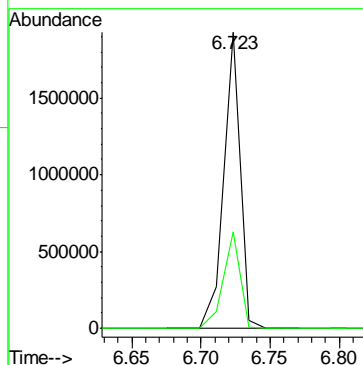
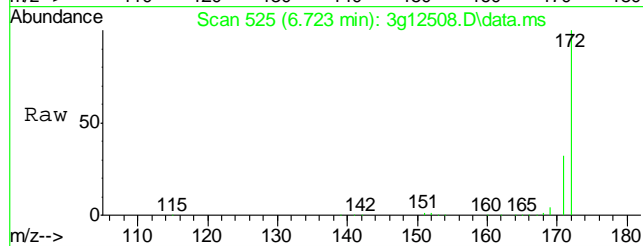
Ion	162	160
Ratio	98.1	46.6
Lower	27.3	
Upper	67.3	





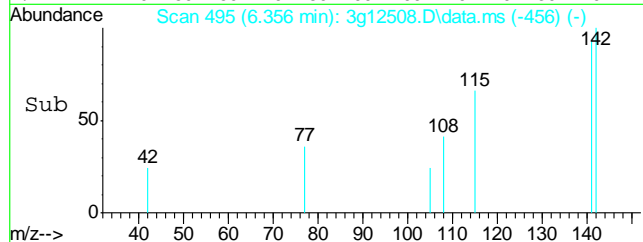
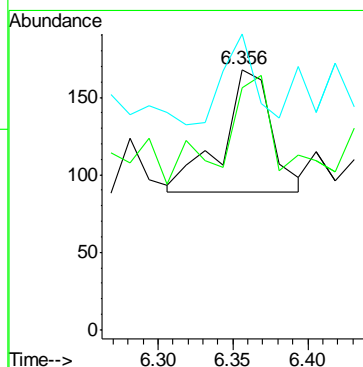
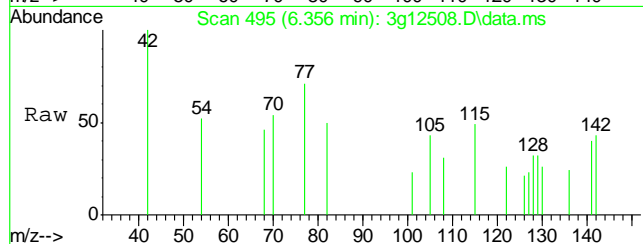
#7
2-Fluorobiphenyl
Concen: 39.4888 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

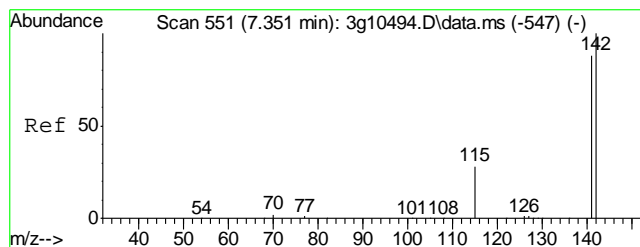
Tgt Ion:172 Resp: 1592975
Ion Ratio Lower Upper
172 100
171 33.4 13.7 53.7



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

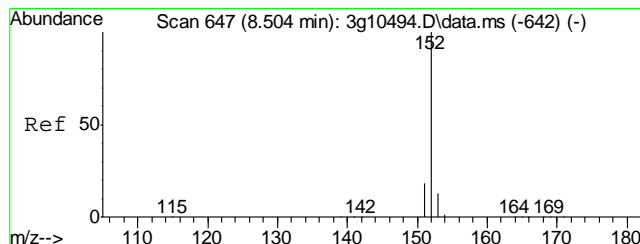
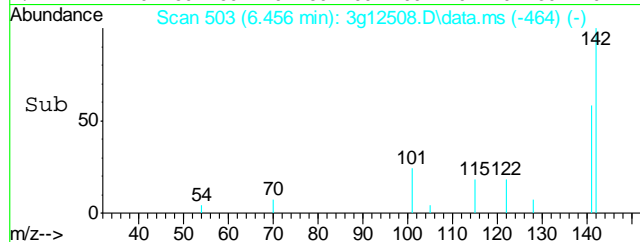
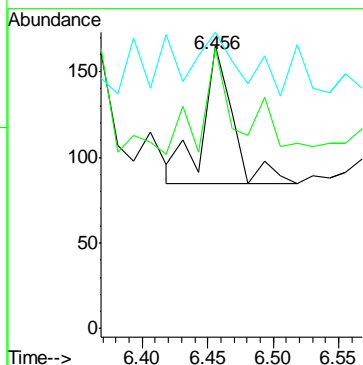
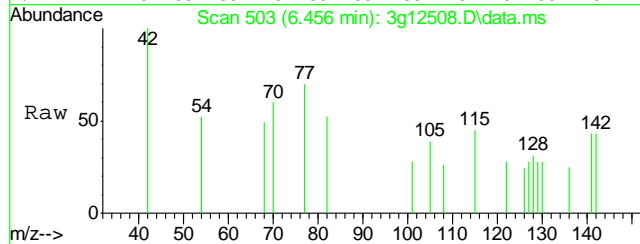
Tgt Ion:142 Resp: 179
Ion Ratio Lower Upper
142 100
141 40.2 65.6 105.6#
115 0.0 12.2 52.2#





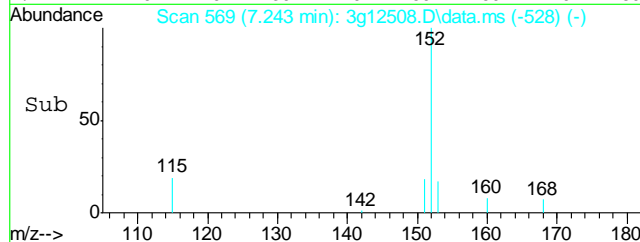
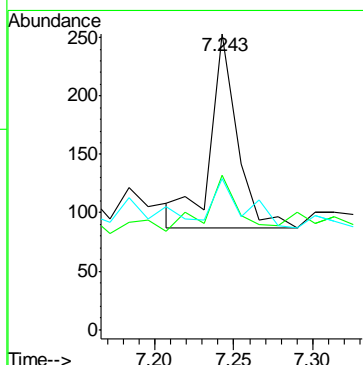
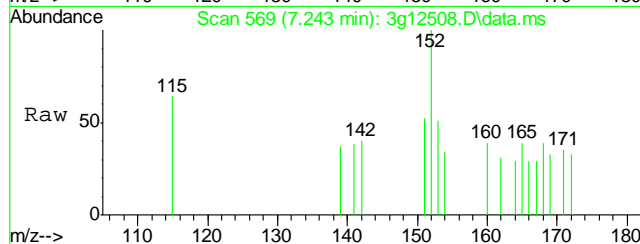
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

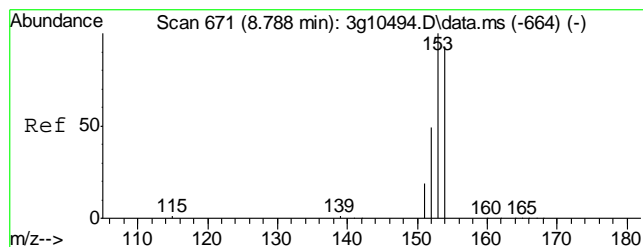
Tgt Ion: 142 Resp: 126
Ion Ratio Lower Upper
142 100
141 69.8 67.0 107.0
115 0.0 9.3 49.3#



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

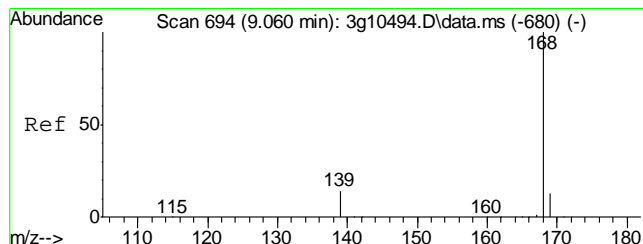
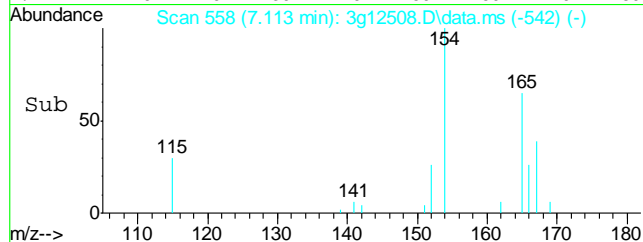
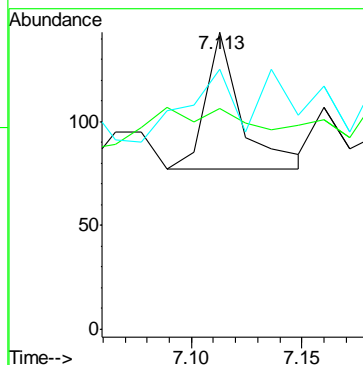
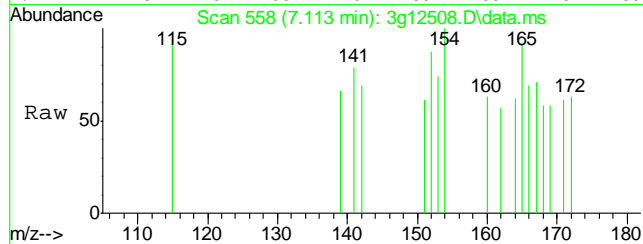
Tgt Ion: 152 Resp: 198
Ion Ratio Lower Upper
152 100
151 34.3 0.0 39.5
153 27.8 0.0 33.0





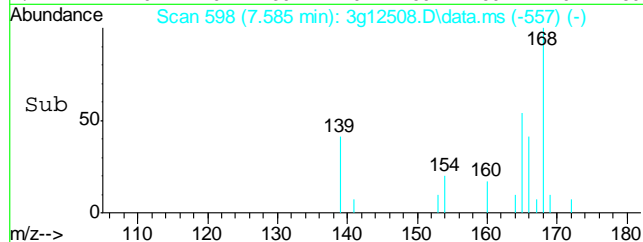
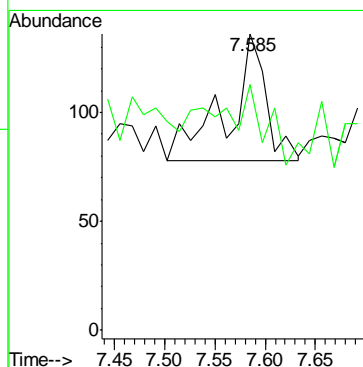
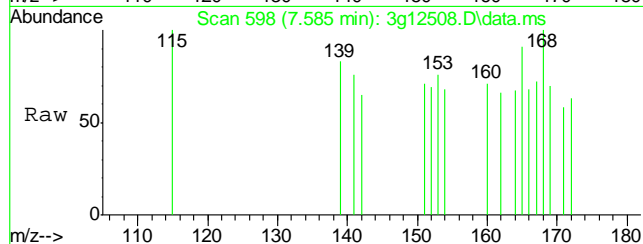
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.113 min Scan# 558
Delta R.T. -0.311 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

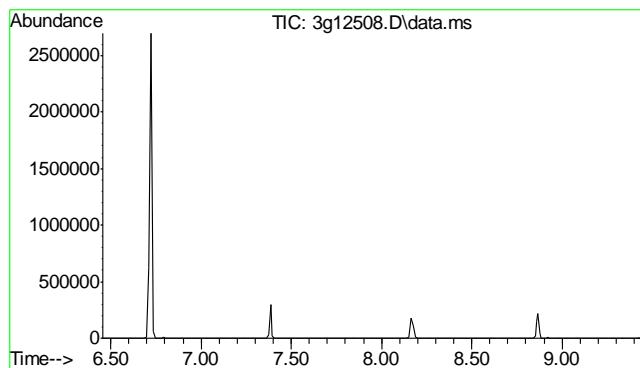
Tgt Ion	154	Resp	75
Ion Ratio	100		
Lower			
Upper			
154	100		
153	98.7	84.7	124.7
152	69.3	30.2	70.2



#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 <td>100</td> <td></td> <td></td>	100		
Lower <td></td> <td></td> <td></td>			
Upper <td></td> <td></td> <td></td>			
168	100		
139	13.2	12.0	52.0

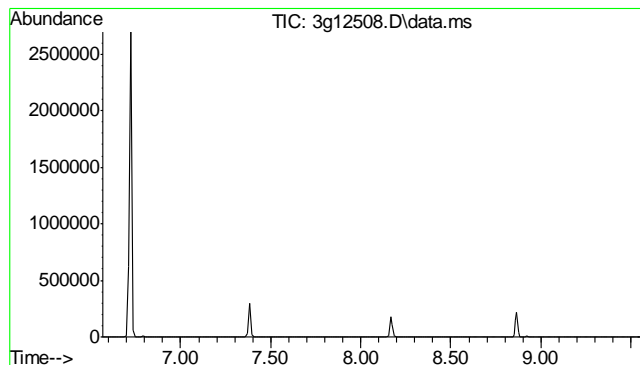
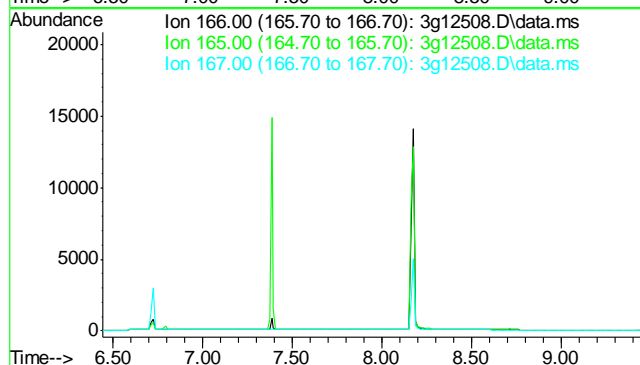




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.94 min

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

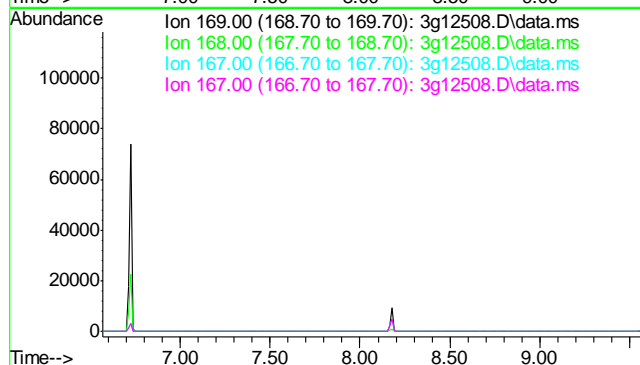
Tgt Ion	166
Sig	Exp Ratio
166	100
165	90.1
167	13.4

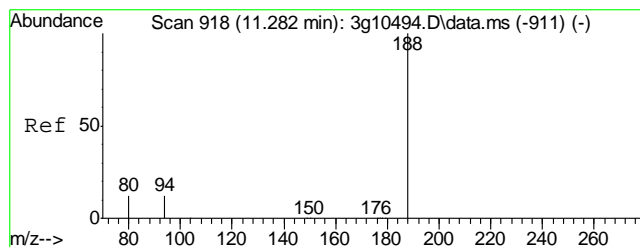


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

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

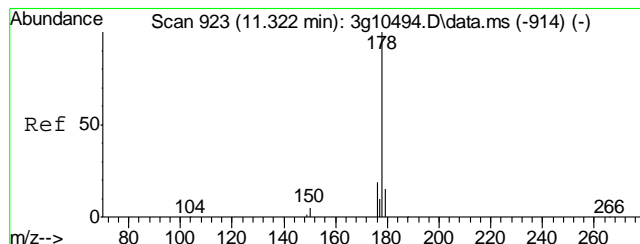
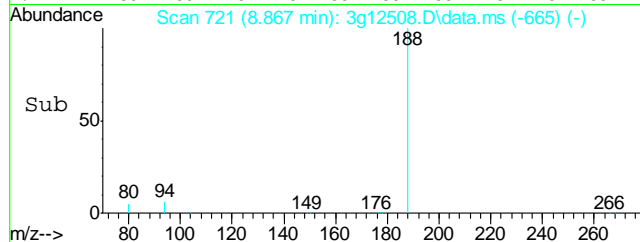
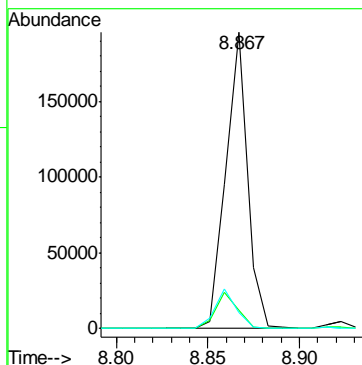
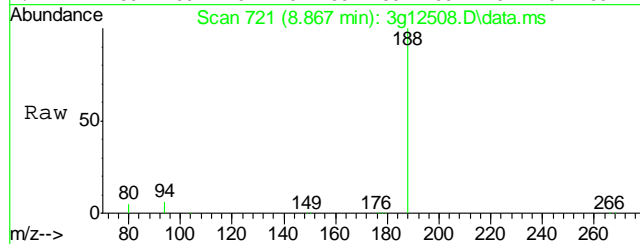
Tgt Ion	169
Sig	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





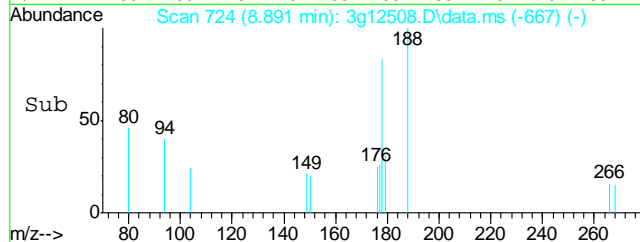
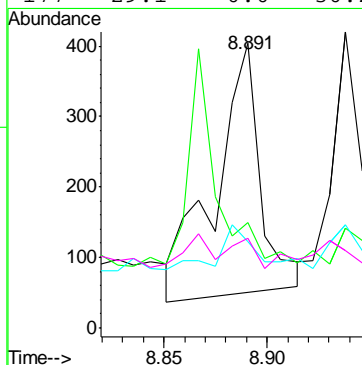
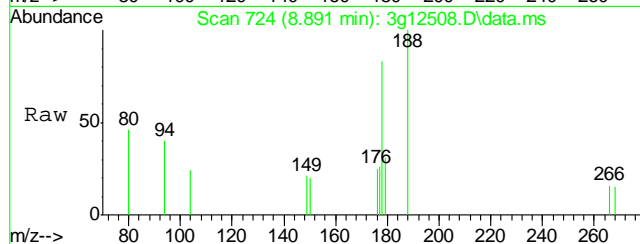
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 721
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

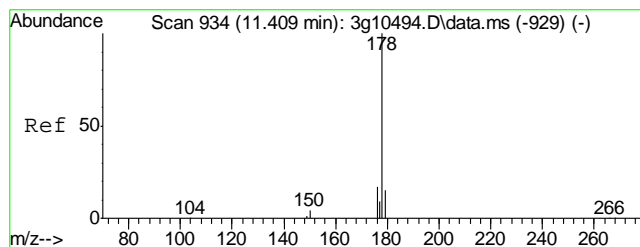
Tgt Ion	Ratio	Lower	Upper
188	100		
94	12.2	0.0	33.4
80	12.9	0.0	28.9



#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

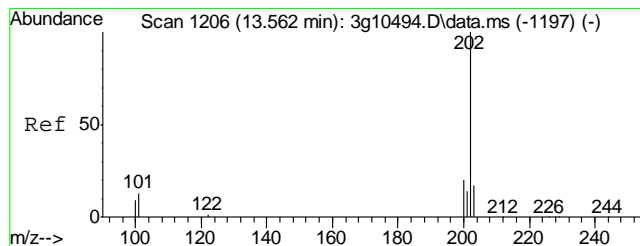
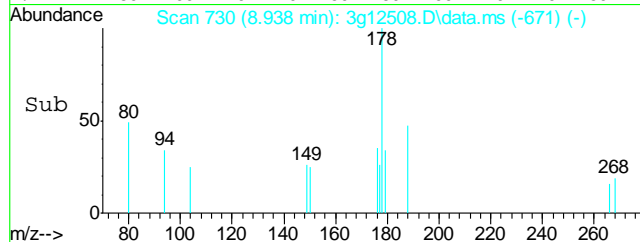
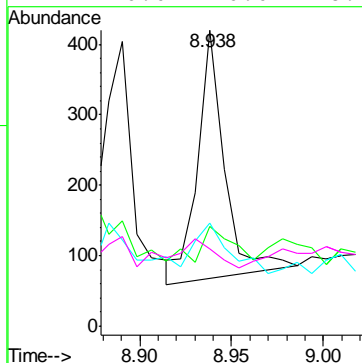
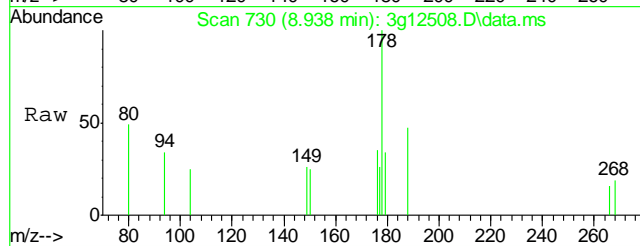
Tgt Ion	Ratio	Lower	Upper
178	100		
179	84.3	0.0	35.3#
176	9.6	0.0	38.6
177	29.1	0.0	30.2





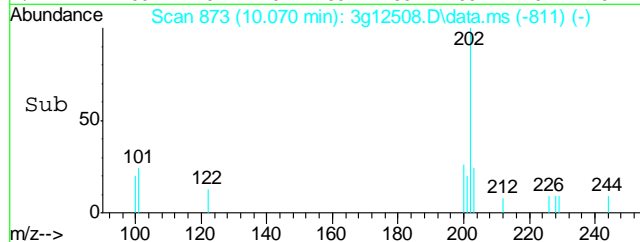
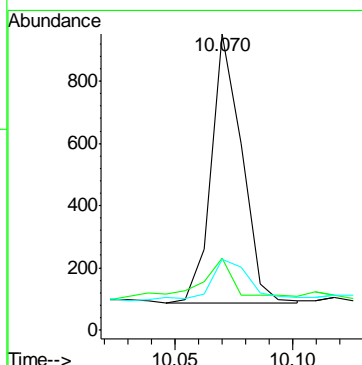
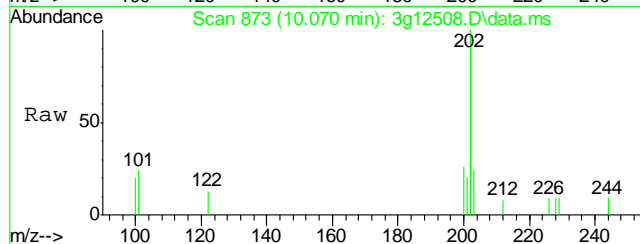
#17
 Anthracene
 Concen: Below ug/mL
 RT: 8.938 min Scan# 730
 Delta R.T. -0.012 min
 Lab File: 3g12508.D
 Acq: 10 Dec 12 11:52 am

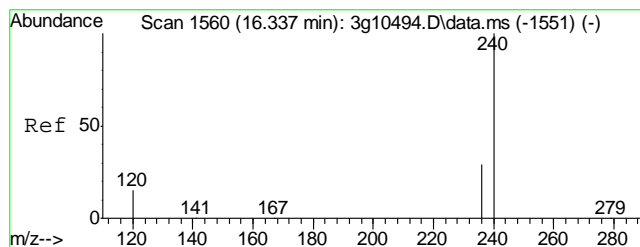
Tgt Ion	Ratio	Lower	Upper
178	100		
179	17.6	0.0	35.1
176	20.7	0.0	38.2
177	0.0	0.0	28.8



#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

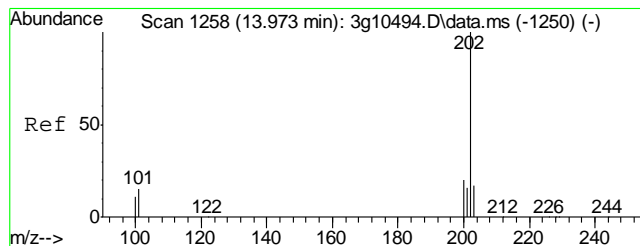
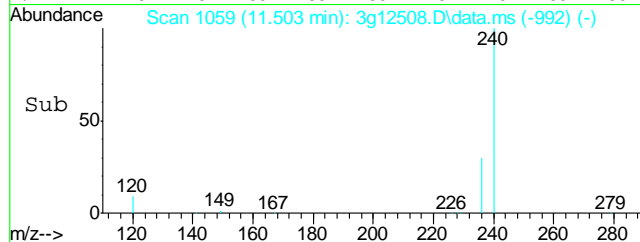
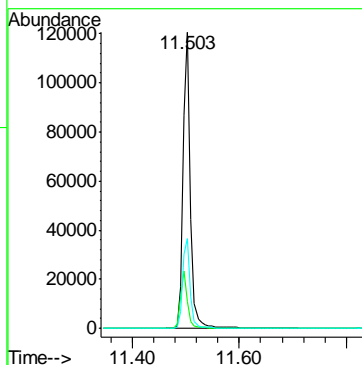
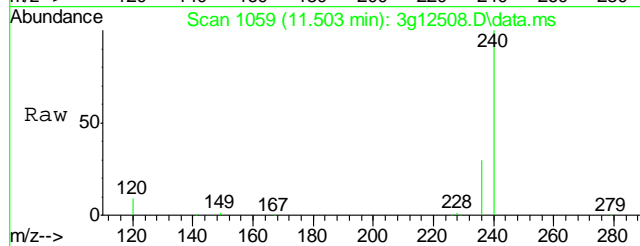
Tgt Ion	Ratio	Lower	Upper
202	100		
101	11.4	0.0	32.5
203	16.1	0.0	37.3





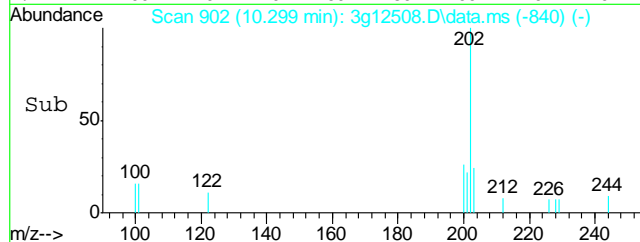
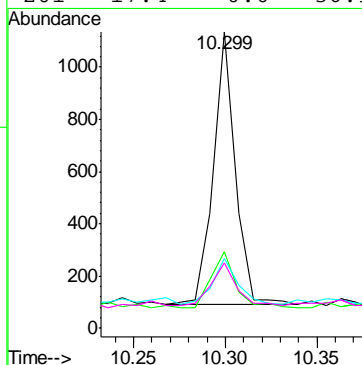
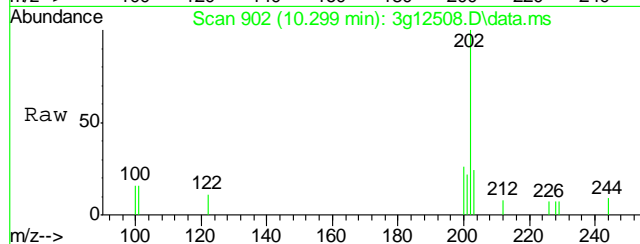
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.503 min Scan# 1059
Delta R.T. -0.013 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

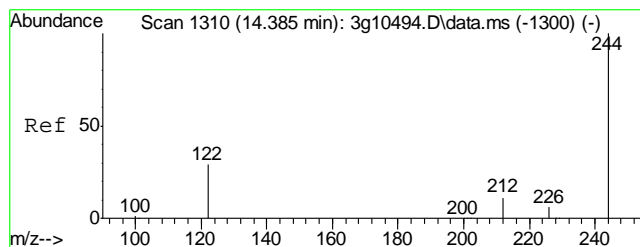
Tgt Ion:	240	Resp:	115791
Ion Ratio	Lower	Upper	
240	100		
120	18.3	0.0	39.7
236	31.8	11.1	51.1



#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

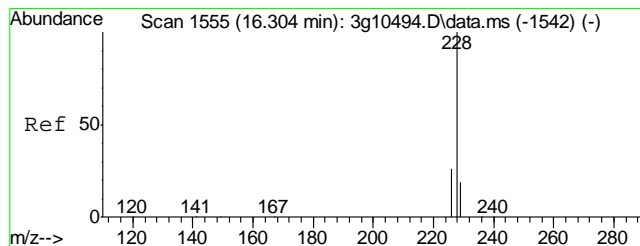
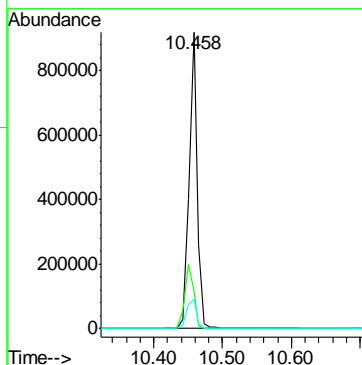
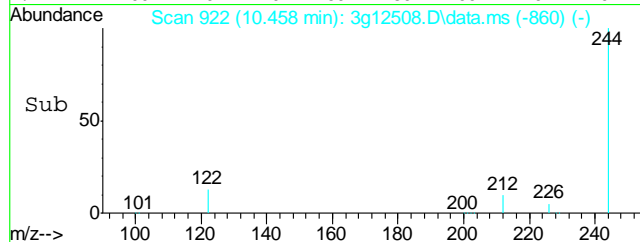
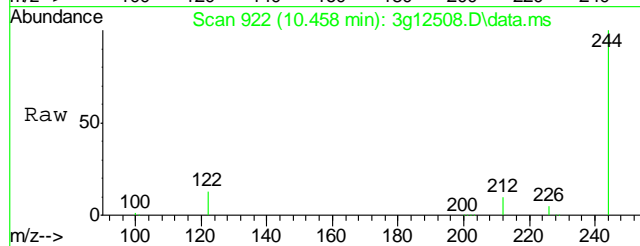
Tgt Ion:	202	Resp:	864
Ion Ratio	Lower	Upper	
202	100		
200	22.9	0.7	40.7
203	19.7	0.0	37.8
201	17.4	0.0	36.9





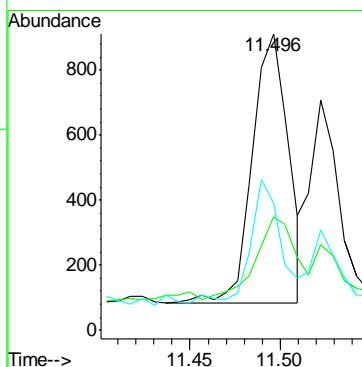
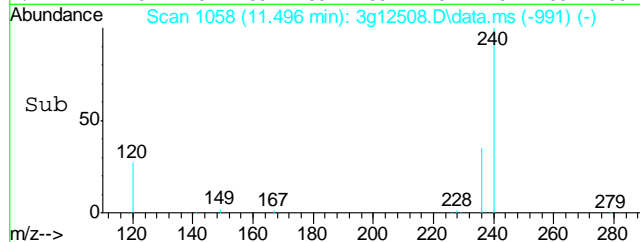
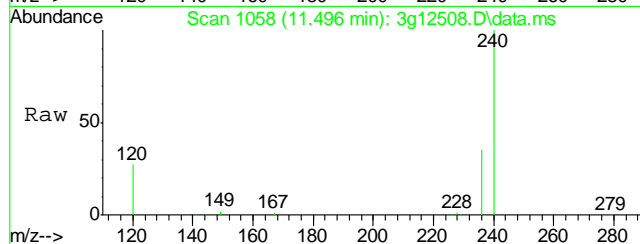
#21
Terphenyl-d14
Concen: 45.4337 ug/mL
RT: 10.458 min Scan# 922
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

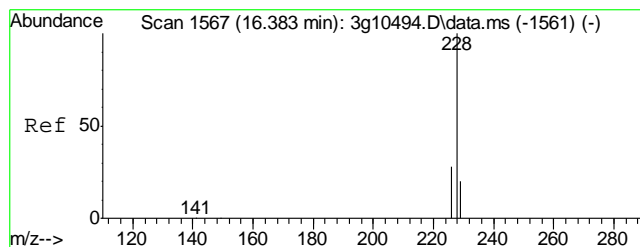
Tgt Ion:	244	Resp:	774374
Ion Ratio	Lower	Upper	
244	100		
122	23.6	6.8	46.8
212	11.7	0.0	32.3



#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

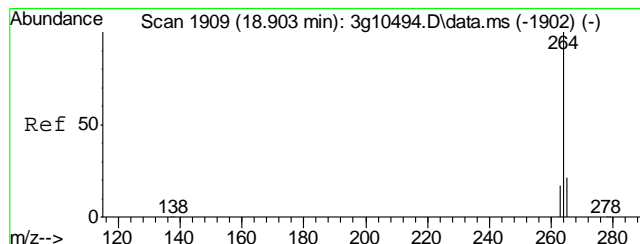
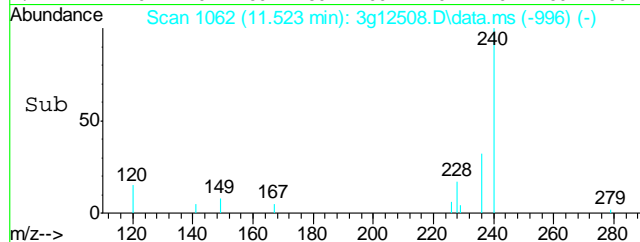
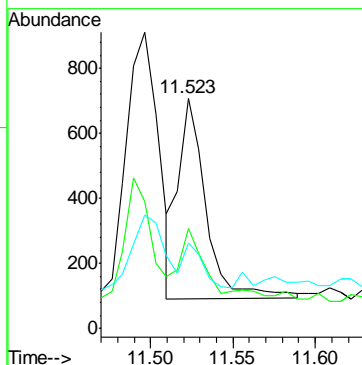
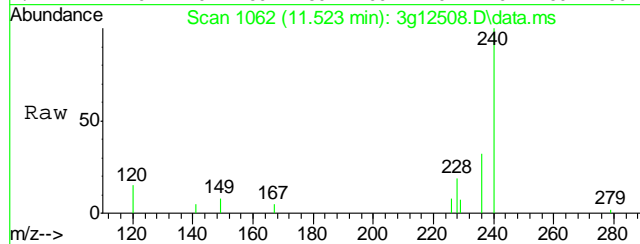
Tgt Ion:	228	Resp:	1148
Ion Ratio	Lower	Upper	
228	100		
229	34.7	0.0	39.4
226	38.0	6.8	46.8





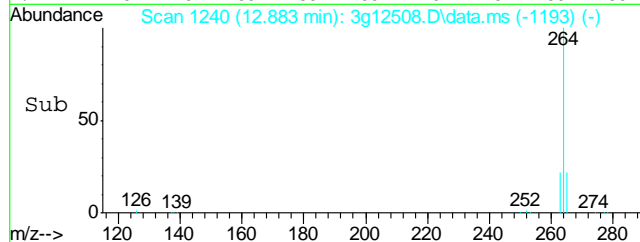
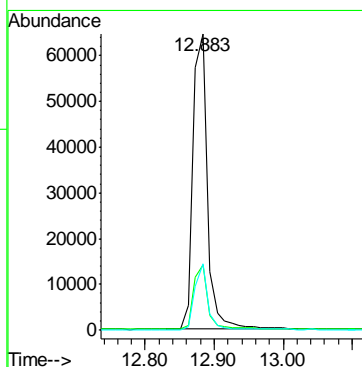
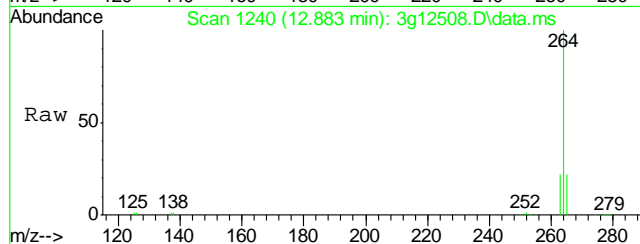
#23
Chrysene
Concen: Below ug/mL
RT: 11.523 min Scan# 1062
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

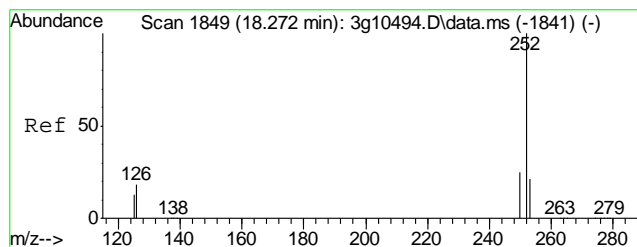
Tgt Ion:	228	Resp:	724
Ion Ratio	100	Lower	Upper
228	100		
226	25.1	9.2	49.2
229	2.9	0.0	39.4



#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

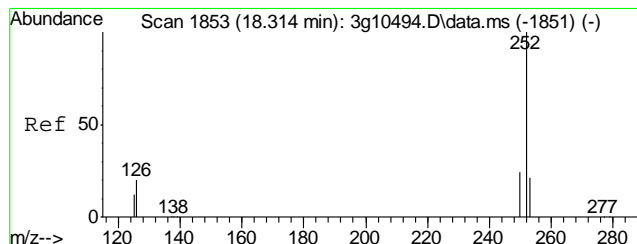
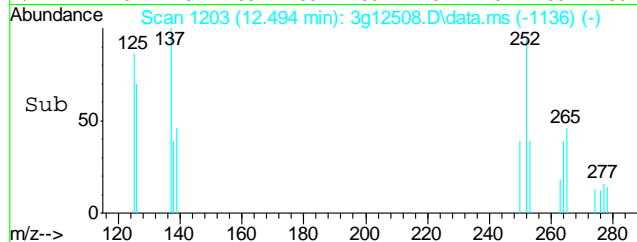
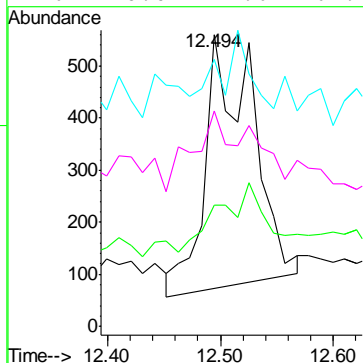
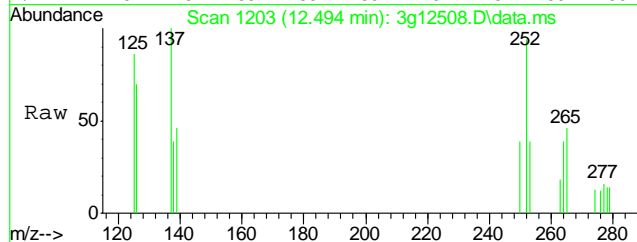
Tgt Ion:	264	Resp:	94737
Ion Ratio	100	Lower	Upper
264	100		
265	20.6	0.6	40.6
263	20.3	0.0	39.7





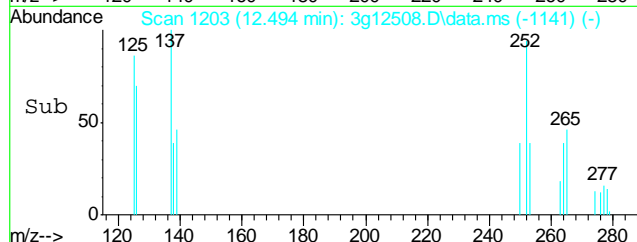
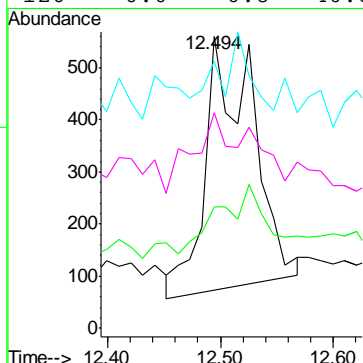
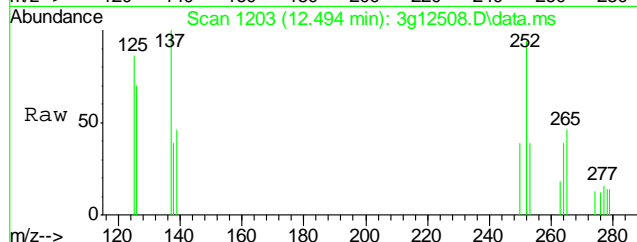
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

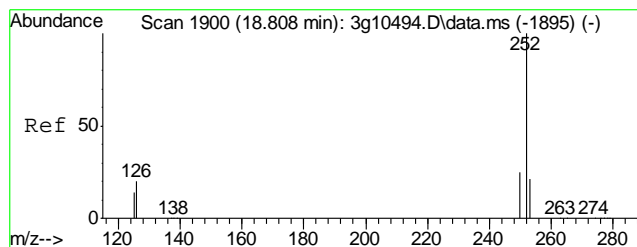
Tgt Ion: 252	Resp: 1411
Ion Ratio	Lower Upper
252	100
253	45.0 7.0 47.0
125	0.0 9.0 49.0#
126	0.0 21.6 61.6#



#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

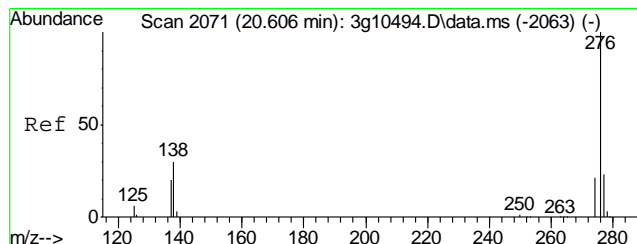
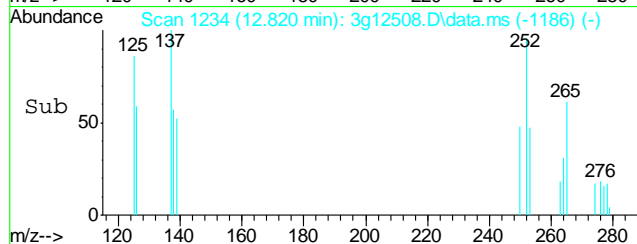
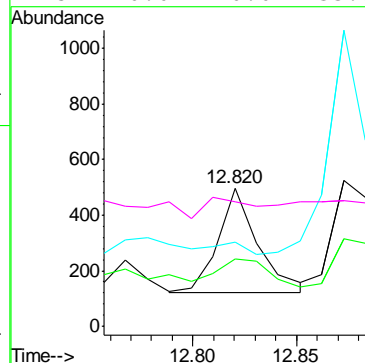
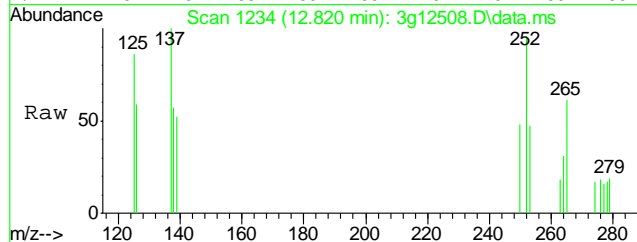
Tgt Ion: 252	Resp: 1411
Ion Ratio	Lower Upper
252	100
253	45.0 4.0 44.0#
125	0.0 0.0 35.3
126	0.0 0.8 40.8#





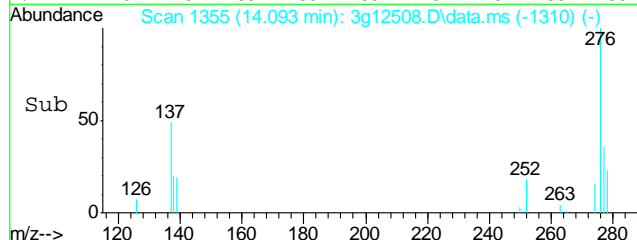
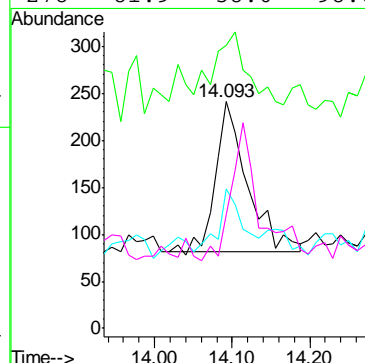
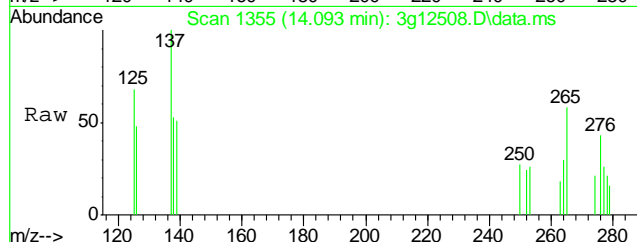
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.820 min Scan# 1234
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

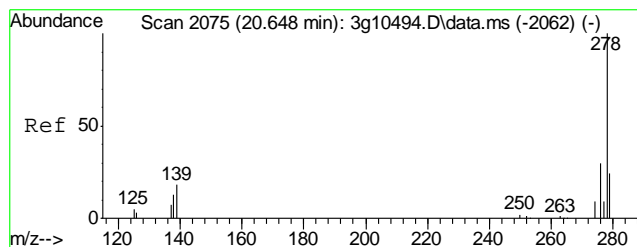
Tgt Ion:	252	Resp:	509
Ion Ratio	100	Lower	Upper
252	100		
253	34.4	1.5	41.5
126	0.0	0.0	38.4
125	0.0	0.0	33.5



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

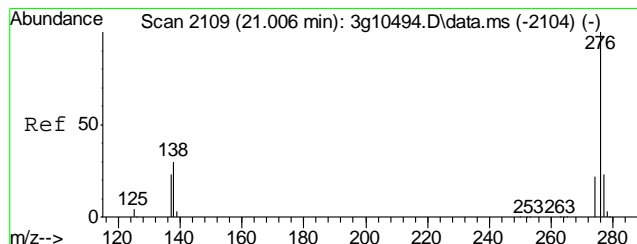
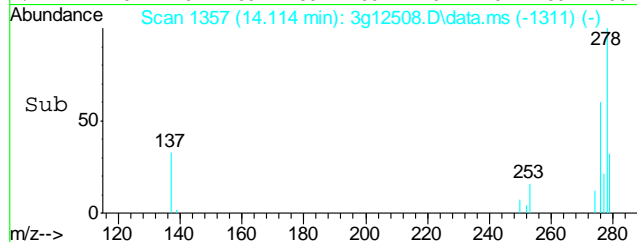
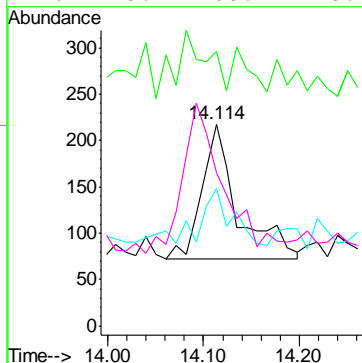
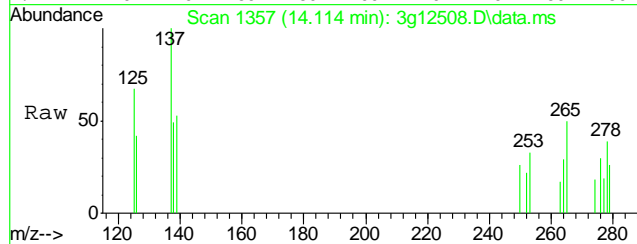
Tgt Ion:	276	Resp:	459
Ion Ratio	100	Lower	Upper
276	100		
138	66.2	16.0	56.0#
277	29.6	4.9	44.9
278	81.9	58.0	98.0





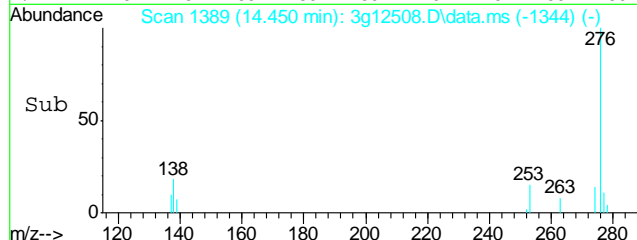
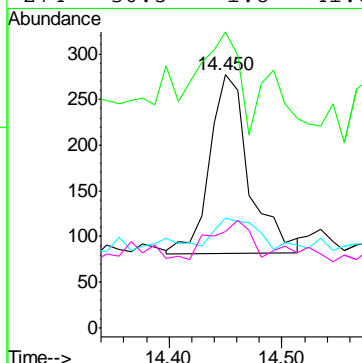
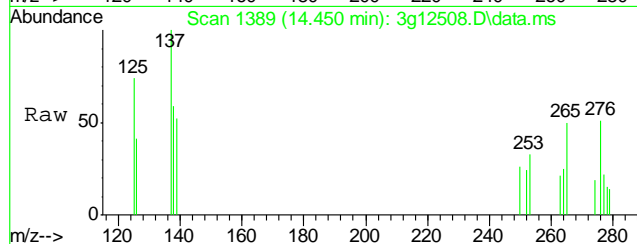
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.114 min Scan# 1357
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

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



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

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



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D41506
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

D41506-1

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: D41506
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

D41506-1

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: D41506
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

D41506-1

CAS No.	Compound	D41506-1 mg/kg	Q	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



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120612\GB18764.D\FID1A.CH Vial: 5
 Signal #2 : Y:\1\DATA\120612\GB18764.D\FID2B.CH
 Acq On : 6 Dec 2012 1:24 pm Operator: StephK
 Sample : D41506-1, 50X Inst : GC/MS Ins
 Misc : GC3278,GGB1023,5.072,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 06 14:10:16 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	14.36	2825883	90.186	%
10) S	1,2,4-Trichlorobenzene (P)	14.36	14693615	90.407	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3723206	<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	7.66	221559	0.559	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	10.47	175777	0.108	ug/L
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.54	423384	2.146	ug/L

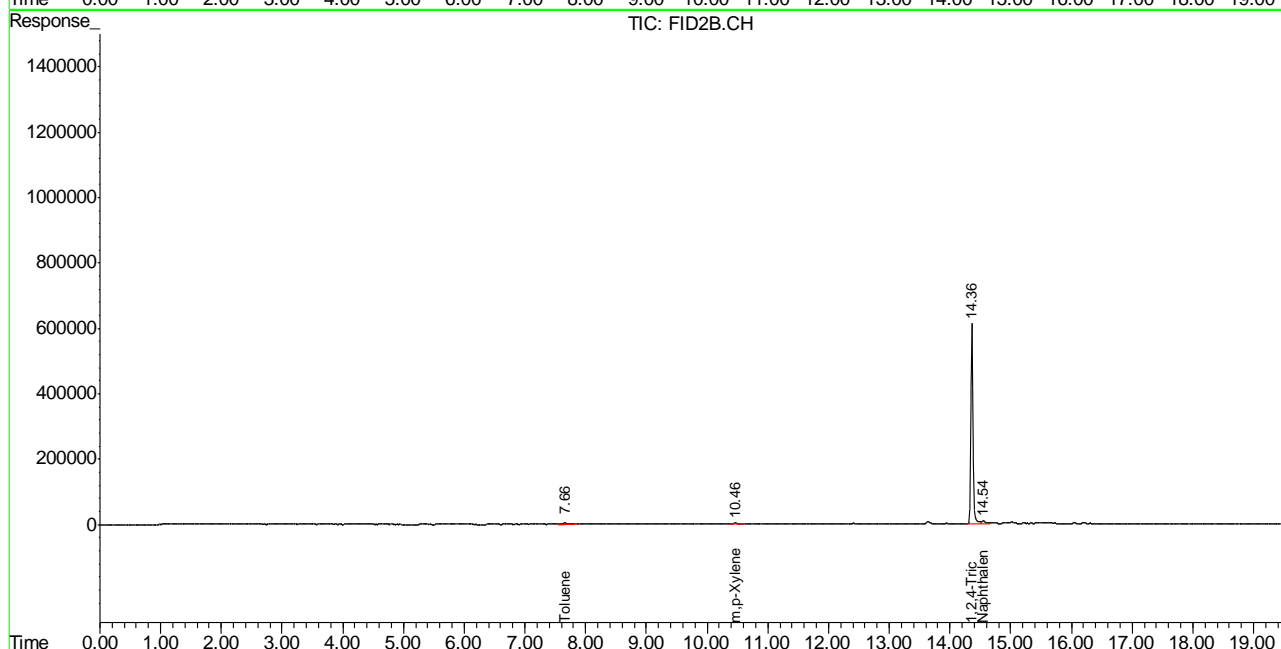
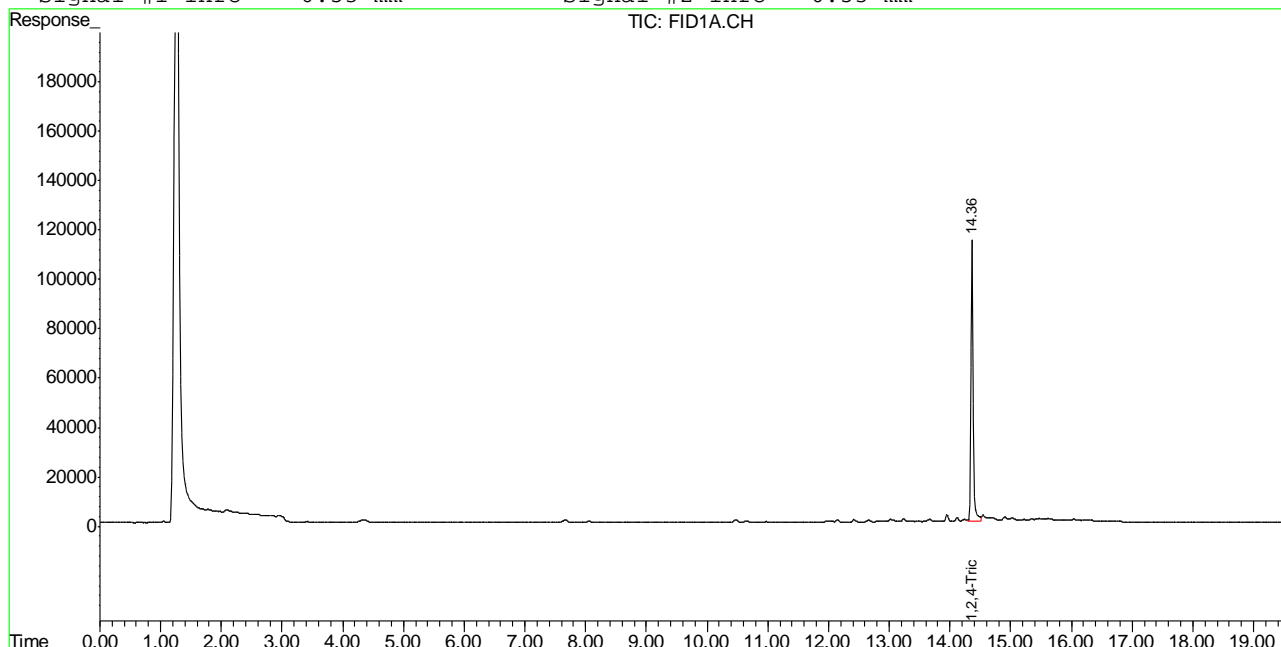
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB18764.D TB868GB868SOIL.M Fri Dec 07 09:03:31 2012 GC

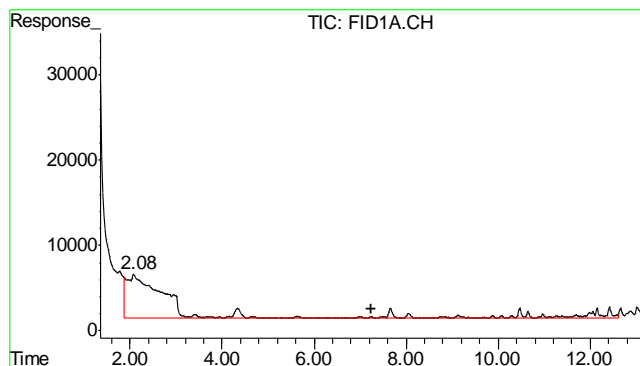
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120612\GB18764.D\FID1A.CH Vial: 5
 Signal #2 : Y:\1\DATA\120612\GB18764.D\FID2B.CH
 Acq On : 6 Dec 2012 1:24 pm Operator: StephK
 Sample : D41506-1, 50X Inst : GC/MS Ins
 Misc : GC3278,GGB1023,5.072,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 6 14:10 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

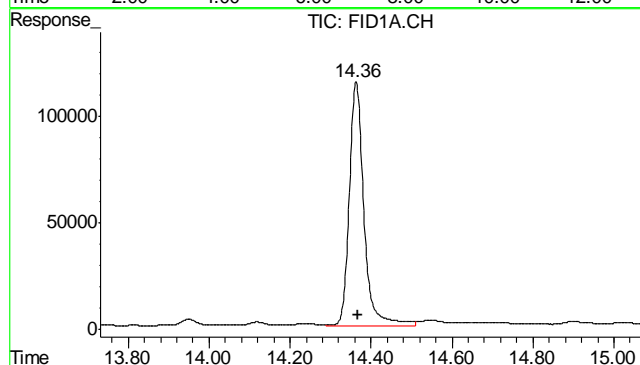
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





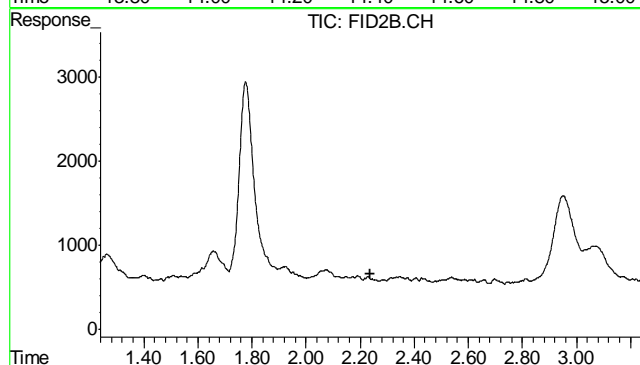
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3723206
Conc: N.D.



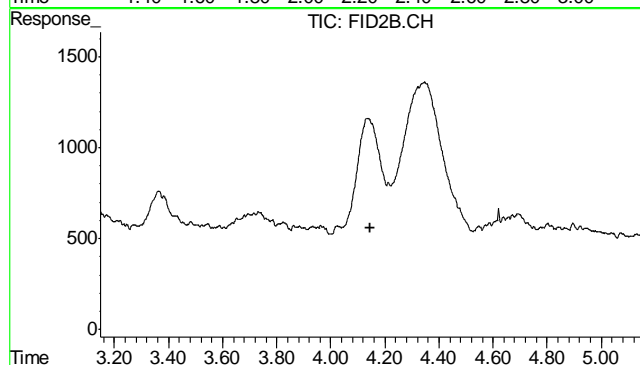
#2 1,2,4-Trichlorobenzene

R.T.: 14.363 min
Delta R.T.: -0.004 min
Response: 2825883
Conc: 90.19 %



#4 Methyl-t-butyl-ether

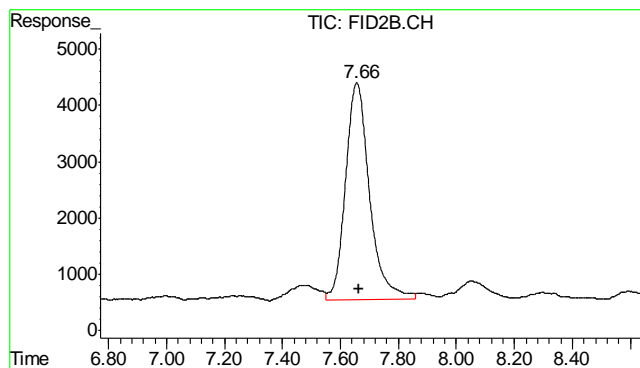
R.T.: 0.000 min
Exp R.T.: 2.239 min
Response: 0
Conc: N.D.



#5 Benzene

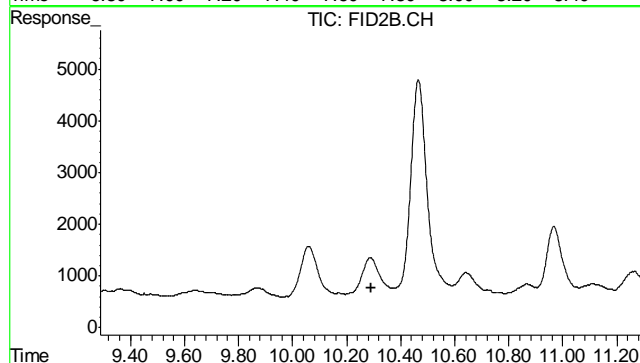
R.T.: 0.000 min
Exp R.T.: 4.147 min
Response: 0
Conc: N.D.

11.11



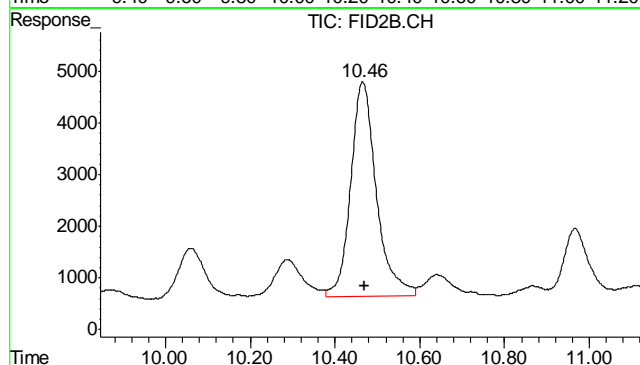
#6 Toluene

R.T.: 7.656 min
Delta R.T.: -0.008 min
Response: 221559
Conc: 0.56 ug/L



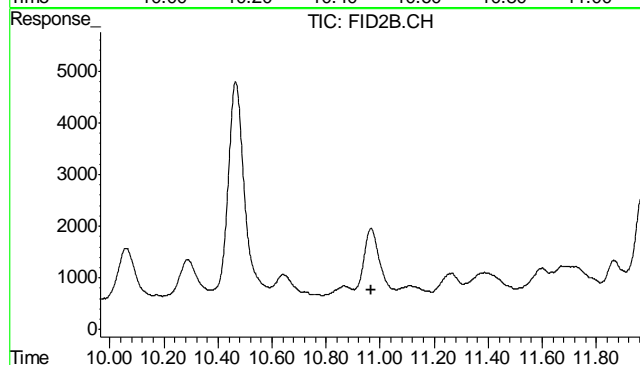
#7 Ethylbenzene

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



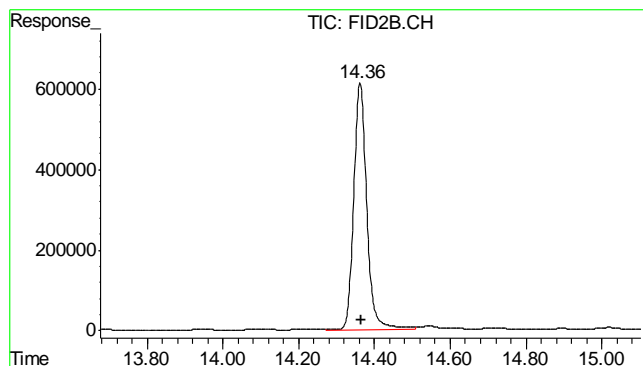
#8 m,p-Xylene

R.T.: 10.465 min
Delta R.T.: -0.004 min
Response: 175777
Conc: 0.11 ug/L



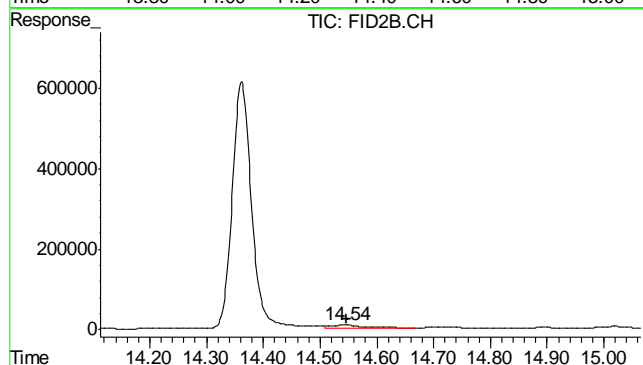
#9 o-Xylene

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



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

R.T.: 14.362 min
 Delta R.T.: -0.003 min
 Response: 14693615
 Conc: 90.41 %



#11 Naphthalene

R.T.: 14.544 min
 Delta R.T.: -0.003 min
 Response: 423384
 Conc: 2.15 ug/L

11.1.1

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

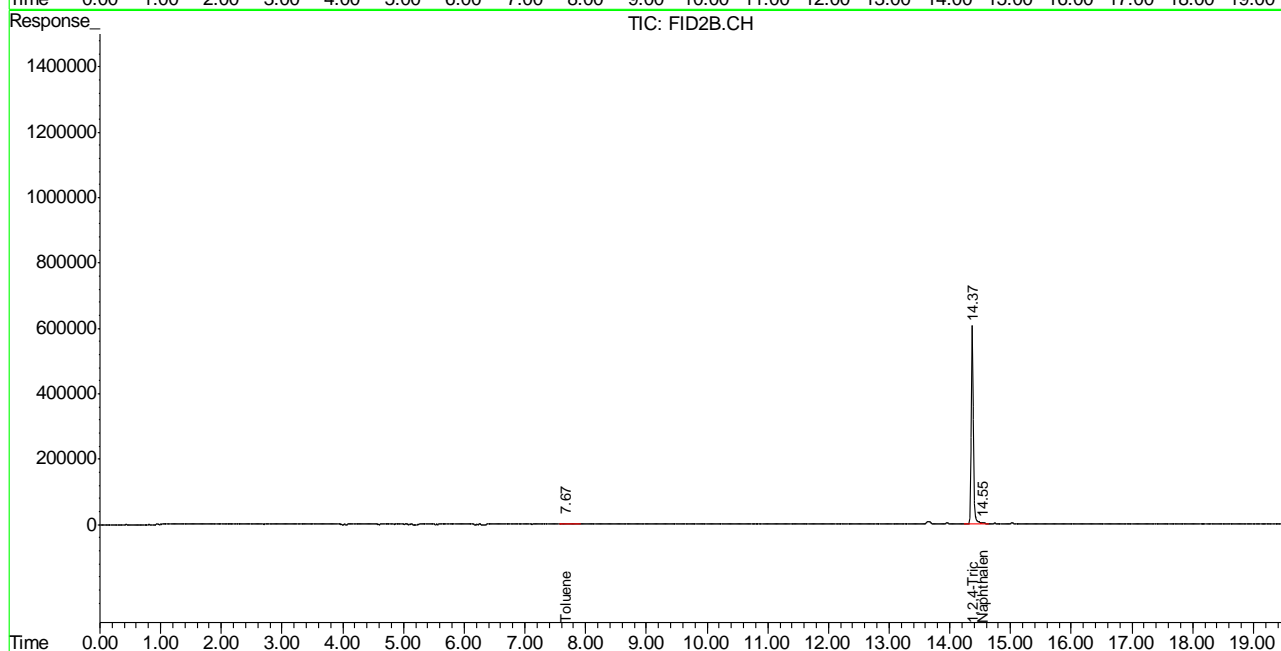
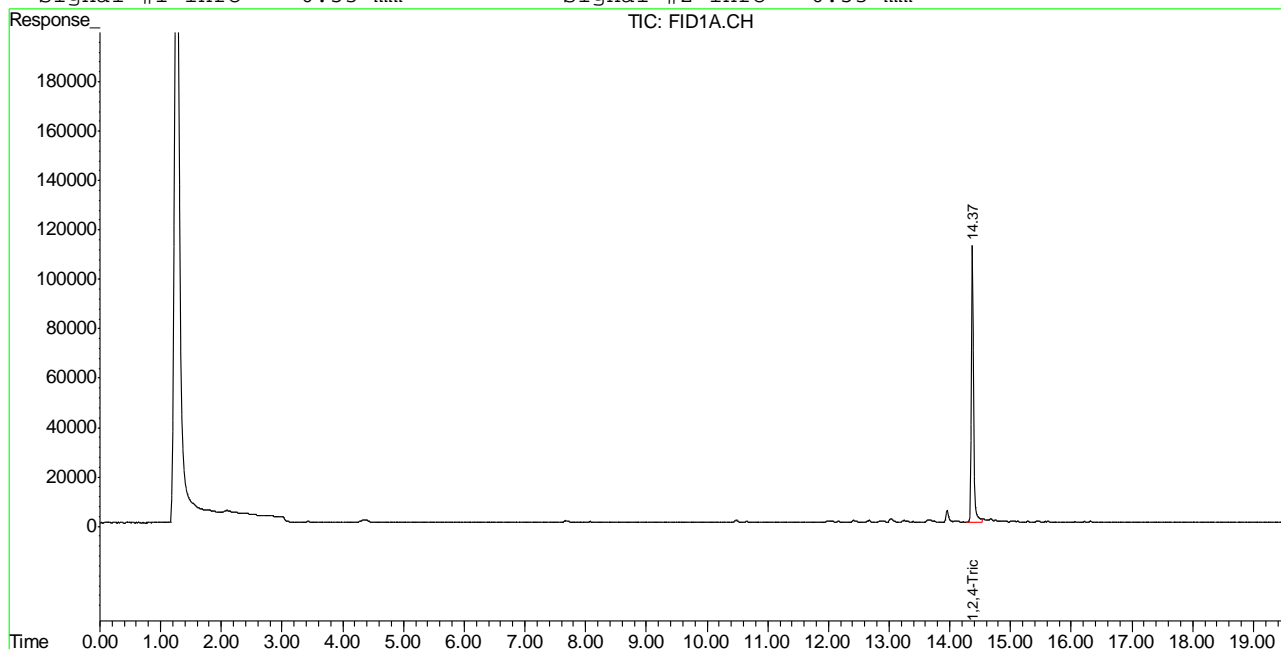
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB18762.D TB868GB868SOIL.M Fri Dec 07 09:03:25 2012 GC

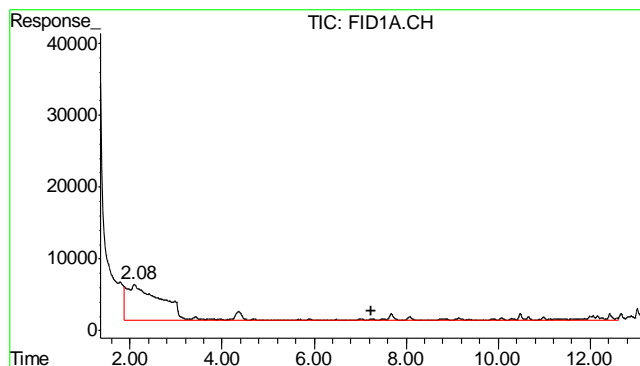
Quantitation Report (QT Reviewed)

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

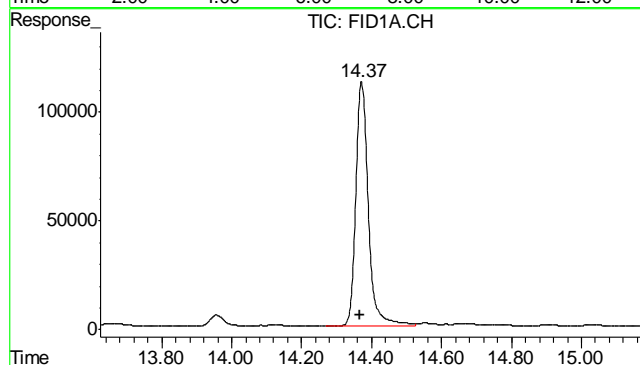
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





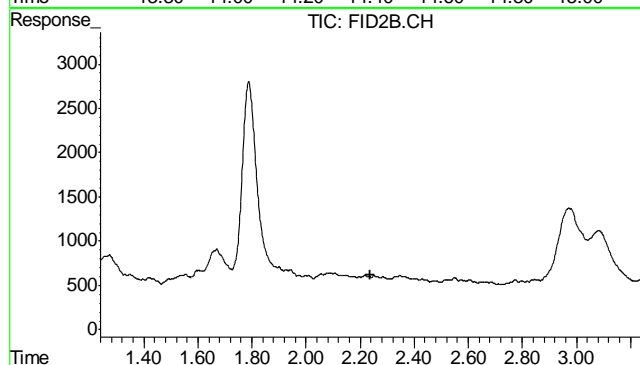
#1 TVH-Gasoline

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



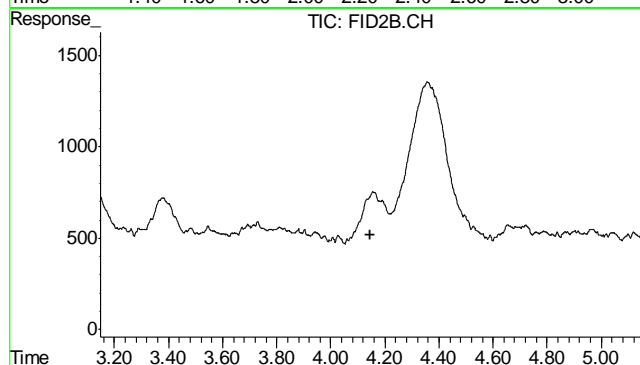
#2 1,2,4-Trichlorobenzene

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



#4 Methyl-t-butyl-ether

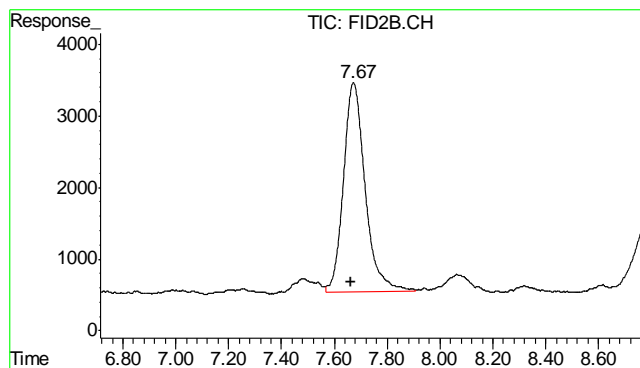
R.T.: 0.000 min
Exp R.T.: 2.239 min
Response: 0
Conc: N.D.



#5 Benzene

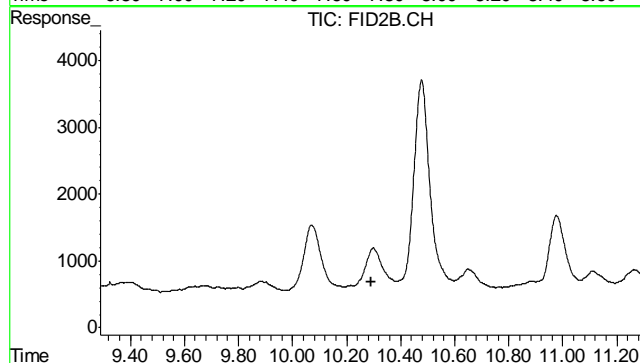
R.T.: 0.000 min
Exp R.T.: 4.147 min
Response: 0
Conc: N.D.

11.21
11



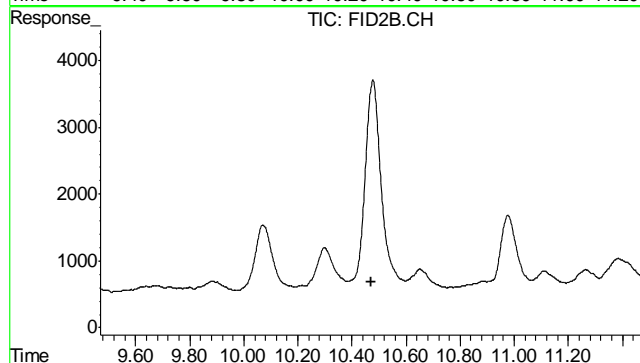
#6 Toluene

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



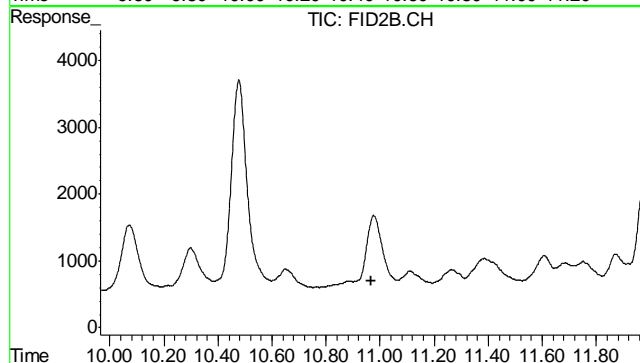
#7 Ethylbenzene

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



#8 m,p-Xylene

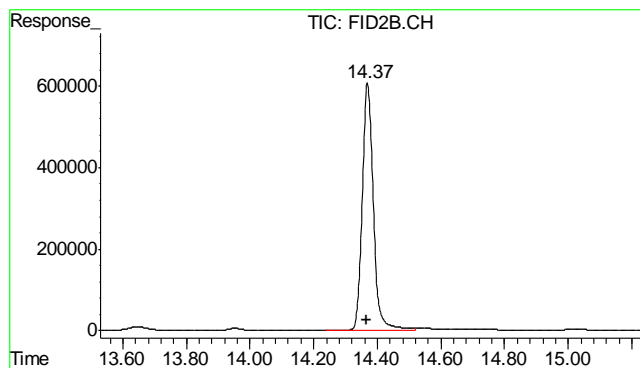
R.T.: 0.000 min
Exp R.T.: 10.469 min
Response: 0
Conc: N.D.



#9 o-Xylene

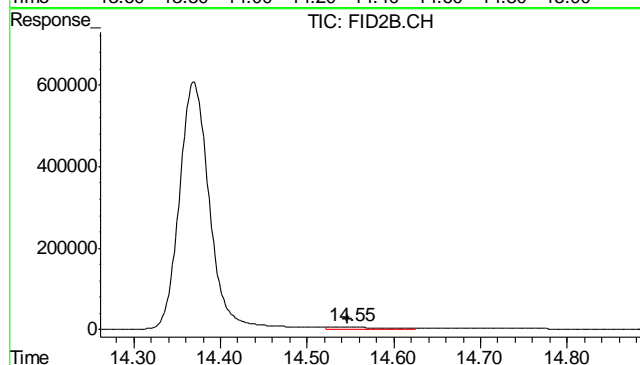
R.T.: 0.000 min
Exp R.T.: 10.965 min
Response: 0
Conc: N.D.

11.21
11



#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: D41506
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7061-MB	FD20235.D	1	12/07/12	AV	12/06/12	OP7061	GFD1015

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

D41506-1

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: D41506
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7061-BS	FD20237.D	1	12/07/12	AV	12/06/12	OP7061	GFD1015

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

D41506-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	695	104	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	99%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D41506
Account: XTOKRWR XTO Energy
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7061-MS	FD20239.D	1	12/07/12	AV	12/06/12	OP7061	GFD1015
OP7061-MSD	FD20241.D	1	12/07/12	AV	12/06/12	OP7061	GFD1015
D41506-1	FD20243.D	1	12/07/12	AV	12/06/12	OP7061	GFD1015

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

D41506-1

CAS No.	Compound	D41506-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	33.8		739	699	90	732	94	5	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D41506-1	Limits
84-15-1	o-Terphenyl	91%	89%	68%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD120712\FD20243.D Vial: 7
Acq On : 07 Dec 2012 11:12 am Operator: ashleyv
Sample : D41506-1 Inst : FID5
Misc : OP7061,GFD1015,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 07 11:37:25 2012 Quant Results File: DRO-GFD982F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD982F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri Nov 16 10:24:56 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

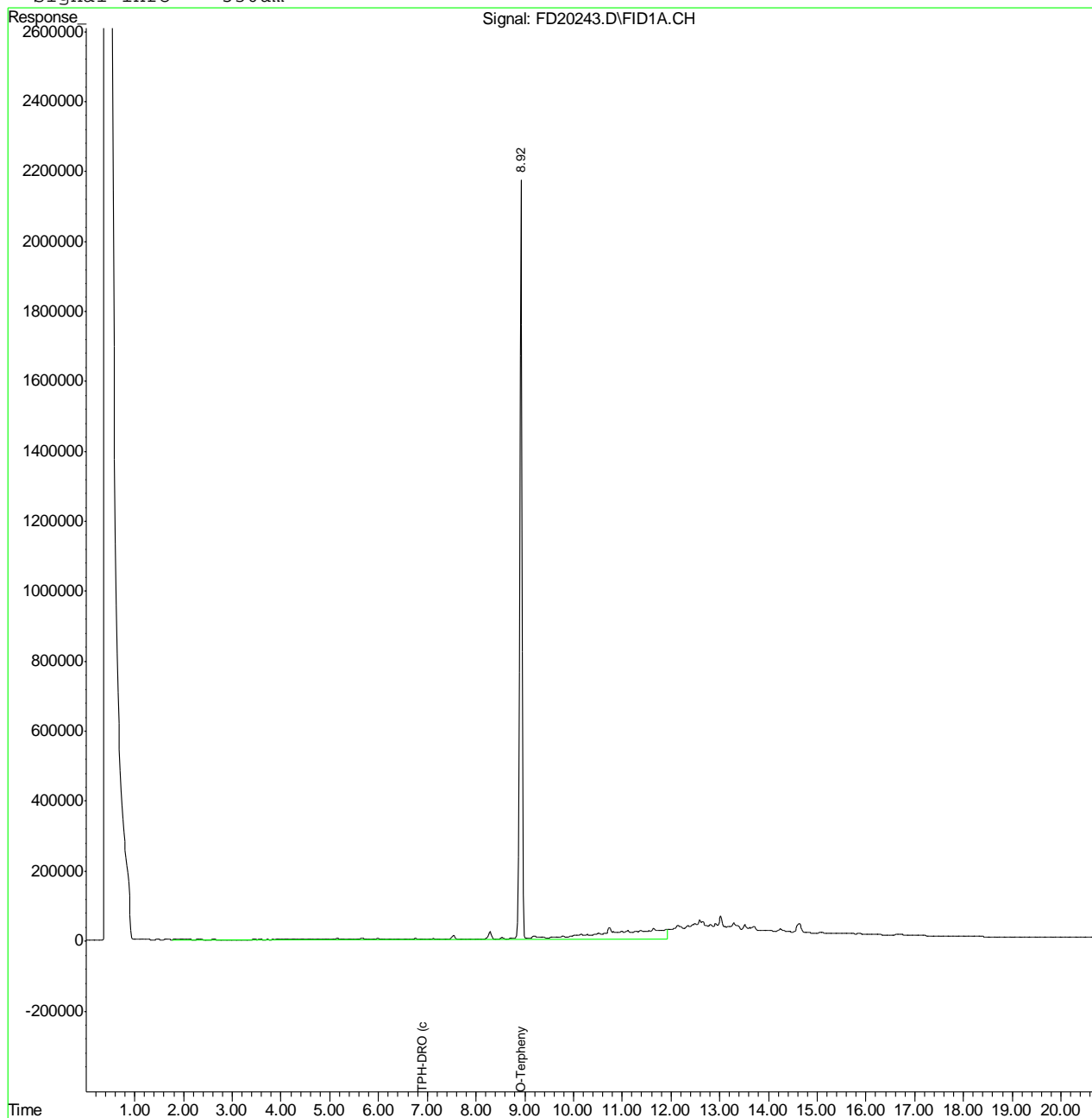
System Monitoring Compounds			
1) S O-Terphenyl	8.93	75762260	1369.270 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	6.89	34755383	915.201 mg/L

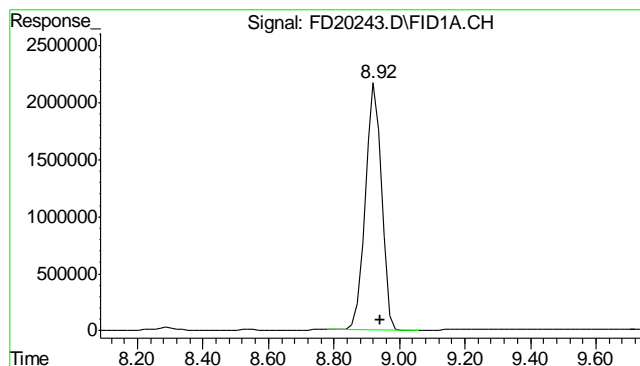
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD120712\FD20243.D Vial: 7
Acq On : 07 Dec 2012 11:12 am Operator: ashleyv
Sample : D41506-1 Inst : FID5
Misc : OP7061,GFD1015,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 7 11:37 2012 Quant Results File: DRO-GFD982F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD982F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri Nov 16 10:24:56 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

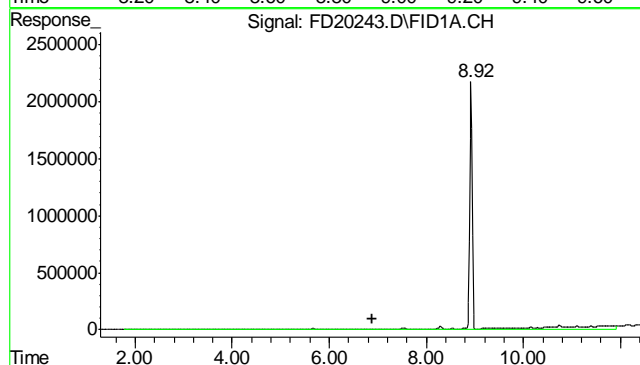
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 8.929 min
 Delta R.T.: -0.011 min
 Response: 75762260
 Conc: 1369.27 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 6.895 min
 Delta R.T.: 0.000 min
 Response: 34755383
 Conc: 915.20 mg/L m

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD120712\FD20235.D Vial: 3
Acq On : 12-7-2012 09:24:29 AM Operator: ashleyv
Sample : OP7061-MB Inst : FID5
Misc : OP7061,GFD1015,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 07 10:09:28 2012 Quant Results File: DRO-GFD982F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD982F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri Nov 16 10:24:56 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	8.93	86712214	1567.172 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	6.89	1719329	45.274 mg/L

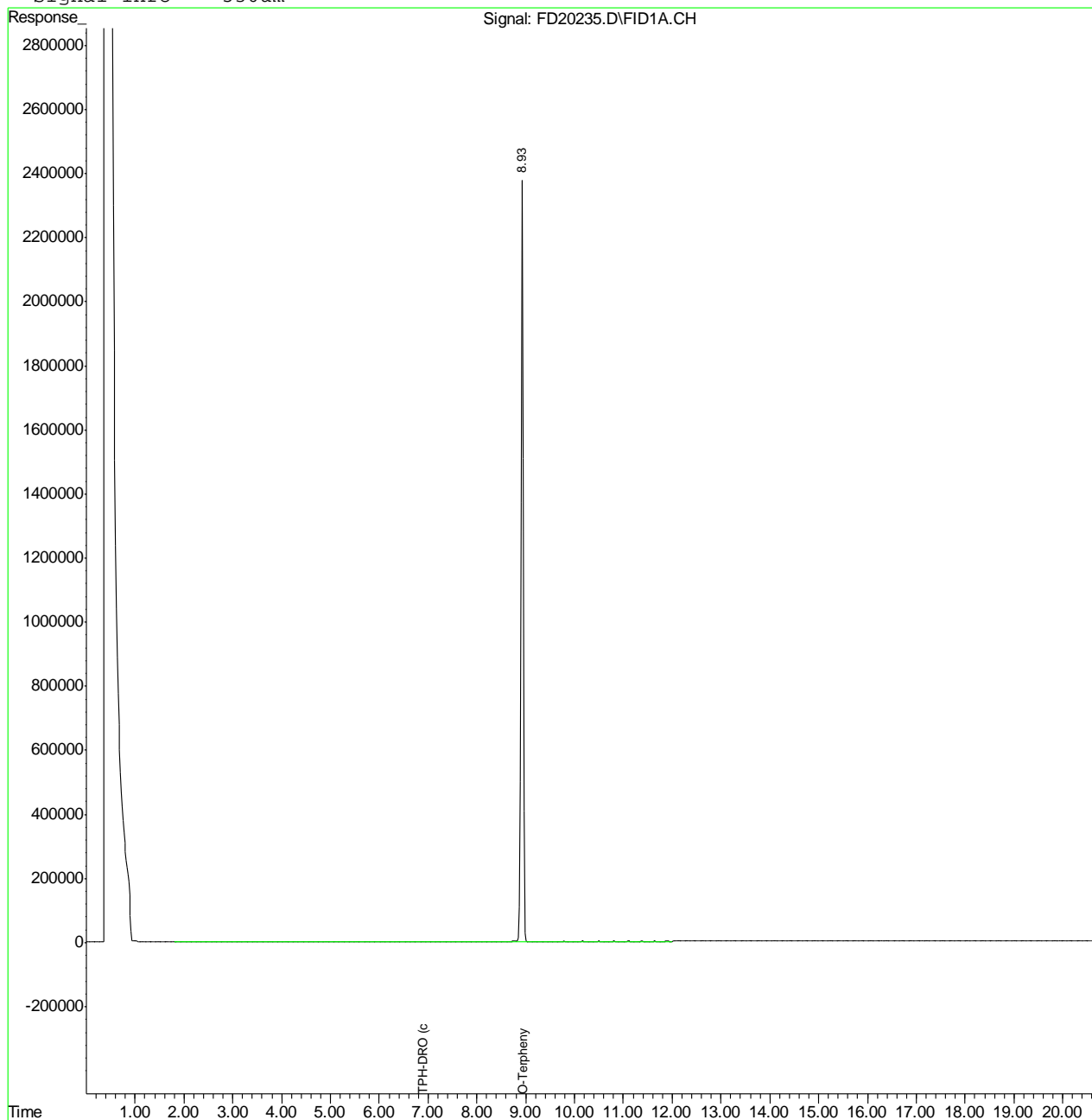
(f)=RT Delta > 1/2 Window (m)=manual int.
FD20235.D DRO-GFD982F.M Fri Dec 07 12:23:46 2012 GC

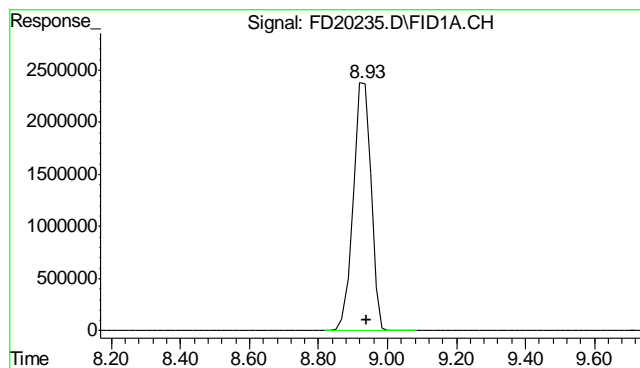
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\DEC\FD120712\FD20235.D Vial: 3
Acq On : 12-7-2012 09:24:29 AM Operator: ashleyv
Sample : OP7061-MB Inst : FID5
Misc : OP7061,GFD1015,30.00,,,1,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 7 10:09 2012 Quant Results File: DRO-GFD982F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD982F.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri Nov 16 10:24:56 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

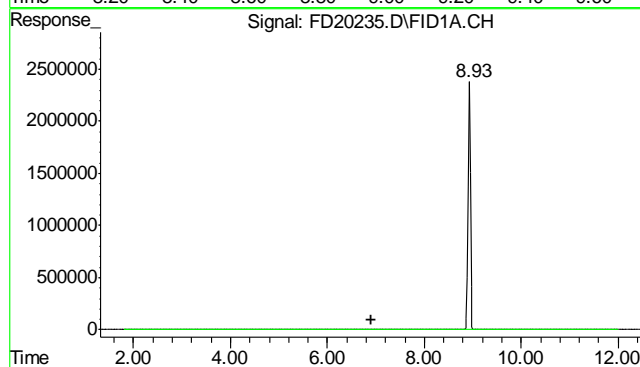
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 8.934 min
Delta R.T.: -0.006 min
Response: 86712214
Conc: 1567.17 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 6.895 min
Delta R.T.: 0.000 min
Response: 1719329
Conc: 45.27 mg/L m

13.2.1
13

Metals Analysis

QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41506
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: D41506-1

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: D41506
 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: D41506-1

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: D41506
 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

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

Associated samples MP9008: D41506-1

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: D41506
 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: D41506-1

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: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

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	0.060	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.030	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.050	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.080	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.38	<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	0.0	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.070	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	0.41	<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	1.1	<3.0

Associated samples MP9011: D41506-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	D41506-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	2270	2320	222	22.6 (a)	75-125
Beryllium	anr				
Boron					
Cadmium	0.077	45.3	55.4	81.6	75-125
Calcium					
Chromium	26.9	68.1	55.4	80.6	75-125
Cobalt					
Copper	9.5	57.5	55.4	86.6	75-125
Iron	anr				
Lead	22.9	96.3	111	68.9N(b)	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	14.1	57.7	55.4	82.6	75-125
Phosphorus	anr				
Potassium					
Selenium	0.56	95.3	111	85.5	75-125
Silicon					
Silver	0.0	20.1	22.2	90.7	75-125
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc	27.7	71.8	55.4	79.6	75-125

Associated samples MP9011: D41506-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	D41506-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	2270	4080	220	824.5(a)	55.0 (b)	20
Beryllium	anr					
Boron						
Cadmium	0.077	45.2	54.9	82.2	0.2	20
Calcium						
Chromium	26.9	67.7	54.9	80.7	0.6	20
Cobalt						
Copper	9.5	57.1	54.9	86.7	0.7	20
Iron	anr					
Lead	22.9	93.7	110	67.2N(c)	2.7	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	14.1	52.3	54.9	73.6N(c)	9.8	20
Phosphorus	anr					
Potassium						
Selenium	0.56	95.7	110	86.7	0.4	20
Silicon						
Silver	0.0	20.0	22	91.1	0.5	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc	27.7	68.1	54.9	73.6N(c)	5.3	20

Associated samples MP9011: D41506-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	213	200	106.5	80-120
Beryllium	anr			
Boron				
Cadmium	47.1	50	94.2	80-120
Calcium				
Chromium	50.6	50	101.2	80-120
Cobalt				
Copper	46.2	50	92.4	80-120
Iron	anr			
Lead	95.8	100	95.8	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	47.7	50	95.4	80-120
Phosphorus	anr			
Potassium				
Selenium	97.3	100	97.3	80-120
Silicon				
Silver	20.2	20	101.0	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	49.5	50	99.0	80-120

Associated samples MP9011: D41506-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/06/12

Metal	D41506-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	17300	20800	0.5	0-10
Beryllium	anr			
Boron				
Cadmium	0.00	0.00	NC (a)	0-10
Calcium				
Chromium	214	254	19.0*(b)	0-10
Cobalt				
Copper	86.5	91.0	5.2	0-10
Iron	anr			
Lead	209	217	19.6*(b)	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	108	133	22.6*(b)	0-10
Phosphorus	anr			
Potassium				
Selenium	0.00	0.00	NC (a)	0-10
Silicon				
Silver	2.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	252	326	29.2*(b)	0-10

Associated samples MP9011: D41506-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9011
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.

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9012
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/06/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	-0.0052	<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 MP9012: D41506-1

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: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9012
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/06/12

Metal	D41506-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	5.0	97.5	111	83.4
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 MP9012: D41506-1

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

14.3.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9012
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/06/12

Metal	D41506-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	5.0	97.5	110	84.3	0.0	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 MP9012: D41506-1

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

14.3.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9012
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	84.7	100	84.7	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 MP9012: D41506-1

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

14.3.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41506
Account: XTOKRWR - XTO Energy
Project: PCU 296-5A

QC Batch ID: MP9012
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/06/12

Metal	D41506-1			QC
	Original	SDL 5:25	%DIF	Limits
Aluminum				
Antimony				
Arsenic	45.4	42.8	5.6	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 MP9012: D41506-1

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: D41506
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: D41506-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41506
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: D41506
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: D41506-1A

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: D41506
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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41506
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: D41506-1A

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: D41506
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: D41506
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: D41506-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41506
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: D41506
 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 SDL 1:5		%DIF	QC 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: D41506-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41506
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
14

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41506
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	GN17963			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:
Batch GP8845: D41506-1
Batch GP8856: D41506-1
Batch GN17963: D41506-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41506
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: D41506-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41506
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: D41506-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41506
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: D41506-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

15.4
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