New Jersey
ACCUTEST LABORATORIES

01/09/13

Technical Report for

Aquaterra Technologies, Inc.

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

AOI-7

Accutest Job Number: JB22267

Sampling Date: 11/27/12

Report to:

Langan Engineering & Environmental

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ATTN: Kristin Ward

Total number of pages in report: **596**

ACCREDITED IN ACCORDANCE WITH nelac

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

Nancy T. Cole
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Laboratory Director

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

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Sample Summary

Aquaterra Technologies, Inc.

Job No: JB22267

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-7

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JB22267-1	11/27/12	08:30	LM	11/28/12	SO	Soil	BH-12-91_0.5'
JB22267-2	11/27/12	08:45	LM	11/28/12	SO	Soil	BH-12-92_0.5'
JB22267-3	11/27/12	09:00	LM	11/28/12	SO	Soil	BH-12-94_1.0'
JB22267-4	11/27/12	09:45	LM	11/28/12	SO	Soil	BH-12-87_1.0'
JB22267-5	11/27/12	10:00	LM	11/28/12	SO	Soil	BH-12-87_3.0'
JB22267-6	11/27/12	10:15	LM	11/28/12	SO	Soil	BH-12-100_3.0'
JB22267-7	11/27/12	10:15	LM	11/28/12	SO	Soil	BH-12-85_1.5'
JB22267-8	11/27/12	10:30	LM	11/28/12	SO	Soil	BH-12-85_3.0'
JB22267-9	11/27/12	10:30	LM	11/28/12	SO	Soil	BH-12-83_1.0'
JB22267-10	11/27/12	10:30	LM	11/28/12	SO	Soil	BH-12-83_3.0'
JB22267-11	11/27/12	10:50	LM	11/28/12	SO	Soil	BH-12-84_3.0'
JB22267-12	11/27/12	11:00	LM	11/28/12	SO	Soil	BH-12-88_2.5'
JB22267-13	11/27/12	12:30	LM	11/28/12	SO	Soil	BH-12-79_1.0'

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

Sample Summary
(continued)

Aquaterra Technologies, Inc.

Job No: JB22267

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-7

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JB22267-14	11/27/12	12:45	LM	11/28/12	SO	Soil	BH-12-82_1.0'
JB22267-15	11/27/12	14:15	LM	11/28/12	SO	Soil	BH-12-78_1.0'
JB22267-16	11/27/12	14:00	LM	11/28/12	SO	Soil	BH-12-78_2.0'
JB22267-17	11/27/12	14:30	LM	11/28/12	SO	Soil	BH-12-80_3.0'

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Aquaterra Technologies, Inc.	**Job No**	JB22267
Site:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, P	**Report Date**	12/13/2012 2:33:36 P

On 11/28/2012, 17 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 1.5 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB22267 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

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:** VD8283

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB22768-1MS, JB22768-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB22267-8: Diluted due to high concentration of target compound.

Matrix: SO **Batch ID:** VV5655

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB22940-4MS, JB22940-4MSD were used as the QC samples indicated.

Matrix: SO **Batch ID:** VX5712

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB23114-47MS, JB23114-48DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO **Batch ID:** VY5528

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB22267-1MS, JB22267-2DUP were used as the QC samples indicated.

Matrix: SO **Batch ID:** VY5539

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB23056-1MS, JB23056-2DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270D

Matrix: SO **Batch ID:** OP61828

- All samples were extracted within the recommended method holding time.
- Sample(s) JB22267-1MS, JB22267-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix: SO	**Batch ID:** MP68325

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB22267-1MS, JB22267-1MSD, JB22267-1SDL were used as the QC samples for metals.
- JB22267-14 for Lead: Elevated detection limit due to dilution required for high interfering element.
- JB22267-1 for Lead: Elevated detection limit due to dilution required for high interfering element.

Wet Chemistry By Method SM2540 G-97

Matrix: SO	**Batch ID:** GN76421

- The data for SM2540 G-97 meets quality control requirements.

Matrix: SO	**Batch ID:** GN76426

- The data for SM2540 G-97 meets quality control requirements.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest'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.

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

Summary of Hits

Job Number: JB22267
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 11/27/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB22267-1	**BH-12-91_0.5'**					
Anthracene		0.0677	0.038		mg/kg	SW846 8270D
Benzo(a)anthracene		0.401	0.038		mg/kg	SW846 8270D
Benzo(a)pyrene		0.403	0.038		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.760	0.038		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.463	0.038		mg/kg	SW846 8270D
Chrysene		0.622	0.038		mg/kg	SW846 8270D
Phenanthrene		0.122	0.038		mg/kg	SW846 8270D
Pyrene		0.910	0.038		mg/kg	SW846 8270D
Lead [a]		291	24		mg/kg	SW846 6010C
JB22267-2	**BH-12-92_0.5'**					
Lead		30.2	2.1		mg/kg	SW846 6010C
JB22267-3	**BH-12-94_1.0'**					
Anthracene		0.162	0.036		mg/kg	SW846 8270D
Benzo(a)anthracene		0.816	0.036		mg/kg	SW846 8270D
Benzo(a)pyrene		0.782	0.036		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.952	0.036		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.538	0.036		mg/kg	SW846 8270D
Chrysene		0.904	0.036		mg/kg	SW846 8270D
Phenanthrene		1.03	0.036		mg/kg	SW846 8270D
Pyrene		1.54	0.036		mg/kg	SW846 8270D
Lead		1340	2.6		mg/kg	SW846 6010C
JB22267-4	**BH-12-87_1.0'**					
Anthracene		0.223	0.041		mg/kg	SW846 8270D
Benzo(a)anthracene		0.670	0.041		mg/kg	SW846 8270D
Benzo(a)pyrene		0.775	0.041		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.815	0.041		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.617	0.041		mg/kg	SW846 8270D
Chrysene		0.718	0.041		mg/kg	SW846 8270D
Fluorene		0.0663	0.041		mg/kg	SW846 8270D
Phenanthrene		0.737	0.041		mg/kg	SW846 8270D
Pyrene		0.884	0.041		mg/kg	SW846 8270D
Lead		870	2.8		mg/kg	SW846 6010C
JB22267-5	**BH-12-87_3.0'**					
Anthracene		0.204	0.047		mg/kg	SW846 8270D
Benzo(a)anthracene		0.662	0.047		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22267
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 11/27/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Benzo(a)pyrene		0.695	0.047		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.593	0.047		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.560	0.047		mg/kg	SW846 8270D
Chrysene		0.687	0.047		mg/kg	SW846 8270D
Fluorene		0.0573	0.047		mg/kg	SW846 8270D
Phenanthrene		0.611	0.047		mg/kg	SW846 8270D
Pyrene		0.896	0.047		mg/kg	SW846 8270D
Lead		1110	2.9		mg/kg	SW846 6010C
JB22267-6	**BH-12-100_3.0'**					
Anthracene		0.159	0.033		mg/kg	SW846 8270D
Benzo(a)anthracene		0.818	0.033		mg/kg	SW846 8270D
Benzo(a)pyrene		0.796	0.033		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.821	0.033		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.489	0.033		mg/kg	SW846 8270D
Chrysene		0.768	0.033		mg/kg	SW846 8270D
Fluorene		0.0385	0.033		mg/kg	SW846 8270D
Phenanthrene		0.469	0.033		mg/kg	SW846 8270D
Pyrene		0.835	0.033		mg/kg	SW846 8270D
Lead		135	2.3		mg/kg	SW846 6010C
JB22267-7	**BH-12-85_1.5'**					
Anthracene		0.0562	0.043		mg/kg	SW846 8270D
Benzo(a)anthracene		0.128	0.043		mg/kg	SW846 8270D
Benzo(a)pyrene		0.183	0.043		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.259	0.043		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.197	0.043		mg/kg	SW846 8270D
Chrysene		0.159	0.043		mg/kg	SW846 8270D
Phenanthrene		0.0803	0.043		mg/kg	SW846 8270D
Pyrene		0.111	0.043		mg/kg	SW846 8270D
Lead		145	2.8		mg/kg	SW846 6010C
JB22267-8	**BH-12-85_3.0'**					
Benzene [b]		2.35	0.099		mg/kg	SW846 8260B
Toluene [b]		1.16	0.099		mg/kg	SW846 8260B
Ethylbenzene [b]		0.382	0.099		mg/kg	SW846 8260B
Xylene (total) [b]		1.64	0.099		mg/kg	SW846 8260B
Naphthalene [b]		1.04	0.49		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene [b]		1.03	0.49		mg/kg	SW846 8260B
Anthracene		0.256	0.045		mg/kg	SW846 8270D
Benzo(a)anthracene		0.455	0.045		mg/kg	SW846 8270D
Benzo(a)pyrene		0.524	0.045		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22267
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 11/27/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Benzo(b)fluoranthene		0.460	0.045		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.494	0.045		mg/kg	SW846 8270D
Chrysene		0.518	0.045		mg/kg	SW846 8270D
Fluorene		0.139	0.045		mg/kg	SW846 8270D
Phenanthrene		0.613	0.045		mg/kg	SW846 8270D
Pyrene		0.540	0.045		mg/kg	SW846 8270D
Lead		344	2.8		mg/kg	SW846 6010C
JB22267-9	**BH-12-83_1.0'**					
Lead		16.2	2.2		mg/kg	SW846 6010C
JB22267-10	**BH-12-83_3.0'**					
Anthracene		0.362	0.047		mg/kg	SW846 8270D
Benzo(a)anthracene		0.845	0.047		mg/kg	SW846 8270D
Benzo(a)pyrene		0.870	0.047		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.973	0.047		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.693	0.047		mg/kg	SW846 8270D
Chrysene		0.887	0.047		mg/kg	SW846 8270D
Fluorene		0.122	0.047		mg/kg	SW846 8270D
Phenanthrene		1.01	0.047		mg/kg	SW846 8270D
Pyrene		1.03	0.047		mg/kg	SW846 8270D
Lead		264	3.2		mg/kg	SW846 6010C
JB22267-11	**BH-12-84_3.0'**					
Toluene		0.0011	0.00086		mg/kg	SW846 8260B
Xylene (total)		0.0012	0.00086		mg/kg	SW846 8260B
Benzo(a)anthracene		0.0454	0.033		mg/kg	SW846 8270D
Benzo(a)pyrene		0.0430	0.033		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.0646	0.033		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.0338	0.033		mg/kg	SW846 8270D
Chrysene		0.0657	0.033		mg/kg	SW846 8270D
Phenanthrene		0.0508	0.033		mg/kg	SW846 8270D
Pyrene		0.0768	0.033		mg/kg	SW846 8270D
Lead		58.0	2.3		mg/kg	SW846 6010C
JB22267-12	**BH-12-88_2.5'**					
Benzo(a)anthracene		0.0591	0.037		mg/kg	SW846 8270D
Benzo(a)pyrene		0.0748	0.037		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.129	0.037		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.0754	0.037		mg/kg	SW846 8270D
Chrysene		0.0824	0.037		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22267
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 11/27/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Pyrene		0.0767	0.037		mg/kg	SW846 8270D
Lead		198	2.4		mg/kg	SW846 6010C
JB22267-13	**BH-12-79_1.0'**					
Anthracene		0.0638	0.037		mg/kg	SW846 8270D
Benzo(a)anthracene		0.265	0.037		mg/kg	SW846 8270D
Benzo(a)pyrene		0.244	0.037		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.282	0.037		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.179	0.037		mg/kg	SW846 8270D
Chrysene		0.253	0.037		mg/kg	SW846 8270D
Phenanthrene		0.243	0.037		mg/kg	SW846 8270D
Pyrene		0.390	0.037		mg/kg	SW846 8270D
Lead		498	2.3		mg/kg	SW846 6010C
JB22267-14	**BH-12-82_1.0'**					
Benzo(a)anthracene		0.0384	0.036		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.106	0.036		mg/kg	SW846 8270D
Chrysene		0.0408	0.036		mg/kg	SW846 8270D
Pyrene		0.0396	0.036		mg/kg	SW846 8270D
Lead [a]		116	13		mg/kg	SW846 6010C
JB22267-15	**BH-12-78_1.0'**					
Anthracene		0.119	0.033		mg/kg	SW846 8270D
Benzo(a)anthracene		0.200	0.033		mg/kg	SW846 8270D
Benzo(a)pyrene		0.150	0.033		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.176	0.033		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.0889	0.033		mg/kg	SW846 8270D
Chrysene		0.205	0.033		mg/kg	SW846 8270D
Fluorene		0.0695	0.033		mg/kg	SW846 8270D
Phenanthrene		0.584	0.033		mg/kg	SW846 8270D
Pyrene		0.350	0.033		mg/kg	SW846 8270D
Lead		237	2.2		mg/kg	SW846 6010C
JB22267-16	**BH-12-78_2.0'**					
Anthracene		0.0605	0.039		mg/kg	SW846 8270D
Benzo(a)anthracene		0.180	0.039		mg/kg	SW846 8270D
Benzo(a)pyrene		0.207	0.039		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.235	0.039		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.222	0.039		mg/kg	SW846 8270D
Chrysene		0.202	0.039		mg/kg	SW846 8270D
Phenanthrene		0.115	0.039		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22267
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 11/27/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Pyrene		0.212	0.039		mg/kg	SW846 8270D
Lead		128	2.4		mg/kg	SW846 6010C
JB22267-17	**BH-12-80_3.0'**					
Anthracene		0.0448	0.030		mg/kg	SW846 8270D
Benzo(a)anthracene		0.152	0.030		mg/kg	SW846 8270D
Benzo(a)pyrene		0.161	0.030		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.158	0.030		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.106	0.030		mg/kg	SW846 8270D
Chrysene		0.151	0.030		mg/kg	SW846 8270D
Phenanthrene		0.217	0.030		mg/kg	SW846 8270D
Pyrene		0.276	0.030		mg/kg	SW846 8270D
Lead		104	2.3		mg/kg	SW846 6010C

(a) Elevated detection limit due to dilution required for high interfering element.
(b) Diluted due to high concentration of target compound.

New Jersey

ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-91_0.5'		
Lab Sample ID:	JB22267-1	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	81.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128568.D	1	12/01/12	RS	11/29/12 07:00	n/a	VY5528
Run #2							

	Initial Weight
Run #1	7.0 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00088	mg/kg	
108-88-3	Toluene	ND	0.00088	mg/kg	
100-41-4	Ethylbenzene	ND	0.00088	mg/kg	
1330-20-7	Xylene (total)	ND	0.00088	mg/kg	
91-20-3	Naphthalene	ND	0.0044	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00088	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00088	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0044	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00088	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0044	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0044	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	89%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	93%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-91_0.5'		
Lab Sample ID:	JB22267-1	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	81.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48365.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	32.5 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.0677	0.038	mg/kg	
56-55-3	Benzo(a)anthracene	0.401	0.038	mg/kg	
50-32-8	Benzo(a)pyrene	0.403	0.038	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.760	0.038	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.463	0.038	mg/kg	
218-01-9	Chrysene	0.622	0.038	mg/kg	
86-73-7	Fluorene	ND	0.038	mg/kg	
85-01-8	Phenanthrene	0.122	0.038	mg/kg	
129-00-0	Pyrene	0.910	0.038	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	43%		21-122%
321-60-8	2-Fluorobiphenyl	49%		30-117%
1718-51-0	Terphenyl-d14	90%		31-129%

ND = Not detected
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:	BH-12-91_0.5'		
Lab Sample ID:	JB22267-1	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	81.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	291	24	mg/kg	10	12/06/12	12/12/12	GT	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30031
(2) Prep QC Batch: MP68325

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-92_0.5'		
Lab Sample ID:	JB22267-2	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	86.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128569.D	1	12/01/12	RS	11/29/12 07:00	n/a	VY5528
Run #2							

	Initial Weight
Run #1	7.0 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00083	mg/kg	
108-88-3	Toluene	ND	0.00083	mg/kg	
100-41-4	Ethylbenzene	ND	0.00083	mg/kg	
1330-20-7	Xylene (total)	ND	0.00083	mg/kg	
91-20-3	Naphthalene	ND	0.0041	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00083	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00083	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0041	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00083	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0041	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0041	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		70-130%
17060-07-0	1,2-Dichloroethane-D4	88%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	94%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-92_0.5'		
Lab Sample ID:	JB22267-2	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	86.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48358.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	33.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.034	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.034	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.034	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.034	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.034	mg/kg	
218-01-9	Chrysene	ND	0.034	mg/kg	
86-73-7	Fluorene	ND	0.034	mg/kg	
85-01-8	Phenanthrene	ND	0.034	mg/kg	
129-00-0	Pyrene	ND	0.034	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	42%		21-122%
321-60-8	2-Fluorobiphenyl	46%		30-117%
1718-51-0	Terphenyl-d14	77%		31-129%

ND = Not detected
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:	BH-12-92_0.5'		
Lab Sample ID:	JB22267-2	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	86.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	30.2	2.1	mg/kg	1	12/06/12	12/07/12	GT	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA29991
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-94_1.0'		
Lab Sample ID:	JB22267-3	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	78.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128575.D	1	12/01/12	RS	11/29/12 07:00	n/a	VY5528
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0012	mg/kg	
108-88-3	Toluene	ND	0.0012	mg/kg	
100-41-4	Ethylbenzene	ND	0.0012	mg/kg	
1330-20-7	Xylene (total)	ND	0.0012	mg/kg	
91-20-3	Naphthalene	ND	0.0058	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0012	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0012	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0058	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0012	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0058	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0058	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	88%		70-122%
2037-26-5	Toluene-D8	99%		81-127%
460-00-4	4-Bromofluorobenzene	96%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-94_1.0'		
Lab Sample ID:	JB22267-3	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	78.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48364.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	35.5 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.162	0.036	mg/kg	
56-55-3	Benzo(a)anthracene	0.816	0.036	mg/kg	
50-32-8	Benzo(a)pyrene	0.782	0.036	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.952	0.036	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.538	0.036	mg/kg	
218-01-9	Chrysene	0.904	0.036	mg/kg	
86-73-7	Fluorene	ND	0.036	mg/kg	
85-01-8	Phenanthrene	1.03	0.036	mg/kg	
129-00-0	Pyrene	1.54	0.036	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%		21-122%
321-60-8	2-Fluorobiphenyl	58%		30-117%
1718-51-0	Terphenyl-d14	85%		31-129%

ND = Not detected
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:	BH-12-94_1.0'		
Lab Sample ID:	JB22267-3	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	78.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	1340	2.6	mg/kg	1	12/06/12	12/07/12	GT	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA29991
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-87_1.0'		
Lab Sample ID:	JB22267-4	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	75.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128576.D	1	12/01/12	RS	11/29/12 07:00	n/a	VY5528
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0012	mg/kg	
108-88-3	Toluene	ND	0.0012	mg/kg	
100-41-4	Ethylbenzene	ND	0.0012	mg/kg	
1330-20-7	Xylene (total)	ND	0.0012	mg/kg	
91-20-3	Naphthalene	ND	0.0062	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0012	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0012	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0062	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0012	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0062	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0062	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
17060-07-0	1,2-Dichloroethane-D4	90%		70-122%
2037-26-5	Toluene-D8	99%		81-127%
460-00-4	4-Bromofluorobenzene	96%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-87_1.0'		
Lab Sample ID:	JB22267-4	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	75.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48368.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	32.5 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.223	0.041	mg/kg	
56-55-3	Benzo(a)anthracene	0.670	0.041	mg/kg	
50-32-8	Benzo(a)pyrene	0.775	0.041	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.815	0.041	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.617	0.041	mg/kg	
218-01-9	Chrysene	0.718	0.041	mg/kg	
86-73-7	Fluorene	0.0663	0.041	mg/kg	
85-01-8	Phenanthrene	0.737	0.041	mg/kg	
129-00-0	Pyrene	0.884	0.041	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%		21-122%
321-60-8	2-Fluorobiphenyl	64%		30-117%
1718-51-0	Terphenyl-d14	89%		31-129%

ND = Not detected
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:	BH-12-87_1.0'		
Lab Sample ID:	JB22267-4	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	75.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	870	2.8	mg/kg	1	12/06/12	12/07/12	GT	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA29991
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-87_3.0'		
Lab Sample ID:	JB22267-5	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	64.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128577.D	1	12/01/12	RS	11/29/12 07:00	n/a	VY5528
Run #2							

	Initial Weight
Run #1	4.1 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0019	mg/kg	
108-88-3	Toluene	ND	0.0019	mg/kg	
100-41-4	Ethylbenzene	ND	0.0019	mg/kg	
1330-20-7	Xylene (total)	ND	0.0019	mg/kg	
91-20-3	Naphthalene	ND	0.0095	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0019	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0019	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0095	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0019	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0095	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0095	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		70-130%
17060-07-0	1,2-Dichloroethane-D4	89%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	93%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-87_3.0'		
Lab Sample ID:	JB22267-5	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	64.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48369.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	32.8 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.204	0.047	mg/kg	
56-55-3	Benzo(a)anthracene	0.662	0.047	mg/kg	
50-32-8	Benzo(a)pyrene	0.695	0.047	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.593	0.047	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.560	0.047	mg/kg	
218-01-9	Chrysene	0.687	0.047	mg/kg	
86-73-7	Fluorene	0.0573	0.047	mg/kg	
85-01-8	Phenanthrene	0.611	0.047	mg/kg	
129-00-0	Pyrene	0.896	0.047	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	32%		21-122%
321-60-8	2-Fluorobiphenyl	44%		30-117%
1718-51-0	Terphenyl-d14	86%		31-129%

ND = Not detected
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:	BH-12-87_3.0'		
Lab Sample ID:	JB22267-5	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	64.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	1110	2.9	mg/kg	1	12/06/12	12/07/12	GT	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA29991
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-100_3.0'		
Lab Sample ID:	JB22267-6	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	85.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128578.D	1	12/01/12	RS	11/29/12 07:00	n/a	VY5528
Run #2							

	Initial Weight
Run #1	6.4 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00091	mg/kg	
108-88-3	Toluene	ND	0.00091	mg/kg	
100-41-4	Ethylbenzene	ND	0.00091	mg/kg	
1330-20-7	Xylene (total)	ND	0.00091	mg/kg	
91-20-3	Naphthalene	ND	0.0046	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00091	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00091	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0046	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00091	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0046	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0046	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
17060-07-0	1,2-Dichloroethane-D4	94%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	96%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-100_3.0'		
Lab Sample ID:	JB22267-6	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	85.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48376.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	35.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.159	0.033	mg/kg	
56-55-3	Benzo(a)anthracene	0.818	0.033	mg/kg	
50-32-8	Benzo(a)pyrene	0.796	0.033	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.821	0.033	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.489	0.033	mg/kg	
218-01-9	Chrysene	0.768	0.033	mg/kg	
86-73-7	Fluorene	0.0385	0.033	mg/kg	
85-01-8	Phenanthrene	0.469	0.033	mg/kg	
129-00-0	Pyrene	0.835	0.033	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	44%		21-122%
321-60-8	2-Fluorobiphenyl	55%		30-117%
1718-51-0	Terphenyl-d14	85%		31-129%

ND = Not detected
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:	BH-12-100_3.0'		
Lab Sample ID:	JB22267-6	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	85.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	135	2.3	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-85_1.5'		
Lab Sample ID:	JB22267-7	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	68.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131180.D	1	12/07/12	TDN	11/29/12 07:00	n/a	VV5655
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0016	mg/kg	
108-88-3	Toluene	ND	0.0016	mg/kg	
100-41-4	Ethylbenzene	ND	0.0016	mg/kg	
1330-20-7	Xylene (total)	ND	0.0016	mg/kg	
91-20-3	Naphthalene	ND	0.0078	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0016	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0016	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0078	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0016	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0078	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0078	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		70-130%
17060-07-0	1,2-Dichloroethane-D4	104%		70-122%
2037-26-5	Toluene-D8	116%		81-127%
460-00-4	4-Bromofluorobenzene	102%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-85_1.5'		
Lab Sample ID:	JB22267-7	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	68.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48370.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	33.7 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.0562	0.043	mg/kg	
56-55-3	Benzo(a)anthracene	0.128	0.043	mg/kg	
50-32-8	Benzo(a)pyrene	0.183	0.043	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.259	0.043	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.197	0.043	mg/kg	
218-01-9	Chrysene	0.159	0.043	mg/kg	
86-73-7	Fluorene	ND	0.043	mg/kg	
85-01-8	Phenanthrene	0.0803	0.043	mg/kg	
129-00-0	Pyrene	0.111	0.043	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	43%		21-122%
321-60-8	2-Fluorobiphenyl	50%		30-117%
1718-51-0	Terphenyl-d14	96%		31-129%

ND = Not detected
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:	BH-12-85_1.5'		
Lab Sample ID:	JB22267-7	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	68.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	145	2.8	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-85_3.0'		
Lab Sample ID:	JB22267-8	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	71.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203148.D	1	12/08/12	ET	11/29/12 07:00	n/a	VD8283
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.4 g	5.0 ml	100 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	2.35	0.099	mg/kg	
108-88-3	Toluene	1.16	0.099	mg/kg	
100-41-4	Ethylbenzene	0.382	0.099	mg/kg	
1330-20-7	Xylene (total)	1.64	0.099	mg/kg	
91-20-3	Naphthalene	1.04	0.49	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.099	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.099	mg/kg	
98-82-8	Isopropylbenzene	ND	0.49	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.099	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	1.03	0.49	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.49	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
17060-07-0	1,2-Dichloroethane-D4	109%		70-122%
2037-26-5	Toluene-D8	98%		81-127%
460-00-4	4-Bromofluorobenzene	102%		66-132%

(a) Diluted due to high concentration of target compound.

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-85_3.0'		
Lab Sample ID:	JB22267-8	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	71.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48371.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.256	0.045	mg/kg	
56-55-3	Benzo(a)anthracene	0.455	0.045	mg/kg	
50-32-8	Benzo(a)pyrene	0.524	0.045	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.460	0.045	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.494	0.045	mg/kg	
218-01-9	Chrysene	0.518	0.045	mg/kg	
86-73-7	Fluorene	0.139	0.045	mg/kg	
85-01-8	Phenanthrene	0.613	0.045	mg/kg	
129-00-0	Pyrene	0.540	0.045	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	42%		21-122%
321-60-8	2-Fluorobiphenyl	48%		30-117%
1718-51-0	Terphenyl-d14	81%		31-129%

ND = Not detected
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:	BH-12-85_3.0'		
Lab Sample ID:	JB22267-8	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	71.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	344	2.8	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-83_1.0'		
Lab Sample ID:	JB22267-9	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	92.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128818.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	4.8 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0011	mg/kg	
108-88-3	Toluene	ND	0.0011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0011	mg/kg	
1330-20-7	Xylene (total)	ND	0.0011	mg/kg	
91-20-3	Naphthalene	ND	0.0056	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0011	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0011	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0056	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0011	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0056	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0056	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		70-130%
17060-07-0	1,2-Dichloroethane-D4	85%		70-122%
2037-26-5	Toluene-D8	95%		81-127%
460-00-4	4-Bromofluorobenzene	89%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-83_1.0'		
Lab Sample ID:	JB22267-9	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	92.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48359.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	35.3 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.031	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.031	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.031	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.031	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.031	mg/kg	
218-01-9	Chrysene	ND	0.031	mg/kg	
86-73-7	Fluorene	ND	0.031	mg/kg	
85-01-8	Phenanthrene	ND	0.031	mg/kg	
129-00-0	Pyrene	ND	0.031	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	32%		21-122%
321-60-8	2-Fluorobiphenyl	36%		30-117%
1718-51-0	Terphenyl-d14	98%		31-129%

ND = Not detected
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:	BH-12-83_1.0'		
Lab Sample ID:	JB22267-9	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	92.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	16.2	2.2	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-83_3.0'		
Lab Sample ID:	JB22267-10	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	64.0
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X131685.D	1	12/11/12	MS	11/29/12 07:00	n/a	VX5712
Run #2							

	Initial Weight
Run #1	4.6 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0017	mg/kg	
108-88-3	Toluene	ND	0.0017	mg/kg	
100-41-4	Ethylbenzene	ND	0.0017	mg/kg	
1330-20-7	Xylene (total)	ND	0.0017	mg/kg	
91-20-3	Naphthalene	ND	0.0085	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0017	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0017	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0085	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0017	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0085	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0085	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		70-130%
17060-07-0	1,2-Dichloroethane-D4	88%		70-122%
2037-26-5	Toluene-D8	112%		81-127%
460-00-4	4-Bromofluorobenzene	102%		66-132%

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-83_3.0'		
Lab Sample ID:	JB22267-10	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	64.0
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48372.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	33.5 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.362	0.047	mg/kg	
56-55-3	Benzo(a)anthracene	0.845	0.047	mg/kg	
50-32-8	Benzo(a)pyrene	0.870	0.047	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.973	0.047	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.693	0.047	mg/kg	
218-01-9	Chrysene	0.887	0.047	mg/kg	
86-73-7	Fluorene	0.122	0.047	mg/kg	
85-01-8	Phenanthrene	1.01	0.047	mg/kg	
129-00-0	Pyrene	1.03	0.047	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	42%		21-122%
321-60-8	2-Fluorobiphenyl	52%		30-117%
1718-51-0	Terphenyl-d14	87%		31-129%

ND = Not detected
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:	BH-12-83_3.0'		
Lab Sample ID:	JB22267-10	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	64.0
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	264	3.2	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

Accutest LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-84_3.0'		
Lab Sample ID:	JB22267-11	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	87.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128811.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	6.6 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00086	mg/kg	
108-88-3	Toluene	0.0011	0.00086	mg/kg	
100-41-4	Ethylbenzene	ND	0.00086	mg/kg	
1330-20-7	Xylene (total)	0.0012	0.00086	mg/kg	
91-20-3	Naphthalene	ND	0.0043	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00086	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00086	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0043	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00086	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0043	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0043	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		70-130%
17060-07-0	1,2-Dichloroethane-D4	81%		70-122%
2037-26-5	Toluene-D8	95%		81-127%
460-00-4	4-Bromofluorobenzene	91%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-84_3.0'		
Lab Sample ID:	JB22267-11	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	87.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48360.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	34.5 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.033	mg/kg	
56-55-3	Benzo(a)anthracene	0.0454	0.033	mg/kg	
50-32-8	Benzo(a)pyrene	0.0430	0.033	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0646	0.033	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0338	0.033	mg/kg	
218-01-9	Chrysene	0.0657	0.033	mg/kg	
86-73-7	Fluorene	ND	0.033	mg/kg	
85-01-8	Phenanthrene	0.0508	0.033	mg/kg	
129-00-0	Pyrene	0.0768	0.033	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	35%		21-122%
321-60-8	2-Fluorobiphenyl	40%		30-117%
1718-51-0	Terphenyl-d14	88%		31-129%

ND = Not detected
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:	BH-12-84_3.0'		
Lab Sample ID:	JB22267-11	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	87.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	58.0	2.3	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-88_2.5'		
Lab Sample ID:	JB22267-12	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	80.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128812.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	6.1 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0010	mg/kg	
108-88-3	Toluene	ND	0.0010	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	mg/kg	
91-20-3	Naphthalene	ND	0.0051	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0010	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0051	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0051	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0051	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		70-130%
17060-07-0	1,2-Dichloroethane-D4	79%		70-122%
2037-26-5	Toluene-D8	96%		81-127%
460-00-4	4-Bromofluorobenzene	91%		66-132%

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-88_2.5'		
Lab Sample ID:	JB22267-12	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	80.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48361.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	33.7 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.037	mg/kg	
56-55-3	Benzo(a)anthracene	0.0591	0.037	mg/kg	
50-32-8	Benzo(a)pyrene	0.0748	0.037	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.129	0.037	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0754	0.037	mg/kg	
218-01-9	Chrysene	0.0824	0.037	mg/kg	
86-73-7	Fluorene	ND	0.037	mg/kg	
85-01-8	Phenanthrene	ND	0.037	mg/kg	
129-00-0	Pyrene	0.0767	0.037	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	39%		21-122%
321-60-8	2-Fluorobiphenyl	44%		30-117%
1718-51-0	Terphenyl-d14	90%		31-129%

ND = Not detected
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:	BH-12-88_2.5'		
Lab Sample ID:	JB22267-12	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	80.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	198	2.4	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-79_1.0'		
Lab Sample ID:	JB22267-13	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128813.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0011	mg/kg	
108-88-3	Toluene	ND	0.0011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0011	mg/kg	
1330-20-7	Xylene (total)	ND	0.0011	mg/kg	
91-20-3	Naphthalene	ND	0.0055	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0011	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0011	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0055	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0011	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0055	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0055	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
17060-07-0	1,2-Dichloroethane-D4	81%		70-122%
2037-26-5	Toluene-D8	98%		81-127%
460-00-4	4-Bromofluorobenzene	93%		66-132%

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-79_1.0'		
Lab Sample ID:	JB22267-13	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48373.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	32.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.0638	0.037	mg/kg	
56-55-3	Benzo(a)anthracene	0.265	0.037	mg/kg	
50-32-8	Benzo(a)pyrene	0.244	0.037	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.282	0.037	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.179	0.037	mg/kg	
218-01-9	Chrysene	0.253	0.037	mg/kg	
86-73-7	Fluorene	ND	0.037	mg/kg	
85-01-8	Phenanthrene	0.243	0.037	mg/kg	
129-00-0	Pyrene	0.390	0.037	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	41%		21-122%
321-60-8	2-Fluorobiphenyl	50%		30-117%
1718-51-0	Terphenyl-d14	104%		31-129%

ND = Not detected
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:	BH-12-79_1.0'		
Lab Sample ID:	JB22267-13	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	498	2.3	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-82_1.0'		
Lab Sample ID:	JB22267-14	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	75.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128814.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	6.8 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00097	mg/kg	
108-88-3	Toluene	ND	0.00097	mg/kg	
100-41-4	Ethylbenzene	ND	0.00097	mg/kg	
1330-20-7	Xylene (total)	ND	0.00097	mg/kg	
91-20-3	Naphthalene	ND	0.0049	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00097	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00097	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0049	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00097	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0049	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
17060-07-0	1,2-Dichloroethane-D4	81%		70-122%
2037-26-5	Toluene-D8	96%		81-127%
460-00-4	4-Bromofluorobenzene	98%		66-132%

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-82_1.0'		
Lab Sample ID:	JB22267-14	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	75.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48374.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	36.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.036	mg/kg	
56-55-3	Benzo(a)anthracene	0.0384	0.036	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.036	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.036	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.106	0.036	mg/kg	
218-01-9	Chrysene	0.0408	0.036	mg/kg	
86-73-7	Fluorene	ND	0.036	mg/kg	
85-01-8	Phenanthrene	ND	0.036	mg/kg	
129-00-0	Pyrene	0.0396	0.036	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	52%		21-122%
321-60-8	2-Fluorobiphenyl	56%		30-117%
1718-51-0	Terphenyl-d14	59%		31-129%

ND = Not detected
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:	BH-12-82_1.0'		
Lab Sample ID:	JB22267-14	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	75.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	116	13	mg/kg	5	12/06/12	12/12/12	GT	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30031
(2) Prep QC Batch: MP68325

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-78_1.0'		
Lab Sample ID:	JB22267-15	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	88.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128815.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	6.4 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00088	mg/kg	
108-88-3	Toluene	ND	0.00088	mg/kg	
100-41-4	Ethylbenzene	ND	0.00088	mg/kg	
1330-20-7	Xylene (total)	ND	0.00088	mg/kg	
91-20-3	Naphthalene	ND	0.0044	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00088	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00088	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0044	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00088	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0044	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0044	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-122%
2037-26-5	Toluene-D8	97%		81-127%
460-00-4	4-Bromofluorobenzene	95%		66-132%

ND = Not detected
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

Client Sample ID:	BH-12-78_1.0'		
Lab Sample ID:	JB22267-15	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	88.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48362.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	33.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.119	0.033	mg/kg	
56-55-3	Benzo(a)anthracene	0.200	0.033	mg/kg	
50-32-8	Benzo(a)pyrene	0.150	0.033	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.176	0.033	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0889	0.033	mg/kg	
218-01-9	Chrysene	0.205	0.033	mg/kg	
86-73-7	Fluorene	0.0695	0.033	mg/kg	
85-01-8	Phenanthrene	0.584	0.033	mg/kg	
129-00-0	Pyrene	0.350	0.033	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	46%		21-122%
321-60-8	2-Fluorobiphenyl	51%		30-117%
1718-51-0	Terphenyl-d14	69%		31-129%

ND = Not detected
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:	BH-12-78_1.0'		
Lab Sample ID:	JB22267-15	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	88.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	237	2.2	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-78_2.0'		
Lab Sample ID:	JB22267-16	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	79.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128816.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	6.0 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0010	mg/kg	
108-88-3	Toluene	ND	0.0010	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	mg/kg	
91-20-3	Naphthalene	ND	0.0052	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0010	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0052	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0052	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0052	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-122%
2037-26-5	Toluene-D8	98%		81-127%
460-00-4	4-Bromofluorobenzene	93%		66-132%

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-78_2.0'		
Lab Sample ID:	JB22267-16	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	79.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48375.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	32.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.0605	0.039	mg/kg	
56-55-3	Benzo(a)anthracene	0.180	0.039	mg/kg	
50-32-8	Benzo(a)pyrene	0.207	0.039	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.235	0.039	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.222	0.039	mg/kg	
218-01-9	Chrysene	0.202	0.039	mg/kg	
86-73-7	Fluorene	ND	0.039	mg/kg	
85-01-8	Phenanthrene	0.115	0.039	mg/kg	
129-00-0	Pyrene	0.212	0.039	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	44%		21-122%
321-60-8	2-Fluorobiphenyl	58%		30-117%
1718-51-0	Terphenyl-d14	87%		31-129%

ND = Not detected
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:	BH-12-78_2.0'		
Lab Sample ID:	JB22267-16	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	79.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	128	2.4	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

Accutest LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-80_3.0'		
Lab Sample ID:	JB22267-17	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	92.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y128817.D	1	12/07/12	RS	11/29/12 07:00	n/a	VY5539
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0011	mg/kg	
108-88-3	Toluene	ND	0.0011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0011	mg/kg	
1330-20-7	Xylene (total)	ND	0.0011	mg/kg	
91-20-3	Naphthalene	ND	0.0054	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0011	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0011	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0054	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0011	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0054	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0054	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
17060-07-0	1,2-Dichloroethane-D4	81%		70-122%
2037-26-5	Toluene-D8	97%		81-127%
460-00-4	4-Bromofluorobenzene	95%		66-132%

ND = Not detected
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 LabLink@706732 12:17 09-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-80_3.0'		
Lab Sample ID:	JB22267-17	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	92.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48363.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
Run #2							

	Initial Weight	Final Volume
Run #1	36.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.0448	0.030	mg/kg	
56-55-3	Benzo(a)anthracene	0.152	0.030	mg/kg	
50-32-8	Benzo(a)pyrene	0.161	0.030	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.158	0.030	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.106	0.030	mg/kg	
218-01-9	Chrysene	0.151	0.030	mg/kg	
86-73-7	Fluorene	ND	0.030	mg/kg	
85-01-8	Phenanthrene	0.217	0.030	mg/kg	
129-00-0	Pyrene	0.276	0.030	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	45%		21-122%
321-60-8	2-Fluorobiphenyl	56%		30-117%
1718-51-0	Terphenyl-d14	108%		31-129%

ND = Not detected
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:	BH-12-80_3.0'		
Lab Sample ID:	JB22267-17	**Date Sampled:**	11/27/12
Matrix:	SO - Soil	**Date Received:**	11/28/12
		Percent Solids:	92.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	104	2.3	mg/kg	1	12/06/12	12/08/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30003
(2) Prep QC Batch: MP68325

RL = Reporting Limit

New Jersey

ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

SLL

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
Tel: 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: JB22267

Client / Reporting Information

Company Name: AQUATERRA TECHNOLOGIES
Street Address: 122 S Church St.
City / State / Zip: West Chester PA 19381
Project Contact / E-mail: TIFFANI DOERR TD@AQUATERRA-TECH.com
Phone #: (610) 431-5733 Fax #:
Sampler(s) Name(s): Pat Troy, Luke Mokrycki Phone #:

Project Information

Project Name: PHILADELPHIA REFINERY AOI-7
Street:
City / State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to):
Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Lead	1,2-Dichloroethane	1,2,4 Trimethylbenzene + 1,3,5 Trimethylbenzene	Benzene, Cumene, Ethylbenzene	Ethylene dibromide, MTBE	Toluene, Xylenes (total)	Anthracene, Benzo(a)anthracene	Benzo(ghi)perylene, Benzo(a)pyrene	Benzo(b) fluoranthene, Chrysene	Fluorene, Naphthalene	Phenanthrene, Pyrene	LAB USE ONLY
-1	BH-12-91_0.5'		11/27/12	830	LM	SO	4					1			3	X	X	X	X	X	X	X	X	X	X	X	EX59
-2	BH-12-92_0.5'			845	LM																						14V4
-3	BH-12-94_1.0'			900	LM																						4983
-4	BH-12-87_1.0'			945	LM																						
-5	BH-12-87_3.0'			1000	LM																						
-6	BH-12-100_3.0'			1015	LM																						
-7	BH-12-85_1.5'			1015	LM																						
-8	BH-12-85_3.0'			1030	LM																						
-9	BH-12-83_1.0'			1030	LM																						
-10	BH-12-83_3.0'			1030	LM																						
-11	BH-12-84_3.0'			1050	LM																						
-12	BH-12-88_2.5'			1100	LM																						

Turnaround Time (Business days)

- [ ] Std. 15 Business Days
- [ ] Std. 10 Business Days (by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Approved By (Accutest PM): / Date:

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [x] Commercial "B" (Level 2)
- [ ] FULL.T1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

3 ENCORES @ 11/28/12

Rec'd at Exton Service Center 11/28

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 AQUATERRA	11/27/12 1600	1 AQUATERRA SAMPLE REFRIGERATOR	2	11/28/12 1540	2
Relinquished by Sampler: 3	Date Time: 11/28/12 1800	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp. 1.5

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JB22267: Chain of Custody
Page 1 of 4

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
Tel: 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # JB22267

Client / Reporting Information

Company Name: AQUATERRA TECHNOLOGIES
Street Address: 122 S. Church St.
City / State / Zip: West Chester PA 19381
Project Contact / E-mail: TIFFANY DOERR TD@AQUATERRATECH.COM
Phone #: (610) 431-5733 Fax #:
Sampler(s) Name(s): Pat Troy, Luke McKrych Phone #:

Project Information

Project Name: PHILADELPHIA REFINERY AOI-7
Street:
City / State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Lead	1,2-Dichloroethane	1,2,4 Trimethylbenzene & 1,3,5 Trimethylbenzene	Benzene, Cumene, Ethylbenzene	Ethylene dibromide, MTBE	Toluene, Xylenes (total)	Anthracene, Benzo (a) anthracene	Benzo (g,h,i) perylene, Benzo(a)pyrene	Benzo (b) fluoranthene, Chrysene	Fluorene, Naphthalene	Phenanthrene, Pyrene	LAB USE ONLY
-13	BH-12-79 - 1.0'		11/27/12	1230	LM	SO	4					1			3	X	X	X	X	X	X	X	X	X	X	X	
-14	BH-12-82 - 1.0'			1245	LM																						
-15	BH-12-78 - 1.0'			1415	LM																						
-16	BH-12-78 - 2.0'			1400	LM																						
-17	BH-12-80 - 3.0'			1430	LM																						

Turnaround Time (Business days)

- ☐ Std. 15 Business Days
- ☐ Std. 10 Business Days (by Contract only)
- ☐ 10 Day *RUSH*
- ☐ 5 Day *RUSH*
- ☐ 3 Day *EMERGENCY*
- ☐ 2 Day *EMERGENCY*
- ☐ 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☒ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☐ Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

3 ENCORES (A) 11/28/12

Rec'd at Exton Service Center 11/28

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 AQUATERRA	11/27/12 1600	1 AQUATERRA SAMPLE REFRIGERATOR	2	11/28/12 1540	2
Relinquished by Sampler: 3	Date Time: 11/28/12 0800	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☐ Cooler Temp. 4.5°C

5.1 5

JB22267: Chain of Custody
Page 2 of 4

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB22267 **Client:** **Project:**

Date / Time Received: 11/28/2012 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.5/1.5); 0

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

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

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

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JB22267: Chain of Custody
Page 3 of 4

Job Change Order: JB22267_12/12/2012

Requested Date:	12/12/2012	**Received Date:**	11/28/2012
Account Name:	Aquaterra Technologies, Inc.	**Due Date:**	12/12/2012
Project	Sun-Philadelphia Refinery, 3144 Passyunk	**Deliverable:**	COMMB
CSR:	KB	**TAT (Days):**	1

Sample #:
JB22267-ALL

Change: Please upgrade deliverable to REDT2

Above Changes Per: Client / Kristen Ward **Date:** 12/12/2012

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22267

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-7

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22267-1	Collected: 27-NOV-12 08:30 By: LM		Received: 28-NOV-12 By: AS			
BH-12-91_0.5'						
JB22267-1	SW846 8260B	01-DEC-12 16:18	RS			V8260PALGTMB
JB22267-1	SW846 8270D	08-DEC-12 15:41	KLS	07-DEC-12	MP	B8270PALO
JB22267-1	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-1	SW846 6010C	12-DEC-12 02:55	GT	06-DEC-12	NS	PB
JB22267-2	Collected: 27-NOV-12 08:45 By: LM		Received: 28-NOV-12 By: AS			
BH-12-92_0.5'						
JB22267-2	SW846 8260B	01-DEC-12 16:47	RS			V8260PALGTMB
JB22267-2	SW846 6010C	07-DEC-12 06:03	GT	06-DEC-12	NS	PB
JB22267-2	SW846 8270D	08-DEC-12 13:01	KLS	07-DEC-12	MP	B8270PALO
JB22267-2	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-3	Collected: 27-NOV-12 09:00 By: LM		Received: 28-NOV-12 By: AS			
BH-12-94_1.0'						
JB22267-3	SW846 8260B	01-DEC-12 19:41	RS			V8260PALGTMB
JB22267-3	SW846 6010C	07-DEC-12 06:10	GT	06-DEC-12	NS	PB
JB22267-3	SW846 8270D	08-DEC-12 15:18	KLS	07-DEC-12	MP	B8270PALO
JB22267-3	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-4	Collected: 27-NOV-12 09:45 By: LM		Received: 28-NOV-12 By: AS			
BH-12-87_1.0'						
JB22267-4	SW846 8260B	01-DEC-12 20:10	RS			V8260PALGTMB
JB22267-4	SW846 6010C	07-DEC-12 06:16	GT	06-DEC-12	NS	PB
JB22267-4	SW846 8270D	08-DEC-12 16:50	KLS	07-DEC-12	MP	B8270PALO
JB22267-4	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-5	Collected: 27-NOV-12 10:00 By: LM		Received: 28-NOV-12 By: AS			
BH-12-87_3.0'						
JB22267-5	SW846 8260B	01-DEC-12 20:39	RS			V8260PALGTMB
JB22267-5	SW846 6010C	07-DEC-12 06:22	GT	06-DEC-12	NS	PB
JB22267-5	SW846 8270D	08-DEC-12 17:13	KLS	07-DEC-12	MP	B8270PALO
JB22267-5	SM2540 G-97	09-DEC-12 12:50	KP			%SOL

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22267

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-7

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22267-6	Collected: 27-NOV-12 10:15 By: LM		Received: 28-NOV-12 By: AS			
BH-12-100_3.0'						
JB22267-6	SW846 8260B	01-DEC-12 21:08	RS			V8260PALGTMB
JB22267-6	SW846 6010C	08-DEC-12 05:41	ND	06-DEC-12	NS	PB
JB22267-6	SW846 8270D	08-DEC-12 19:54	KLS	07-DEC-12	MP	B8270PALO
JB22267-6	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-7	Collected: 27-NOV-12 10:15 By: LM		Received: 28-NOV-12 By: AS			
BH-12-85_1.5'						
JB22267-7	SW846 8260B	07-DEC-12 18:58	TDN			V8260PALGTMB
JB22267-7	SW846 6010C	08-DEC-12 05:47	ND	06-DEC-12	NS	PB
JB22267-7	SW846 8270D	08-DEC-12 17:36	KLS	07-DEC-12	MP	B8270PALO
JB22267-7	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-8	Collected: 27-NOV-12 10:30 By: LM		Received: 28-NOV-12 By: AS			
BH-12-85_3.0'						
JB22267-8	SW846 6010C	08-DEC-12 05:53	ND	06-DEC-12	NS	PB
JB22267-8	SW846 8260B	08-DEC-12 16:58	ET			V8260PALGTMB
JB22267-8	SW846 8270D	08-DEC-12 17:59	KLS	07-DEC-12	MP	B8270PALO
JB22267-8	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-9	Collected: 27-NOV-12 10:30 By: LM		Received: 28-NOV-12 By: AS			
BH-12-83_1.0'						
JB22267-9	SW846 8260B	07-DEC-12 20:28	RS			V8260PALGTMB
JB22267-9	SW846 6010C	08-DEC-12 05:59	ND	06-DEC-12	NS	PB
JB22267-9	SW846 8270D	08-DEC-12 13:24	KLS	07-DEC-12	MP	B8270PALO
JB22267-9	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-10	Collected: 27-NOV-12 10:30 By: LM		Received: 28-NOV-12 By: AS			
BH-12-83_3.0'						
JB22267-10	SW846 6010C	08-DEC-12 06:05	ND	06-DEC-12	NS	PB
JB22267-10	SW846 8270D	08-DEC-12 18:22	KLS	07-DEC-12	MP	B8270PALO
JB22267-10	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-10	SW846 8260B	11-DEC-12 16:27	MS			V8260PALGTMB

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22267

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-7

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22267-11 Collected: 27-NOV-12 10:50 By: LM Received: 28-NOV-12 By: AS BH-12-84_3.0'						
JB22267-11	SW846 8260B	07-DEC-12 17:02	RS			V8260PALGTMB
JB22267-11	SW846 6010C	08-DEC-12 06:12	ND	06-DEC-12	NS	PB
JB22267-11	SW846 8270D	08-DEC-12 13:47	KLS	07-DEC-12	MP	B8270PALO
JB22267-11	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-12 Collected: 27-NOV-12 11:00 By: LM Received: 28-NOV-12 By: AS BH-12-88_2.5'						
JB22267-12	SW846 8260B	07-DEC-12 17:31	RS			V8260PALGTMB
JB22267-12	SW846 6010C	08-DEC-12 06:18	ND	06-DEC-12	NS	PB
JB22267-12	SW846 8270D	08-DEC-12 14:10	KLS	07-DEC-12	MP	B8270PALO
JB22267-12	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-13 Collected: 27-NOV-12 12:30 By: LM Received: 28-NOV-12 By: AS BH-12-79_1.0'						
JB22267-13	SW846 8260B	07-DEC-12 18:01	RS			V8260PALGTMB
JB22267-13	SW846 6010C	08-DEC-12 06:36	ND	06-DEC-12	NS	PB
JB22267-13	SW846 8270D	08-DEC-12 18:45	KLS	07-DEC-12	MP	B8270PALO
JB22267-13	SM2540 G-97	09-DEC-12 12:50	KP			%SOL
JB22267-14 Collected: 27-NOV-12 12:45 By: LM Received: 28-NOV-12 By: AS BH-12-82_1.0'						
JB22267-14	SW846 8260B	07-DEC-12 18:30	RS			V8260PALGTMB
JB22267-14	SW846 8270D	08-DEC-12 19:08	KLS	07-DEC-12	MP	B8270PALO
JB22267-14	SM2540 G-97	09-DEC-12 03:05	KP			%SOL
JB22267-14	SW846 6010C	12-DEC-12 03:08	GT	06-DEC-12	NS	PB
JB22267-15 Collected: 27-NOV-12 14:15 By: LM Received: 28-NOV-12 By: AS BH-12-78_1.0'						
JB22267-15	SW846 8260B	07-DEC-12 19:00	RS			V8260PALGTMB
JB22267-15	SW846 6010C	08-DEC-12 06:49	ND	06-DEC-12	NS	PB
JB22267-15	SW846 8270D	08-DEC-12 14:33	KLS	07-DEC-12	MP	B8270PALO
JB22267-15	SM2540 G-97	09-DEC-12 03:05	KP			%SOL

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22267

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-7

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22267-16	Collected: 27-NOV-12 14:00 By: LM		Received: 28-NOV-12 By: AS			
BH-12-78_2.0'						
JB22267-16	SW846 8260B	07-DEC-12 19:29	RS			V8260PALGTMB
JB22267-16	SW846 6010C	08-DEC-12 06:55	ND	06-DEC-12	NS	PB
JB22267-16	SW846 8270D	08-DEC-12 19:31	KLS	07-DEC-12	MP	B8270PALO
JB22267-16	SM2540 G-97	09-DEC-12 03:05	KP			%SOL
JB22267-17	Collected: 27-NOV-12 14:30 By: LM		Received: 28-NOV-12 By: AS			
BH-12-80_3.0'						
JB22267-17	SW846 8260B	07-DEC-12 19:58	RS			V8260PALGTMB
JB22267-17	SW846 6010C	08-DEC-12 07:02	ND	06-DEC-12	NS	PB
JB22267-17	SW846 8270D	08-DEC-12 14:55	KLS	07-DEC-12	MP	B8270PALO
JB22267-17	SM2540 G-97	09-DEC-12 03:05	KP			%SOL

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-1.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-1.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-1.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-1.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-1.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-1.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-1.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-1.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-1.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-1.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-1.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-1.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-1.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-1.1
JB22267-1.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-1.1
JB22267-1.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-1.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-1.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-1.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-1.1
JB22267-1.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-1.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-1.1
JB22267-1.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-1.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-1.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-1.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-1.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-1.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-1.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-1.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-1.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-1.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-1.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-1.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-1.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-1.4	GCMSY	Henny Salim	12/01/12 13:11	Unload from Instrument
JB22267-1.4	Henny Salim	Secured Storage	12/01/12 13:11	Return to Storage
JB22267-1.4	Secured Storage	Robert Szot	12/03/12 10:59	Retrieve from Storage
JB22267-1.4	Robert Szot	GCMSY	12/03/12 10:59	Load on Instrument
JB22267-1.4	GCMSY	Robert Szot	12/04/12 13:43	Unload from Instrument
JB22267-1.4	Robert Szot		12/04/12 13:43	Depleted

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-1.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-1.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-1.5	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-1.5	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-1.5	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-1.5	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-1.5	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-1.5	Robert Szot		12/03/12 10:59	Depleted
JB22267-2.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-2.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-2.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-2.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-2.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-2.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-2.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-2.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-2.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-2.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-2.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-2.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-2.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-2.1
JB22267-2.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-2.1
JB22267-2.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-2.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-2.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-2.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-2.1
JB22267-2.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-2.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-2.1
JB22267-2.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-2.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-2.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-2.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-2.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-2.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-2.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-2.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-2.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-2.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-2.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-2.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-2.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-2.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-2.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-2.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-2.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-2.5	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-2.5	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-2.5	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-2.5	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-2.5	GCMSY	Henny Salim	12/01/12 13:11	Unload from Instrument
JB22267-2.5	Henny Salim	Secured Storage	12/01/12 13:11	Return to Storage
JB22267-2.5	Secured Storage	Robert Szot	12/03/12 10:59	Retrieve from Storage
JB22267-2.5	Robert Szot	GCMSY	12/03/12 10:59	Load on Instrument
JB22267-2.5	GCMSY	Robert Szot	12/04/12 13:43	Unload from Instrument
JB22267-2.5	Robert Szot		12/04/12 13:43	Depleted
JB22267-3.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-3.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-3.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-3.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-3.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-3.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-3.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-3.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-3.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-3.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-3.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-3.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-3.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-3.1
JB22267-3.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-3.1
JB22267-3.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-3.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-3.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-3.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-3.1
JB22267-3.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-3.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-3.1
JB22267-3.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-3.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-3.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-3.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-3.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-3.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-3.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-3.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-3.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-3.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-3.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-3.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-3.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-3.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-3.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-3.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-3.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-3.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-4.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-4.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-4.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-4.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-4.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-4.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-4.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-4.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-4.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-4.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-4.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-4.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-4.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-4.1
JB22267-4.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-4.1
JB22267-4.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-4.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-4.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-4.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-4.1
JB22267-4.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-4.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-4.1
JB22267-4.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-4.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-4.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-4.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-4.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-4.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-4.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-4.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-4.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-4.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-4.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-4.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-4.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-4.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-4.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-4.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-4.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-4.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-5.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-5.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-5.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-5.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-5.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-5.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-5.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-5.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-5.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-5.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-5.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-5.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-5.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-5.1
JB22267-5.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-5.1
JB22267-5.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-5.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-5.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-5.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-5.1
JB22267-5.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-5.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-5.1
JB22267-5.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-5.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-5.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-5.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-5.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-5.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-5.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-5.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-5.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-5.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-5.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-5.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-5.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-5.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-5.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-5.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-5.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-5.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-6.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-6.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-6.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-6.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-6.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-6.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-6.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-6.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-6.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-6.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-6.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-6.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-6.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-6.1
JB22267-6.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-6.1
JB22267-6.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-6.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-6.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-6.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-6.1
JB22267-6.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-6.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-6.1
JB22267-6.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-6.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-6.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-6.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-6.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-6.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-6.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-6.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-6.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-6.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-6.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-6.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-6.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-6.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-6.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-6.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-6.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-6.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-7.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-7.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-7.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-7.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-7.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-7.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-7.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-7.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-7.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-7.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-7.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-7.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-7.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-7.1
JB22267-7.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-7.1
JB22267-7.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-7.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-7.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-7.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-7.1
JB22267-7.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-7.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-7.1
JB22267-7.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-7.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-7.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-7.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-7.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-7.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-7.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-7.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-7.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-7.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-7.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-7.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-7.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-7.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-7.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-7.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-7.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-7.5	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22267-7.5	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22267-7.5	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22267-7.5	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22267-7.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-8.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-8.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-8.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-8.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-8.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-8.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-8.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-8.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-8.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-8.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-8.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-8.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-8.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-8.1
JB22267-8.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-8.1
JB22267-8.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-8.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-8.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-8.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-8.1
JB22267-8.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-8.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-8.1

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-8.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-8.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-8.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-8.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-8.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-8.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-8.3	Secured Storage	Emily Tran	12/03/12 10:35	Retrieve from Storage
JB22267-8.3	Emily Tran	Secured Storage	12/03/12 17:06	Return to Storage
JB22267-8.3	Secured Storage	Emily Tran	12/05/12 10:43	Retrieve from Storage
JB22267-8.3	Emily Tran	Secured Storage	12/05/12 15:11	Return to Storage
JB22267-8.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-8.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-8.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-8.4	Nick Popow		01/02/13 08:10	Disposed
JB22267-8.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-8.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-8.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-9.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-9.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-9.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-9.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-9.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-9.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-9.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-9.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-9.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-9.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-9.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-9.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-9.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-9.1
JB22267-9.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-9.1
JB22267-9.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-9.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-9.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-9.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-9.1
JB22267-9.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-9.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-9.1
JB22267-9.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-9.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-9.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-9.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-9.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-9.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-9.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-9.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-9.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-9.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-9.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-9.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-9.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-9.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-9.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-9.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-9.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-9.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-9.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-9.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-9.5	Robert Szot		12/11/12 10:43	Depleted
JB22267-10.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-10.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-10.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-10.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-10.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-10.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-10.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-10.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-10.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-10.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-10.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-10.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-10.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-10.1
JB22267-10.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-10.1
JB22267-10.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-10.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-10.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-10.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-10.1

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-10.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-10.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-10.1
JB22267-10.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-10.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-10.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-10.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-10.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-10.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-10.3	Secured Storage	Emily Tran	12/03/12 10:35	Retrieve from Storage
JB22267-10.3	Emily Tran	Secured Storage	12/03/12 17:06	Return to Storage
JB22267-10.3	Secured Storage	Emily Tran	12/05/12 10:43	Retrieve from Storage
JB22267-10.3	Emily Tran	Secured Storage	12/05/12 15:11	Return to Storage
JB22267-10.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-10.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-10.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-10.4	Secured Storage	Margaret Starzec	12/11/12 11:51	Retrieve from Storage
JB22267-10.4	Margaret Starzec	GCMSX	12/11/12 11:51	Load on Instrument
JB22267-10.4	GCMSX	Margaret Starzec	12/12/12 10:13	Unload from Instrument
JB22267-10.4	Margaret Starzec	Secured Storage	12/12/12 10:14	Return to Storage
JB22267-10.4	Nick Popow		01/02/13 08:10	Disposed
JB22267-10.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-10.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-10.5	Nick Popow		01/02/13 08:10	Disposed
JB22267-11.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-11.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-11.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-11.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-11.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-11.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-11.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-11.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-11.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-11.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-11.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-11.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-11.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-11.1
JB22267-11.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-11.1
JB22267-11.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-11.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-11.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-11.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-11.1
JB22267-11.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-11.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-11.1
JB22267-11.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-11.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-11.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-11.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-11.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-11.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-11.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-11.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-11.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-11.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-11.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-11.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-11.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-11.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-11.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-11.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-11.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-11.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-11.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-11.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-11.5	Robert Szot		12/11/12 10:43	Depleted
JB22267-12.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-12.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-12.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-12.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-12.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-12.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-12.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-12.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-12.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-12.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-12.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-12.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-12.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-12.1

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-12.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-12.1
JB22267-12.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-12.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-12.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-12.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-12.1
JB22267-12.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-12.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-12.1
JB22267-12.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-12.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-12.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-12.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-12.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-12.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-12.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-12.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-12.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-12.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-12.4	Robert Szot	VOA Prep Storage	11/30/12 17:53	Return to Storage
JB22267-12.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-12.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-12.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-12.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-12.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-12.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-12.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-12.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-12.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-12.5	Robert Szot		12/11/12 10:43	Depleted
JB22267-13.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-13.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-13.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-13.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-13.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-13.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-13.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-13.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-13.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-13.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-13.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-13.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-13.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-13.1
JB22267-13.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-13.1
JB22267-13.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-13.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-13.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-13.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-13.1
JB22267-13.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-13.1
JB22267-13.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-13.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-13.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-13.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-13.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-13.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-13.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-13.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-13.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-13.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-13.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-13.4	Robert Szot	VOA Prep Storage	11/30/12 17:54	Return to Storage
JB22267-13.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-13.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-13.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-13.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-13.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-13.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-13.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-13.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-13.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-13.5	Robert Szot		12/11/12 10:43	Depleted
JB22267-14.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-14.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-14.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-14.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-14.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-14.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-14.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-14.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-14.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-14.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-14.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-14.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-14.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-14.1
JB22267-14.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-14.1
JB22267-14.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-14.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-14.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-14.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-14.1
JB22267-14.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-14.1
JB22267-14.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-14.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-14.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-14.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-14.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-14.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-14.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-14.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-14.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-14.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-14.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-14.4	Robert Szot	VOA Prep Storage	11/30/12 17:54	Return to Storage
JB22267-14.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-14.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-14.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-14.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-14.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-14.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-14.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-14.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-14.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-14.5	Robert Szot		12/11/12 10:43	Depleted
JB22267-15.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-15.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-15.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-15.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-15.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-15.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-15.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-15.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-15.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-15.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-15.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-15.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-15.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-15.1
JB22267-15.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-15.1
JB22267-15.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-15.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-15.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-15.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-15.1
JB22267-15.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-15.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-15.1
JB22267-15.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-15.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-15.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-15.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-15.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-15.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-15.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-15.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-15.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-15.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-15.4	Robert Szot	VOA Prep Storage	11/30/12 17:54	Return to Storage
JB22267-15.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-15.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-15.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-15.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-15.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-15.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-15.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-15.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-15.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-15.5	Robert Szot		12/11/12 10:43	Depleted
JB22267-16.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-16.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-16.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-16.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-16.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-16.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-16.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-16.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-16.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-16.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-16.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-16.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-16.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-16.1
JB22267-16.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-16.1
JB22267-16.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-16.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-16.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-16.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-16.1
JB22267-16.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-16.1
JB22267-16.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-16.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-16.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-16.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-16.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-16.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-16.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-16.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-16.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-16.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-16.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-16.4	Robert Szot	VOA Prep Storage	11/30/12 17:54	Return to Storage
JB22267-16.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-16.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-16.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-16.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-16.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-16.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-16.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage
JB22267-16.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-16.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-16.5	Robert Szot		12/11/12 10:43	Depleted

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-17.1	Secured Storage	Dave Hunkele	12/06/12 06:55	Retrieve from Storage
JB22267-17.1	Dave Hunkele	Secured Staging Area	12/06/12 06:57	Return to Storage
JB22267-17.1	Secured Staging Area	Rinku Patel	12/06/12 08:14	Retrieve from Storage
JB22267-17.1	Rinku Patel	Khusbu Shah	12/06/12 11:23	Custody Transfer
JB22267-17.1	Khusbu Shah	Secured Storage	12/06/12 15:33	Return to Storage
JB22267-17.1	Secured Storage	Miti Patel	12/07/12 08:20	Retrieve from Storage
JB22267-17.1	Miti Patel	Secured Storage	12/07/12 16:36	Return to Storage
JB22267-17.1	Secured Storage	Brian Racin	12/09/12 11:02	Retrieve from Storage
JB22267-17.1	Brian Racin	Secured Staging Area	12/09/12 11:04	Return to Storage
JB22267-17.1	Secured Staging Area	Krimesh Patel	12/09/12 11:28	Retrieve from Storage
JB22267-17.1	Krimesh Patel	Secured Storage	12/09/12 13:04	Return to Storage
JB22267-17.1	Nick Popow		01/02/13 08:10	Disposed
JB22267-17.1.1	Rinku Patel	Metals Digestion	12/06/12 10:05	Digestate from JB22267-17.1
JB22267-17.1.1	Metals Digestion	Nida Saleem	12/06/12 10:05	Digestate from JB22267-17.1
JB22267-17.1.1	Nida Saleem	Metals Digestate Storage	12/06/12 10:05	Return to Storage
JB22267-17.1.1	Metals Digestate Storage	Nancy Duan	12/11/12 11:56	Retrieve from Storage
JB22267-17.1.1	Nancy Duan	Metals Digestate Storage	12/11/12 11:57	Return to Storage
JB22267-17.1.2	Miti Patel	Organics Prep	12/07/12 08:23	Extract from JB22267-17.1
JB22267-17.1.2	Organics Prep	Miti Patel	12/07/12 16:37	Extract from JB22267-17.1
JB22267-17.1.2	Miti Patel	Extract Storage	12/07/12 16:37	Return to Storage
JB22267-17.1.2	Extract Storage	Kristi Schollenberger	12/08/12 12:17	Retrieve from Storage
JB22267-17.1.2	Kristi Schollenberger	GCMS2M	12/08/12 12:17	Load on Instrument
JB22267-17.1.2	GCMS2M	Olga Azarihn	12/10/12 10:20	Unload from Instrument
JB22267-17.1.2	Olga Azarihn	Extract Freezer	12/10/12 10:20	Return to Storage
JB22267-17.3	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-17.3	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-17.3	Nick Popow		01/02/13 08:10	Disposed
JB22267-17.4	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-17.4	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-17.4	Secured Storage	Robert Szot	11/30/12 17:53	Retrieve from Storage
JB22267-17.4	Robert Szot	VOA Prep Storage	11/30/12 17:54	Return to Storage
JB22267-17.4	VOA Prep Storage	Henny Salim	12/01/12 12:59	Retrieve from Storage
JB22267-17.4	Henny Salim	GCMSY	12/01/12 12:59	Load on Instrument
JB22267-17.4	GCMSY	Robert Szot	12/03/12 10:58	Unload from Instrument
JB22267-17.4	Robert Szot		12/03/12 10:59	Depleted
JB22267-17.5	Secured Storage	Jayna Patel	11/29/12 08:01	Retrieve from Storage
JB22267-17.5	Jayna Patel	Secured Storage	11/29/12 08:02	Return to Storage
JB22267-17.5	Secured Storage	Robert Szot	12/07/12 16:42	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 11/28/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22267-17.5	Robert Szot	GCMSY	12/07/12 16:42	Load on Instrument
JB22267-17.5	GCMSY	Robert Szot	12/11/12 10:43	Unload from Instrument
JB22267-17.5	Robert Szot		12/11/12 10:43	Depleted

New Jersey
ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY5528-MB	Y128560.D	1	12/01/12	RS	n/a	n/a	VY5528

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

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/kg	
91-20-3	Naphthalene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	1.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	93%	70-122%
2037-26-5	Toluene-D8	100%	81-127%
460-00-4	4-Bromofluorobenzene	94%	66-132%

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY5539-MB	Y128798.D	1	12/07/12	RS	n/a	n/a	VY5539

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

JB22267-9, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/kg	
91-20-3	Naphthalene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	1.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-122%
2037-26-5	Toluene-D8	100%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5655-MB1	V131168.D	1	12/07/12	TDN	n/a	n/a	VV5655

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

JB22267-7

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/kg	
91-20-3	Naphthalene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	1.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	112%	70-130%
17060-07-0	1,2-Dichloroethane-D4	95%	70-122%
2037-26-5	Toluene-D8	114%	81-127%
460-00-4	4-Bromofluorobenzene	101%	66-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8283-MB	D203137.D	1	12/08/12	ET	n/a	n/a	VD8283

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

JB22267-8

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	50	ug/kg	
106-93-4	1,2-Dibromoethane	ND	50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	ug/kg	
100-41-4	Ethylbenzene	ND	50	ug/kg	
98-82-8	Isopropylbenzene	ND	250	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	ug/kg	
91-20-3	Naphthalene	ND	250	ug/kg	
108-88-3	Toluene	ND	50	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	250	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	250	ug/kg	
1330-20-7	Xylene (total)	ND	50	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
17060-07-0	1,2-Dichloroethane-D4	111%	70-122%
2037-26-5	Toluene-D8	96%	81-127%
460-00-4	4-Bromofluorobenzene	99%	66-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX5712-MB	X131673.D	1	12/11/12	MS	n/a	n/a	VX5712

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

JB22267-10

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/kg	
91-20-3	Naphthalene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	1.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	77%	70-122%
2037-26-5	Toluene-D8	114%	81-127%
460-00-4	4-Bromofluorobenzene	96%	66-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY5528-MB2	Y128608.D	1	12/03/12	RS	n/a	n/a	VY5528

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

JB22267-2DUP, JB22267-1MS

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/kg	
91-20-3	Naphthalene	ND	5.0	ug/kg	
108-88-3	Toluene	ND	1.0	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	105%	70-130%
17060-07-0	1,2-Dichloroethane-D4	103%	70-122%
2037-26-5	Toluene-D8	102%	81-127%
460-00-4	4-Bromofluorobenzene	100%	66-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8283-MB2	D203161.D	1	12/08/12	ET	n/a	n/a	VD8283

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

JB22768-1MS, JB22768-1MSD

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	50	ug/kg	
106-93-4	1,2-Dibromoethane	ND	50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	ug/kg	
100-41-4	Ethylbenzene	ND	50	ug/kg	
98-82-8	Isopropylbenzene	ND	250	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	ug/kg	
91-20-3	Naphthalene	ND	250	ug/kg	
108-88-3	Toluene	ND	50	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	250	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	250	ug/kg	
1330-20-7	Xylene (total)	ND	50	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	70-130%
17060-07-0	1,2-Dichloroethane-D4	112%	70-122%
2037-26-5	Toluene-D8	97%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY5528-BS	Y128561.D	1	12/01/12	RS	n/a	n/a	VY5528

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

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	46.5	93	76-117
106-93-4	1,2-Dibromoethane	50	50.3	101	77-122
107-06-2	1,2-Dichloroethane	50	48.9	98	68-134
100-41-4	Ethylbenzene	50	46.4	93	74-119
98-82-8	Isopropylbenzene	50	44.7	89	71-119
1634-04-4	Methyl Tert Butyl Ether	100	92.0	92	72-124
91-20-3	Naphthalene	50	44.9	90	60-127
108-88-3	Toluene	50	47.3	95	77-121
95-63-6	1,2,4-Trimethylbenzene	50	44.1	88	72-118
108-67-8	1,3,5-Trimethylbenzene	50	43.9	88	69-118
1330-20-7	Xylene (total)	150	137	91	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	91%	70-122%
2037-26-5	Toluene-D8	99%	81-127%
460-00-4	4-Bromofluorobenzene	85%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY5539-BS	Y128799.D	1	12/07/12	RS	n/a	n/a	VY5539

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

JB22267-9, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.6	97	76-117
106-93-4	1,2-Dibromoethane	50	53.0	106	77-122
107-06-2	1,2-Dichloroethane	50	54.9	110	68-134
100-41-4	Ethylbenzene	50	47.1	94	74-119
98-82-8	Isopropylbenzene	50	47.6	95	71-119
1634-04-4	Methyl Tert Butyl Ether	100	100	100	72-124
91-20-3	Naphthalene	50	44.3	89	60-127
108-88-3	Toluene	50	47.8	96	77-121
95-63-6	1,2,4-Trimethylbenzene	50	47.6	95	72-118
108-67-8	1,3,5-Trimethylbenzene	50	46.4	93	69-118
1330-20-7	Xylene (total)	150	138	92	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	105%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-122%
2037-26-5	Toluene-D8	100%	81-127%
460-00-4	4-Bromofluorobenzene	96%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5655-BS	V131169.D	1	12/07/12	TDN	n/a	n/a	VV5655

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

JB22267-7

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	51.2	102	76-117
106-93-4	1,2-Dibromoethane	50	43.3	87	77-122
107-06-2	1,2-Dichloroethane	50	51.3	103	68-134
100-41-4	Ethylbenzene	50	47.9	96	74-119
98-82-8	Isopropylbenzene	50	49.2	98	71-119
1634-04-4	Methyl Tert Butyl Ether	100	104	104	72-124
91-20-3	Naphthalene	50	47.4	95	60-127
108-88-3	Toluene	50	51.0	102	77-121
95-63-6	1,2,4-Trimethylbenzene	50	47.8	96	72-118
108-67-8	1,3,5-Trimethylbenzene	50	47.8	96	69-118
1330-20-7	Xylene (total)	150	141	94	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	114%	70-130%
17060-07-0	1,2-Dichloroethane-D4	106%	70-122%
2037-26-5	Toluene-D8	117%	81-127%
460-00-4	4-Bromofluorobenzene	104%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8283-BS	D203143.D	1	12/08/12	ET	n/a	n/a	VD8283

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

JB22267-8

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2590	104	76-117
106-93-4	1,2-Dibromoethane	2500	2540	102	77-122
107-06-2	1,2-Dichloroethane	2500	2930	117	68-134
100-41-4	Ethylbenzene	2500	2600	104	74-119
98-82-8	Isopropylbenzene	2500	2600	104	71-119
1634-04-4	Methyl Tert Butyl Ether	5000	4910	98	72-124
91-20-3	Naphthalene	2500	2700	108	60-127
108-88-3	Toluene	2500	2470	99	77-121
95-63-6	1,2,4-Trimethylbenzene	2500	2590	104	72-118
108-67-8	1,3,5-Trimethylbenzene	2500	2540	102	69-118
1330-20-7	Xylene (total)	7500	7570	101	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	112%	70-122%
2037-26-5	Toluene-D8	99%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX5712-BS	X131674.D	1	12/11/12	MS	n/a	n/a	VX5712

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

JB22267-10

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.5	99	76-117
106-93-4	1,2-Dibromoethane	50	41.6	83	77-122
107-06-2	1,2-Dichloroethane	50	44.1	88	68-134
100-41-4	Ethylbenzene	50	46.4	93	74-119
98-82-8	Isopropylbenzene	50	48.6	97	71-119
1634-04-4	Methyl Tert Butyl Ether	100	85.8	86	72-124
91-20-3	Naphthalene	50	43.6	87	60-127
108-88-3	Toluene	50	50.7	101	77-121
95-63-6	1,2,4-Trimethylbenzene	50	45.3	91	72-118
108-67-8	1,3,5-Trimethylbenzene	50	45.5	91	69-118
1330-20-7	Xylene (total)	150	141	94	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	83%	70-122%
2037-26-5	Toluene-D8	112%	81-127%
460-00-4	4-Bromofluorobenzene	91%	66-132%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22267-1MS	Y128610.D	1	12/03/12	RS	n/a	n/a	VY5528
JB22267-1	Y128568.D	1	12/01/12	RS	n/a	n/a	VY5528

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

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6

CAS No.	Compound	JB22267-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		55.7	36.9	66	44-130
106-93-4	1,2-Dibromoethane	ND		55.7	44.6	80	41-139
107-06-2	1,2-Dichloroethane	ND		55.7	42.4	76	43-139
100-41-4	Ethylbenzene	ND		55.7	36.7	66	29-137
98-82-8	Isopropylbenzene	ND		55.7	37.0	66	27-138
1634-04-4	Methyl Tert Butyl Ether	ND		55.7	42.7	77	51-128
91-20-3	Naphthalene	ND		55.7	37.7	68	10-152
108-88-3	Toluene	ND		55.7	35.9	64	40-135
95-63-6	1,2,4-Trimethylbenzene	ND		55.7	35.8	64	17-142
108-67-8	1,3,5-Trimethylbenzene	ND		55.7	35.3	63	20-140
1330-20-7	Xylene (total)	ND		167	108	65	28-139

CAS No.	Surrogate Recoveries	MS	JB22267-1	Limits
1868-53-7	Dibromofluoromethane	95%	89%	70-130%
17060-07-0	1,2-Dichloroethane-D4	92%	83%	70-122%
2037-26-5	Toluene-D8	100%	100%	81-127%
460-00-4	4-Bromofluorobenzene	95%	93%	66-132%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB23056-1MS	Y128800.D	1	12/07/12	RS	n/a	n/a	VY5539
JB23056-1	Y128803.D	1	12/07/12	RS	n/a	n/a	VY5539

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

JB22267-9, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	JB23056-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		53.4	47.1	88	44-130
106-93-4	1,2-Dibromoethane	ND		53.4	53.3	100	41-139
107-06-2	1,2-Dichloroethane	ND		53.4	53.0	99	43-139
100-41-4	Ethylbenzene	ND		53.4	47.1	88	29-137
98-82-8	Isopropylbenzene	ND		53.4	49.7	93	27-138
1634-04-4	Methyl Tert Butyl Ether	ND		53.4	50.7	95	51-128
91-20-3	Naphthalene	ND		53.4	45.9	86	10-152
108-88-3	Toluene	ND		53.4	47.0	88	40-135
95-63-6	1,2,4-Trimethylbenzene	ND		53.4	47.1	88	17-142
108-67-8	1,3,5-Trimethylbenzene	ND		53.4	47.5	89	20-140
1330-20-7	Xylene (total)	ND		160	138	86	28-139

CAS No.	Surrogate Recoveries	MS	JB23056-1	Limits
1868-53-7	Dibromofluoromethane	105%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	99%	70-122%
2037-26-5	Toluene-D8	99%	97%	81-127%
460-00-4	4-Bromofluorobenzene	95%	102%	66-132%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB23114-47MS	X131686.D	1	12/11/12	MS	n/a	n/a	VX5712
JB23114-47	X131677.D	1	12/11/12	MS	n/a	n/a	VX5712

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

JB22267-10

CAS No.	Compound	JB23114-47 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		42.8	36.2	85	44-130
106-93-4	1,2-Dibromoethane	ND		42.8	31.5	74	41-139
107-06-2	1,2-Dichloroethane	ND		42.8	33.7	79	43-139
100-41-4	Ethylbenzene	ND		42.8	33.2	78	29-137
98-82-8	Isopropylbenzene	ND		42.8	34.2	80	27-138
1634-04-4	Methyl Tert Butyl Ether	ND		42.8	34.3	80	51-128
91-20-3	Naphthalene	ND		42.8	28.4	66	10-152
108-88-3	Toluene	ND		42.8	36.9	86	40-135
95-63-6	1,2,4-Trimethylbenzene	ND		42.8	31.0	72	17-142
108-67-8	1,3,5-Trimethylbenzene	ND		42.8	31.6	74	20-140
1330-20-7	Xylene (total)	ND		128	101	79	28-139

CAS No.	Surrogate Recoveries	MS	JB23114-47	Limits
1868-53-7	Dibromofluoromethane	102%	96%	70-130%
17060-07-0	1,2-Dichloroethane-D4	85%	82%	70-122%
2037-26-5	Toluene-D8	113%	114%	81-127%
460-00-4	4-Bromofluorobenzene	94%	95%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22940-4MS	V131181.D	1	12/07/12	TDN	n/a	n/a	VV5655
JB22940-4MSD	V131182.D	1	12/07/12	TDN	n/a	n/a	VV5655
JB22940-4	V131175.D	1	12/07/12	TDN	n/a	n/a	VV5655

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

JB22267-7

CAS No.	Compound	JB22940-4 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.1		57	62.2	107	60.4	100	3	44-130/21
106-93-4	1,2-Dibromoethane	ND		57	47.5	83	44.2	75	7	41-139/21
107-06-2	1,2-Dichloroethane	ND		57	55.0	96	52.1	88	5	43-139/19
100-41-4	Ethylbenzene	0.55		57	60.6	105	56.5	95	7	29-137/25
98-82-8	Isopropylbenzene	ND		57	61.3	107	58.5	99	5	27-138/26
1634-04-4	Methyl Tert Butyl Ether	1.4		57	61.2	105	58.6	97	4	51-128/20
91-20-3	Naphthalene	ND		57	50.2	88	49.0	83	2	10-152/31
108-88-3	Toluene	1.3		57	63.5	109	60.2	100	5	40-135/22
95-63-6	1,2,4-Trimethylbenzene	1.3		57	62.3	107	57.9	96	7	17-142/28
108-67-8	1,3,5-Trimethylbenzene	0.44		57	60.4	105	56.1	94	7	20-140/27
1330-20-7	Xylene (total)	2.0		171	181	105	168	93	7	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22940-4	Limits
1868-53-7	Dibromofluoromethane	80%	84%	97%	70-130%
17060-07-0	1,2-Dichloroethane-D4	92%	90%	112%	70-122%
2037-26-5	Toluene-D8	116%	116%	118%	81-127%
460-00-4	4-Bromofluorobenzene	103%	102%	103%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22768-1MS	D203163.D	1	12/09/12	ET	n/a	n/a	VD8283
JB22768-1MSD	D203164.D	1	12/09/12	ET	n/a	n/a	VD8283
JB22768-1 [a]	D203166.D	1	12/09/12	ET	n/a	n/a	VD8283

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

JB22267-8

CAS No.	Compound	JB22768-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		7240	5870	81	5770	80	2	44-130/21
106-93-4	1,2-Dibromoethane	ND		7240	5810	80	5880	81	1	41-139/21
107-06-2	1,2-Dichloroethane	ND		7240	6650	92	6650	92	0	43-139/19
100-41-4	Ethylbenzene	ND		7240	5970	82	5780	80	3	29-137/25
98-82-8	Isopropylbenzene	ND		7240	5910	82	5810	80	2	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		7240	5630	78	5670	78	1	51-128/20
91-20-3	Naphthalene	ND		7240	7580	105	7620	105	1	10-152/31
108-88-3	Toluene	26.8	J	7240	5600	77	5500	76	2	40-135/22
95-63-6	1,2,4-Trimethylbenzene	ND		7240	5740	79	5640	78	2	17-142/28
108-67-8	1,3,5-Trimethylbenzene	ND		7240	5870	81	5740	79	2	20-140/27
1330-20-7	Xylene (total)	41.6	J	21700	17200	79	16700	77	3	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22768-1	Limits
1868-53-7	Dibromofluoromethane	95%	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	112%	115%		70-122%
2037-26-5	Toluene-D8	98%	99%		81-127%
460-00-4	4-Bromofluorobenzene	99%	100%		66-132%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22267-2DUP	Y128611.D	1	12/03/12	RS	n/a	n/a	VY5528
JB22267-2	Y128569.D	1	12/01/12	RS	n/a	n/a	VY5528

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

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6

CAS No.	Compound	JB22267-2 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	15
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	29
98-82-8	Isopropylbenzene	ND		ND		nc	23
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	23
91-20-3	Naphthalene	ND		ND		nc	12
108-88-3	Toluene	ND		ND		nc	21
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	12
1330-20-7	Xylene (total)	ND		ND		nc	26

CAS No.	Surrogate Recoveries	DUP	JB22267-2	Limits
1868-53-7	Dibromofluoromethane	100%	97%	70-130%
17060-07-0	1,2-Dichloroethane-D4	95%	88%	70-122%
2037-26-5	Toluene-D8	101%	100%	81-127%
460-00-4	4-Bromofluorobenzene	101%	94%	66-132%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB23056-2DUP	Y128801.D	1	12/07/12	RS	n/a	n/a	VY5539
JB23056-2	Y128802.D	1	12/07/12	RS	n/a	n/a	VY5539

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

JB22267-9, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	JB23056-2 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	15
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	29
98-82-8	Isopropylbenzene	ND		ND		nc	23
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	23
91-20-3	Naphthalene	ND		ND		nc	12
108-88-3	Toluene	ND		ND		nc	21
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	12
1330-20-7	Xylene (total)	ND		ND		nc	26

CAS No.	Surrogate Recoveries	DUP	JB23056-2	Limits
1868-53-7	Dibromofluoromethane	100%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	96%	70-122%
2037-26-5	Toluene-D8	99%	100%	81-127%
460-00-4	4-Bromofluorobenzene	100%	101%	66-132%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB23114-48DUP	X131688.D	1	12/11/12	MS	n/a	n/a	VX5712
JB23114-48	X131678.D	1	12/11/12	MS	n/a	n/a	VX5712

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

JB22267-10

CAS No.	Compound	JB23114-48 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	15
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	29
98-82-8	Isopropylbenzene	ND		ND		nc	23
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	23
91-20-3	Naphthalene	ND		ND		nc	12
108-88-3	Toluene	ND		ND		nc	21
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	12
1330-20-7	Xylene (total)	ND		ND		nc	26

CAS No.	Surrogate Recoveries	DUP	JB23114-48	Limits
1868-53-7	Dibromofluoromethane	99%	98%	70-130%
17060-07-0	1,2-Dichloroethane-D4	85%	83%	70-122%
2037-26-5	Toluene-D8	114%	115%	81-127%
460-00-4	4-Bromofluorobenzene	95%	95%	66-132%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8248-BFB
Lab File ID: D202316.D
Instrument ID: GCMSD
Injection Date: 11/13/12
Injection Time: 12:25

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	11801	18.0		Pass
75	30.0 - 60.0% of mass 95	31122	47.4		Pass
95	Base peak, 100% relative abundance	65621	100.0		Pass
96	5.0 - 9.0% of mass 95	4584	6.99		Pass
173	Less than 2.0% of mass 174	165	0.25	(0.29) [a]	Pass
174	50.0 - 120.0% of mass 95	56354	85.9		Pass
175	5.0 - 9.0% of mass 174	4287	6.53	(7.61) [a]	Pass
176	95.0 - 101.0% of mass 174	55125	84.0	(97.8) [a]	Pass
177	5.0 - 9.0% of mass 176	3613	5.51	(6.55) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8248-IC8248	D202317.D	11/13/12	12:59	00:34	Initial cal 0.5
VD8248-IC8248	D202318.D	11/13/12	13:29	01:04	Initial cal 1
VD8248-IC8248	D202319.D	11/13/12	13:58	01:33	Initial cal 2
VD8248-IC8248	D202320.D	11/13/12	14:27	02:02	Initial cal 5
VD8248-IC8248	D202321.D	11/13/12	14:57	02:32	Initial cal 10
VD8248-IC8248	D202322.D	11/13/12	15:26	03:01	Initial cal 20
VD8248-ICC8248	D202323.D	11/13/12	15:55	03:30	Initial cal 50
VD8248-IC8248	D202324.D	11/13/12	16:25	04:00	Initial cal 100
VD8248-IC8248	D202325.D	11/13/12	16:54	04:29	Initial cal 200
VD8248-ICV8248	D202327.D	11/13/12	17:53	05:28	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8283-BFB
Lab File ID: D203134.D
Instrument ID: GCMSD
Injection Date: 12/08/12
Injection Time: 09:36

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	11926	21.3		Pass
75	30.0 - 60.0% of mass 95	29290	52.2		Pass
95	Base peak, 100% relative abundance	56101	100.0		Pass
96	5.0 - 9.0% of mass 95	3879	6.91		Pass
173	Less than 2.0% of mass 174	161	0.29	(0.33) [a]	Pass
174	50.0 - 120.0% of mass 95	48936	87.2		Pass
175	5.0 - 9.0% of mass 174	3596	6.41	(7.35) [a]	Pass
176	95.0 - 101.0% of mass 174	47258	84.2	(96.6) [a]	Pass
177	5.0 - 9.0% of mass 176	3163	5.64	(6.69) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8283-CC8248	D203135.D	12/08/12	10:10	00:34	Continuing cal 20
VD8283-MB	D203137.D	12/08/12	11:16	01:40	Method Blank
ZZZZZZ	D203138.D	12/08/12	11:57	02:21	(unrelated sample)
ZZZZZZ	D203139.D	12/08/12	12:26	02:50	(unrelated sample)
ZZZZZZ	D203141.D	12/08/12	13:25	03:49	(unrelated sample)
ZZZZZZ	D203142.D	12/08/12	13:54	04:18	(unrelated sample)
VD8283-BS	D203143.D	12/08/12	14:24	04:48	Blank Spike
ZZZZZZ	D203146.D	12/08/12	15:59	06:23	(unrelated sample)
ZZZZZZ	D203147.D	12/08/12	16:28	06:52	(unrelated sample)
JB22267-8	D203148.D	12/08/12	16:58	07:22	BH-12-85_3.0'
ZZZZZZ	D203152.D	12/08/12	18:55	09:19	(unrelated sample)
ZZZZZZ	D203153.D	12/08/12	19:24	09:48	(unrelated sample)
ZZZZZZ	D203154.D	12/08/12	19:54	10:18	(unrelated sample)
ZZZZZZ	D203156.D	12/08/12	20:52	11:16	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8283-BFB
Lab File ID: D203158.D
Instrument ID: GCMSD
Injection Date: 12/08/12
Injection Time: 22:20

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	11023	21.7		Pass
75	30.0 - 60.0% of mass 95	27138	53.3		Pass
95	Base peak, 100% relative abundance	50882	100.0		Pass
96	5.0 - 9.0% of mass 95	3624	7.12		Pass
173	Less than 2.0% of mass 174	141	0.28	(0.33) [a]	Pass
174	50.0 - 120.0% of mass 95	43248	85.0		Pass
175	5.0 - 9.0% of mass 174	3068	6.03	(7.09) [a]	Pass
176	95.0 - 101.0% of mass 174	41616	81.8	(96.2) [a]	Pass
177	5.0 - 9.0% of mass 176	2828	5.56	(6.80) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8283-CC8248	D203159.D	12/08/12	22:49	00:29	Continuing cal 50
VD8283-MB2	D203161.D	12/08/12	23:48	01:28	Method Blank
VD8284-BS	D203162.D	12/09/12	00:17	01:57	Blank Spike
VD8283-BS2	D203162.D	12/09/12	00:17	01:57	Blank Spike
JB22768-1MS	D203163.D	12/09/12	00:47	02:27	Matrix Spike
JB22768-1MSD	D203164.D	12/09/12	01:16	02:56	Matrix Spike Duplicate
JB22768-1	D203166.D	12/09/12	02:15	03:55	(used for QC only; not part of job JB22267)
ZZZZZZ	D203167.D	12/09/12	02:45	04:25	(unrelated sample)
ZZZZZZ	D203170.D	12/09/12	04:13	05:53	(unrelated sample)
ZZZZZZ	D203172.D	12/09/12	05:11	06:51	(unrelated sample)
ZZZZZZ	D203173.D	12/09/12	05:41	07:21	(unrelated sample)
ZZZZZZ	D203174.D	12/09/12	06:10	07:50	(unrelated sample)
ZZZZZZ	D203175.D	12/09/12	06:40	08:20	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5649-BFB
Lab File ID: V131003.D
Instrument ID: GCMSV
Injection Date: 11/29/12
Injection Time: 18:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	7125	19.2		Pass
75	30.0 - 60.0% of mass 95	18285	49.2		Pass
95	Base peak, 100% relative abundance	37160	100.0		Pass
96	5.0 - 9.0% of mass 95	2505	6.74		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	33162	89.2		Pass
175	5.0 - 9.0% of mass 174	2654	7.14	(8.00) [a]	Pass
176	95.0 - 101.0% of mass 174	32474	87.4	(97.9) [a]	Pass
177	5.0 - 9.0% of mass 176	2161	5.82	(6.65) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV5649-IC5649	V131004.D	11/29/12	19:01	00:31	Initial cal 0.5
VV5649-IC5649	V131005.D	11/29/12	19:31	01:01	Initial cal 1
VV5649-IC5649	V131006.D	11/29/12	20:02	01:32	Initial cal 2
VV5649-IC5649	V131007.D	11/29/12	20:33	02:03	Initial cal 5
VV5649-IC5649	V131008.D	11/29/12	21:04	02:34	Initial cal 10
VV5649-IC5649	V131009.D	11/29/12	21:35	03:05	Initial cal 20
VV5649-ICC5649	V131010.D	11/29/12	22:05	03:35	Initial cal 50
VV5649-IC5649	V131011.D	11/29/12	22:36	04:06	Initial cal 100
VV5649-IC5649	V131012.D	11/29/12	23:07	04:37	Initial cal 200

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5655-BFB
Lab File ID: V131164.D
Instrument ID: GCMSV
Injection Date: 12/07/12
Injection Time: 08:15

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	5968	18.8		Pass
75	30.0 - 60.0% of mass 95	15698	49.4		Pass
95	Base peak, 100% relative abundance	31772	100.0		Pass
96	5.0 - 9.0% of mass 95	2210	6.96		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	28193	88.7		Pass
175	5.0 - 9.0% of mass 174	1789	5.63	(6.35) [a]	Pass
176	95.0 - 101.0% of mass 174	26840	84.5	(95.2) [a]	Pass
177	5.0 - 9.0% of mass 176	1958	6.16	(7.30) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV5655-CC5649	V131166.D	12/07/12	09:29	01:14	Continuing cal 20
VV5655-MB1	V131168.D	12/07/12	10:43	02:28	Method Blank
VV5655-BS	V131169.D	12/07/12	12:02	03:47	Blank Spike
ZZZZZZ	V131171.D	12/07/12	13:34	05:19	(unrelated sample)
ZZZZZZ	V131172.D	12/07/12	14:05	05:50	(unrelated sample)
ZZZZZZ	V131173.D	12/07/12	14:36	06:21	(unrelated sample)
ZZZZZZ	V131174.D	12/07/12	15:06	06:51	(unrelated sample)
JB22940-4	V131175.D	12/07/12	15:37	07:22	(used for QC only; not part of job JB22267)
ZZZZZZ	V131177.D	12/07/12	17:12	08:57	(unrelated sample)
ZZZZZZ	V131179.D	12/07/12	18:27	10:12	(unrelated sample)
JB22267-7	V131180.D	12/07/12	18:58	10:43	BH-12-85_1.5'
JB22940-4MS	V131181.D	12/07/12	19:29	11:14	Matrix Spike
JB22940-4MSD	V131182.D	12/07/12	19:59	11:44	Matrix Spike Duplicate

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VX5685-BFB
Lab File ID: X130942.D
Instrument ID: GCMSX
Injection Date: 11/13/12
Injection Time: 17:23

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	9935	17.4		Pass
75	30.0 - 60.0% of mass 95	25930	45.4		Pass
95	Base peak, 100% relative abundance	57069	100.0		Pass
96	5.0 - 9.0% of mass 95	3828	6.71		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	49410	86.6		Pass
175	5.0 - 9.0% of mass 174	4196	7.35	(8.49) [a]	Pass
176	95.0 - 101.0% of mass 174	48274	84.6	(97.7) [a]	Pass
177	5.0 - 9.0% of mass 176	3199	5.61	(6.63) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	X130943M.D	11/13/12	17:52	00:29	(unrelated sample)
VX5685-IC5685	X130943.D	11/13/12	17:52	00:29	Initial cal 0.5
ZZZZZZ	X130944M.D	11/13/12	18:22	00:59	(unrelated sample)
VX5685-IC5685	X130944.D	11/13/12	18:22	00:59	Initial cal 1
VX5685-IC5685	X130945.D	11/13/12	18:51	01:28	Initial cal 2
ZZZZZZ	X130945A.D	11/13/12	18:51	01:28	(unrelated sample)
VX5685-IC5685	X130946.D	11/13/12	19:21	01:58	Initial cal 5
VX5685-IC5685	X130947.D	11/13/12	19:50	02:27	Initial cal 10
VX5685-IC5685	X130948.D	11/13/12	20:19	02:56	Initial cal 20
VX5685-ICC5685	X130949.D	11/13/12	20:48	03:25	Initial cal 50
VX5685-IC5685	X130950.D	11/13/12	21:18	03:55	Initial cal 75
VX5685-IC5685	X130951.D	11/13/12	21:47	04:24	Initial cal 100
VX5685-IC5685	X130952.D	11/13/12	22:16	04:53	Initial cal 200
VX5685-ICV5685	X130955.D	11/13/12	23:44	06:21	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VX5712-BFB
Lab File ID: X131670.D
Instrument ID: GCMSX
Injection Date: 12/11/12
Injection Time: 08:32

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10236	16.4		Pass
75	30.0 - 60.0% of mass 95	27853	44.6		Pass
95	Base peak, 100% relative abundance	62437	100.0		Pass
96	5.0 - 9.0% of mass 95	4360	6.98		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	54501	87.3		Pass
175	5.0 - 9.0% of mass 174	4518	7.24	(8.29) [a]	Pass
176	95.0 - 101.0% of mass 174	53301	85.4	(97.8) [a]	Pass
177	5.0 - 9.0% of mass 176	3605	5.77	(6.76) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VX5712-CC5685	X131671.D	12/11/12	09:02	00:30	Continuing cal 20
VX5712-MB	X131673.D	12/11/12	10:12	01:40	Method Blank
VX5712-BS	X131674.D	12/11/12	10:44	02:12	Blank Spike
ZZZZZZ	X131676.D	12/11/12	12:01	03:29	(unrelated sample)
JB23114-47	X131677.D	12/11/12	12:31	03:59	(used for QC only; not part of job JB22267)
JB23114-48	X131678.D	12/11/12	13:01	04:29	(used for QC only; not part of job JB22267)
ZZZZZZ	X131679.D	12/11/12	13:30	04:58	(unrelated sample)
ZZZZZZ	X131680.D	12/11/12	13:59	05:27	(unrelated sample)
ZZZZZZ	X131681.D	12/11/12	14:28	05:56	(unrelated sample)
ZZZZZZ	X131682.D	12/11/12	14:58	06:26	(unrelated sample)
ZZZZZZ	X131683.D	12/11/12	15:28	06:56	(unrelated sample)
ZZZZZZ	X131684.D	12/11/12	15:57	07:25	(unrelated sample)
JB22267-10	X131685.D	12/11/12	16:27	07:55	BH-12-83_3.0'
JB23114-47MS	X131686.D	12/11/12	16:56	08:24	Matrix Spike
JB23114-48DUP	X131688.D	12/11/12	17:55	09:23	Duplicate
ZZZZZZ	X131689.D	12/11/12	18:24	09:52	(unrelated sample)
ZZZZZZ	X131690.D	12/11/12	18:54	10:22	(unrelated sample)
ZZZZZZ	X131691.D	12/11/12	19:24	10:52	(unrelated sample)
ZZZZZZ	X131692.D	12/11/12	19:53	11:21	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VY5501-BFB
Lab File ID: Y127978.D
Instrument ID: GCMSY
Injection Date: 11/12/12
Injection Time: 09:45

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8396	16.7		Pass
75	30.0 - 60.0% of mass 95	22933	45.6		Pass
95	Base peak, 100% relative abundance	50240	100.0		Pass
96	5.0 - 9.0% of mass 95	3383	6.73		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	40962	81.5		Pass
175	5.0 - 9.0% of mass 174	3269	6.51	(7.98) [a]	Pass
176	95.0 - 101.0% of mass 174	39613	78.8	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	2603	5.18	(6.57) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VY5501-IC5501	Y127979.D	11/12/12	10:33	00:48	Initial cal 5
VY5501-IC5501	Y127980.D	11/12/12	11:02	01:17	Initial cal 10
VY5501-IC5501	Y127981.D	11/12/12	11:31	01:46	Initial cal 2
VY5501-IC5501	Y127982.D	11/12/12	12:00	02:15	Initial cal 1
VY5501-IC5501	Y127983.D	11/12/12	12:29	02:44	Initial cal 0.5
VY5501-IC5501	Y127984.D	11/12/12	12:58	03:13	Initial cal 20
VY5501-IC5501	Y127985.D	11/12/12	13:27	03:42	Initial cal 75
VY5501-ICC5501	Y127986.D	11/12/12	13:56	04:11	Initial cal 50
VY5501-IC5501	Y127987.D	11/12/12	14:25	04:40	Initial cal 100
VY5501-IC5501	Y127988.D	11/12/12	14:54	05:09	Initial cal 200
VY5501-ICV5501	Y127990.D	11/12/12	16:02	06:17	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VY5528-BFB
Lab File ID: Y128557.D
Instrument ID: GCMSY
Injection Date: 12/01/12
Injection Time: 09:32

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6761	15.5		Pass
75	30.0 - 60.0% of mass 95	19744	45.4		Pass
95	Base peak, 100% relative abundance	43504	100.0		Pass
96	5.0 - 9.0% of mass 95	2999	6.89		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	38024	87.4		Pass
175	5.0 - 9.0% of mass 174	3084	7.09	(8.11) [a]	Pass
176	95.0 - 101.0% of mass 174	37645	86.5	(99.0) [a]	Pass
177	5.0 - 9.0% of mass 176	2376	5.46	(6.31) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VY5528-CC5501	Y128558A.D	12/01/12	11:06	01:34	Continuing cal 20
VY5528-MB	Y128560.D	12/01/12	12:04	02:32	Method Blank
VY5528-BS	Y128561.D	12/01/12	12:43	03:11	Blank Spike
ZZZZZZ	Y128564.D	12/01/12	14:22	04:50	(unrelated sample)
ZZZZZZ	Y128566.D	12/01/12	15:20	05:48	(unrelated sample)
JB22267-1	Y128568.D	12/01/12	16:18	06:46	BH-12-91_0.5'
JB22267-2	Y128569.D	12/01/12	16:47	07:15	BH-12-92_0.5'
ZZZZZZ	Y128570.D	12/01/12	17:15	07:43	(unrelated sample)
ZZZZZZ	Y128571.D	12/01/12	17:44	08:12	(unrelated sample)
ZZZZZZ	Y128572.D	12/01/12	18:14	08:42	(unrelated sample)
ZZZZZZ	Y128573.D	12/01/12	18:43	09:11	(unrelated sample)
ZZZZZZ	Y128574.D	12/01/12	19:12	09:40	(unrelated sample)
JB22267-3	Y128575.D	12/01/12	19:41	10:09	BH-12-94_1.0'
JB22267-4	Y128576.D	12/01/12	20:10	10:38	BH-12-87_1.0'
JB22267-5	Y128577.D	12/01/12	20:39	11:07	BH-12-87_3.0'
JB22267-6	Y128578.D	12/01/12	21:08	11:36	BH-12-100_3.0'

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VY5530-BFB
Lab File ID: Y128606.D
Instrument ID: GCMSY
Injection Date: 12/03/12
Injection Time: 09:14

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	5900	18.2		Pass
75	30.0 - 60.0% of mass 95	15224	46.9		Pass
95	Base peak, 100% relative abundance	32461	100.0		Pass
96	5.0 - 9.0% of mass 95	2110	6.50		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	27288	84.1		Pass
175	5.0 - 9.0% of mass 174	2263	6.97	(8.29) [a]	Pass
176	95.0 - 101.0% of mass 174	26746	82.4	(98.0) [a]	Pass
177	5.0 - 9.0% of mass 176	1829	5.63	(6.84) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VY5530-CC5501	Y128607.D	12/03/12	09:48	00:34	Continuing cal 20
VY5528-MB2	Y128608.D	12/03/12	10:26	01:12	Method Blank
VY5528-BS2	Y128609.D	12/03/12	11:00	01:46	Blank Spike
JB22267-1MS	Y128610.D	12/03/12	11:35	02:21	Matrix Spike
JB22267-2DUP	Y128611.D	12/03/12	12:04	02:50	Duplicate
VY5530-MB	Y128612.D	12/03/12	12:44	03:30	Method Blank
VY5530-BS	Y128613.D	12/03/12	13:18	04:04	Blank Spike
ZZZZZZ	Y128614.D	12/03/12	13:57	04:43	(unrelated sample)
ZZZZZZ	Y128615.D	12/03/12	14:26	05:12	(unrelated sample)
JB22203-1	Y128617.D	12/03/12	15:25	06:11	(used for QC only; not part of job JB22267)
JB22203-1MS	Y128618.D	12/03/12	15:54	06:40	Matrix Spike
JB22203-1MSD	Y128619.D	12/03/12	16:23	07:09	Matrix Spike Duplicate
ZZZZZZ	Y128620.D	12/03/12	16:52	07:38	(unrelated sample)
ZZZZZZ	Y128621.D	12/03/12	17:21	08:07	(unrelated sample)
ZZZZZZ	Y128622.D	12/03/12	17:51	08:37	(unrelated sample)
ZZZZZZ	Y128623.D	12/03/12	18:20	09:06	(unrelated sample)
ZZZZZZ	Y128624.D	12/03/12	18:49	09:35	(unrelated sample)
ZZZZZZ	Y128625.D	12/03/12	19:19	10:05	(unrelated sample)
ZZZZZZ	Y128626.D	12/03/12	19:48	10:34	(unrelated sample)
ZZZZZZ	Y128627.D	12/03/12	20:17	11:03	(unrelated sample)
ZZZZZZ	Y128628.D	12/03/12	20:46	11:32	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VY5539-BFB
Lab File ID: Y128795.D
Instrument ID: GCMSY
Injection Date: 12/07/12
Injection Time: 08:45

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	7786	16.7		Pass
75	30.0 - 60.0% of mass 95	21658	46.5		Pass
95	Base peak, 100% relative abundance	46541	100.0		Pass
96	5.0 - 9.0% of mass 95	3079	6.62		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	40608	87.3		Pass
175	5.0 - 9.0% of mass 174	3115	6.69	(7.67) [a]	Pass
176	95.0 - 101.0% of mass 174	39584	85.1	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	2515	5.40	(6.35) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VY5539-CC5501	Y128796.D	12/07/12	09:18	00:33	Continuing cal 20
VY5539-MB	Y128798.D	12/07/12	10:24	01:39	Method Blank
VY5539-BS	Y128799.D	12/07/12	10:57	02:12	Blank Spike
JB23056-1MS	Y128800.D	12/07/12	11:36	02:51	Matrix Spike
JB23056-2DUP	Y128801.D	12/07/12	12:08	03:23	Duplicate
JB23056-2	Y128802.D	12/07/12	12:38	03:53	(used for QC only; not part of job JB22267)
JB23056-1	Y128803.D	12/07/12	13:07	04:22	(used for QC only; not part of job JB22267)
ZZZZZZ	Y128804.D	12/07/12	13:37	04:52	(unrelated sample)
ZZZZZZ	Y128805.D	12/07/12	14:06	05:21	(unrelated sample)
ZZZZZZ	Y128806.D	12/07/12	14:36	05:51	(unrelated sample)
ZZZZZZ	Y128807.D	12/07/12	15:05	06:20	(unrelated sample)
ZZZZZZ	Y128808.D	12/07/12	15:34	06:49	(unrelated sample)
ZZZZZZ	Y128809.D	12/07/12	16:04	07:19	(unrelated sample)
ZZZZZZ	Y128810.D	12/07/12	16:33	07:48	(unrelated sample)
JB22267-11	Y128811.D	12/07/12	17:02	08:17	BH-12-84_3.0'
JB22267-12	Y128812.D	12/07/12	17:31	08:46	BH-12-88_2.5'
JB22267-13	Y128813.D	12/07/12	18:01	09:16	BH-12-79_1.0'
JB22267-14	Y128814.D	12/07/12	18:30	09:45	BH-12-82_1.0'
JB22267-15	Y128815.D	12/07/12	19:00	10:15	BH-12-78_1.0'
JB22267-16	Y128816.D	12/07/12	19:29	10:44	BH-12-78_2.0'
JB22267-17	Y128817.D	12/07/12	19:58	11:13	BH-12-80_3.0'
JB22267-9	Y128818.D	12/07/12	20:28	11:43	BH-12-83_1.0'

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8283-CC8248	**Injection Date:**	12/08/12
Lab File ID:	D203135.D	**Injection Time:**	10:10
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	95661	8.03	142848	10.26	211740	11.17	191413	14.52	113327	17.10
Upper Limit [a]	191322	8.53	285696	10.76	423480	11.67	382826	15.02	226654	17.60
Lower Limit [b]	47831	7.53	71424	9.76	105870	10.67	95707	14.02	56664	16.60

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VD8283-MB	79858	8.05	138407	10.25	205973	11.18	189278	14.52	113560	17.10
ZZZZZZ	87385	8.02	136889	10.26	202613	11.17	191638	14.52	110445	17.10
ZZZZZZ	89103	8.02	137792	10.26	205094	11.18	193586	14.52	112177	17.10
ZZZZZZ	83517	8.02	134638	10.26	199715	11.17	185449	14.52	108454	17.10
ZZZZZZ	81223	8.02	133011	10.27	198652	11.18	183940	14.52	106487	17.10
VD8283-BS	82430	8.03	129330	10.26	193716	11.17	184081	14.52	111779	17.10
ZZZZZZ	76037	8.04	122897	10.26	185420	11.18	175382	14.52	105078	17.10
ZZZZZZ	85827	8.03	137641	10.26	207370	11.17	190257	14.52	113798	17.10
JB22267-8 [c]	90961	8.03	141741	10.26	210042	11.18	194995	14.52	115775	17.10
ZZZZZZ	88961	8.03	139898	10.26	207508	11.18	192993	14.52	113872	17.10
ZZZZZZ	89892	8.04	140732	10.26	211532	11.18	197734	14.52	115102	17.10
ZZZZZZ	84856	8.04	137183	10.26	206021	11.17	189740	14.52	113146	17.10
ZZZZZZ	83797	8.03	140640	10.26	208637	11.18	194912	14.52	116541	17.10

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Diluted due to high concentration of target compound.

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8283-CC8248	**Injection Date:**	12/08/12
Lab File ID:	D203159.D	**Injection Time:**	22:49
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	82715	8.03	132779	10.26	198221	11.18	186136	14.52	112584	17.10
Upper Limit [a]	165430	8.53	265558	10.76	396442	11.68	372272	15.02	225168	17.60
Lower Limit [b]	41358	7.53	66390	9.76	99111	10.68	93068	14.02	56292	16.60

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VD8283-MB2	63409	8.06	122859	10.26	184786	11.17	173770	14.52	106744	17.10
VD8284-BS	79513	8.02	125783	10.26	191287	11.17	181916	14.52	109067	17.10
VD8283-BS2	79513	8.02	125783	10.26	191287	11.17	181916	14.52	109067	17.10
JB22768-1MS	74164	8.03	126938	10.26	190308	11.18	178202	14.52	107119	17.10
JB22768-1MSD	77207	8.03	129920	10.26	195923	11.17	185111	14.52	110181	17.10
JB22768-1	73693	8.03	127509	10.26	193849	11.18	182256	14.52	107749	17.10
ZZZZZZ	75145	8.03	123064	10.26	184734	11.18	179093	14.52	106043	17.10
ZZZZZZ	79631	8.04	131626	10.26	200025	11.18	185230	14.52	114198	17.10
ZZZZZZ	85722	8.03	136071	10.26	205164	11.18	187325	14.52	110779	17.10
ZZZZZZ	85055	8.03	135085	10.26	199423	11.17	187155	14.52	111610	17.10
ZZZZZZ	86213	8.04	135538	10.26	203362	11.18	192747	14.52	112825	17.10
ZZZZZZ	76368	8.03	131898	10.26	196887	11.18	183175	14.52	108807	17.10

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5655-CC5649	**Injection Date:**	12/07/12
Lab File ID:	V131166.D	**Injection Time:**	09:29
Instrument ID:	GCMSV	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	53354	7.63	156971	9.85	240411	10.80	223543	14.21	130539	16.82
Upper Limit [a]	106708	8.13	313942	10.35	480822	11.30	447086	14.71	261078	17.32
Lower Limit [b]	26677	7.13	78486	9.35	120206	10.30	111772	13.71	65270	16.32

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5655-MB1	32270	7.63	161998	9.85	249573	10.80	226757	14.21	124005	16.81
VV5655-BS	41048	7.64	148532	9.85	228308	10.80	211403	14.21	123344	16.82
ZZZZZZ	38754	7.64	163870	9.85	247341	10.80	230967	14.21	129669	16.82
ZZZZZZ	39536	7.64	157668	9.85	243940	10.80	225148	14.21	125605	16.82
ZZZZZZ	38319	7.64	148497	9.85	227403	10.80	215872	14.21	120579	16.82
ZZZZZZ	40151	7.64	149541	9.85	228537	10.80	214706	14.21	118124	16.82
JB22940-4	44411	7.64	158681	9.85	249938	10.80	235651	14.21	134310	16.82
ZZZZZZ	75980	7.63	295529	9.85	444810	10.80	403556	14.21	228031	16.82
ZZZZZZ	44835	7.63	158281	9.85	240531	10.80	223163	14.21	125708	16.82
JB22267-7	43458	7.64	157024	9.85	238808	10.80	219927	14.21	119865	16.82
JB22940-4MS	27857	7.64	151790	9.85	233926	10.80	209607	14.21	121007	16.82
JB22940-4MSD	35170	7.64	166215	9.85	256018	10.80	231734	14.21	132923	16.82

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VX5712-CC5685	**Injection Date:**	12/11/12
Lab File ID:	X131671.D	**Injection Time:**	09:02
Instrument ID:	GCMSX	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	62672	7.26	186509	9.94	273469	11.11	262176	15.33	132940	18.13
Upper Limit [a]	125344	7.76	373018	10.44	546938	11.61	524352	15.83	265880	18.63
Lower Limit [b]	31336	6.76	93255	9.44	136735	10.61	131088	14.83	66470	17.63

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VX5712-MB	61140	7.25	202275	9.94	283511	11.11	266552	15.33	136799	18.12
VX5712-BS	64543	7.26	178610	9.94	263504	11.11	257721	15.33	131689	18.12
ZZZZZZ	74299	7.26	197096	9.94	279393	11.10	268648	15.33	141939	18.12
JB23114-47	72595	7.25	204989	9.94	289097	11.11	275868	15.33	140549	18.12
JB23114-48	68084	7.25	200049	9.94	281868	11.10	271303	15.33	138976	18.12
ZZZZZZ	76495	7.25	202605	9.94	287915	11.11	274189	15.33	141840	18.12
ZZZZZZ	67547	7.26	200852	9.94	286652	11.11	273196	15.33	139470	18.12
ZZZZZZ	68625	7.25	197758	9.94	282081	11.10	268263	15.33	138289	18.12
ZZZZZZ	72413	7.25	200345	9.94	284945	11.10	270362	15.33	135917	18.12
ZZZZZZ	68218	7.25	199731	9.94	283514	11.10	271634	15.32	138787	18.12
ZZZZZZ	70139	7.25	192595	9.94	273511	11.10	261924	15.33	132775	18.12
JB22267-10	63592	7.25	182367	9.94	254517	11.09	248152	15.32	116974	18.12
JB23114-47MS	61725	7.25	177757	9.94	264937	11.09	260797	15.32	131534	18.12
JB23114-48DUP	67176	7.25	196392	9.94	279962	11.09	272432	15.32	139873	18.12
ZZZZZZ	65319	7.26	188400	9.93	269358	11.09	260424	15.32	138658	18.12
ZZZZZZ	71557	7.27	197196	9.93	283850	11.09	274469	15.32	149050	18.12
ZZZZZZ	70662	7.24	205502	9.93	292896	11.09	258985	15.32	137910	18.12
ZZZZZZ	99435	7.22	179846	9.93	270650	11.09	250924	15.32	113568	18.12

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VY5528-CC5501	**Injection Date:**	12/01/12
Lab File ID:	Y128558A.D	**Injection Time:**	11:06
Instrument ID:	GCMSY	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	60370	7.65	145126	9.83	216227	10.74	176547	13.83	91492	16.11
Upper Limit [a]	120740	8.15	290252	10.33	432454	11.24	353094	14.33	182984	16.61
Lower Limit [b]	30185	7.15	72563	9.33	108114	10.24	88274	13.33	45746	15.61

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VY5528-MB	60118	7.65	152343	9.83	225650	10.74	184162	13.83	87739	16.11
VY5528-BS	61897	7.65	136543	9.82	206484	10.74	171936	13.83	90380	16.11
ZZZZZZ	64620	7.66	180044	9.83	264107	10.74	211635	13.83	99437	16.11
ZZZZZZ	54824	7.65	180434	9.83	261535	10.74	211198	13.83	100324	16.11
JB22267-1	57360	7.65	178752	9.83	258515	10.75	205333	13.83	95851	16.11
JB22267-2	60492	7.65	165657	9.83	239899	10.74	194118	13.83	91460	16.11
ZZZZZZ	53030	7.65	159281	9.83	232932	10.75	181711	13.83	86232	16.11
ZZZZZZ	50791	7.65	164378	9.83	238927	10.75	191732	13.83	90283	16.11
ZZZZZZ	53424	7.66	156434	9.83	227274	10.75	184656	13.83	88681	16.11
ZZZZZZ	39840	7.65	154061	9.83	224201	10.74	179333	13.83	86419	16.11
ZZZZZZ	45658	7.66	154546	9.83	223094	10.74	180652	13.83	87098	16.11
JB22267-3	53083	7.65	153320	9.83	223197	10.74	175332	13.83	78923	16.11
JB22267-4	50482	7.65	144575	9.83	211784	10.75	164962	13.83	74387	16.11
JB22267-5	55754	7.65	153019	9.83	220879	10.75	176249	13.83	82152	16.11
JB22267-6	59797	7.65	146929	9.83	216334	10.75	176062	13.83	81468	16.11

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VY5530-CC5501	**Injection Date:**	12/03/12
Lab File ID:	Y128607.D	**Injection Time:**	09:48
Instrument ID:	GCMSY	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	60168	7.65	143205	9.83	214385	10.74	173209	13.83	83530	16.11
Upper Limit [a]	120336	8.15	286410	10.33	428770	11.24	346418	14.33	167060	16.61
Lower Limit [b]	30084	7.15	71603	9.33	107193	10.24	86605	13.33	41765	15.61

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VY5528-MB2	60501	7.65	135465	9.83	201943	10.74	164951	13.83	75678	16.11
VY5528-BS2	64213	7.65	126005	9.83	193898	10.74	160667	13.83	77081	16.11
JB22267-1MS	57398	7.65	146727	9.82	218462	10.74	170124	13.83	80668	16.11
JB22267-2DUP	63053	7.65	156876	9.83	231075	10.75	182953	13.83	82388	16.11
VY5530-MB	61141	7.65	128919	9.83	194914	10.74	157075	13.83	71977	16.11
VY5530-BS	56629	7.65	115586	9.83	178524	10.74	146512	13.83	70871	16.11
ZZZZZZ	61036	7.65	137685	9.82	201047	10.74	154293	13.83	73556	16.11
ZZZZZZ	52147	7.65	146055	9.83	212793	10.75	161741	13.83	72749	16.11
JB22203-1	64160	7.65	134989	9.83	199416	10.75	156193	13.83	74391	16.11
JB22203-1MS	48404	7.65	122759	9.83	183512	10.75	144076	13.83	70821	16.11
JB22203-1MSD	43986	7.65	118795	9.83	176764	10.74	139338	13.83	67828	16.11
ZZZZZZ	47561	7.66	122915	9.83	184031	10.75	134057	13.83	58657	16.11
ZZZZZZ	46434	7.65	128405	9.83	189786	10.75	145618	13.83	69767	16.11
ZZZZZZ	39573	7.65	123714	9.83	180638	10.74	133448	13.83	63883	16.11
ZZZZZZ	48990	7.65	123937	9.83	183043	10.74	140993	13.83	65780	16.11
ZZZZZZ	47452	7.65	118374	9.83	173830	10.74	133447	13.83	62808	16.11
ZZZZZZ	44432	7.66	123288	9.83	180684	10.74	136781	13.83	63860	16.11
ZZZZZZ	45475	7.65	117436	9.83	170904	10.74	131991	13.83	61775	16.11
ZZZZZZ	48316	7.65	111534	9.83	164720	10.75	125717	13.83	59411	16.11
ZZZZZZ	38325	7.65	111355	9.83	163852	10.75	122976	13.83	57076	16.11

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VY5539-CC5501	**Injection Date:**	12/07/12
Lab File ID:	Y128796.D	**Injection Time:**	09:18
Instrument ID:	GCMSY	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	80802	7.66	155222	9.83	233473	10.74	193267	13.83	94163	16.11
Upper Limit [a]	161604	8.16	310444	10.33	466946	11.24	386534	14.33	188326	16.61
Lower Limit [b]	40401	7.16	77611	9.33	116737	10.24	96634	13.33	47082	15.61

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VY5539-MB	73687	7.66	160730	9.83	237387	10.75	192387	13.83	88021	16.11
VY5539-BS	68528	7.65	144171	9.83	218281	10.74	179175	13.83	86161	16.11
JB23056-1MS	69726	7.65	162527	9.83	247232	10.74	199634	13.83	95425	16.11
JB23056-2DUP	69319	7.65	179866	9.83	266083	10.74	208632	13.83	95245	16.11
JB23056-2	68459	7.65	176315	9.83	255714	10.75	200489	13.83	91344	16.11
JB23056-1	58971	7.66	157726	9.83	230524	10.75	177036	13.83	80938	16.11
ZZZZZZ	58738	7.65	156207	9.83	224935	10.74	173979	13.83	78153	16.11
ZZZZZZ	51657	7.66	137593	9.83	201919	10.75	158659	13.83	71838	16.11
ZZZZZZ	50440	7.66	128072	9.83	190076	10.75	149628	13.83	68228	16.11
ZZZZZZ	42025	7.66	114472	9.83	170543	10.75	132506	13.83	59784	16.11
ZZZZZZ	43650	7.66	105152	9.83	156350	10.74	120113	13.83	55836	16.11
ZZZZZZ	44412	7.66	102728	9.83	154582	10.75	119496	13.83	54291	16.11
ZZZZZZ	52141	7.65	185672	9.83	270110	10.75	211496	13.83	98332	16.11
JB22267-11	63256	7.66	171843	9.83	242705	10.74	193893	13.83	96235	16.11
JB22267-12	61181	7.66	183699	9.83	265977	10.75	204883	13.83	97858	16.11
JB22267-13	53331	7.66	171047	9.83	249994	10.74	197612	13.83	90528	16.11
JB22267-14	59823	7.65	180629	9.83	262495	10.74	198301	13.83	83917	16.11
JB22267-15	61405	7.65	177989	9.83	260633	10.75	204053	13.83	92961	16.11
JB22267-16	59359	7.65	172944	9.83	250533	10.75	197703	13.83	89841	16.11
JB22267-17	56257	7.65	174979	9.83	253715	10.75	196749	13.83	88634	16.11
JB22267-9	56604	7.65	170298	9.83	238782	10.75	179537	13.83	86927	16.11

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Method: SW846 8260B **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB22267-1	Y128568.D	89.0	83.0	100.0	93.0
JB22267-2	Y128569.D	97.0	88.0	100.0	94.0
JB22267-3	Y128575.D	95.0	88.0	99.0	96.0
JB22267-4	Y128576.D	99.0	90.0	99.0	96.0
JB22267-5	Y128577.D	98.0	89.0	100.0	93.0
JB22267-6	Y128578.D	101.0	94.0	100.0	96.0
JB22267-7	V131180.D	114.0	104.0	116.0	102.0
JB22267-8	D203148.D	93.0	109.0	98.0	102.0
JB22267-9	Y128818.D	98.0	85.0	95.0	89.0
JB22267-10	X131685.D	102.0	88.0	112.0	102.0
JB22267-11	Y128811.D	92.0	81.0	95.0	91.0
JB22267-12	Y128812.D	98.0	79.0	96.0	91.0
JB22267-13	Y128813.D	100.0	81.0	98.0	93.0
JB22267-14	Y128814.D	100.0	81.0	96.0	98.0
JB22267-15	Y128815.D	101.0	83.0	97.0	95.0
JB22267-16	Y128816.D	100.0	83.0	98.0	93.0
JB22267-17	Y128817.D	99.0	81.0	97.0	95.0
JB22267-1MS	Y128610.D	95.0	92.0	100.0	95.0
JB22267-2DUP	Y128611.D	100.0	95.0	101.0	101.0
JB22768-1MS	D203163.D	95.0	112.0	98.0	99.0
JB22768-1MSD	D203164.D	95.0	115.0	99.0	100.0
JB22940-4MS	V131181.D	80.0	92.0	116.0	103.0
JB22940-4MSD	V131182.D	84.0	90.0	116.0	102.0
JB23056-1MS	Y128800.D	105.0	96.0	99.0	95.0
JB23056-2DUP	Y128801.D	100.0	96.0	99.0	100.0
JB23114-47MS	X131686.D	102.0	85.0	113.0	94.0
JB23114-48DUP	X131688.D	99.0	85.0	114.0	95.0
VD8283-BS	D203143.D	95.0	112.0	99.0	98.0
VD8283-MB	D203137.D	93.0	111.0	96.0	99.0
VV5655-BS	V131169.D	114.0	106.0	117.0	104.0
VV5655-MB1	V131168.D	112.0	95.0	114.0	101.0
VX5712-BS	X131674.D	101.0	83.0	112.0	91.0
VX5712-MB	X131673.D	95.0	77.0	114.0	96.0
VY5528-BS	Y128561.D	101.0	91.0	99.0	85.0
VY5528-MB	Y128560.D	101.0	93.0	100.0	94.0
VY5539-BS	Y128799.D	105.0	100.0	100.0	96.0
VY5539-MB	Y128798.D	103.0	100.0	100.0	98.0
VD8283-MB2	D203161.D	94.0	112.0	97.0	98.0
VY5528-MB2	Y128608.D	105.0	103.0	102.0	100.0

Volatile Surrogate Recovery Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Method: SW846 8260B **Matrix:** SO

Samples and QC shown here apply to the above method

Surrogate Compounds	Recovery Limits

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = 1,2-Dichloroethane-D4	70-122%
S3 = Toluene-D8	81-127%
S4 = 4-Bromofluorobenzene	66-132%

Initial Calibration Summary

Job Number: JB22267 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSD

```
Method       : C:\MSDCHEM\1\METHODS\MD8248.M (RTE Integrator)
Title        : SW-846 Method 8260B
Last Update  : Wed Nov 14 09:27:47 2012
Response via : Initial Calibration

Calibration Files
5   =d202320.D   2   =d202319.D   0.5 =d202317.D   50  =d202323.D
100 =d202324.D   1   =d202318.D   200 =d202325.D   20  =d202322.D
10  =d202321.D       =

 Compound
           5     2     0.5   50    100   1     200   20    10      Avg    %RSD
-------------------------------------------------------------------------------

1) I   Tert Butyl Alcohol-d9 ----------------ISTD---------------------
2)  1,4-dioxane
          0.095             0.099 0.085       0.111 0.085 0.095   0.095   10.43
3)  tertiary butyl alcohol
          1.196 1.328       1.194 1.145       1.101 1.087 1.138   1.170    6.94

4) I   pentafluorobenzene    ----------------ISTD---------------------
5)  1,2-dichloro-1,2,2-trifluoroet
                                                                  0.000#  -1.00
6)  chlorodifluoromethane
          0.516 0.472       0.537 0.560 0.471 0.536 0.491 0.417   0.500    9.30
7)  dichlorodifluoromethane
          0.703 0.625       0.787 0.818 0.644 0.766 0.739 0.787   0.734    9.61
8)  chloromethane
          0.690 0.704 0.727 0.722 0.759 0.739 0.756 0.644 0.720   0.718    4.97
9)  vinyl chloride
          0.765 0.744 0.770 0.838 0.880 0.836 0.836 0.771 0.802   0.805    5.60
10)  bromomethane
          0.442 0.456 0.368 0.460 0.478 0.450 0.344 0.425 0.462   0.432   10.56
11)  chloroethane
          0.423 0.411 0.348 0.430 0.451 0.421 0.425 0.401 0.436   0.416    7.06
12)  vinyl bromide
                                                                  0.000#  -1.00
13)  trichlorofluoromethane
          0.797 0.654       0.855 0.903 0.780 0.844 0.809 0.833   0.809    9.06
14)  pentane
          1.068 1.232       1.009 1.080 1.021       0.968 1.136   1.073    8.25
15)  ethyl ether
          0.356 0.390       0.342 0.350 0.469 0.346 0.314 0.367   0.367   12.73
16)  acrolein
          0.147 0.137 0.124 0.136 0.135 0.136 0.166 0.116 0.160   0.140   11.36
17)  chlorotrifluoroethene
                                                                  0.000#  -1.00
18)  2-chloropropane
          0.942 1.026 0.625 0.940 1.007 1.034 0.965 0.877 0.987   0.934   13.47
19)  1,1-dichloroethene
          0.525 0.544       0.506 0.540 0.635 0.519 0.466 0.546   0.535    9.00
20)  acetone
          0.035             0.061 0.061       0.061 0.048 0.055   0.054   19.83
           ----- Linear regression -----  Coefficient =  0.9997
             Response Ratio = -0.00256 + 0.06204 *A

21)  allyl chloride
          1.275 1.206 1.457 1.309 1.311 1.350 1.401 1.157 1.344   1.312    7.02
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

22)	acetonitrile										
		0.061	0.072		0.060	0.058		0.058	0.057	0.062	0.061	8.02
23)	acetaldehyde											
											0.000#	-1.00
24)	iodomethane											
		0.882	0.861	0.853	0.924	0.986	0.912	0.952	0.835	0.968	0.908	5.94
25)	iso-butyl alcohol											
											0.000#	-1.00
26)	carbon disulfide											
		1.722	1.716	1.790	1.764	1.884	1.801	1.788	1.598	1.844	1.767	4.69
27)	methylene chloride											
		0.608	0.666		0.590	0.616	0.750	0.595	0.533	0.615	0.622	10.22
28)	1-chloropropane											
		0.929	0.970	1.026	0.903	1.004	1.077	0.968	0.839	0.960	0.964	7.25
29)	methyl acetate											
		0.513	0.571	0.466	0.529	0.529	0.600	0.513	0.476	0.450	0.516	9.41
30)	methyl tert butyl ether											
		1.711	1.822	2.313	1.788	1.858	1.915	1.811	1.616	1.904	1.860	10.43
31)	trans-1,2-dichloroethene											
		0.561	0.593		0.552	0.571	0.650	0.553	0.503	0.583	0.571	7.33
32)	di-isopropyl ether											
		1.810	1.860	1.438	1.865	1.873	1.746	1.845	1.685	1.533	1.740	9.10
33)	ethyl tert-butyl ether											
		1.807	1.853	1.433	1.897	1.904	1.689	1.880	1.707	1.570	1.749	9.36
34)	2-butanone											
		0.055			0.070	0.073		0.075	0.062	0.067	0.067	11.14
35)	1,1-dichloroethane											
		0.919	0.928	0.982	0.951	1.002	0.928	0.974	0.866	0.986	0.948	4.49
36)	chloroprene											
		0.769	0.751		0.821	0.854	0.696	0.833	0.727	0.626	0.760	10.12
37)	acrylonitrile											
		0.232	0.237	0.273	0.246	0.252	0.229	0.246	0.221	0.261	0.244	6.73
38)	vinyl acetate											
		0.091	0.092		0.112	0.112		0.110	0.102	0.085	0.101	11.06
39)	ethyl acetate											
		0.084	0.080		0.090	0.084	0.078	0.084	0.082	0.076	0.082	5.20
40)	2,2-dichloropropane											
		0.798	0.816	0.912	0.782	0.828	0.871	0.786	0.730	0.854	0.820	6.60
41)	cis-1,2-dichloroethene											
		0.608	0.638	0.799	0.598	0.615	0.724	0.598	0.543	0.629	0.639	12.04
42)	propionitrile											
		0.090	0.096	0.122	0.097	0.099	0.091	0.096	0.086	0.102	0.098	10.38
43)	bromochloromethane											
		0.282	0.289	0.296	0.294	0.307	0.265	0.298	0.263	0.311	0.289	5.80
44)	tetrahydrofuran											
		0.076	0.079		0.086	0.089		0.088	0.075	0.087	0.083	7.25
45)	chloroform											
		0.882	0.892	1.006	0.921	0.956	0.908	0.928	0.833	0.960	0.921	5.47
46)	dibromofluoromethane (s)											
		0.462	0.498	0.588	0.493	0.507	0.500	0.496	0.441	0.467	0.495	8.33
47)	1,2-dichloroethane-d4 (s)											
		0.563	0.567	0.545	0.592	0.598	0.564	0.587	0.533	0.574	0.569	3.72
48)	freon 113											
		0.406	0.324		0.423	0.438		0.429	0.394	0.331	0.392	11.89
49)	methacrylonitrile											
		0.372	0.373	0.431	0.383	0.392	0.405	0.383	0.351	0.406	0.388	6.09
50)	t-butyl formate											
		0.619	0.601	0.435	0.651	0.660	0.566	0.645	0.584	0.542	0.589	11.95
51)	1,1,1-trichloroethane											
		0.792	0.776	0.871	0.836	0.887	0.787	0.855	0.757	0.859	0.825	5.71

Initial Calibration Summary

Job Number: JB22267 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
52)  tert-amyl methyl ether
           1.822 1.904 1.515 1.898 1.911 1.758 1.885 1.703 1.574   1.774    8.41

53) I   1,4-difluorobenzene   ----------------ISTD--------------------
54)  cyclohexane
           0.544 0.473 0.469 0.565 0.590 0.549 0.569 0.511 0.600   0.541    8.79
55)  tert amyl alcohol
           0.017 0.016       0.017 0.016 0.014 0.017 0.015 0.017   0.016    7.15
56)  2,2,4-trimethylpentane
           1.383 1.182 1.002 1.496 1.551 1.227 1.568 1.342 1.175   1.325   14.62
57)  epichlorohydrin
           0.047 0.050 0.039 0.049 0.048 0.048 0.048 0.045 0.044   0.046    7.38
58)  n-butyl alcohol
           0.014 0.016 0.012 0.014 0.014 0.018 0.014 0.013 0.013   0.014   12.44
59)  carbon tetrachloride
           0.457 0.435 0.452 0.485 0.510 0.458 0.497 0.428 0.501   0.469    6.35
60)  1,1-dichloropropene
           0.462 0.445 0.490 0.472 0.498 0.467 0.480 0.417 0.491   0.469    5.42
61)  hexane
           0.425 0.374 0.360 0.439 0.450 0.407 0.440 0.396 0.346   0.404    9.32
62)  benzene
           1.388 1.362 1.573 1.434 1.472 1.470 1.425 1.257 1.482   1.429    6.20
63)  heptane
           0.262 0.216       0.273 0.277       0.274 0.249 0.212   0.252   10.96
64)  isopropyl acetate
           0.741 0.759 0.613 0.765 0.757 0.755 0.751 0.688 0.633   0.718    8.17
65)  1,2-dichloroethane
           0.454 0.454 0.501 0.484 0.495 0.456 0.481 0.421 0.495   0.471    5.60
66)  Ethyl Acrylate
           0.470 0.485 0.445 0.515 0.518 0.495 0.517 0.444 0.499   0.487    5.97
67)  trichloroethene
           0.341 0.316 0.363 0.358 0.370 0.340 0.359 0.311 0.360   0.346    6.09
68)  2-nitropropane
           1.021 1.012 0.917 1.074 1.070 1.044 1.047 0.940 0.913   1.004    6.40
69)  2-chloroethyl vinyl ether
           0.258 0.259 0.196 0.278 0.277 0.246 0.272 0.246 0.234   0.252   10.24
70)  methyl methacrylate
           0.098 0.099 0.101 0.115 0.121 0.091 0.118 0.099 0.111   0.106    9.82
71)  tert-amyl ethyl ether
           0.592 0.582 0.549 0.604 0.613 0.589 0.613 0.526 0.595   0.585    4.99
72)  1,2-dichloropropane
           0.355 0.355 0.363 0.382 0.395 0.379 0.388 0.334 0.379   0.370    5.26
73)  methylcyclohexane
           0.626 0.533       0.653 0.675 0.530 0.662 0.590 0.517   0.598   10.82
74)  dibromomethane
           0.211 0.216 0.243 0.236 0.240 0.210 0.236 0.203 0.239   0.226    6.90
75)  bromodichloromethane
           0.446 0.436 0.463 0.494 0.503 0.423 0.499 0.416 0.487   0.463    7.34
76)  cis-1,3-dichloropropene
           0.589 0.601 0.685 0.629 0.644 0.620 0.626 0.556 0.657   0.623    6.12
77)  toluene-d8 (s)
           1.221 1.245 1.402 1.287 1.291 1.294 1.259 1.164 1.246   1.268    5.11
78)  4-methyl-2-pentanone
           0.153 0.163 0.182 0.172 0.176 0.141 0.173 0.151 0.173   0.165    8.40
79)  toluene
           0.884 0.876 1.031 0.919 0.951 0.906 0.921 0.822 0.949   0.918    6.36
80)  3-methyl-1-butanol
           0.014 0.014 0.010 0.015 0.014 0.017 0.014 0.013 0.013   0.014   13.12
81)  trans-1,3-dichloropropene
           0.555 0.576 0.689 0.603 0.619 0.595 0.604 0.526 0.611   0.598    7.59
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
 82)  ethyl methacrylate
            0.472 0.458 0.543 0.546 0.572 0.472 0.559 0.472 0.524   0.513    8.68
 83)  1,1,2-trichloroethane
            0.269 0.252 0.301 0.287 0.297 0.277 0.291 0.259 0.303   0.282    6.60
 84)  2-hexanone
            0.133 0.132 0.151 0.154 0.164 0.132 0.165 0.135 0.151   0.146    9.25

 85) I   chlorobenzene-d5      ----------------ISTD--------------------
 86)  tetrachloroethene
            0.406 0.402 0.429 0.433 0.445 0.415 0.421 0.387 0.445   0.420    4.72
 87)  1,3-dichloropropane
            0.574 0.595 0.681 0.618 0.626 0.593 0.609 0.547 0.632   0.608    6.25
 88)  butyl acetate
            0.274 0.289 0.200 0.297 0.285 0.314 0.283 0.268 0.264   0.275   11.66
 89)  3,3-dimethyl-1-butanol
            0.049 0.050 0.039 0.052 0.049 0.065 0.052 0.046 0.046   0.050   13.82
 90)  dibromochloromethane
            0.380 0.382 0.403 0.429 0.440 0.381 0.430 0.365 0.415   0.403    6.67
 91)  1,2-dibromoethane
            0.354 0.360 0.384 0.386 0.394 0.349 0.383 0.340 0.394   0.372    5.61
 92)  chlorobenzene
            1.022 1.017 1.191 1.052 1.078 1.057 1.048 0.945 1.080   1.055    6.20
 93)  1,1,1,2-tetrachloroethane
            0.366 0.363 0.451 0.405 0.410 0.398 0.405 0.348 0.407   0.395    7.95
 94)  ethylbenzene
            1.747 1.776 2.054 1.817 1.868 1.881 1.807 1.618 1.886   1.828    6.50
 95)  m,p-xylene
            0.691 0.693 0.771 0.724 0.737 0.714 0.716 0.642 0.743   0.714    5.19
 96)  o-xylene
            0.690 0.672 0.772 0.717 0.740 0.700 0.727 0.636 0.745   0.711    5.83
 97)  styrene
            1.085 1.073 1.235 1.232 1.276 1.139 1.252 1.055 1.207   1.173    7.29
 98)  bromoform
            0.297 0.291 0.367 0.340 0.357 0.287 0.357 0.286 0.325   0.323   10.33

 99) I   1,4-dichlorobenzene-d ----------------ISTD--------------------
100)  isopropylbenzene
            3.038 3.042 3.541 2.996 3.083 3.082 2.962 2.768 3.168   3.075    6.72
101)  4-bromofluorobenzene (s)
            0.904 0.966       0.871 0.874 1.080 0.863 0.793 0.869   0.903    9.56
102)  bromobenzene
            0.805 0.834 1.050 0.828 0.841 0.876 0.816 0.749 0.864   0.852    9.75
103)  cyclohexanone
            0.013 0.016 0.014 0.024 0.018 0.012 0.021 0.015 0.016   0.017   23.48
             ----- Linear regression -----  Coefficient =  0.9924
               Response Ratio = -0.00571 + 0.02063 *A

104)  1,1,2,2-tetrachloroethane
            0.858 0.902       0.857 0.866 0.945 0.846 0.775 0.915   0.871    5.93
105)  trans-1,4-dichloro-2-butene
            0.242 0.254 0.337 0.268 0.273 0.259 0.271 0.231 0.270   0.267   11.13
106)  1,2,3-trichloropropane
            0.259 0.258 0.321 0.256 0.261 0.240 0.252 0.233 0.274   0.262    9.63
107)  n-propylbenzene
            3.454 3.529 4.100 3.449 3.552 3.704 3.408 3.144 3.653   3.555    7.32
108)  p-ethyltoluene
            2.979 2.998 3.451 2.834 2.883 3.204 2.834 2.635 2.994   2.979    7.90
109)  2-chlorotoluene
            0.743 0.750 0.843 0.726 0.748 0.752 0.730 0.668 0.771   0.748    6.14
110)  4-chlorotoluene
```

```
            2.241 2.326 3.066 2.225 2.287 2.508 2.241 1.994 2.352   2.360   12.59
111)  1,3,5-trimethylbenzene
            2.630 2.622 3.231 2.600 2.672 2.745 2.656 2.379 2.737   2.697    8.42
112)  tert-butylbenzene
            2.274 2.266 2.861 2.320 2.385 2.393 2.302 2.123 2.395   2.369    8.58
113)  pentachloroethane
            0.505 0.522 0.635 0.515 0.531 0.533 0.531 0.470 0.528   0.530    8.32
114)  1,2,4-trimethylbenzene
            2.702 2.665 3.410 2.696 2.772 2.907 2.707 2.423 2.850   2.793    9.60
115)  sec-butylbenzene
            3.412 3.334 4.034 3.389 3.529 3.571 3.365 3.134 3.611   3.487    7.18
116)  1,3-dichlorobenzene
            1.584 1.591 1.967 1.585 1.623 1.652 1.569 1.424 1.658   1.628    8.87
117)  p-isopropyltoluene
            2.918 2.903 3.583 2.836 2.968 3.085 2.838 2.615 2.982   2.970    8.89
118)  1,4-dichlorobenzene
            1.607 1.691 2.179 1.653 1.683 1.696 1.624 1.469 1.722   1.702   11.38
119)  Benzyl Chloride
            2.063 2.130 2.102 2.020 1.919 2.390 1.874 1.854 1.827   2.020    8.82
120)  p-diethylbenzene
            1.742 1.862 2.325 1.714 1.745 1.951 1.725 1.575 1.780   1.824   11.75
121)  1,2-dichlorobenzene
            1.565 1.610 2.037 1.583 1.602 1.683 1.540 1.433 1.675   1.636   10.23
122)  n-butylbenzene
            1.484 1.487 1.839 1.534 1.612 1.550 1.560 1.366 1.581   1.557    8.19
123)  1,2,4,5-tetramethylbenzene
            2.987 2.976 3.184 2.773 2.641 3.070 2.572 2.629 2.965   2.866    7.61
124)  1,2-dibromo-3-chloropropane
            0.188 0.226       0.166 0.159       0.157 0.159 0.186   0.177   14.24
125)  1,3,5-trichlorobenzene
            1.287 1.294 1.738 1.269 1.216 1.347 1.161 1.199 1.375   1.321   12.94
126)  1,2,4-trichlorobenzene
            1.004 1.003       1.059 0.950 0.939 0.931 1.000 1.139   1.003    6.93
127)  hexachlorobutadiene
            0.633 0.671       0.597 0.535 0.724 0.532 0.589 0.683   0.620   11.27
128)  naphthalene
            2.390 2.392       2.375 2.040 2.405 1.990 2.308 2.676   2.322    9.41
129)  1,2,3-trichlorobenzene
            0.858 0.868       0.848 0.705 0.868 0.677 0.849 0.975   0.831   11.56
130)  hexachloroethane
            0.577 0.629 0.686 0.547 0.549 0.637 0.561 0.496 0.544   0.581   10.11
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           MD8248.M          Wed Nov 14 10:02:39 2012
```

Initial Calibration Verification

Job Number: JB22267 **Sample:** VD8248-ICV8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202327.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d202327.D Vial: 12
Acq On : 13 Nov 2012 5:53 pm Operator: EmilyT
Sample : ICV8248-50 Inst : MSD
Misc : ms38524,vd8248,5,,100,5,1 Multiplr: 1.00
MS Integration Params: LSCINT.P

Method : C:\MSDCHEM\1\METHODS\MD8248.M (RTE Integrator)
Title : SW-846 Method 8260B
Last Update : Wed Nov 14 09:27:47 2012
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	96	0.00	8.04
2	M	1,4-dioxane	0.095	0.089	6.3	86	0.00	11.91
3	M	tertiary butyl alcohol	1.170	1.200	-2.6	97	0.00	8.15
4	I	pentafluorobenzene	1.000	1.000	0.0	98	0.00	10.27
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.509	-1.8	93	0.00	4.58
7	M	dichlorodifluoromethane	0.734	0.751	-2.3	94	0.00	4.56
8	M	chloromethane	0.718	0.700	2.5	95	0.00	4.92
9	M	vinyl chloride	0.805	0.808	-0.4	95	0.00	5.21
10	M	bromomethane	0.432	0.460	-6.5	98	0.00	5.87
11	M	chloroethane	0.416	0.427	-2.6	97	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.843	-4.2	97	0.00	6.58
14		pentane	1.073	1.109	-3.4	108	0.00	6.65
15	M	ethyl ether	0.367	0.350	4.6	101	0.00	6.97
16	M	acrolein	0.140	0.135	3.6	97	0.00	7.20
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	0.962	-3.0	101	0.00	7.17
19	M	1,1-dichloroethene	0.535	0.520	2.8	101	0.00	7.40
		----------	True	Calc.	% Drift	----------		
20	M	acetone	50.000	50.676	-1.4	97	0.00	7.42
		----------	AvgRF	CCRF	% Dev	----------		
21	M	allyl chloride	1.312	1.259	4.0	94	0.00	7.91
22	M	acetonitrile	0.061	0.060	1.6	97	0.00	7.85
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.957	-5.4	102	0.00	7.67
25	M	iso-butyl alcohol		----------NA----------				
26	M	carbon disulfide	1.767	1.810	-2.4	101	0.00	7.81
27	M	methylene chloride	0.622	0.599	3.7	100	0.00	8.08
28	M	1-chloropropane	0.964	0.934	3.1	102	0.00	8.14
29	M	methyl acetate	0.516	0.490	5.0	91	0.00	7.89
30	M	methyl tert butyl ether	1.860	1.780	4.3	98	0.00	8.45
31	M	trans-1,2-dichloroethene	0.571	0.554	3.0	99	0.00	8.47
32	M	di-isopropyl ether	1.740	1.887	-8.4	99	0.00	9.05
33	M	ethyl tert-butyl ether	1.749	1.862	-6.5	96	0.00	9.51
34	M	2-butanone	0.067	0.076	-13.4	105	0.00	9.71
35	M	1,1-dichloroethane	0.948	0.969	-2.2	100	0.00	9.02
36	M	chloroprene	0.760	0.764	-0.5	91	0.00	9.14
37	M	acrylonitrile	0.244	0.251	-2.9	100	0.00	8.39

Initial Calibration Verification

Job Number: JB22267 **Sample:** VD8248-ICV8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202327.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.125	-23.8#	110	0.00	9.01
39	M	ethyl acetate	0.082	0.089	-8.5	97	0.00	9.74
40	M	2,2-dichloropropane	0.820	0.775	5.5	97	0.00	9.78
41	M	cis-1,2-dichloroethene	0.639	0.604	5.5	99	0.00	9.75
42	M	propionitrile	0.098	0.097	1.0	98	0.00	9.79
43	M	bromochloromethane	0.289	0.300	-3.8	100	0.00	10.05
44	M	tetrahydrofuran	0.083	0.087	-4.8	100	0.00	10.11
45	M	chloroform	0.921	0.927	-0.7	99	0.00	10.11
46	S	dibromofluoromethane (s)	0.495	0.492	0.6	98	0.00	10.30
47	S	1,2-dichloroethane-d4 (s)	0.569	0.590	-3.7	98	0.00	10.72
48	M	freon 113	0.392	0.411	-4.8	95	0.00	7.38
49	M	methacrylonitrile	0.388	0.389	-0.3	100	0.00	9.99
50	m	t-butyl formate	0.589	0.662	-12.4	100	0.00	10.17
51	M	1,1,1-trichloroethane	0.825	0.859	-4.1	101	0.00	10.40
52	M	tert-amyl methyl ether	1.774	1.850	-4.3	96	0.00	10.88
53	I	1,4-difluorobenzene	1.000	1.000	0.0	100	0.00	11.18
54	M	cyclohexane	0.541	0.571	-5.5	101	0.00	10.49
55		tert amyl alcohol	0.016	0.017	-3.1	97	0.00	10.67
56	M	2,2,4-trimethylpentane	1.325	1.317	0.6	88	0.00	10.88
57	M	epichlorohydrin	0.046	0.046	0.0	94	0.00	12.44
58	M	n-butyl alcohol	0.014	0.015	-7.1	101	0.00	11.27
59	M	carbon tetrachloride	0.469	0.493	-5.1	101	0.00	10.60
60	M	1,1-dichloropropene	0.469	0.474	-1.1	100	0.00	10.57
61	M	hexane	0.404	0.407	-0.7	93	0.00	8.80
62	M	benzene	1.429	1.425	0.3	99	0.00	10.83
63	M	heptane	0.252	0.282	-11.9	104	0.00	11.02
64	M	isopropyl acetate	0.718	0.765	-6.5	100	0.00	10.74
65	M	1,2-dichloroethane	0.471	0.482	-2.3	100	0.00	10.82
66		Ethyl Acrylate	0.487	0.517	-6.2	100	0.00	11.52
67	M	trichloroethene	0.346	0.354	-2.3	99	0.00	11.53
68	M	2-nitropropane	1.004	1.079	-7.5	100	0.00	12.33
69	M	2-chloroethyl vinyl ether	0.252	0.281	-11.5	101	0.00	12.33
70	M	methyl methacrylate	0.106	0.114	-7.5	99	0.00	11.80
71	M	tert-amyl ethyl ether	0.585	0.597	-2.1	99	0.00	11.72
72	M	1,2-dichloropropane	0.370	0.382	-3.2	100	0.00	11.80
73	M	methylcyclohexane	0.598	0.625	-4.5	96	0.00	11.80
74	M	dibromomethane	0.226	0.234	-3.5	99	0.00	11.94
75	M	bromodichloromethane	0.463	0.486	-5.0	98	0.00	12.07
76	M	cis-1,3-dichloropropene	0.623	0.624	-0.2	99	0.00	12.56
77	S	toluene-d8 (s)	1.268	1.251	1.3	97	0.00	12.89
78	M	4-methyl-2-pentanone	0.165	0.172	-4.2	100	0.00	12.67
79	M	toluene	0.918	0.919	-0.1	100	0.00	12.97
80	M	3-methyl-1-butanol	0.014	0.014	0.0	93	0.00	12.66
81	M	trans-1,3-dichloropropene	0.598	0.599	-0.2	99	0.00	13.15
82	M	ethyl methacrylate	0.513	0.544	-6.0	100	0.00	13.16
83	M	1,1,2-trichloroethane	0.282	0.291	-3.2	101	0.00	13.38
84	M	2-hexanone	0.146	0.163	-11.6	106	0.00	13.58
85	I	chlorobenzene-d5	1.000	1.000	0.0	102	0.00	14.52
86	M	tetrachloroethene	0.420	0.433	-3.1	102	0.00	13.60
87	M	1,3-dichloropropane	0.608	0.617	-1.5	102	0.00	13.58
88	M	butyl acetate	0.275	0.291	-5.8	100	0.00	13.66
89	m	3,3-dimethyl-1-butanol	0.050	0.047	6.0	92	0.00	13.75
90	M	dibromochloromethane	0.403	0.429	-6.5	102	0.00	13.86
91	M	1,2-dibromoethane	0.372	0.389	-4.6	102	0.00	14.03
92	M	chlorobenzene	1.055	1.065	-0.9	103	0.00	14.56
93	M	1,1,1,2-tetrachloroethane	0.395	0.402	-1.8	101	0.00	14.62
94	M	ethylbenzene	1.828	1.830	-0.1	102	0.00	14.63
95	M	m,p-xylene	0.714	0.725	-1.5	102	0.00	14.75

Initial Calibration Verification

Job Number: JB22267 **Sample:** VD8248-ICV8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202327.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.726	-2.1	103	0.00	15.21
97	M	styrene	1.173	1.236	-5.4	102	0.00	15.21
98	M	bromoform	0.323	0.347	-7.4	104	0.00	15.48
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	102	0.00	17.11
100	M	isopropylbenzene	3.075	3.004	2.3	102	0.00	15.60
101	S	4-bromofluorobenzene (s)	0.903	0.862	4.5	101	0.00	15.80
102	M	bromobenzene	0.852	0.832	2.3	103	0.00	16.03
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	500.000	445.841	10.8	75	0.00	15.76
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.855	1.8	102	0.00	15.89
105	M	trans-1,4-dichloro-2-bute	0.267	0.266	0.4	101	0.00	15.95
106	M	1,2,3-trichloropropane	0.262	0.261	0.4	104	0.00	15.99
107	M	n-propylbenzene	3.555	3.473	2.3	103	0.00	16.05
108	M	p-ethyltoluene	2.979	2.904	2.5	105	0.00	16.17
109	M	2-chlorotoluene	0.748	0.726	2.9	102	0.00	16.21
110	M	4-chlorotoluene	2.360	2.247	4.8	103	0.00	16.32
111	M	1,3,5-trimethylbenzene	2.697	2.567	4.8	101	0.00	16.22
112	M	tert-butylbenzene	2.369	2.307	2.6	101	0.00	16.62
113	M	pentachloroethane	0.530	0.508	4.2	101	0.00	16.69
114	M	1,2,4-trimethylbenzene	2.793	2.685	3.9	102	0.00	16.66
115	M	sec-butylbenzene	3.487	3.385	2.9	102	0.00	16.86
116	M	1,3-dichlorobenzene	1.628	1.591	2.3	102	0.00	17.05
117	M	p-isopropyltoluene	2.970	2.840	4.4	102	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.639	3.7	101	0.00	17.14
119		Benzyl Chloride	2.020	1.846	8.6	93	0.00	17.26
120	M	p-diethylbenzene	1.824	1.698	6.9	101	0.00	17.41
121	M	1,2-dichlorobenzene	1.636	1.571	4.0	101	0.00	17.57
122	M	n-butylbenzene	1.557	1.528	1.9	102	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen	2.866	2.746	4.2	101	0.00	18.28
124	M	1,2-dibromo-3-chloropropa	0.177	0.164	7.3	101	0.00	18.42
125	M	1,3,5-trichlorobenzene	1.321	1.242	6.0	100	0.00	18.65
126	M	1,2,4-trichlorobenzene	1.003	1.029	-2.6	99	0.00	19.39
127	M	hexachlorobutadiene	0.620	0.583	6.0	100	0.00	19.53
128	M	naphthalene	2.322	2.329	-0.3	100	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.824	0.8	99	0.00	19.99
130	M	hexachloroethane	0.581	0.541	6.9	101	0.00	17.88

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202323.D MD8248.M Wed Nov 14 10:02:12 2012

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VD8283-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203135.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203135.D                    Vial: 2
Acq On    :  8 Dec 2012  10:10 am                     Operator: EmilyT
Sample    : cc8248-20                                 Inst    : MSD
Misc      : ms39770,vd8283,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MD8248.M (RTE Integrator)
Title        : SW-846 Method 8260B
Last Update  : Wed Nov 28 10:39:36 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.010  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	91	-0.01	8.03
2	M	1,4-dioxane	0.095	0.098	-3.2	106	-0.01	11.90
3	M	tertiary butyl alcohol	1.170	1.262	-7.9	106	-0.01	8.14
4	I	pentafluorobenzene	1.000	1.000	0.0	92	0.00	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.567	-13.4	106	0.00	4.58
7	M	dichlorodifluoromethane	0.734	0.707	3.7	88	0.00	4.56
8	M	chloromethane	0.718	0.715	0.4	102	-0.01	4.91
9	M	vinyl chloride	0.805	0.820	-1.9	98	-0.02	5.19
10	M	bromomethane	0.432	0.429	0.7	93	-0.01	5.86
11	M	chloroethane	0.416	0.432	-3.8	99	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.931	-15.1	106	0.00	6.58
14		pentane	1.073	0.882	17.8	84	0.00	6.65
15	M	ethyl ether	0.367	0.343	6.5	101	-0.02	6.96
16	M	acrolein	0.140	0.122	12.9	97	0.00	7.19
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.106	-18.4	116	-0.01	7.16
19	M	1,1-dichloroethene	0.535	0.477	10.8	94	-0.01	7.39
		----------	True	Calc.	% Drift		----------	
20	M	acetone	20.000	19.685	1.6	104	-0.01	7.41
		----------	AvgRF	CCRF	% Dev		----------	
21	M	allyl chloride	1.312	1.290	1.7	103	0.00	7.90
22	M	acetonitrile	0.061	0.071	-16.4	116	0.00	7.83
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.856	5.7	94	-0.02	7.66
25	M	iso-butyl alcohol		----------NA----------				
26	M	carbon disulfide	1.767	1.751	0.9	101	-0.01	7.79
27	M	methylene chloride	0.622	0.554	10.9	96	-0.01	8.08
28	M	1-chloropropane	0.964	1.061	-10.1	116	-0.01	8.13
29	M	methyl acetate	0.516	0.579	-12.2	112	0.00	7.88
30	M	methyl tert butyl ether	1.860	1.825	1.9	104	-0.01	8.44
31	M	trans-1,2-dichloroethene	0.571	0.511	10.5	93	0.00	8.47
32	M	di-isopropyl ether	1.740	2.037	-17.1	111	-0.01	9.03
33	M	ethyl tert-butyl ether	1.749	1.930	-10.3	104	-0.01	9.49
34	M	2-butanone	0.067	0.071	-6.0	106	-0.01	9.70
35	M	1,1-dichloroethane	0.948	0.952	-0.4	101	-0.01	9.02
36	M	chloroprene	0.760	0.880	-15.8	111	0.00	9.14
37	M	acrylonitrile	0.244	0.246	-0.8	103	-0.01	8.38

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VD8283-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203135.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.102	-1.0	92	0.00	9.00
39	M	ethyl acetate	0.082	0.096	-17.1	107	-0.01	9.73
40	M	2,2-dichloropropane	0.820	0.895	-9.1	113	-0.01	9.77
41	M	cis-1,2-dichloroethene	0.639	0.551	13.8	93	0.00	9.75
42	M	propionitrile	0.098	0.099	-1.0	105	-0.01	9.78
43	M	bromochloromethane	0.289	0.272	5.9	95	0.00	10.04
44	M	tetrahydrofuran	0.083	0.085	-2.4	104	-0.02	10.10
45	M	chloroform	0.921	0.908	1.4	100	-0.01	10.10
46	S	dibromofluoromethane (s)	0.495	0.461	6.9	96	0.00	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.624	-9.7	108	0.00	10.72
48	M	freon 113	0.392	0.416	-6.1	97	0.00	7.39
49	M	methacrylonitrile	0.388	0.427	-10.1	112	-0.01	9.98
50	m	t-butyl formate	0.589	0.669	-13.6	105	-0.02	10.16
51	M	1,1,1-trichloroethane	0.825	0.854	-3.5	104	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.834	-3.4	99	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	89	-0.01	11.17
54	M	cyclohexane	0.541	0.572	-5.7	99	0.00	10.49
55		tert amyl alcohol	0.016	0.019	-18.7	110	0.00	10.66
56	M	2,2,4-trimethylpentane	1.325	1.575	-18.9	104	-0.01	10.86
57	M	epichlorohydrin	0.046	0.049	-6.5	97	-0.01	12.43
58	M	n-butyl alcohol	0.014	0.014	0.0	95	-0.02	11.26
59	M	carbon tetrachloride	0.469	0.501	-6.8	104	0.00	10.60
60	M	1,1-dichloropropene	0.469	0.473	-0.9	100	0.00	10.56
61	M	hexane	0.404	0.470	-16.3	105	-0.01	8.80
62	M	benzene	1.429	1.371	4.1	97	0.00	10.82
63	M	heptane	0.252	0.295	-17.1	105	0.00	11.02
64	M	isopropyl acetate	0.718	0.862	-20.1#	111	-0.01	10.73
65	M	1,2-dichloroethane	0.471	0.517	-9.8	109	-0.01	10.81
66		Ethyl Acrylate	0.487	0.513	-5.3	102	0.00	11.52
67	M	trichloroethene	0.346	0.340	1.7	97	0.00	11.53
68	M	2-nitropropane	1.004	1.138	-13.3	107	-0.01	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.268	-6.3	97	-0.01	12.32
70	M	methyl methacrylate	0.106	0.099	6.6	89	0.00	11.80
71	M	tert-amyl ethyl ether	0.585	0.499	14.7	84	-0.01	11.72
72	M	1,2-dichloropropane	0.370	0.368	0.5	97	-0.01	11.79
73	M	methylcyclohexane	0.598	0.634	-6.0	95	0.00	11.79
74	M	dibromomethane	0.226	0.219	3.1	96	0.00	11.94
75	M	bromodichloromethane	0.463	0.468	-1.1	100	0.00	12.07
76	M	cis-1,3-dichloropropene	0.623	0.592	5.0	94	0.00	12.55
77	S	toluene-d8 (s)	1.268	1.221	3.7	93	0.00	12.88
78	M	4-methyl-2-pentanone	0.165	0.170	-3.0	100	-0.01	12.66
79	M	toluene	0.918	0.845	8.0	91	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.013	7.1	88	-0.01	12.65
81	M	trans-1,3-dichloropropene	0.598	0.569	4.8	96	-0.01	13.13
82	M	ethyl methacrylate	0.513	0.505	1.6	95	-0.01	13.15
83	M	1,1,2-trichloroethane	0.282	0.260	7.8	89	0.00	13.37
84	M	2-hexanone	0.146	0.151	-3.4	100	0.00	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	82	0.00	14.52
86	M	tetrachloroethene	0.420	0.410	2.4	87	0.00	13.59
87	M	1,3-dichloropropane	0.608	0.606	0.3	91	0.00	13.57
88	M	butyl acetate	0.275	0.315	-14.5	96	0.00	13.66
89	m	3,3-dimethyl-1-butanol	0.050	0.053	-6.0	94	-0.01	13.74
90	M	dibromochloromethane	0.403	0.407	-1.0	91	0.00	13.86
91	M	1,2-dibromoethane	0.372	0.365	1.9	88	-0.01	14.03
92	M	chlorobenzene	1.055	1.006	4.6	87	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.379	4.1	89	0.00	14.61
94	M	ethylbenzene	1.828	1.767	3.3	90	0.00	14.63
95	M	m,p-xylene	0.714	0.684	4.2	87	0.00	14.74

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VD8283-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203135.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.673	5.3	87	0.00	15.21
97	M	styrene	1.173	1.107	5.6	86	0.00	15.21
98	M	bromoform	0.323	0.296	8.4	85	0.00	15.48
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	79	0.00	17.10
100	M	isopropylbenzene	3.075	3.054	0.7	88	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.896	0.8	90	0.00	15.80
102	M	bromobenzene	0.852	0.817	4.1	86	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	200.000	284.793	-42.4#	147	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.868	0.3	89	0.00	15.89
105	M	trans-1,4-dichloro-2-bute	0.267	0.296	-10.9	102	0.00	15.94
106	M	1,2,3-trichloropropane	0.262	0.259	1.1	88	0.00	15.98
107	M	n-propylbenzene	3.555	3.545	0.3	89	0.00	16.05
108	M	p-ethyltoluene	2.979	3.116	-4.6	94	0.00	16.16
109	M	2-chlorotoluene	0.748	0.703	6.0	84	0.00	16.20
110	M	4-chlorotoluene	2.360	2.258	4.3	90	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.618	2.9	87	0.00	16.21
112	M	tert-butylbenzene	2.369	2.328	1.7	87	0.00	16.61
113	M	pentachloroethane	0.530	0.527	0.6	89	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.704	3.2	89	0.00	16.65
115	M	sec-butylbenzene	3.487	3.425	1.8	87	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.504	7.6	84	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.847	4.1	86	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.541	9.5	83	0.00	17.13
119		Benzyl Chloride	2.020	2.076	-2.8	89	-0.01	17.25
120	M	p-diethylbenzene	1.824	1.882	-3.2	95	0.00	17.40
121	M	1,2-dichlorobenzene	1.636	1.496	8.6	83	-0.01	17.56
122	M	n-butylbenzene	1.557	1.527	1.9	89	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen	2.866	2.997	-4.6	90	0.00	18.28
124	M	1,2-dibromo-3-chloropropa	0.177	0.188	-6.2	94	-0.01	18.41
125	M	1,3,5-trichlorobenzene	1.321	1.265	4.2	84	0.00	18.65
126	M	1,2,4-trichlorobenzene	1.003	1.110	-10.7	88	0.00	19.38
127	M	hexachlorobutadiene	0.620	0.629	-1.5	85	0.00	19.53
128	M	naphthalene	2.322	2.618	-12.7	90	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.944	-13.6	88	-0.01	19.98
130	M	hexachloroethane	0.581	0.568	2.2	91	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202322.D MD8248.M Mon Dec 10 12:52:56 2012

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VD8283-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203159.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203159.D                    Vial: 26
Acq On    :  8 Dec 2012  10:49 pm                     Operator: EmilyT
Sample    : cc8248-50                                 Inst    : MSD
Misc      : ms39770,vd8283,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MD8248.M (RTE Integrator)
Title        : SW-846 Method 8260B
Last Update  : Wed Nov 28 10:39:36 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.010  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	76	-0.01	8.03
2	M	1,4-dioxane	0.095	0.082	13.7	63	-0.01	11.90
3	M	tertiary butyl alcohol	1.170	1.228	-5.0	79	-0.01	8.14
4	I	pentafluorobenzene	1.000	1.000	0.0	84	0.00	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.633	-26.6#	99	0.00	4.58
7	M	dichlorodifluoromethane	0.734	0.740	-0.8	79	0.00	4.57
8	M	chloromethane	0.718	0.747	-4.0	87	0.00	4.92
9	M	vinyl chloride	0.805	0.877	-8.9	88	0.00	5.21
10	M	bromomethane	0.432	0.427	1.2	78	0.00	5.87
11	M	chloroethane	0.416	0.440	-5.8	86	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.932	-15.2	91	0.00	6.58
14		pentane		----------NA----------				
15	M	ethyl ether	0.367	0.344	6.3	84	-0.01	6.97
16	M	acrolein	0.140	0.115	17.9	70	0.00	7.19
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.202	-28.7#	107	0.00	7.16
19	M	1,1-dichloroethene	0.535	0.512	4.3	85	0.00	7.39
		----------	True	Calc.	% Drift	----------		
20	M	acetone	50.000	54.254	-8.5	89	0.00	7.42
		----------	AvgRF	CCRF	% Dev	----------		
21	M	allyl chloride	1.312	1.286	2.0	82	0.00	7.91
22	M	acetonitrile	0.061	0.064	-4.9	88	-0.01	7.83
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.898	1.1	81	-0.01	7.66
25	M	iso-butyl alcohol	0.000	0.003#	0.0	0#	0.00	10.51
26	M	carbon disulfide	1.767	1.892	-7.1	90	0.00	7.80
27	M	methylene chloride	0.622	0.588	5.5	84	-0.01	8.07
28	M	1-chloropropane	0.964	1.160	-20.3#	108	0.00	8.14
29	M	methyl acetate	0.516	0.579	-12.2	92	0.00	7.88
30	M	methyl tert butyl ether	1.860	1.854	0.3	87	0.00	8.44
31	M	trans-1,2-dichloroethene	0.571	0.536	6.1	81	0.00	8.47
32	M	di-isopropyl ether	1.740	2.078	-19.4	93	0.00	9.04
33	M	ethyl tert-butyl ether	1.749	1.943	-11.1	86	0.00	9.50
34	M	2-butanone	0.067	0.075	-11.9	90	0.00	9.71
35	M	1,1-dichloroethane	0.948	1.036	-9.3	91	0.00	9.02
36	M	chloroprene	0.760	0.936	-23.2#	95	0.00	9.14
37	M	acrylonitrile	0.244	0.255	-4.5	87	0.00	8.38

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VD8283-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203159.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.103	-2.0	77	0.00	9.01
39	M	ethyl acetate	0.082	0.097	-18.3	90	-0.01	9.73
40	M	2,2-dichloropropane	0.820	0.730	11.0	78	0.00	9.78
41	M	cis-1,2-dichloroethene	0.639	0.590	7.7	83	0.00	9.74
42	M	propionitrile	0.098	0.100	-2.0	86	-0.01	9.78
43	M	bromochloromethane	0.289	0.285	1.4	81	0.00	10.05
44	M	tetrahydrofuran	0.083	0.084	-1.2	83	-0.01	10.10
45	M	chloroform	0.921	0.971	-5.4	88	0.00	10.10
46	S	dibromofluoromethane (s)	0.495	0.472	4.6	80	0.00	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.638	-12.1	90	0.00	10.72
48	M	freon 113	0.392	0.406	-3.6	80	0.00	7.38
49	M	methacrylonitrile	0.388	0.445	-14.7	97	0.00	9.98
50	m	t-butyl formate	0.589	0.668	-13.4	86	0.00	10.17
51	M	1,1,1-trichloroethane	0.825	0.930	-12.7	93	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.875	-5.7	83	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	83	0.00	11.18
54	M	cyclohexane	0.541	0.616	-13.9	91	0.00	10.49
55		tert amyl alcohol		----------NA----------				
56	M	2,2,4-trimethylpentane	1.325	1.477	-11.5	82	0.00	10.87
57	M	epichlorohydrin	0.046	0.046	0.0	78	0.00	12.44
58	M	n-butyl alcohol	0.014	0.013	7.1	74	-0.01	11.26
59	M	carbon tetrachloride	0.469	0.548	-16.8	94	0.00	10.60
60	M	1,1-dichloropropene	0.469	0.516	-10.0	91	0.00	10.56
61	M	hexane	0.404	0.414	-2.5	79	0.00	8.80
62	M	benzene	1.429	1.456	-1.9	85	0.00	10.83
63	M	heptane	0.252	0.243	3.6	74	0.00	11.02
64	M	isopropyl acetate	0.718	0.860	-19.8	94	0.00	10.73
65	M	1,2-dichloroethane	0.471	0.551	-17.0	95	0.00	10.81
66		Ethyl Acrylate		----------NA----------				
67	M	trichloroethene	0.346	0.364	-5.2	85	0.00	11.53
68	M	2-nitropropane	1.004	1.201	-19.6	93	0.00	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.278	-10.3	83	0.00	12.32
70	M	methyl methacrylate	0.106	0.107	-0.9	77	0.00	11.79
71	M	tert-amyl ethyl ether		----------NA----------				
72	M	1,2-dichloropropane	0.370	0.398	-7.6	87	0.00	11.79
73	M	methylcyclohexane	0.598	0.639	-6.9	82	0.00	11.79
74	M	dibromomethane	0.226	0.239	-5.8	84	0.00	11.93
75	M	bromodichloromethane	0.463	0.511	-10.4	86	0.00	12.07
76	M	cis-1,3-dichloropropene	0.623	0.619	0.6	82	0.00	12.55
77	S	toluene-d8 (s)	1.268	1.248	1.6	81	0.00	12.89
78	M	4-methyl-2-pentanone	0.165	0.177	-7.3	86	-0.01	12.66
79	M	toluene	0.918	0.909	1.0	82	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.013	7.1	74	0.00	12.65
81	M	trans-1,3-dichloropropene	0.598	0.595	0.5	82	0.00	13.14
82	M	ethyl methacrylate	0.513	0.551	-7.4	84	0.00	13.15
83	M	1,1,2-trichloroethane	0.282	0.289	-2.5	84	0.00	13.37
84	M	2-hexanone	0.146	0.166	-13.7	90	0.00	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	81	0.00	14.52
86	M	tetrachloroethene	0.420	0.435	-3.6	81	0.00	13.60
87	M	1,3-dichloropropane	0.608	0.641	-5.4	84	0.00	13.57
88	M	butyl acetate	0.275	0.312	-13.5	85	0.00	13.66
89	m	3,3-dimethyl-1-butanol	0.050	0.050	0.0	78	-0.01	13.74
90	M	dibromochloromethane	0.403	0.432	-7.2	82	0.00	13.85
91	M	1,2-dibromoethane	0.372	0.388	-4.3	81	0.00	14.03
92	M	chlorobenzene	1.055	1.062	-0.7	82	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.402	-1.8	81	0.00	14.61
94	M	ethylbenzene	1.828	1.907	-4.3	85	0.00	14.62
95	M	m,p-xylene	0.714	0.723	-1.3	81	0.00	14.74

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VD8283-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203159.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.719	-1.1	81	0.00	15.20
97	M	styrene	1.173	1.210	-3.2	80	0.00	15.21
98	M	bromoform	0.323	0.328	-1.5	78	0.00	15.48
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	78	0.00	17.10
100	M	isopropylbenzene	3.075	3.200	-4.1	83	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.884	2.1	79	0.00	15.80
102	M	bromobenzene	0.852	0.816	4.2	77	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	500.000	644.535	-28.9#	83	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.897	-3.0	81	0.00	15.89
105	M	trans-1,4-dichloro-2-bute	0.267	0.288	-7.9	83	0.00	15.94
106	M	1,2,3-trichloropropane	0.262	0.261	0.4	79	0.00	15.98
107	M	n-propylbenzene	3.555	3.728	-4.9	84	0.00	16.05
108	M	p-ethyltoluene		----------NA----------				
109	M	2-chlorotoluene	0.748	0.735	1.7	79	0.00	16.21
110	M	4-chlorotoluene	2.360	2.370	-0.4	83	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.764	-2.5	83	0.00	16.21
112	M	tert-butylbenzene	2.369	2.431	-2.6	81	0.00	16.61
113	M	pentachloroethane	0.530	0.534	-0.8	81	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.807	-0.5	81	0.00	16.65
115	M	sec-butylbenzene	3.487	3.602	-3.3	83	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.564	3.9	77	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.960	0.3	81	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.628	4.3	77	0.00	17.13
119		Benzyl Chloride	2.020	1.290	36.1#	50#	0.00	17.25
120	M	p-diethylbenzene		----------NA----------				
121	M	1,2-dichlorobenzene	1.636	1.570	4.0	77	0.00	17.57
122	M	n-butylbenzene	1.557	1.559	-0.1	79	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen		----------NA----------				
124	M	1,2-dibromo-3-chloropropa	0.177	0.186	-5.1	87	0.00	18.41
125	M	1,3,5-trichlorobenzene	1.321	1.286	2.6	79	0.00	18.64
126	M	1,2,4-trichlorobenzene	1.003	1.096	-9.3	80	0.00	19.38
127	M	hexachlorobutadiene	0.620	0.628	-1.3	82	0.00	19.52
128	M	naphthalene	2.322	2.516	-8.4	82	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.896	-7.8	82	0.00	19.98
130	M	hexachloroethane	0.581	0.588	-1.2	84	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202323.D MD8248.M Mon Dec 10 13:33:35 2012

6.9.4

6

Initial Calibration Summary

Job Number: JB22267 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSV

```
Method       : C:\MSDCHEM\1\METHODS\MVS5649.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Calibration Files
1   =V131005.D   10  =V131008.D   100 =V131011.D   50  =V131010.D
20  =V131009.D   200 =V131012.D   5   =V131007.D   0.5 =V131004.D
2   =V131006.D       =

 Compound
           1     10    100   50    20    200   5     0.5   2       Avg    %RSD
-------------------------------------------------------------------------------

1) I   Tert Butyl Alcohol-d9 ----------------ISTD---------------------
2)  tertiary butyl alcohol
                1.012 1.096 1.075 1.225 1.183 1.242       1.018   1.121    8.50
3)  1,4-dioxane
                0.083 0.093 0.087 0.109 0.100 0.094               0.094    9.88

4) I   pentafluorobenzene    ----------------ISTD---------------------
5)  Propylene
                                                                  0.000   -1.00
6)  Freon 115
                                                                  0.000   -1.00
7)  Freon 23
                                                                  0.000   -1.00
8)  Freon 143A
                                                                  0.000   -1.00
9)  Freon 152A
                                                                  0.000   -1.00
10)  Freon 114
                                                                  0.000   -1.00
11)  Freon 142B
                                                                  0.000   -1.00
12)  Chlorotrifluoroethene
                                                                  0.000   -1.00
13)  1,3-Butadiene
                                                                  0.000   -1.00
14)  chlorodifluoromethane
           0.492 0.398 0.429 0.425 0.494 0.393 0.480       0.481   0.449    9.43
15)  dichlorodifluoromethane
           0.556 0.523 0.504 0.489 0.593 0.481 0.538 0.605 0.554   0.538    8.07
16)  chloromethane
           0.600 0.503 0.525 0.482 0.563 0.509 0.508       0.540   0.529    7.17
17)  vinyl chloride
           0.622 0.554 0.562 0.525 0.601 0.564 0.563       0.563   0.569    5.22
18)  bromomethane
                0.323 0.318 0.286 0.350 0.298 0.307       0.320   0.315    6.50
19)  chloroethane
           0.294 0.274 0.274 0.248 0.304 0.267 0.285 0.252 0.253   0.273    7.15
20)  trichlorofluoromethane
           0.648 0.568 0.545 0.511 0.644 0.530 0.566       0.600   0.576    8.76
21)  Vinyl Bromide
                                                                  0.000   -1.00
22)  ethyl ether
                0.151 0.159 0.155 0.188 0.146 0.177       0.214   0.170   14.38
23)  Acetaldehyde
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                0.023 0.020 0.021 0.029 0.017 0.026                0.023   18.98
        ----- Quadratic regression -----                  Coefficient =  0.9985
            Response Ratio = 0.00863 + 0.02258 *A + -0.00015 *A^2

24)  Pentane
                0.572 0.486 0.463 0.605 0.430 0.605                0.527   14.52
25)  Freon 123A
                                                                   0.000   -1.00
26)  Freon 141B
                                                                   0.000   -1.00
27)  Freon 123
                                                                   0.000   -1.00
28)  acrolein
          0.049 0.040       0.038 0.048       0.111       0.050   0.056   48.78
           ----- Linear regression -----  Coefficient =  0.9944
            Response Ratio = -0.01284 + 0.04951 *A

29)  freon 113
          0.274 0.241 0.252 0.254 0.310 0.232 0.298       0.267   0.266   10.16
30)  1,1-dichloroethene
                0.331 0.305 0.309 0.387 0.279 0.365       0.414   0.341   14.31
31)  acetone
                0.017 0.016 0.017 0.021 0.015                     0.017   13.36
32)  iso-butyl alcohol
                0.009 0.010 0.010 0.012 0.010 0.012       0.011   0.010   10.46
33)  allyl chloride
                0.179 0.183 0.169 0.226 0.159 0.224               0.190   14.93
34)  acetonitrile
          0.076 0.076 0.071 0.070 0.090 0.064 0.082       0.096   0.078   13.48
35)  iodomethane
          0.562 0.598 0.614 0.595 0.741 0.566 0.676 0.675 0.703   0.637   10.03
36)  carbon disulfide
          1.126 1.193 1.170 1.156 1.429 1.077 1.368 1.283 1.442   1.250   10.88
37)  methylene chloride
                0.344 0.345 0.343 0.433 0.320 0.410               0.366   12.19
38)  methyl acetate
                0.137 0.150 0.154 0.176 0.147 0.154               0.153    8.26
39)  methyl tert butyl ether
          0.810 0.786 0.841 0.835 1.013 0.776 0.919       1.060   0.880   12.15
40)  trans-1,2-dichloroethene
          0.379 0.350 0.337 0.327 0.428 0.313 0.395 0.339 0.413   0.364   11.12
41)  di-isopropyl ether
          1.098 0.898 1.075 1.036 1.233 1.008 1.080 1.107 1.158   1.077    8.71
42)  2-butanone
                0.021 0.023 0.023 0.027 0.022                     0.023    9.45
43)  1,1-dichloroethane
          0.568 0.629 0.624 0.609 0.758 0.575 0.685 0.698 0.685   0.648    9.68
44)  chloroprene
          0.562 0.435 0.509 0.489 0.589 0.479 0.532 0.436 0.541   0.508   10.55
45)  acrylonitrile
          0.067 0.063 0.068 0.068 0.083 0.063 0.064 0.065 0.083   0.070   11.43
46)  vinyl acetate
                0.022 0.032 0.030 0.035 0.032 0.018               0.028   23.44
           ----- Linear regression -----  Coefficient =  0.9992
            Response Ratio = -0.00069 + 0.03183 *A

47)  ethyl tert-butyl ether
          1.029 0.818 1.006 0.959 1.155 0.948 0.998 0.901 1.039   0.983    9.61
48)  ethyl acetate
                0.023 0.029 0.031 0.032 0.027 0.030               0.029   12.01
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
49)  2,2-dichloropropane
           0.536 0.524 0.508 0.508 0.624 0.469 0.614       0.639   0.553   11.51
50)  cis-1,2-dichloroethene
           0.346 0.357 0.364 0.354 0.447 0.335 0.401 0.442 0.460   0.389   12.53
51)  propionitrile
                 0.024 0.026 0.026 0.031 0.024 0.023       0.028   0.026   11.03
52)  methyl acrylate
                 0.020 0.030 0.029 0.036 0.028 0.016               0.027   27.34
             ----- Linear regression -----  Coefficient =  0.9976
               Response Ratio = 0.00040 + 0.02855 *A

53)  methacrylonitrile
                 0.070 0.081 0.080 0.097 0.075 0.072       0.067   0.077   13.09
54)  bromochloromethane
                 0.144 0.153 0.152 0.186 0.144 0.160       0.177   0.160   10.17
55)  tetrahydrofuran
                 0.066 0.068 0.068 0.078 0.064 0.066               0.068    7.13
56)  chloroform
           0.569 0.573 0.589 0.569 0.720 0.538 0.645       0.731   0.617   11.94
57)  tert-Butyl Formate
           0.161 0.179 0.225 0.214 0.244 0.213 0.199       0.234   0.209   13.50
58)  dibromofluoromethane (s)
           0.347 0.280 0.290 0.284 0.328 0.274 0.314       0.325   0.305    8.75
59)  1,2-dichloroethane-d4 (s)
           0.370 0.267 0.280 0.275 0.320 0.259 0.308       0.305   0.298   12.16
60)  1,1,1-trichloroethane
           0.535 0.533 0.533 0.515 0.646 0.484 0.587 0.561 0.643   0.560   10.00
61)  Cyclohexane
                 0.501 0.486 0.481 0.593 0.436 0.562               0.510   11.25
62)  Tert Amyl Alcohol
                 0.008 0.007 0.008 0.009 0.007 0.005               0.007   15.95
             ----- Linear regression -----  Coefficient =  0.9985
               Response Ratio = 0.00180 + 0.00701 *A


63) I   1,4-difluorobenzene   ----------------ISTD---------------------
64)  methylcyclohexane
           0.433 0.339 0.378 0.366 0.462 0.358 0.416 0.439 0.400   0.399   10.43
65)  epichlorohydrin
                 0.010 0.012 0.012 0.014 0.012 0.011       0.013   0.012   10.50
66)  n-butyl alcohol
                 0.003 0.004 0.004 0.004 0.004 0.003       0.003   0.004   17.10
             ----- Linear regression -----  Coefficient =  0.9997
               Response Ratio = -0.00173 + 0.00395 *A

67)  carbon tetrachloride
           0.329 0.326 0.323 0.317 0.397 0.299 0.365 0.349 0.383   0.343    9.55
68)  1,1-dichloropropene
           0.328 0.321 0.314 0.309 0.394 0.294 0.349 0.304 0.404   0.335   11.76
69)  hexane
           0.247 0.255 0.281 0.271 0.337 0.259 0.326 0.252 0.350   0.287   14.00
70)  2,2,4-Trimethylpentane
           1.069 0.777 0.893 0.854 1.075 0.849 0.961       0.918   0.924   11.44
71)  benzene
           0.913 0.933 0.921 0.897 1.165 0.876 1.019       1.161   0.986   11.90
72)  tert-amyl methyl ether
           0.649 0.524 0.610 0.589 0.709 0.594 0.626       0.758   0.632   11.61
73)  heptane
           0.191 0.149 0.162 0.159 0.210 0.151 0.170       0.172   0.170   12.16
74)  isopropyl acetate
```

```
                0.049 0.059 0.060 0.078 0.057 0.055       0.059   0.060   15.07
          ----- Linear regression -----  Coefficient =  0.9982
            Response Ratio = 0.00209 + 0.05664 *A

75)  1,2-dichloroethane
           0.217 0.251 0.251 0.244 0.311 0.233 0.269       0.320   0.262   13.91
76)  trichloroethene
           0.231 0.233 0.235 0.222 0.291 0.220 0.262 0.224 0.294   0.246   11.87
77)  Ethyl Acrylate
           0.129 0.160 0.170 0.165 0.181 0.161 0.160       0.169   0.162    9.40
78)  tert-Amyl Ethyl Ether
           0.354 0.330 0.349 0.330 0.377 0.337 0.374       0.327   0.347    5.72
79)  2-chloroethyl vinyl ether
           0.047 0.034 0.045 0.041 0.049 0.047 0.038       0.042   0.043   12.15
80)  methyl methacrylate
                0.031 0.039 0.040 0.051 0.038                       0.040   18.27
          ----- Linear regression -----  Coefficient =  0.9980
            Response Ratio = 0.00267 + 0.03732 *A

81)  1,2-dichloropropane
           0.238 0.224 0.233 0.225 0.283 0.218 0.251 0.268 0.269   0.245    9.47
82)  dibromomethane
           0.083 0.107 0.111 0.109 0.136 0.104 0.109       0.116   0.109   13.31
83)  bromodichloromethane
           0.300 0.288 0.301 0.292 0.369 0.280 0.313 0.319 0.333   0.311    8.79
84)  2-nitropropane
                0.042 0.042 0.041 0.052 0.042 0.046               0.044    9.87
85)  cis-1,3-dichloropropene
           0.364 0.335 0.357 0.352 0.445 0.342 0.374 0.398 0.414   0.376    9.73
86)  toluene-d8 (s)
                0.781 0.780 0.774 0.940 0.761 0.899       0.924   0.837    9.55
87)  4-methyl-2-pentanone
                0.055 0.056 0.057 0.070 0.054 0.061               0.059   10.06
88)  toluene
           0.693 0.580 0.583 0.571 0.750 0.551 0.667       0.764   0.645   13.14
89)  isoamyl alcohol
                0.005 0.006 0.006 0.007 0.006 0.006       0.007   0.006   10.50
90)  trans-1,3-dichloropropene
           0.308 0.284 0.300 0.298 0.380 0.284 0.307 0.289 0.362   0.312   11.15
91)  ethyl methacrylate
           0.216 0.191 0.216 0.218 0.263 0.205 0.212 0.270 0.271   0.229   13.21
92)  1,1,2-trichloroethane
           0.112 0.125 0.135 0.136 0.172 0.131 0.149 0.152 0.157   0.141   12.87
93)  2-hexanone
                0.054 0.056 0.060 0.077 0.055 0.045               0.058   18.16
          ----- Linear regression -----  Coefficient =  0.9979
            Response Ratio = 0.00336 + 0.05422 *A


94) I   chlorobenzene-d5      ----------------ISTD--------------------
95)  tetrachloroethene
           0.319 0.312 0.304 0.290 0.369 0.283 0.341 0.291 0.367   0.320   10.20
96)  1,3-dichloropropane
           0.305 0.316 0.322 0.318 0.393 0.305 0.334 0.345 0.400   0.337   10.63
97)  butyl acetate
                0.047 0.044 0.050 0.062 0.042 0.068               0.052   20.10
          ----- Linear regression -----  Coefficient =  0.9978
            Response Ratio = 0.00483 + 0.04140 *A

98)  3,3-Dimethyl-1-Butanol
```

```
                  0.010 0.013 0.012 0.014 0.013 0.012       0.017   0.013   15.59
             ----- Linear regression -----  Coefficient =  0.9995
               Response Ratio = -0.00194 + 0.01294 *A

 99)  dibromochloromethane
            0.238 0.236 0.256 0.242 0.310 0.242 0.261       0.283   0.259   10.11
100)  1,2-dibromoethane
            0.206 0.180 0.189 0.185 0.227 0.181 0.189 0.211 0.234   0.200   10.10
101)  chlorobenzene
            0.774 0.777 0.766 0.746 0.948 0.736 0.847 0.961 0.967   0.836   11.66
102)  1,1,1,2-tetrachloroethane
            0.254 0.279 0.283 0.270 0.333 0.267 0.291 0.307 0.335   0.291    9.89
103)  ethylbenzene
            1.442 1.385 1.339 1.308 1.667 1.292 1.510       1.670   1.452   10.44
104)  m,p-xylene
            0.612 0.520 0.522 0.506 0.643 0.497 0.579       0.650   0.566   11.12
105)  o-xylene
            0.552 0.509 0.527 0.504 0.638 0.505 0.559       0.619   0.552    9.40
106)  styrene
            0.843 0.821 0.876 0.826 1.043 0.843 0.899 1.156 1.036   0.927   13.02
107)  Butyl Acrylate
                                                                    0.000   -1.00
108)  bromoform
                  0.154 0.163 0.159 0.195 0.156 0.170               0.166    9.10
109)  cyclohexanone
                  0.025 0.017 0.016 0.024 0.013 0.028               0.021   28.14
           ----- Quadratic regression -----                 Coefficient =  0.9967
               Response Ratio = 0.01224 + 0.01838 *A + -0.00013 *A^2

110)  4-bromofluorobenzene (s)
                  0.392 0.365 0.352 0.418 0.355 0.456               0.390   10.49

111) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
112)  isopropylbenzene
            2.392 2.367 2.359 2.370 3.010 2.233 2.670       2.879   2.535   11.16
113)  1,1,2,2-tetrachloroethane
            0.470 0.408 0.422 0.433 0.548 0.403 0.470       0.502   0.457   11.02
114)  trans-1,4-dichloro-2-butene
                  0.095 0.106 0.110 0.140 0.100 0.112               0.110   14.29
115)  1,2,3-trichloropropane
                  0.107 0.099 0.103 0.129 0.095 0.102               0.106   11.33
116)  bromobenzene
            0.623 0.550 0.562 0.559 0.714 0.539 0.623       0.662   0.604   10.28
117)  n-propylbenzene
            2.853 2.846 2.820 2.816 3.605 2.664 3.285       3.437   3.041   11.47
118)  4-Ethyltoluene
            3.125 2.507 2.441 2.368 2.815 2.315 3.057 3.028 3.009   2.741   12.04
119)  2-chlorotoluene
            0.514 0.551 0.562 0.560 0.719 0.548 0.637       0.680   0.596   12.27
120)  4-chlorotoluene
            1.865 1.730 1.724 1.702 2.237 1.662 1.884       2.243   1.881   12.48
121)  1,3,5-trimethylbenzene
            2.435 2.085 2.059 2.059 2.620 1.986 2.356       2.460   2.257   10.54
122)  tert-butylbenzene
            1.796 1.806 1.836 1.803 2.246 1.745 2.013       2.098   1.918    9.39
123)  pentachloroethane
            0.358 0.367 0.397 0.387 0.472 0.383 0.425       0.466   0.407   10.63
124)  1,2,4-trimethylbenzene
            2.440 2.090 2.137 2.118 2.685 2.055 2.363       2.592   2.310   10.62
125)  sec-butylbenzene
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
            2.706 2.790 2.819 2.796 3.560 2.686 3.175       3.375   2.988   11.22
126)  p-isopropyltoluene
            2.216 2.351 2.372 2.344 2.961 2.275 2.627       2.800   2.493   10.85
127)  1,3-dichlorobenzene
            1.197 1.141 1.178 1.155 1.500 1.131 1.301       1.451   1.257   11.57
128)  1,4-dichlorobenzene
            1.333 1.122 1.169 1.148 1.479 1.141 1.332       1.398   1.265   10.83
129)  1,2,3-trimethylbenzene
            2.917 2.180 2.184 2.165 2.498 2.169 2.458       2.263   2.354   11.19
130)  1,2-dichlorobenzene
            1.270 1.070 1.107 1.083 1.389 1.064 1.199       1.332   1.189   10.77
131)  Benzyl Chloride
            0.960 0.693 0.803 0.795 0.970 0.790 0.851       0.987   0.856   12.37
132)  Vinyl Toluene
                                                                    0.000   -1.00
133)  1,4-Diethylbenzene
            1.716 1.468 1.439 1.372 1.609 1.385 1.699       1.615   1.538    9.01
134)  n-butylbenzene
            1.344 1.285 1.323 1.307 1.647 1.290 1.450       1.568   1.402    9.89
135)  hexachloroethane
            0.371 0.407 0.437 0.415 0.501 0.424 0.444 0.431 0.459   0.432    8.31
136)  1,2,4,5-tetramethylbenzene
            2.772 2.328 2.421 2.287 2.642 2.269 2.803 2.878 2.515   2.546    9.26
137)  1,2-dibromo-3-chloropropane
                  0.079 0.083 0.083 0.098 0.077 0.087               0.085    8.85
138)  1,3,5-trichlorobenzene
            1.080 0.971 1.017 0.996 1.279 0.941 1.102       1.226   1.076   11.30
139)  1,2,4-trichlorobenzene
            0.925 0.760 0.827 0.815 1.024 0.770 0.830       1.031   0.873   12.34
140)  hexachlorobutadiene
            0.508 0.560 0.584 0.557 0.679 0.540 0.623       0.650   0.587    9.92
141)  naphthalene
                  1.202 1.399 1.362 1.633 1.320 1.294       1.584   1.399   11.17
142)  1,2,3-trichlorobenzene
            0.802 0.647 0.714 0.713 0.866 0.665 0.703       0.820   0.741   10.60
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          MVS5649.M         Mon Dec 03 13:17:48 2012   VOA-05
```

6.9.5

6

Initial Calibration Verification

Job Number: JB22267 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-...vv5649-5650\V131018.D Vial: 2
Acq On    : 30 Nov 2012   4:25 pm                    Operator: THIENN
Sample    : icv5649-50                               Inst    : MSV
Misc      : MS39224,VV5649,5.0,,,,1                  Multiplr: 1.00
MS Integration Params: rteint.p

Method       : C:\MSDCHEM\1\METHODS\MVS5649.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Fri Nov 30 12:23:46 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	116	0.00	7.64
2	tertiary butyl alcohol	1.121	1.022	8.8	110	0.00	7.75
3	1,4-dioxane	0.094	0.089	5.3	119	0.00	11.56
4 I	pentafluorobenzene	1.000	1.000	0.0	112	0.00	9.85
5	Propylene		----------NA----------				
6	Freon 115		----------NA----------				
7	Freon 23		----------NA----------				
8	Freon 143A		----------NA----------				
9	Freon 152A		----------NA----------				
10	Freon 114		----------NA----------				
11	Freon 142B		----------NA----------				
12	Chlorotrifluoroethene		----------NA----------				
13	1,3-Butadiene		----------NA----------				
14	chlorodifluoromethane	0.449	0.430	4.2	113	0.00	4.33
15	dichlorodifluoromethane	0.538	0.431	19.9	99	0.01	4.32
16	chloromethane	0.529	0.543	-2.6	126	0.00	4.65
17	vinyl chloride	0.569	0.524	7.9	112	0.00	4.90
18	bromomethane	0.315	0.312	1.0	122	0.00	5.55
19	chloroethane	0.273	0.274	-0.4	123	0.00	5.72
20	trichlorofluoromethane	0.576	0.533	7.5	117	0.00	6.13
21	Vinyl Bromide		----------NA----------				
22	ethyl ether	0.170	0.155	8.8	112	0.00	6.54
	----------	True	Calc.	% Drift	----------		
23	Acetaldehyde	500.000	442.746	11.5	103	0.00	5.12
	----------	AvgRF	CCRF	% Dev	----------		
24	Pentane	0.527	0.577	-9.5	139	0.00	6.22
25	Freon 123A		----------NA----------				
26	Freon 141B		----------NA----------				
27	Freon 123		----------NA----------				
	----------	True	Calc.	% Drift	----------		
28	acrolein	500.000	454.519	9.1	127	0.00	6.83
	----------	AvgRF	CCRF	% Dev	----------		
29	freon 113	0.266	0.239	10.2	105	0.00	6.92
30	1,1-dichloroethene	0.341	0.324	5.0	117	0.00	6.98
31	acetone	0.017	0.016	5.9	107	0.00	7.04
32	iso-butyl alcohol	0.010	0.010	0.0	113	0.00	10.44
33	allyl chloride	0.190	0.211	-11.1	140	0.00	7.51

Initial Calibration Verification

Job Number: JB22267 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.081	-3.8	128	0.00	7.50
35		iodomethane	0.637	0.603	5.3	113	0.00	7.28
36		carbon disulfide	1.250	1.203	3.8	116	0.00	7.40
37		methylene chloride	0.366	0.360	1.6	117	0.00	7.70
38		methyl acetate	0.153	0.139	9.2	101	0.00	7.47
39		methyl tert butyl ether	0.880	0.798	9.3	107	0.00	8.00
40		trans-1,2-dichloroethene	0.364	0.348	4.4	119	0.00	8.06
41		di-isopropyl ether	1.077	1.060	1.6	114	0.00	8.57
42		2-butanone	0.023	0.024	-4.3	117	0.00	9.34
43		1,1-dichloroethane	0.648	0.637	1.7	117	0.00	8.63
44		chloroprene	0.508	0.479	5.7	109	0.00	8.72
45		acrylonitrile	0.070	0.071	-1.4	115	0.00	8.03
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	50.000	57.112	-14.2	131	0.00	8.59
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	0.944	4.0	110	0.00	9.03
48		ethyl acetate	0.029	0.030	-3.4	107	0.00	9.33
49		2,2-dichloropropane	0.553	0.535	3.3	118	0.00	9.36
50		cis-1,2-dichloroethene	0.389	0.361	7.2	114	0.00	9.37
51		propionitrile	0.026	0.026	0.0	114	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	50.000	47.774	4.5	106	0.00	9.42
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.077	0.0	108	0.00	9.62
54		bromochloromethane	0.160	0.149	6.9	109	0.00	9.69
55		tetrahydrofuran	0.068	0.071	-4.4	117	0.00	9.73
56		chloroform	0.617	0.597	3.2	117	0.00	9.73
57		tert-Butyl Formate	0.209	0.216	-3.3	113	0.00	9.75
58	S	dibromofluoromethane (s)	0.305	0.295	3.3	116	0.00	9.94
59	S	1,2-dichloroethane-d4 (s)	0.298	0.281	5.7	114	0.00	10.37
60		1,1,1-trichloroethane	0.560	0.544	2.9	118	0.00	9.98
61		Cyclohexane	0.510	0.506	0.8	118	0.00	10.05
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol	250.000	274.096	-9.6	113	0.00	10.28
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	115	0.00	10.80
64		methylcyclohexane	0.399	0.350	12.3	110	0.00	11.37
65		epichlorohydrin	0.012	0.013	-8.3	124	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	2500.000	2594.425	-3.8	121	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.324	5.5	117	0.00	10.19
68		1,1-dichloropropene	0.335	0.314	6.3	117	0.00	10.16
69		hexane	0.287	0.254	11.5	108	0.00	8.33
70		2,2,4-Trimethylpentane	0.924	0.775	16.1	105	0.00	10.40
71		benzene	0.986	0.932	5.5	120	0.00	10.43
72		tert-amyl methyl ether	0.632	0.565	10.6	111	0.00	10.44
73		heptane	0.170	0.146	14.1	106	0.00	10.57
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	50.000	49.421	1.2	112	0.00	10.32

Initial Calibration Verification

Job Number: JB22267 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.229	12.6	108	0.00	10.46
76		trichloroethene	0.246	0.239	2.8	124	0.00	11.16
77		Ethyl Acrylate	0.162	0.159	1.9	111	0.00	11.15
78		tert-Amyl Ethyl Ether	0.347	0.315	9.2	110	0.00	11.29
79		2-chloroethyl vinyl ether	0.043	0.042	2.3	119	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	50.000	50.243	-0.5	115	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.229	6.5	117	0.00	11.44
82		dibromomethane	0.109	0.107	1.8	113	0.00	11.62
83		bromodichloromethane	0.311	0.281	9.6	111	0.00	11.74
84		2-nitropropane	0.044	0.041	6.8	114	0.00	11.98
85		cis-1,3-dichloropropene	0.376	0.330	12.2	108	0.00	12.23
86	S	toluene-d8 (s)	0.837	0.840	-0.4	125	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.058	1.7	116	0.00	12.32
88		toluene	0.645	0.624	3.3	126	0.00	12.61
89		isoamyl alcohol	0.006	0.006	0.0	116	0.00	12.34
90		trans-1,3-dichloropropene	0.312	0.290	7.1	112	0.00	12.84
91		ethyl methacrylate	0.229	0.201	12.2	106	0.00	12.80
92		1,1,2-trichloroethane	0.141	0.132	6.4	112	0.00	13.08
			True	Calc.	% Drift			
93		2-hexanone	50.000	48.234	3.5	107	0.00	13.25
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	117	0.00	14.21
95		tetrachloroethene	0.320	0.295	7.8	119	0.00	13.25
96		1,3-dichloropropane	0.337	0.300	11.0	110	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	50.000	44.293	11.4	97	0.00	13.32
98		3,3-Dimethyl-1-Butanol	500.000	483.285	3.3	119	0.01	13.44
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.226	12.7	109	0.00	13.57
100		1,2-dibromoethane	0.200	0.174	13.0	111	0.00	13.74
101		chlorobenzene	0.836	0.738	11.7	116	0.00	14.25
102		1,1,1,2-tetrachloroethane	0.291	0.255	12.4	111	0.00	14.31
103		ethylbenzene	1.452	1.339	7.8	120	0.00	14.29
104		m,p-xylene	0.566	0.525	7.2	121	0.00	14.41
105		o-xylene	0.552	0.519	6.0	121	0.00	14.89
106		styrene	0.927	0.827	10.8	117	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.147	11.4	108	0.00	15.22
			True	Calc.	% Drift			
109		cyclohexanone	500.000	343.633	31.3#	95	0.00	15.49
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.369	5.4	123	0.00	15.51
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	114	0.00	16.82
112		isopropylbenzene	2.535	2.412	4.9	116	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.407	10.9	107	0.00	15.63
114		trans-1,4-dichloro-2-bute	0.110	0.112	-1.8	116	0.00	15.67

Initial Calibration Verification

Job Number: JB22267 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.099	6.6	110	0.00	15.71
116	bromobenzene	0.604	0.550	8.9	112	0.00	15.73
117	n-propylbenzene	3.041	2.982	1.9	121	0.00	15.72
118	4-Ethyltoluene	2.741	2.477	9.6	119	0.00	15.83
119	2-chlorotoluene	0.596	0.559	6.2	114	0.00	15.90
120	4-chlorotoluene	1.881	1.718	8.7	115	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	2.071	8.2	115	0.00	15.88
122	tert-butylbenzene	1.918	1.785	6.9	113	0.00	16.28
123	pentachloroethane	0.407	0.373	8.4	110	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.231	3.4	120	0.00	16.33
125	sec-butylbenzene	2.988	2.739	8.3	112	0.00	16.52
126	p-isopropyltoluene	2.493	2.382	4.5	116	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.153	8.3	114	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.146	9.4	114	0.00	16.84
129	1,2,3-trimethylbenzene	2.354	2.160	8.2	114	0.03	16.83
130	1,2-dichlorobenzene	1.189	1.058	11.0	112	0.00	17.29
131	Benzyl Chloride	0.856	0.864	-0.9	124	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene	1.538	1.357	11.8	113	0.00	17.07
134	n-butylbenzene	1.402	1.283	8.5	112	0.00	17.11
135	hexachloroethane	0.432	0.397	8.1	109	0.00	17.57
136	1,2,4,5-tetramethylbenzen	2.546	2.166	14.9	108	0.00	17.95
137	1,2-dibromo-3-chloropropa	0.085	0.076	10.6	104	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	0.953	11.4	109	0.00	18.34
139	1,2,4-trichlorobenzene	0.873	0.795	8.9	111	0.00	19.08
140	hexachlorobutadiene	0.587	0.472	19.6	97	0.00	19.19
141	naphthalene	1.399	1.294	7.5	109	0.00	19.42
142	1,2,3-trichlorobenzene	0.741	0.645	13.0	103	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131010.D MVS5649.M Mon Dec 03 13:15:08 2012 VOA-05

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-CORE\vv5655\v131166.d    Vial: 3
Acq On    :  7 Dec 2012   9:29 am                    Operator: THIENN
Sample    : cc5649-20                                Inst    : MSV
Misc      : MS39786,VV5655,5,,,,1                    Multiplr: 1.00
MS Integration Params: rteint.p

Method       : C:\MSDCHEM\1\METHODS\MVS5649.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Fri Nov 30 12:23:46 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	157	-0.01	7.63
2	tertiary butyl alcohol	1.121	0.911	18.7	116	0.00	7.75
3	1,4-dioxane	0.094	0.068	27.7#	99	0.01	11.57
4 I	pentafluorobenzene	1.000	1.000	0.0	109	0.00	9.85
5	Propylene		----------NA----------				
6	Freon 115		----------NA----------				
7	Freon 23		----------NA----------				
8	Freon 143A		----------NA----------				
9	Freon 152A		----------NA----------				
10	Freon 114		----------NA----------				
11	Freon 142B		----------NA----------				
12	Chlorotrifluoroethene		----------NA----------				
13	1,3-Butadiene		----------NA----------				
14	chlorodifluoromethane	0.449	0.456	-1.6	101	-0.01	4.32
15	dichlorodifluoromethane	0.538	0.543	-0.9	100	0.00	4.32
16	chloromethane	0.529	0.458	13.4	89	0.00	4.65
17	vinyl chloride	0.569	0.506	11.1	92	0.00	4.89
18	bromomethane	0.315	0.303	3.8	94	0.00	5.55
19	chloroethane	0.273	0.263	3.7	94	0.00	5.72
20	trichlorofluoromethane	0.576	0.571	0.9	97	0.00	6.13
21	Vinyl Bromide		----------NA----------				
22	ethyl ether	0.170	0.176	-3.5	102	0.00	6.54
	----------	True	Calc.	% Drift	----------		
23	Acetaldehyde	200.000	78.786	60.6#	42	0.02	5.14
	----------	AvgRF	CCRF	% Dev	----------		
24	Pentane		----------NA----------				
25	Freon 123A		----------NA----------				
26	Freon 141B		----------NA----------				
27	Freon 123		----------NA----------				
	----------	True	Calc.	% Drift	----------		
28	acrolein	200.000	166.528	16.7	87	0.00	6.83
	----------	AvgRF	CCRF	% Dev	----------		
29	freon 113	0.266	0.274	-3.0	96	-0.01	6.91
30	1,1-dichloroethene	0.341	0.331	2.9	93	0.00	6.98
31	acetone	0.017	0.018	-5.9	94	0.00	7.03
32	iso-butyl alcohol	0.010	0.011	-10.0	96	0.00	10.43
33	allyl chloride	0.190	0.245	-28.9#	118	0.00	7.50

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.083	-6.4	100	0.00	7.50
35		iodomethane	0.637	0.648	-1.7	95	0.00	7.28
36		carbon disulfide	1.250	1.276	-2.1	97	0.00	7.40
37		methylene chloride	0.366	0.382	-4.4	96	0.00	7.69
38		methyl acetate	0.153	0.180	-17.6	111	0.00	7.47
39		methyl tert butyl ether	0.880	0.946	-7.5	102	0.00	7.99
40		trans-1,2-dichloroethene	0.364	0.363	0.3	92	0.00	8.05
41		di-isopropyl ether	1.077	1.067	0.9	94	0.00	8.56
42		2-butanone	0.023	0.028	-21.7#	116	0.00	9.35
43		1,1-dichloroethane	0.648	0.678	-4.6	98	0.00	8.62
44		chloroprene	0.508	0.523	-3.0	97	0.00	8.72
45		acrylonitrile	0.070	0.080	-14.3	104	0.00	8.03
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	20.000	17.849	10.8	83	0.00	8.60
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	0.994	-1.1	94	0.00	9.03
48		ethyl acetate	0.029	0.033	-13.8	112	0.00	9.33
49		2,2-dichloropropane	0.553	0.600	-8.5	105	0.00	9.36
50		cis-1,2-dichloroethene	0.389	0.380	2.3	93	0.00	9.36
51		propionitrile	0.026	0.031	-19.2	108	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	20.000	21.228	-6.1	96	0.00	9.42
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.087	-13.0	98	0.00	9.62
54		bromochloromethane	0.160	0.160	0.0	94	0.00	9.68
55		tetrahydrofuran	0.068	0.081	-19.1	114	0.00	9.73
56		chloroform	0.617	0.636	-3.1	96	0.00	9.73
57		tert-Butyl Formate	0.209	0.226	-8.1	101	-0.01	9.74
58	S	dibromofluoromethane (s)	0.305	0.350	-14.8	116	0.00	9.93
59	S	1,2-dichloroethane-d4 (s)	0.298	0.320	-7.4	109	0.00	10.36
60		1,1,1-trichloroethane	0.560	0.579	-3.4	98	0.00	9.98
61		Cyclohexane	0.510	0.497	2.5	91	0.00	10.05
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	118	0.00	10.80
64		methylcyclohexane	0.399	0.347	13.0	89	0.00	11.37
65		epichlorohydrin	0.012	0.013	-8.3	112	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	1000.000	1104.928	-10.5	116	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.339	1.2	101	0.00	10.18
68		1,1-dichloropropene	0.335	0.330	1.5	99	0.00	10.16
69		hexane	0.287	0.254	11.5	89	-0.01	8.32
70		2,2,4-Trimethylpentane	0.924	0.772	16.5	85	0.00	10.40
71		benzene	0.986	0.949	3.8	96	0.00	10.43
72		tert-amyl methyl ether	0.632	0.601	4.9	100	0.00	10.43
73		heptane	0.170	0.146	14.1	82	0.00	10.57
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	20.000	21.552	-7.8	100	0.00	10.32

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.262	0.0	100	0.00	10.46
76		trichloroethene	0.246	0.230	6.5	94	0.00	11.15
77		Ethyl Acrylate		----------NA----------				
78		tert-Amyl Ethyl Ether		----------NA----------				
79		2-chloroethyl vinyl ether	0.043	0.073	-69.8#	176	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	20.000	17.920	10.4	92	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.228	6.9	95	0.00	11.44
82		dibromomethane	0.109	0.115	-5.5	100	0.00	11.61
83		bromodichloromethane	0.311	0.297	4.5	95	0.00	11.75
84		2-nitropropane	0.044	0.052	-18.2	119	0.00	11.98
85		cis-1,3-dichloropropene	0.376	0.366	2.7	97	0.00	12.22
86	S	toluene-d8 (s)	0.837	0.981	-17.2	124	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.062	-5.1	106	0.00	12.32
88		toluene	0.645	0.611	5.3	96	0.00	12.61
89		isoamyl alcohol	0.006	0.007	-16.7	118	0.00	12.34
90		trans-1,3-dichloropropene	0.312	0.316	-1.3	98	0.00	12.83
91		ethyl methacrylate	0.229	0.232	-1.3	105	0.00	12.80
92		1,1,2-trichloroethane	0.141	0.139	1.4	96	0.00	13.07
			True	Calc.	% Drift			
93		2-hexanone	20.000	20.263	-1.3	98	0.00	13.24
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	126	0.00	14.21
95		tetrachloroethene	0.320	0.276	13.7	95	0.00	13.25
96		1,3-dichloropropane	0.337	0.307	8.9	99	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	20.000	16.409	18.0	94	0.00	13.31
98		3,3-Dimethyl-1-Butanol	200.000	207.178	-3.6	120	0.00	13.44
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.238	8.1	97	0.00	13.57
100		1,2-dibromoethane	0.200	0.177	11.5	99	0.00	13.74
101		chlorobenzene	0.836	0.714	14.6	95	0.00	14.24
102		1,1,1,2-tetrachloroethane	0.291	0.261	10.3	99	0.00	14.30
103		ethylbenzene	1.452	1.278	12.0	97	0.00	14.29
104		m,p-xylene	0.566	0.498	12.0	98	0.00	14.40
105		o-xylene	0.552	0.485	12.1	96	0.00	14.88
106		styrene	0.927	0.795	14.2	96	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.156	6.0	101	0.00	15.22
			True	Calc.	% Drift			
109		cyclohexanone	200.000	155.753	22.1#	91	0.00	15.48
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.413	-5.9	125	0.00	15.51
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	128	0.00	16.82
112		isopropylbenzene	2.535	2.203	13.1	94	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.429	6.1	100	0.00	15.62
114		trans-1,4-dichloro-2-bute	0.110	0.121	-10.0	111	0.00	15.68

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.109	-2.8	109	0.00	15.72
116	bromobenzene	0.604	0.536	11.3	96	0.00	15.73
117	n-propylbenzene	3.041	2.687	11.6	96	0.00	15.72
118	4-Ethyltoluene		----------NA----------				
119	2-chlorotoluene	0.596	0.539	9.6	96	0.00	15.90
120	4-chlorotoluene	1.881	1.626	13.6	93	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	1.968	12.8	96	0.00	15.88
122	tert-butylbenzene	1.918	1.628	15.1	93	0.00	16.28
123	pentachloroethane	0.407	0.373	8.4	101	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.038	11.8	97	0.00	16.33
125	sec-butylbenzene	2.988	2.515	15.8	91	0.00	16.52
126	p-isopropyltoluene	2.493	2.108	15.4	91	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.113	11.5	95	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.111	12.2	96	0.00	16.84
129	1,2,3-trimethylbenzene		----------NA----------				
130	1,2-dichlorobenzene	1.189	1.043	12.3	96	0.00	17.29
131	Benzyl Chloride	0.856	0.813	5.0	107	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene		----------NA----------				
134	n-butylbenzene	1.402	1.135	19.0	88	0.00	17.11
135	hexachloroethane	0.432	0.378	12.5	97	0.00	17.56
136	1,2,4,5-tetramethylbenzen		----------NA----------				
137	1,2-dibromo-3-chloropropa	0.085	0.085	0.0	111	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	0.925	14.0	93	0.00	18.33
139	1,2,4-trichlorobenzene	0.873	0.743	14.9	93	0.00	19.07
140	hexachlorobutadiene	0.587	0.474	19.3	90	0.00	19.20
141	naphthalene	1.399	1.262	9.8	99	0.00	19.42
142	1,2,3-trichlorobenzene	0.741	0.652	12.0	97	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131009.D MVS5649.M Fri Dec 07 16:01:00 2012 VOA-05

6.9.7

6

Initial Calibration Summary

Job Number: JB22267 **Sample:** VX5685-ICC5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X130949.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSX

```
Method       : C:\MSDCHEM\1\METHODS\MX5685.M (RTE Integrator)
Title        : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Wed Nov 14 09:29:11 2012
Response via : Initial Calibration

Calibration Files
1   =X130944.D   2   =X130945.D   100 =X130951.D   50  =X130949.D
20  =X130948.D   200 =X130952.D   5   =X130946.D   10  =X130947.D
0.5 =X130943.D   75  =X130950.D       =                =

Compound
        1     2     100   50    20    200   5     10    0.5   75     Avg   %RSD
-------------------------------------------------------------------------------

1) I   tert butyl alcohol-d9 ----------------ISTD---------------------
2)  tertiary butyl alcohol
     1.761 1.585 1.344 1.349 1.407 1.280 1.405 1.398       1.389  1.435   10.27
3)  ethyl alcohol
     0.035 0.052 0.055 0.053 0.056 0.051 0.058 0.059       0.058  0.053   13.94
4)  1,4-dioxane
           0.118 0.112 0.104 0.109 0.107 0.101 0.109       0.118  0.110    5.45

5) I   pentafluorobenzene    ----------------ISTD---------------------
6)  freon 23
                                                                     0.000   -1.00
7)  freon 115
                                                                     0.000   -1.00
8)  freon 143a
                                                                     0.000   -1.00
9)  freon 152a
                                                                     0.000   -1.00
10)  chlorotrifluoroethene
                                                                     0.000   -1.00
11)  chlorodifluoromethane
      0.417 0.371 0.391 0.346 0.372 0.326 0.319 0.335       0.364  0.360    8.87
12)  dichlorodifluoromethane
      0.583 0.612 0.566 0.499 0.471 0.458 0.461 0.466       0.525  0.516   11.37
13)  freon 114
                                                                     0.000   -1.00
14)  freon 142b
                                                                     0.000   -1.00
15)  chloromethane
      0.817 0.764 0.630 0.618 0.666 0.521 0.666 0.631       0.660  0.664   12.86
16)  vinyl chloride
      0.638 0.648 0.616 0.578 0.601 0.505 0.580 0.601       0.629  0.599    7.13
17)  acetaldehyde
                 0.043 0.046 0.048 0.037 0.041 0.045       0.042  0.043    8.58
18)  bromomethane
                 0.344 0.368 0.401       0.413 0.399       0.386  0.385    6.55
19)  chloroethane
      0.329 0.355 0.307 0.302 0.317 0.241 0.323 0.315       0.325  0.313    9.88
20)  vinyl bromide
                                                                     0.000   -1.00
21)  trichlorofluoromethane
      0.589 0.634 0.602 0.541 0.555 0.490 0.530 0.557       0.601  0.566    7.77
22)  pentane
                                                                     0.000   -1.00
23)  ethyl ether
```

```
      0.308 0.302 0.249 0.253 0.264 0.236 0.285 0.251       0.255  0.267    9.48
24)  freon 141b
                                                                   0.000   -1.00
25)  freon 123a
                                                                   0.000   -1.00
26)  freon 123
                                                                   0.000   -1.00
27)  acrolein
      0.104 0.076 0.072 0.080 0.082 0.068 0.081 0.074 0.073 0.069  0.078   13.24
28)  1,1-dichloroethene
                  0.327 0.282 0.340 0.272 0.351 0.352       0.342  0.323   10.24
29)  acetone
                  0.033 0.035 0.035 0.032       0.030       0.031  0.033    6.40
30)  allyl chloride
            0.287 0.249 0.225 0.256 0.210 0.265 0.253       0.262  0.251    9.52
31)  acetonitrile
                  0.032 0.033 0.036 0.029       0.030       0.031  0.032    8.17
32)  iodomethane
      0.601 0.739 0.715 0.647 0.731 0.636 0.724 0.711       0.750  0.695    7.60
33)  iso-butyl alcohol
                  0.018 0.020 0.021 0.018 0.022 0.018       0.016  0.019   10.25
34)  carbon disulfide
      1.081 1.385 1.226 1.077 1.292 1.030 1.272 1.282 0.992 1.299  1.194   11.38
35)  methylene chloride
                  0.469 0.446 0.504 0.429 0.546 0.503       0.494  0.484    8.17
36)  methyl acetate
                  0.316 0.339 0.342 0.299 0.343 0.317       0.294  0.321    6.37
37)  methyl tert butyl ether
      1.361 1.392 1.232 1.254 1.359 1.152 1.375 1.296 1.366 1.223  1.301    6.28
38)  trans-1,2-dichloroethene
      0.517 0.508 0.396 0.360 0.427 0.337 0.445 0.423       0.424  0.426   14.06
39)  di-isopropyl ether
      2.075 2.010 1.560 1.557 1.671 1.392 1.724 1.652       1.604  1.694   12.93
40)  2-butanone
                  0.045 0.049 0.049 0.044 0.045 0.044       0.041  0.045    6.13
41)  1,1-dichloroethane
      0.704 0.895 0.776 0.720 0.806 0.668 0.804 0.825 0.642 0.828  0.767   10.48
42)  chloroprene
      0.700 0.714 0.636 0.569 0.611 0.525 0.595 0.607 0.538 0.651  0.615   10.22
43)  acrylonitrile
      0.130 0.148 0.134 0.143 0.148 0.126 0.147 0.137 0.111 0.128  0.135    8.85
44)  vinyl acetate
                  0.060 0.063 0.060 0.057 0.048 0.053       0.059  0.057    9.35
45)  ethyl tert-butyl ether
      1.733 1.705 1.538 1.534 1.628 1.416 1.584 1.531 1.376 1.542  1.559    7.20
46)  ethyl acetate
                  0.045 0.049 0.050 0.042 0.048 0.041       0.042  0.046    8.08
47)  2,2-dichloropropane
      0.647 0.683 0.550 0.489 0.577 0.455 0.587 0.575 0.713 0.575  0.585   13.68
48)  cis-1,2-dichloroethene
      0.556 0.618 0.490 0.458 0.516 0.429 0.533 0.518       0.517  0.515   10.61
49)  propionitrile
      0.052 0.058 0.052 0.057 0.058 0.051 0.059 0.053       0.049  0.054    6.55
50)  tert-Butyl Formate
      0.419 0.421 0.377 0.382 0.402 0.365 0.386 0.372       0.366  0.388    5.53
51)  bromochloromethane
      0.196 0.244 0.238 0.228 0.246 0.222 0.250 0.240       0.245  0.234    7.24
52)  tetrahydrofuran
                  0.135 0.145 0.162 0.130       0.160       0.128  0.143   10.33
53)  chloroform
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VX5685-ICC5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X130949.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
      0.824 0.885 0.782 0.730 0.798 0.691 0.842 0.807 0.918 0.827  0.810    8.28
54)  dibromofluoromethane (s)
             0.500 0.421 0.417 0.405 0.389 0.421 0.431       0.439  0.428    7.67
55)  1,2-dichloroethane-d4 (s)
      0.615 0.559 0.447 0.467 0.445 0.424 0.479 0.466       0.457  0.484   12.80
56)  freon 113
      0.202 0.284 0.280 0.230 0.256 0.227 0.234 0.253       0.272  0.249   11.05
57)  methacrylonitrile
                   0.248 0.256 0.273 0.243 0.334 0.225       0.238  0.260   13.90
58)  1,1,1-trichloroethane
      0.524 0.597 0.585 0.496 0.569 0.492 0.556 0.561 0.499 0.608  0.549    7.86
59)  cyclohexane
      0.386 0.562 0.520 0.392 0.491 0.430 0.471 0.487       0.533  0.475   12.94
60)  tert amyl alcohol
                                                                    0.000   -1.00
61)  iso-octane
      1.673 1.839 1.482 1.243 1.470 1.185 1.444 1.533       1.473  1.482   13.35

62) I   1,4-difluorobenzene   ----------------ISTD--------------------
63)  di-isobutylene
                                                                    0.000   -1.00
64)  epichlorohydrin
                   0.007 0.007 0.007 0.008 0.008 0.007       0.007  0.007    7.13
65)  n-butyl alcohol
      0.011 0.010 0.008 0.009 0.009 0.008 0.009 0.007       0.008  0.009   13.60
66)  carbon tetrachloride
      0.254 0.361 0.331 0.281 0.336 0.272 0.325 0.330       0.346  0.315   11.74
67)  1,1-dichloropropene
      0.303 0.371 0.354 0.306 0.353 0.294 0.351 0.358       0.372  0.340    8.99
68)  hexane
                   0.374 0.311 0.351 0.299 0.361 0.372       0.378  0.349    9.07
69)  benzene
      1.143 1.352 1.111 1.038 1.182 0.949 1.251 1.223 1.171 1.192  1.161    9.64
70)  tert-amyl methyl ether
      1.210 1.084 0.867 0.879 0.954 0.802 1.002 0.948       0.861  0.956   13.32
71)  heptane
                   0.220 0.181 0.206 0.177 0.208 0.218       0.218  0.204    8.79
72)  isopropyl acetate
                   0.482 0.514 0.497 0.452 0.465 0.460       0.453  0.475    5.01
73)  1,2-dichloroethane
      0.348 0.402 0.329 0.330 0.358 0.307 0.389 0.364 0.318 0.340  0.349    8.69
74)  trichloroethene
      0.248 0.308 0.292 0.259 0.289 0.248 0.285 0.287 0.238 0.310  0.276    9.38
75)  ethyl acrylate
                   0.381 0.321 0.373 0.305 0.389 0.393       0.382  0.363    9.77
76)  tert amyl ethyl ether
                                                                    0.000   -1.00
77)  2-nitropropane
                                                                    0.000   -1.00
78)  2-chloroethyl vinyl ether
      0.030 0.028 0.036 0.034 0.033 0.040 0.029 0.030       0.034  0.033   11.45
79)  methyl methacrylate
      0.213 0.246 0.184 0.197 0.206 0.177 0.240 0.200       0.179  0.205   12.16
80)  1,2-dichloropropane
      0.304 0.360 0.319 0.304 0.341 0.289 0.353 0.332 0.250 0.339  0.319   10.46
81)  dibromomethane
      0.176 0.203 0.182 0.181 0.191 0.171 0.202 0.188 0.131 0.185  0.181   11.15
82)  methylcyclohexane
      0.464 0.544 0.468 0.389 0.446 0.375 0.420 0.453       0.467  0.447   11.15
83)  bromodichloromethane
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VX5685-ICC5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X130949.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
       0.405 0.490 0.435 0.412 0.446 0.393 0.474 0.449 0.479 0.450  0.443    7.36
 84)  cis-1,3-dichloropropene
       0.524 0.631 0.538 0.525 0.566 0.488 0.598 0.566 0.532 0.563  0.553    7.40
 85)  toluene-d8 (s)
                   1.015 1.029 1.021 0.860 1.218 1.199       1.087  1.062   11.51
 86)  4-methyl-2-pentanone
             0.114 0.114 0.122 0.128 0.111 0.124 0.115       0.107  0.117    6.08
 87)  toluene
       0.699 0.885 0.726 0.665 0.742 0.624 0.785 0.775 0.669 0.768  0.734   10.24
 88)  3-methyl-1-butanol
                   0.013 0.014 0.014 0.012 0.017 0.011       0.012  0.013   13.63
 89)  trans-1,3-dichloropropene
       0.494 0.558 0.474 0.470 0.503 0.437 0.546 0.495 0.529 0.488  0.499    7.37
 90)  ethyl methacrylate
       0.473 0.478 0.374 0.397 0.422 0.353 0.462 0.404       0.369  0.415   11.32
 91)  1,1,2-trichloroethane
       0.255 0.291 0.233 0.234 0.249 0.218 0.269 0.243 0.263 0.237  0.249    8.47
 92)  2-hexanone
             0.122 0.100 0.111 0.114 0.098 0.128 0.111       0.094  0.110   10.88

 93) I   chlorobenzene-d5      ----------------ISTD---------------------
 94)  3,3-Dimethyl-1-butanol
             0.038 0.029 0.031 0.031 0.028 0.032 0.028       0.027  0.030   11.73
 95)  tetrachloroethene
       0.215 0.293 0.270 0.234 0.264 0.222 0.259 0.270       0.279  0.256   10.43
 96)  1,3-dichloropropane
       0.510 0.588 0.451 0.460 0.501 0.413 0.556 0.500 0.524 0.461  0.496   10.52
 97)  butyl acetate
                   0.206 0.224 0.230 0.198 0.236 0.212       0.195  0.215    7.44
 98)  dibromochloromethane
       0.367 0.433 0.366 0.363 0.390 0.339 0.407 0.387 0.351 0.376  0.378    7.30
 99)  1,2-dibromoethane
       0.320 0.343 0.309 0.309 0.324 0.290 0.338 0.308 0.296 0.306  0.314    5.45
100)  n-butyl ether
                                                                    0.000   -1.00
101)  chlorobenzene
       0.884 1.033 0.898 0.840 0.918 0.781 0.959 0.931 0.891 0.944  0.908    7.49
102)  1,1,1,2-tetrachloroethane
       0.318 0.393 0.329 0.313 0.347 0.293 0.372 0.356 0.299 0.342  0.336    9.54
103)  ethylbenzene
       1.458 1.773 1.411 1.321 1.511 1.165 1.584 1.546 1.550 1.495  1.481   10.96
104)  m,p-xylene
       0.565 0.699 0.558 0.516 0.593 0.469 0.620 0.605 0.597 0.586  0.581   10.57
105)  o-xylene
       0.587 0.741 0.611 0.573 0.635 0.523 0.666 0.654 0.619 0.641  0.625    9.41
106)  styrene
       1.077 1.319 1.007 0.969 1.095 0.872 1.196 1.143 1.260 1.058  1.100   12.30
107)  bromoform
       0.260 0.298 0.260 0.263 0.274 0.243 0.286 0.269 0.230 0.255  0.264    7.45

108) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
109)  isopropylbenzene
       2.798 3.539 2.877 2.648 2.984 2.356 3.125 3.071 2.845 3.081  2.932   10.74
110)  Cyclohexanone
                   0.036 0.036 0.032 0.029       0.037       0.033  0.034    9.89
111)  4-bromofluorobenzene (s)
                   0.924 0.948 0.928 0.827 1.156 1.136       0.987  0.986   12.10
112)  bromobenzene
       0.834 0.982 0.808 0.782 0.861 0.729 0.926 0.887 0.876 0.859  0.854    8.41
113)  1,1,2,2-tetrachloroethane
```

```
       0.879 0.992 0.792 0.836 0.863 0.750 0.957 0.844 0.933 0.785  0.863    9.11
114)  trans-1,4-dichloro-2-butene
              0.243 0.192 0.202 0.209 0.181 0.215 0.199       0.186  0.203    9.67
115)  1,2,3-trichloropropane
       0.198 0.219 0.173 0.186 0.195 0.163 0.219 0.187       0.172  0.190   10.43
116)  n-propylbenzene
       3.401 4.131 3.189 2.928 3.387 2.611 3.638 3.582 3.547 3.388  3.380   12.21
117)  4-ethyltoluene
                                                                    0.000   -1.00
118)  2-chlorotoluene
       0.748 0.871 0.742 0.691 0.754 0.648 0.808 0.781 0.720 0.788  0.755    8.27
119)  4-chlorotoluene
       2.538 2.909 2.224 2.079 2.320 1.910 2.566 2.446 2.614 2.366  2.397   11.92
120)  1,3,5-trimethylbenzene
       2.442 3.046 2.344 2.198 2.501 1.981 2.710 2.633 2.695 2.497  2.505   11.79
121)  tert-butylbenzene
       2.018 2.497 2.113 1.930 2.131 1.763 2.233 2.189 2.036 2.260  2.117    9.45
122)  pentachloroethane
       0.527 0.661 0.531 0.509 0.545 0.495 0.594 0.573 0.455 0.557  0.545   10.45
123)  1,2,4-trimethylbenzene
       2.727 3.142 2.452 2.304 2.624 2.072 2.890 2.734 2.951 2.598  2.649   11.93
124)  1,2,3-trimethylbenzene
                                                                    0.000   -1.00
125)  sec-butylbenzene
       2.936 3.605 3.077 2.801 3.180 2.530 3.273 3.233 3.070 3.275  3.098    9.51
126)  1,3-dichlorobenzene
       1.546 1.814 1.492 1.406 1.558 1.314 1.670 1.604 1.764 1.555  1.572    9.66
127)  p-isopropyltoluene
       2.544 3.065 2.567 2.356 2.681 2.142 2.737 2.747 2.596 2.727  2.616    9.45
128)  1,4-dichlorobenzene
       1.552 1.736 1.498 1.406 1.507 1.342 1.628 1.546 1.758 1.545  1.552    8.38
129)  1,2-dichlorobenzene
       1.452 1.736 1.458 1.412 1.518 1.332 1.588 1.536 1.582 1.516  1.513    7.33
130)  benzyl chloride
       1.910 1.721 1.397 1.486 1.510 1.303 1.483 1.394       1.374  1.509   12.70
131)  1,4-diethylbenzene
                                                                    0.000   -1.00
132)  n-butylbenzene
       1.267 1.527 1.406 1.267 1.422 1.190 1.408 1.449 1.369 1.489  1.379    7.76
133)  1,2,4,5-tetramethylbenzene
                                                                    0.000   -1.00
134)  1,2-dibromo-3-chloropropane
                    0.126 0.139 0.152 0.127       0.156       0.122  0.137   10.44
135)  1,3,5-trichlorobenzene
       1.149 1.310 1.138 1.082 1.177 1.018 1.221 1.213 1.319 1.173  1.180    7.86
136)  hexachlorobutadiene
       0.481 0.620 0.508 0.480 0.555 0.463 0.539 0.554       0.564  0.529    9.57
137)  naphthalene
       2.169 2.131 1.693 1.916 1.990 1.645 2.029 1.873       1.772  1.913    9.68
138)  1,2,4-trichlorobenzene
       0.958 1.049 0.935 0.945 1.010 0.869 0.996 1.022 1.151 0.978  0.991    7.65
139)  1,2,3-trichlorobenzene
       0.834 0.892 0.723 0.818 0.872 0.679 0.861 0.841 0.887 0.786  0.819    8.63
140)  hexachloroethane
       0.366 0.493 0.492 0.442 0.478 0.440 0.461 0.477 0.374 0.520  0.454   11.15
 ------------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          MX5685.M          Wed Nov 14 09:41:23 2012   MSX
```

Initial Calibration Verification

Job Number: JB22267 **Sample:** VX5685-ICV5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X130955.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\X130955.D Vial: 14
Acq On : 13 Nov 2012 11:44 pm Operator: margares
Sample : icv5685-50 Inst : MSX
Misc : MS38379,VX5685,5.0,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MX5685.M (RTE Integrator)
Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Wed Nov 14 09:29:11 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert butyl alcohol-d9	1.000	1.000	0.0	79	0.00	7.25
2		tertiary butyl alcohol	1.435	1.386	3.4	81	0.00	7.38
3		ethyl alcohol	0.053	0.049	7.5	74	0.02	5.92
4		1,4-dioxane	0.110	0.117	-6.4	89	0.00	12.04
5	I	pentafluorobenzene	1.000	1.000	0.0	100	0.00	9.92
6	m	freon 23		----------NA----------				
7	m	freon 115		----------NA----------				
8	m	freon 143a		----------NA----------				
9	m	freon 152a		----------NA----------				
10	m	chlorotrifluoroethene		----------NA----------				
11		chlorodifluoromethane	0.360	0.361	-0.3	104	0.00	3.77
12		dichlorodifluoromethane	0.516	0.545	-5.6	109	0.01	3.74
13	m	freon 114		----------NA----------				
14	m	freon 142b		----------NA----------				
15		chloromethane	0.664	0.663	0.2	107	0.00	4.06
16		vinyl chloride	0.599	0.623	-4.0	108	0.00	4.31
17	m	acetaldehyde	0.043	0.042	2.3	91	0.00	4.53
18		bromomethane	0.385	0.395	-2.6	108	0.00	4.95
19		chloroethane	0.313	0.324	-3.5	107	0.01	5.14
20		vinyl bromide		----------NA----------				
21		trichlorofluoromethane	0.566	0.593	-4.8	110	0.02	5.63
22		pentane		----------NA----------				
23		ethyl ether	0.267	0.245	8.2	97	0.00	6.04
24	m	freon 141b		----------NA----------				
25	m	freon 123a		----------NA----------				
26	m	freon 123		----------NA----------				
27		acrolein	0.078	0.069	11.5	86	0.00	6.30
28		1,1-dichloroethene	0.323	0.308	4.6	109	0.00	6.48
29		acetone	0.033	0.029	12.1	84	0.00	6.56
30		allyl chloride	0.251	0.243	3.2	108	0.00	7.05
31		acetonitrile	0.032	0.030	6.3	91	0.00	7.03
32		iodomethane	0.695	0.694	0.1	107	0.00	6.78
33		iso-butyl alcohol	0.019	0.017	10.5	83	0.00	10.32
34		carbon disulfide	1.194	1.146	4.0	106	0.00	6.91
35		methylene chloride	0.484	0.470	2.9	105	0.00	7.27
36		methyl acetate	0.321	0.262	18.4	77	0.00	7.05
37		methyl tert butyl ether	1.301	1.147	11.8	92	0.00	7.65
38		trans-1,2-dichloroethene	0.426	0.382	10.3	106	0.00	7.69
39		di-isopropyl ether	1.694	1.591	6.1	102	0.00	8.34
40		2-butanone	0.045	0.041	8.9	84	0.00	9.23
41		1,1-dichloroethane	0.767	0.772	-0.7	107	0.00	8.35

Initial Calibration Verification

Job Number: JB22267 **Sample:** VX5685-ICV5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X130955.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42		chloroprene	0.615	0.545	11.4	96	0.00	8.48
43		acrylonitrile	0.135	0.126	6.7	88	0.00	7.64
44		vinyl acetate	0.057	0.067	-17.5	106	0.00	8.35
45		ethyl tert-butyl ether	1.559	1.470	5.7	96	0.00	8.91
46		ethyl acetate	0.046	0.042	8.7	85	0.00	9.26
47		2,2-dichloropropane	0.585	0.518	11.5	106	0.00	9.25
48		cis-1,2-dichloroethene	0.515	0.494	4.1	108	0.00	9.25
49		propionitrile	0.054	0.049	9.3	86	0.00	9.34
50		tert-Butyl Formate	0.388	0.363	6.4	95	0.00	9.76
51		bromochloromethane	0.234	0.233	0.4	102	0.00	9.64
52		tetrahydrofuran	0.143	0.127	11.2	87	0.00	9.70
53		chloroform	0.810	0.783	3.3	107	0.00	9.72
54	S	dibromofluoromethane (s)	0.428	0.422	1.4	101	0.00	9.97
55	S	1,2-dichloroethane-d4 (s)	0.484	0.442	8.7	95	0.00	10.49
56		freon 113	0.249	0.241	3.2	105	0.00	6.46
57		methacrylonitrile	0.260	0.231	11.2	90	0.00	9.57
58		1,1,1-trichloroethane	0.549	0.543	1.1	110	0.00	10.02
59		cyclohexane	0.475	0.436	8.2	111	0.00	10.11
60	m	tert amyl alcohol		----------NA----------				
61	m	iso-octane	1.482	1.201	19.0	97	0.00	10.60
62	I	1,4-difluorobenzene	1.000	1.000	0.0	99	0.00	11.08
63		di-isobutylene		----------NA----------				
64		epichlorohydrin	0.007	0.006	14.3	86	0.00	12.62
65		n-butyl alcohol	0.009	0.008	11.1	88	0.00	11.29
66		carbon tetrachloride	0.315	0.310	1.6	109	0.00	10.27
67		1,1-dichloropropene	0.340	0.332	2.4	108	0.00	10.25
68		hexane	0.349	0.305	12.6	97	0.00	8.04
69		benzene	1.161	1.125	3.1	107	0.00	10.58
70		tert-amyl methyl ether	0.956	0.831	13.1	94	0.00	10.65
71		heptane	0.204	0.099	51.5#	54	0.00	10.83
72		isopropyl acetate	0.475	0.485	-2.1	93	0.00	10.53
73		1,2-dichloroethane	0.349	0.335	4.0	100	0.00	10.61
74		trichloroethene	0.276	0.284	-2.9	109	0.00	11.52
75	m	ethyl acrylate	0.363	0.456	-25.6#	141	0.00	11.80
76	m	tert amyl ethyl ether		----------NA----------				
77		2-nitropropane		----------NA----------				
78		2-chloroethyl vinyl ether	0.033	0.031	6.1	90	0.00	12.62
79		methyl methacrylate	0.205	0.175	14.6	88	0.00	11.92
80		1,2-dichloropropane	0.319	0.317	0.6	103	0.00	11.87
81		dibromomethane	0.181	0.178	1.7	98	0.00	12.08
82		methylcyclohexane	0.447	0.390	12.8	99	0.00	11.80
83		bromodichloromethane	0.443	0.435	1.8	105	0.00	12.27
84		cis-1,3-dichloropropene	0.553	0.541	2.2	102	0.00	12.89
85	S	toluene-d8 (s)	1.062	1.048	1.3	101	0.00	13.28
86		4-methyl-2-pentanone	0.117	0.105	10.3	85	0.00	13.05
87		toluene	0.734	0.724	1.4	108	0.00	13.38
88		3-methyl-1-butanol	0.013	0.011	15.4	78	0.00	13.11
89		trans-1,3-dichloropropene	0.499	0.470	5.8	99	0.00	13.67
90		ethyl methacrylate	0.415	0.367	11.6	92	0.00	13.69
91		1,1,2-trichloroethane	0.249	0.230	7.6	97	0.00	13.95
92		2-hexanone	0.110	0.094	14.5	84	0.00	14.21
93	I	chlorobenzene-d5	1.000	1.000	0.0	99	0.00	15.31
94		3,3-Dimethyl-1-butanol	0.030	0.023	23.3#	75	0.00	14.46
95		tetrachloroethene	0.256	0.252	1.6	107	0.00	14.17
96		1,3-dichloropropane	0.496	0.455	8.3	98	0.00	14.19
97		butyl acetate	0.215	0.196	8.8	87	0.00	14.33
98		dibromochloromethane	0.378	0.368	2.6	101	0.00	14.54
99		1,2-dibromoethane	0.314	0.298	5.1	96	0.00	14.72

Initial Calibration Verification

Job Number: JB22267 **Sample:** VX5685-ICV5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X130955.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

100	m	n-butyl ether		----------NA----------				
101		chlorobenzene	0.908	0.891	1.9	106	0.00	15.35
102		1,1,1,2-tetrachloroethane	0.336	0.328	2.4	104	0.00	15.44
103		ethylbenzene	1.481	1.395	5.8	105	0.00	15.44
104		m,p-xylene	0.581	0.547	5.9	106	0.00	15.58
105		o-xylene	0.625	0.602	3.7	105	0.00	16.13
106		styrene	1.100	1.017	7.5	104	0.00	16.15
107		bromoform	0.264	0.248	6.1	94	0.00	16.47
108	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	18.11
109		isopropylbenzene	2.932	2.778	5.3	105	0.00	16.58
110		Cyclohexanone	0.034	0.023	32.4#	63	0.00	16.77
111	S	4-bromofluorobenzene (s)	0.986	0.939	4.8	99	0.00	16.82
112		bromobenzene	0.854	0.808	5.4	103	0.00	17.04
113		1,1,2,2-tetrachloroethane	0.863	0.761	11.8	91	0.00	16.96
114		trans-1,4-dichloro-2-bute	0.203	0.177	12.8	88	0.00	17.02
115		1,2,3-trichloropropane	0.190	0.168	11.6	90	0.00	17.04
116		n-propylbenzene	3.380	3.065	9.3	104	0.00	17.07
117	m	4-ethyltoluene		----------NA----------				
118		2-chlorotoluene	0.755	0.712	5.7	103	0.00	17.23
119		4-chlorotoluene	2.397	2.163	9.8	104	0.00	17.34
120		1,3,5-trimethylbenzene	2.505	2.265	9.6	103	0.00	17.25
121		tert-butylbenzene	2.117	2.024	4.4	105	0.00	17.63
122		pentachloroethane	0.545	0.521	4.4	102	0.00	17.72
123		1,2,4-trimethylbenzene	2.649	2.379	10.2	103	0.00	17.69
124	m	1,2,3-trimethylbenzene		----------NA----------				
125		sec-butylbenzene	3.098	2.916	5.9	104	0.00	17.86
126		1,3-dichlorobenzene	1.572	1.431	9.0	101	0.00	18.05
127		p-isopropyltoluene	2.616	2.420	7.5	102	0.00	17.99
128		1,4-dichlorobenzene	1.552	1.407	9.3	100	0.00	18.14
129		1,2-dichlorobenzene	1.513	1.411	6.7	100	0.00	18.53
130		benzyl chloride	1.509	1.271	15.8	85	0.00	18.26
131	m	1,4-diethylbenzene		----------NA----------				
132		n-butylbenzene	1.379	1.286	6.7	101	0.00	18.41
133	m	1,2,4,5-tetramethylbenzen		----------NA----------				
134		1,2-dibromo-3-chloropropa	0.137	0.119	13.1	86	0.00	19.28
135		1,3,5-trichlorobenzene	1.180	1.040	11.9	96	0.00	19.45
136		hexachlorobutadiene	0.529	0.492	7.0	102	0.00	20.16
137		naphthalene	1.913	1.723	9.9	90	0.00	20.33
138		1,2,4-trichlorobenzene	0.991	0.892	10.0	94	0.00	20.05
139	m	1,2,3-trichlorobenzene	0.819	0.766	6.5	93	0.00	20.56
140		hexachloroethane	0.454	0.469	-3.3	106	0.00	18.78

(#) = Out of Range SPCC's out = 0 CCC's out = 0
X130949.D MX5685.M Wed Nov 14 09:41:19 2012 MSX

6.9.9

6

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VX5712-CC5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X131671.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\X\VX5712\X131671.D Vial: 2
Acq On : 11 Dec 2012 9:02 am Operator: margares
Sample : cc5685-20 Inst : ACC-VOA-MSX
Misc : MS39655,VX5712,5.0,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MX5685.M (RTE Integrator)
Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Wed Nov 14 09:29:11 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert butyl alcohol-d9	1.000	1.000	0.0	82	0.01	7.26
2		tertiary butyl alcohol	1.435	1.257	12.4	74	0.00	7.39
3		ethyl alcohol		----------NA----------				
4		1,4-dioxane	0.110	0.109	0.9	83	0.02	12.06
5	I	pentafluorobenzene	1.000	1.000	0.0	96	0.02	9.94
6	m	freon 23		----------NA----------				
7	m	freon 115		----------NA----------				
8	m	freon 143a		----------NA----------				
9	m	freon 152a		----------NA----------				
10	m	chlorotrifluoroethene		----------NA----------				
11		chlorodifluoromethane	0.360	0.277	23.1#	71	0.02	3.78
12		dichlorodifluoromethane	0.516	0.493	4.5	100	0.03	3.76
13	m	freon 114		----------NA----------				
14	m	freon 142b		----------NA----------				
15		chloromethane	0.664	0.546	17.8	79	0.00	4.07
16		vinyl chloride	0.599	0.587	2.0	94	0.00	4.32
17	m	acetaldehyde	0.043	0.032	25.6#	63	0.02	4.54
18		bromomethane	0.385	0.377	2.1	90	0.02	4.96
19		chloroethane	0.313	0.298	4.8	90	0.03	5.15
20		vinyl bromide		----------NA----------				
21		trichlorofluoromethane	0.566	0.616	-8.8	107	0.03	5.64
22		pentane		----------NA----------				
23		ethyl ether	0.267	0.245	8.2	89	0.02	6.05
24	m	freon 141b		----------NA----------				
25	m	freon 123a		----------NA----------				
26	m	freon 123		----------NA----------				
27		acrolein	0.078	0.067	14.1	78	0.02	6.31
28		1,1-dichloroethene	0.323	0.365	-13.0	103	0.03	6.50
29		acetone	0.033	0.032	3.0	88	0.02	6.57
30		allyl chloride	0.251	0.254	-1.2	95	0.02	7.08
31		acetonitrile	0.032	0.030	6.3	79	0.02	7.04
32		iodomethane	0.695	0.762	-9.6	100	0.02	6.79
33		iso-butyl alcohol	0.019	0.016	15.8	73	0.02	10.33
34		carbon disulfide	1.194	1.396	-16.9	104	0.02	6.93
35		methylene chloride	0.484	0.480	0.8	91	0.02	7.29
36		methyl acetate	0.321	0.267	16.8	75	0.02	7.07
37		methyl tert butyl ether	1.301	1.182	9.1	83	0.02	7.66
38		trans-1,2-dichloroethene	0.426	0.418	1.9	94	0.02	7.71
39		di-isopropyl ether	1.694	1.376	18.8	79	0.02	8.36
40		2-butanone	0.045	0.043	4.4	84	0.03	9.25
41		1,1-dichloroethane	0.767	0.763	0.5	91	0.02	8.38

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VX5712-CC5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X131671.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42		chloroprene	0.615	0.565	8.1	89	0.03	8.51
43		acrylonitrile	0.135	0.121	10.4	79	0.02	7.66
44		vinyl acetate	0.057	0.055	3.5	87	0.03	8.38
45		ethyl tert-butyl ether	1.559	1.336	14.3	79	0.02	8.93
46		ethyl acetate	0.046	0.039	15.2	75	0.02	9.28
47		2,2-dichloropropane	0.585	0.590	-0.9	98	0.03	9.27
48		cis-1,2-dichloroethene	0.515	0.487	5.4	90	0.02	9.27
49		propionitrile	0.054	0.047	13.0	78	0.02	9.36
50		tert-Butyl Formate	0.388	0.346	10.8	83	0.02	9.78
51		bromochloromethane	0.234	0.231	1.3	90	0.02	9.66
52		tetrahydrofuran	0.143	0.123	14.0	73	0.03	9.72
53		chloroform	0.810	0.756	6.7	91	0.02	9.74
54	S	dibromofluoromethane (s)	0.428	0.422	1.4	100	0.03	9.99
55	S	1,2-dichloroethane-d4 (s)	0.484	0.403	16.7	87	0.02	10.51
56		freon 113	0.249	0.295	-18.5	110	0.03	6.48
57		methacrylonitrile	0.260	0.202	22.3#	71	0.02	9.59
58		1,1,1-trichloroethane	0.549	0.573	-4.4	97	0.02	10.04
59		cyclohexane	0.475	0.539	-13.5	105	0.02	10.13
60	m	tert amyl alcohol		----------NA----------				
61	m	iso-octane	1.482	1.371	7.5	89	0.02	10.62
62	I	1,4-difluorobenzene	1.000	1.000	0.0	95	0.02	11.11
63		di-isobutylene		----------NA----------				
64		epichlorohydrin	0.007	0.011	-57.1#	153	0.02	12.64
65		n-butyl alcohol	0.009	0.007	22.2#	76	0.02	11.31
66		carbon tetrachloride	0.315	0.359	-14.0	102	0.03	10.30
67		1,1-dichloropropene	0.340	0.359	-5.6	97	0.03	10.28
68		hexane	0.349	0.342	2.0	93	0.02	8.06
69		benzene	1.161	1.123	3.3	90	0.02	10.60
70		tert-amyl methyl ether	0.956	0.789	17.5	79	0.02	10.67
71		heptane	0.204	0.192	5.9	89	0.02	10.85
72		isopropyl acetate	0.475	0.369	22.3#	71	0.02	10.55
73		1,2-dichloroethane	0.349	0.319	8.6	85	0.02	10.63
74		trichloroethene	0.276	0.301	-9.1	99	0.02	11.54
75	m	ethyl acrylate	0.363	0.352	3.0	90	0.03	11.82
76	m	tert amyl ethyl ether		----------NA----------				
77		2-nitropropane		----------NA----------				
78		2-chloroethyl vinyl ether	0.033	0.059	-78.8#	173	0.02	12.64
79		methyl methacrylate	0.205	0.170	17.1	78	0.02	11.94
80		1,2-dichloropropane	0.319	0.299	6.3	83	0.02	11.89
81		dibromomethane	0.181	0.172	5.0	86	0.02	12.10
82		methylcyclohexane	0.447	0.451	-0.9	96	0.03	11.83
83		bromodichloromethane	0.443	0.395	10.8	84	0.02	12.29
84		cis-1,3-dichloropropene	0.553	0.511	7.6	86	0.02	12.91
85	S	toluene-d8 (s)	1.062	1.198	-12.8	112	0.02	13.30
86		4-methyl-2-pentanone	0.117	0.102	12.8	76	0.02	13.07
87		toluene	0.734	0.719	2.0	92	0.02	13.40
88		3-methyl-1-butanol	0.013	0.011	15.4	77	0.02	13.12
89		trans-1,3-dichloropropene	0.499	0.444	11.0	84	0.02	13.69
90		ethyl methacrylate	0.415	0.340	18.1	77	0.02	13.71
91		1,1,2-trichloroethane	0.249	0.217	12.9	83	0.02	13.97
92		2-hexanone	0.110	0.091	17.3	76	0.02	14.23
93	I	chlorobenzene-d5	1.000	1.000	0.0	99	0.02	15.33
94		3,3-Dimethyl-1-butanol	0.030	0.023	23.3#	74	0.02	14.48
95		tetrachloroethene	0.256	0.274	-7.0	103	0.02	14.19
96		1,3-dichloropropane	0.496	0.420	15.3	83	0.02	14.21
97		butyl acetate	0.215	0.180	16.3	78	0.02	14.35
98		dibromochloromethane	0.378	0.337	10.8	86	0.02	14.56
99		1,2-dibromoethane	0.314	0.277	11.8	85	0.02	14.75

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VX5712-CC5685
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** X131671.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

100	m	n-butyl ether		----------NA----------				
101		chlorobenzene	0.908	0.838	7.7	90	0.02	15.37
102		1,1,1,2-tetrachloroethane	0.336	0.314	6.5	90	0.02	15.46
103		ethylbenzene	1.481	1.398	5.6	92	0.02	15.46
104		m,p-xylene	0.581	0.550	5.3	92	0.02	15.60
105		o-xylene	0.625	0.588	5.9	92	0.02	16.15
106		styrene	1.100	0.948	13.8	86	0.02	16.17
107		bromoform	0.264	0.232	12.1	84	0.02	16.49
108	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	99	0.02	18.13
109		isopropylbenzene	2.932	2.869	2.1	95	0.02	16.59
110		Cyclohexanone	0.034	0.084	-147.1#	260#	0.00	16.78
111	S	4-bromofluorobenzene (s)	0.986	0.921	6.6	98	0.02	16.83
112		bromobenzene	0.854	0.743	13.0	85	0.02	17.05
113		1,1,2,2-tetrachloroethane	0.863	0.690	20.0#	79	0.02	16.98
114		trans-1,4-dichloro-2-bute	0.203	0.151	25.6#	72	0.02	17.03
115		1,2,3-trichloropropane	0.190	0.166	12.6	84	0.02	17.06
116		n-propylbenzene	3.380	3.180	5.9	93	0.02	17.09
117	m	4-ethyltoluene		----------NA----------				
118		2-chlorotoluene	0.755	0.700	7.3	92	0.02	17.25
119		4-chlorotoluene	2.397	2.038	15.0	87	0.02	17.36
120		1,3,5-trimethylbenzene	2.505	2.326	7.1	92	0.02	17.27
121		tert-butylbenzene	2.117	2.106	0.5	98	0.02	17.65
122		pentachloroethane	0.545	0.495	9.2	90	0.02	17.73
123		1,2,4-trimethylbenzene	2.649	2.435	8.1	92	0.02	17.70
124	m	1,2,3-trimethylbenzene		----------NA----------				
125		sec-butylbenzene	3.098	3.067	1.0	95	0.02	17.88
126		1,3-dichlorobenzene	1.572	1.400	10.9	89	0.02	18.07
127		p-isopropyltoluene	2.616	2.563	2.0	95	0.02	18.01
128		1,4-dichlorobenzene	1.552	1.351	13.0	89	0.02	18.16
129		1,2-dichlorobenzene	1.513	1.351	10.7	88	0.02	18.54
130		benzyl chloride	1.509	1.319	12.6	86	0.01	18.28
131	m	1,4-diethylbenzene		----------NA----------				
132		n-butylbenzene	1.379	1.365	1.0	95	0.02	18.43
133	m	1,2,4,5-tetramethylbenzen		----------NA----------				
134		1,2-dibromo-3-chloropropa	0.137	0.112	18.2	73	0.02	19.30
135		1,3,5-trichlorobenzene	1.180	1.122	4.9	94	0.02	19.47
136		hexachlorobutadiene	0.529	0.556	-5.1	99	0.02	20.18
137		naphthalene	1.913	1.616	15.5	80	0.02	20.34
138		1,2,4-trichlorobenzene	0.991	0.899	9.3	88	0.02	20.07
139	m	1,2,3-trichlorobenzene	0.819	0.737	10.0	84	0.02	20.58
140		hexachloroethane	0.454	0.481	-5.9	100	0.02	18.79

(#) = Out of Range SPCC's out = 0 CCC's out = 0
X130948.D MX5685.M Tue Dec 11 15:49:32 2012 ACCNJ

6.9.10

6

Initial Calibration Summary

Job Number: JB22267 **Sample:** VY5501-ICC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127986.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                         Response Factor Report  MSY

Method       : C:\MSDCHEM\1\METHODS\MY5501.M (RTE Integrator)
Title        : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Calibration Files
5   =Y127979.D   10  =Y127980.D   0.5 =Y127983.D   50  =Y127986.D
100 =Y127987.D   1   =Y127982.D   200 =Y127988.D   20  =Y127984.D
2   =Y127981.D   75  =Y127985.D       =                =

Compound
        5     10    0.5   50    100   1     200   20    2     75     Avg   %RSD
-----------------------------------------------------------------------------

1) I   Tert Butyl Alcohol-d9 ----------------ISTD--------------------
2)  1,4-dioxane
     0.090 0.089       0.102 0.099       0.098 0.095 0.077 0.099  0.094    8.79
3)  tertiary butyl alcohol
     1.174 1.134       1.126 1.085 1.088 1.074 1.095 1.082 1.098  1.106    2.93

4) I   pentafluorobenzene    ----------------ISTD--------------------
5)  freon 141b
     0.458 0.475       0.406 0.428 0.461 0.414 0.466 0.460 0.416  0.443    5.94
6)  freon 142b
     0.543 0.548       0.456 0.479 0.530 0.459 0.536 0.572 0.477  0.511    8.47
7)  freon 143a
     0.168 0.142       0.111 0.122 0.107 0.111 0.130 0.121 0.115  0.125   15.38
           ----- Linear regression -----  Coefficient =  0.9965
             Response Ratio = -0.00071 + 0.11779 *A

8)  chlorodifluoromethane
     0.543 0.437       0.343 0.356       0.362 0.439       0.369  0.407   17.54
           ----- Linear regression -----  Coefficient =  0.9990
             Response Ratio = 0.01414 + 0.35603 *A

9)  dichlorodifluoromethane
     0.537 0.503       0.422 0.410 0.424 0.430 0.494 0.466 0.440  0.458    9.59
10)  chloromethane
     0.626 0.572       0.492 0.511 0.666 0.494 0.573 0.668 0.523  0.569   12.35
11)  vinyl chloride
     0.597 0.577 0.651 0.513 0.530 0.485 0.514 0.589 0.596 0.530  0.558    9.20
12)  bromomethane
     0.385 0.366       0.298 0.282 0.400       0.349 0.379 0.275  0.342   14.54
13)  chloroethane
     0.311 0.301 0.328 0.260 0.257 0.265 0.228 0.299 0.301 0.252  0.280   11.39
14)  Vinyl Bromide
                                                                  0.000#  -1.00
15)  trichlorofluoromethane
     0.603 0.601 0.518 0.511 0.521 0.460 0.504 0.594 0.574 0.521  0.541    9.06
16)  ethyl ether
     0.258 0.267       0.258 0.258 0.343 0.249 0.267 0.307 0.256  0.274   11.34
17)  2-chloropropane
     0.180 0.181       0.159 0.163       0.156 0.187 0.162 0.163  0.169    6.86
18)  acrolein
     0.078 0.083       0.077       0.074 0.091 0.080 0.074 0.077  0.079    7.18
19)  1,1-dichloroethene
     0.679 0.689       0.565 0.573 0.623 0.544 0.672 0.659 0.571  0.619    9.18
20)  acetone
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VY5501-ICC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127986.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

	0.041	0.050		0.045	0.048		0.045	0.036		0.043	0.044	10.49
21)	allyl chloride											
	0.255	0.277		0.249	0.249	0.206	0.239	0.283	0.252	0.247	0.251	8.77
22)	acetonitrile											
		0.045		0.043	0.044		0.035	0.055		0.047	0.045	14.15
23)	iodomethane											
	0.769	0.776	0.837	0.728	0.742	0.738	0.723	0.803	0.808	0.732	0.766	5.17
24)	iso-butyl alcohol											
	0.015	0.015		0.013	0.014	0.018	0.013	0.014	0.014	0.014	0.014	9.91
25)	carbon disulfide											
	1.417	1.420	1.528	1.231	1.261	1.278	1.208	1.421	1.340	1.254	1.336	7.92
26)	1-chloropropane											
	0.034	0.035		0.031	0.031		0.030	0.036		0.031	0.033	7.35
27)	methylene chloride											
	0.781	0.755		0.621	0.604		0.581	0.718		0.621	0.669	12.03
28)	methyl acetate											
	0.050	0.055		0.064	0.069		0.065	0.062		0.066	0.062	10.91
29)	methyl tert butyl ether											
	1.266	1.313	1.627	1.261	1.262	1.296	1.225	1.336	1.301	1.257	1.314	8.71
30)	trans-1,2-dichloroethene											
	0.617	0.622	0.660	0.562	0.555	0.558	0.527	0.641	0.604	0.556	0.590	7.51
31)	di-isopropyl ether											
	1.468	1.388		1.388	1.388	1.592	1.340	1.501	1.567	1.395	1.448	6.16
32)	ethyl tert-butyl ether											
	1.444	1.381		1.398	1.405	1.546	1.364	1.478	1.520	1.405	1.438	4.45
33)	2-butanone											
	0.042	0.049		0.051	0.055		0.052	0.046		0.052	0.049	8.89
34)	1,1-dichloroethane											
	0.805	0.837	0.951	0.753	0.739	0.795	0.702	0.848	0.803	0.740	0.797	8.92
35)	chloroprene											
	0.674	0.607		0.529	0.538	0.684	0.512	0.625	0.694	0.537	0.600	12.16
36)	acrylonitrile											
	0.134	0.136		0.129	0.129	0.114	0.121	0.139	0.135	0.130	0.130	6.08
37)	vinyl acetate											
		0.046		0.057	0.061		0.058	0.058		0.060	0.057	9.70
38)	ethyl acetate											
	0.054	0.057		0.050	0.053		0.050	0.057		0.051	0.053	5.59
39)	2,2-dichloropropane											
	0.665	0.659	0.843	0.549	0.549	0.667	0.526	0.654	0.633	0.559	0.630	14.79
40)	cis-1,2-dichloroethene											
	0.489	0.502	0.601	0.463	0.454	0.508	0.429	0.517	0.499	0.452	0.491	9.76
41)	propionitrile											
	0.052	0.055		0.052	0.054		0.051	0.055	0.047	0.053	0.052	4.80
42)	bromochloromethane											
	0.282	0.307		0.299	0.296	0.265	0.285	0.318	0.281	0.292	0.292	5.36
43)	tetrahydrofuran											
	0.052	0.052		0.053	0.053		0.050	0.055	0.048	0.053	0.052	4.10
44)	chloroform											
	0.790	0.800		0.732	0.713	0.797	0.676	0.815	0.825	0.714	0.763	7.06
45)	tert-Butyl Formate											
	0.275	0.269	0.257	0.290	0.303	0.284	0.299	0.302	0.294	0.300	0.287	5.42
46)	dibromofluoromethane (s)											
	0.420	0.421		0.405	0.399		0.382	0.428		0.404	0.408	3.85
47)	1,2-dichloroethane-d4 (s)											
	0.478	0.462		0.428	0.408		0.384	0.448		0.420	0.433	7.46
48)	freon 113											
	0.325	0.303		0.261	0.272	0.273	0.267	0.307	0.289	0.273	0.286	7.66
49)	methacrylonitrile											
	0.142	0.165		0.159	0.166		0.161	0.167	0.130	0.160	0.156	8.48
50)	1,1,1-trichloroethane											

Initial Calibration Summary

Job Number: JB22267 **Sample:** VY5501-ICC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127986.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
      0.640 0.643 0.707 0.546 0.553 0.575 0.536 0.642 0.634 0.559  0.603    9.41
51)  Cyclohexane
      0.645 0.638       0.517 0.512       0.494 0.608       0.527  0.563   11.48
52)  2,2,4-trimethylpentane
      1.750 1.676       1.379 1.379 1.793 1.316 1.663 1.831 1.427  1.579   12.81
53)  tert-amyl methyl ether
      1.374 1.333       1.267 1.251 1.528 1.178 1.389 1.502 1.265  1.343    8.74

54) I   1,4-difluorobenzene   ----------------ISTD---------------------
55)  epichlorohydrin
      0.027 0.025       0.024 0.025       0.024 0.025       0.025  0.025    3.28
56)  n-butyl alcohol
      0.008 0.008       0.008 0.009       0.009 0.009       0.009  0.009#   2.99
57)  carbon tetrachloride
      0.394 0.397 0.400 0.321 0.321 0.367 0.305 0.378 0.382 0.322  0.359   10.36
58)  1,1-dichloropropene
      0.396 0.399 0.400 0.335 0.333 0.368 0.314 0.394 0.385 0.334  0.366    9.14
59)  hexane
      0.418 0.388       0.310 0.306       0.290 0.367       0.316  0.342   14.22
60)  Tert Amyl Alcohol
                                                                   0.000#  -1.00
61)  benzene
      1.228 1.222       1.045 0.998 1.273 0.920 1.198 1.261 1.014  1.129   11.82
62)  heptane
      0.243 0.221       0.179 0.177       0.167 0.214       0.183  0.198   14.28
63)  isopropyl acetate
      0.109 0.109       0.107 0.108 0.084 0.103 0.121 0.110 0.107  0.106    9.14
64)  1,2-dichloroethane
      0.348 0.372 0.376 0.339 0.331 0.329 0.313 0.373 0.350 0.331  0.346    6.22
65)  trichloroethene
      0.297 0.301 0.352 0.267 0.265 0.279 0.254 0.299 0.301 0.265  0.288    9.93
66)  ethyl acrylate
                                                                   0.000#  -1.00
67)  2-nitropropane
      0.083 0.081       0.073 0.076       0.070 0.080       0.074  0.077    6.05
68)  2-chloroethyl vinyl ether
      0.086 0.086       0.090 0.093 0.075 0.091 0.091 0.085 0.093  0.088    6.42
69)  methyl methacrylate
      0.228 0.211       0.185 0.187       0.174 0.191       0.187  0.195    9.45
70)  1,2-dichloropropane
      0.307 0.314 0.375 0.297 0.287 0.304 0.270 0.320 0.327 0.288  0.309    9.33
71)  methylcyclohexane
      0.519 0.494       0.406 0.411       0.394 0.480       0.418  0.446   11.25
72)  Tert-amyl ethyl ether
                                                                   0.000#  -1.00
73)  dibromomethane
      0.172 0.180 0.172 0.174 0.174 0.154 0.166 0.180 0.179 0.171  0.172    4.58
74)  bromodichloromethane
      0.386 0.401 0.434 0.386 0.386 0.360 0.369 0.409 0.395 0.382  0.391    5.34
75)  cis-1,3-dichloropropene
      0.483 0.504 0.517 0.491 0.490 0.449 0.467 0.516 0.475 0.484  0.488    4.35
76)  toluene-d8 (s)
      1.053 1.021       0.931 0.895       0.832 1.009       0.924  0.952    8.24
77)  4-methyl-2-pentanone
      0.109 0.113       0.103 0.108       0.100 0.110 0.094 0.103  0.105    5.85
78)  toluene
      1.233 1.231       1.065 1.042 1.298 0.975 1.199 1.266 1.048  1.151   10.24
79)  3-methyl-1-butanol
      0.009 0.009       0.008 0.009 0.008 0.008 0.008 0.008 0.008  0.008#   3.77
80)  trans-1,3-dichloropropene
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VY5501-ICC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127986.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
      0.404 0.431 0.428 0.419 0.420 0.368 0.395 0.439 0.403 0.413  0.412    5.00
 81)  ethyl methacrylate
      0.347 0.380       0.348 0.354 0.398 0.336 0.357 0.426 0.344  0.365    8.14
 82)  1,1,2-trichloroethane
      0.208 0.217 0.259 0.204 0.207 0.198 0.196 0.213 0.212 0.202  0.212    8.48
 83)  2-hexanone
      0.111 0.115       0.106 0.102       0.094 0.107       0.104  0.106    6.34

 84) I   chlorobenzene-d5      ----------------ISTD---------------------
 85)  tetrachloroethene
      0.409 0.390 0.437 0.338 0.340 0.374 0.320 0.390 0.387 0.336  0.372   10.05
 86)  1,3-dichloropropane
      0.510 0.526 0.561 0.486 0.479 0.496 0.440 0.527 0.499 0.482  0.500    6.61
 87)  butyl acetate
      0.232 0.212       0.201 0.204       0.187 0.214 0.243 0.205  0.212    8.40
 88)  dibromochloromethane
      0.364 0.375 0.390 0.372 0.376 0.322 0.355 0.386 0.351 0.363  0.365    5.37
 89)  1,2-dibromoethane
      0.315 0.318 0.312 0.309 0.310 0.296 0.295 0.325 0.293 0.302  0.307    3.51
 90)  3,3-Dimethyl-1-Butanol
      0.045 0.041       0.035 0.038       0.034 0.038 0.043 0.037  0.039    9.81
 91)  chlorobenzene
      0.970 0.972 1.138 0.898 0.895 0.938 0.832 0.987 0.979 0.890  0.950    8.71
 92)  1,1,1,2-tetrachloroethane
      0.355 0.363 0.399 0.332 0.322 0.334 0.296 0.361 0.354 0.320  0.344    8.42
 93)  ethylbenzene
      1.654 1.621       1.394 1.352 1.600 1.237 1.595 1.662 1.358  1.497   10.72
 94)  m,p-xylene
      0.653 0.631       0.532 0.515 0.607 0.468 0.614 0.629 0.518  0.574   11.48
 95)  o-xylene
      1.376 1.351 1.647 1.206 1.185 1.374 1.090 1.352 1.379 1.179  1.314   11.95
 96)  styrene
      1.045 1.053 1.200 0.967 0.933 0.969 0.850 1.067 1.054 0.937  1.007    9.63
 97)  bromoform
      0.225 0.243 0.226 0.238 0.246 0.216 0.230 0.247 0.218 0.237  0.232    4.88

 98) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
 99)  isopropylbenzene
      3.210 3.209       2.788 2.770 3.113 2.651 3.128 3.166 2.734  2.975    7.79
100)  4-bromofluorobenzene (s)
      1.016 0.846       0.932 0.881       0.840 0.960       0.903  0.911    6.97
101)  bromobenzene
      0.829 0.849 0.934 0.778 0.752 0.784 0.702 0.823 0.807 0.740  0.800    8.13
102)  cyclohexanone
            0.170       0.131 0.140       0.125 0.114       0.127  0.135   14.22
103)  1,1,2,2-tetrachloroethane
      0.849 0.879 1.048 0.807 0.838 0.843 0.803 0.845 0.825 0.800  0.854    8.51
104)  trans-1,4-dichloro-2-butene
      0.218 0.228       0.212 0.218       0.209 0.224       0.214  0.217    2.99
105)  1,2,3-trichloropropane
      0.183 0.197 0.134 0.176 0.177 0.181 0.163 0.188 0.169 0.173  0.174    9.72
106)  n-propylbenzene
      3.836 3.833       3.281 3.225 3.620 3.009 3.706 3.800 3.194  3.500    9.20
107)  4-Ethyltoluene
                                                                   0.000#  -1.00
108)  2-chlorotoluene
      0.790 0.787       0.694 0.679 0.769 0.635 0.778 0.776 0.668  0.731    8.34
109)  4-chlorotoluene
      2.440 2.417       2.179 2.154 2.420 2.068 2.370 2.539 2.114  2.300    7.44
110)  1,3,5-trimethylbenzene
```

Initial Calibration Summary

Job Number: JB22267 **Sample:** VY5501-ICC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127986.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
       2.736 2.725       2.418 2.389 2.654 2.247 2.658 2.757 2.354  2.549    7.66
111)  tert-butylbenzene
       2.254 2.274       2.001 2.001 2.131 1.941 2.220 2.295 1.982  2.122    6.70
112)  pentachloroethane
       0.495 0.541       0.504 0.499 0.477 0.474 0.536 0.512 0.487  0.503    4.68
113)  1,2,4-trimethylbenzene
       2.713 2.730       2.427 2.408 2.686 2.244 2.685 2.738 2.386  2.557    7.40
114)  sec-butylbenzene
       3.497 3.485       2.949 2.966 3.470 2.800 3.352 3.629 2.943  3.232    9.68
115)  1,3-dichlorobenzene
       1.569 1.589       1.468 1.465 1.595 1.381 1.577 1.667 1.447  1.529    6.01
116)  p-isopropyltoluene
       2.829 2.862       2.468 2.463 2.712 2.323 2.783 2.878 2.455  2.642    8.06
117)  1,4-dichlorobenzene
       1.558 1.576       1.469 1.455 1.611 1.371 1.571 1.645 1.431  1.521    6.06
118)  1,2-dichlorobenzene
       1.494 1.496       1.430 1.435 1.482 1.357 1.521 1.519 1.412  1.461    3.79
119)  n-butylbenzene
       0.665 0.672       0.586 0.594 0.595 0.557 0.664 0.655 0.593  0.620    6.96
120)  p-Diethylbenzene
                                                                    0.000#  -1.00
121)  1,2-dibromo-3-chloropropane
       0.150 0.164       0.158 0.168       0.165 0.161 0.130 0.161  0.157    7.86
122)  1,3,5-Trichlorobenzene
       1.244 1.279       1.169 1.171 1.198 1.103 1.268 1.254 1.179  1.207    4.79
123)  1,2,4-trichlorobenzene
       1.093 1.101       1.058 1.058 1.114 1.004 1.140 1.155 1.079  1.089    4.24
124)  1,2,4,5-tetramethylbenzene
                                                                    0.000#  -1.00
125)  hexachlorobutadiene
       0.597 0.618       0.524 0.511 0.602 0.471 0.610 0.640 0.524  0.566   10.45
126)  naphthalene
       2.279 2.396       2.214 2.241 2.403 2.132 2.322 2.359 2.259  2.289    3.91
127)  1,2,3-trichlorobenzene
       0.955 1.008       0.940 0.935 0.999 0.872 1.013 0.980 0.959  0.963    4.64
128)  hexachloroethane
       0.553 0.571       0.529 0.540 0.512 0.522 0.575 0.539 0.532  0.541    3.93
129)  Benzyl chloride
       1.583 1.513       1.452 1.499       1.440 1.509 1.547 1.514  1.507    3.07
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          MY5501.M          Mon Nov 19 15:50:08 2012   RPT1
```

6.9.11

6

Initial Calibration Verification

Job Number: JB22267 **Sample:** VY5501-ICV5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127990.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDChem\1\olddata...7000-127999\Y127990.D Vial: 13
Acq On    : 12 Nov 2012   4:02 pm                    Operator: ROBERTS
Sample    : ICV5501-50                               Inst    : MSY
Misc      : MS38300,VY5501,5.0,,,,1                  Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MY5501.M (RTE Integrator)
Title        : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Nov 19 15:36:21 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.010  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	111	0.00	7.66
2	1,4-dioxane	0.094	0.100	-6.4	109	0.00	11.47
3	tertiary butyl alcohol	1.106	1.139	-3.0	113	0.00	7.78
4 I	pentafluorobenzene	1.000	1.000	0.0	105	0.00	9.83
5	freon 141b	0.443	0.461	-4.1	119	0.00	6.53
6	freon 142b	0.511	0.515	-0.8	118	0.00	4.44
	----------	True	Calc.	% Drift	----------		
7	freon 143a	50.000	51.319	-2.6	114	0.00	3.84
8	chlorodifluoromethane	50.000	52.096	-4.2	118	0.00	4.19
	----------	AvgRF	CCRF	% Dev	----------		
9	dichlorodifluoromethane	0.458	0.437	4.6	108	0.00	4.16
10	chloromethane	0.569	0.527	7.4	112	0.00	4.52
11	vinyl chloride	0.558	0.561	-0.5	115	0.00	4.79
12	bromomethane	0.342	0.300	12.3	105	0.00	5.46
13	chloroethane	0.280	0.278	0.7	112	0.00	5.63
14	Vinyl Bromide		----------NA----------				
15	trichlorofluoromethane	0.541	0.563	-4.1	116	0.00	6.09
16	ethyl ether	0.274	0.254	7.3	103	0.00	6.49
17	2-chloropropane	0.169	0.174	-3.0	114	0.00	6.72
18	acrolein	0.079	0.087	-10.1	118	0.00	6.82
19	1,1-dichloroethene	0.619	0.590	4.7	109	0.00	6.94
20	acetone	0.044	0.052	-18.2	120	0.01	7.05
21	allyl chloride	0.251	0.251	0.0	106	0.00	7.48
22	acetonitrile	0.045	0.044	2.2	107	-0.02	7.51
23	iodomethane	0.766	0.722	5.7	104	0.00	7.24
24	iso-butyl alcohol	0.014	0.014	0.0	110	0.00	10.15
25	carbon disulfide	1.336	1.254	6.1	107	0.00	7.35
26	1-chloropropane	0.033	0.034	-3.0	116	0.00	7.70
27	methylene chloride	0.669	0.611	8.7	103	0.00	7.69
28	methyl acetate	0.062	0.061	1.6	99	0.00	7.48
29	methyl tert butyl ether	1.314	1.232	6.2	102	0.00	7.97
30	trans-1,2-dichloroethene	0.590	0.573	2.9	107	0.00	8.03
31	di-isopropyl ether	1.448	1.464	-1.1	110	0.00	8.54
32	ethyl tert-butyl ether	1.438	1.416	1.5	106	0.00	9.00
33	2-butanone	0.049	0.057	-16.3	117	0.00	9.34
34	1,1-dichloroethane	0.797	0.789	1.0	110	0.00	8.61
35	chloroprene	0.600	0.546	9.0	108	0.00	8.70
36	acrylonitrile	0.130	0.125	3.8	102	0.00	8.06
37	vinyl acetate	0.057	0.071	-24.6#	130	0.00	8.59

Initial Calibration Verification

Job Number: JB22267 **Sample:** VY5501-ICV5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127990.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38		ethyl acetate	0.053	0.053	0.0	110	0.00	9.31
39		2,2-dichloropropane	0.630	0.600	4.8	114	0.00	9.33
40		cis-1,2-dichloroethene	0.491	0.471	4.1	107	0.00	9.35
41		propionitrile	0.052	0.054	-3.8	108	0.00	9.47
42		bromochloromethane	0.292	0.293	-0.3	103	0.00	9.67
43		tetrahydrofuran	0.052	0.055	-5.8	109	0.00	9.69
44		chloroform	0.763	0.746	2.2	107	0.00	9.71
45		tert-Butyl Formate	0.287	0.310	-8.0	112	0.00	9.73
46	S	dibromofluoromethane (s)	0.408	0.406	0.5	105	0.00	9.92
47	S	1,2-dichloroethane-d4 (s)	0.433	0.422	2.5	103	0.00	10.34
48		freon 113	0.286	0.286	0.0	115	0.00	6.88
49		methacrylonitrile	0.156	0.158	-1.3	104	0.00	9.62
50		1,1,1-trichloroethane	0.603	0.590	2.2	113	0.00	9.94
51		Cyclohexane	0.563	0.562	0.2	114	0.00	9.98
52		2,2,4-trimethylpentane	1.579	1.374	13.0	104	0.00	10.31
53		tert-amyl methyl ether	1.343	1.279	4.8	106	0.00	10.38
54	I	1,4-difluorobenzene	1.000	1.000	0.0	105	0.00	10.75
55		epichlorohydrin	0.025	0.025	0.0	110	0.00	12.02
56		n-butyl alcohol	0.009	0.009#	0.0	118	0.00	10.89
57		carbon tetrachloride	0.359	0.349	2.8	114	0.00	10.13
58		1,1-dichloropropene	0.366	0.360	1.6	113	0.00	10.11
59		hexane	0.342	0.320	6.4	109	0.00	8.27
60		Tert Amyl Alcohol		----------NA----------				
61		benzene	1.129	1.073	5.0	108	0.00	10.38
62		heptane	0.198	0.102	48.5#	60	0.00	10.48
63		isopropyl acetate	0.106	0.112	-5.7	111	0.00	10.29
64		1,2-dichloroethane	0.346	0.339	2.0	106	0.00	10.43
65		trichloroethene	0.288	0.286	0.7	113	0.00	11.08
66		ethyl acrylate		----------NA----------				
67		2-nitropropane	0.077	0.074	3.9	107	0.00	11.88
68		2-chloroethyl vinyl ether	0.088	0.096	-9.1	113	0.00	11.86
69		methyl methacrylate	0.195	0.182	6.7	104	0.00	11.34
70		1,2-dichloropropane	0.309	0.296	4.2	105	0.00	11.36
71		methylcyclohexane	0.446	0.428	4.0	111	0.00	11.26
72		Tert-amyl ethyl ether	0.000	0.022	0.0	0#	0.00	11.08
73		dibromomethane	0.172	0.177	-2.9	107	0.00	11.53
74		bromodichloromethane	0.391	0.394	-0.8	107	0.00	11.65
75		cis-1,3-dichloropropene	0.488	0.481	1.4	103	0.00	12.08
76	S	toluene-d8 (s)	0.952	0.961	-0.9	109	0.00	12.34
77		4-methyl-2-pentanone	0.105	0.104	1.0	106	0.00	12.17
78		toluene	1.151	1.107	3.8	110	0.00	12.42
79		3-methyl-1-butanol	0.008	0.008#	0.0	106	0.00	12.20
80		trans-1,3-dichloropropene	0.412	0.423	-2.7	106	0.00	12.64
81		ethyl methacrylate	0.365	0.337	7.7	102	0.00	12.59
82		1,1,2-trichloroethane	0.212	0.209	1.4	108	0.00	12.85
83		2-hexanone	0.106	0.111	-4.7	110	0.00	13.00
84	I	chlorobenzene-d5	1.000	1.000	0.0	107	0.00	13.83
85		tetrachloroethene	0.372	0.361	3.0	114	0.00	12.98
86		1,3-dichloropropane	0.500	0.486	2.8	107	0.00	13.03
87		butyl acetate	0.212	0.212	0.0	113	0.00	13.05
88		dibromochloromethane	0.365	0.359	1.6	103	0.00	13.29
89		1,2-dibromoethane	0.307	0.304	1.0	105	0.00	13.44
90		3,3-Dimethyl-1-Butanol	0.039	0.035	10.3	106	0.00	13.17
91		chlorobenzene	0.950	0.919	3.3	109	0.00	13.87
92		1,1,1,2-tetrachloroethane	0.344	0.333	3.2	107	0.00	13.93
93		ethylbenzene	1.497	1.457	2.7	111	0.00	13.90
94		m,p-xylene	0.574	0.560	2.4	112	0.00	14.00
95		o-xylene	1.314	1.251	4.8	110	0.00	14.42

Initial Calibration Verification

Job Number: JB22267 **Sample:** VY5501-ICV5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y127990.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96		styrene	1.007	0.968	3.9	107	0.00	14.44
97		bromoform	0.232	0.235	-1.3	105	0.00	14.73
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	107	0.00	16.11
99		isopropylbenzene	2.975	2.962	0.4	114	0.00	14.74
100	S	4-bromofluorobenzene (s)	0.911	0.935	-2.6	107	0.00	14.97
101		bromobenzene	0.800	0.776	3.0	107	0.00	15.16
102		cyclohexanone	0.135	0.131	3.0	107	0.00	14.96
103		1,1,2,2-tetrachloroethane	0.854	0.787	7.8	104	0.00	15.09
104		trans-1,4-dichloro-2-bute	0.217	0.205	5.5	103	0.00	15.13
105		1,2,3-trichloropropane	0.174	0.174	0.0	106	0.00	15.17
106		n-propylbenzene	3.500	3.540	-1.1	115	0.00	15.15
107		4-Ethyltoluene		----------NA----------				
108		2-chlorotoluene	0.731	0.712	2.6	110	0.00	15.31
109		4-chlorotoluene	2.300	2.230	3.0	109	0.00	15.41
110		1,3,5-trimethylbenzene	2.549	2.539	0.4	112	0.00	15.29
111		tert-butylbenzene	2.122	2.126	-0.2	114	0.00	15.63
112		pentachloroethane	0.503	0.511	-1.6	108	0.00	15.74
113		1,2,4-trimethylbenzene	2.557	2.559	-0.1	113	0.00	15.69
114		sec-butylbenzene	3.232	3.154	2.4	114	0.00	15.84
115		1,3-dichlorobenzene	1.529	1.509	1.3	110	0.00	16.06
116		p-isopropyltoluene	2.642	2.725	-3.1	118	0.00	15.96
117		1,4-dichlorobenzene	1.521	1.487	2.2	108	0.00	16.14
118		1,2-dichlorobenzene	1.461	1.438	1.6	107	0.00	16.53
119		n-butylbenzene	0.620	0.646	-4.2	118	0.00	16.37
120		p-Diethylbenzene		----------NA----------				
121		1,2-dibromo-3-chloropropa	0.157	0.157	0.0	106	0.00	17.32
122		1,3,5-Trichlorobenzene	1.207	1.226	-1.6	112	0.00	17.47
123		1,2,4-trichlorobenzene	1.089	1.125	-3.3	114	0.00	18.11
124		1,2,4,5-tetramethylbenzen		----------NA----------				
125		hexachlorobutadiene	0.566	0.560	1.1	114	0.00	18.20
126		naphthalene	2.289	2.222	2.9	107	0.00	18.41
127		1,2,3-trichlorobenzene	0.963	0.962	0.1	109	0.00	18.66
128		hexachloroethane	0.541	0.544	-0.6	110	0.00	16.77
129		Benzyl chloride	1.507	1.605	-6.5	118	0.00	16.27

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Y127986.D MY5501.M Mon Nov 19 15:50:07 2012 RPT1

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5528-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128558A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDChem\1\DATA\Y128558a.D                    Vial: 2
Acq On    :  1 Dec 2012  11:06 am                       Operator: ROBERTS
Sample    : CC5501-20                                   Inst    : MSY
Misc      : MS39454,VY5528,5.0,,,,1                     Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MY5501.M (RTE Integrator)
Title        : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Nov 19 15:36:21 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	99	-0.01	7.65
2		1,4-dioxane	0.094	0.098	-4.3	102	0.00	11.47
3		tertiary butyl alcohol	1.106	1.080	2.4	98	0.00	7.77
4	I	pentafluorobenzene	1.000	1.000	0.0	108	0.00	9.83
5		freon 141b		----------NA----------				
6		freon 142b		----------NA----------				
		----------	True	Calc.	% Drift	----------		
7		freon 143a		----------NA----------				
8		chlorodifluoromethane	20.000	19.657	1.7	95	-0.02	4.17
		----------	AvgRF	CCRF	% Dev	----------		
9		dichlorodifluoromethane	0.458	0.609	-33.0#	133	-0.02	4.15
10		chloromethane	0.569	0.620	-9.0	117	-0.02	4.50
11		vinyl chloride	0.558	0.623	-11.6	114	-0.02	4.76
12		bromomethane	0.342	0.359	-5.0	111	0.00	5.45
13		chloroethane	0.280	0.287	-2.5	103	0.00	5.63
14		Vinyl Bromide		----------NA----------				
15		trichlorofluoromethane	0.541	0.667	-23.3#	121	-0.02	6.08
16		ethyl ether	0.274	0.218	20.4#	88	0.00	6.49
17		2-chloropropane	0.169	0.159	5.9	92	0.00	6.72
18		acrolein	0.079	0.066	16.5	90	0.00	6.82
19		1,1-dichloroethene	0.619	0.520	16.0	84	-0.01	6.93
20		acetone	0.044	0.041	6.8	121	0.00	7.04
21		allyl chloride	0.251	0.224	10.8	86	0.00	7.48
22		acetonitrile	0.045	0.041	8.9	80	0.00	7.53
23		iodomethane	0.766	0.707	7.7	95	0.00	7.24
24		iso-butyl alcohol	0.014	0.012	14.3	94	0.00	10.16
25		carbon disulfide	1.336	1.184	11.4	90	0.00	7.34
26		1-chloropropane	0.033	0.031	6.1	93	0.00	7.70
27		methylene chloride	0.669	0.559	16.4	84	0.00	7.69
28		methyl acetate	0.062	0.060	3.2	105	0.01	7.48
29		methyl tert butyl ether	1.314	1.160	11.7	94	0.00	7.96
30		trans-1,2-dichloroethene	0.590	0.532	9.8	90	0.00	8.03
31		di-isopropyl ether	1.448	1.259	13.1	91	0.00	8.52
32		ethyl tert-butyl ether	1.438	1.266	12.0	93	0.00	8.99
33		2-butanone	0.049	0.045	8.2	105	0.00	9.33
34		1,1-dichloroethane	0.797	0.724	9.2	92	0.00	8.61
35		chloroprene	0.600	0.528	12.0	91	0.00	8.70
36		acrylonitrile	0.130	0.119	8.5	93	0.00	8.06
37		vinyl acetate	0.057	0.050	12.3	94	0.00	8.59

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5528-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128558A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38		ethyl acetate	0.053	0.045	15.1	86	0.00	9.31
39		2,2-dichloropropane	0.630	0.571	9.4	94	-0.01	9.33
40		cis-1,2-dichloroethene	0.491	0.458	6.7	96	0.00	9.35
41		propionitrile	0.052	0.049	5.8	95	0.00	9.47
42		bromochloromethane	0.292	0.294	-0.7	100	0.00	9.67
43		tetrahydrofuran	0.052	0.054	-3.8	105	0.00	9.69
44		chloroform	0.763	0.742	2.8	98	0.00	9.71
45		tert-Butyl Formate	0.287	0.283	1.4	101	0.00	9.72
46	S	dibromofluoromethane (s)	0.408	0.406	0.5	102	0.00	9.92
47	S	1,2-dichloroethane-d4 (s)	0.433	0.393	9.2	95	0.00	10.34
48		freon 113	0.286	0.293	-2.4	103	-0.02	6.86
49		methacrylonitrile	0.156	0.145	7.1	94	0.00	9.62
50		1,1,1-trichloroethane	0.603	0.606	-0.5	102	0.00	9.93
51		Cyclohexane	0.563	0.531	5.7	94	0.00	9.98
52		2,2,4-trimethylpentane	1.579	1.296	17.9	84	0.00	10.31
53		tert-amyl methyl ether	1.343	1.189	11.5	92	0.00	10.38
54	I	1,4-difluorobenzene	1.000	1.000	0.0	108	0.00	10.74
55		epichlorohydrin	0.025	0.022	12.0	95	0.00	12.02
56		n-butyl alcohol	0.009	0.007	22.2#	92	0.00	10.89
57		carbon tetrachloride	0.359	0.377	-5.0	108	0.00	10.12
58		1,1-dichloropropene	0.366	0.341	6.8	94	0.00	10.10
59		hexane	0.342	0.296	13.5	87	0.00	8.27
60		Tert Amyl Alcohol		----------NA----------				
61		benzene	1.129	1.029	8.9	93	0.00	10.38
62		heptane	0.198	0.166	16.2	84	0.00	10.48
63		isopropyl acetate	0.106	0.102	3.8	92	0.00	10.29
64		1,2-dichloroethane	0.346	0.332	4.0	96	0.00	10.43
65		trichloroethene	0.288	0.273	5.2	99	0.00	11.08
66		ethyl acrylate		----------NA----------				
67		2-nitropropane	0.077	0.070	9.1	95	0.00	11.88
68		2-chloroethyl vinyl ether	0.088	0.097	-10.2	115	0.00	11.86
69		methyl methacrylate	0.195	0.163	16.4	92	0.00	11.34
70		1,2-dichloropropane	0.309	0.276	10.7	94	0.00	11.36
71		methylcyclohexane	0.446	0.405	9.2	91	0.00	11.26
72		Tert-amyl ethyl ether		----------NA----------				
73		dibromomethane	0.172	0.177	-2.9	106	0.00	11.53
74		bromodichloromethane	0.391	0.382	2.3	101	0.00	11.65
75		cis-1,3-dichloropropene	0.488	0.451	7.6	95	0.00	12.08
76	S	toluene-d8 (s)	0.952	0.950	0.2	102	0.00	12.34
77		4-methyl-2-pentanone	0.105	0.098	6.7	97	0.00	12.17
78		toluene	1.151	1.039	9.7	94	0.00	12.42
79		3-methyl-1-butanol	0.008	0.007	12.5	91	0.00	12.20
80		trans-1,3-dichloropropene	0.412	0.396	3.9	98	0.00	12.64
81		ethyl methacrylate	0.365	0.296	18.9	90	0.00	12.59
82		1,1,2-trichloroethane	0.212	0.199	6.1	101	0.00	12.85
83		2-hexanone	0.106	0.091	14.2	93	0.00	13.01
84	I	chlorobenzene-d5	1.000	1.000	0.0	112	0.00	13.83
85		tetrachloroethene	0.372	0.345	7.3	99	0.00	12.98
86		1,3-dichloropropane	0.500	0.456	8.8	97	0.00	13.03
87		butyl acetate	0.212	0.172	18.9	90	0.00	13.05
88		dibromochloromethane	0.365	0.372	-1.9	108	0.00	13.29
89		1,2-dibromoethane	0.307	0.296	3.6	102	0.00	13.44
90		3,3-Dimethyl-1-Butanol	0.039	0.029	25.6#	85	0.00	13.16
91		chlorobenzene	0.950	0.857	9.8	97	0.00	13.86
92		1,1,1,2-tetrachloroethane	0.344	0.345	-0.3	107	0.00	13.92
93		ethylbenzene	1.497	1.341	10.4	94	0.00	13.90
94		m,p-xylene	0.574	0.516	10.1	94	0.00	14.00
95		o-xylene	1.314	1.148	12.6	95	0.00	14.41

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5528-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128558A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96		styrene	1.007	0.868	13.8	91	0.00	14.44
97		bromoform	0.232	0.252	-8.6	115	0.00	14.73
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	116	0.00	16.11
99		isopropylbenzene	2.975	2.603	12.5	96	0.00	14.74
100	S	4-bromofluorobenzene (s)	0.911	0.805	11.6	97	0.00	14.97
101		bromobenzene	0.800	0.744	7.0	105	0.00	15.16
102		cyclohexanone	0.135	0.109	19.3	111	0.00	14.96
103		1,1,2,2-tetrachloroethane	0.854	0.716	16.2	98	0.00	15.09
104		trans-1,4-dichloro-2-bute	0.217	0.160	26.3#	83	0.00	15.13
105		1,2,3-trichloropropane	0.174	0.177	-1.7	109	0.00	15.16
106		n-propylbenzene	3.500	3.039	13.2	95	0.00	15.15
107		4-Ethyltoluene		----------NA----------				
108		2-chlorotoluene	0.731	0.662	9.4	98	0.00	15.31
109		4-chlorotoluene	2.300	1.939	15.7	95	0.00	15.40
110		1,3,5-trimethylbenzene	2.549	2.162	15.2	94	0.00	15.29
111		tert-butylbenzene	2.122	1.859	12.4	97	0.00	15.63
112		pentachloroethane	0.503	0.504	-0.2	109	0.00	15.74
113		1,2,4-trimethylbenzene	2.557	2.205	13.8	95	0.00	15.68
114		sec-butylbenzene	3.232	2.736	15.3	95	0.00	15.84
115		1,3-dichlorobenzene	1.529	1.364	10.8	100	0.00	16.06
116		p-isopropyltoluene	2.642	2.270	14.1	94	0.00	15.96
117		1,4-dichlorobenzene	1.521	1.343	11.7	99	0.00	16.14
118		1,2-dichlorobenzene	1.461	1.340	8.3	102	0.00	16.53
119		n-butylbenzene	0.620	0.544	12.3	95	0.00	16.37
120		p-Diethylbenzene		----------NA----------				
121		1,2-dibromo-3-chloropropa	0.157	0.149	5.1	107	0.00	17.32
122		1,3,5-Trichlorobenzene	1.207	1.103	8.6	101	0.00	17.47
123		1,2,4-trichlorobenzene	1.089	0.914	16.1	93	0.00	18.11
124		1,2,4,5-tetramethylbenzen		----------NA----------				
125		hexachlorobutadiene	0.566	0.542	4.2	103	0.00	18.20
126		naphthalene	2.289	1.833	19.9	91	0.00	18.40
127		1,2,3-trichlorobenzene	0.963	0.824	14.4	94	0.00	18.66
128		hexachloroethane	0.541	0.528	2.4	106	0.00	16.76
129		Benzyl chloride	1.507	1.199	20.4#	92	0.00	16.26

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Y127984.D MY5501.M Thu Dec 06 11:09:22 2012 RPT1

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5530-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128607.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\MSDChem\1\DATA\Y128607.D Vial: 2
Acq On : 3 Dec 2012 9:48 am Operator: ROBERTS
Sample : CC5501-20 Inst : MSY
Misc : MS39433,VY5530,5.0,,,,1 Multiplr: 1.00
MS Integration Params: LSCINT.P

Method : C:\MSDCHEM\1\METHODS\MY5501.M (RTE Integrator)
Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Mon Nov 19 15:36:21 2012
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	99	-0.01	7.65
2	1,4-dioxane	0.094	0.123	-30.9#	127	0.00	11.47
3	tertiary butyl alcohol	1.106	1.304	-17.9	118	0.00	7.77
4 I	pentafluorobenzene	1.000	1.000	0.0	107	0.00	9.83
5	freon 141b	0.443	0.530	-19.6	121	0.00	6.52
6	freon 142b	0.511	0.597	-16.8	119	0.00	4.44
	----------	True	Calc.	% Drift	----------		
7	freon 143a	20.000	16.656	16.7	79	-0.02	3.82
8	chlorodifluoromethane	20.000	17.838	10.8	86	0.00	4.19
	----------	AvgRF	CCRF	% Dev	----------		
9	dichlorodifluoromethane	0.458	0.451	1.5	97	0.00	4.16
10	chloromethane	0.569	0.513	9.8	95	-0.02	4.50
11	vinyl chloride	0.558	0.509	8.8	92	-0.02	4.77
12	bromomethane	0.342	0.336	1.8	103	0.00	5.46
13	chloroethane	0.280	0.261	6.8	93	0.00	5.64
14	Vinyl Bromide		----------NA----------				
15	trichlorofluoromethane	0.541	0.568	-5.0	102	0.00	6.09
16	ethyl ether	0.274	0.257	6.2	102	-0.01	6.49
17	2-chloropropane	0.169	0.169	0.0	97	0.00	6.72
18	acrolein	0.079	0.086	-8.9	115	0.00	6.81
19	1,1-dichloroethene	0.619	0.592	4.4	94	0.00	6.94
20	acetone	0.044	0.044	0.0	129	0.00	7.05
21	allyl chloride	0.251	0.248	1.2	94	0.00	7.48
22	acetonitrile	0.045	0.091	-102.2#	178	-0.05	7.48
23	iodomethane	0.766	0.769	-0.4	102	0.00	7.24
24	iso-butyl alcohol	0.014	0.016	-14.3	123	-0.01	10.15
25	carbon disulfide	1.336	1.227	8.2	92	0.00	7.35
26	1-chloropropane	0.033	0.031	6.1	91	0.00	7.70
27	methylene chloride	0.669	0.660	1.3	98	0.00	7.69
28	methyl acetate	0.062	0.066	-6.5	114	0.00	7.48
29	methyl tert butyl ether	1.314	1.326	-0.9	106	0.00	7.97
30	trans-1,2-dichloroethene	0.590	0.573	2.9	95	0.00	8.03
31	di-isopropyl ether	1.448	1.490	-2.9	106	0.00	8.53
32	ethyl tert-butyl ether	1.438	1.452	-1.0	105	0.00	8.99
33	2-butanone	0.049	0.054	-10.2	126	0.00	9.33
34	1,1-dichloroethane	0.797	0.780	2.1	98	0.00	8.61
35	chloroprene	0.600	0.563	6.2	96	0.00	8.69
36	acrylonitrile	0.130	0.137	-5.4	106	0.00	8.06
37	vinyl acetate	0.057	0.058	-1.8	107	0.00	8.59

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5530-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128607.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38		ethyl acetate	0.053	0.056	-5.7	105	0.00	9.31
39		2,2-dichloropropane	0.630	0.607	3.7	99	0.00	9.33
40		cis-1,2-dichloroethene	0.491	0.481	2.0	99	0.00	9.35
41		propionitrile	0.052	0.056	-7.7	108	0.00	9.47
42		bromochloromethane	0.292	0.319	-9.2	107	-0.01	9.66
43		tetrahydrofuran	0.052	0.057	-9.6	110	0.00	9.69
44		chloroform	0.763	0.786	-3.0	103	0.00	9.71
45		tert-Butyl Formate	0.287	0.338	-17.8	119	0.00	9.72
46	S	dibromofluoromethane (s)	0.408	0.416	-2.0	104	0.00	9.91
47	S	1,2-dichloroethane-d4 (s)	0.433	0.415	4.2	99	0.00	10.33
48		freon 113	0.286	0.293	-2.4	102	0.00	6.87
49		methacrylonitrile	0.156	0.158	-1.3	101	0.00	9.62
50		1,1,1-trichloroethane	0.603	0.602	0.2	100	0.00	9.93
51		Cyclohexane	0.563	0.517	8.2	91	0.00	9.98
52		2,2,4-trimethylpentane	1.579	1.367	13.4	88	0.00	10.31
53		tert-amyl methyl ether	1.343	1.333	0.7	102	0.00	10.38
54	I	1,4-difluorobenzene	1.000	1.000	0.0	107	0.00	10.74
55		epichlorohydrin	0.025	0.027	-8.0	113	0.00	12.01
56		n-butyl alcohol	0.009	0.009	0.0	115	0.00	10.89
57		carbon tetrachloride	0.359	0.366	-1.9	104	0.00	10.13
58		1,1-dichloropropene	0.366	0.341	6.8	93	0.00	10.10
59		hexane	0.342	0.310	9.4	90	0.00	8.27
60		Tert Amyl Alcohol		----------NA----------				
61		benzene	1.129	1.059	6.2	95	0.00	10.38
62		heptane	0.198	0.181	8.6	91	0.00	10.48
63		isopropyl acetate	0.106	0.117	-10.4	104	0.00	10.28
64		1,2-dichloroethane	0.346	0.370	-6.9	106	0.00	10.43
65		trichloroethene	0.288	0.271	5.9	97	0.00	11.07
66		ethyl acrylate		----------NA----------				
67		2-nitropropane	0.077	0.086	-11.7	116	0.00	11.88
68		2-chloroethyl vinyl ether	0.088	0.109	-23.9#	128	0.00	11.86
69		methyl methacrylate	0.195	0.182	6.7	102	0.00	11.33
70		1,2-dichloropropane	0.309	0.298	3.6	100	0.00	11.35
71		methylcyclohexane	0.446	0.396	11.2	88	0.00	11.25
72		Tert-amyl ethyl ether		----------NA----------				
73		dibromomethane	0.172	0.183	-6.4	109	0.00	11.53
74		bromodichloromethane	0.391	0.403	-3.1	106	0.00	11.64
75		cis-1,3-dichloropropene	0.488	0.483	1.0	100	0.00	12.08
76	S	toluene-d8 (s)	0.952	0.958	-0.6	102	0.00	12.34
77		4-methyl-2-pentanone	0.105	0.122	-16.2	119	0.00	12.17
78		toluene	1.151	1.052	8.6	94	0.00	12.41
79		3-methyl-1-butanol	0.008	0.008	0.0	109	0.00	12.20
80		trans-1,3-dichloropropene	0.412	0.428	-3.9	104	0.00	12.64
81		ethyl methacrylate	0.365	0.336	7.9	101	0.00	12.59
82		1,1,2-trichloroethane	0.212	0.208	1.9	105	0.00	12.85
83		2-hexanone	0.106	0.116	-9.4	116	0.00	13.00
84	I	chlorobenzene-d5	1.000	1.000	0.0	110	0.00	13.83
85		tetrachloroethene	0.372	0.332	10.8	94	0.00	12.97
86		1,3-dichloropropane	0.500	0.498	0.4	104	0.00	13.03
87		butyl acetate	0.212	0.206	2.8	106	0.00	13.05
88		dibromochloromethane	0.365	0.383	-4.9	109	0.00	13.29
89		1,2-dibromoethane	0.307	0.318	-3.6	108	0.00	13.44
90		3,3-Dimethyl-1-Butanol	0.039	0.035	10.3	103	0.00	13.17
91		chlorobenzene	0.950	0.877	7.7	98	0.00	13.87
92		1,1,1,2-tetrachloroethane	0.344	0.344	0.0	105	0.00	13.92
93		ethylbenzene	1.497	1.384	7.5	95	0.00	13.90
94		m,p-xylene	0.574	0.519	9.6	93	0.00	14.00
95		o-xylene	1.314	1.153	12.3	94	0.00	14.41

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5530-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128607.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96		styrene	1.007	0.904	10.2	93	0.00	14.44
97		bromoform	0.232	0.255	-9.9	114	0.00	14.73
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	106	0.00	16.11
99		isopropylbenzene	2.975	2.725	8.4	92	0.00	14.74
100	S	4-bromofluorobenzene (s)	0.911	0.874	4.1	96	0.00	14.97
101		bromobenzene	0.800	0.791	1.1	102	0.00	15.16
102		cyclohexanone	0.135	0.127	5.9	117	0.00	14.96
103		1,1,2,2-tetrachloroethane	0.854	0.825	3.4	103	0.00	15.08
104		trans-1,4-dichloro-2-bute	0.217	0.203	6.5	96	0.00	15.13
105		1,2,3-trichloropropane	0.174	0.195	-12.1	110	0.00	15.16
106		n-propylbenzene	3.500	3.213	8.2	92	0.00	15.15
107		4-Ethyltoluene		----------NA----------				
108		2-chlorotoluene	0.731	0.698	4.5	95	0.00	15.31
109		4-chlorotoluene	2.300	2.109	8.3	94	0.00	15.40
110		1,3,5-trimethylbenzene	2.549	2.304	9.6	92	0.00	15.29
111		tert-butylbenzene	2.122	1.913	9.8	91	0.00	15.63
112		pentachloroethane	0.503	0.514	-2.2	101	0.00	15.74
113		1,2,4-trimethylbenzene	2.557	2.330	8.9	92	0.00	15.68
114		sec-butylbenzene	3.232	2.829	12.5	89	0.00	15.84
115		1,3-dichlorobenzene	1.529	1.401	8.4	94	0.00	16.06
116		p-isopropyltoluene	2.642	2.354	10.9	89	0.00	15.96
117		1,4-dichlorobenzene	1.521	1.390	8.6	94	0.00	16.14
118		1,2-dichlorobenzene	1.461	1.378	5.7	96	0.00	16.53
119		n-butylbenzene	0.620	0.545	12.1	87	0.00	16.37
120		p-Diethylbenzene		----------NA----------				
121		1,2-dibromo-3-chloropropa	0.157	0.155	1.3	102	0.00	17.32
122		1,3,5-Trichlorobenzene	1.207	1.107	8.3	92	0.00	17.47
123		1,2,4-trichlorobenzene	1.089	0.909	16.5	84	0.00	18.11
124		1,2,4,5-tetramethylbenzen		----------NA----------				
125		hexachlorobutadiene	0.566	0.519	8.3	90	0.00	18.20
126		naphthalene	2.289	1.933	15.6	88	0.00	18.41
127		1,2,3-trichlorobenzene	0.963	0.819	15.0	85	0.00	18.66
128		hexachloroethane	0.541	0.528	2.4	97	0.00	16.76
129		Benzyl chloride	1.507	1.442	4.3	101	0.00	16.27

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Y127984.D MY5501.M Mon Dec 03 15:39:03 2012 RPT1

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5539-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128796.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDChem\1\DATA\Y128796.D                    Vial: 2
Acq On    :  7 Dec 2012   9:18 am                     Operator: ROBERTS
Sample    : CC5501-20                                 Inst    : MSY
Misc      : MS39811,VY5539,5.0,,,,1                   Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MY5501.M (RTE Integrator)
Title        : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Nov 19 15:36:21 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	132	0.00	7.66
2	1,4-dioxane	0.094	0.099	-5.3	138	0.00	11.47
3	tertiary butyl alcohol	1.106	1.179	-6.6	143	0.00	7.77
4 I	pentafluorobenzene	1.000	1.000	0.0	116	0.00	9.83
5	freon 141b		----------NA----------				
6	freon 142b		----------NA----------				
	----------	True	Calc.	% Drift	----------		
7	freon 143a		----------NA----------				
8	chlorodifluoromethane	20.000	17.218	13.9	90	-0.02	4.18
	----------	AvgRF	CCRF	% Dev	----------		
9	dichlorodifluoromethane	0.458	0.415	9.4	97	-0.02	4.15
10	chloromethane	0.569	0.511	10.2	103	-0.02	4.50
11	vinyl chloride	0.558	0.534	4.3	105	-0.02	4.76
12	bromomethane	0.342	0.359	-5.0	119	0.00	5.46
13	chloroethane	0.280	0.281	-0.4	108	0.00	5.64
14	Vinyl Bromide		----------NA----------				
15	trichlorofluoromethane	0.541	0.636	-17.6	124	0.00	6.09
16	ethyl ether	0.274	0.292	-6.6	126	0.00	6.49
17	2-chloropropane	0.169	0.193	-14.2	120	0.00	6.72
18	acrolein	0.079	0.084	-6.3	122	0.00	6.82
19	1,1-dichloroethene	0.619	0.658	-6.3	113	0.00	6.94
20	acetone	0.044	0.043	2.3	138	0.00	7.05
21	allyl chloride	0.251	0.278	-10.8	113	0.00	7.48
22	acetonitrile	0.045	0.056	-24.4#	118	0.00	7.53
23	iodomethane	0.766	0.880	-14.9	127	0.00	7.24
24	iso-butyl alcohol	0.014	0.018	-28.6#	146	0.00	10.15
25	carbon disulfide	1.336	1.492	-11.7	121	0.00	7.35
26	1-chloropropane	0.033	0.039	-18.2	124	-0.01	7.69
27	methylene chloride	0.669	0.743	-11.1	120	0.00	7.69
28	methyl acetate	0.062	0.076	-22.6#	142	0.00	7.47
29	methyl tert butyl ether	1.314	1.466	-11.6	127	0.00	7.96
30	trans-1,2-dichloroethene	0.590	0.659	-11.7	119	0.00	8.03
31	di-isopropyl ether	1.448	1.561	-7.8	120	0.00	8.53
32	ethyl tert-butyl ether	1.438	1.481	-3.0	116	0.00	8.99
33	2-butanone	0.049	0.052	-6.1	130	0.00	9.33
34	1,1-dichloroethane	0.797	0.874	-9.7	119	0.00	8.61
35	chloroprene	0.600	0.600	0.0	111	0.00	8.69
36	acrylonitrile	0.130	0.158	-21.5#	131	0.00	8.06
37	vinyl acetate	0.057	0.054	5.3	108	0.00	8.59

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5539-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128796.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38		ethyl acetate	0.053	0.060	-13.2	122	0.00	9.32
39		2,2-dichloropropane	0.630	0.705	-11.9	124	-0.02	9.32
40		cis-1,2-dichloroethene	0.491	0.545	-11.0	122	0.00	9.35
41		propionitrile	0.052	0.064	-23.1#	134	0.00	9.48
42		bromochloromethane	0.292	0.357	-22.3#	130	0.00	9.67
43		tetrahydrofuran	0.052	0.069	-32.7#	145	0.00	9.70
44		chloroform	0.763	0.891	-16.8	126	0.00	9.71
45		tert-Butyl Formate	0.287	0.328	-14.3	126	0.00	9.72
46	S	dibromofluoromethane (s)	0.408	0.436	-6.9	118	0.00	9.91
47	S	1,2-dichloroethane-d4 (s)	0.433	0.435	-0.5	112	0.00	10.34
48		freon 113	0.286	0.321	-12.2	121	0.00	6.88
49		methacrylonitrile	0.156	0.182	-16.7	126	0.00	9.62
50		1,1,1-trichloroethane	0.603	0.691	-14.6	124	0.00	9.93
51		Cyclohexane	0.563	0.620	-10.1	118	0.00	9.97
52		2,2,4-trimethylpentane	1.579	1.459	7.6	101	0.00	10.31
53		tert-amyl methyl ether	1.343	1.378	-2.6	115	0.00	10.37
54	I	1,4-difluorobenzene	1.000	1.000	0.0	117	0.00	10.74
55		epichlorohydrin	0.025	0.028	-12.0	128	0.00	12.01
56		n-butyl alcohol	0.009	0.010	-11.1	132	0.00	10.89
57		carbon tetrachloride	0.359	0.421	-17.3	130	0.00	10.12
58		1,1-dichloropropene	0.366	0.390	-6.6	116	0.00	10.10
59		hexane	0.342	0.336	1.8	107	0.00	8.27
60		Tert Amyl Alcohol		----------NA----------				
61		benzene	1.129	1.187	-5.1	116	0.00	10.38
62		heptane	0.198	0.192	3.0	105	0.00	10.48
63		isopropyl acetate	0.106	0.129	-21.7#	125	0.00	10.28
64		1,2-dichloroethane	0.346	0.403	-16.5	126	0.00	10.42
65		trichloroethene	0.288	0.307	-6.6	120	0.00	11.08
66		ethyl acrylate		----------NA----------				
67		2-nitropropane	0.077	0.094	-22.1#	137	0.00	11.88
68		2-chloroethyl vinyl ether	0.088	0.121	-37.5#	155	0.00	11.86
69		methyl methacrylate	0.195	0.201	-3.1	123	0.00	11.33
70		1,2-dichloropropane	0.309	0.334	-8.1	122	0.00	11.35
71		methylcyclohexane	0.446	0.431	3.4	105	0.00	11.26
72		Tert-amyl ethyl ether		----------NA----------				
73		dibromomethane	0.172	0.209	-21.5#	136	0.00	11.53
74		bromodichloromethane	0.391	0.451	-15.3	129	0.00	11.64
75		cis-1,3-dichloropropene	0.488	0.534	-9.4	121	0.00	12.08
76	S	toluene-d8 (s)	0.952	0.956	-0.4	111	0.00	12.34
77		4-methyl-2-pentanone	0.105	0.121	-15.2	129	0.00	12.17
78		toluene	1.151	1.181	-2.6	115	0.00	12.41
79		3-methyl-1-butanol	0.008	0.009	-12.5	131	0.00	12.19
80		trans-1,3-dichloropropene	0.412	0.477	-15.8	127	0.00	12.64
81		ethyl methacrylate	0.365	0.374	-2.5	122	0.00	12.59
82		1,1,2-trichloroethane	0.212	0.229	-8.0	126	0.00	12.85
83		2-hexanone	0.106	0.123	-16.0	135	0.00	13.00
84	I	chlorobenzene-d5	1.000	1.000	0.0	123	0.00	13.83
85		tetrachloroethene	0.372	0.375	-0.8	118	0.00	12.98
86		1,3-dichloropropane	0.500	0.538	-7.6	125	0.00	13.03
87		butyl acetate	0.212	0.219	-3.3	125	0.00	13.04
88		dibromochloromethane	0.365	0.422	-15.6	134	0.00	13.28
89		1,2-dibromoethane	0.307	0.348	-13.4	131	0.00	13.44
90		3,3-Dimethyl-1-Butanol	0.039	0.037	5.1	120	0.00	13.16
91		chlorobenzene	0.950	0.954	-0.4	119	0.00	13.87
92		1,1,1,2-tetrachloroethane	0.344	0.375	-9.0	127	0.00	13.92
93		ethylbenzene	1.497	1.506	-0.6	116	0.00	13.90
94		m,p-xylene	0.574	0.568	1.0	114	0.00	14.00
95		o-xylene	1.314	1.271	3.3	115	0.00	14.41

Continuing Calibration Summary

Job Number: JB22267 **Sample:** VY5539-CC5501
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Y128796.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96		styrene	1.007	0.983	2.4	113	0.00	14.44
97		bromoform	0.232	0.289	-24.6#	144	0.00	14.73
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	119	0.00	16.11
99		isopropylbenzene	2.975	2.984	-0.3	114	0.00	14.74
100	S	4-bromofluorobenzene (s)	0.911	0.860	5.6	107	0.00	14.97
101		bromobenzene	0.800	0.863	-7.9	125	0.00	15.16
102		cyclohexanone	0.135	0.179	-32.6#	187	0.00	14.96
103		1,1,2,2-tetrachloroethane	0.854	0.897	-5.0	126	0.00	15.09
104		trans-1,4-dichloro-2-bute	0.217	0.225	-3.7	120	0.00	15.13
105		1,2,3-trichloropropane	0.174	0.216	-24.1#	138	0.00	15.16
106		n-propylbenzene	3.500	3.543	-1.2	114	0.00	15.14
107		4-Ethyltoluene		----------NA----------				
108		2-chlorotoluene	0.731	0.762	-4.2	117	0.00	15.30
109		4-chlorotoluene	2.300	2.246	2.3	113	0.00	15.40
110		1,3,5-trimethylbenzene	2.549	2.497	2.0	112	0.00	15.29
111		tert-butylbenzene	2.122	2.050	3.4	110	0.00	15.63
112		pentachloroethane	0.503	0.565	-12.3	126	0.00	15.74
113		1,2,4-trimethylbenzene	2.557	2.522	1.4	112	0.00	15.68
114		sec-butylbenzene	3.232	3.122	3.4	111	0.00	15.84
115		1,3-dichlorobenzene	1.529	1.531	-0.1	116	0.00	16.06
116		p-isopropyltoluene	2.642	2.550	3.5	109	0.00	15.96
117		1,4-dichlorobenzene	1.521	1.531	-0.7	116	0.00	16.14
118		1,2-dichlorobenzene	1.461	1.503	-2.9	118	0.00	16.53
119		n-butylbenzene	0.620	0.603	2.7	108	0.00	16.37
120		p-Diethylbenzene		----------NA----------				
121		1,2-dibromo-3-chloropropa	0.157	0.179	-14.0	133	0.00	17.32
122		1,3,5-Trichlorobenzene	1.207	1.229	-1.8	116	0.00	17.47
123		1,2,4-trichlorobenzene	1.089	1.017	6.6	106	0.00	18.11
124		1,2,4,5-tetramethylbenzen		----------NA----------				
125		hexachlorobutadiene	0.566	0.597	-5.5	117	0.00	18.20
126		naphthalene	2.289	2.135	6.7	110	0.00	18.41
127		1,2,3-trichlorobenzene	0.963	0.928	3.6	109	0.00	18.66
128		hexachloroethane	0.541	0.591	-9.2	122	0.00	16.76
129		Benzyl chloride	1.507	1.491	1.1	118	0.00	16.26

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Y127984.D MY5501.M Fri Dec 07 16:26:04 2012 RPT1

New Jersey

ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128568.D
Acq On : 1 Dec 2012 4:18 pm
Operator : ROBERTS
Sample : JB22267-1
Misc : MS39454,VY5528,7.0,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 11:13:15 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	57360	500.00	ug/L	-0.02
4) pentafluorobenzene	9.83	168	178752	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	258515	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	205333	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	95851	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	64854	44.42	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 88.84%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	64305	41.58	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 83.16%			
76) toluene-d8 (s)	12.34	98	244947	49.75	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.50%			
100) 4-bromofluorobenzene (s)	14.97	95	81546	46.68	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 93.36%			

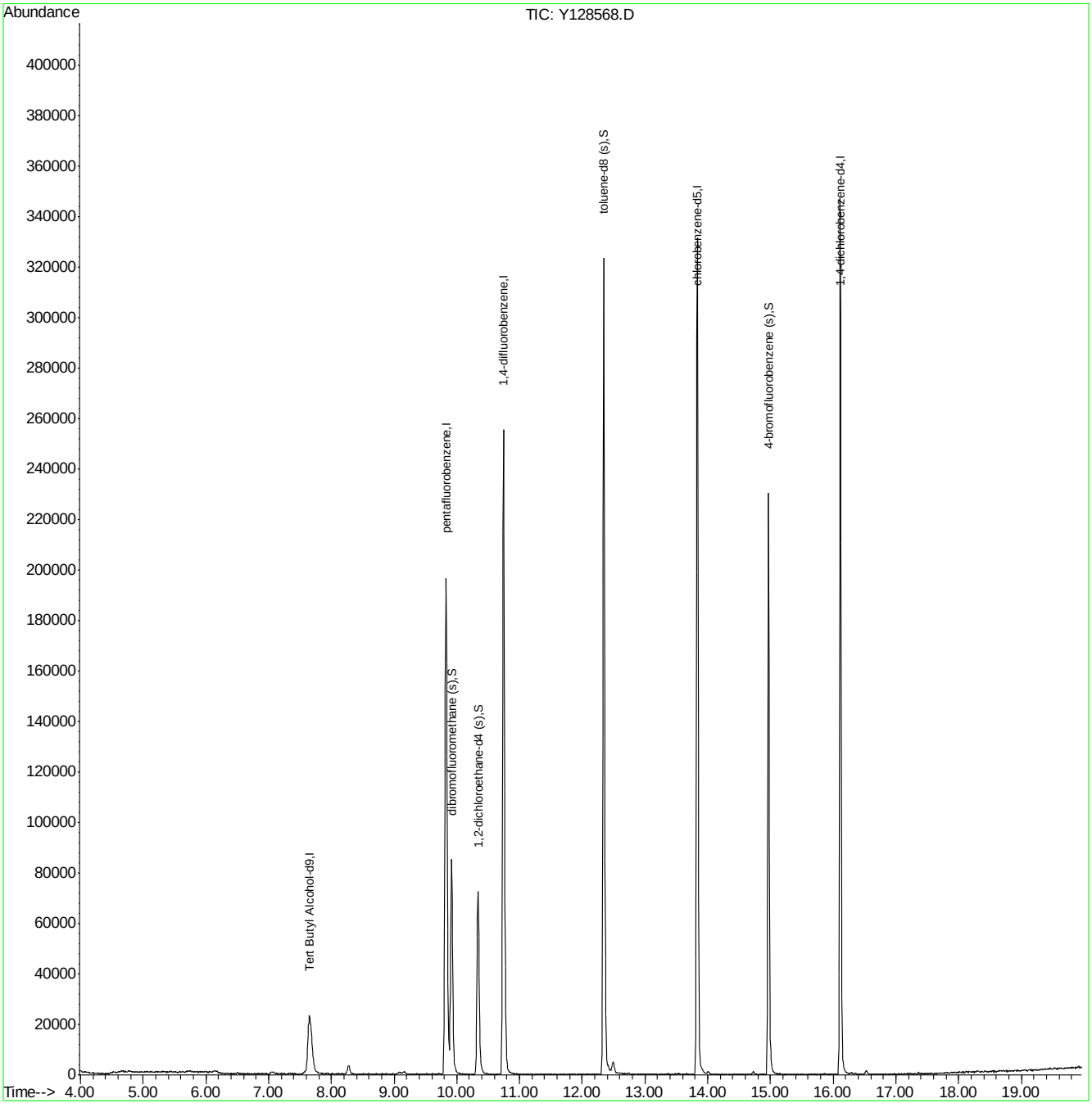
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128568.D
Acq On : 1 Dec 2012 4:18 pm
Operator : ROBERTS
Sample : JB22267-1
Misc : MS39454,VY5528,7.0,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 06 11:13:15 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Thu Dec 06 11:16:54 2012 RPT1 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128569.D
Acq On : 1 Dec 2012 4:47 pm
Operator : ROBERTS
Sample : JB22267-2
Misc : MS39454,VY5528,7.0,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 06 11:13:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	60492	500.00	ug/L	-0.02
4) pentafluorobenzene	9.83	168	165657	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.74	114	239899	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	194118	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	91460	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	65582	48.47	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 96.94%			
47) 1,2-dichloroethane-d4 (s)	10.33	65	63199	44.09	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 88.18%			
76) toluene-d8 (s)	12.34	98	228065	49.92	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.84%			
100) 4-bromofluorobenzene (s)	14.97	95	77942	46.76	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 93.52%			

Target Compounds Qvalue

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

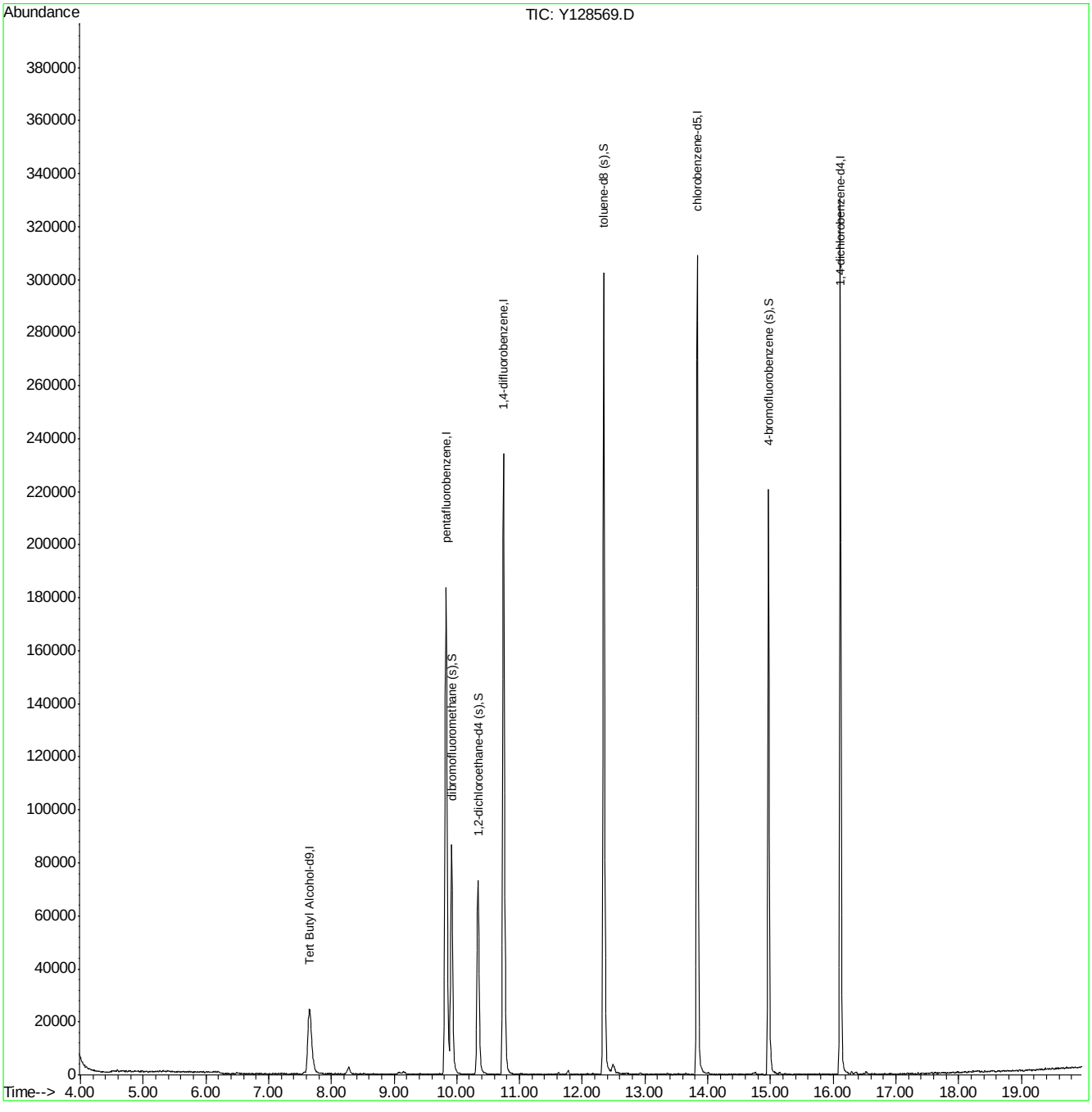
7.1.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128569.D
Acq On : 1 Dec 2012 4:47 pm
Operator : ROBERTS
Sample : JB22267-2
Misc : MS39454,VY5528,7.0,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 06 11:13:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128575.D
Acq On : 1 Dec 2012 7:41 pm
Operator : ROBERTS
Sample : JB22267-3
Misc : MS39454,VY5528,5.5,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 06 11:15:18 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	53083	500.00	ug/L	-0.02
4) pentafluorobenzene	9.83	168	153320	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.74	114	223197	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	175332	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	78923	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	59621	47.61	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.22%			
47) 1,2-dichloroethane-d4 (s)	10.33	65	58108	43.81	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 87.62%			
76) toluene-d8 (s)	12.34	98	209849	49.37	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 98.74%			
100) 4-bromofluorobenzene (s)	14.97	95	68845	47.87	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 95.74%			

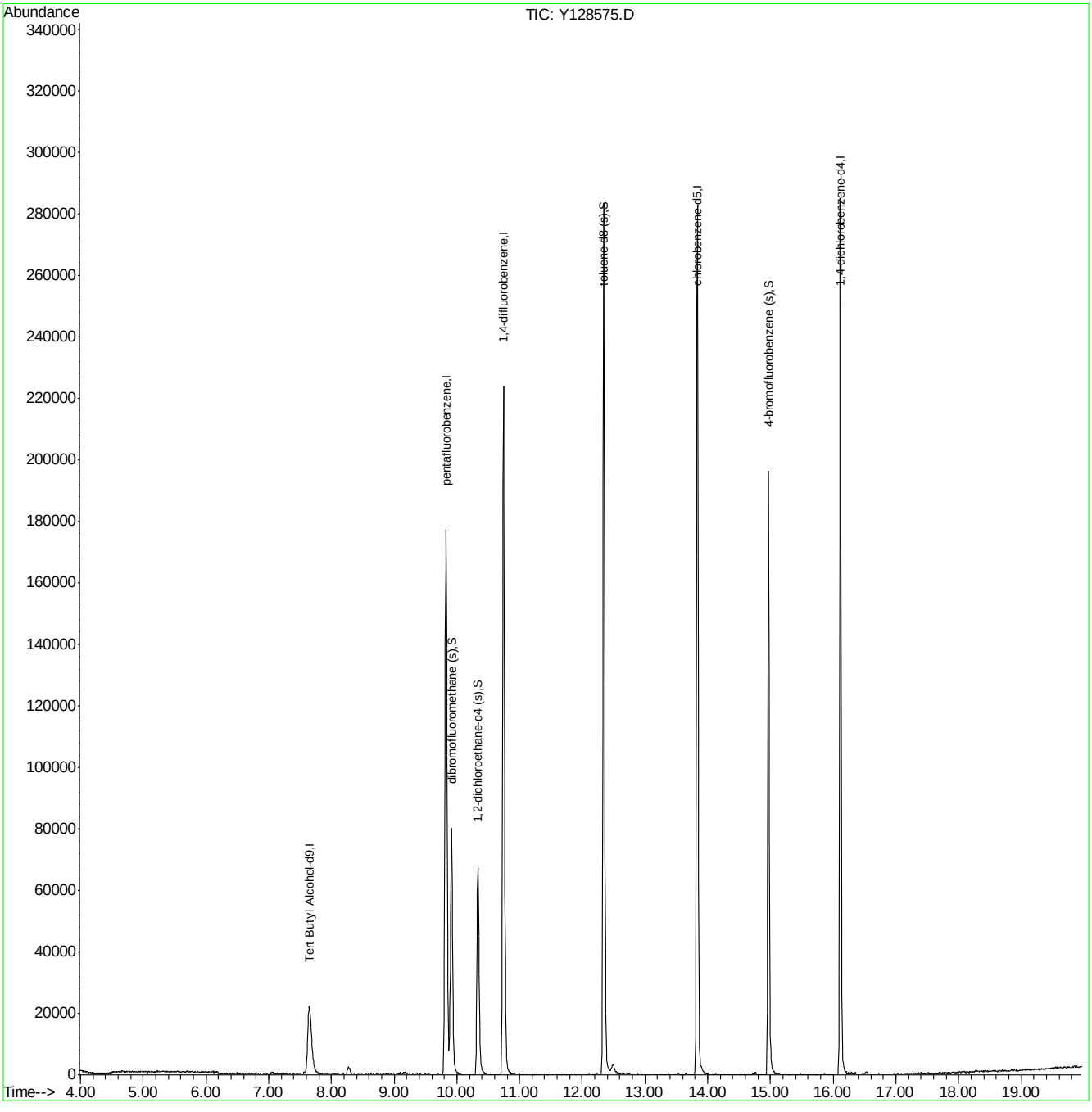
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128575.D
Acq On : 1 Dec 2012 7:41 pm
Operator : ROBERTS
Sample : JB22267-3
Misc : MS39454,VY5528,5.5,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 06 11:15:18 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Thu Dec 06 11:17:00 2012 RPT1

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128576.D
Acq On : 1 Dec 2012 8:10 pm
Operator : ROBERTS
Sample : JB22267-4
Misc : MS39454,VY5528,5.4,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 06 11:15:27 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	50482	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	144575	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	211784	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	164962	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	74387	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	58569	49.60	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 99.20%			
47) 1,2-dichloroethane-d4 (s)	10.33	65	56163	44.90	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 89.80%			
76) toluene-d8 (s)	12.34	98	200075	49.61	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.22%			
100) 4-bromofluorobenzene (s)	14.97	95	65077	48.00	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 96.00%			

Target Compounds Qvalue

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

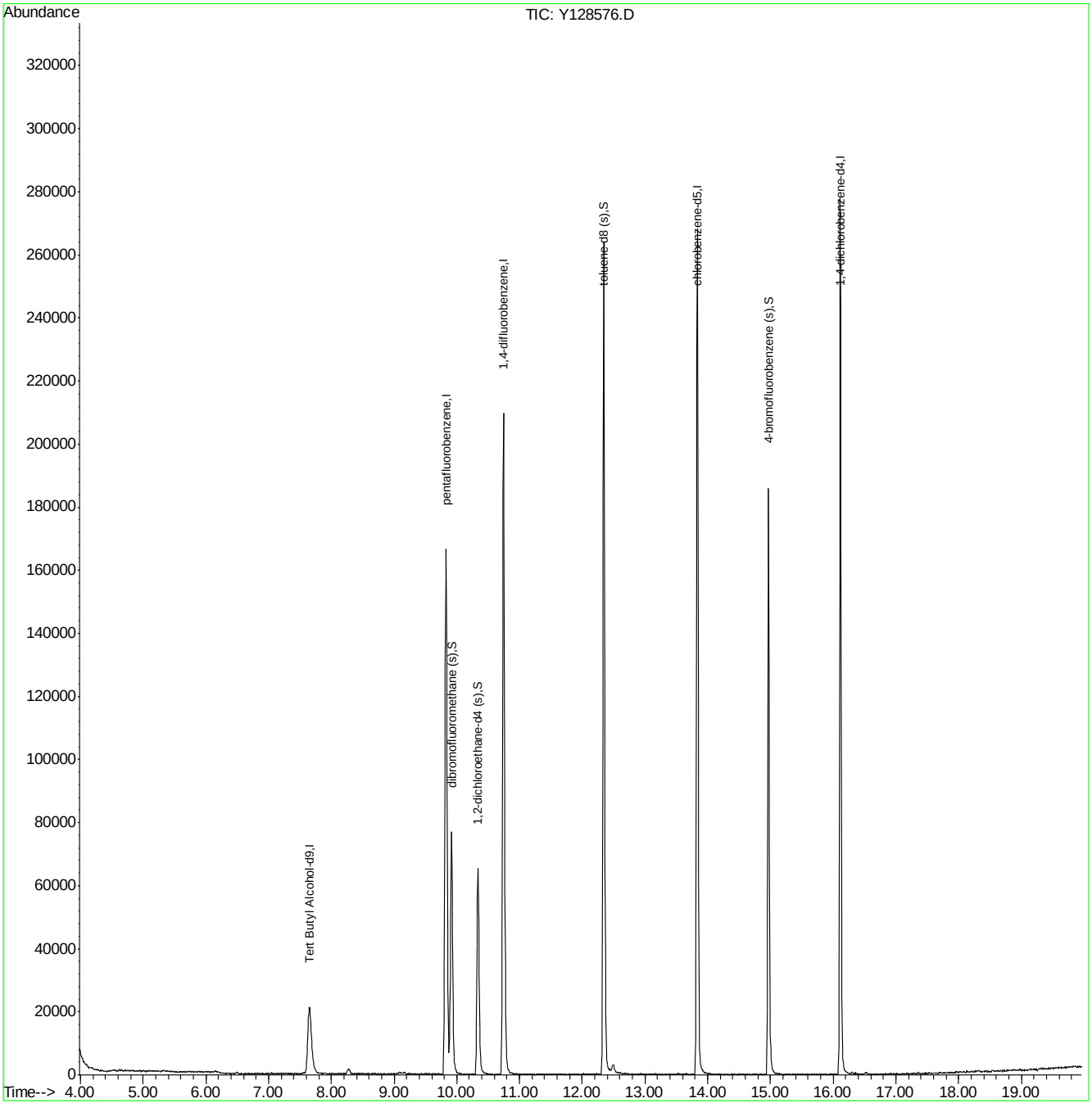
7.1.4

7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128576.D
Acq On : 1 Dec 2012 8:10 pm
Operator : ROBERTS
Sample : JB22267-4
Misc : MS39454,VY5528,5.4,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 06 11:15:27 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Thu Dec 06 11:17:01 2012 RPT1 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128577.D
Acq On : 1 Dec 2012 8:39 pm
Operator : ROBERTS
Sample : JB22267-5
Misc : MS39454,VY5528,4.1,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 06 11:15:41 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	55754	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	153019	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	220879	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	176249	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	82152	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	61345	49.08	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 98.16%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	58957	44.53	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 89.06%			
76) toluene-d8 (s)	12.34	98	210263	49.99	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.98%			
100) 4-bromofluorobenzene (s)	14.97	95	69933	46.71	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 93.42%			

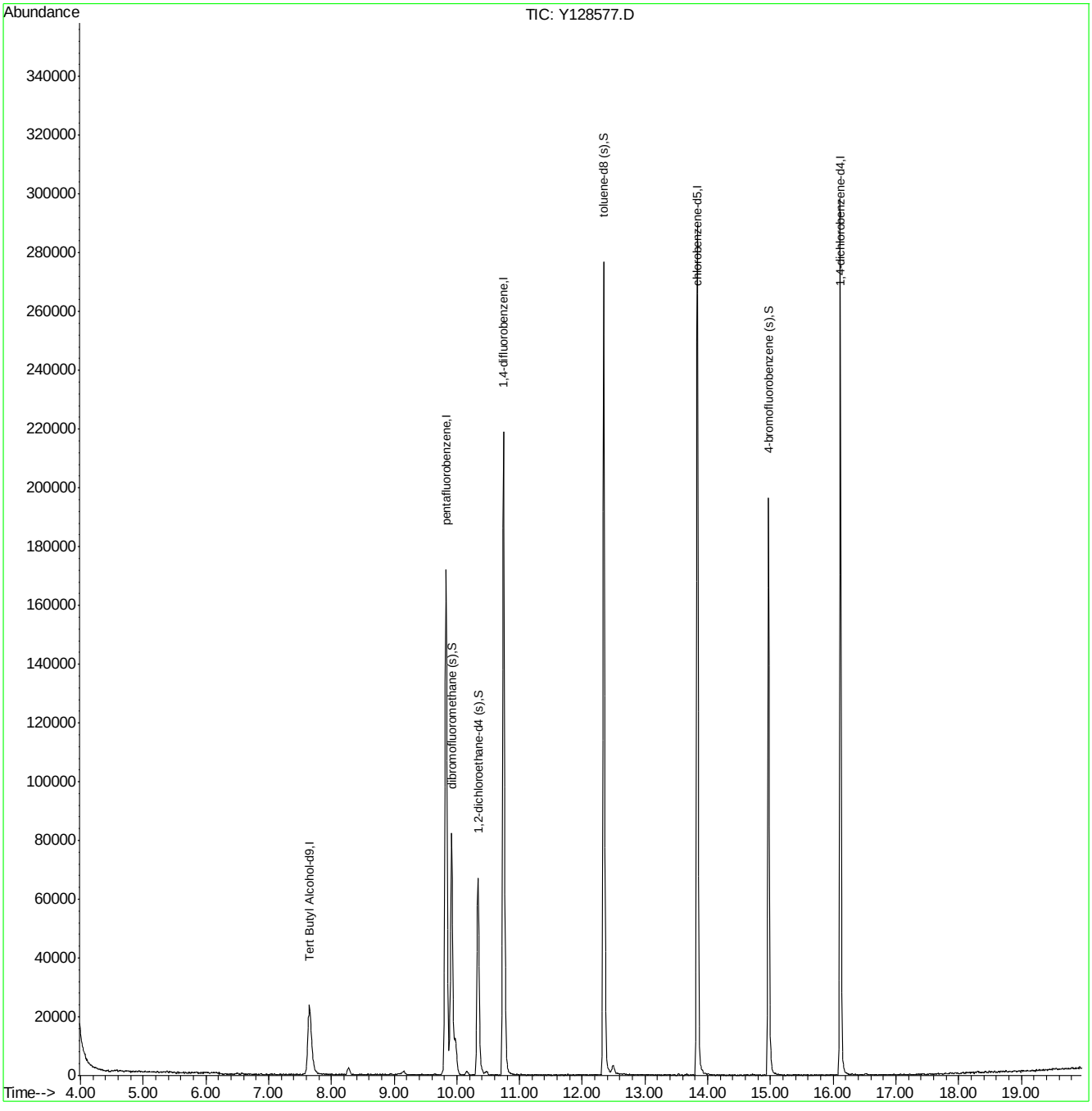
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128577.D
Acq On : 1 Dec 2012 8:39 pm
Operator : ROBERTS
Sample : JB22267-5
Misc : MS39454,VY5528,4.1,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 06 11:15:41 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



ACCUTEST LABORATORIES JB22267

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128578.D
Acq On : 1 Dec 2012 9:08 pm
Operator : ROBERTS
Sample : JB22267-6
Misc : MS39454,VY5528,6.4,,,,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 06 11:15:51 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	59797	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	146929	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	216334	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	176062	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	81468	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	60888	50.74	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 101.48%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	59661	46.93	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 93.86%			
76) toluene-d8 (s)	12.34	98	206146	50.04	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 100.08%			
100) 4-bromofluorobenzene (s)	14.97	95	71161	47.93	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 95.86%			

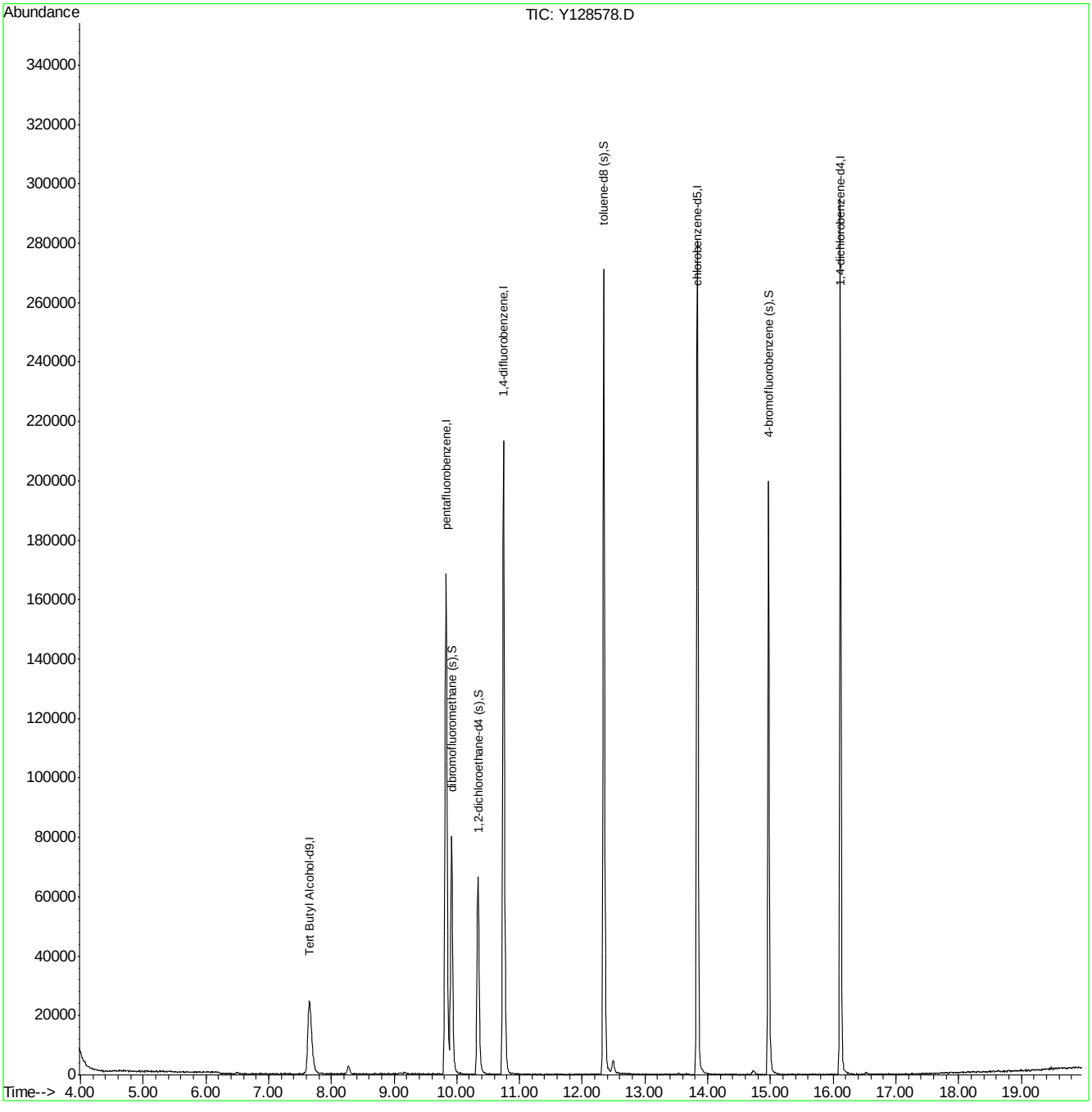
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128578.D
Acq On : 1 Dec 2012 9:08 pm
Operator : ROBERTS
Sample : JB22267-6
Misc : MS39454,VY5528,6.4,,,,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 06 11:15:51 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Thu Dec 06 11:17:02 2012 RPT1

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131180.D
Acq On : 7 Dec 2012 6:58 pm
Operator : THIENN
Sample : jb22267-7
Misc : MS39454,VV5655,4.7,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 10 17:38:14 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.636	65	43458	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	157024	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	238808	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	219927	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	119865	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.932	113	54450	56.80	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 113.60%			
59) 1,2-dichloroethane-d4 (s)	10.367	65	48537	51.85	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 103.70%			
86) toluene-d8 (s)	12.532	98	231294	57.85	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 115.70%			
110) 4-bromofluorobenzene (s)	15.508	95	87570	51.11	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 102.22%			

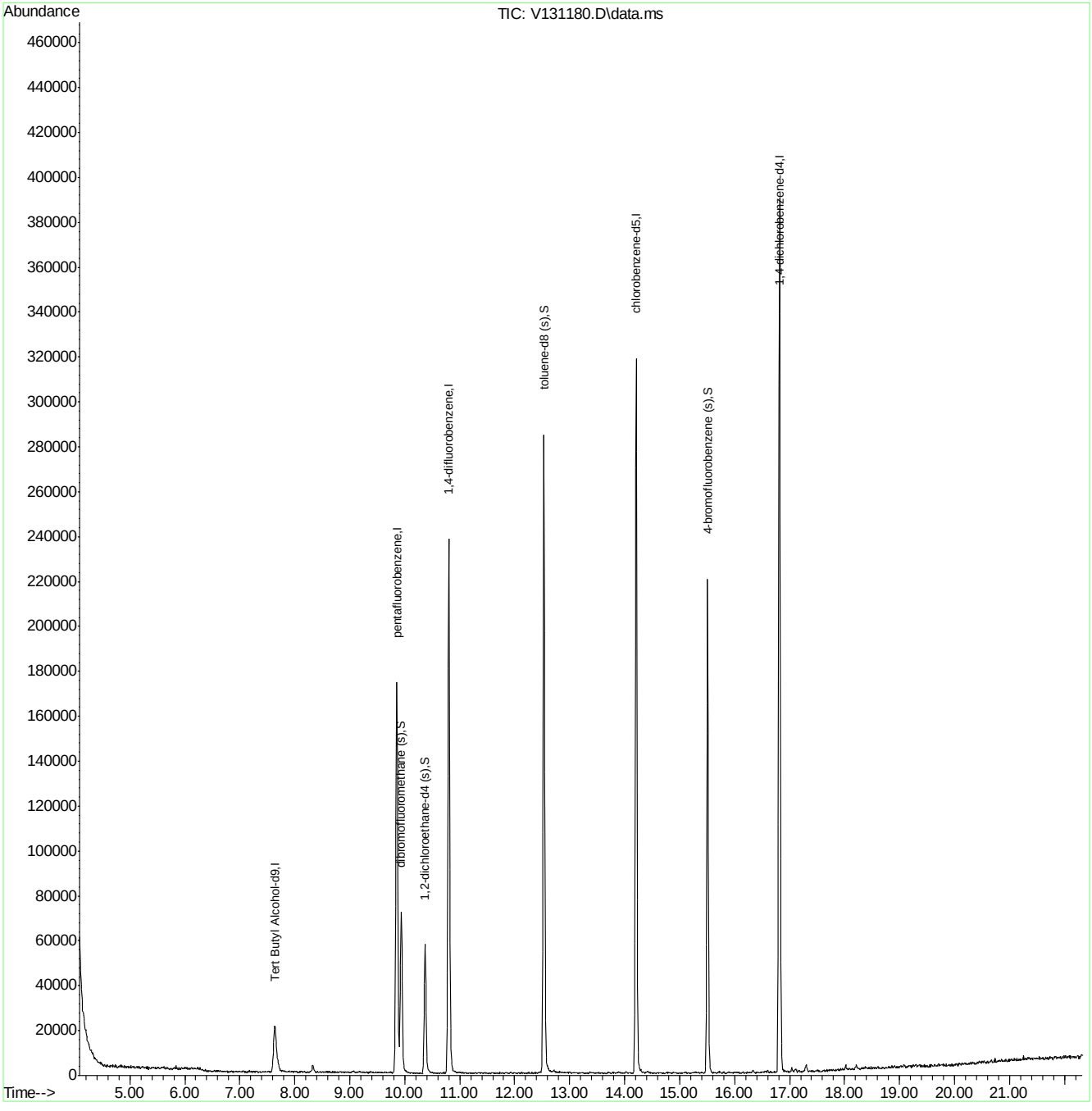
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131180.D
Acq On : 7 Dec 2012 6:58 pm
Operator : THIENN
Sample : jb22267-7
Misc : MS39454,VV5655,4.7,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 10 17:38:14 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203148.D
Acq On : 8 Dec 2012 4:58 pm
Operator : EmilyT
Sample : JB22267-8
Misc : ms39454,vd8283,4.4,,100,5,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 10 13:17:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.032	65	90961	500.00 ug/L	0.00
4) pentafluorobenzene	10.260	168	141741	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.176	114	210042	50.00 ug/L	0.00
85) chlorobenzene-d5	14.518	117	194995	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	115775	50.00 ug/L	0.00

System Monitoring Compounds					
46) dibromofluoromethane (s)	10.292	113	65009	46.35 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 92.70%		
47) 1,2-dichloroethane-d4 (s)	10.720	65	88264	54.70 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 109.40%		
77) toluene-d8 (s)	12.886	98	261232	49.05 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 98.10%		
101) 4-bromofluorobenzene (s)	15.799	95	106313	50.87 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 101.74%		

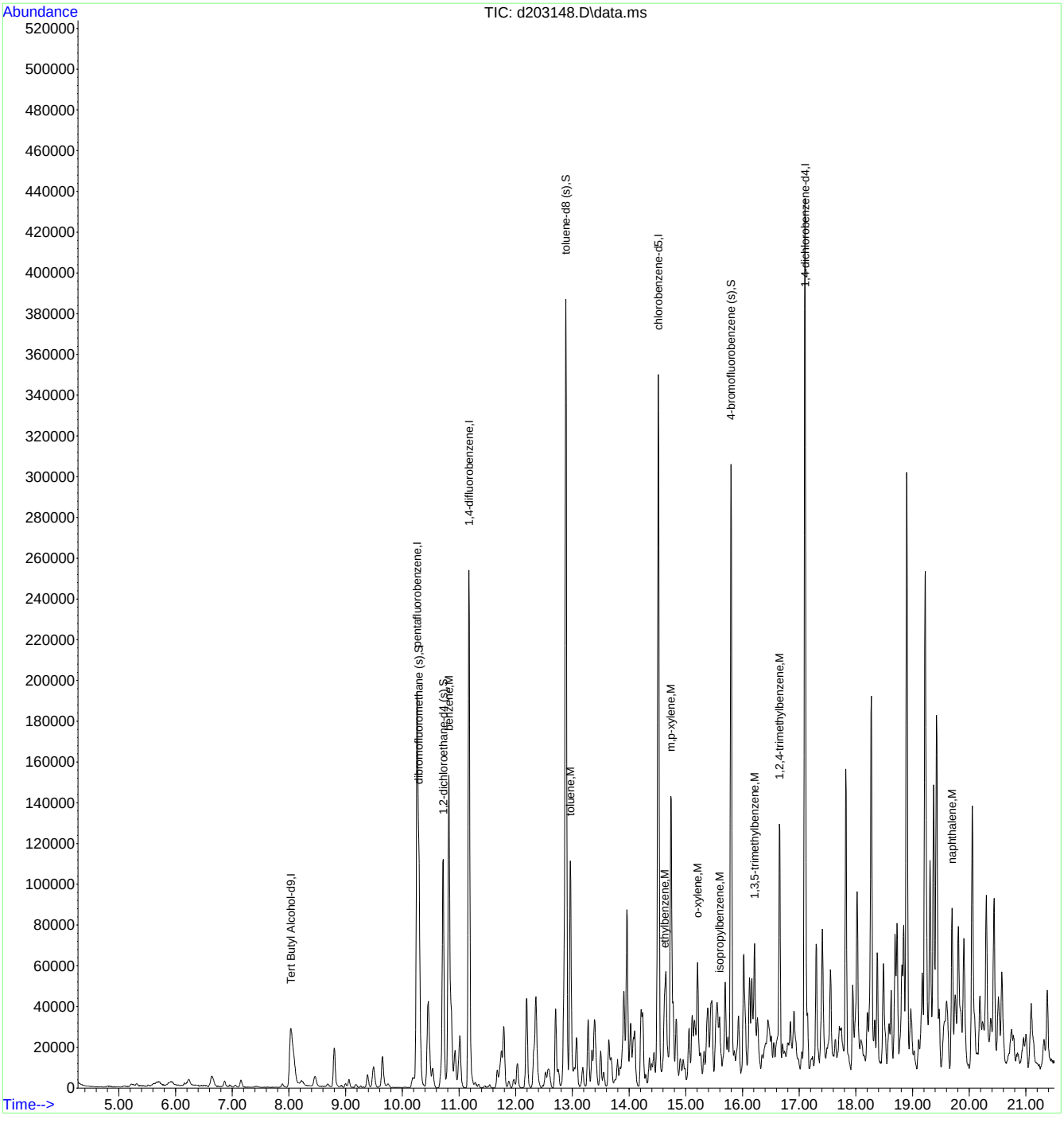
Target Compounds					Qvalue
62) benzene	10.820	78	142381	23.71 ug/L	98
79) toluene	12.964	92	45132	11.71 ug/L	99
94) ethylbenzene	14.622	91	27497	3.86 ug/L	98
95) m,p-xylene	14.742	106	40136	14.41 ug/L	97
96) o-xylene	15.203	106	6013	2.17 ug/L	98
100) isopropylbenzene	15.590	105	2761	0.39 ug/L	83
111) 1,3,5-trimethylbenzene	16.212	105	22783	3.65 ug/L	99
114) 1,2,4-trimethylbenzene	16.651	105	67164	10.39 ug/L	95
128) naphthalene	19.695	128	56697	10.55 ug/L	99

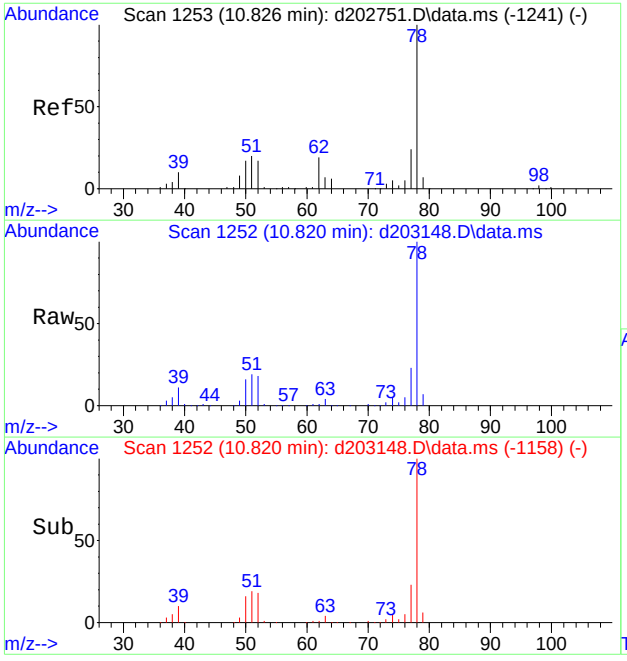
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203148.D
Acq On : 8 Dec 2012 4:58 pm
Operator : EmilyT
Sample : JB22267-8
Misc : ms39454,vd8283,4.4,,100,5,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 10 13:17:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

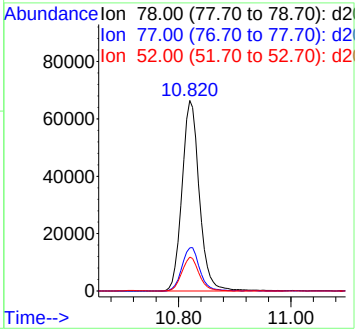


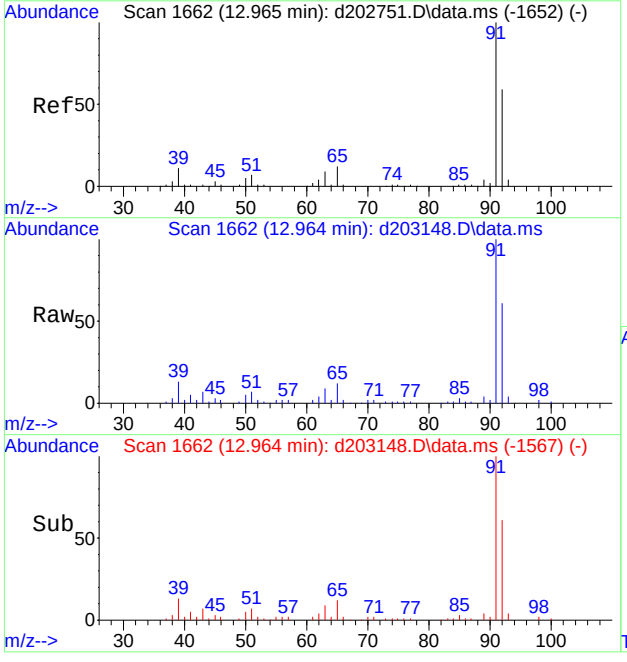


#62
benzene
Concen: 23.71 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

Tgt Ion: 78 Resp: 142381

Ion	Ratio	Lower	Upper
78	100		
77	22.7	0.0	53.8
52	17.8	0.0	46.8

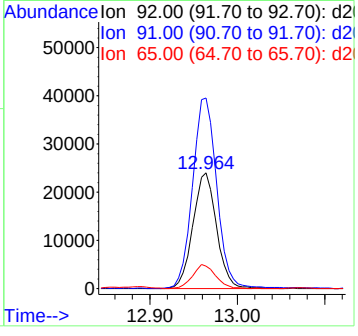


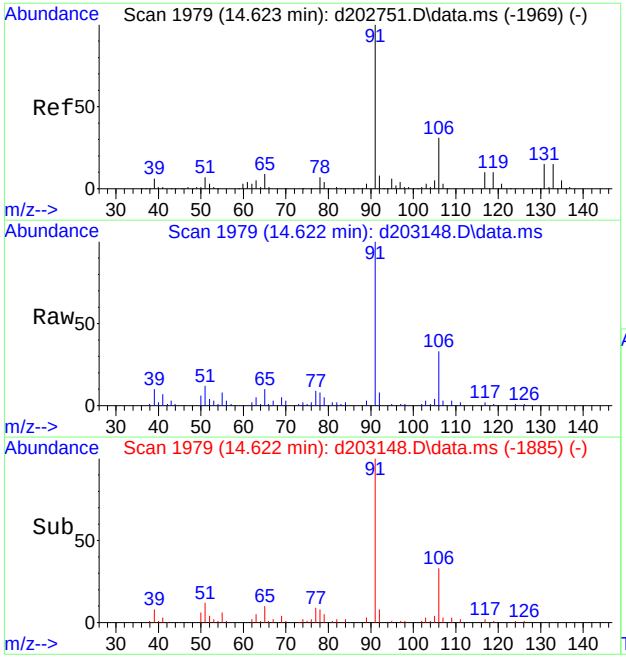


#79
toluene
Concen: 11.71 ug/L
RT: 12.964 min Scan# 1662
Delta R.T. -0.003 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

Tgt Ion: 92 Resp: 45132

Ion	Ratio	Lower	Upper
92	100		
91	164.4	136.4	196.4
65	19.3	0.0	49.2

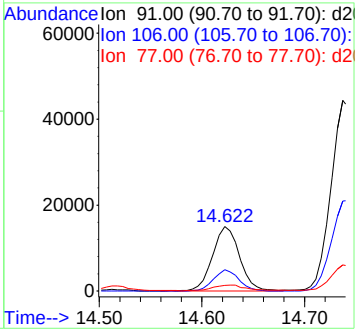


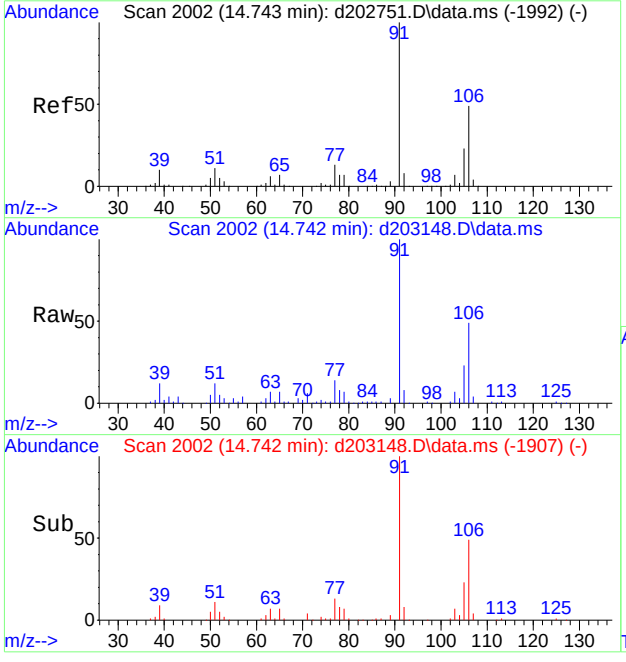


#94
ethylbenzene
Concen: 3.86 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

Tgt Ion: 91 Resp: 27497

Ion	Ratio	Lower	Upper
91	100		
106	33.1	2.1	62.1
77	8.2	0.0	38.6

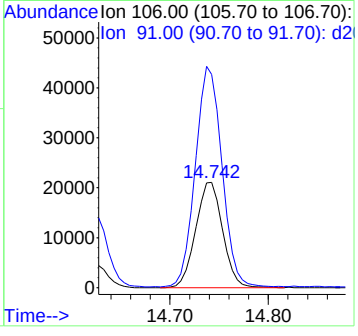




#95
m,p-xylene
Concen: 14.41 ug/L
RT: 14.742 min Scan# 2002
Delta R.T. -0.003 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

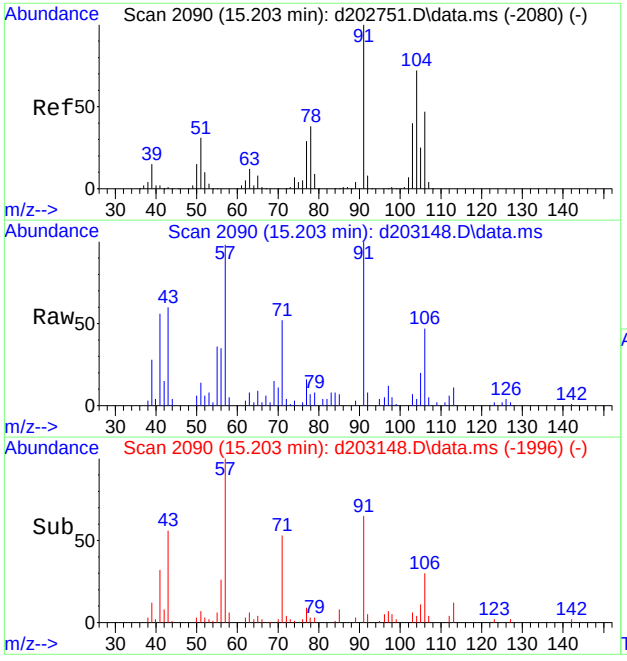
Tgt Ion:106 Resp: 40136

Ion	Ratio	Lower	Upper
106	100		
91	201.7	137.7	255.7



7.1.8

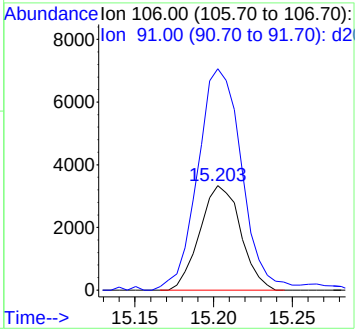
7

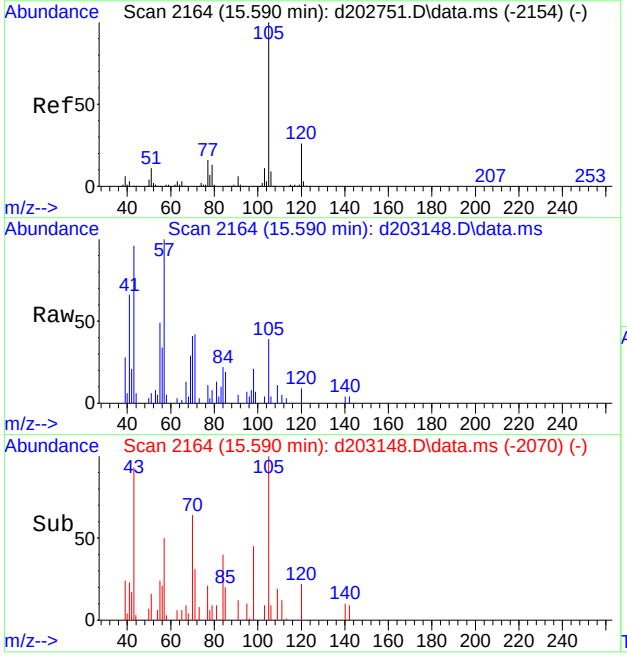


#96
o-xylene
Concen: 2.17 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

Tgt Ion:106 Resp: 6013

Ion	Ratio	Lower	Upper
106	100		
91	208.2	147.4	273.8

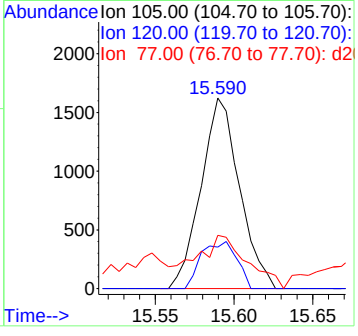




#100
isopropylbenzene
Concen: 0.39 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

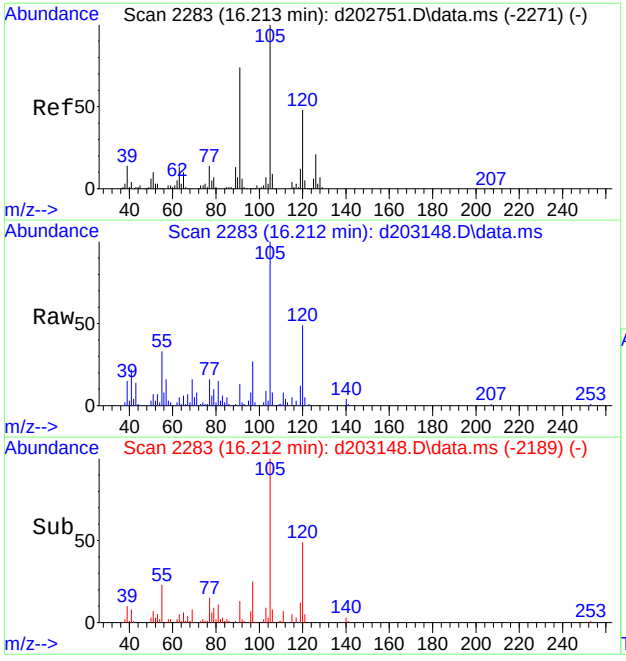
Tgt Ion:105 Resp: 2761

Ion	Ratio	Lower	Upper
105	100		
120	21.8	0.0	56.7
77	27.9	0.0	44.9



7.1.8

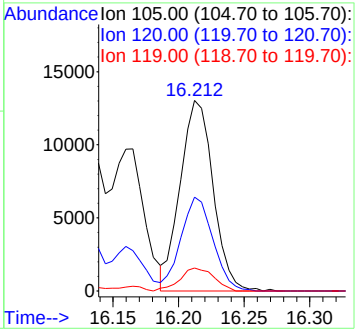
7

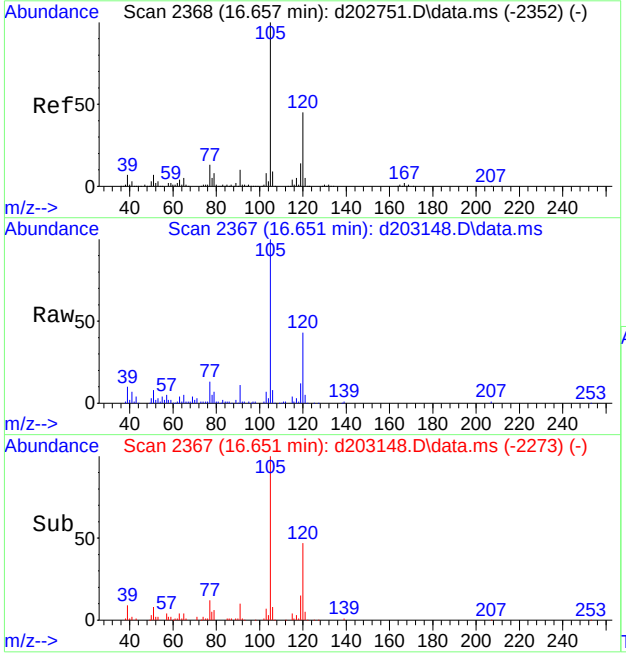


#111
1,3,5-trimethylbenzene
Concen: 3.65 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

Tgt Ion:105 Resp: 22783

Ion	Ratio	Lower	Upper
105	100		
120	49.3	19.9	79.9
119	12.0	0.0	42.6

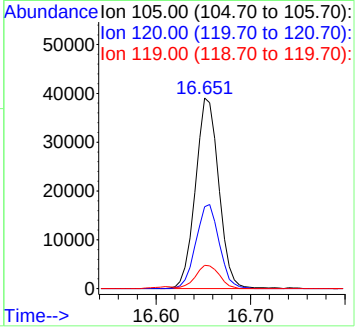




#114
1,2,4-trimethylbenzene
Concen: 10.39 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

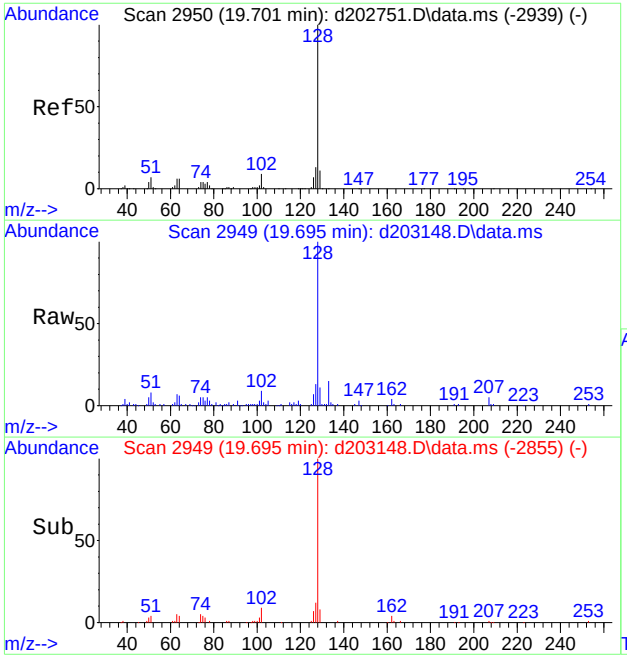
Tgt Ion:105 Resp: 67164

Ion	Ratio	Lower	Upper
105	100		
120	43.0	16.5	76.5
119	12.2	0.0	43.8



7.1.8

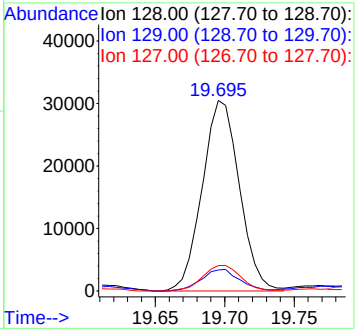
7



#128
naphthalene
Concen: 10.55 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203148.D
Acq: 8 Dec 2012 4:58 pm

Tgt Ion:128 Resp: 56697

Ion	Ratio	Lower	Upper
128	100		
129	11.1	0.0	41.0
127	13.5	0.0	42.7



7.1.8

7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128818.D
Acq On : 7 Dec 2012 8:28 pm
Operator : ROBERTS
Sample : JB22267-9
Misc : MS39454,VY5539,4.8,,,,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 11 10:26:25 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	56604	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	170298	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	238782	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	179537	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	86927	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	67862	48.79	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 97.58%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	62661	42.53	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 85.06%			
76) toluene-d8 (s)	12.34	98	215305	47.35	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 94.70%			
100) 4-bromofluorobenzene (s)	14.97	95	70506	44.51	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 89.02%			

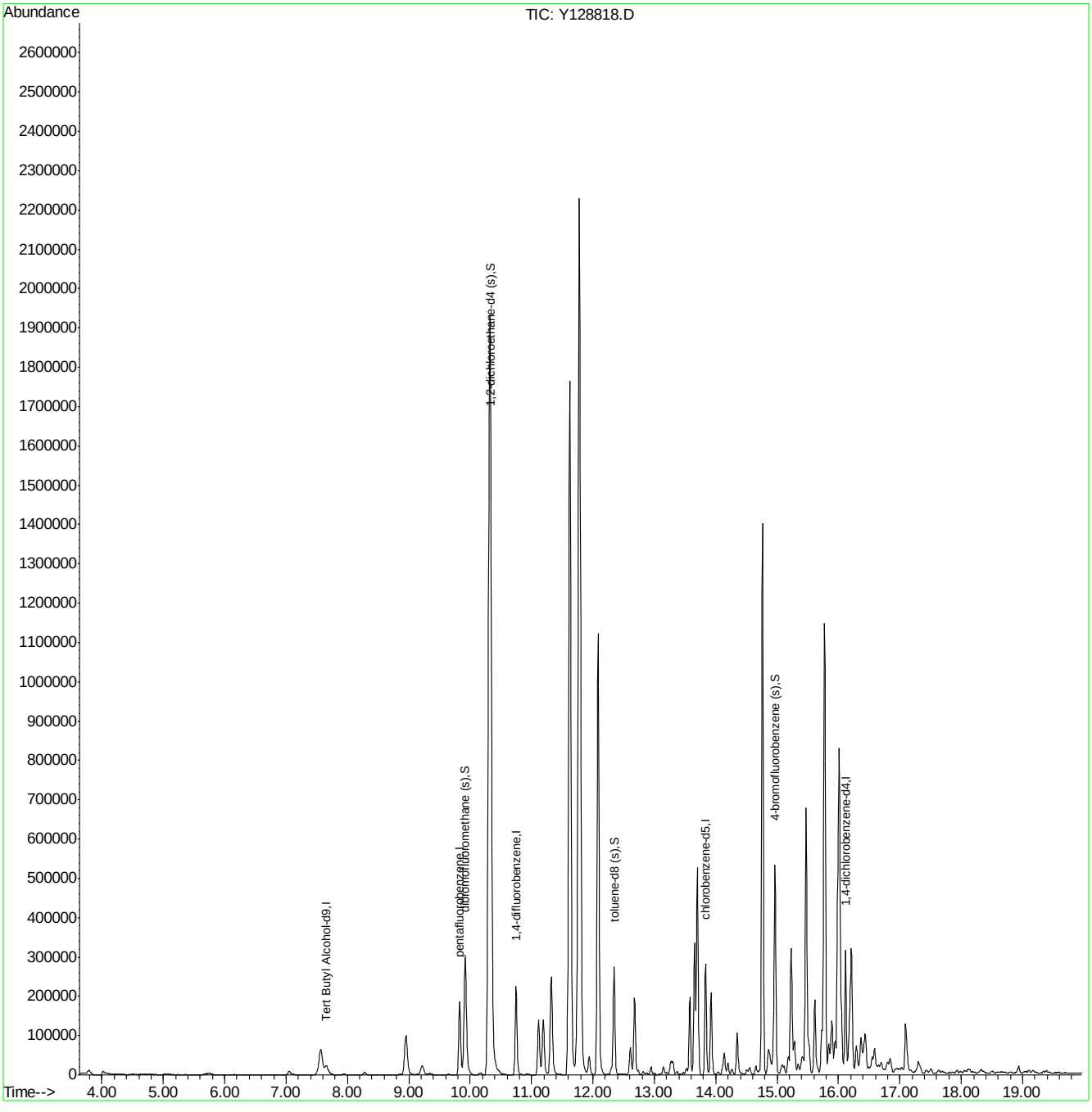
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128818.D
Acq On : 7 Dec 2012 8:28 pm
Operator : ROBERTS
Sample : JB22267-9
Misc : MS39454,VY5539,4.8,,,,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 11 10:26:25 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\X\VX5712\
Data File : X131685.D
Acq On : 11 Dec 2012 4:27 pm
Operator : margares
Sample : jb22267-10
Misc : MS39454,VX5712,4.6,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 11 17:00:56 2012
Quant Method : C:\MSDCHEM\1\METHODS\MX5685.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed Nov 14 09:29:11 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert butyl alcohol-d9	7.250	65	63592	500.00	ug/L	0.00
5) pentafluorobenzene	9.939	168	182367	50.00	ug/L	0.02
62) 1,4-difluorobenzene	11.095	114	254517	50.00	ug/L	0.01
93) chlorobenzene-d5	15.321	117	248152	50.00	ug/L	0.01
108) 1,4-dichlorobenzene-d4	18.124	152	116974	50.00	ug/L	0.01
System Monitoring Compounds						
54) dibromofluoromethane (s)	9.981	113	79495	50.95	ug/L	0.02
Spiked Amount 50.000	Range 70 - 130		Recovery = 101.90%			
55) 1,2-dichloroethane-d4 (s)	10.504	65	77532	43.88	ug/L	0.01
Spiked Amount 50.000	Range 70 - 122		Recovery = 87.76%			
85) toluene-d8 (s)	13.291	98	301610	55.81	ug/L	0.01
Spiked Amount 50.000	Range 81 - 127		Recovery = 111.62%			
111) 4-bromofluorobenzene (s)	16.827	95	117958	51.11	ug/L	0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 102.22%			

Target Compounds Qvalue

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

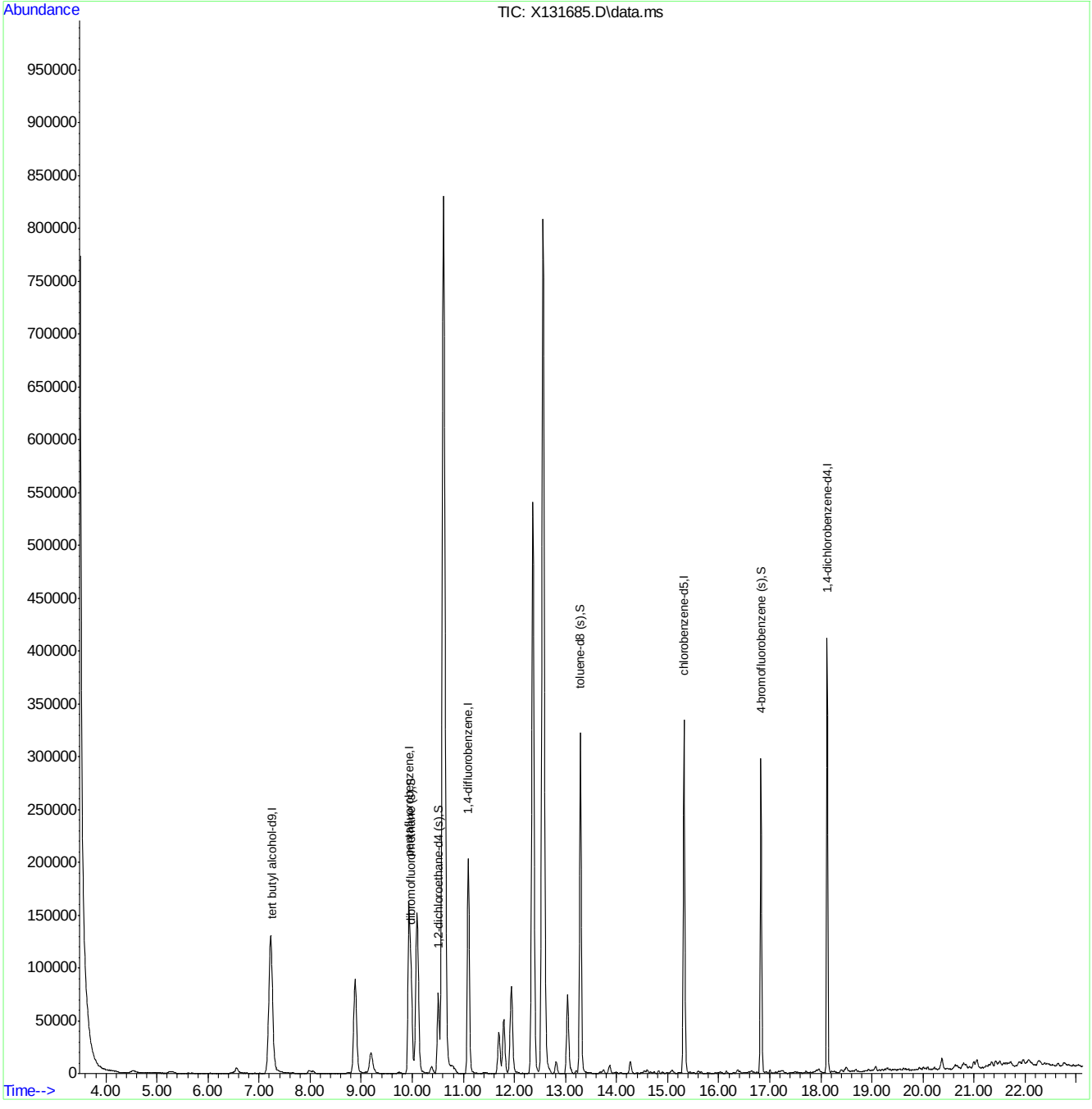
7.1.10

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\X\VX5712\
Data File : X131685.D
Acq On : 11 Dec 2012 4:27 pm
Operator : margares
Sample : jb22267-10
Misc : MS39454,VX5712,4.6,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 11 17:00:56 2012
Quant Method : C:\MSDCHEM\1\METHODS\MX5685.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed Nov 14 09:29:11 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128811.D
Acq On : 7 Dec 2012 5:02 pm
Operator : ROBERTS
Sample : JB22267-11
Misc : MS39454,VY5539,6.6,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 11 10:23:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.66	65	63256	500.00	ug/L	0.00
4) pentafluorobenzene	9.83	168	171843	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.74	114	242705	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	193893	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	96235	50.00	ug/L	0.00

System Monitoring Compounds						
46) dibromofluoromethane (s)	9.91	113	64901	46.24	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 92.48%			
47) 1,2-dichloroethane-d4 (s)	10.33	65	60485	40.68	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 81.36%			
76) toluene-d8 (s)	12.34	98	220201	47.64	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 95.28%			
100) 4-bromofluorobenzene (s)	14.97	95	79768	45.48	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 90.96%			

Target Compounds						Qvalue
61) benzene	10.38	78	2612	0.48	ug/L	80
78) toluene	12.42	91	7423	1.33	ug/L	98
94) m,p-xylene	14.00	106	2253	1.01	ug/L	84
95) o-xylene	14.42	91	1929	0.38	ug/L	84
99) isopropylbenzene	14.74	105	3028	0.53	ug/L	92
113) 1,2,4-trimethylbenzene	15.69	105	1947	0.40	ug/L	92

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

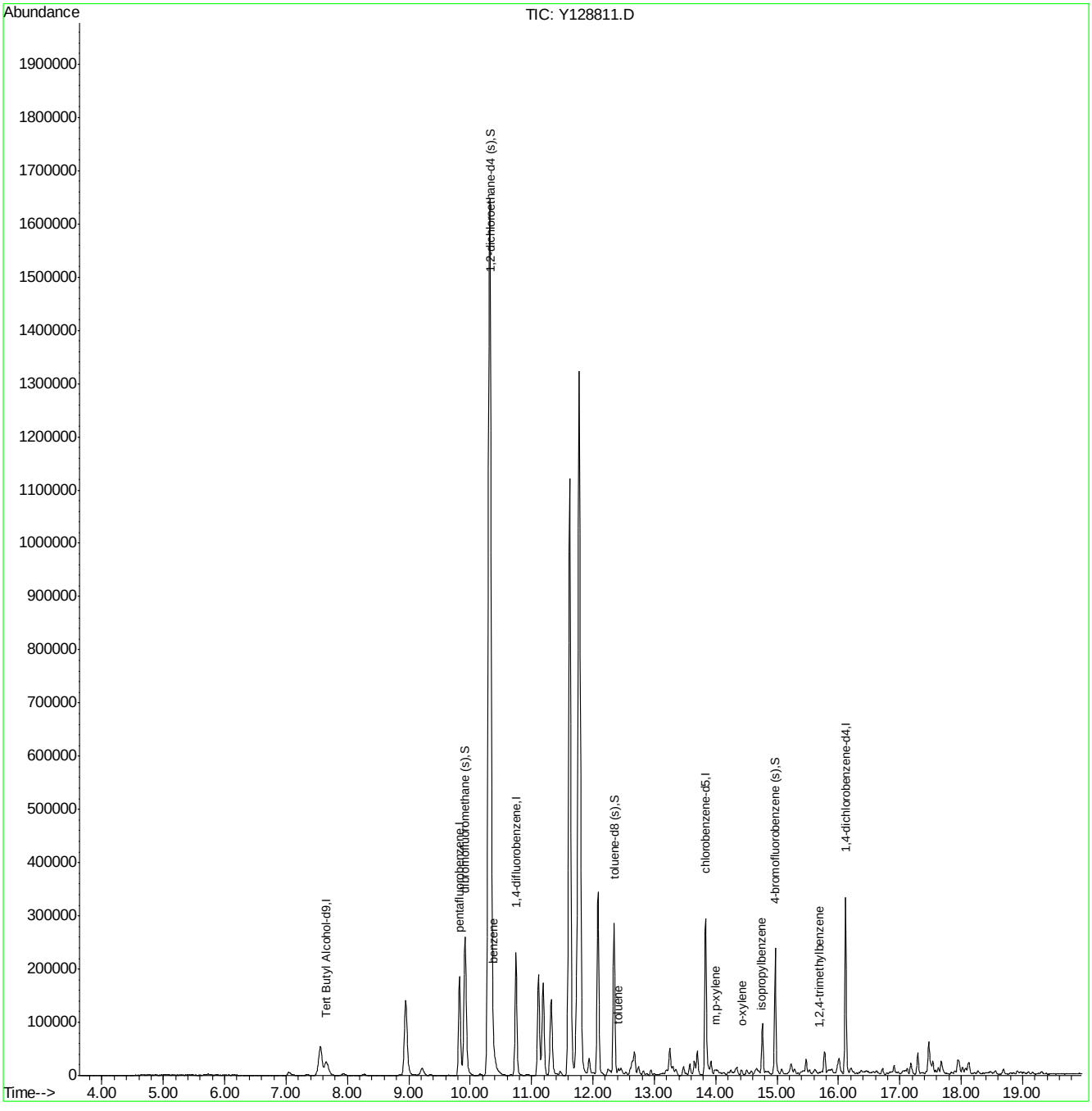
7.1.11

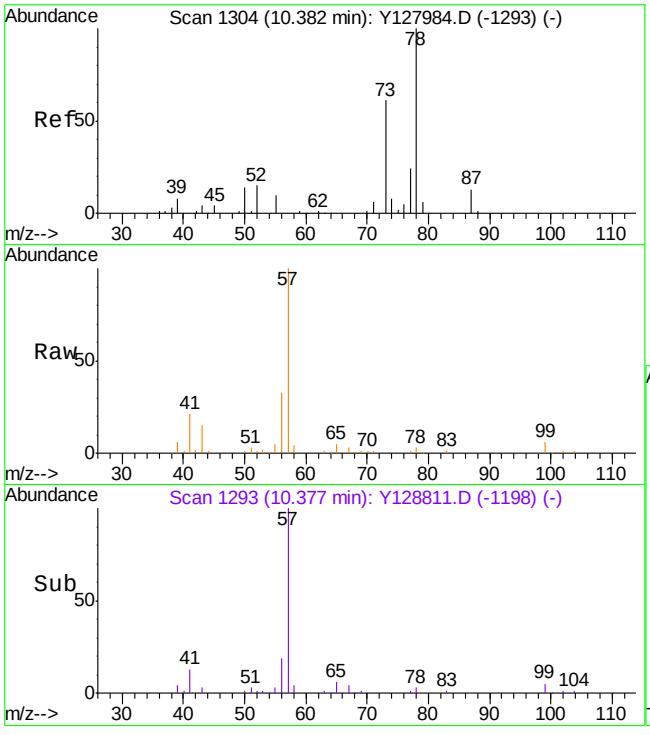
7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128811.D
Acq On : 7 Dec 2012 5:02 pm
Operator : ROBERTS
Sample : JB22267-11
Misc : MS39454,VY5539,6.6,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 11 10:23:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

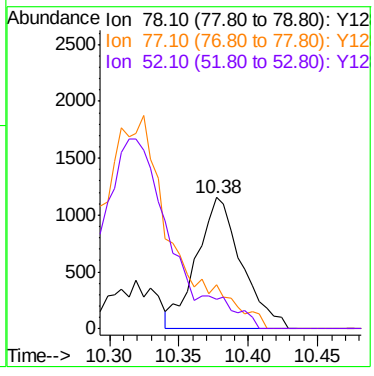


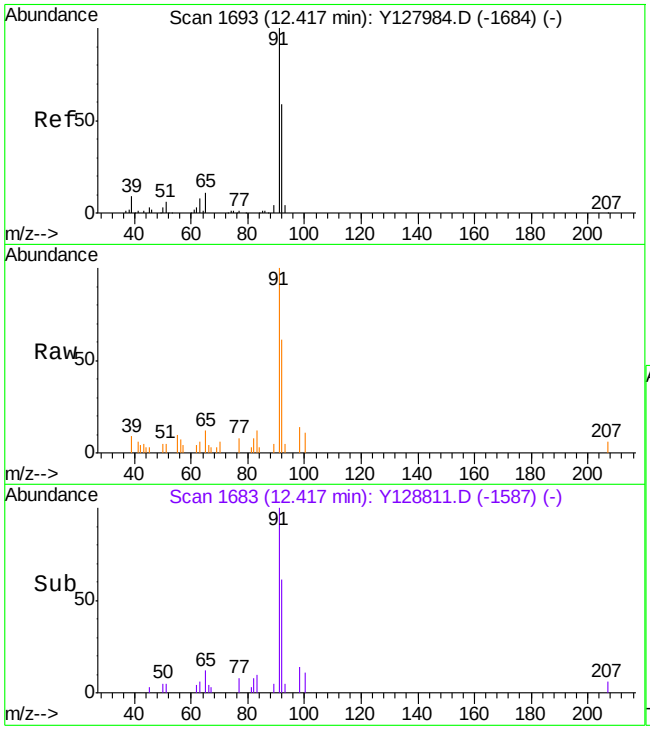


#61
benzene
Concen: 0.48 ug/L
RT: 10.38 min Scan# 1293
Delta R.T. -0.01 min
Lab File: Y128811.D
Acq: 7 Dec 2012 5:02 pm

Tgt Ion: 78 Resp: 2612

Ion	Ratio	Lower	Upper
78	100		
77	33.5	0.0	53.0
52	22.2	0.0	45.2

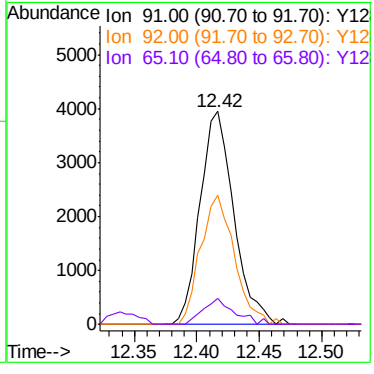


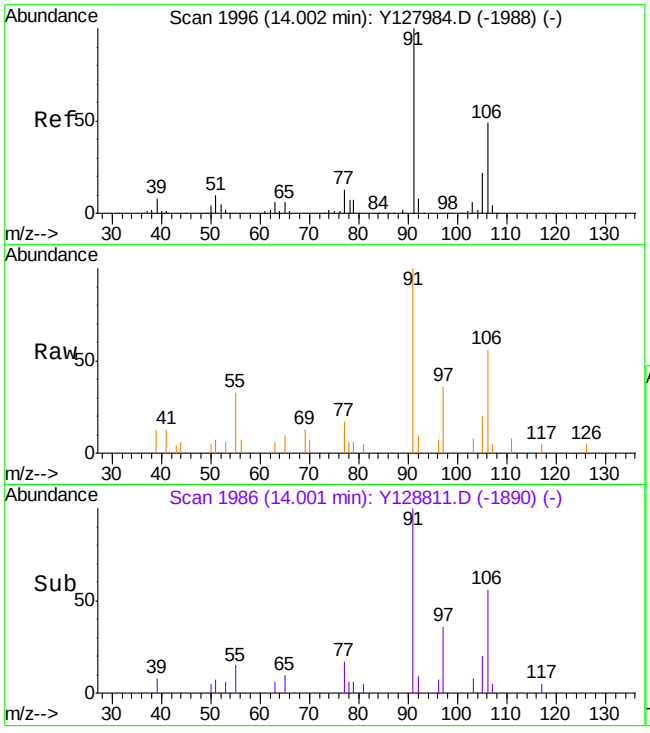


#78
toluene
Concen: 1.33 ug/L
RT: 12.42 min Scan# 1683
Delta R.T. 0.00 min
Lab File: Y128811.D
Acq: 7 Dec 2012 5:02 pm

Tgt Ion: 91 Resp: 7423

Ion	Ratio	Lower	Upper
91	100		
92	60.6	29.0	89.0
65	12.4	0.0	41.0

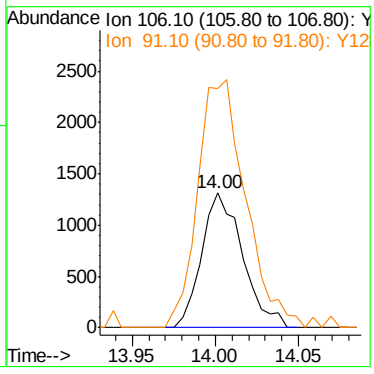


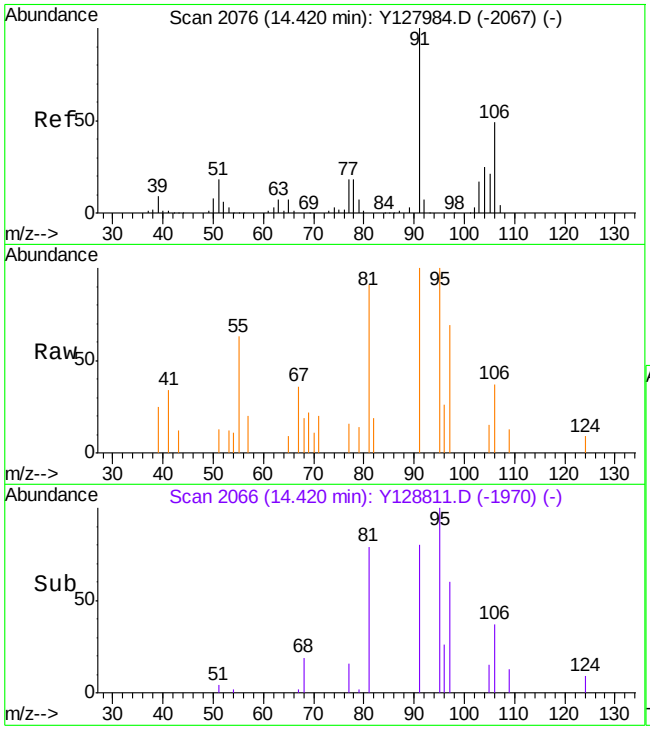


#94
m,p-xylene
Concen: 1.01 ug/L
RT: 14.00 min Scan# 1986
Delta R.T. 0.00 min
Lab File: Y128811.D
Acq: 7 Dec 2012 5:02 pm

Tgt Ion:106 Resp: 2253

Ion	Ratio	Lower	Upper
106	100		
91	177.8	141.8	263.4

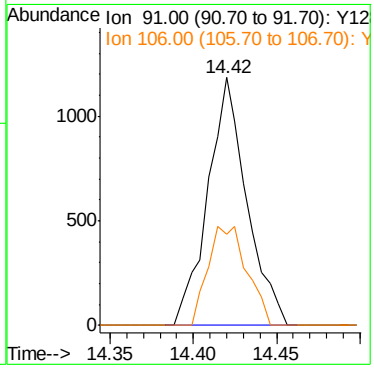


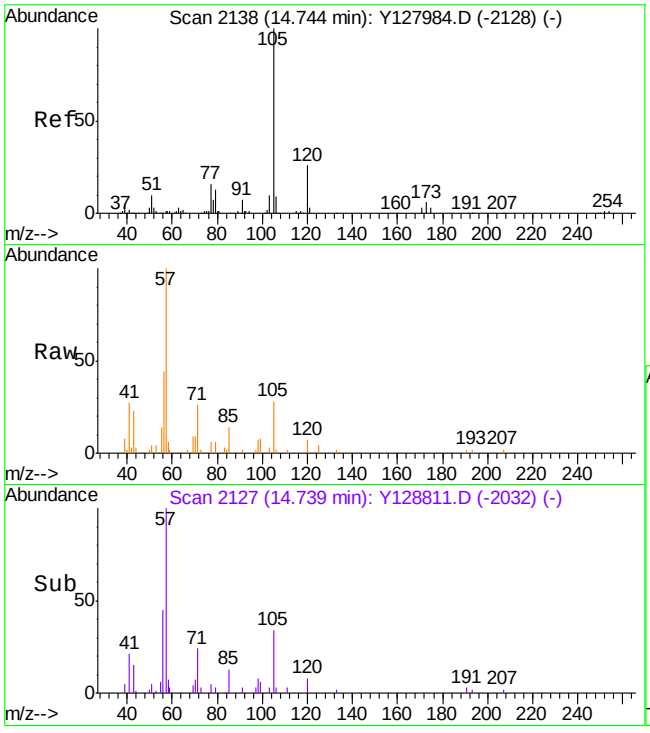


#95
o-xylene
Concen: 0.38 ug/L
RT: 14.42 min Scan# 2066
Delta R.T. 0.00 min
Lab File: Y128811.D
Acq: 7 Dec 2012 5:02 pm

Tgt Ion: 91 Resp: 1929

Ion	Ratio	Lower	Upper
91	100		
106	36.8	33.2	61.6

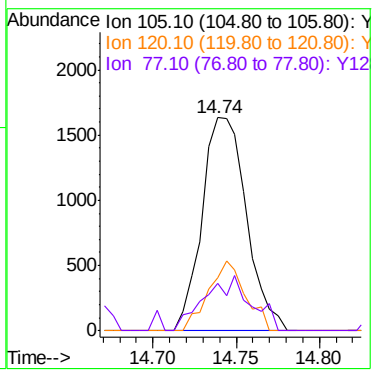


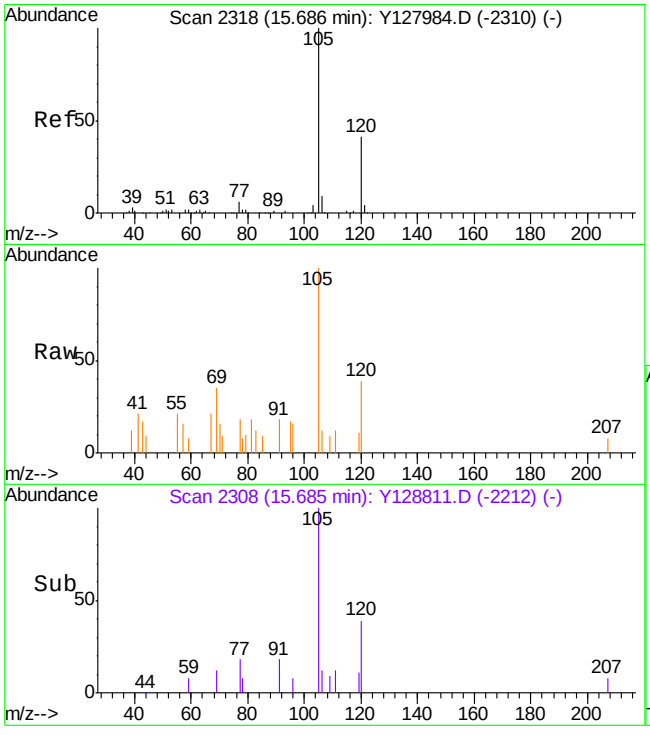


#99
isopropylbenzene
Concen: 0.53 ug/L
RT: 14.74 min Scan# 2127
Delta R.T. -0.00 min
Lab File: Y128811.D
Acq: 7 Dec 2012 5:02 pm

Tgt Ion:105 Resp: 3028

Ion	Ratio	Lower	Upper
105	100		
120	24.7	0.0	55.9
77	22.5	0.0	45.1

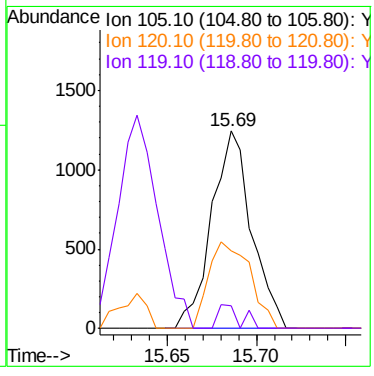




#113
1,2,4-trimethylbenzene
Concen: 0.40 ug/L
RT: 15.69 min Scan# 2308
Delta R.T. 0.00 min
Lab File: Y128811.D
Acq: 7 Dec 2012 5:02 pm

Tgt Ion:105 Resp: 1947

Ion	Ratio	Lower	Upper
105	100		
120	39.3	16.1	76.1
119	11.5	0.0	42.0



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128812.D
Acq On : 7 Dec 2012 5:31 pm
Operator : ROBERTS
Sample : JB22267-12
Misc : MS39454,VY5539,6.1,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 11 10:24:09 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.66	65	61181	500.00	ug/L	0.00
4) pentafluorobenzene	9.83	168	183699	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	265977	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	204883	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	97858	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	73261	48.83	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 97.66%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	63025	39.65	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 79.30%			
76) toluene-d8 (s)	12.34	98	242694	47.91	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 95.82%			
100) 4-bromofluorobenzene (s)	14.97	95	80963	45.40	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 90.80%			

Target Compounds Qvalue

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

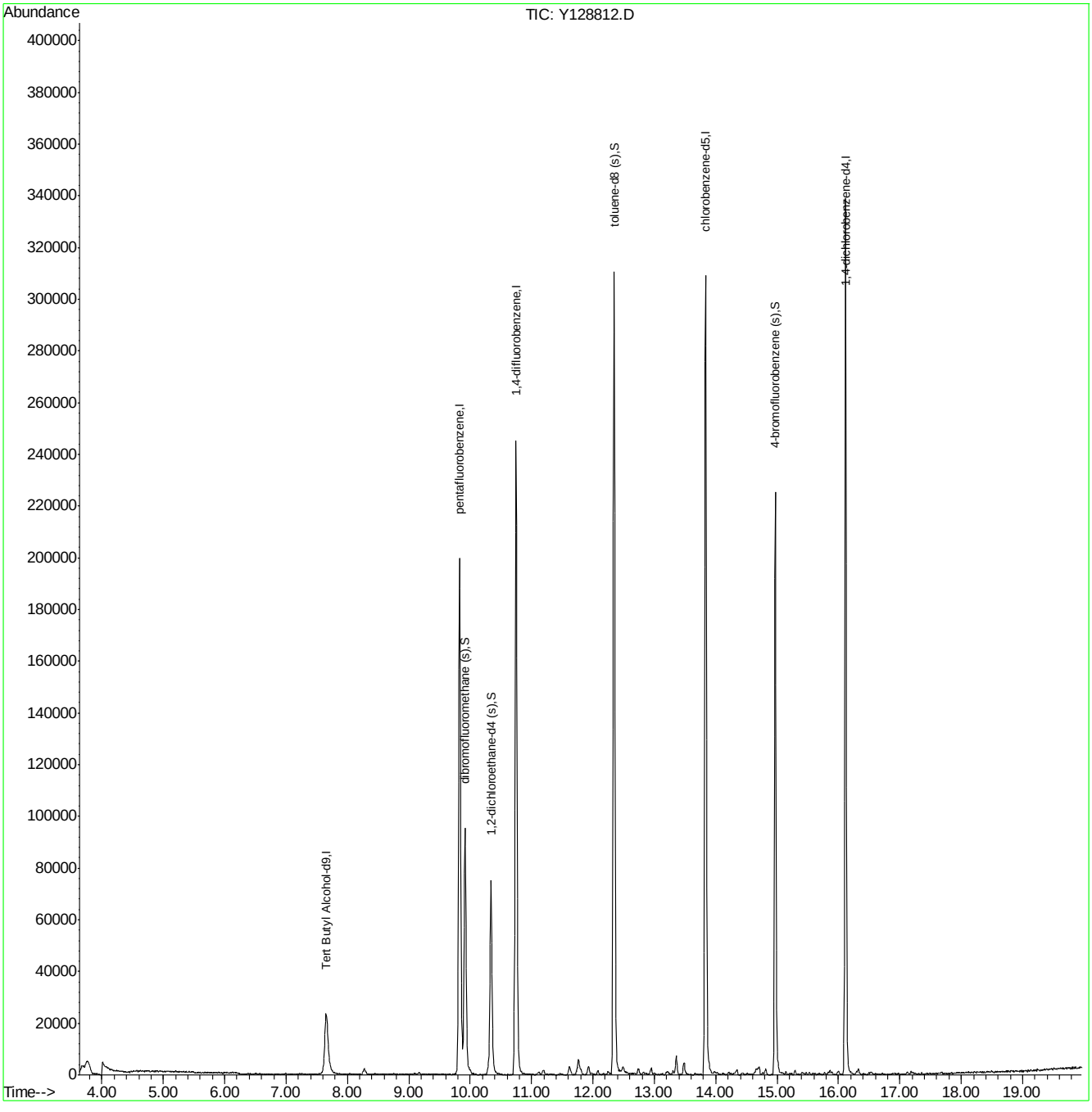
7.1.12

7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128812.D
Acq On : 7 Dec 2012 5:31 pm
Operator : ROBERTS
Sample : JB22267-12
Misc : MS39454,VY5539,6.1,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 11 10:24:09 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Tue Dec 11 10:28:12 2012 RPT1 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128813.D
Acq On : 7 Dec 2012 6:01 pm
Operator : ROBERTS
Sample : JB22267-13
Misc : MS39454,VY5539,5.4,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 11 10:24:24 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.66	65	53331	500.00	ug/L	0.00
4) pentafluorobenzene	9.83	168	171047	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.74	114	249994	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	197612	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	90528	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	70064	50.15	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 100.30%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	59828	40.43	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 80.86%			
76) toluene-d8 (s)	12.34	98	232916	48.92	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 97.84%			
100) 4-bromofluorobenzene (s)	14.97	95	76590	46.42	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 92.84%			

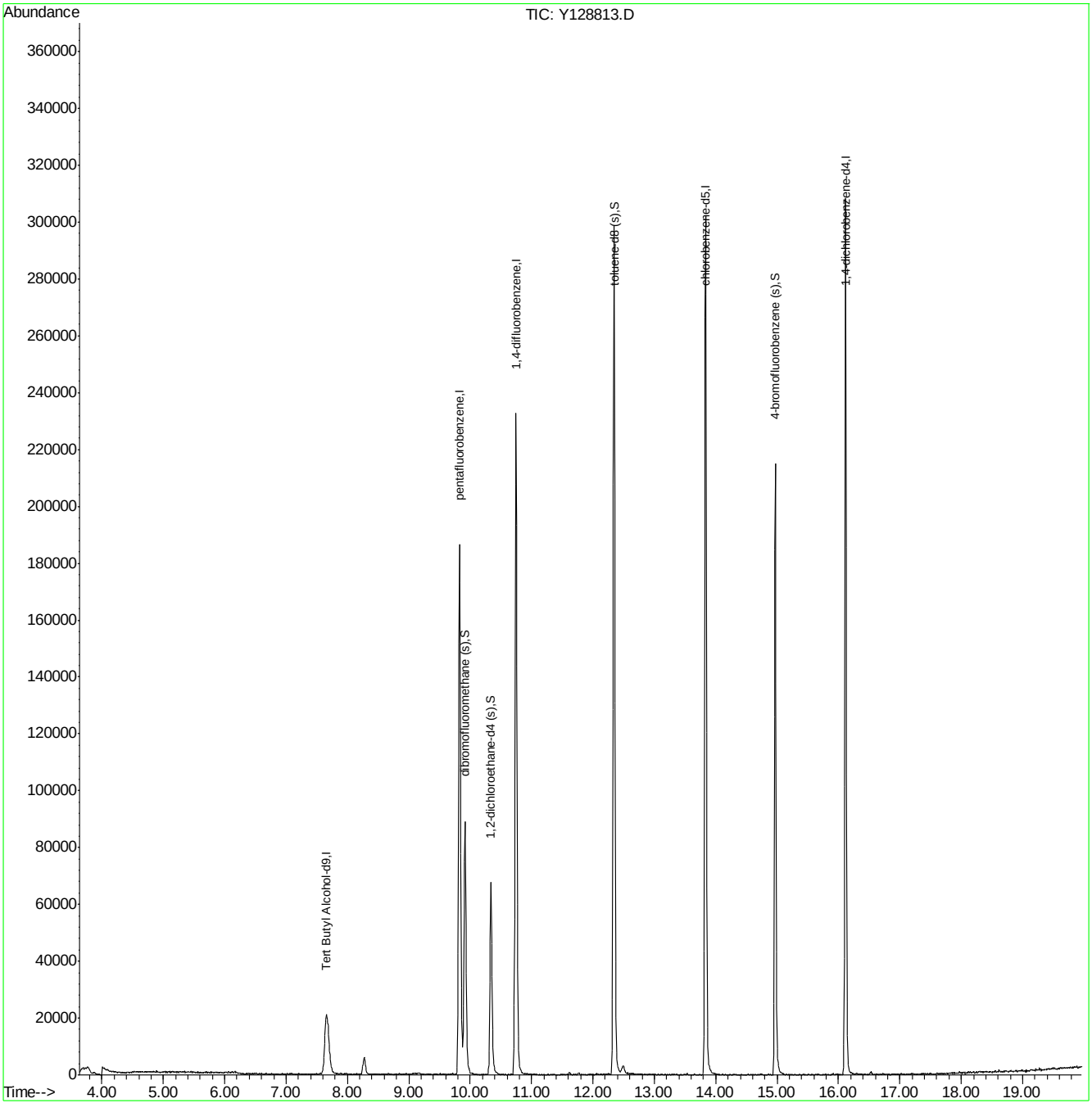
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128813.D
Acq On : 7 Dec 2012 6:01 pm
Operator : ROBERTS
Sample : JB22267-13
Misc : MS39454,VY5539,5.4,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 11 10:24:24 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128814.D
Acq On : 7 Dec 2012 6:30 pm
Operator : ROBERTS
Sample : JB22267-14
Misc : MS39454,VY5539,6.8,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 11 10:24:37 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	59823	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	180629	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.74	114	262495	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	198301	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	83917	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	73503	49.82	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 99.64%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	63658	40.73	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 81.46%			
76) toluene-d8 (s)	12.34	98	239667	47.94	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 95.88%			
100) 4-bromofluorobenzene (s)	14.97	95	74778	48.90	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 97.80%			

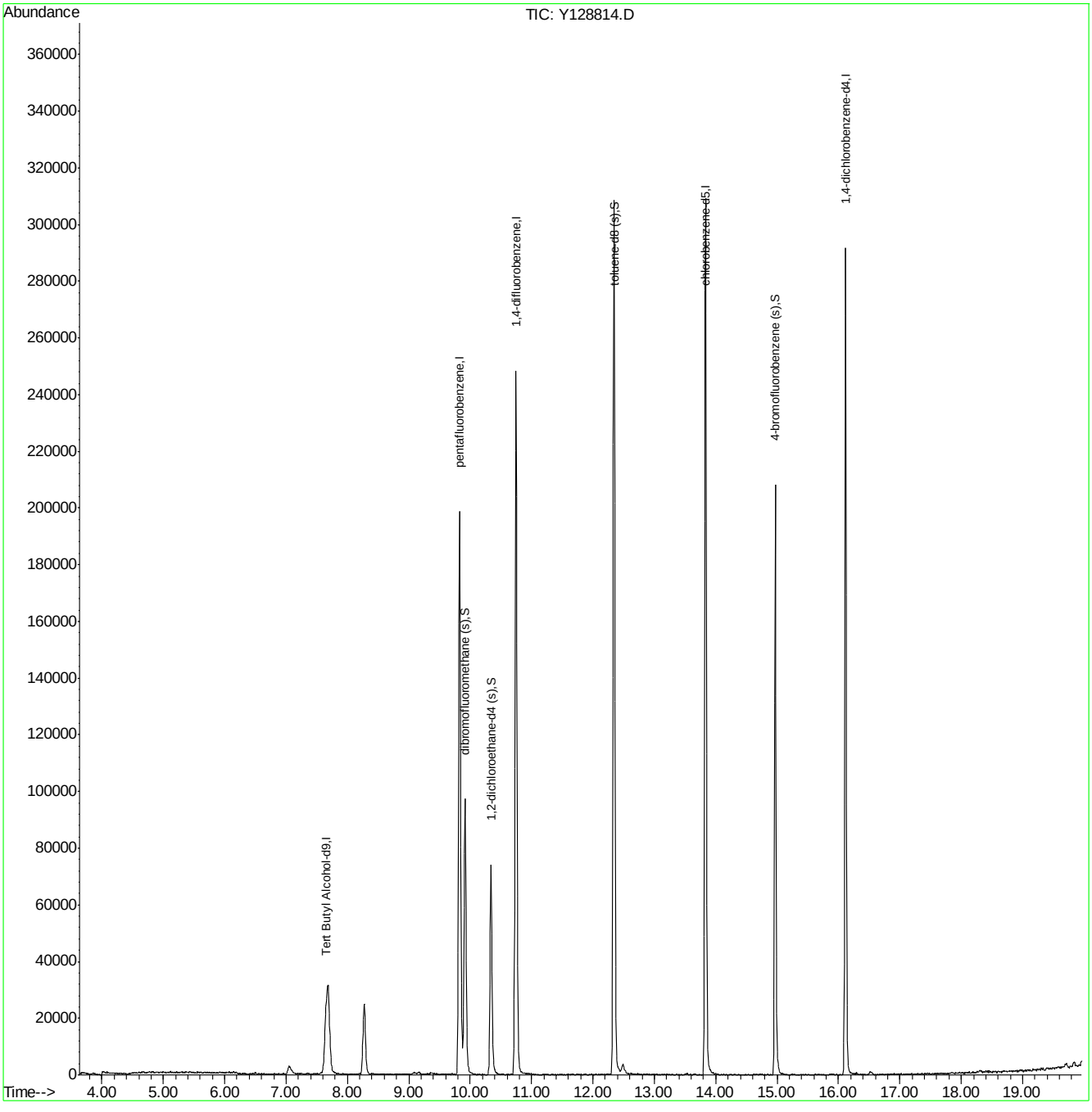
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128814.D
Acq On : 7 Dec 2012 6:30 pm
Operator : ROBERTS
Sample : JB22267-14
Misc : MS39454,VY5539,6.8,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 11 10:24:37 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128815.D
Acq On : 7 Dec 2012 7:00 pm
Operator : ROBERTS
Sample : JB22267-15
Misc : MS39454,VY5539,6.4,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 11 10:25:04 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

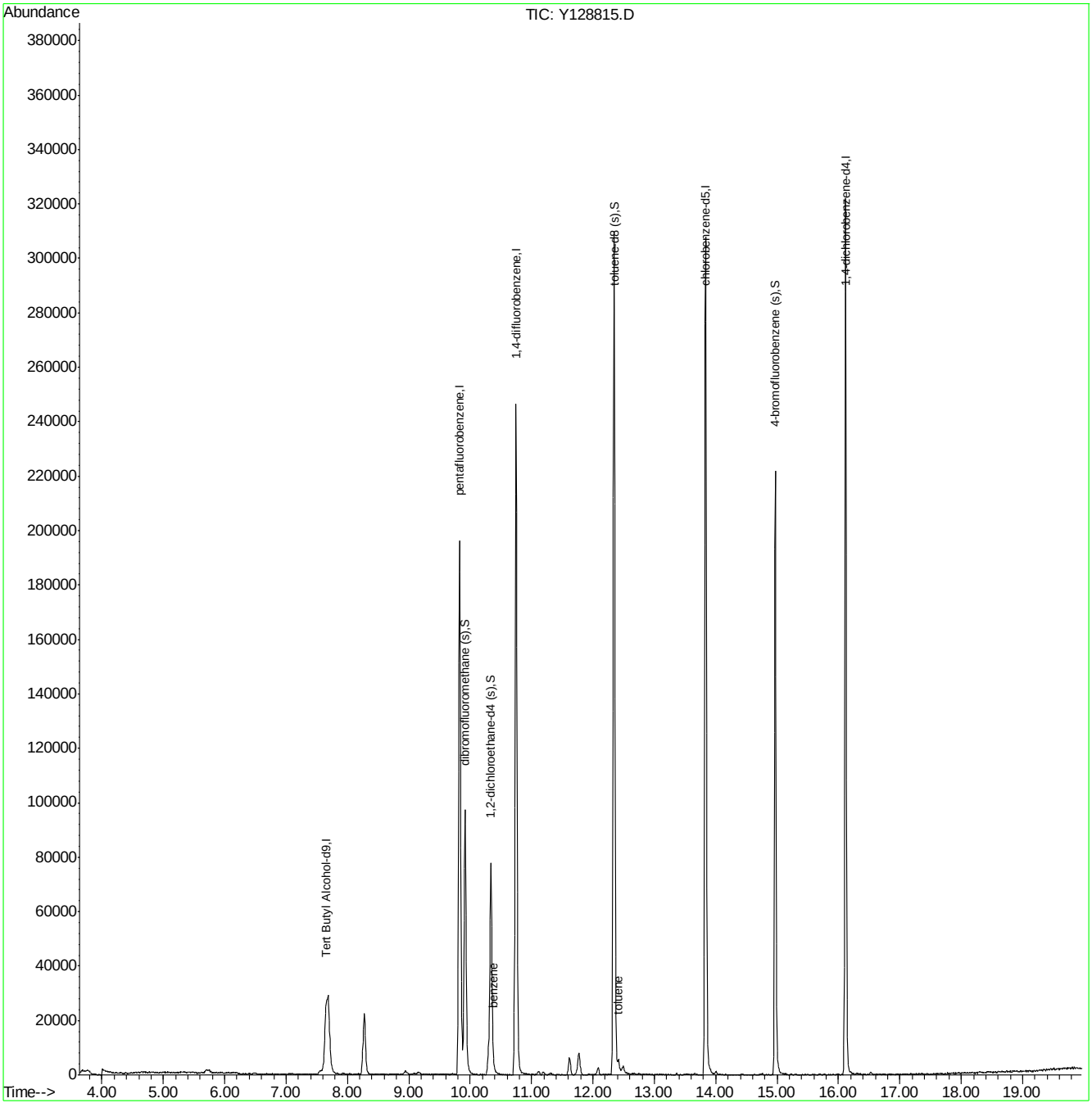
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	61405	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	177989	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	260633	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	204053	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	92961	50.00	ug/L	0.00
System Monitoring Compounds						
46) dibromofluoromethane (s)	9.92	113	73142	50.31	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 100.62%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	63892	41.49	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 82.98%			
76) toluene-d8 (s)	12.34	98	239927	48.34	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 96.68%			
100) 4-bromofluorobenzene (s)	14.97	95	80255	47.37	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 94.74%			
Target Compounds						Qvalue
61) benzene	10.38	78	1006	0.17	ug/L	80
78) toluene	12.42	91	3581	0.60	ug/L	96

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

Quantitation Report (QT Reviewed)

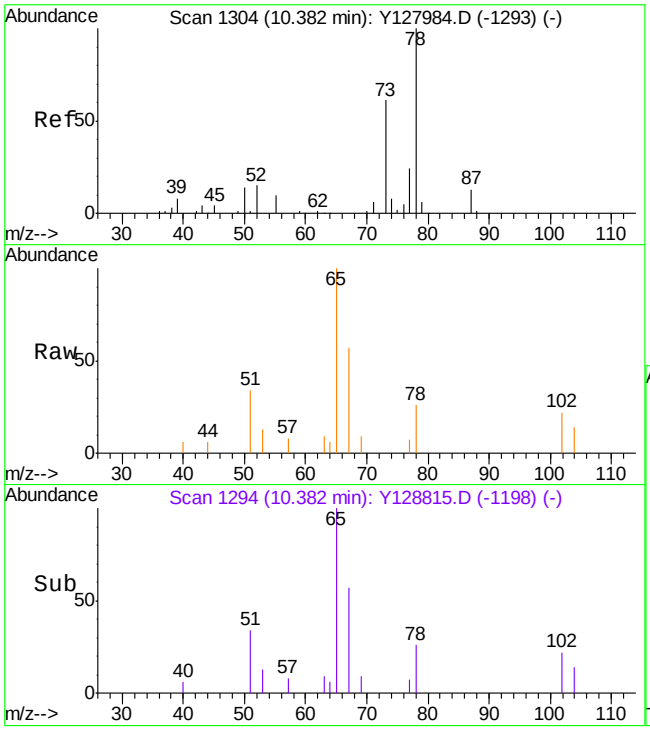
Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128815.D
Acq On : 7 Dec 2012 7:00 pm
Operator : ROBERTS
Sample : JB22267-15
Misc : MS39454,VY5539,6.4,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 11 10:25:04 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



7.1.15 7

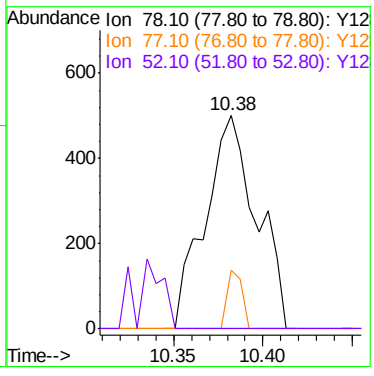
ACCUTEST LABORATORIES JB22267

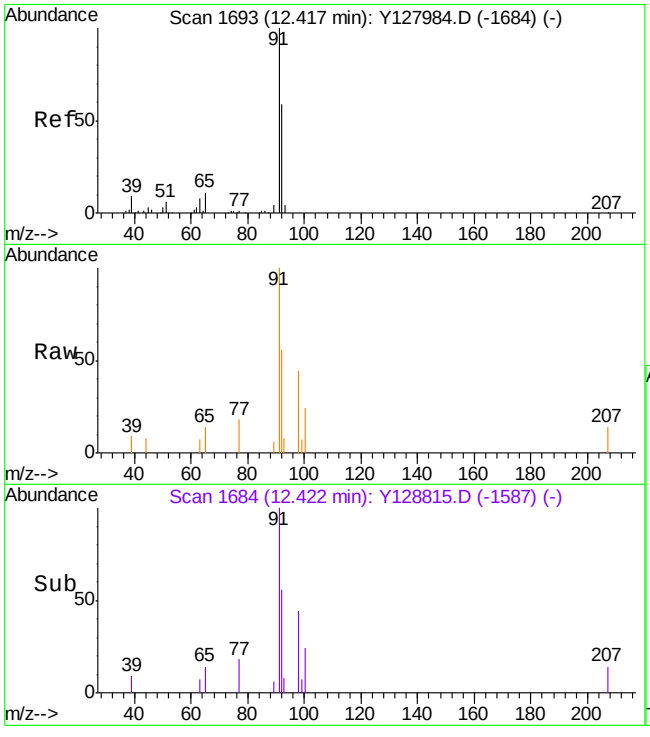


#61
benzene
Concen: 0.17 ug/L
RT: 10.38 min Scan# 1294
Delta R.T. -0.00 min
Lab File: Y128815.D
Acq: 7 Dec 2012 7:00 pm

Tgt Ion: 78 Resp: 1006

Ion	Ratio	Lower	Upper
78	100		
77	27.3	0.0	53.0
52	0.0	0.0	45.2

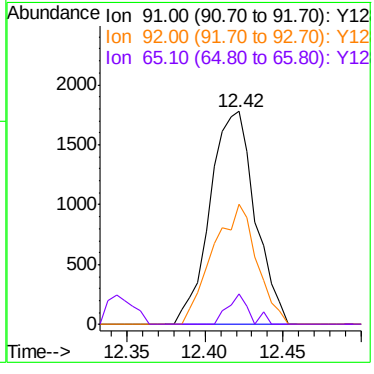




#78
toluene
Concen: 0.60 ug/L
RT: 12.42 min Scan# 1684
Delta R.T. 0.01 min
Lab File: Y128815.D
Acq: 7 Dec 2012 7:00 pm

Tgt Ion: 91 Resp: 3581

Ion	Ratio	Lower	Upper
91	100		
92	56.5	29.0	89.0
65	14.3	0.0	41.0



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128816.D
Acq On : 7 Dec 2012 7:29 pm
Operator : ROBERTS
Sample : JB22267-16
Misc : MS39454,VY5539,6.0,,,,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 11 10:25:20 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	59359	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	172944	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	250533	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	197703	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	89841	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	70405	49.84	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 99.68%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	62292	41.63	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 83.26%			
76) toluene-d8 (s)	12.34	98	234692	49.19	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 98.38%			
100) 4-bromofluorobenzene (s)	14.97	95	75956	46.39	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 92.78%			

Target Compounds Qvalue

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

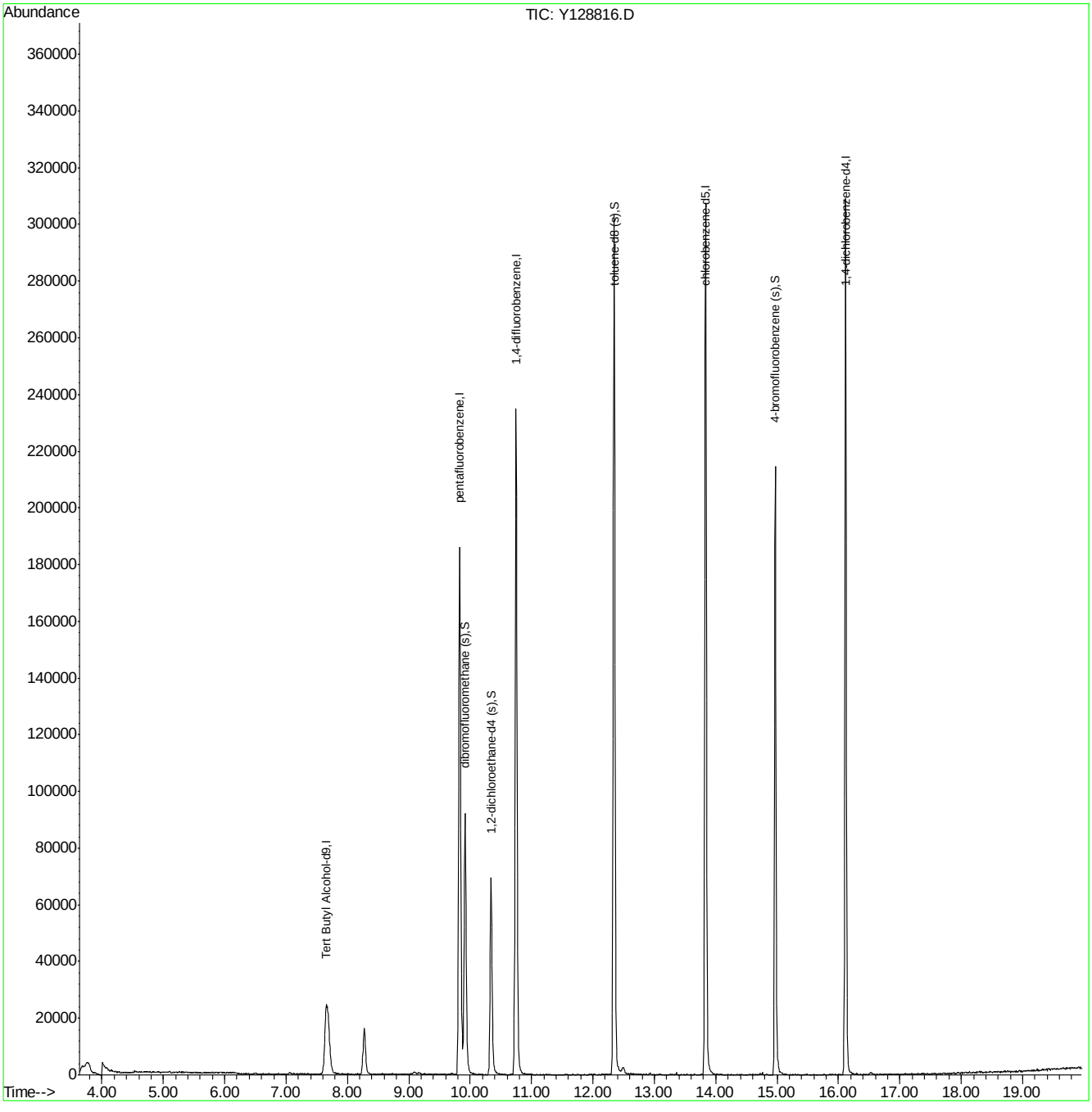
7.1.16

7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128816.D
Acq On : 7 Dec 2012 7:29 pm
Operator : ROBERTS
Sample : JB22267-16
Misc : MS39454,VY5539,6.0,,,,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 11 10:25:20 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128817.D
Acq On : 7 Dec 2012 7:58 pm
Operator : ROBERTS
Sample : JB22267-17
Misc : MS39454,VY5539,5.0,,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 11 10:25:43 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	56257	500.00	ug/L	-0.01
4) pentafluorobenzene	9.83	168	174979	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	253715	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	196749	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	88634	50.00	ug/L	0.00

System Monitoring Compounds						
46) dibromofluoromethane (s)	9.92	113	70599	49.40	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 98.80%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	61612	40.70	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 81.40%			
76) toluene-d8 (s)	12.34	98	234827	48.60	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 97.20%			
100) 4-bromofluorobenzene (s)	14.97	95	76531	47.38	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 94.76%			

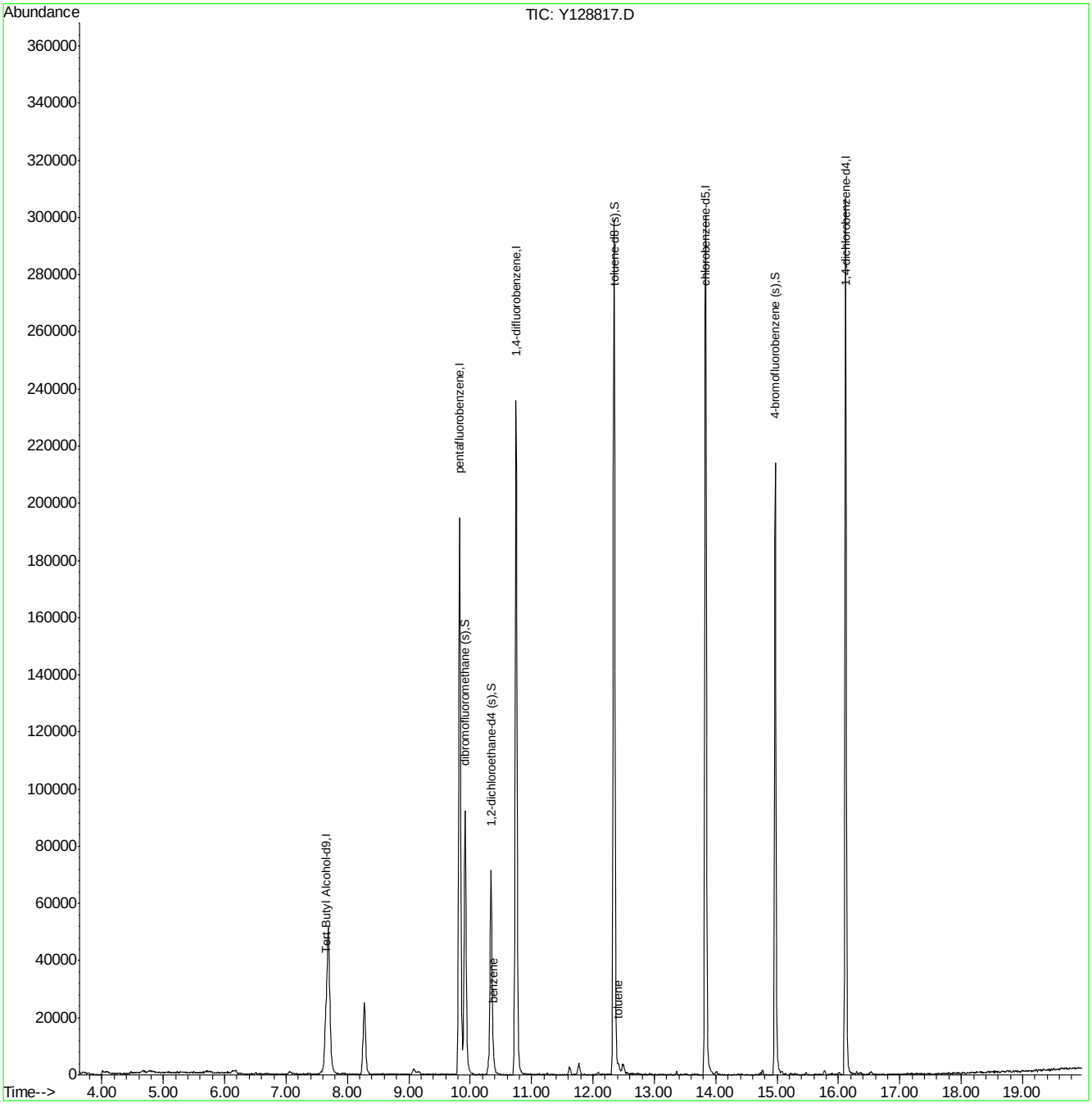
Target Compounds						Qvalue
61) benzene	10.38	78	3232	0.56	ug/L	92
78) toluene	12.42	91	2188	0.37	ug/L	91

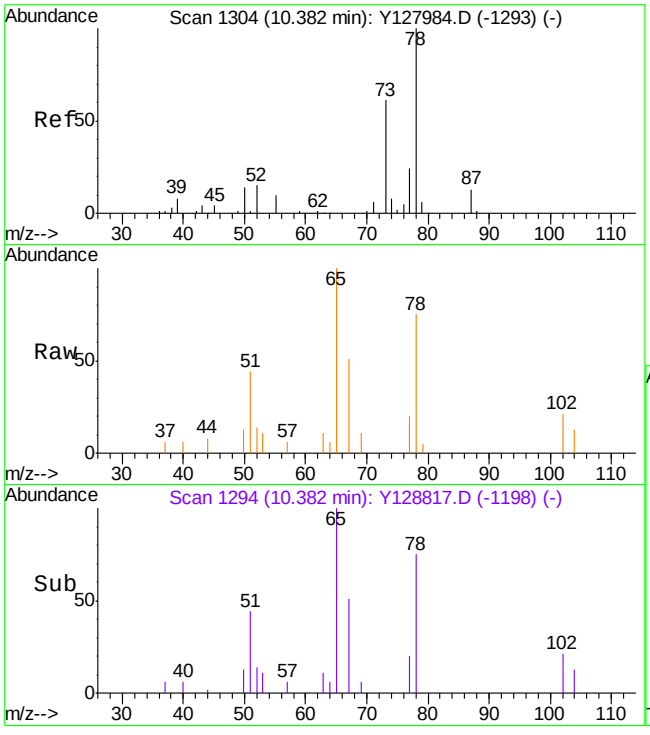
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : Y128817.D
Acq On : 7 Dec 2012 7:58 pm
Operator : ROBERTS
Sample : JB22267-17
Misc : MS39454,VY5539,5.0,,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 11 10:25:43 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

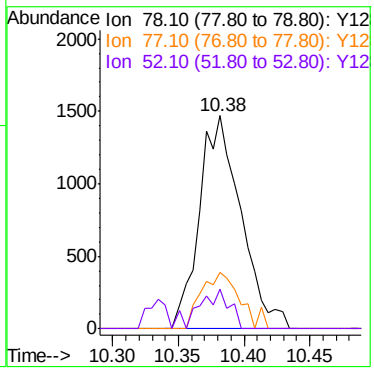


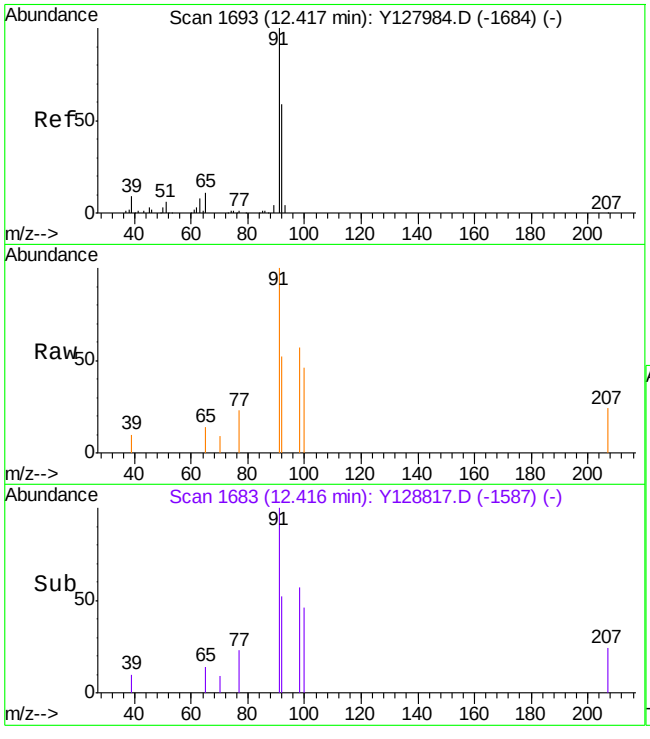


#61
benzene
Concen: 0.56 ug/L
RT: 10.38 min Scan# 1294
Delta R.T. -0.00 min
Lab File: Y128817.D
Acq: 7 Dec 2012 7:58 pm

Tgt Ion: 78 Resp: 3232

Ion	Ratio	Lower	Upper
78	100		
77	26.4	0.0	53.0
52	18.8	0.0	45.2

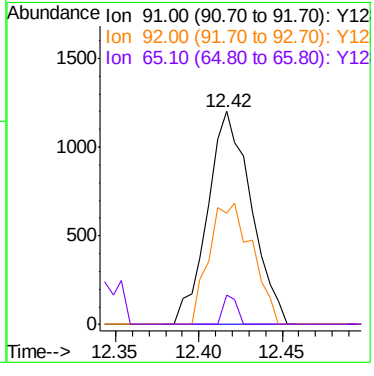




#78
toluene
Concen: 0.37 ug/L
RT: 12.42 min Scan# 1683
Delta R.T. -0.00 min
Lab File: Y128817.D
Acq: 7 Dec 2012 7:58 pm

Tgt Ion: 91 Resp: 2188

Ion	Ratio	Lower	Upper
91	100		
92	52.2	29.0	89.0
65	14.1	0.0	41.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203137.D
Acq On : 8 Dec 2012 11:16 am
Operator : EmilyT
Sample : mb
Misc : ms39926,vd8283,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 10 12:53:33 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.047	65	79858	500.00	ug/L	0.00
4) pentafluorobenzene	10.255	168	138407	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	11.175	114	205973	50.00	ug/L	0.00
85) chlorobenzene-d5	14.517	117	189278	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	113560	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.291	113	63782	46.57	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 93.14%			
47) 1,2-dichloroethane-d4 (s)	10.715	65	87553	55.57	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 111.14%			
77) toluene-d8 (s)	12.885	98	251600	48.18	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 96.36%			
101) 4-bromofluorobenzene (s)	15.799	95	101366	49.45	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 98.90%			

Target Compounds Qvalue

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

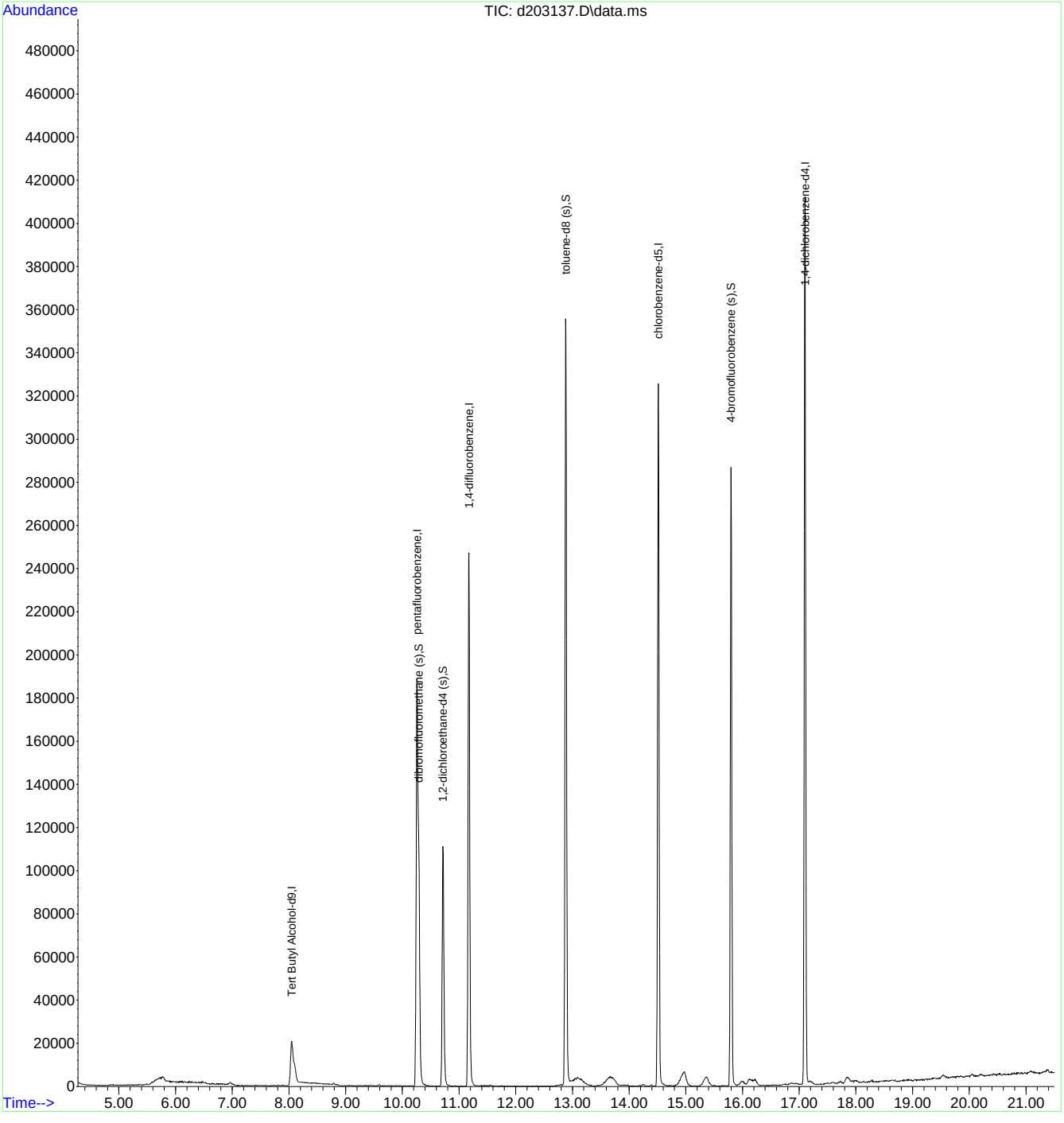
7.2.1

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203137.D
Acq On : 8 Dec 2012 11:16 am
Operator : EmilyT
Sample : mb
Misc : ms39926,vd8283,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 10 12:53:33 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : v131168.d
Acq On : 7 Dec 2012 10:43 am
Operator : THIENN
Sample : mb1
Misc : MS39738,VV5655,5,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 07 16:03:09 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.631	65	32270	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	161998	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	249573	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	226757	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.810	152	124005	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.932	113	55522	56.14	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 112.28%			
59) 1,2-dichloroethane-d4 (s)	10.361	65	45893	47.52	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 95.04%			
86) toluene-d8 (s)	12.527	98	237958	56.95	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 113.90%			
110) 4-bromofluorobenzene (s)	15.508	95	88870	50.30	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 100.60%			

Target Compounds Qvalue

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

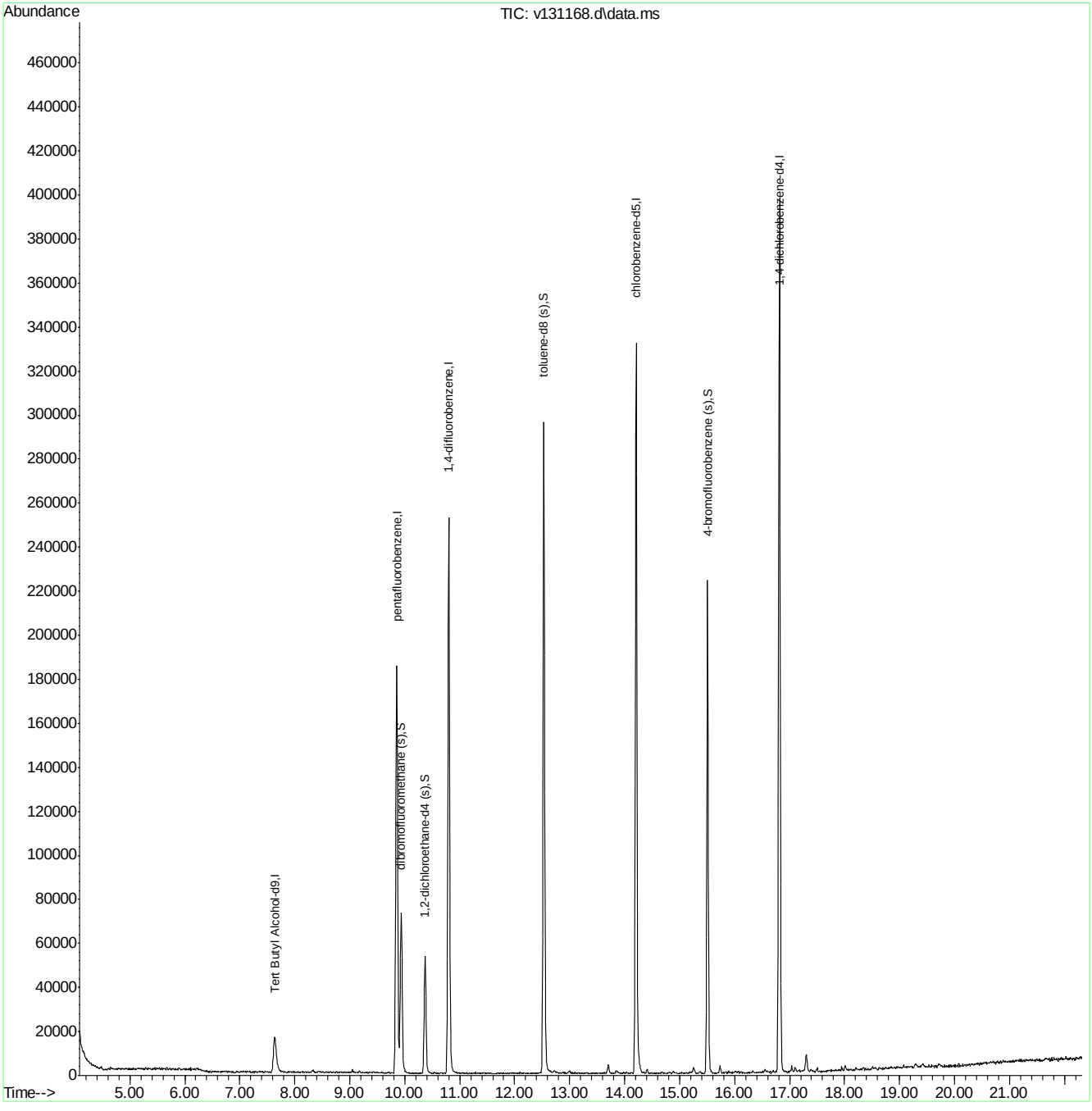
7.2.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : v131168.d
Acq On : 7 Dec 2012 10:43 am
Operator : THIENN
Sample : mb1
Misc : MS39738,VV5655,5,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 07 16:03:09 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration



ACCUTEST LABORATORIES JB22267

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\X\VX5712\
Data File : X131673.D
Acq On : 11 Dec 2012 10:12 am
Operator : margares
Sample : mb
Misc : MS39927,VX5712,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 11 15:50:12 2012
Quant Method : C:\MSDCHEM\1\METHODS\MX5685.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed Nov 14 09:29:11 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert butyl alcohol-d9	7.251	65	61140	500.00	ug/L	0.00
5) pentafluorobenzene	9.944	168	202275	50.00	ug/L	0.02
62) 1,4-difluorobenzene	11.105	114	283511	50.00	ug/L	0.02
93) chlorobenzene-d5	15.326	117	266552	50.00	ug/L	0.02
108) 1,4-dichlorobenzene-d4	18.124	152	136799	50.00	ug/L	0.01
System Monitoring Compounds						
54) dibromofluoromethane (s)	9.986	113	82429	47.63	ug/L	0.02
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.26%			
55) 1,2-dichloroethane-d4 (s)	10.514	65	75716	38.63	ug/L	0.02
Spiked Amount 50.000	Range 70 - 122		Recovery = 77.26%			
85) toluene-d8 (s)	13.297	98	342185	56.85	ug/L	0.02
Spiked Amount 50.000	Range 81 - 127		Recovery = 113.70%			
111) 4-bromofluorobenzene (s)	16.833	95	129167	47.86	ug/L	0.02
Spiked Amount 50.000	Range 66 - 132		Recovery = 95.72%			

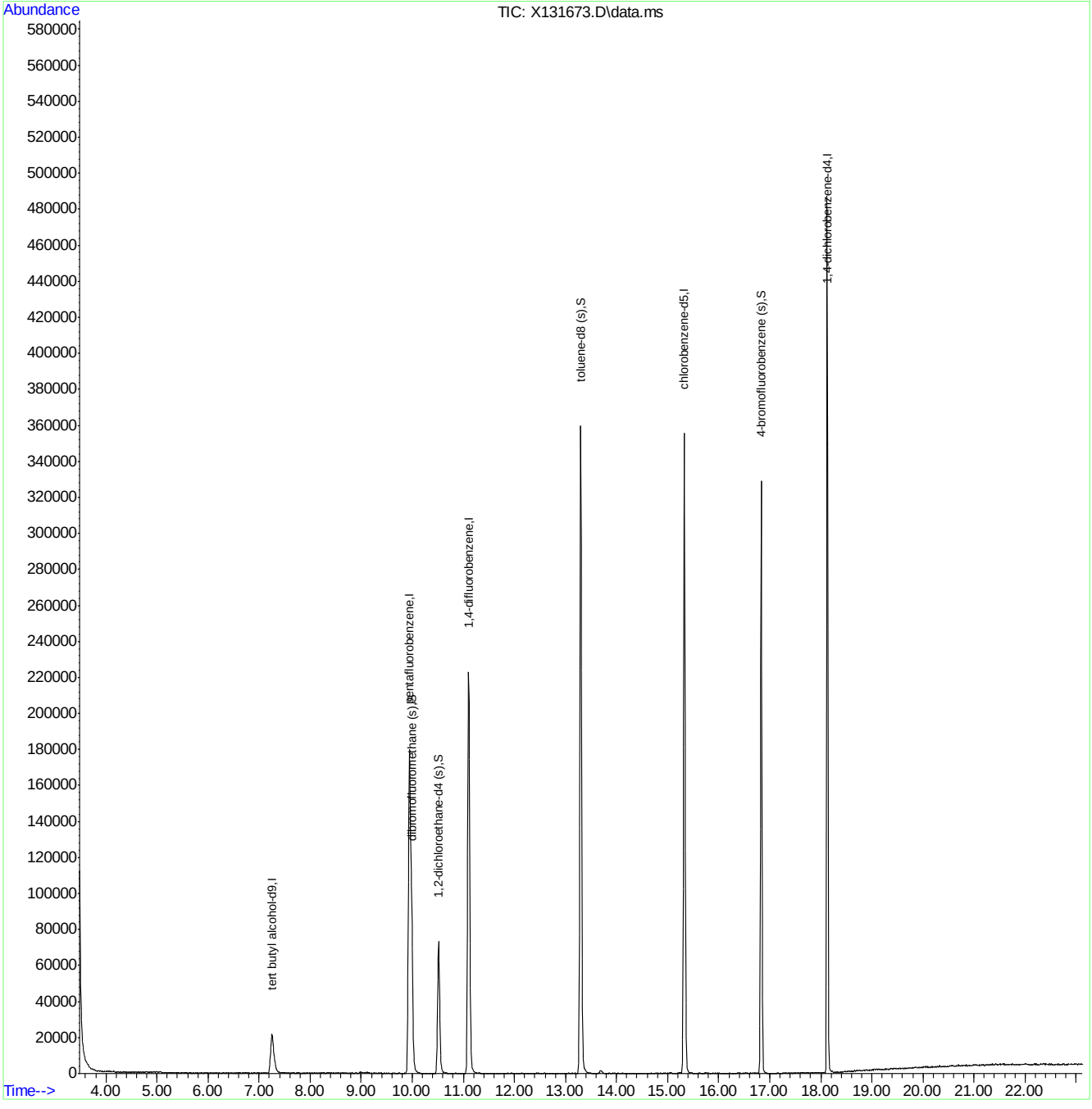
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\X\VX5712\
Data File : X131673.D
Acq On : 11 Dec 2012 10:12 am
Operator : margares
Sample : mb
Misc : MS39927,VX5712,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 11 15:50:12 2012
Quant Method : C:\MSDCHEM\1\METHODS\MX5685.M
Quant Title : SW-846 Method 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Wed Nov 14 09:29:11 2012
Response via : Initial Calibration



MX5685.M Tue Dec 11 15:55:57 2012 ACCNJ

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : Y128560.D
Acq On : 1 Dec 2012 12:04 pm
Operator : ROBERTS
Sample : MB
Misc : MS39454,VY5528,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 06 11:09:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.65	65	60118	500.00	ug/L	-0.02
4) pentafluorobenzene	9.83	168	152343	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.74	114	225650	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	184162	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	87739	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	62762	50.44	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 100.88%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	61397	46.58	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 93.16%			
76) toluene-d8 (s)	12.34	98	214177	49.84	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.68%			
100) 4-bromofluorobenzene (s)	14.97	95	75486	47.21	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 94.42%			

Target Compounds Qvalue

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

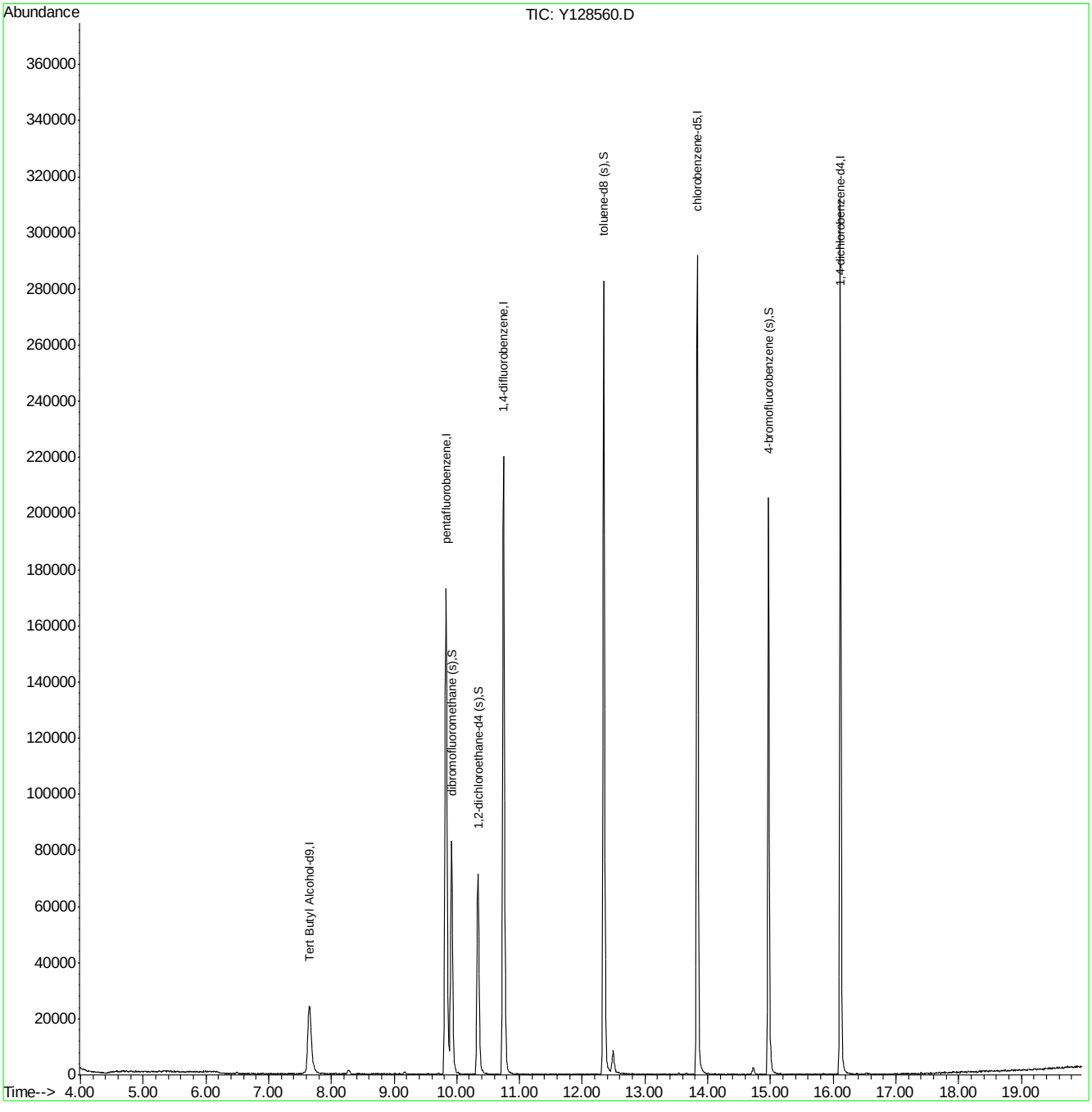
7.2.4

7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : Y128560.D
Acq On : 1 Dec 2012 12:04 pm
Operator : ROBERTS
Sample : MB
Misc : MS39454,VY5528,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 06 11:09:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Thu Dec 06 11:09:33 2012 RPT1

ACCUTEST LABORATORIES JB22267

Quantitation Report (QT/LSC Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : Y128798.D
Acq On : 7 Dec 2012 10:24 am
Operator : ROBERTS
Sample : MB
Misc : MS39811,VY5539,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 07 16:24:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.66	65	73687	500.00	ug/L	0.00
4) pentafluorobenzene	9.83	168	160730	50.00	ug/L	0.00
54) 1,4-difluorobenzene	10.75	114	237387	50.00	ug/L	0.00
84) chlorobenzene-d5	13.83	117	192387	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.11	152	88021	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	9.92	113	67619	51.51	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 103.02%			
47) 1,2-dichloroethane-d4 (s)	10.34	65	69355	49.87	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 99.74%			
76) toluene-d8 (s)	12.34	98	226284	50.05	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 100.10%			
100) 4-bromofluorobenzene (s)	14.97	95	78946	49.21	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 98.42%			

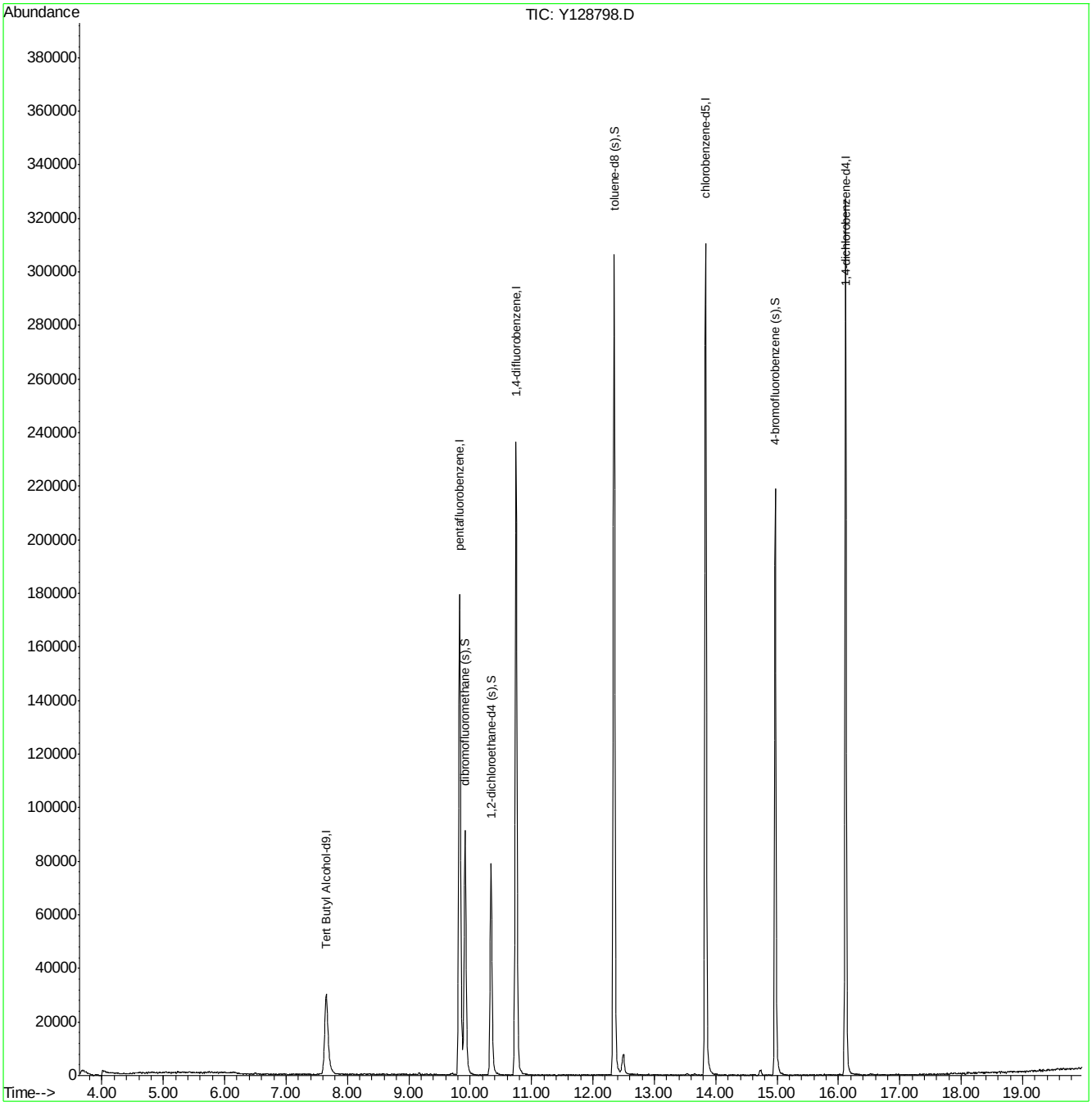
Target Compounds Qvalue

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

Quantitation Report (QT/LSC Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : Y128798.D
Acq On : 7 Dec 2012 10:24 am
Operator : ROBERTS
Sample : MB
Misc : MS39811,VY5539,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 07 16:24:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\MY5501.M
Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Nov 19 15:36:21 2012
Response via : Initial Calibration



MY5501.M Fri Dec 07 16:25:17 2012 RPT1

ACCUTEST LABORATORIES JB22267

New Jersey

ACCUTEST LABORATORIES

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP61828-MB1	2M48356.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	29	ug/kg	
56-55-3	Benzo(a)anthracene	ND	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	29	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	29	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	29	ug/kg	
218-01-9	Chrysene	ND	29	ug/kg	
86-73-7	Fluorene	ND	29	ug/kg	
85-01-8	Phenanthrene	ND	29	ug/kg	
129-00-0	Pyrene	ND	29	ug/kg	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	67%	21-122%
321-60-8	2-Fluorobiphenyl	70%	30-117%
1718-51-0	Terphenyl-d14	88%	31-129%

Blank Spike Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP61828-BS1	2M48357.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	1430	1220	85	59-121
56-55-3	Benzo(a)anthracene	1430	1230	86	54-119
50-32-8	Benzo(a)pyrene	1430	1330	93	59-122
205-99-2	Benzo(b)fluoranthene	1430	1530	107	45-133
191-24-2	Benzo(g,h,i)perylene	1430	1260	88	57-122
218-01-9	Chrysene	1430	1190	83	55-120
86-73-7	Fluorene	1430	1200	84	57-117
85-01-8	Phenanthrene	1430	1180	83	58-118
129-00-0	Pyrene	1430	1160	81	54-122

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	67%	21-122%
321-60-8	2-Fluorobiphenyl	72%	30-117%
1718-51-0	Terphenyl-d14	99%	31-129%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP61828-MS	2M48366.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
OP61828-MSD	2M48367.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073
JB22267-1	2M48365.D	1	12/08/12	KLS	12/07/12	OP61828	E2M2073

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

CAS No.	Compound	JB22267-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	67.7		1730	1500	83	1450	81	3	33-130/30
56-55-3	Benzo(a)anthracene	401		1730	1970	91	1880	87	5	29-127/33
50-32-8	Benzo(a)pyrene	403		1730	2070	97	2030	95	2	28-134/34
205-99-2	Benzo(b)fluoranthene	760		1730	2680	111	2660	111	1	19-143/38
191-24-2	Benzo(g,h,i)perylene	463		1730	2150	98	2110	96	2	27-135/34
218-01-9	Chrysene	622		1730	2220	93	2150	90	3	29-129/32
86-73-7	Fluorene	ND		1730	1300	75	1310	77	1	32-125/32
85-01-8	Phenanthrene	122		1730	1440	76	1460	78	1	28-132/34
129-00-0	Pyrene	910		1730	2560	96	2520	94	2	27-132/33

CAS No.	Surrogate Recoveries	MS	MSD	JB22267-1	Limits
4165-60-0	Nitrobenzene-d5	63%	62%	43%	21-122%
321-60-8	2-Fluorobiphenyl	64%	63%	49%	30-117%
1718-51-0	Terphenyl-d14	90%	84%	90%	31-129%

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2013-DFTPP
Lab File ID: 2M46670.D
Instrument ID: GCMS2M
Injection Date: 10/02/12
Injection Time: 14:01

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	29430	41.1		Pass
68	Less than 2.0% of mass 69	394	0.55	(1.41) [a]	Pass
69	Mass 69 relative abundance	27877	38.9		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	37690	52.6		Pass
197	Less than 1.0% of mass 198	309	0.43		Pass
198	Base peak, 100% relative abundance	71618	100.0		Pass
199	5.0 - 9.0% of mass 198	4898	6.84		Pass
275	10.0 - 30.0% of mass 198	15179	21.2		Pass
365	1.0 - 100.0% of mass 198	1725	2.41		Pass
441	Present, but less than mass 443	6265	8.75	(73.6) [b]	Pass
442	40.0 - 100.0% of mass 198	44074	61.5		Pass
443	17.0 - 23.0% of mass 442	8508	11.9	(19.3) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2013-IC2013	2M46671.D	10/02/12	14:14	00:13	Initial cal 100
E2M2013-IC2013	2M46672.D	10/02/12	14:38	00:37	Initial cal 2
E2M2013-IC2013	2M46673.D	10/02/12	15:03	01:02	Initial cal 80
E2M2013-IC2013	2M46674.D	10/02/12	15:27	01:26	Initial cal 10
E2M2013-IC2013	2M46675.D	10/02/12	15:51	01:50	Initial cal 5
E2M2013-IC2013	2M46676.D	10/02/12	16:15	02:14	Initial cal 1
E2M2013-IC2013	2M46677.D	10/02/12	16:39	02:38	Initial cal 25
E2M2013-ICC2013	2M46678.D	10/02/12	17:03	03:02	Initial cal 50
E2M2013-ICV2009	2M46679.D	10/02/12	17:27	03:26	Initial cal verification 50
E2M2013-ICV2013	2M46680.D	10/02/12	17:51	03:50	Initial cal verification 50
E2M2013-ICV2013	2M46681.D	10/02/12	18:15	04:14	Initial cal verification 50
E2M2013-ICV2013	2M46682.D	10/02/12	18:40	04:39	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2034-DFTPP
Lab File ID: 2M47225.D
Instrument ID: GCMS2M
Injection Date: 10/22/12
Injection Time: 10:12

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	45508	42.4		Pass
68	Less than 2.0% of mass 69	855	0.80	(1.86) [a]	Pass
69	Mass 69 relative abundance	45846	42.7		Pass
70	Less than 2.0% of mass 69	313	0.29	(0.68) [a]	Pass
127	40.0 - 60.0% of mass 198	58629	54.6		Pass
197	Less than 1.0% of mass 198	246	0.23		Pass
198	Base peak, 100% relative abundance	107368	100.0		Pass
199	5.0 - 9.0% of mass 198	7318	6.82		Pass
275	10.0 - 30.0% of mass 198	26496	24.7		Pass
365	1.0 - 100.0% of mass 198	3155	2.94		Pass
441	Present, but less than mass 443	10895	10.1	(75.2) [b]	Pass
442	40.0 - 100.0% of mass 198	75786	70.6		Pass
443	17.0 - 23.0% of mass 442	14484	13.5	(19.1) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2034-IC2034	2M47226.D	10/22/12	10:25	00:13	Initial cal 25
E2M2034-IC2034	2M47227.D	10/22/12	10:50	00:38	Initial cal 100
E2M2034-IC2034	2M47228.D	10/22/12	11:13	01:01	Initial cal 1
E2M2034-IC2034	2M47229.D	10/22/12	11:44	01:32	Initial cal 80
E2M2034-IC2034	2M47230.D	10/22/12	12:07	01:55	Initial cal 2
E2M2034-ICC2034	2M47231.D	10/22/12	12:36	02:24	Initial cal 50
E2M2034-IC2034	2M47232.D	10/22/12	12:59	02:47	Initial cal 5
E2M2034-IC2034	2M47233.D	10/22/12	13:22	03:10	Initial cal 10
E2M2034-ICV2034	2M47234.D	10/22/12	13:45	03:33	Initial cal verification 50
E2M2034-ICV2034	2M47235.D	10/22/12	14:08	03:56	Initial cal verification 50
E2M2034-ICV2034	2M47236.D	10/22/12	14:30	04:18	Initial cal verification 50
E2M2034-ICV2034	2M47237.D	10/22/12	14:53	04:41	Initial cal verification 50
E2M2034-ICV2034	2M47238.D	10/22/12	15:16	05:04	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2073-DFTPP
Lab File ID: 2M48352.D
Instrument ID: GCMS2M
Injection Date: 12/08/12
Injection Time: 10:45

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	13327	52.5		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	12939	51.0		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	14092	55.5		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	25378	100.0		Pass
199	5.0 - 9.0% of mass 198	1703	6.71		Pass
275	10.0 - 30.0% of mass 198	6403	25.2		Pass
365	1.0 - 100.0% of mass 198	890	3.51		Pass
441	Present, but less than mass 443	3159	12.4	(75.5) [b]	Pass
442	40.0 - 100.0% of mass 198	21651	85.3		Pass
443	17.0 - 23.0% of mass 442	4183	16.5	(19.3) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2073-CC2034	2M48354.D	12/08/12	11:21	00:36	Continuing cal 50
E2M2073-CC2013	2M48355.D	12/08/12	11:45	01:00	Continuing cal 50
OP61828-MB1	2M48356.D	12/08/12	12:08	01:23	Method Blank
OP61828-BS1	2M48357.D	12/08/12	12:38	01:53	Blank Spike
JB22267-2	2M48358.D	12/08/12	13:01	02:16	BH-12-92_0.5'
JB22267-9	2M48359.D	12/08/12	13:24	02:39	BH-12-83_1.0'
JB22267-11	2M48360.D	12/08/12	13:47	03:02	BH-12-84_3.0'
JB22267-12	2M48361.D	12/08/12	14:10	03:25	BH-12-88_2.5'
JB22267-15	2M48362.D	12/08/12	14:33	03:48	BH-12-78_1.0'
JB22267-17	2M48363.D	12/08/12	14:55	04:10	BH-12-80_3.0'
JB22267-3	2M48364.D	12/08/12	15:18	04:33	BH-12-94_1.0'
JB22267-1	2M48365.D	12/08/12	15:41	04:56	BH-12-91_0.5'
OP61828-MS	2M48366.D	12/08/12	16:04	05:19	Matrix Spike
OP61828-MSD	2M48367.D	12/08/12	16:27	05:42	Matrix Spike Duplicate
JB22267-4	2M48368.D	12/08/12	16:50	06:05	BH-12-87_1.0'
JB22267-5	2M48369.D	12/08/12	17:13	06:28	BH-12-87_3.0'
JB22267-7	2M48370.D	12/08/12	17:36	06:51	BH-12-85_1.5'
JB22267-8	2M48371.D	12/08/12	17:59	07:14	BH-12-85_3.0'
JB22267-10	2M48372.D	12/08/12	18:22	07:37	BH-12-83_3.0'

Instrument Performance Check (DFTPP)

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2073-DFTPP
Lab File ID: 2M48352.D
Instrument ID: GCMS2M
Injection Date: 12/08/12
Injection Time: 10:45

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
JB22267-13	2M48373.D	12/08/12	18:45	08:00	BH-12-79_1.0'
JB22267-14	2M48374.D	12/08/12	19:08	08:23	BH-12-82_1.0'
JB22267-16	2M48375.D	12/08/12	19:31	08:46	BH-12-78_2.0'
JB22267-6	2M48376.D	12/08/12	19:54	09:09	BH-12-100_3.0'

Semivolatile Internal Standard Area Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	E2M2073-CC2034	**Injection Date:**	12/08/12
Lab File ID:	2M48354.D	**Injection Time:**	11:21
Instrument ID:	GCMS2M	**Method:**	SW846 8270D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	361743	2.50	1665585	4.04	982609	6.62	1636574	8.85	1721361	12.63	1407677	14.03
Upper Limit [a]	723486	3.00	3331170	4.54	1965218	7.12	3273148	9.35	3442722	13.13	2815354	14.53
Lower Limit [b]	180872	2.00	832793	3.54	491305	6.12	818287	8.35	860681	12.13	703839	13.53

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP61828-MB1	265730	2.50	1142572	4.04	705142	6.61	1213908	8.85	1323973	12.63	1194884	14.03
OP61828-BS1	285132	2.50	1304631	4.04	799418	6.61	1330578	8.85	1383181	12.63	1196269	14.03
JB22267-2	227824	2.50	1013169	4.04	635090	6.61	1056012	8.85	1080302	12.63	967727	14.03
JB22267-9	273560	2.50	1223215	4.04	745640	6.61	1202239	8.85	1261649	12.63	1114195	14.03
JB22267-11	267765	2.50	1151175	4.04	677161	6.61	1104357	8.85	1131494	12.63	1013844	14.03
JB22267-12	247535	2.50	1087187	4.04	651164	6.61	1080867	8.85	1097056	12.63	965087	14.03
JB22267-15	218496	2.50	995750	4.04	598080	6.61	973151	8.84	1011431	12.63	889285	14.03
JB22267-17	273902	2.50	1208022	4.04	694016	6.61	1122077	8.85	1061295	12.63	923080	14.03
JB22267-3	245146	2.50	1129316	4.04	683244	6.61	1112736	8.85	1153102	12.63	1097008	14.04
JB22267-1	260202	2.50	1178957	4.04	716599	6.61	1158927	8.85	1169897	12.63	1095961	14.04
OP61828-MS	245229	2.50	1114582	4.04	659915	6.61	1077392	8.85	1105228	12.64	990691	14.04
OP61828-MSD	244866	2.50	1153030	4.04	691009	6.61	1119617	8.85	1171301	12.64	1033619	14.04
JB22267-4	225691	2.50	1008224	4.04	602320	6.61	989529	8.85	1010882	12.64	930921	14.04
JB22267-5	351525	2.50	1564665	4.04	917595	6.62	1470943	8.85	1523076	12.64	1508806	14.05
JB22267-7	282277	2.50	1246579	4.04	729478	6.61	1169383	8.85	1175230	12.64	1150089	14.04
JB22267-8	228677	2.50	1019274	4.04	604233	6.61	977697	8.85	1028242	12.64	1037222	14.05
JB22267-10	302362	2.50	1364833	4.04	793181	6.61	1281515	8.85	1403890	12.64	1459076	14.05
JB22267-13	307355	2.50	1373069	4.04	810095	6.61	1306288	8.85	1278757	12.64	1265457	14.04
JB22267-14	276514	2.50	1244348	4.04	721533	6.62	1175730	8.86	1438647	12.66	1856920	14.09
JB22267-16	249863	2.50	1162593	4.05	689123	6.63	1112311	8.86	1116939	12.64	1168258	14.05
JB22267-6	314400	2.50	1417204	4.05	823722	6.63	1316809	8.86	1399129	12.65	1448461	14.05

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Semivolatile Surrogate Recovery Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Method: SW846 8270D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JB22267-1	2M48365.D	43.0	49.0	90.0
JB22267-2	2M48358.D	42.0	46.0	77.0
JB22267-3	2M48364.D	48.0	58.0	85.0
JB22267-4	2M48368.D	55.0	64.0	89.0
JB22267-5	2M48369.D	32.0	44.0	86.0
JB22267-6	2M48376.D	44.0	55.0	85.0
JB22267-7	2M48370.D	43.0	50.0	96.0
JB22267-8	2M48371.D	42.0	48.0	81.0
JB22267-9	2M48359.D	32.0	36.0	98.0
JB22267-10	2M48372.D	42.0	52.0	87.0
JB22267-11	2M48360.D	35.0	40.0	88.0
JB22267-12	2M48361.D	39.0	44.0	90.0
JB22267-13	2M48373.D	41.0	50.0	104.0
JB22267-14	2M48374.D	52.0	56.0	59.0
JB22267-15	2M48362.D	46.0	51.0	69.0
JB22267-16	2M48375.D	44.0	58.0	87.0
JB22267-17	2M48363.D	45.0	56.0	108.0
OP61828-BS1	2M48357.D	67.0	72.0	99.0
OP61828-MB1	2M48356.D	67.0	70.0	88.0
OP61828-MS	2M48366.D	63.0	64.0	90.0
OP61828-MSD	2M48367.D	62.0	63.0	84.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	21-122%
S2 = 2-Fluorobiphenyl	30-117%
S3 = Terphenyl-d14	31-129%

Initial Calibration Summary

Job Number: JB22267 **Sample:** E2M2013-ICC2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46678.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                          Response Factor Report  MS2M

  Method       : C:\MSDCHEM\1\METHODS\M2M2013.M (RTE Integrator)
  Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
  Last Update  : Wed Oct 03 09:24:42 2012
  Response via : Initial Calibration

  Calibration Files
  2   =2m46672.D   5   =2m46675.D   25  =2m46677.D   80  =2m46673.D
  100 =2m46671.D   50  =2m46678.D   1   =2m46676.D   10  =2m46674.D

   Compound         2     5     25    80    100   50    1     10    Avg %RSD
  ---------------------------------------------------------------------------

102)     1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 1.132 1.122 1.168 1.169 1.096 1.007 1.173 1.182 1.131   5.17

104)     Acenaphthene-d10a     ----------------ISTD---------------------
105) 1,2,4,5-Tetr 0.467 0.461 0.471 0.478 0.497 0.475 0.489 0.482 0.478   2.44
106) 2-bromonapht 0.574 0.570 0.593 0.615 0.649 0.611 0.585 0.596 0.599   4.29

107)     Chrysene-d12a         ----------------ISTD---------------------
108) Benzidine          0.562 0.669 0.569 0.572 0.529       0.584 0.581   8.11
109) 1-chloroocta 0.406 0.404 0.454 0.463 0.481 0.457 0.351 0.447 0.433   9.82

110)     Phenanthrene-d10a     ----------------ISTD---------------------
111) Atrazine     0.101 0.095 0.108 0.115 0.123 0.111 0.088 0.106 0.106  10.61
112) o-terphenyl  0.539 0.545 0.585 0.613 0.656 0.601 0.549 0.582 0.584   6.84

113) I   Naphthalene-d8a       ----------------ISTD---------------------
114) hydroquinone 0.240 0.269 0.327 0.377 0.408 0.414 0.293 0.298 0.328  19.81
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M2M2009.M         Wed Oct 03 09:25:36 2012   MS2M
```

8.7.1

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2013-ICV2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46680.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2013\2m46680.D          Vial: 11
Acq On    :  2 Oct 2012   5:51 pm                    Operator: olgaa
Sample    : icv2013-50                               Inst    : MS2M
Misc      : op60024,e2m2013,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2009.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Wed Oct 03 09:37:56 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
104	Acenaphthene-d10a	1.000	1.000	0.0	88	0.00	7.28
105	1,2,4,5-Tetrachlorobenzen	0.478	0.455	4.8	85	0.00	6.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46678.D M2M2009.M Wed Oct 03 12:46:45 2012 MS2M

8.7.2

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2013-ICV2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46681.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2013\2m46681.D          Vial: 12
Acq On    :  2 Oct 2012   6:15 pm                    Operator: olgaa
Sample    : icv2013-50                               Inst    : MS2M
Misc      : op60024,e2m2013,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2009.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Wed Oct 03 09:37:56 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	144	0.00	3.03
103	Benzaldehyde	1.131	1.168	-3.3	167	0.00	2.58
108	Phenanthrene-d10a	1.000	1.000	0.0	128	0.00	9.53
109	Atrazine	0.106	0.127	-19.8	147	0.00	9.38

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46678.D M2M2009.M Wed Oct 03 12:49:22 2012 MS2M

8.7.3

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2013-ICV2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46682.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2013\2m46682.D          Vial: 13
Acq On    :  2 Oct 2012   6:40 pm                    Operator: olgaa
Sample    : icv2013-50                               Inst    : MS2M
Misc      : op60024,e2m2013,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2009.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Wed Oct 03 09:37:56 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
106	Chrysene-d12a	1.000	1.000	0.0	123	0.00	13.16
107	Benzidine	0.581	0.897	-54.4#	209	0.00	11.69

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46678.D M2M2009.M Wed Oct 03 12:50:33 2012 MS2M

8.7.4

8

Initial Calibration Summary

Job Number: JB22267 **Sample:** E2M2034-ICC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47231.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MS2M

Method : C:\msdchem\1\METHODS\M2M2034.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update : Mon Oct 22 13:58:41 2012
Response via : Initial Calibration

Calibration Files
2 =2m47230.D 5 =2m47232.D 25 =2m47226.D 80 =2m47229.D
100 =2m47227.D 50 =2m47231.D 1 =2m47228.D 10 =2m47233.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
1) I 1,4-Dichlorobenzene-d					ISTD					
2) 1,4-Dioxane	0.594	0.572	0.640	0.557	0.565	0.599	0.698	0.579	0.600	7.83
3) Pyridine	1.809	1.630	1.625	1.604	1.611	1.673	2.017	1.684	1.707	8.30
4) N-Nitrosodim	1.138	1.036	1.079	1.034	1.034	1.060	1.244	1.117	1.093	6.64
5) 2-Fluorophen	1.444	1.384	1.414	1.468	1.462	1.406	1.562	1.505	1.456	3.97
6) Indene	2.818	2.644	2.783	2.561	2.511	2.782	3.006	2.823	2.741	5.86
7) Cumene	3.887	3.659	3.762	3.422	3.356	3.748	4.095	3.821	3.719	6.48
8) Phenol-d5	2.042	1.936	1.861	1.900	1.847	1.852	2.094	2.077	1.951	5.34
9) Phenol	2.182	2.134	2.169	2.062	1.986	2.168	2.278	2.247	2.153	4.39
10) Aniline	2.524	2.285	1.943	1.774	1.741	1.838	2.706	2.240	2.131	17.03
11) bis(2-Chloro	1.706	1.618	1.600	1.548	1.499	1.602	1.798	1.711	1.635	5.93
12) 2-Chlorophen	1.612	1.520	1.561	1.524	1.503	1.550	1.740	1.621	1.579	4.92
13) Decane	1.987	1.902	1.900	1.676	1.611	1.908	2.131	1.993	1.888	9.00
14) 1,3-Dichloro	1.806	1.680	1.694	1.639	1.625	1.674	1.923	1.778	1.727	5.84
15) 1,4-Dichloro	1.898	1.744	1.738	1.672	1.666	1.710	2.120	1.817	1.796	8.46
16) Benzyl alcoh	1.134	1.076	1.113	1.104	1.087	1.103	1.187	1.165	1.121	3.44
17) 1,2-Dichloro	1.753	1.622	1.602	1.573	1.545	1.583	1.873	1.691	1.655	6.71
18) Acetophenone	2.386	2.210	2.253	2.211	2.135	2.293	2.310	2.406	2.276	4.05
19) 2-Methylphen	1.471	1.431	1.467	1.454	1.417	1.467	1.603	1.555	1.483	4.28
20) 2,2'-oxybis(	2.801	2.702	2.522	2.492	2.370	2.602	2.971	2.890	2.669	7.82
21) 3&4-Methylph	1.593	1.542	1.596	1.597	1.578	1.630	1.575	1.698	1.601	2.89
22) n-Nitroso-di	1.430	1.352	1.290	1.307	1.267	1.319	1.472	1.446	1.360	5.76
23) Hexachloroet	0.544	0.497	0.515	0.512	0.512	0.508	0.575	0.535	0.525	4.82
24) I Naphthalene-d8					ISTD					
25) Nitrobenzene	0.453	0.422	0.406	0.403	0.405	0.413	0.485	0.447	0.429	6.88
26) Nitrobenzene	0.463	0.448	0.432	0.422	0.419	0.437	0.517	0.470	0.451	7.14
27) Quinoline	0.775	0.699	0.754	0.708	0.702	0.744	0.807	0.755	0.743	5.11
28) Isophorone	0.796	0.755	0.724	0.682	0.664	0.723	0.854	0.805	0.750	8.67
29) 2-Nitropheno	0.219	0.201	0.213	0.208	0.209	0.211	0.223	0.224	0.214	3.69
30) 2,4-Dimethyl	0.285	0.303	0.323	0.355	0.357	0.356	0.310	0.328	0.327	8.29
31) Benzoic acid		0.236	0.278	0.328	0.323	0.315		0.306	0.298	11.80
32) bis(2-Chloro	0.437	0.416	0.412	0.402	0.401	0.414	0.463	0.448	0.424	5.29
33) 2,4-Dichloro	0.296	0.275	0.291	0.283	0.285	0.288	0.301	0.301	0.290	3.16
34) 2,6-Dichloro	0.293	0.280	0.287	0.276	0.276	0.283	0.317	0.296	0.289	4.79
35) 1,3,5-Trichl	0.324	0.292	0.311	0.289	0.293	0.304	0.357	0.313	0.310	7.16
36) 1,2,4-Trichl	0.323	0.296	0.295	0.289	0.295	0.293	0.350	0.310	0.306	6.76
37) 1,2,3-Trichl	0.309	0.285	0.300	0.281	0.286	0.294	0.328	0.302	0.298	5.18
38) Naphthalene	1.192	1.101	1.097	1.005	0.995	1.088	1.276	1.150	1.113	8.39
39) 4-Chloroanil	0.503	0.463	0.437	0.412	0.405	0.428	0.537	0.481	0.458	10.09
40) 2,3-Dichloro	0.365	0.335	0.353	0.339	0.339	0.352	0.381	0.363	0.353	4.42
41) Caprolactam	0.194	0.189	0.193	0.198	0.192	0.206	0.201	0.214	0.198	4.30
42) Hexachlorobu	0.175	0.162	0.161	0.161	0.167	0.161	0.194	0.173	0.169	6.73
43) 4-Chloro-3-m	0.347	0.318	0.337	0.337	0.333	0.350	0.366	0.362	0.344	4.57
44) 2-Methylnaph	0.715	0.662	0.662	0.640	0.635	0.666	0.760	0.720	0.683	6.47
45) 1-Methylnaph	0.737	0.690	0.710	0.673	0.660	0.703	0.786	0.734	0.712	5.65

Initial Calibration Summary

Job Number: JB22267 **Sample:** E2M2034-ICC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47231.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

46)	Dimethylnaph	0.635	0.608	0.639	0.617	0.612	0.640	0.679	0.659	0.636	3.84
47)	I Acenaphthene-d10	----------ISTD----------									
48)	Hexachlorocy	0.242	0.250	0.301	0.330	0.340	0.316	0.216	0.305	0.287	15.75
49)	2,4,6-Trichl	0.346	0.314	0.350	0.347	0.350	0.346	0.349	0.344	0.343	3.52
50)	2,4,5-Trichl	0.353	0.334	0.369	0.371	0.376	0.375	0.384	0.373	0.367	4.37
51)	2-Fluorobiph	1.398	1.289	1.260	1.237	1.241	1.238	1.520	1.339	1.315	7.64
52)	2-Chloronaph	1.278	1.159	1.146	1.123	1.124	1.133	1.377	1.216	1.195	7.64
53)	Biphenyl	1.642	1.513	1.555	1.456	1.457	1.545	1.756	1.585	1.564	6.38
54)	2-Nitroanili	0.446	0.424	0.430	0.447	0.435	0.449	0.440	0.495	0.446	4.92
55)	Dimethylphth	1.513	1.349	1.342	1.329	1.313	1.352	1.575	1.441	1.402	6.92
56)	Acenaphthyle	1.986	1.854	1.951	1.819	1.782	1.941	2.128	1.992	1.932	5.75
57)	2,6-Dinitrot	0.310	0.281	0.306	0.315	0.314	0.309	0.318	0.321	0.309	3.99
58)	3-Nitroanili	0.396	0.378	0.401	0.390	0.391	0.397	0.413	0.422	0.398	3.44
59)	Acenaphthene	1.318	1.210	1.216	1.148	1.136	1.220	1.414	1.275	1.242	7.38
60)	2,4-Dinitrop			0.159	0.195	0.199	0.173		0.163	0.178	10.25
61)	4-Nitropheno	0.151	0.135	0.172	0.191	0.187	0.193	0.150	0.189	0.171	13.37
62)	Dibenzofuran	1.826	1.671	1.647	1.593	1.570	1.635	1.945	1.745	1.704	7.49
63)	2,4-Dinitrot	0.425	0.404	0.428	0.435	0.433	0.430	0.421	0.453	0.429	3.18
64)	2,3,4,6-Tetr	0.250	0.226	0.271	0.292	0.295	0.282	0.276	0.272	0.271	8.39
65)	Diethylphtha	1.567	1.416	1.399	1.392	1.368	1.425	1.630	1.499	1.462	6.43
66)	Fluorene	1.405	1.288	1.324	1.281	1.266	1.333	1.492	1.368	1.345	5.63
67)	4-Chlorophen	0.640	0.587	0.586	0.588	0.595	0.590	0.671	0.622	0.610	5.19
68)	4-Nitroanili	0.399	0.363	0.390	0.393	0.388	0.400	0.423	0.417	0.397	4.68
69)	I Phenanthrene-d10	----------ISTD----------									
70)	4,6-Dinitro-	0.104	0.116	0.159	0.166	0.168	0.164		0.158	0.148	17.83
71)	n-Nitrosodip	0.670	0.631	0.631	0.607	0.610	0.616	0.729	0.653	0.643	6.36
72)	1,2-Diphenyl	1.126	1.070	1.028	1.010	0.978	1.032	1.203	1.129	1.072	7.02
73)	2,4,6-Tribro	0.088	0.084	0.088	0.103	0.108	0.091	0.097	0.094	0.094	8.86
74)	4-Bromopheny	0.210	0.195	0.205	0.208	0.213	0.201	0.228	0.208	0.208	4.74
75)	Hexachlorobe	0.236	0.214	0.212	0.223	0.227	0.212	0.248	0.220	0.224	5.65
76)	Pentachlorop		0.084	0.130	0.147	0.152	0.135		0.119	0.128	19.14
77)	Phenanthrene	1.298	1.202	1.195	1.126	1.122	1.171	1.442	1.241	1.225	8.58
78)	Anthracene	1.269	1.157	1.205	1.142	1.132	1.178	1.385	1.243	1.214	6.93
79)	Carbazole	1.208	1.128	1.187	1.081	1.072	1.156	1.382	1.189	1.175	8.29
80)	Di-n-butylph	1.533	1.446	1.492	1.414	1.393	1.485	1.675	1.573	1.502	6.12
81)	Fluoranthene	1.204	1.132	1.199	1.136	1.144	1.212	1.433	1.205	1.208	8.02
82)	Octadecane	0.686	0.652	0.665	0.600	0.577	0.664	0.724	0.706	0.659	7.59
83)	I Chrysene-d12	----------ISTD----------									
84)	Pyrene	1.350	1.230	1.280	1.173	1.186	1.235	1.622	1.272	1.294	11.13
85)	Terphenyl-d1	0.818	0.758	0.762	0.768	0.787	0.751	1.034	0.788	0.808	11.61
86)	Butylbenzylp	0.717	0.650	0.685	0.633	0.624	0.666	0.867	0.708	0.694	11.18
87)	Butyl steara	0.423	0.406	0.422	0.373	0.359	0.412	0.511	0.445	0.419	11.11
88)	Benzo[a]anth	1.279	1.134	1.184	1.129	1.131	1.163	1.643	1.179	1.230	14.12
89)	3,3'-Dichlor	0.481	0.442	0.458	0.474	0.484	0.460	0.606	0.465	0.484	10.60
90)	Chrysene	1.286	1.160	1.135	1.124	1.135	1.144	1.598	1.175	1.220	13.24
91)	bis(2-Ethylh	1.006	0.922	0.972	0.895	0.886	0.955	1.235	0.988	0.982	11.28
92)	I Perylene-d12	----------ISTD----------									
93)	Di-n-octylph	1.706	1.622	1.880	1.623	1.595	1.808	2.128	1.775	1.767	10.03
94)	Benzo[b]fluo	1.312	1.202	1.342	1.428	1.616	1.319	1.637	1.286	1.393	11.29
95)	Benzo[k]fluo	1.289	1.268	1.297	1.130	0.956	1.362	1.500	1.225	1.253	12.81
96)	Benzo[a]pyre	1.161	1.080	1.209	1.139	1.152	1.204	1.387	1.130	1.183	7.80
97)	Indeno[1,2,3	1.305	1.246	1.421	1.370	1.399	1.410	1.525	1.313	1.374	6.26
98)	Dibenz(a,h)a	0.921	0.873	1.052	0.972	0.993	1.031	1.055	0.939	0.979	6.73
99)	Dibenz[a,h]a	1.082	1.023	1.202	1.189	1.222	1.200	1.202	1.110	1.154	6.29
100)	7,12-Dimethy	0.508	0.480	0.538	0.636	0.649	0.607	0.652	0.504	0.572	12.56
101)	Benzo[g,h,i]	1.152	1.092	1.191	1.155	1.181	1.200	1.278	1.134	1.173	4.66

8.7.5

8

Initial Calibration Summary

Job Number: JB22267 **Sample:** E2M2034-ICC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47231.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
-------------------------------------------------------------------------------
(#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          M2M2034.M         Mon Oct 22 14:35:25 2012   MS2M
```

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47234.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47234.D          Vial: 10
Acq On    : 22 Oct 2012   1:45 pm                     Operator: olgaa
Sample    : icv2034-50                                Inst    : MS2M
Misc      : op60718,e2m2034,                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	89	0.01	2.78
9	t	Phenol	2.153	1.953	9.3	80	0.01	2.57
12	t	2-Chlorophenol	1.579	1.482	6.1	85	0.01	2.61
19	t	2-Methylphenol	1.483	1.391	6.2	85	0.00	3.22
21	t	3&4-Methylphenol	1.601	1.471	8.1	80	0.00	3.41
24	I	Naphthalene-d8	1.000	1.000	0.0	85	0.00	4.37
29	t	2-Nitrophenol	0.214	0.198	7.5	80	0.01	3.92
30	t	2,4-Dimethylphenol	0.327	0.376	-15.0	90	0.01	4.09
31	t	Benzoic acid	0.298	0.265	11.1	72	0.04	4.38
33	t	2,4-Dichlorophenol	0.290	0.277	4.5	82	0.00	4.27
34	t	2,6-Dichlorophenol	0.289	0.275	4.8	83	0.01	4.58
43	t	4-Chloro-3-methylphenol	0.344	0.317	7.8	77	0.00	5.41
47	I	Acenaphthene-d10	1.000	1.000	0.0	81	0.01	6.98
49	t	2,4,6-Trichlorophenol	0.343	0.335	2.3	79	0.00	5.94
50	t	2,4,5-Trichlorophenol	0.367	0.365	0.5	79	0.00	6.00
60	t	2,4-Dinitrophenol	0.178	0.148	16.9	70	0.00	7.21
61	t	4-Nitrophenol	0.171	0.170	0.6	72	0.00	7.50
64		2,3,4,6-Tetrachlorophenol	0.271	0.259	4.4	75	0.00	7.61
69	I	Phenanthrene-d10	1.000	1.000	0.0	79	0.00	9.22
70	t	4,6-Dinitro-2-methylpheno	0.148	0.149	-0.7	72	0.00	8.06
76	t	Pentachlorophenol	0.128	0.114	10.9	66	0.00	9.12

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m47272.D M2M2034.M Tue Oct 23 16:06:52 2012 MS2M

8.7.6

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47235.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47235.D          Vial: 11
Acq On    : 22 Oct 2012   2:08 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	124	0.01	2.79
3	t	Pyridine	1.707	1.474	13.6	109	0.00	0.96
4	t	N-Nitrosodimethylamine	1.093	0.994	9.1	116	0.00	0.96
11	t	bis(2-Chloroethyl)ether	1.635	1.515	7.3	117	0.01	2.58
14	t	1,3-Dichlorobenzene	1.727	1.590	7.9	118	0.01	2.74
15	t	1,4-Dichlorobenzene	1.796	1.629	9.3	118	0.01	2.80
16	t	Benzyl alcohol	1.121	1.027	8.4	115	0.02	3.02
17	t	1,2-Dichlorobenzene	1.655	1.541	6.9	120	0.01	3.00
20	t	2,2'-oxybis(1-Chloropropa	2.669	2.353	11.8	112	0.01	3.20
22	t	n-Nitroso-di-n-propylamin	1.360	1.168	14.1	110	0.01	3.36
23	t	Hexachloroethane	0.525	0.484	7.8	118	0.01	3.36
24	I	Naphthalene-d8	1.000	1.000	0.0	119	0.01	4.38
26	t	Nitrobenzene	0.451	0.414	8.2	113	0.02	3.50
28	t	Isophorone	0.750	0.715	4.7	118	0.01	3.81
32	t	bis(2-Chloroethoxy)methan	0.424	0.422	0.5	122	0.02	4.19
36	t	1,2,4-Trichlorobenzene	0.306	0.289	5.6	118	0.01	4.34
38	t	Naphthalene	1.113	1.033	7.2	113	0.01	4.41
42	t	Hexachlorobutadiene	0.169	0.160	5.3	118	0.01	4.71
44	t	2-Methylnaphthalene	0.683	0.582	14.8	104	0.01	5.41
47	I	Acenaphthene-d10	1.000	1.000	0.0	115	0.02	6.99
48	t	Hexachlorocyclopentadiene	0.287	0.266	7.3	96	0.01	5.77
52	t	2-Chloronaphthalene	1.195	1.108	7.3	112	0.01	6.12
54	t	2-Nitroaniline	0.446	0.405	9.2	103	0.02	6.41
55	t	Dimethylphthalate	1.402	1.269	9.5	108	0.02	6.80
56	t	Acenaphthylene	1.932	1.624	15.9	96	0.01	6.74
57	t	2,6-Dinitrotoluene	0.309	0.294	4.9	109	0.02	6.87
58	t	3-Nitroaniline	0.398	0.341	14.3	99	0.02	7.06
59	t	Acenaphthene	1.242	1.137	8.5	107	0.02	7.04
62	t	Dibenzofuran	1.704	1.535	9.9	108	0.01	7.29
63	t	2,4-Dinitrotoluene	0.429	0.394	8.2	105	0.02	7.46
65	t	Diethylphthalate	1.462	1.324	9.4	107	0.02	7.91
66	t	Fluorene	1.345	1.276	5.1	110	0.01	7.81
67	t	4-Chlorophenyl-phenylethe	0.610	0.567	7.0	110	0.02	7.90
68	t	4-Nitroaniline	0.397	0.366	7.8	105	0.02	8.02
69	I	Phenanthrene-d10	1.000	1.000	0.0	110	0.01	9.23
71	t	n-Nitrosodiphenylamine	0.643	0.594	7.6	106	0.02	8.12
72	t	1,2-Diphenylhydrazine	1.072	1.043	2.7	111	0.02	8.13
74	t	4-Bromophenyl-phenylether	0.208	0.203	2.4	112	0.02	8.63
75	t	Hexachlorobenzene	0.224	0.214	4.5	111	0.01	8.79

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47235.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	t	Phenanthrene	1.225	1.151	6.0	108	0.01	9.26
78	t	Anthracene	1.214	1.179	2.9	110	0.02	9.33
79	t	Carbazole	1.175	1.103	6.1	105	0.02	9.67
80	t	Di-n-butylphthalate	1.502	1.432	4.7	106	0.02	10.48
81	t	Fluoranthene	1.208	1.136	6.0	103	0.01	11.10
83	I	Chrysene-d12	1.000	1.000	0.0	108	0.01	12.93
84	t	Pyrene	1.294	1.208	6.6	105	0.01	11.40
86	t	Butylbenzylphthalate	0.694	0.644	7.2	104	0.01	12.49
88	t	Benzo[a]anthracene	1.230	1.119	9.0	104	0.01	12.91
89	t	3,3'-Dichlorobenzidine	0.484	0.385	20.5	90	0.00	12.96
90	t	Chrysene	1.220	1.152	5.6	109	0.01	12.95
91	t	bis(2-Ethylhexyl)phthalat	0.982	0.911	7.2	103	0.01	13.20
92	I	Perylene-d12	1.000	1.000	0.0	112	0.01	14.31
93	t	Di-n-octylphthalate	1.767	1.681	4.9	104	0.01	13.80
94	t	Benzo[b]fluoranthene	1.393	1.351	3.0	115	0.01	13.99
95	t	Benzo[k]fluoranthene	1.253	1.099	12.3	91	0.01	14.01
96	t	Benzo[a]pyrene	1.183	1.148	3.0	107	0.01	14.25
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.303	5.2	104	0.01	15.13
99	t	Dibenz[a,h]anthracene	1.154	1.097	4.9	103	0.01	15.15
101	t	Benzo[g,h,i]perylene	1.173	1.151	1.9	108	0.01	15.31

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m47272.D M2M2034.M Tue Oct 23 16:10:59 2012 MS2M

8.7.7

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47236.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47236.D          Vial: 12
Acq On    : 22 Oct 2012   2:30 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	92	0.01	2.79
2	t	1,4-Dioxane	0.600	0.731	-21.8	112	0.00	0.83
6	t	Indene	2.741	3.143	-14.7	104	0.00	3.10
7	t	Cumene	3.719	4.327	-16.3	106	0.01	2.05
13	t	Decane	1.888	2.091	-10.8	101	0.00	2.68
18	t	Acetophenone	2.276	2.570	-12.9	103	0.00	3.30
24	I	Naphthalene-d8	1.000	1.000	0.0	88	0.00	4.37
27	t	Quinoline	0.743	0.829	-11.6	98	0.00	4.89
40	t	2,3-Dichloroaniline	0.353	0.362	-2.5	91	0.02	5.92
41	t	Caprolactam	0.198	0.212	-7.1	91	-0.01	5.02
45	t	1-Methylnaphthalene	0.712	0.791	-11.1	99	0.01	5.56
46	t	Dimethylnaphthalene	0.636	0.726	-14.2	100	0.01	6.37
47	I	Acenaphthene-d10	1.000	1.000	0.0	87	0.01	6.98
53	t	Biphenyl	1.564	1.713	-9.5	96	0.01	6.15
69	I	Phenanthrene-d10	1.000	1.000	0.0	85	0.00	9.22
82	t	Octadecane	0.659	0.727	-10.3	93	0.02	9.39
92	I	Perylene-d12	1.000	1.000	0.0	74	0.00	14.30
100	t	7,12-Dimethylbenz(a)anthr	0.572	0.668	-16.8	82	0.00	14.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m47272.D M2M2034.M Tue Oct 23 16:14:35 2012 MS2M

8.7.8

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47237.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47237.D          Vial: 13
Acq On    : 22 Oct 2012   2:53 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	101	0.01	2.79
5	S	2-Fluorophenol	1.456	1.541	-5.8	111	0.01	1.70
8	S	Phenol-d5	1.951	1.930	1.1	106	0.01	2.56
24	I	Naphthalene-d8	1.000	1.000	0.0	99	0.00	4.37
25	S	Nitrobenzene-d5	0.429	0.426	0.7	102	0.01	3.48
47	I	Acenaphthene-d10	1.000	1.000	0.0	96	0.01	6.98
51	S	2-Fluorobiphenyl	1.315	1.315	0.0	102	0.01	6.04
69	I	Phenanthrene-d10	1.000	1.000	0.0	94	0.00	9.22
73	S	2,4,6-Tribromophenol	0.094	0.093	1.1	95	0.00	8.22
83	I	Chrysene-d12	1.000	1.000	0.0	89	0.00	12.92
85	S	Terphenyl-d14	0.808	0.925	-14.5	109	0.01	11.76

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 2m47272.D  M2M2034.M        Tue Oct 23 16:16:30 2012   MS2M
```

8.7.9

8

Initial Calibration Verification

Job Number: JB22267 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47238.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47238.D          Vial: 14
Acq On    : 22 Oct 2012   3:16 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	140	0.01	2.79
10		Aniline	2.131	2.294	-7.6	174	0.01	2.50
24	I	Naphthalene-d8	1.000	1.000	0.0	141	0.01	4.38
39	t	4-Chloroaniline	0.458	0.426	7.0	140	0.01	4.58

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 2m47272.D  M2M2034.M        Tue Oct 23 16:18:11 2012   MS2M
```

8.7.10

8

Continuing Calibration Summary

Job Number: JB22267 **Sample:** E2M2073-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48354.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2073\2m48354.D          Vial: 2
Acq On    :  8 Dec 2012  11:21 am                    Operator: kristis
Sample    : cc2034-50                                Inst    : MS2M
Misc      : op61764,e2m2073,1000,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Dec 11 16:45:41 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	105	0.03	2.50
2	t	1,4-Dioxane	0.600	0.598	0.3	105	0.03	0.70
3	t	Pyridine	1.707	1.580	7.4	99	0.03	0.83
4	t	N-Nitrosodimethylamine	1.093	1.004	8.1	100	0.03	0.82
5	S	2-Fluorophenol	1.456	1.399	3.9	105	0.02	1.50
6	t	Indene	2.741	2.900	-5.8	110	0.04	2.80
7	t	Cumene	3.719	3.835	-3.1	108	0.03	1.80
8	S	Phenol-d5	1.951	2.046	-4.9	116	0.02	2.30
9	t	Phenol	2.153	2.299	-6.8	111	0.02	2.31
10		Aniline	2.131	1.771	16.9	101	0.03	2.24
11	t	bis(2-Chloroethyl)ether	1.635	1.685	-3.1	111	0.03	2.31
12	t	2-Chlorophenol	1.579	1.673	-6.0	113	0.03	2.34
13	t	Decane	1.888	1.860	1.5	103	0.03	2.40
14	t	1,3-Dichlorobenzene	1.727	1.711	0.9	107	0.04	2.46
15	t	1,4-Dichlorobenzene	1.796	1.780	0.9	109	0.03	2.51
16	t	Benzyl alcohol	1.121	1.175	-4.8	112	0.03	2.74
17	t	1,2-Dichlorobenzene	1.655	1.674	-1.1	111	0.03	2.71
18	t	Acetophenone	2.276	2.541	-11.6	116	0.04	3.02
19	t	2-Methylphenol	1.483	1.516	-2.2	109	0.03	2.95
20	t	2,2'-oxybis(1-Chloropropa	2.669	2.458	7.9	99	0.03	2.90
21	t	3&4-Methylphenol	1.601	1.704	-6.4	110	0.03	3.14
22	t	n-Nitroso-di-n-propylamin	1.360	1.426	-4.9	114	0.04	3.07
23	t	Hexachloroethane	0.525	0.542	-3.2	112	0.03	3.04
24	I	Naphthalene-d8	1.000	1.000	0.0	112	0.04	4.04
25	S	Nitrobenzene-d5	0.429	0.418	2.6	113	0.04	3.18
26	t	Nitrobenzene	0.451	0.463	-2.7	119	0.04	3.20
27	t	Quinoline	0.743	0.781	-5.1	117	0.05	4.58
28	t	Isophorone	0.750	0.745	0.7	115	0.04	3.50
29	t	2-Nitrophenol	0.214	0.221	-3.3	117	0.03	3.61
30	t	2,4-Dimethylphenol	0.327	0.379	-15.9	119	0.03	3.79
31	t	Benzoic acid	0.298	0.270	9.4	96	0.08	4.18
32	t	bis(2-Chloroethoxy)methan	0.424	0.405	4.5	109	0.04	3.87
33	t	2,4-Dichlorophenol	0.290	0.301	-3.8	117	0.03	3.97
34	t	2,6-Dichlorophenol	0.289	0.305	-5.5	120	0.04	4.26
35		1,3,5-Trichlorobenzene	0.310	0.316	-1.9	116	-0.07	3.60
36	t	1,2,4-Trichlorobenzene	0.306	0.303	1.0	115	0.04	4.02
37		1,2,3-Trichlorobenzene	0.298	0.306	-2.7	116	-0.08	4.34
38	t	Naphthalene	1.113	1.107	0.5	114	0.04	4.07
39	t	4-Chloroaniline	0.458	0.446	2.6	116	0.04	4.27
40	t	2,3-Dichloroaniline	0.353	0.374	-5.9	119	0.04	5.58
41	t	Caprolactam	0.198	0.204	-3.0	111	0.06	4.79

Continuing Calibration Summary

Job Number: JB22267 **Sample:** E2M2073-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48354.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.169	0.173	-2.4	120	0.04	4.36
43	t	4-Chloro-3-methylphenol	0.344	0.380	-10.5	121	0.04	5.13
44	t	2-Methylnaphthalene	0.683	0.687	-0.6	115	0.04	5.06
45	t	1-Methylnaphthalene	0.712	0.764	-7.3	122	0.04	5.21
46	t	Dimethylnaphthalene	0.636	0.692	-8.8	121	0.04	6.01
47	I	Acenaphthene-d10	1.000	1.000	0.0	116	0.04	6.62
48	t	Hexachlorocyclopentadiene	0.287	0.234	18.5	86	0.04	5.41
49	t	2,4,6-Trichlorophenol	0.343	0.358	-4.4	120	0.03	5.61
50	t	2,4,5-Trichlorophenol	0.367	0.380	-3.5	117	0.03	5.71
51	S	2-Fluorobiphenyl	1.315	1.305	0.8	122	0.04	5.69
52	t	2-Chloronaphthalene	1.195	1.182	1.1	121	0.04	5.77
53	t	Biphenyl	1.564	1.612	-3.1	121	0.04	5.80
54	t	2-Nitroaniline	0.446	0.483	-8.3	124	0.04	6.08
55	t	Dimethylphthalate	1.402	1.472	-5.0	126	0.04	6.45
56	t	Acenaphthylene	1.932	2.056	-6.4	123	0.04	6.38
57	t	2,6-Dinitrotoluene	0.309	0.335	-8.4	126	0.04	6.53
58	t	3-Nitroaniline	0.398	0.408	-2.5	119	0.04	6.73
59	t	Acenaphthene	1.242	1.291	-3.9	123	0.04	6.66
60	t	2,4-Dinitrophenol	0.178	0.172	3.4	115	0.02	6.93
61	t	4-Nitrophenol	0.171	0.216	-26.3#	130	0.02	7.25
62	t	Dibenzofuran	1.704	1.774	-4.1	126	0.04	6.92
63	t	2,4-Dinitrotoluene	0.429	0.483	-12.6	130	0.03	7.14
64		2,3,4,6-Tetrachlorophenol	0.271	0.297	-9.6	122	0.03	7.27
65	t	Diethylphthalate	1.462	1.617	-10.6	131	0.04	7.56
66	t	Fluorene	1.345	1.460	-8.6	127	0.04	7.44
67	t	4-Chlorophenyl-phenylethe	0.610	0.645	-5.7	127	0.04	7.52
68	t	4-Nitroaniline	0.397	0.419	-5.5	121	0.05	7.70
69	I	Phenanthrene-d10	1.000	1.000	0.0	122	0.04	8.85
70	t	4,6-Dinitro-2-methylpheno	0.148	0.170	-14.9	126	0.03	7.76
71	t	n-Nitrosodiphenylamine	0.643	0.663	-3.1	132	0.04	7.75
72	t	1,2-Diphenylhydrazine	1.072	1.149	-7.2	136	0.04	7.76
73	S	2,4,6-Tribromophenol	0.094	0.113	-20.2#	152	0.04	7.87
74	t	4-Bromophenyl-phenylether	0.208	0.220	-5.8	134	0.04	8.25
75	t	Hexachlorobenzene	0.224	0.243	-8.5	140	0.04	8.41
76	t	Pentachlorophenol	0.128	0.141	-10.2	127	0.03	8.77
77	t	Phenanthrene	1.225	1.235	-0.8	129	0.04	8.88
78	t	Anthracene	1.214	1.252	-3.1	130	0.05	8.96
79	t	Carbazole	1.175	1.216	-3.5	129	0.04	9.31
80	t	Di-n-butylphthalate	1.502	1.644	-9.5	135	0.04	10.10
81	t	Fluoranthene	1.208	1.270	-5.1	128	0.04	10.72
82	t	Octadecane	0.659	0.662	-0.5	122	0.04	9.01
83	I	Chrysene-d12	1.000	1.000	0.0	127	0.03	12.63
84	t	Pyrene	1.294	1.267	2.1	131	0.04	11.03
85	S	Terphenyl-d14	0.808	0.809	-0.1	137	0.04	11.42
86	t	Butylbenzylphthalate	0.694	0.720	-3.7	138	0.04	12.18
87		Butyl stearate	0.419	0.423	-1.0	131	-0.07	12.32
88	t	Benzo[a]anthracene	1.230	1.247	-1.4	137	0.04	12.62
89	t	3,3'-Dichlorobenzidine	0.484	0.455	6.0	126	0.03	12.68
90	t	Chrysene	1.220	1.159	5.0	129	0.04	12.66
91	t	bis(2-Ethylhexyl)phthalat	0.982	1.034	-5.3	138	0.03	12.92
92	I	Perylene-d12	1.000	1.000	0.0	117	0.03	14.03
93	t	Di-n-octylphthalate	1.767	2.182	-23.5#	141	0.04	13.53
94	t	Benzo[b]fluoranthene	1.393	1.396	-0.2	124	0.04	13.72
95	t	Benzo[k]fluoranthene	1.253	1.685	-34.5#	145	0.03	13.73
96	t	Benzo[a]pyrene	1.183	1.313	-11.0	128	0.03	13.99
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.551	-12.9	129	0.03	14.87

Continuing Calibration Summary

Job Number: JB22267 **Sample:** E2M2073-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48354.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

98	t	Dibenz(a,h)acridine	0.979	1.116	-14.0	127	-0.05	14.72
99	t	Dibenz[a,h]anthracene	1.154	1.301	-12.7	127	0.03	14.88
100	t	7,12-Dimethylbenz(a)anthr	0.572	0.662	-15.7	128	0.03	13.72
101	t	Benzo[g,h,i]perylene	1.173	1.234	-5.2	120	0.03	15.04

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m48422.D M2M2034.M Tue Dec 11 17:30:19 2012 MS2M

8.7.11

8

Continuing Calibration Summary

Job Number: JB22267 **Sample:** E2M2073-CC2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48355.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2073\2m48355.D          Vial: 3
Acq On    :  8 Dec 2012  11:45 am                     Operator: kristis
Sample    : cc2013-50                                 Inst    : MS2M
Misc      : op61828,e2m2073,35.0,,,1,1                Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Dec 11 16:45:41 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	105	0.04	2.50
103	Benzaldehyde	1.131	1.044	7.7	109	0.03	2.10
104	Acenaphthene-d10a	1.000	1.000	0.0	130	0.04	6.61
105	1,2,4,5-Tetrachlorobenzen	0.478	0.424	11.3	116	0.04	5.38
106	Chrysene-d12a	1.000	1.000	0.0	158	0.03	12.63
107	Benzidine	0.581	0.517	11.0	154	0.04	11.08
108	Phenanthrene-d10a	1.000	1.000	0.0	135	0.04	8.84
109	Atrazine	0.106	0.117	-10.4	141	0.04	8.73

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 2m48422.D  M2M2034.M        Tue Dec 11 17:32:47 2012   MS2M
```

8.7.12

8

New Jersey

ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48365.D
Acq On : 8 Dec 2012 3:41 pm
Operator : kristis
Sample : jb22267-1
Misc : op61828,e2m2073,32.5,,,1,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 11 17:44:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	260202	40.00	ppb	-0.07
24) Naphthalene-d8	4.042	136	1178957	40.00	ppb	-0.08
47) Acenaphthene-d10	6.615	164	716599	40.00	ppb	-0.09
69) Phenanthrene-d10	8.845	188	1158927	40.00	ppb	-0.09
83) Chrysene-d12	12.632	240	1169897	40.00	ppb	-0.06
92) Perylene-d12	14.039	264	1095961	40.00	ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	260202	40.00	ppb	-0.07
104) Acenaphthene-d10a	6.615	164	716599	40.00	ppb	-0.09
106) Chrysene-d12a	12.632	240	1169897	40.00	ppb	-0.06
108) Phenanthrene-d10a	8.845	188	1158927	40.00	ppb	-0.09
110) Chrysene-d12b	12.632	240	1169897	40.00	ppb	-0.06
System Monitoring Compounds						
5) 2-Fluorophenol	1.507	112	205235	21.67	ppb	-0.04
Spiked Amount 50.000			Recovery	=	43.34%	
8) Phenol-d5	2.320	99	274441	21.62	ppb	-0.05
Spiked Amount 50.000			Recovery	=	43.24%	
25) Nitrobenzene-d5	3.186	82	272306	21.53	ppb	-0.06
Spiked Amount 50.000			Recovery	=	43.06%	
51) 2-Fluorobiphenyl	5.689	172	573972	24.36	ppb	-0.09
Spiked Amount 50.000			Recovery	=	48.72%	
73) 2,4,6-Tribromophenol	7.872	330	95122	34.93	ppb	-0.08
Spiked Amount 50.000			Recovery	=	69.86%	
85) Terphenyl-d14	11.423	244	1068446	45.19	ppb	-0.07
Spiked Amount 50.000			Recovery	=	90.38%	
Target Compounds						Qvalue
56) Acenaphthylene	6.379	152	111521	3.22	ppb	97
77) Phenanthrene	8.877	178	114469	3.23	ppb	99
78) Anthracene	8.957	178	63108	1.79	ppb	96
81) Fluoranthene	10.717	202	569669	16.28	ppb	98
84) Pyrene	11.033	202	913438	24.14	ppb	99
88) Benzo[a]anthracene	12.621	228	383116	10.65	ppb	93
90) Chrysene	12.659	228	588838	16.51	ppb	98
94) Benzo[b]fluoranthene	13.718	252	768953m	20.15	ppb	
95) Benzo[k]fluoranthene	13.728	252	286980m	8.36	ppb	
96) Benzo[a]pyrene	13.990	252	346521	10.69	ppb	95
97) Indeno[1,2,3-cd]pyrene	14.878	276	396144	10.53	ppb	97
99) Dibenz[a,h]anthracene	14.889	278	117283m	3.71	ppb	
101) Benzo[g,h,i]perylene	15.050	276	394671	12.28	ppb	99

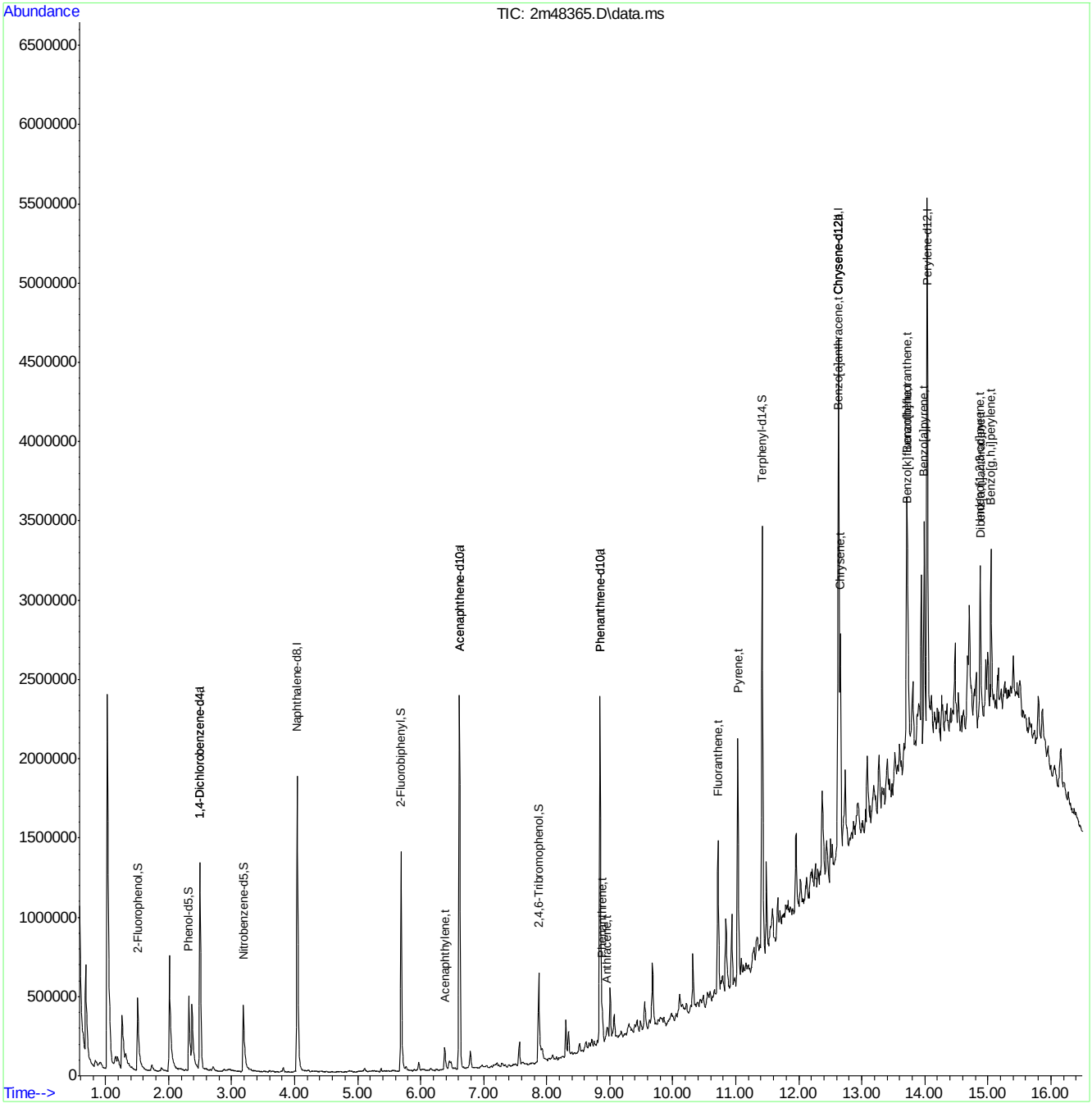
(#) = qualifier out of range (m) = manual integration (+) = signals summed

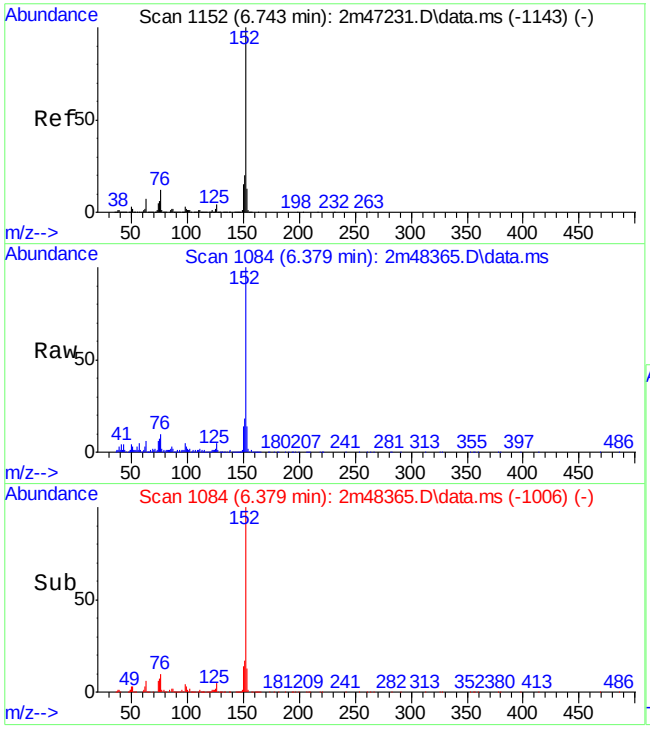
9.1.1
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48365.D
Acq On : 8 Dec 2012 3:41 pm
Operator : kristis
Sample : jb22267-1
Misc : op61828,e2m2073,32.5,,,1,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 11 17:44:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

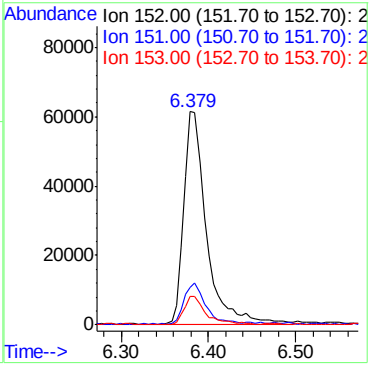


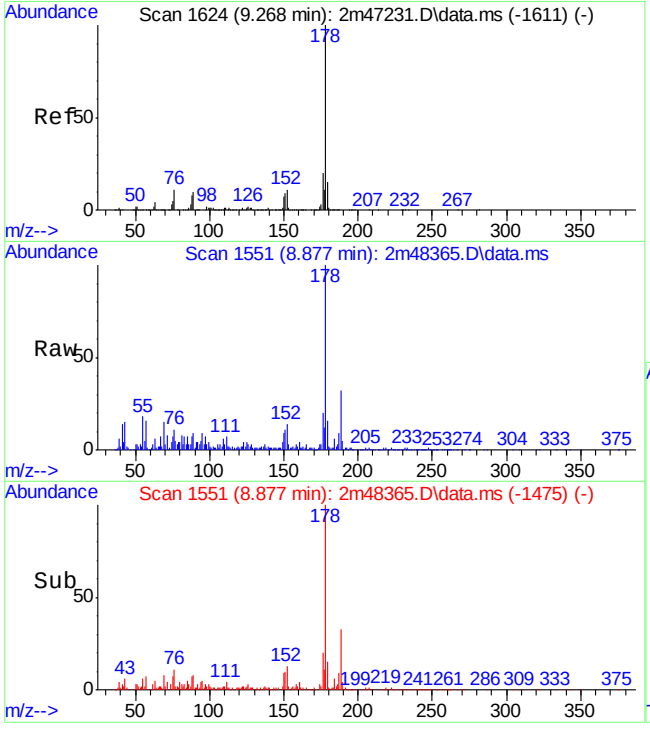


#56
Acenaphthylene
Concen: 3.22 ppb
RT: 6.379 min Scan# 1084
Delta R.T. -0.080 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:152 Resp: 111521

Ion	Ratio	Lower	Upper
152	100		
151	17.2	0.0	49.4
153	13.5	0.0	43.0

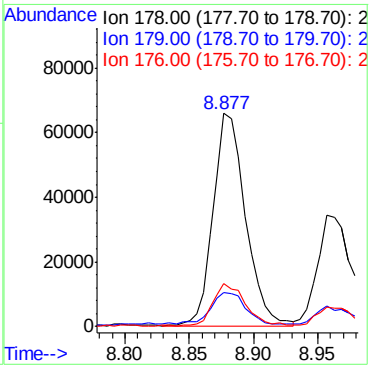




#77
Phenanthrene
Concen: 3.23 ppb
RT: 8.877 min Scan# 1551
Delta R.T. -0.091 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

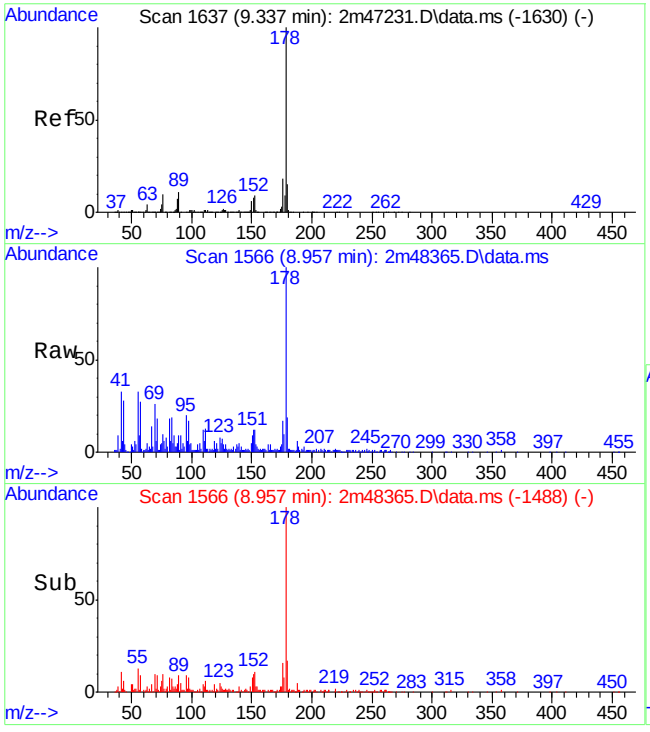
Tgt Ion:178 Resp: 114469

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	44.9
176	19.7	0.0	49.1



9.1.1

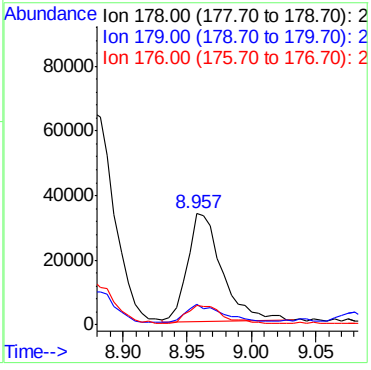
9

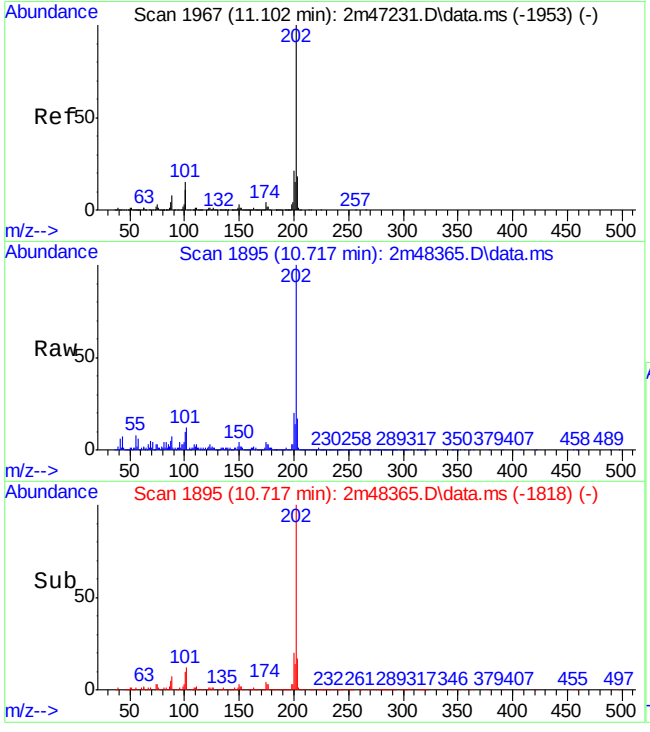


#78
Anthracene
Concen: 1.79 ppb
RT: 8.957 min Scan# 1566
Delta R.T. -0.080 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:178 Resp: 63108

Ion	Ratio	Lower	Upper
178	100		
179	16.3	0.0	44.3
176	16.7	0.0	48.3

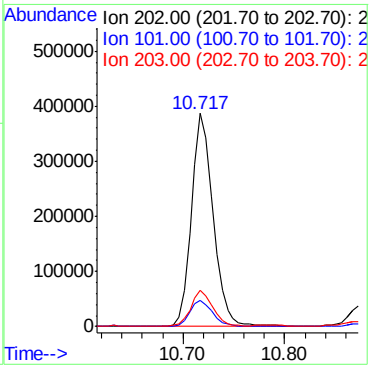


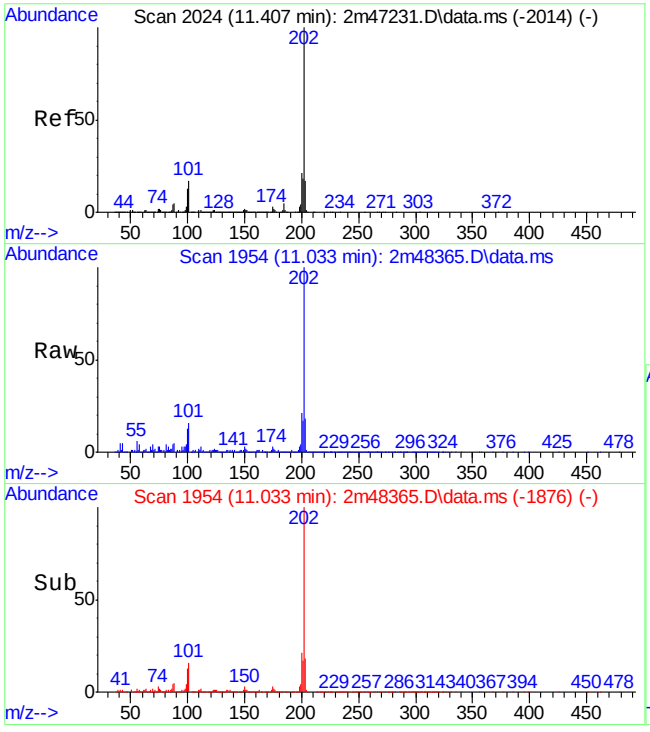


#81
Fluoranthene
Concen: 16.28 ppb
RT: 10.717 min Scan# 1895
Delta R.T. -0.086 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:202 Resp: 569669

Ion	Ratio	Lower	Upper
202	100		
101	12.3	0.0	43.8
203	16.9	0.0	47.5

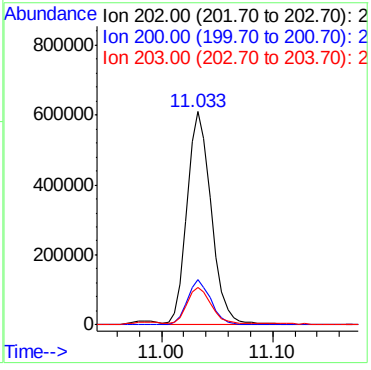


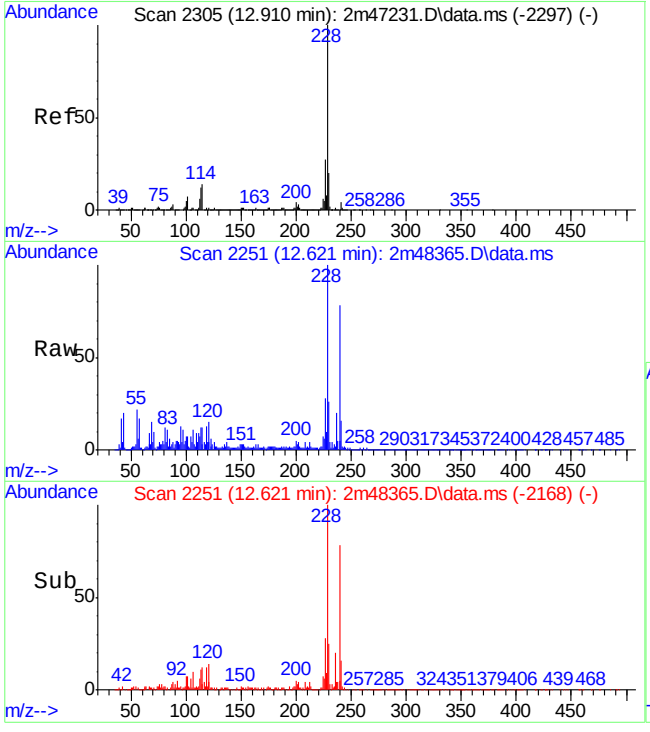


#84
Pyrene
Concen: 24.14 ppb
RT: 11.033 min Scan# 1954
Delta R.T. -0.080 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:202 Resp: 913438

Ion	Ratio	Lower	Upper
202	100		
200	21.0	0.0	51.3
203	17.3	0.0	47.6

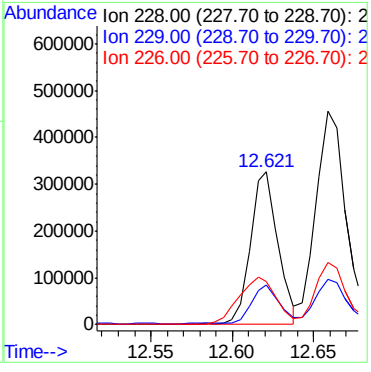




#88
Benzo[a]anthracene
Concen: 10.65 ppb
RT: 12.621 min Scan# 2251
Delta R.T. -0.053 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

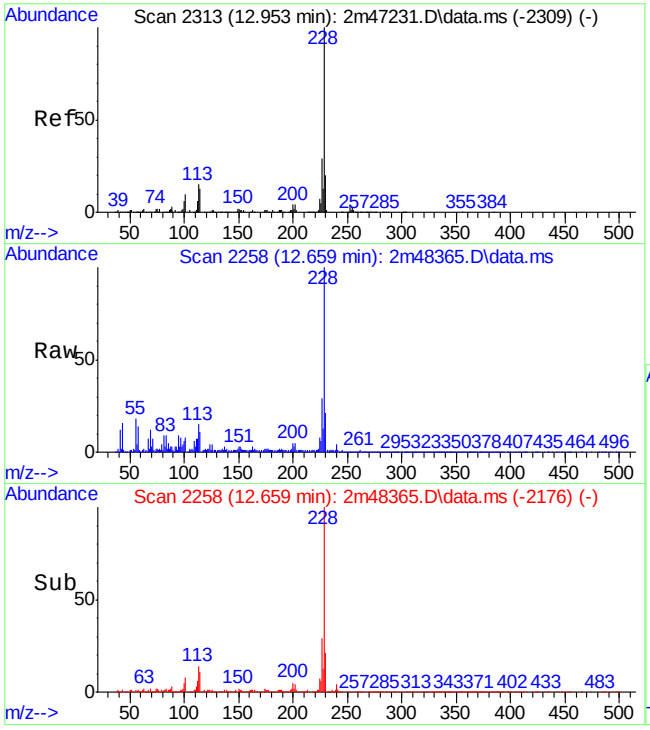
Tgt Ion:228 Resp: 383116

Ion	Ratio	Lower	Upper
228	100		
229	24.7	0.0	49.3
226	27.9	0.0	56.0



9.1.1

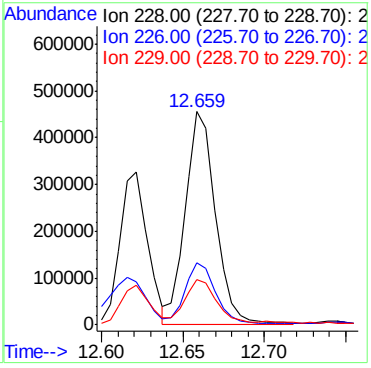
9

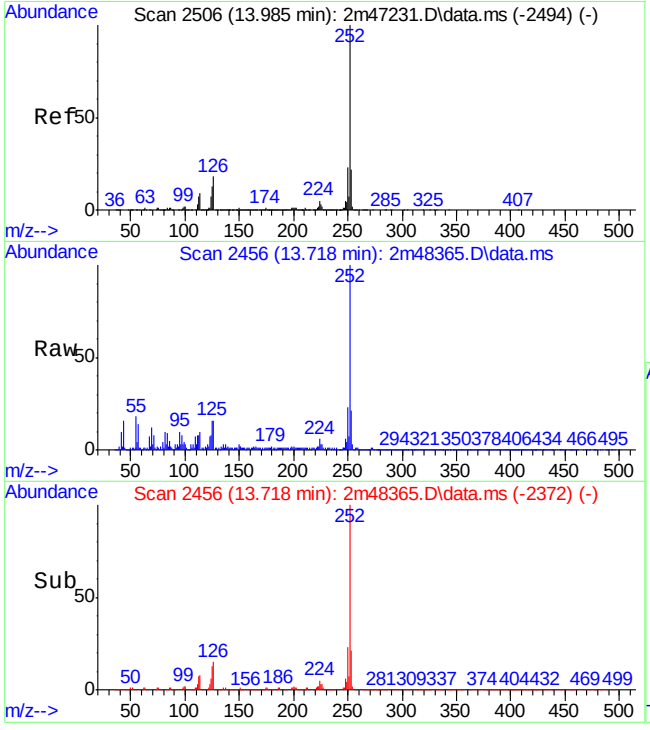


#90
Chrysene
Concen: 16.51 ppb
RT: 12.659 min Scan# 2258
Delta R.T. -0.059 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:228 Resp: 588838

Ion	Ratio	Lower	Upper
228	100		
226	29.0	0.0	57.7
229	20.2	0.0	49.3

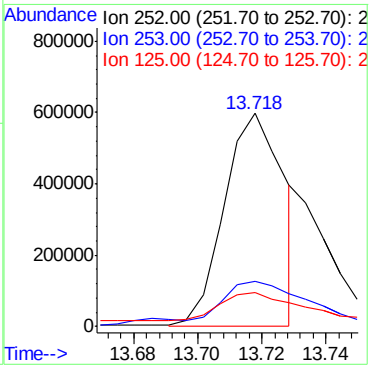


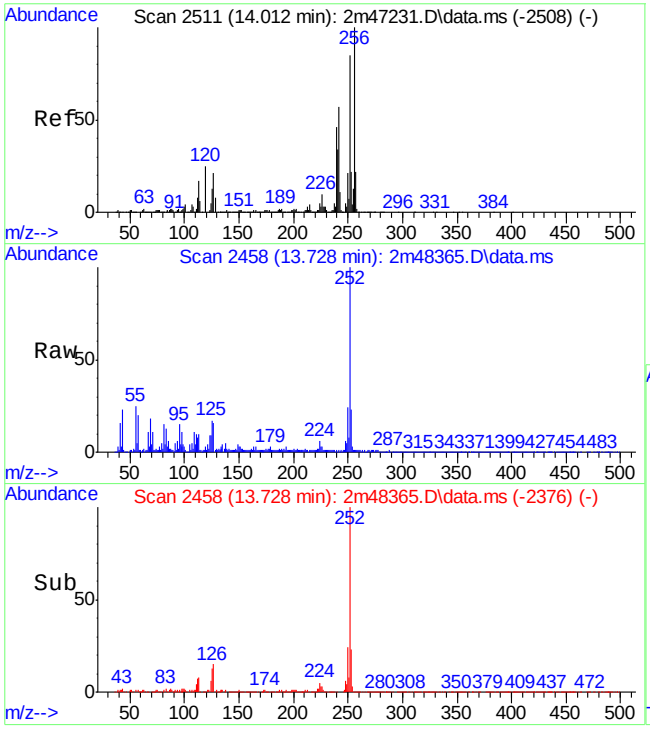


#94
Benzo[b]fluoranthene
Concen: 20.15 ppb m
RT: 13.718 min Scan# 2456
Delta R.T. -0.048 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:252 Resp: 768953

Ion	Ratio	Lower	Upper
252	100		
253	21.3	0.0	51.6
125	15.8	0.0	40.1

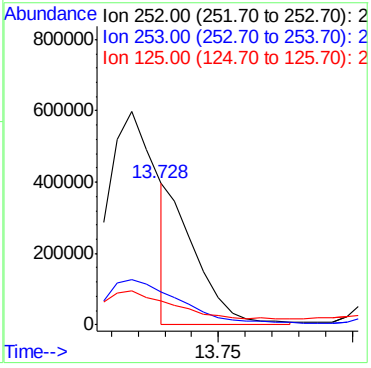


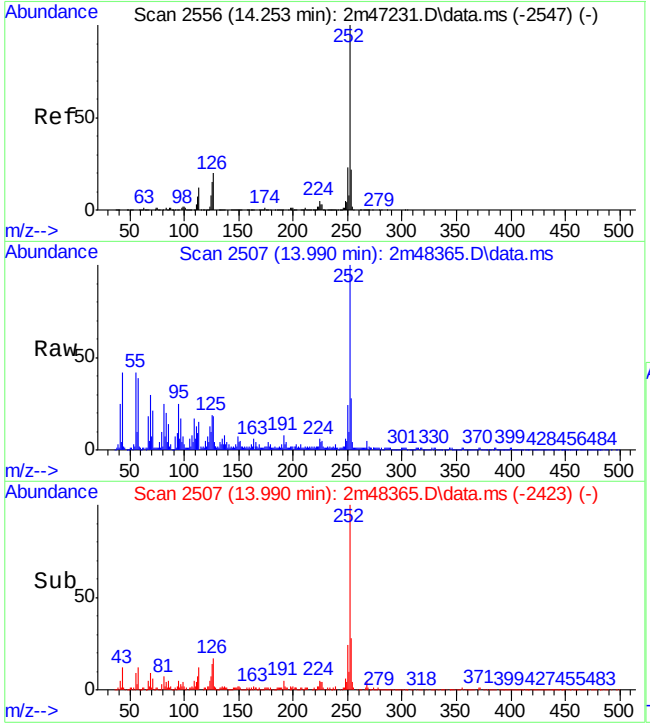


#95
Benzo[k]fluoranthene
Concen: 8.36 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.059 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:252 Resp: 286980

Ion	Ratio	Lower	Upper
252	100		
253	23.5	0.0	52.7
125	16.7	0.0	42.9

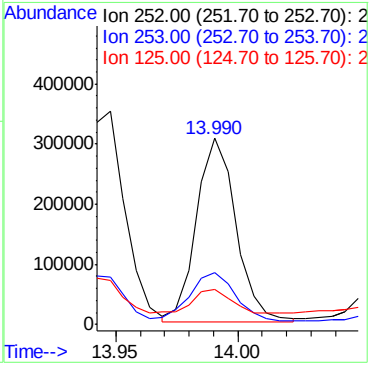


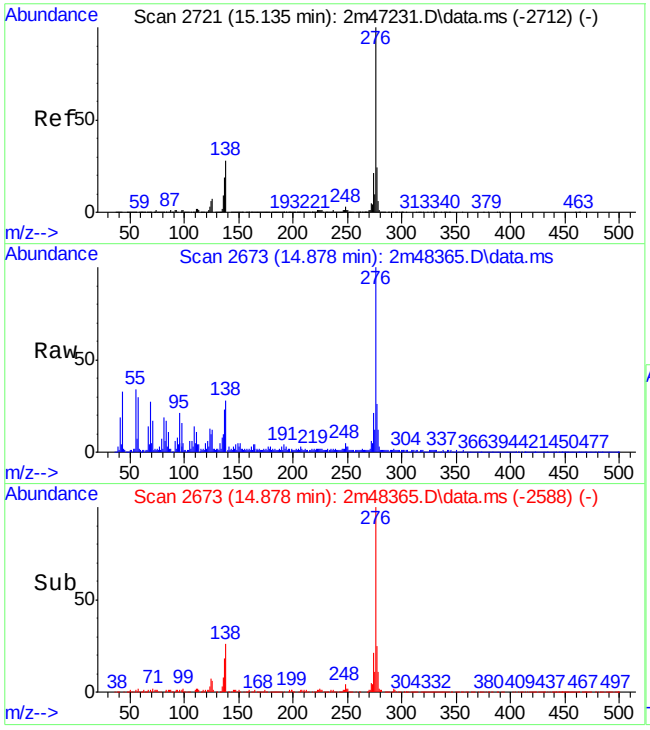


#96
Benzo[a]pyrene
Concen: 10.69 ppb
RT: 13.990 min Scan# 2507
Delta R.T. -0.048 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:252 Resp: 346521

Ion	Ratio	Lower	Upper
252	100		
253	26.0	0.0	52.4
125	12.6	0.0	42.7

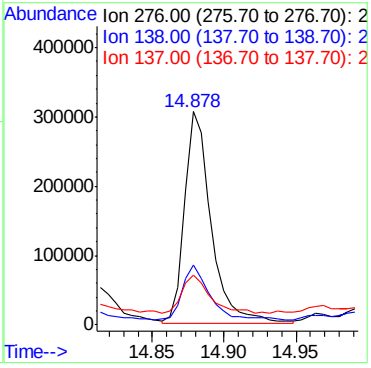


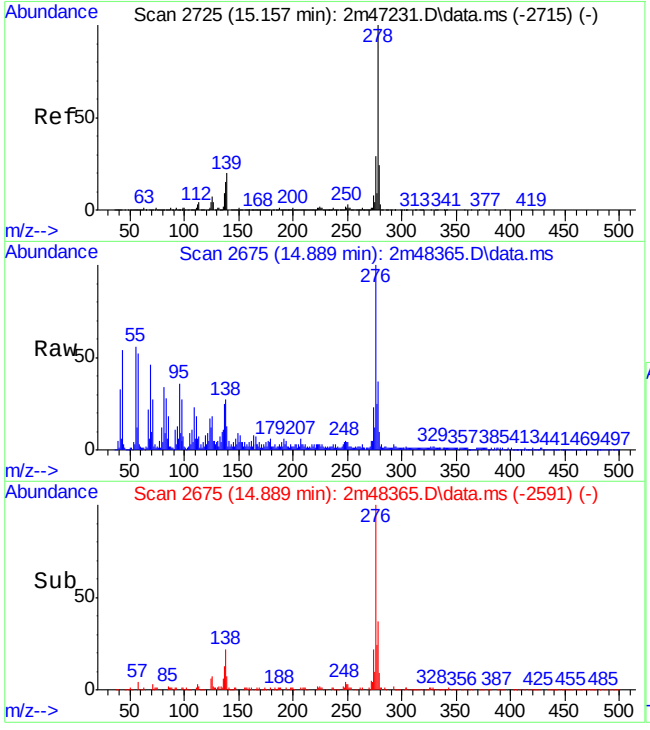


#97
Indeno[1,2,3-cd]pyrene
Concen: 10.53 ppb
RT: 14.878 min Scan# 2673
Delta R.T. -0.043 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:276 Resp: 396144

Ion	Ratio	Lower	Upper
276	100		
138	26.2	0.0	57.6
137	17.8	0.0	48.9

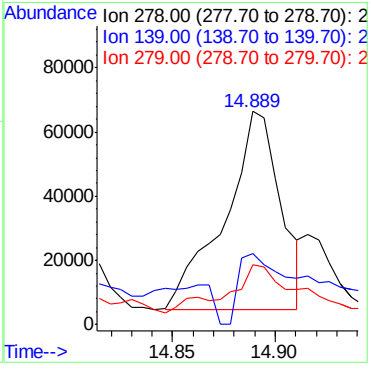


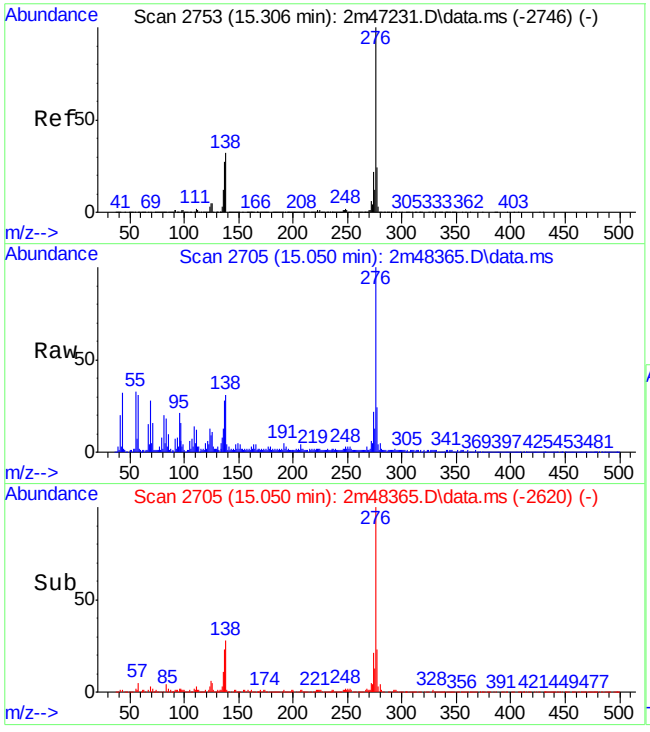


#99
Dibenz[a,h]anthracene
Concen: 3.71 ppb m
RT: 14.889 min Scan# 2675
Delta R.T. -0.048 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:278 Resp: 117283

Ion	Ratio	Lower	Upper
278	100		
139	33.5	0.0	52.4
279	27.9	0.0	54.1

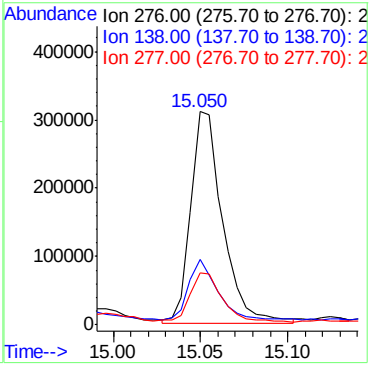




#101
Benzo[g,h,i]perylene
Concen: 12.28 ppb
RT: 15.050 min Scan# 2705
Delta R.T. -0.043 min
Lab File: 2m48365.D
Acq: 8 Dec 2012 3:41 pm

Tgt Ion:276 Resp: 394671

Ion	Ratio	Lower	Upper
276	100		
138	28.8	0.1	60.1
277	23.2	0.0	53.2



9.1.1

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48358.D
Acq On : 8 Dec 2012 1:01 pm
Operator : kristis
Sample : jb22267-2
Misc : op61828,e2m2073,33.6,,,1,1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 11 17:36:21 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	227824	40.00 ppb	-0.07
24) Naphthalene-d8	4.042	136	1013169	40.00 ppb	-0.08
47) Acenaphthene-d10	6.615	164	635090	40.00 ppb	-0.09
69) Phenanthrene-d10	8.850	188	1056012	40.00 ppb	-0.08
83) Chrysene-d12	12.632	240	1080302	40.00 ppb	-0.06
92) Perylene-d12	14.033	264	967727	40.00 ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	227824	40.00 ppb	-0.07
104) Acenaphthene-d10a	6.615	164	635090	40.00 ppb	-0.09
106) Chrysene-d12a	12.632	240	1080302	40.00 ppb	-0.06
108) Phenanthrene-d10a	8.850	188	1056012	40.00 ppb	-0.08
110) Chrysene-d12b	12.632	240	1080302	40.00 ppb	-0.06

System Monitoring Compounds					
5) 2-Fluorophenol	1.512	112	193875	23.38 ppb	-0.04
Spiked Amount 50.000			Recovery	= 46.76%	
8) Phenol-d5	2.320	99	251490	22.63 ppb	-0.05
Spiked Amount 50.000			Recovery	= 45.26%	
25) Nitrobenzene-d5	3.192	82	229996	21.16 ppb	-0.05
Spiked Amount 50.000			Recovery	= 42.32%	
51) 2-Fluorobiphenyl	5.695	172	475216	22.76 ppb	-0.08
Spiked Amount 50.000			Recovery	= 45.52%	
73) 2,4,6-Tribromophenol	7.882	330	89019	35.87 ppb	-0.07
Spiked Amount 50.000			Recovery	= 71.74%	
85) Terphenyl-d14	11.418	244	838309	38.40 ppb	-0.08
Spiked Amount 50.000			Recovery	= 76.80%	

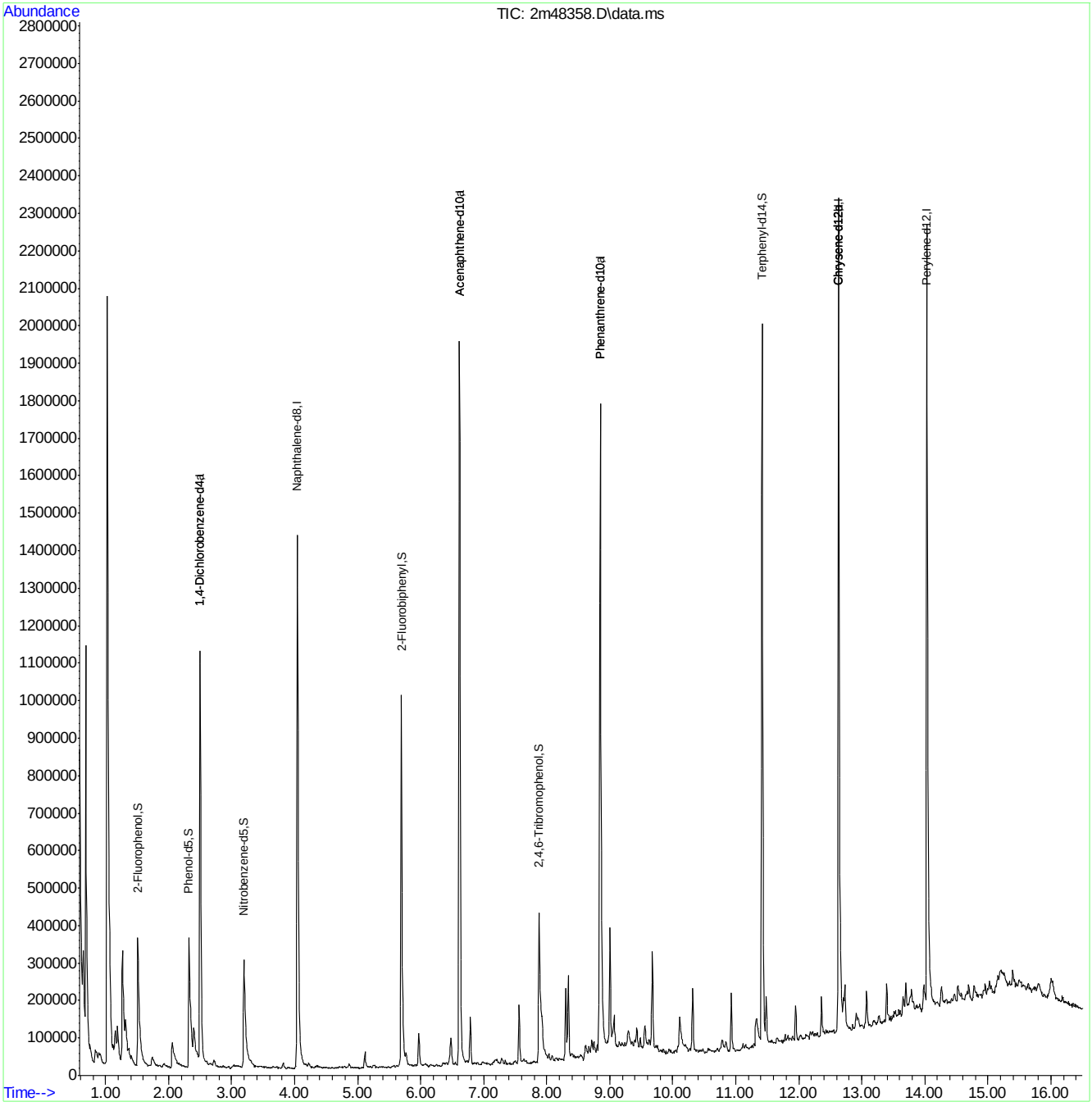
Target Compounds	Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48358.D
Acq On : 8 Dec 2012 1:01 pm
Operator : kristis
Sample : jb22267-2
Misc : op61828,e2m2073,33.6,,,1,1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 11 17:36:21 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48364.D
Acq On : 8 Dec 2012 3:18 pm
Operator : kristis
Sample : jb22267-3
Misc : op61828,e2m2073,35.5,,,1,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 11 17:43:33 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Mon Dec 10 10:18:10 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	245146	40.00	ppb	0.00
24) Naphthalene-d8	4.037	136	1129316	40.00	ppb	0.00
47) Acenaphthene-d10	6.609	164	683244	40.00	ppb	-0.01
69) Phenanthrene-d10	8.845	188	1112736	40.00	ppb	0.00
83) Chrysene-d12	12.632	240	1153102	40.00	ppb	0.00
92) Perylene-d12	14.039	264	1097008	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.496	152	245146	40.00	ppb	0.00
104) Acenaphthene-d10a	6.609	164	683244	40.00	ppb	-0.01
106) Chrysene-d12a	12.632	240	1153102	40.00	ppb	0.00
108) Phenanthrene-d10a	8.845	188	1112736	40.00	ppb	0.00
110) Chrysene-d12b	12.632	240	1153102	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.507	112	234049	26.23	ppb	0.01
Spiked Amount 50.000			Recovery	=	52.46%	
8) Phenol-d5	2.314	99	337414	28.22	ppb	0.02
Spiked Amount 50.000			Recovery	=	56.44%	
25) Nitrobenzene-d5	3.186	82	292421	24.13	ppb	0.00
Spiked Amount 50.000			Recovery	=	48.26%	
51) 2-Fluorobiphenyl	5.689	172	654821	29.15	ppb	0.00
Spiked Amount 50.000			Recovery	=	58.30%	
73) 2,4,6-Tribromophenol	7.866	330	104159	39.83	ppb	0.00
Spiked Amount 50.000			Recovery	=	79.66%	
85) Terphenyl-d14	11.418	244	992405	42.59	ppb	0.00
Spiked Amount 50.000			Recovery	=	85.18%	

Target Compounds						Qvalue
38) Naphthalene	4.063	128	30808	0.98	ppb	93
44) 2-Methylnaphthalene	5.080	141	11556	0.60	ppb	97
56) Acenaphthylene	6.385	152	30584	0.93	ppb	97
59) Acenaphthene	6.657	153	24629	1.16	ppb	89
66) Fluorene	7.444	166	21182	0.92	ppb	95
77) Phenanthrene	8.877	178	979724	28.76	ppb	99
78) Anthracene	8.957	178	152681	4.52	ppb	95
81) Fluoranthene	10.712	202	1487987	44.28	ppb	98
84) Pyrene	11.033	202	1601990	42.95	ppb	99
88) Benzo[a]anthracene	12.616	228	808434	22.79	ppb	96
90) Chrysene	12.659	228	888283	25.26	ppb	98
94) Benzo[b]fluoranthene	13.712	252	1015885m	26.60	ppb	
95) Benzo[k]fluoranthene	13.728	252	306944m	8.93	ppb	
96) Benzo[a]pyrene	13.990	252	709234	21.86	ppb	99
97) Indeno[1,2,3-cd]pyrene	14.884	276	505782	13.43	ppb	93
99) Dibenz[a,h]anthracene	14.894	278	171889m	5.43	ppb	
101) Benzo[g,h,i]perylene	15.055	276	483517	15.03	ppb	95

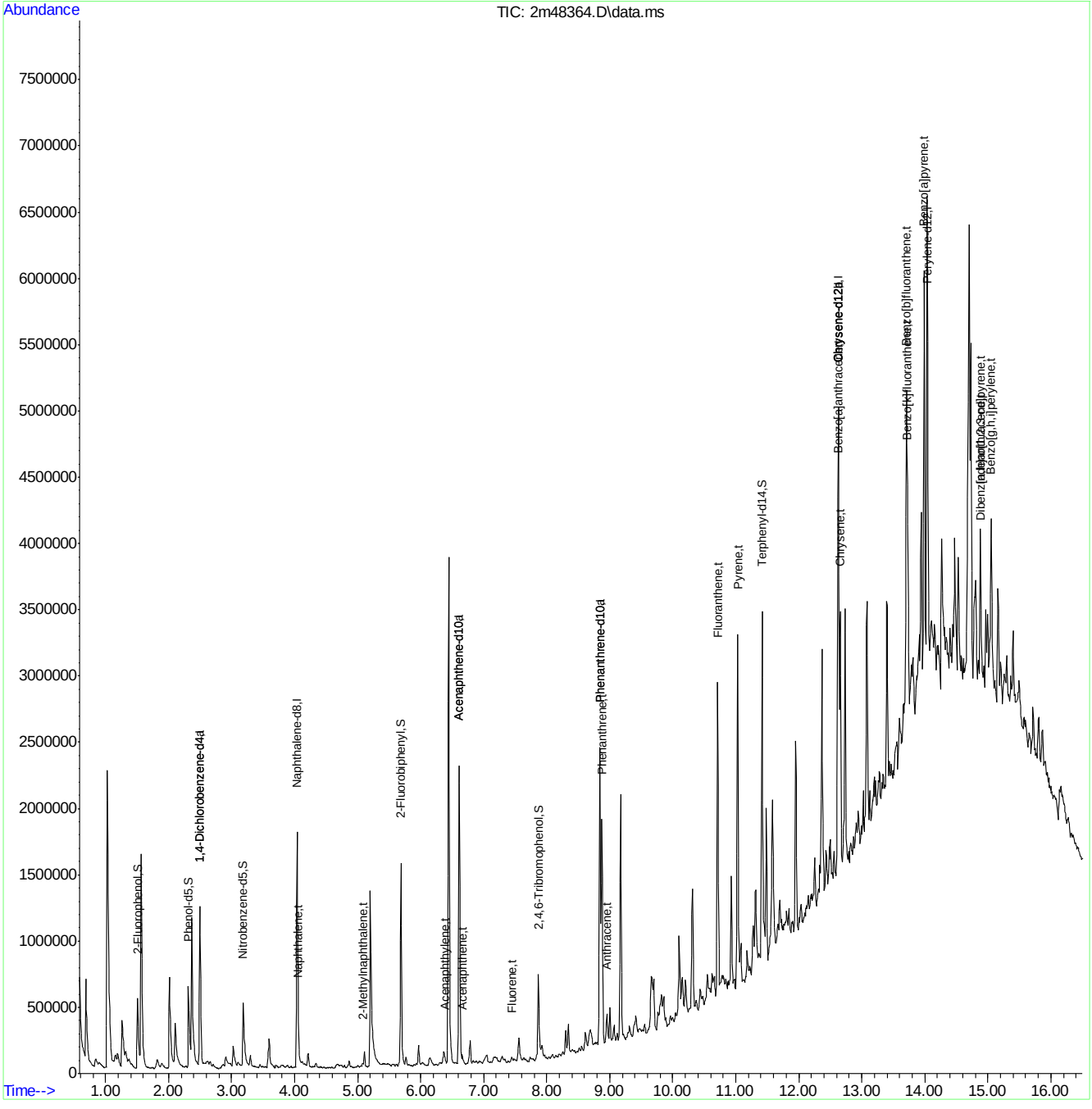
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.3
9

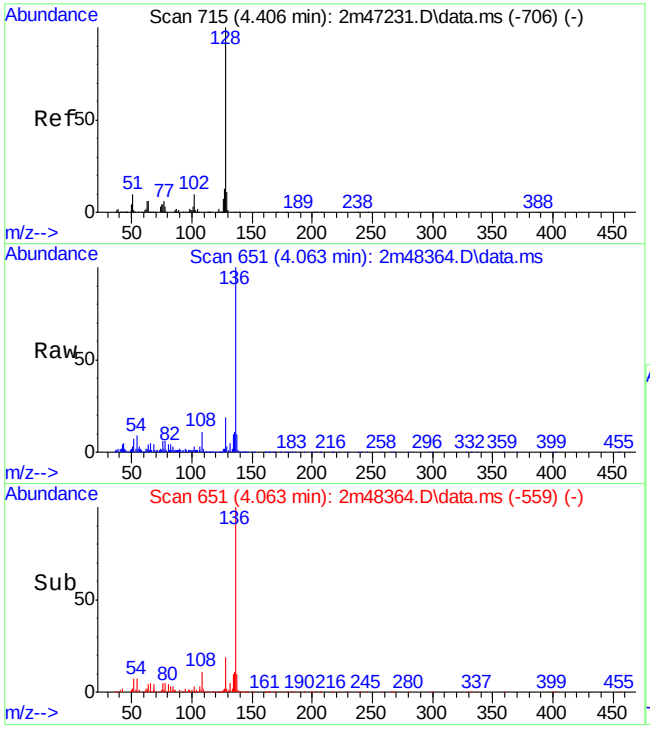
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48364.D
Acq On : 8 Dec 2012 3:18 pm
Operator : kristis
Sample : jb22267-3
Misc : op61828,e2m2073,35.5,,,1,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 11 17:43:33 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Mon Dec 10 10:18:10 2012
Response via : Initial Calibration



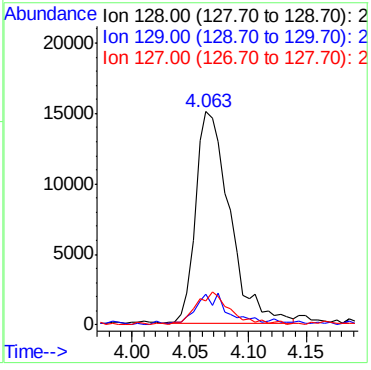
M2M2034.M Tue Dec 11 17:43:41 2012 MS2M Page: 2

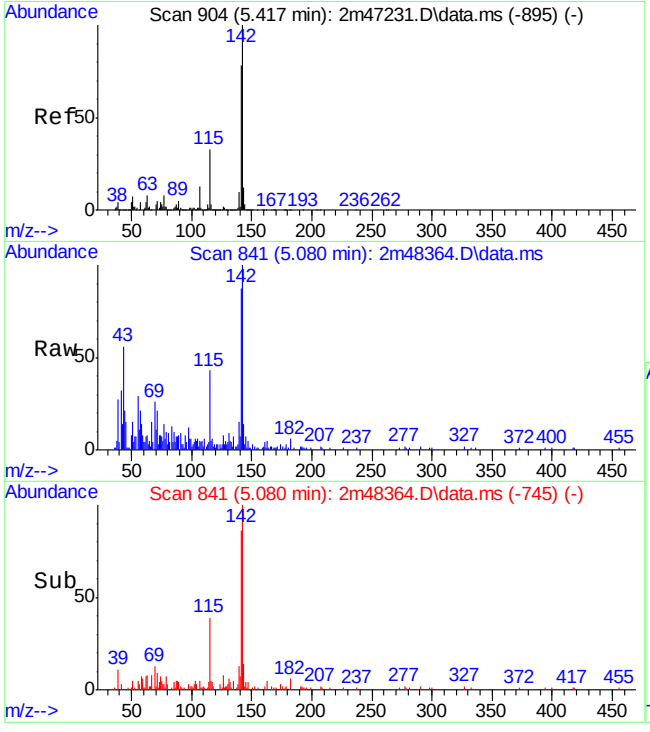


#38
Naphthalene
Concen: 0.98 ppb
RT: 4.063 min Scan# 651
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:128 Resp: 30808

Ion	Ratio	Lower	Upper
128	100		
129	13.9	0.0	40.9
127	11.0	0.0	43.3

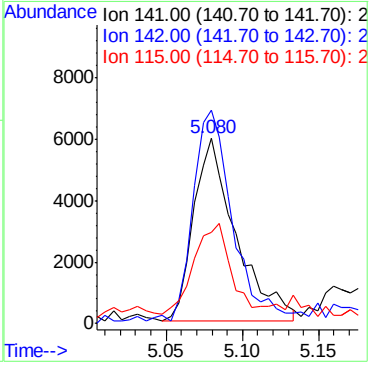




#44
2-Methylnaphthalene
Concen: 0.60 ppb
RT: 5.080 min Scan# 841
Delta R.T. 0.016 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

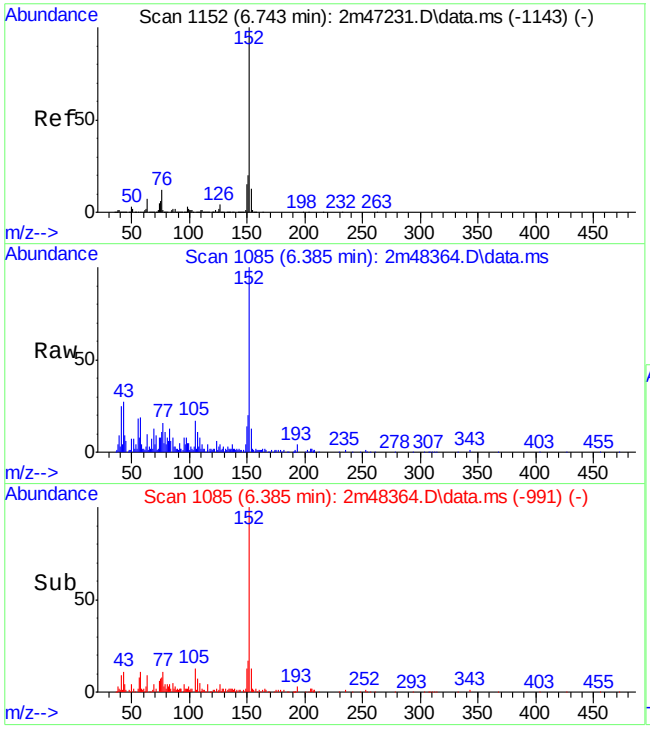
Tgt Ion:141 Resp: 11556

Ion	Ratio	Lower	Upper
141	100		
142	114.6	81.7	141.7
115	40.5	12.0	72.0



9.1.3

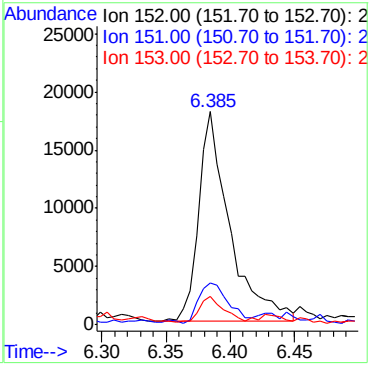
9

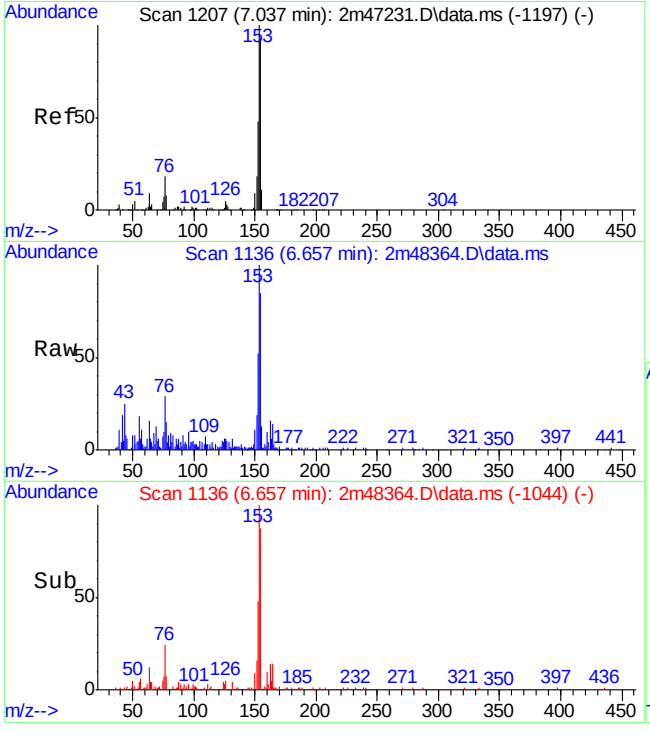


#56
Acenaphthylene
Concen: 0.93 ppb
RT: 6.385 min Scan# 1085
Delta R.T. 0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:152 Resp: 30584

Ion	Ratio	Lower	Upper
152	100		
151	17.8	0.0	49.4
153	12.0	0.0	43.0

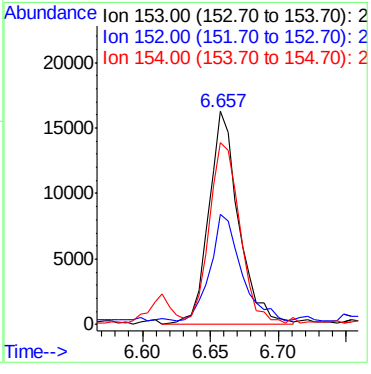


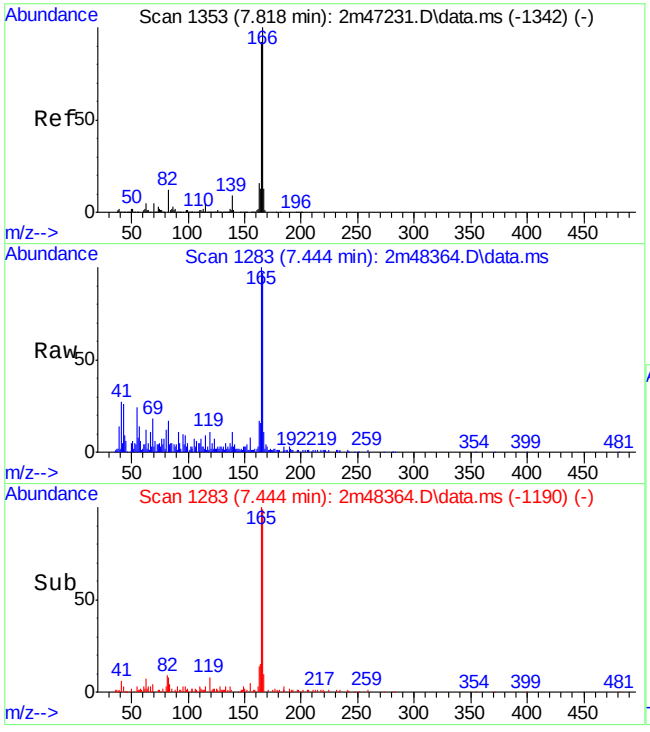


#59
Acenaphthene
Concen: 1.16 ppb
RT: 6.657 min Scan# 1136
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:153 Resp: 24629

Ion	Ratio	Lower	Upper
153	100		
152	49.7	15.8	75.8
154	77.3	59.7	119.7

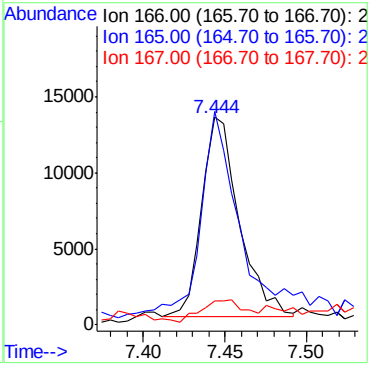


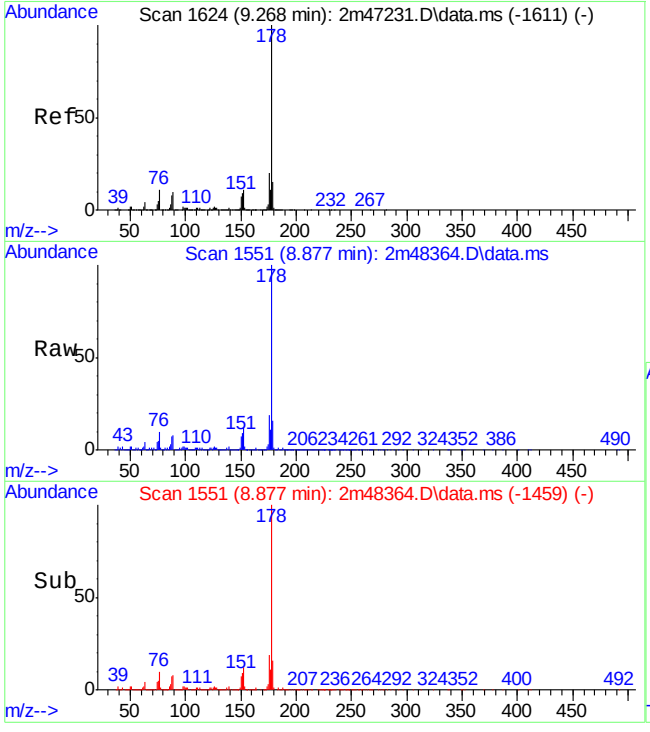


#66
Fluorene
Concen: 0.92 ppb
RT: 7.444 min Scan# 1283
Delta R.T. -0.000 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:166 Resp: 21182

Ion	Ratio	Lower	Upper
166	100		
165	95.2	61.9	121.9
167	6.0	0.0	43.1

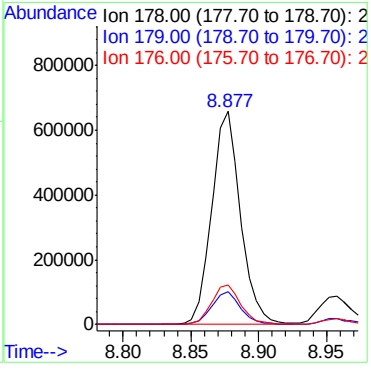


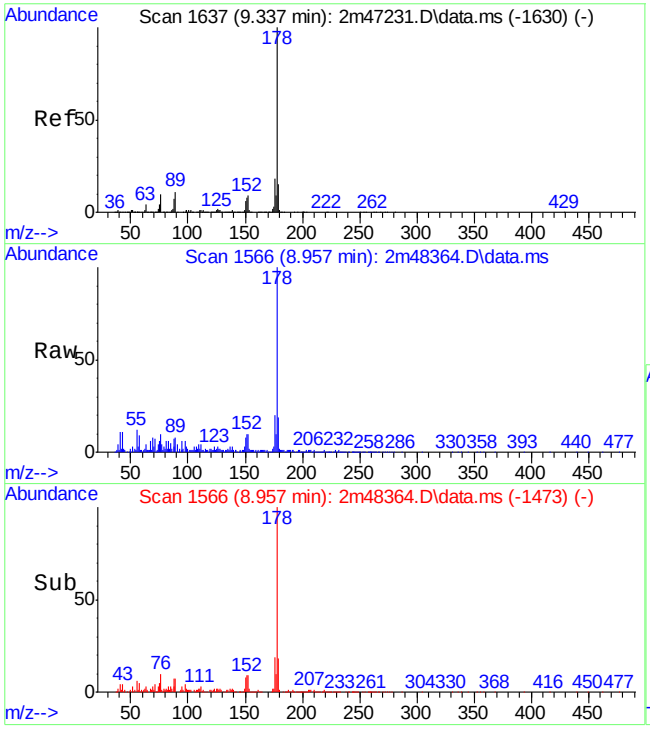


#77
Phenanthrene
Concen: 28.76 ppb
RT: 8.877 min Scan# 1551
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:178 Resp: 979724

Ion	Ratio	Lower	Upper
178	100		
179	15.5	0.0	44.9
176	18.8	0.0	49.1

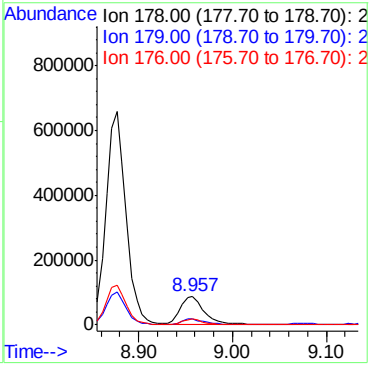


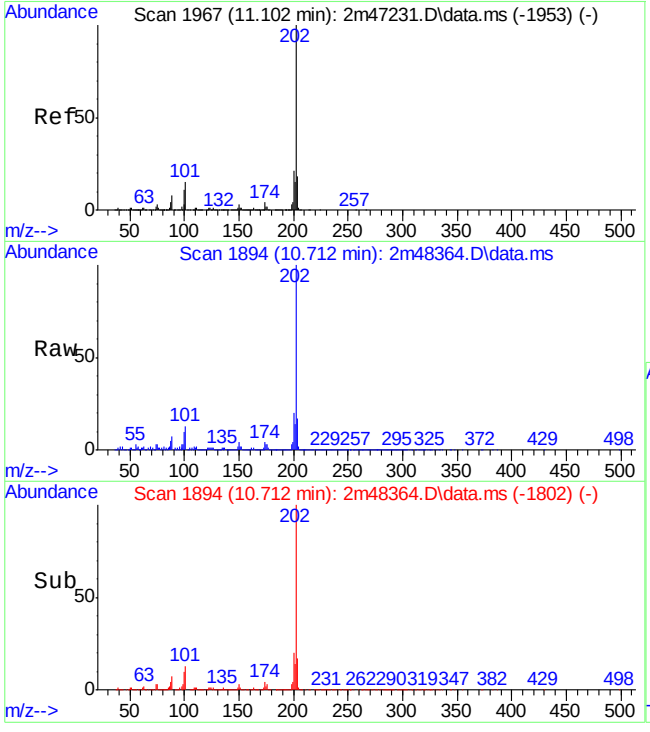


#78
Anthracene
Concen: 4.52 ppb
RT: 8.957 min Scan# 1566
Delta R.T. -0.000 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:178 Resp: 152681

Ion	Ratio	Lower	Upper
178	100		
179	17.6	0.0	44.3
176	19.5	0.0	48.3

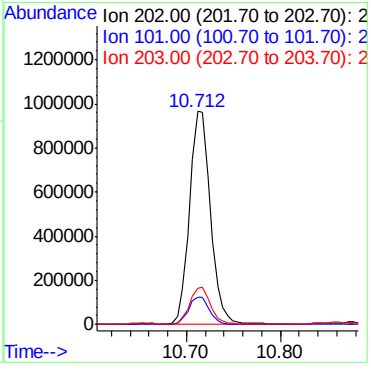


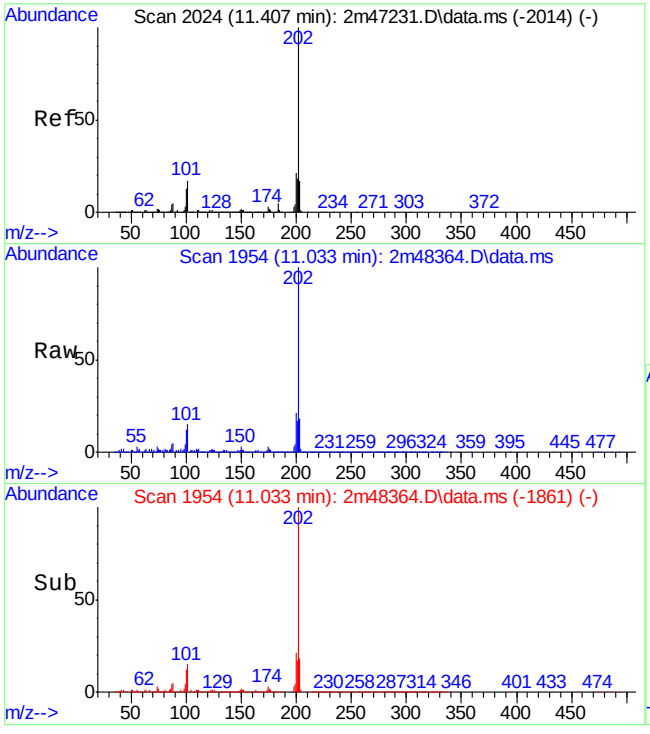


#81
Fluoranthene
Concen: 44.28 ppb
RT: 10.712 min Scan# 1894
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:202 Resp: 1487987

Ion	Ratio	Lower	Upper
202	100		
101	12.9	0.0	43.8
203	17.0	0.0	47.5

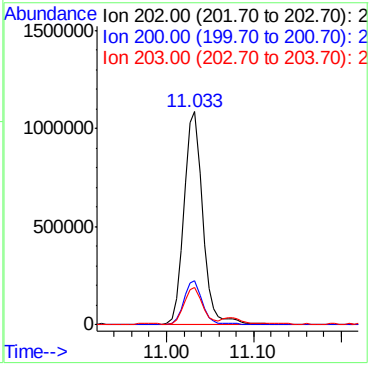


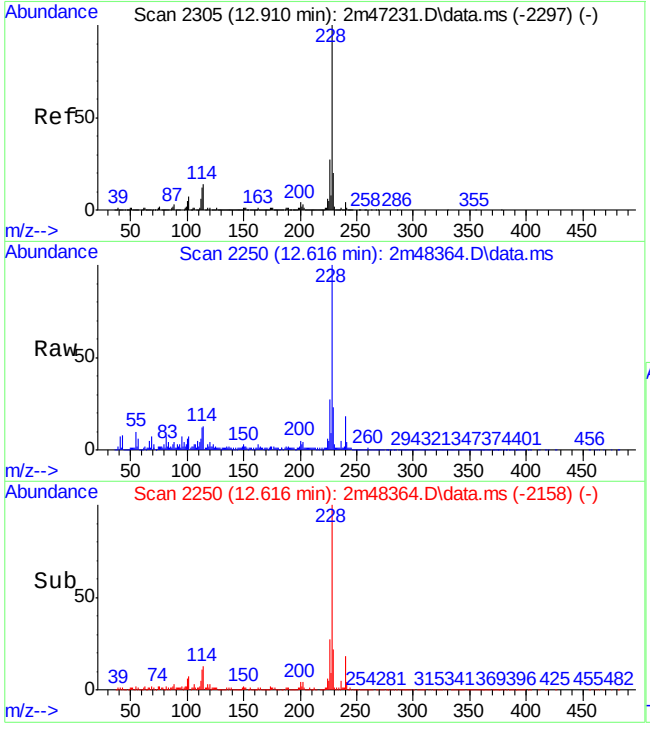


#84
Pyrene
Concen: 42.95 ppb
RT: 11.033 min Scan# 1954
Delta R.T. -0.000 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:202 Resp: 1601990

Ion	Ratio	Lower	Upper
202	100		
200	20.7	0.0	51.3
203	17.4	0.0	47.6

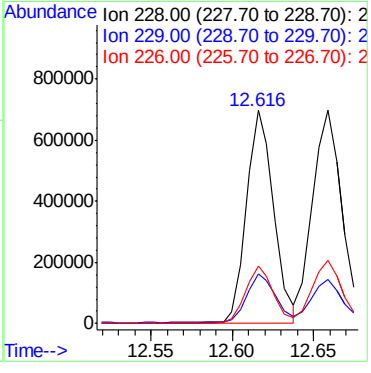


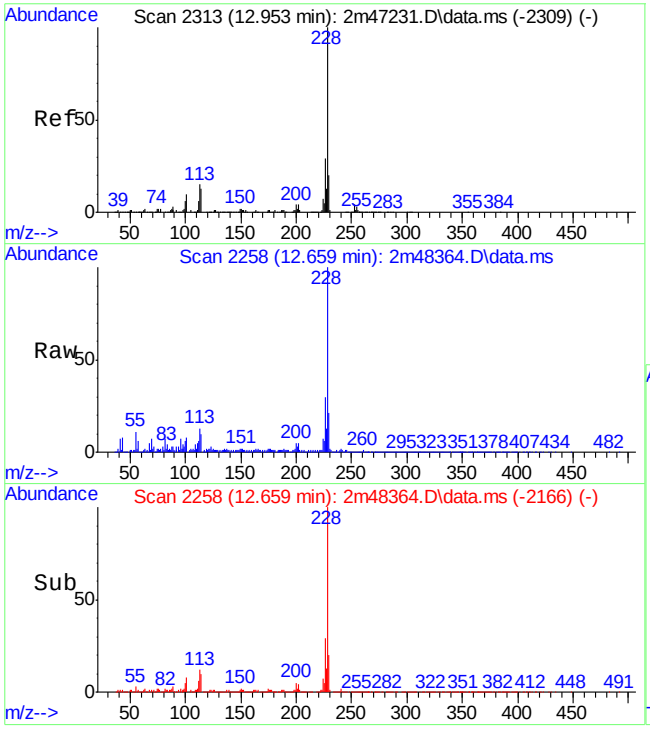


#88
Benzo[a]anthracene
Concen: 22.79 ppb
RT: 12.616 min Scan# 2250
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:228 Resp: 808434

Ion	Ratio	Lower	Upper
228	100		
229	22.5	0.0	49.3
226	26.9	0.0	56.0

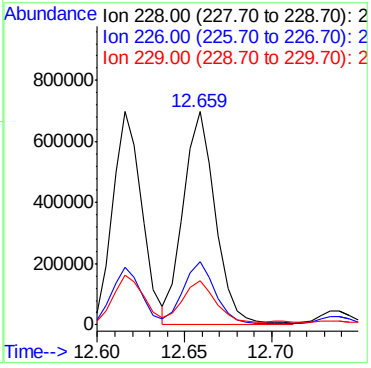


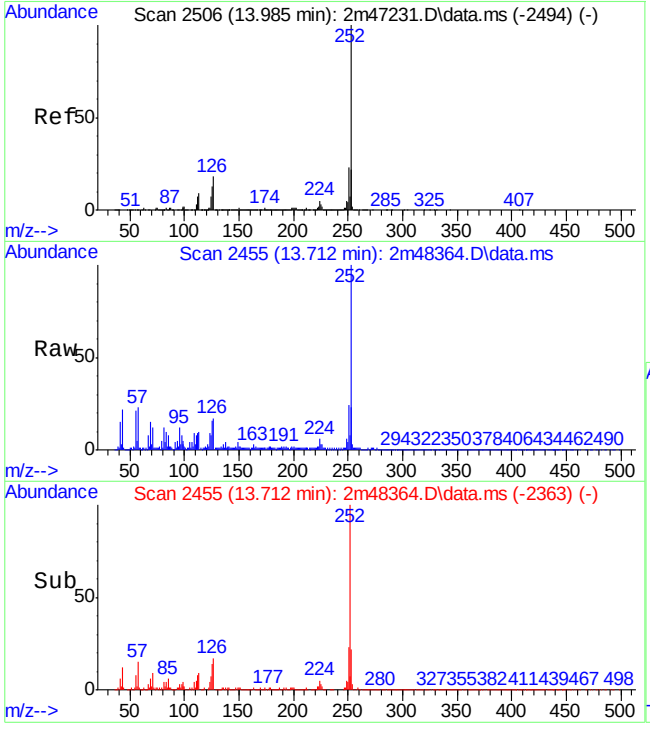


#90
Chrysene
Concen: 25.26 ppb
RT: 12.659 min Scan# 2258
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:228 Resp: 888283

Ion	Ratio	Lower	Upper
228	100		
226	29.2	0.0	57.7
229	19.3	0.0	49.3

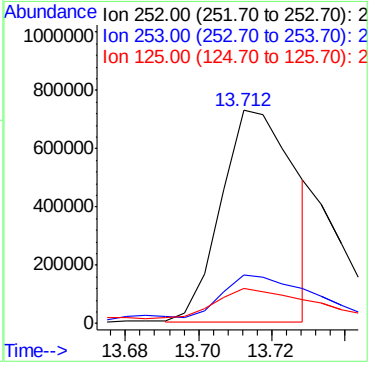


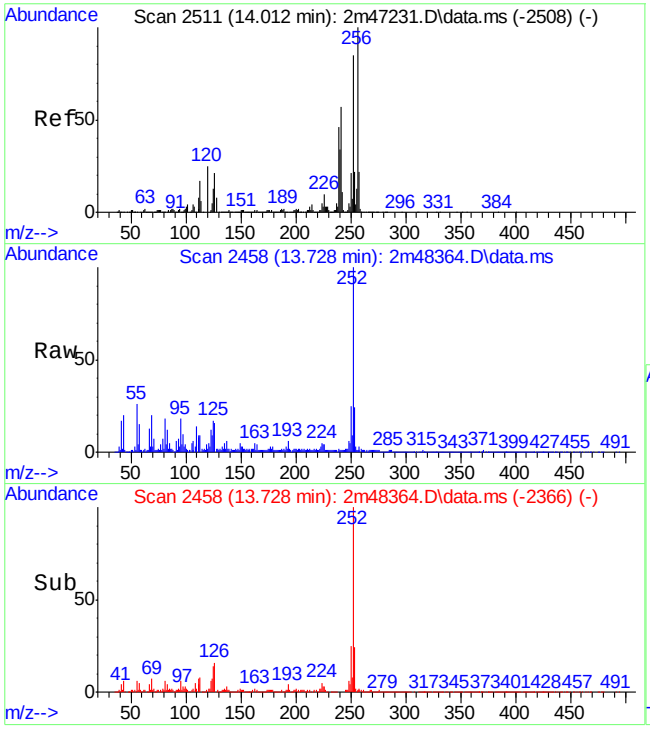


#94
Benzo[b]fluoranthene
Concen: 26.60 ppb m
RT: 13.712 min Scan# 2455
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:252 Resp: 1015885

Ion	Ratio	Lower	Upper
252	100		
253	22.5	0.0	51.6
125	16.3	0.0	40.1

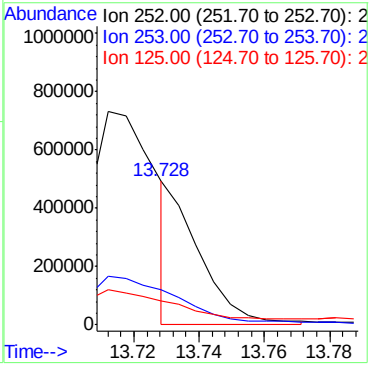


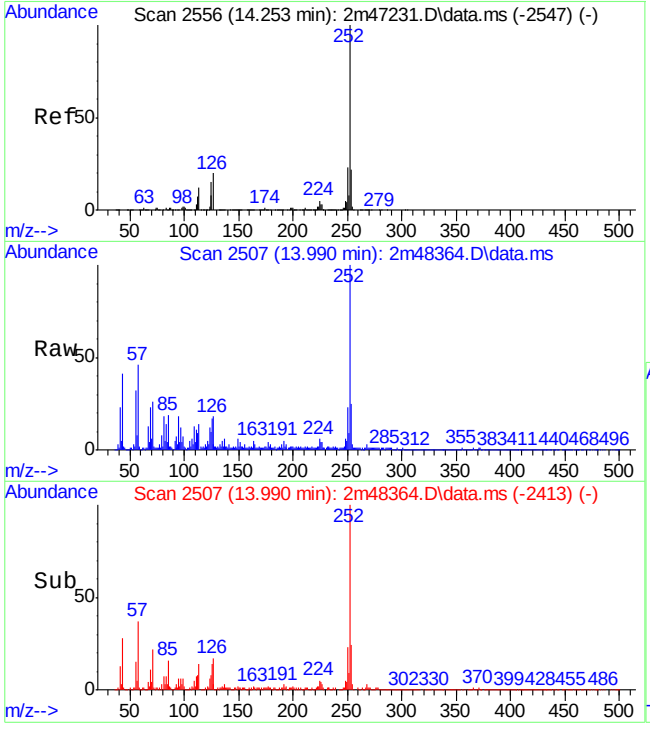


#95
Benzo[k]fluoranthene
Concen: 8.93 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:252 Resp: 306944

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	52.7
125	16.6	0.0	42.9

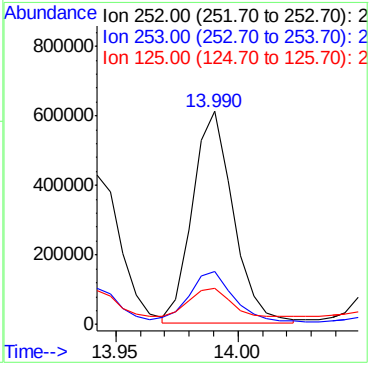


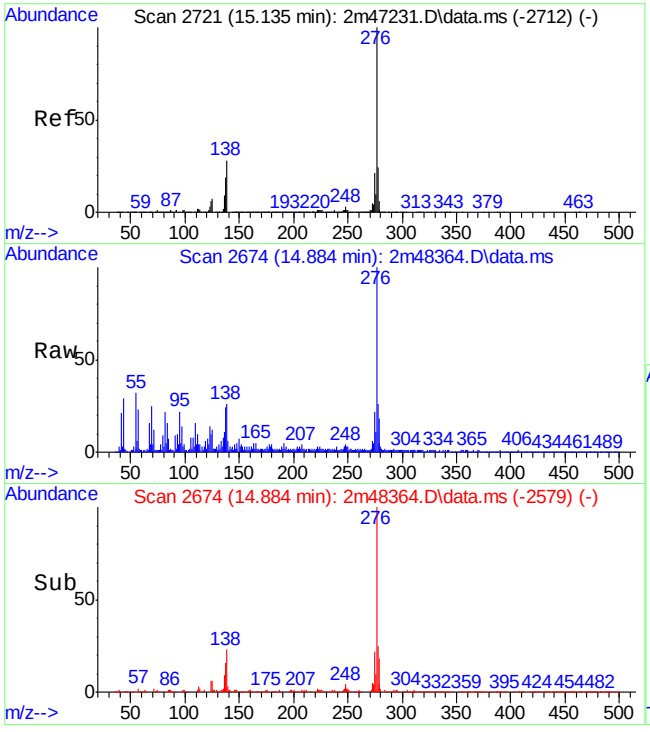


#96
Benzo[a]pyrene
Concen: 21.86 ppb
RT: 13.990 min Scan# 2507
Delta R.T. 0.005 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:252 Resp: 709234

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	52.4
125	13.4	0.0	42.7

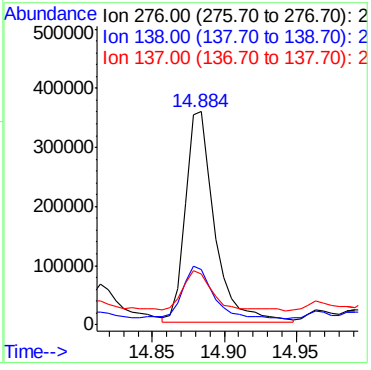


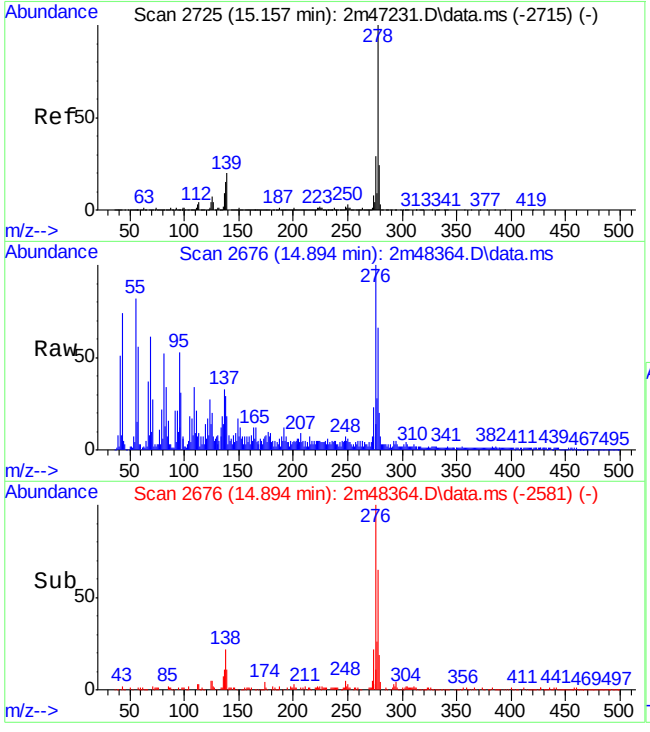


#97
Indeno[1,2,3-cd]pyrene
Concen: 13.43 ppb
RT: 14.884 min Scan# 2674
Delta R.T. 0.011 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:276 Resp: 505782

Ion	Ratio	Lower	Upper
276	100		
138	22.9	0.0	57.6
137	17.3	0.0	48.9

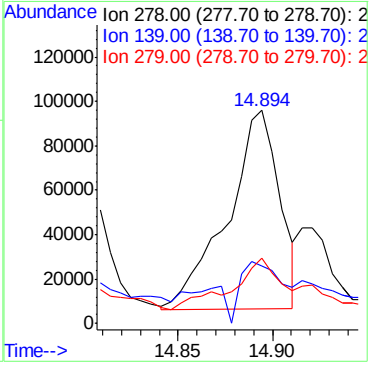


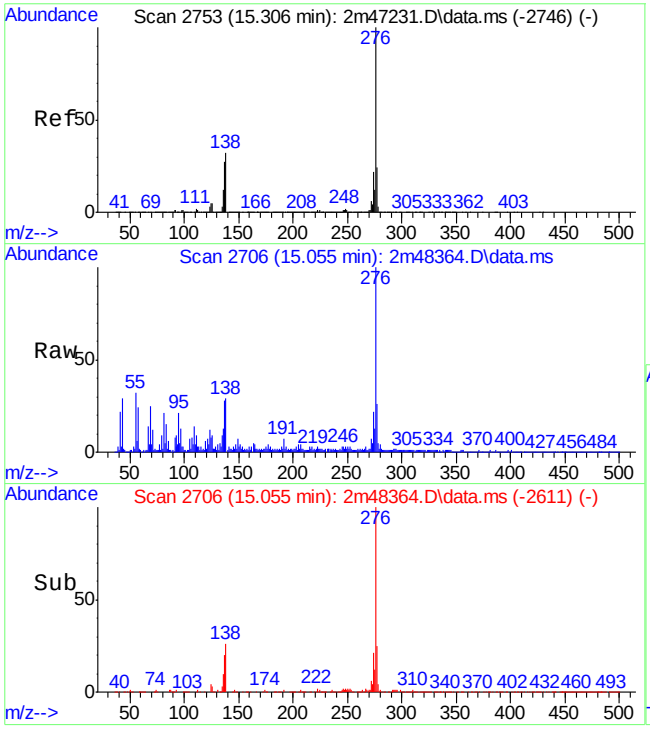


#99
Dibenz[a,h]anthracene
Concen: 5.43 ppb m
RT: 14.894 min Scan# 2676
Delta R.T. 0.011 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:278 Resp: 171889

Ion	Ratio	Lower	Upper
278	100		
139	26.9	0.0	52.4
279	30.7	0.0	54.1

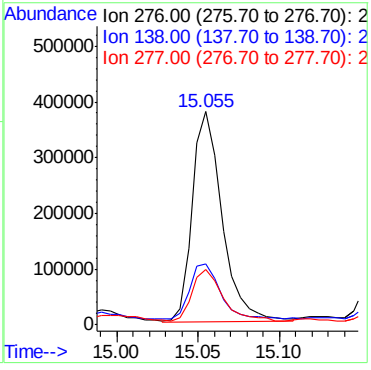




#101
Benzo[g,h,i]perylene
Concen: 15.03 ppb
RT: 15.055 min Scan# 2706
Delta R.T. 0.011 min
Lab File: 2m48364.D
Acq: 8 Dec 2012 3:18 pm

Tgt Ion:276 Resp: 483517

Ion	Ratio	Lower	Upper
276	100		
138	26.4	0.1	60.1
277	24.1	0.0	53.2



9.1.3

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48368.D
Acq On : 8 Dec 2012 4:50 pm
Operator : kristis
Sample : jb22267-4
Misc : op61828,e2m2073,32.5,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 11 17:50:03 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	225691	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1008224	40.00	ppb	0.00
47) Acenaphthene-d10	6.615	164	602320	40.00	ppb	0.00
69) Phenanthrene-d10	8.845	188	989529	40.00	ppb	0.00
83) Chrysene-d12	12.637	240	1010882	40.00	ppb	0.00
92) Perylene-d12	14.044	264	930921	40.00	ppb	0.01
102) 1,4-Dichlorobenzene-d4a	2.502	152	225691	40.00	ppb	0.00
104) Acenaphthene-d10a	6.615	164	602320	40.00	ppb	0.00
106) Chrysene-d12a	12.637	240	1010882	40.00	ppb	0.00
108) Phenanthrene-d10a	8.845	188	989529	40.00	ppb	0.00
110) Chrysene-d12b	12.637	240	1010882	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	199646	24.31	ppb	0.01
Spiked Amount 50.000			Recovery	=	48.62%	
8) Phenol-d5	2.320	99	302007	27.43	ppb	0.02
Spiked Amount 50.000			Recovery	=	54.86%	
25) Nitrobenzene-d5	3.186	82	299764	27.71	ppb	0.00
Spiked Amount 50.000			Recovery	=	55.42%	
51) 2-Fluorobiphenyl	5.689	172	629906	31.80	ppb	0.00
Spiked Amount 50.000			Recovery	=	63.60%	
73) 2,4,6-Tribromophenol	7.872	330	79313	34.11	ppb	0.00
Spiked Amount 50.000			Recovery	=	68.22%	
85) Terphenyl-d14	11.423	244	906280	44.37	ppb	0.00
Spiked Amount 50.000			Recovery	=	88.74%	

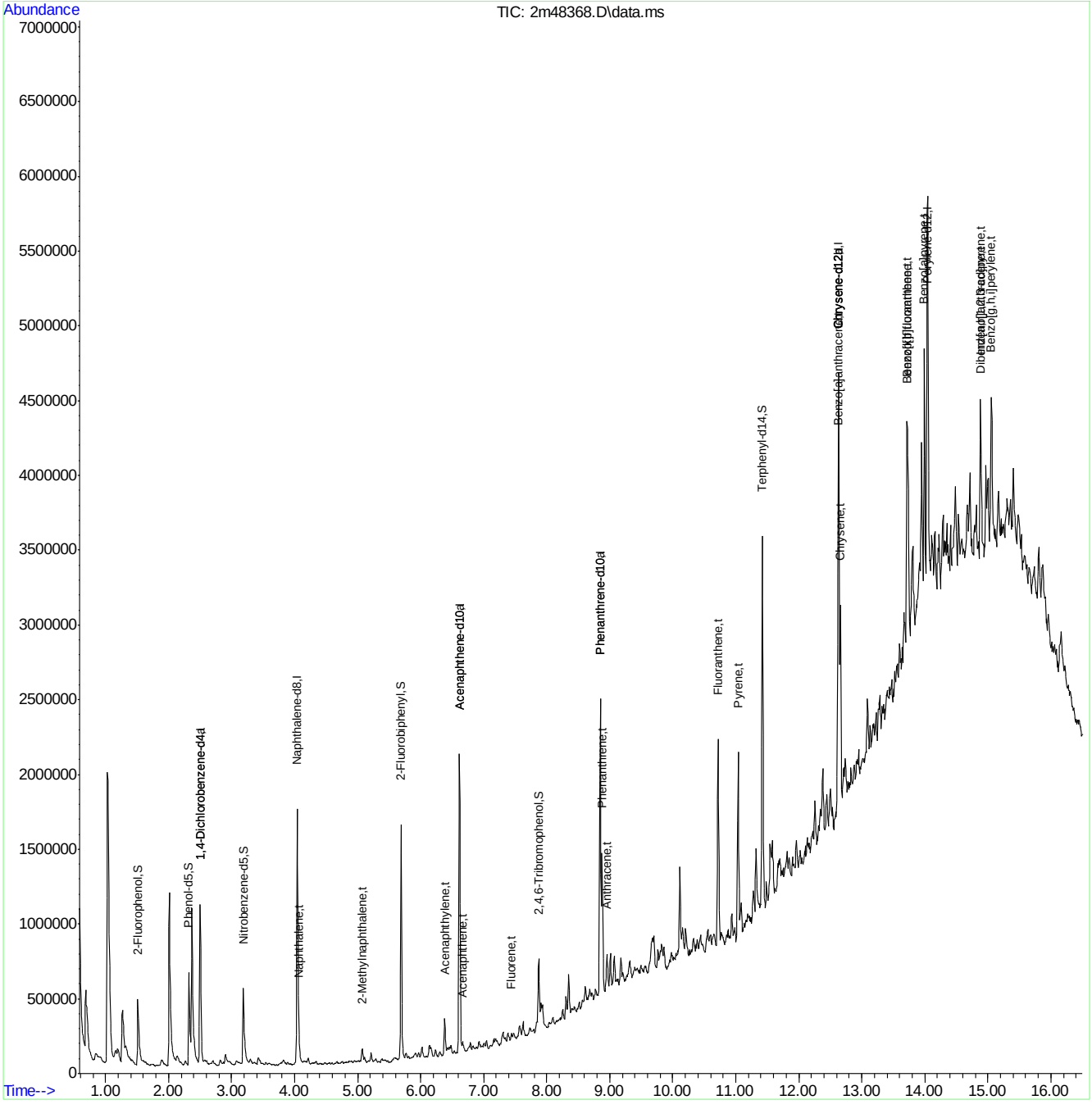
Target Compounds						Qvalue
38) Naphthalene	4.069	128	60544	2.16	ppb	95
44) 2-Methylnaphthalene	5.074	141	33813	1.97	ppb	94
56) Acenaphthylene	6.379	152	189932	6.53	ppb	99
59) Acenaphthene	6.663	153	26137	1.40	ppb	98
66) Fluorene	7.444	166	32752	1.62	ppb	94
77) Phenanthrene	8.882	178	545096	17.99	ppb	98
78) Anthracene	8.957	178	163281	5.44	ppb	95
81) Fluoranthene	10.722	202	812586	27.19	ppb	97
84) Pyrene	11.038	202	705429	21.58	ppb	100
88) Benzo[a]anthracene	12.621	228	508778	16.36	ppb	95
90) Chrysene	12.664	228	540437	17.53	ppb	98
94) Benzo[b]fluoranthene	13.723	252	644571m	19.89	ppb	
95) Benzo[k]fluoranthene	13.728	252	343985m	11.79	ppb	
96) Benzo[a]pyrene	13.990	252	520963	18.92	ppb	97
97) Indeno[1,2,3-cd]pyrene	14.884	276	427341	13.37	ppb	94
99) Dibenz[a,h]anthracene	14.894	278	112182m	4.18	ppb	
101) Benzo[g,h,i]perylene	15.060	276	411044	15.06	ppb	92

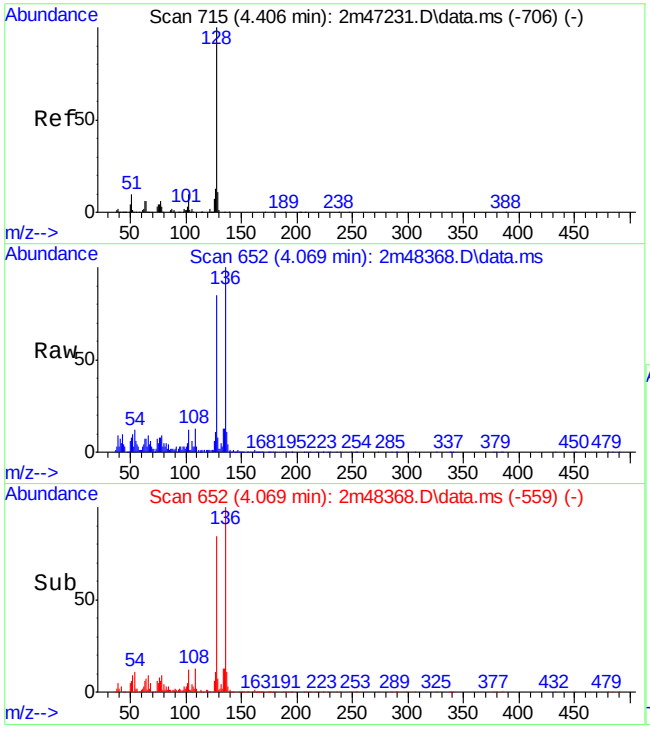
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48368.D
Acq On : 8 Dec 2012 4:50 pm
Operator : kristis
Sample : jb22267-4
Misc : op61828,e2m2073,32.5,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 11 17:50:03 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

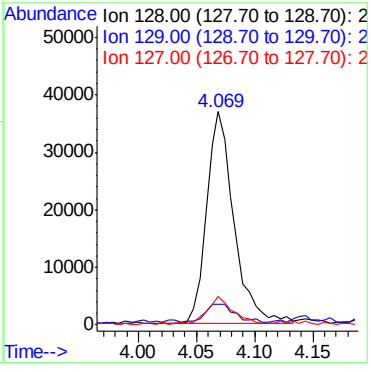


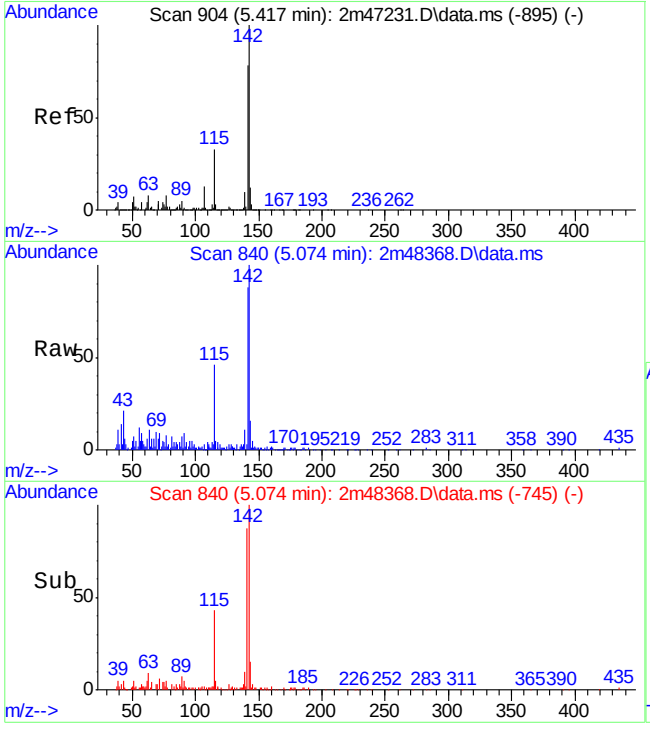


#38
Naphthalene
Concen: 2.16 ppb
RT: 4.069 min Scan# 652
Delta R.T. -0.000 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:128 Resp: 60544

Ion	Ratio	Lower	Upper
128	100		
129	8.0	0.0	40.9
127	12.0	0.0	43.3

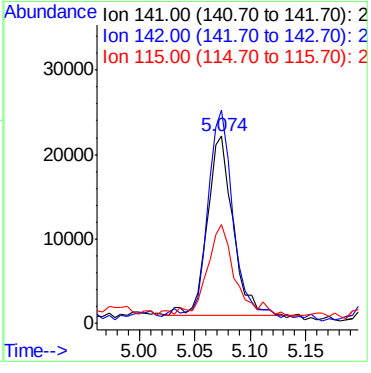




#44
2-Methylnaphthalene
Concen: 1.97 ppb
RT: 5.074 min Scan# 840
Delta R.T. 0.011 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

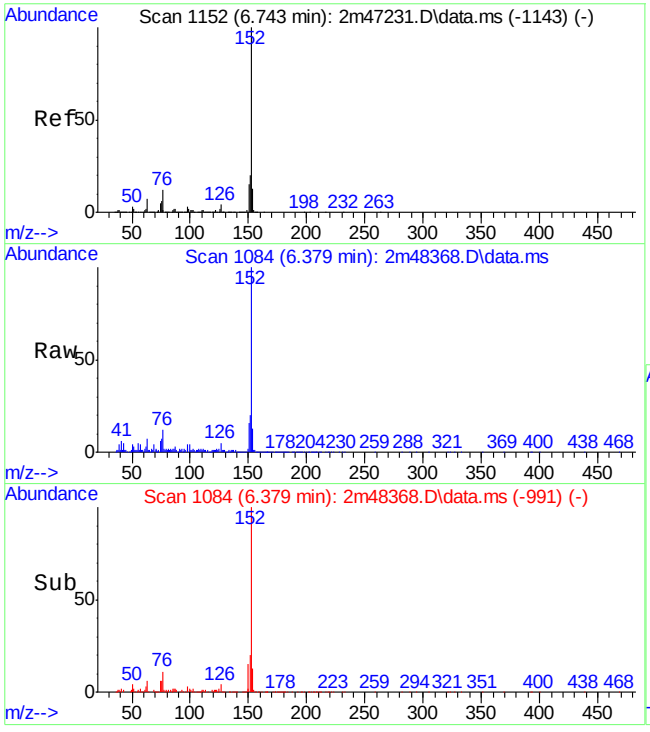
Tgt Ion:141 Resp: 33813

Ion	Ratio	Lower	Upper
141	100		
142	115.8	81.7	141.7
115	50.0	12.0	72.0



9.1.4

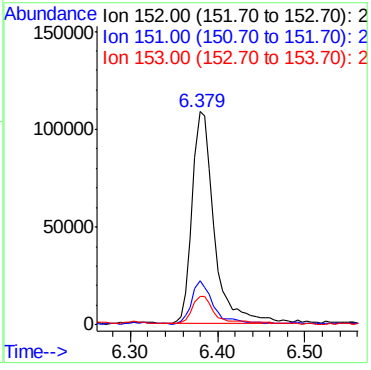
9

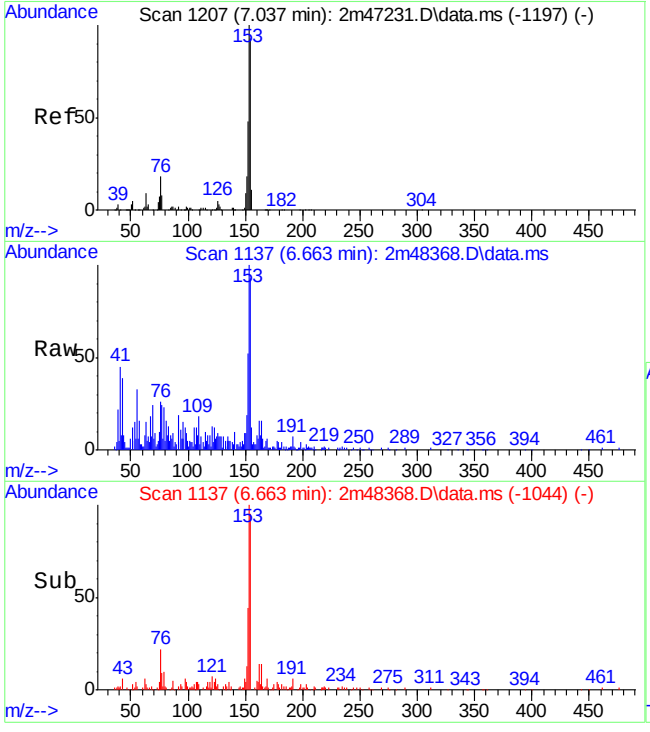


#56
Acenaphthylene
Concen: 6.53 ppb
RT: 6.379 min Scan# 1084
Delta R.T. -0.000 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:152 Resp: 189932

Ion	Ratio	Lower	Upper
152	100		
151	19.8	0.0	49.4
153	12.9	0.0	43.0

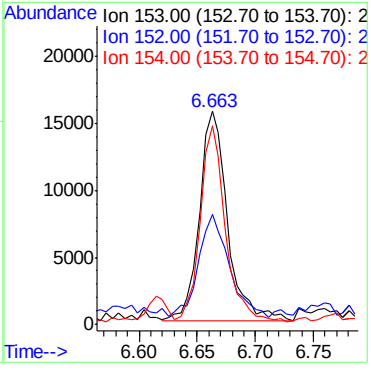




#59
Acenaphthene
Concen: 1.40 ppb
RT: 6.663 min Scan# 1137
Delta R.T. -0.000 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

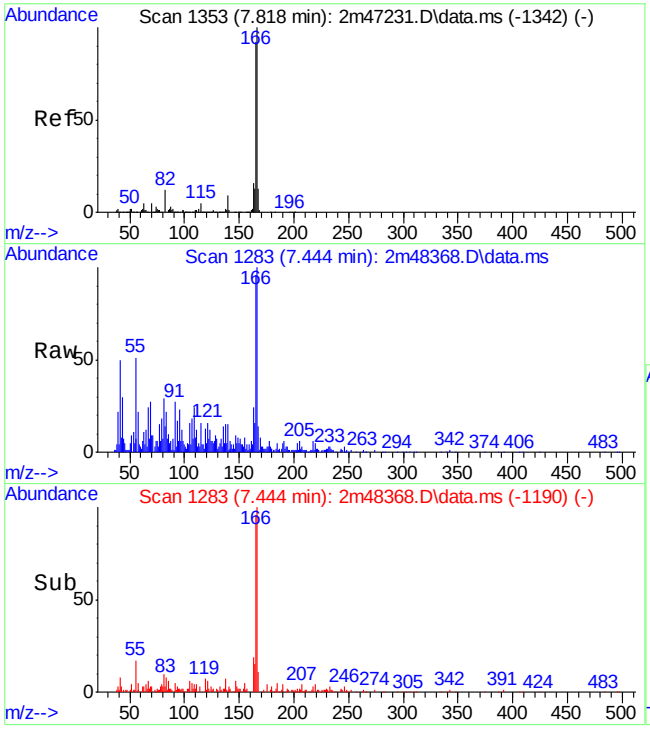
Tgt Ion:153 Resp: 26137

Ion	Ratio	Lower	Upper
153	100		
152	47.0	15.8	75.8
154	88.1	59.7	119.7



9.1.4

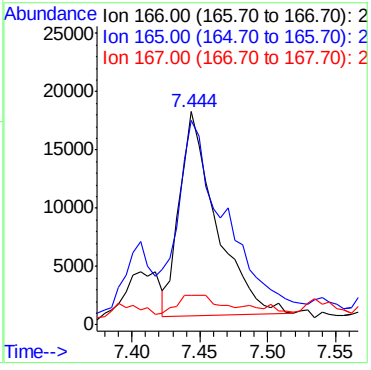
9

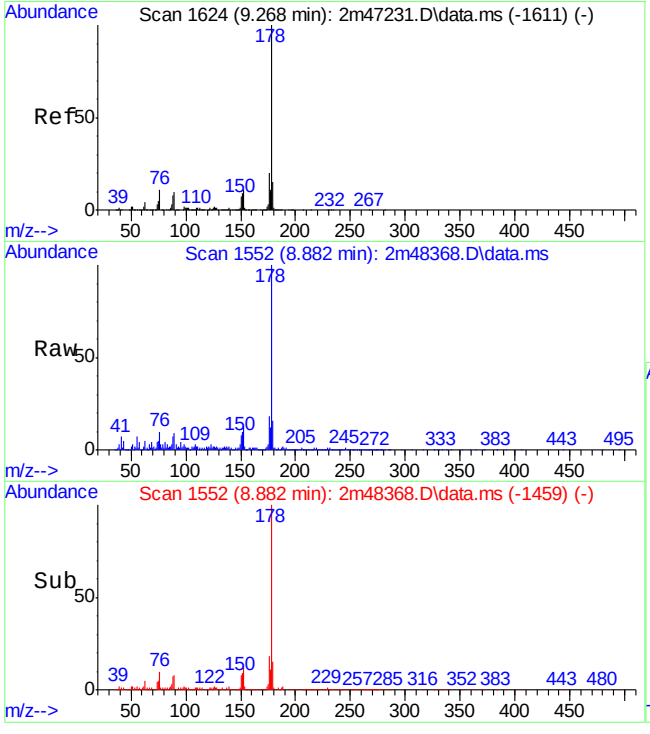


#66
Fluorene
Concen: 1.62 ppb
RT: 7.444 min Scan# 1283
Delta R.T. -0.000 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:166 Resp: 32752

Ion	Ratio	Lower	Upper
166	100		
165	86.5	61.9	121.9
167	8.7	0.0	43.1

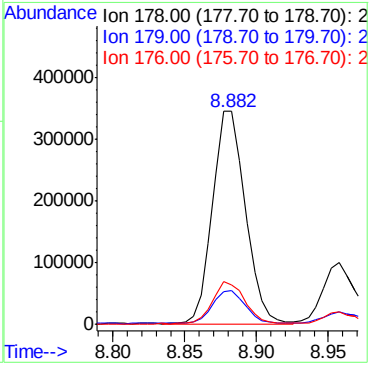


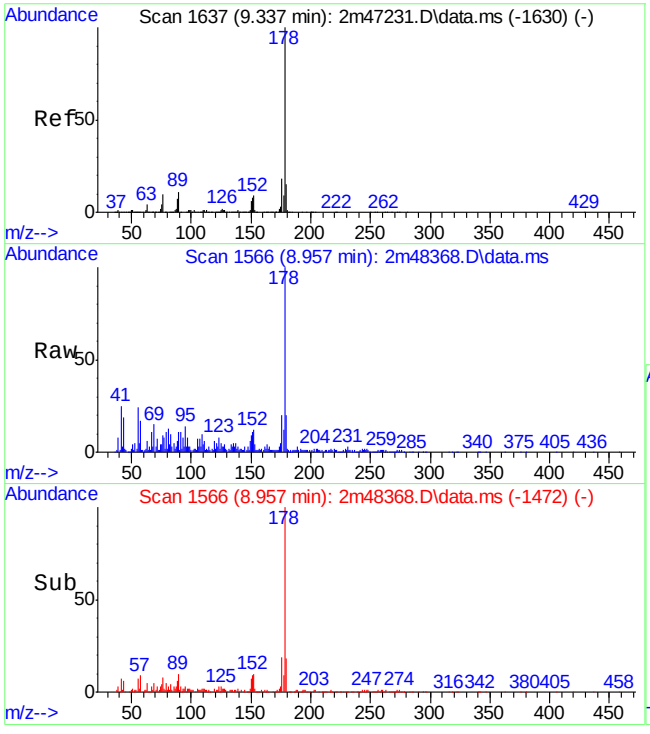


#77
Phenanthrene
Concen: 17.99 ppb
RT: 8.882 min Scan# 1552
Delta R.T. -0.000 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:178 Resp: 545096

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	44.9
176	18.1	0.0	49.1

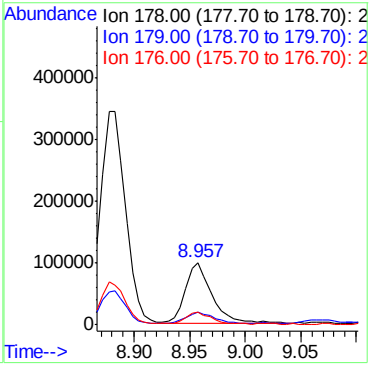


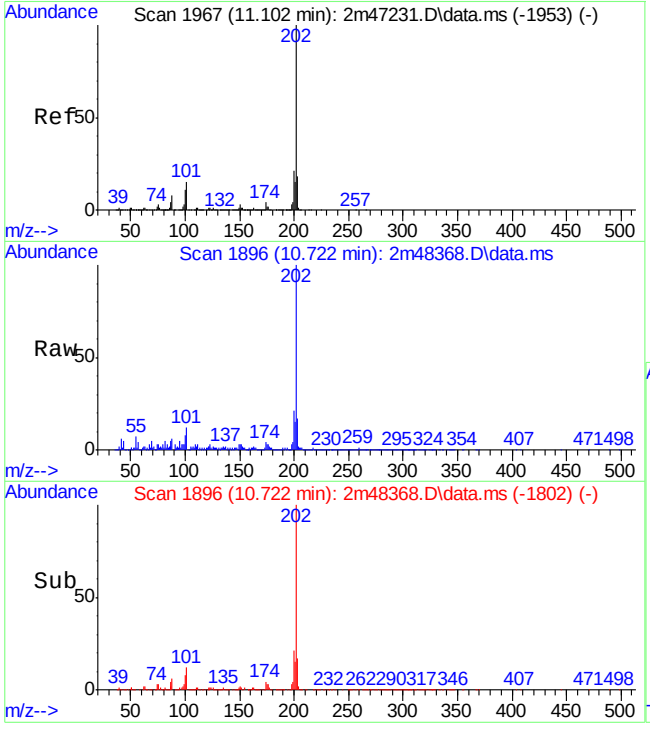


#78
Anthracene
Concen: 5.44 ppb
RT: 8.957 min Scan# 1566
Delta R.T. 0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:178 Resp: 163281

Ion	Ratio	Lower	Upper
178	100		
179	18.2	0.0	44.3
176	19.0	0.0	48.3

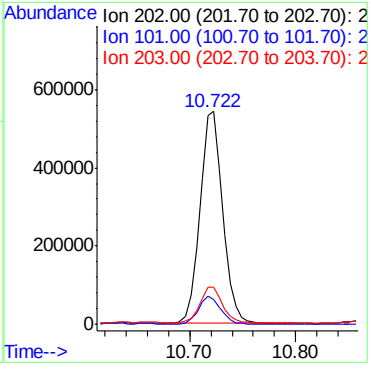


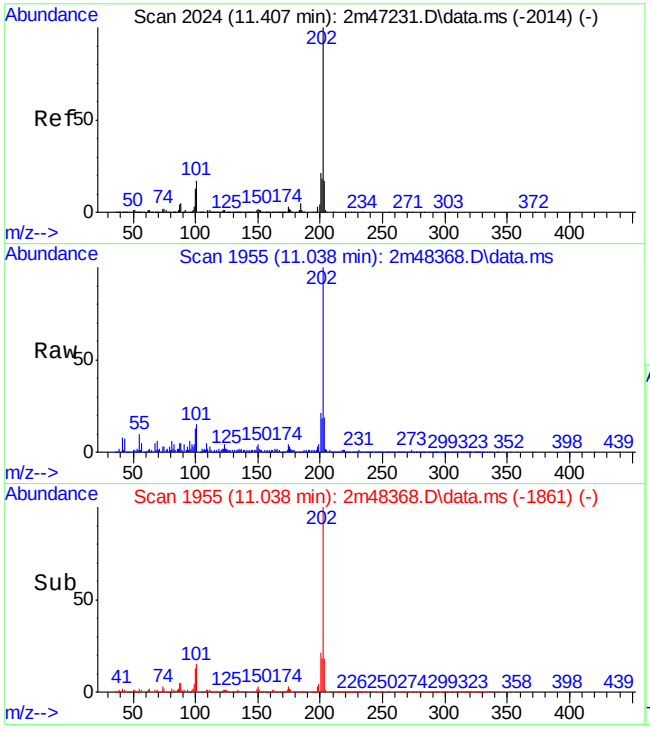


#81
Fluoranthene
Concen: 27.19 ppb
RT: 10.722 min Scan# 1896
Delta R.T. 0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:202 Resp: 812586

Ion	Ratio	Lower	Upper
202	100		
101	11.7	0.0	43.8
203	16.6	0.0	47.5

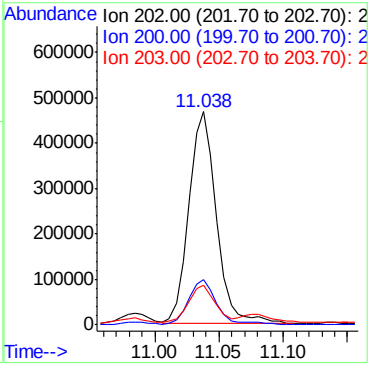


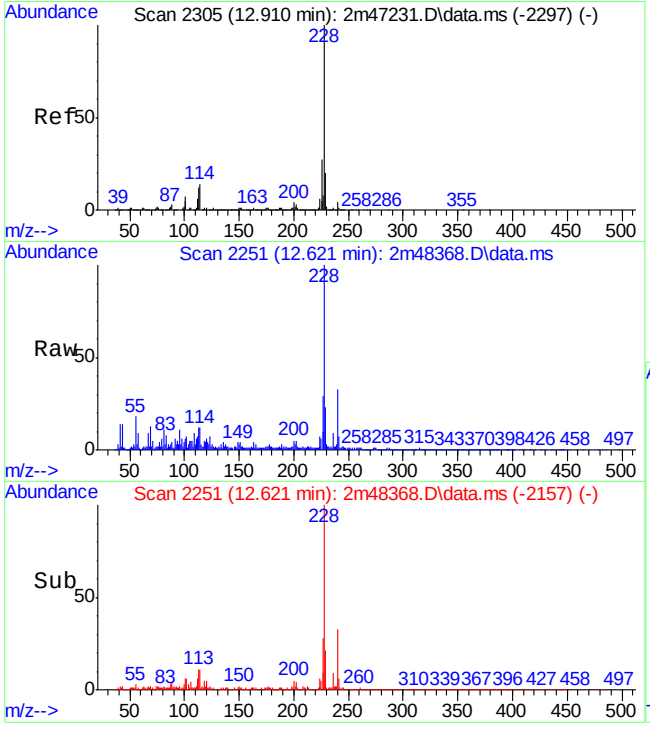


#84
Pyrene
Concen: 21.58 ppb
RT: 11.038 min Scan# 1955
Delta R.T. 0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:202 Resp: 705429

Ion	Ratio	Lower	Upper
202	100		
200	21.3	0.0	51.3
203	17.5	0.0	47.6

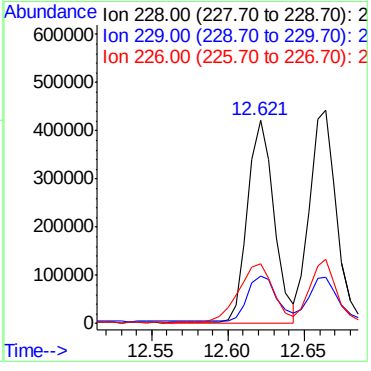


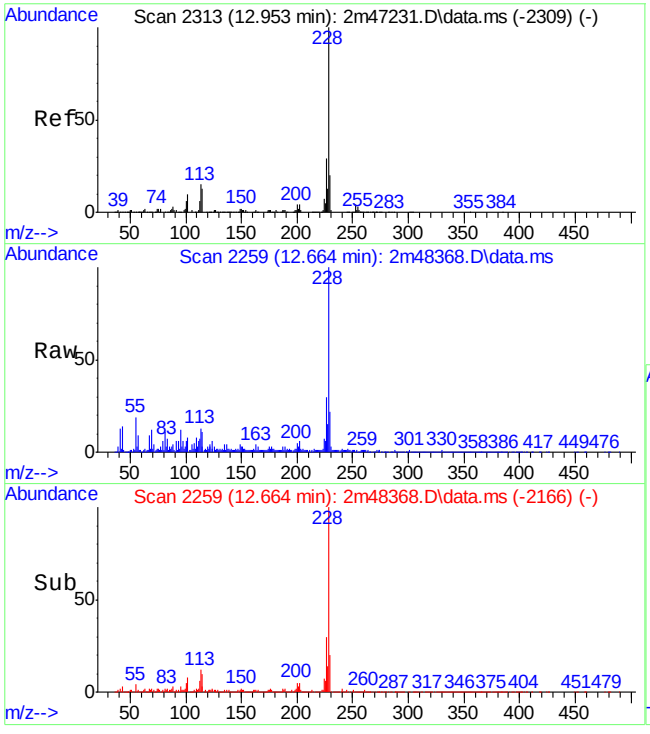


#88
Benzo[a]anthracene
Concen: 16.36 ppb
RT: 12.621 min Scan# 2251
Delta R.T. 0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:228 Resp: 508778

Ion	Ratio	Lower	Upper
228	100		
229	21.3	0.0	49.3
226	28.7	0.0	56.0

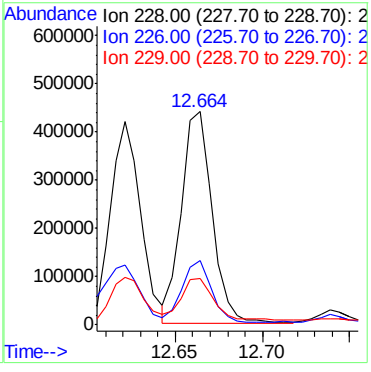


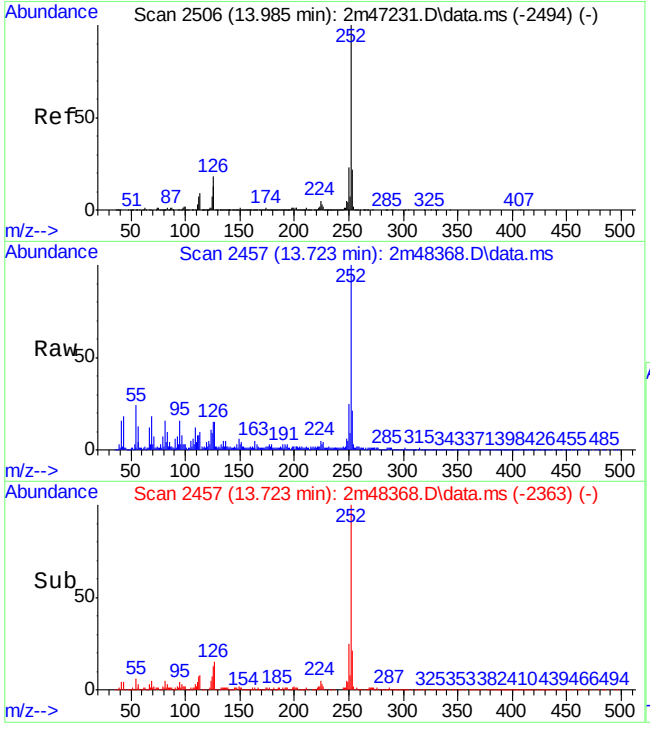


#90
Chrysene
Concen: 17.53 ppb
RT: 12.664 min Scan# 2259
Delta R.T. -0.000 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:228 Resp: 540437

Ion	Ratio	Lower	Upper
228	100		
226	29.6	0.0	57.7
229	19.1	0.0	49.3

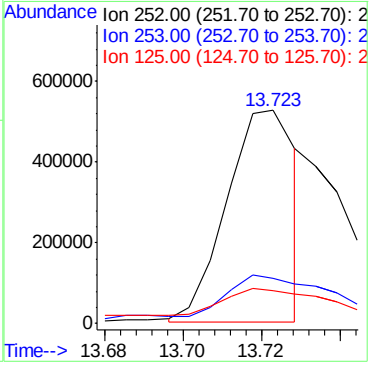


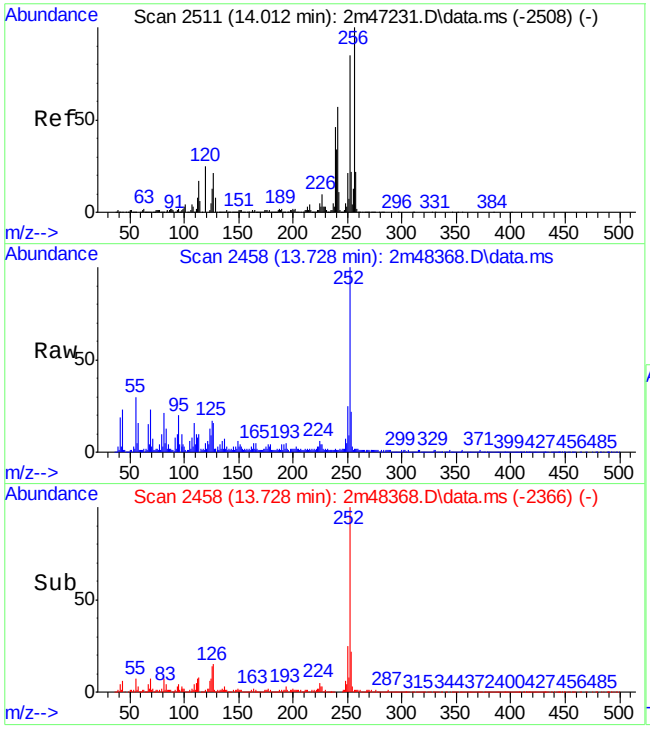


#94
Benzo[b]fluoranthene
Concen: 19.89 ppb m
RT: 13.723 min Scan# 2457
Delta R.T. 0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:252 Resp: 644571

Ion	Ratio	Lower	Upper
252	100		
253	21.3	0.0	51.6
125	15.2	0.0	40.1

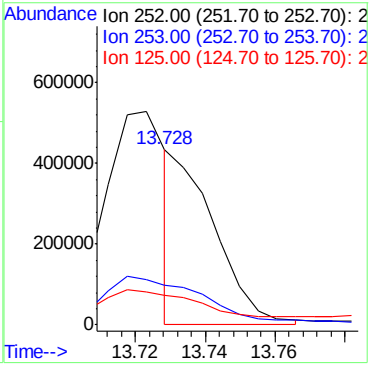


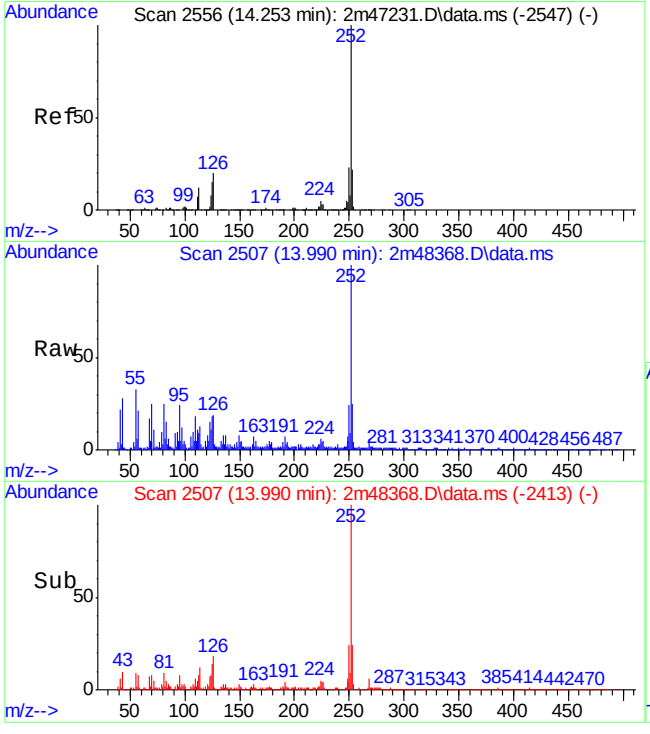


#95
Benzo[k]fluoranthene
Concen: 11.79 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:252 Resp: 343985

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	52.7
125	17.1	0.0	42.9

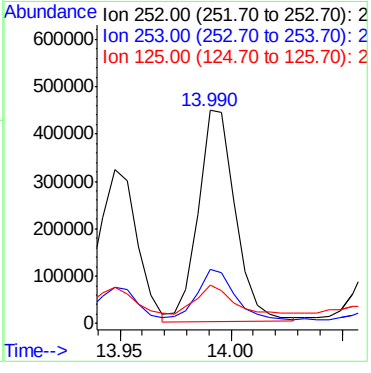


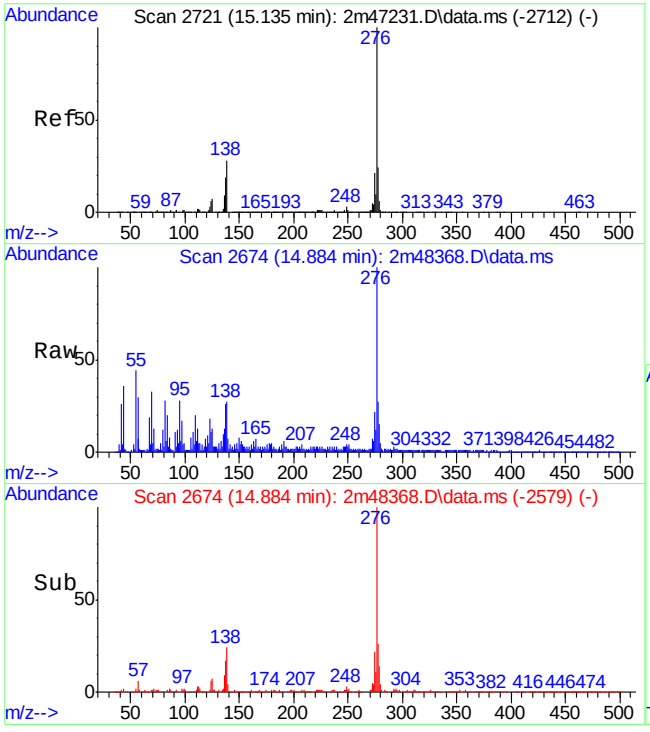


#96
Benzo[a]pyrene
Concen: 18.92 ppb
RT: 13.990 min Scan# 2507
Delta R.T. 0.005 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:252 Resp: 520963

Ion	Ratio	Lower	Upper
252	100		
253	23.8	0.0	52.4
125	13.4	0.0	42.7

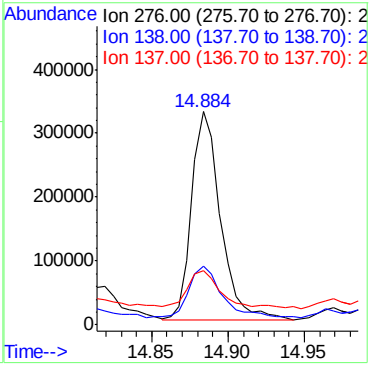


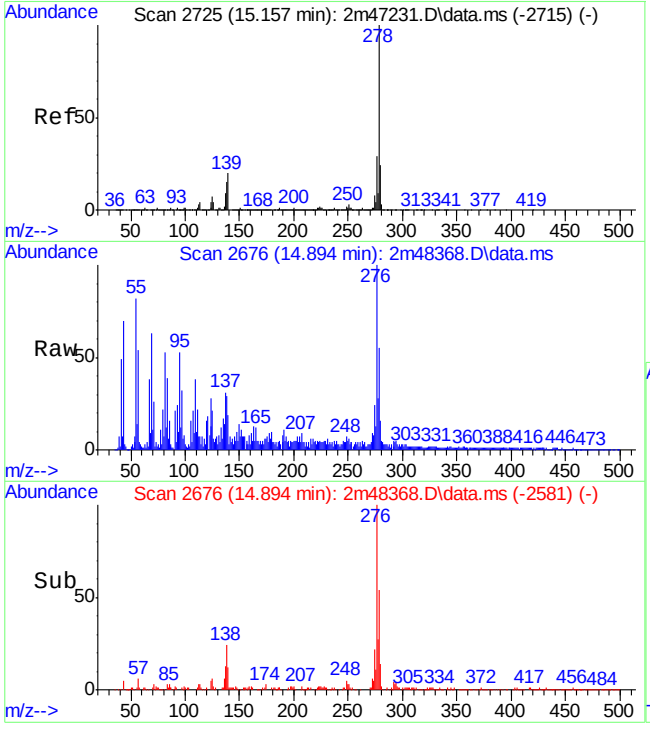


#97
Indeno[1,2,3-cd]pyrene
Concen: 13.37 ppb
RT: 14.884 min Scan# 2674
Delta R.T. 0.011 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:276 Resp: 427341

Ion	Ratio	Lower	Upper
276	100		
138	23.9	0.0	57.6
137	17.4	0.0	48.9

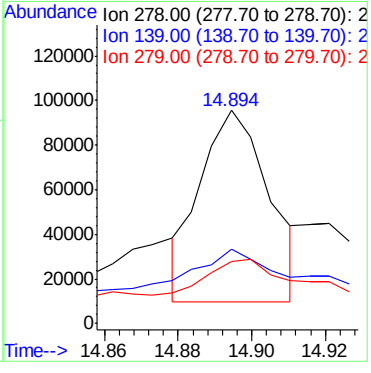


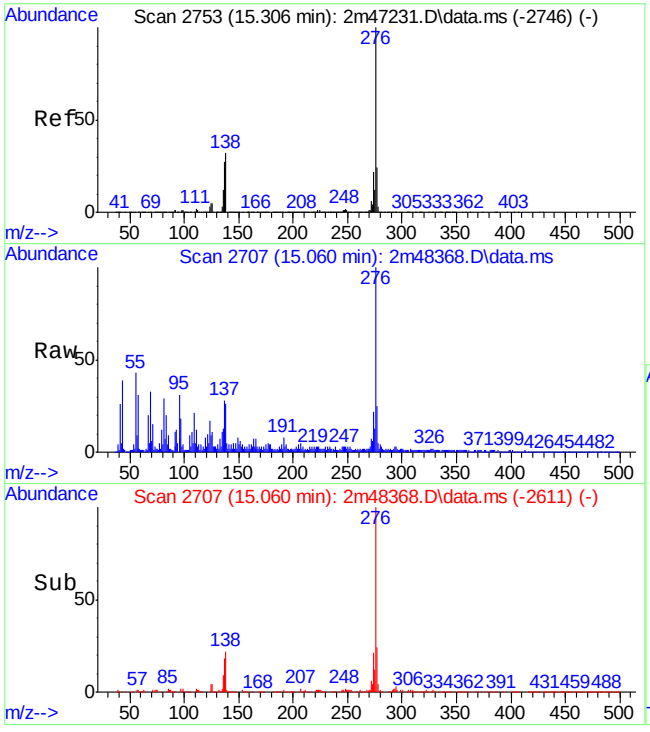


#99
Dibenz[a,h]anthracene
Concen: 4.18 ppb m
RT: 14.894 min Scan# 2676
Delta R.T. 0.011 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:278 Resp: 112182

Ion	Ratio	Lower	Upper
278	100		
139	34.9	0.0	52.4
279	29.2	0.0	54.1

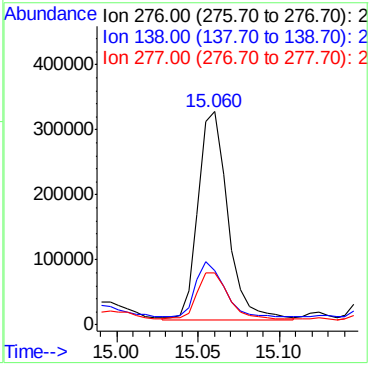




#101
Benzo[g,h,i]perylene
Concen: 15.06 ppb
RT: 15.060 min Scan# 2707
Delta R.T. 0.016 min
Lab File: 2m48368.D
Acq: 8 Dec 2012 4:50 pm

Tgt Ion:276 Resp: 411044

Ion	Ratio	Lower	Upper
276	100		
138	22.7	0.1	60.1
277	22.4	0.0	53.2



9.1.4

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48369.D
Acq On : 8 Dec 2012 5:13 pm
Operator : kristis
Sample : jb22267-5
Misc : op61828,e2m2073,32.8,,,1,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 11 17:51:39 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	351525	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1564665	40.00	ppb	0.00
47) Acenaphthene-d10	6.620	164	917595	40.00	ppb	0.00
69) Phenanthrene-d10	8.850	188	1470943	40.00	ppb	0.00
83) Chrysene-d12	12.643	240	1523076	40.00	ppb	0.01
92) Perylene-d12	14.049	264	1508806	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.502	152	351525	40.00	ppb	0.00
104) Acenaphthene-d10a	6.620	164	917595	40.00	ppb	0.00
106) Chrysene-d12a	12.643	240	1523076	40.00	ppb	0.01
108) Phenanthrene-d10a	8.850	188	1470943	40.00	ppb	0.00
110) Chrysene-d12b	12.643	240	1523076	40.00	ppb	0.01

System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	179217	14.01	ppb	0.01
Spiked Amount 50.000			Recovery = 28.02%			
8) Phenol-d5	2.320	99	336425	19.62	ppb	0.02
Spiked Amount 50.000			Recovery = 39.24%			
25) Nitrobenzene-d5	3.186	82	266197	15.86	ppb	0.00
Spiked Amount 50.000			Recovery = 31.72%			
51) 2-Fluorobiphenyl	5.689	172	656974	21.77	ppb	0.00
Spiked Amount 50.000			Recovery = 43.54%			
73) 2,4,6-Tribromophenol	7.872	330	104742	30.30	ppb	0.00
Spiked Amount 50.000			Recovery = 60.60%			
85) Terphenyl-d14	11.429	244	1326395	43.10	ppb	0.00
Spiked Amount 50.000			Recovery = 86.20%			

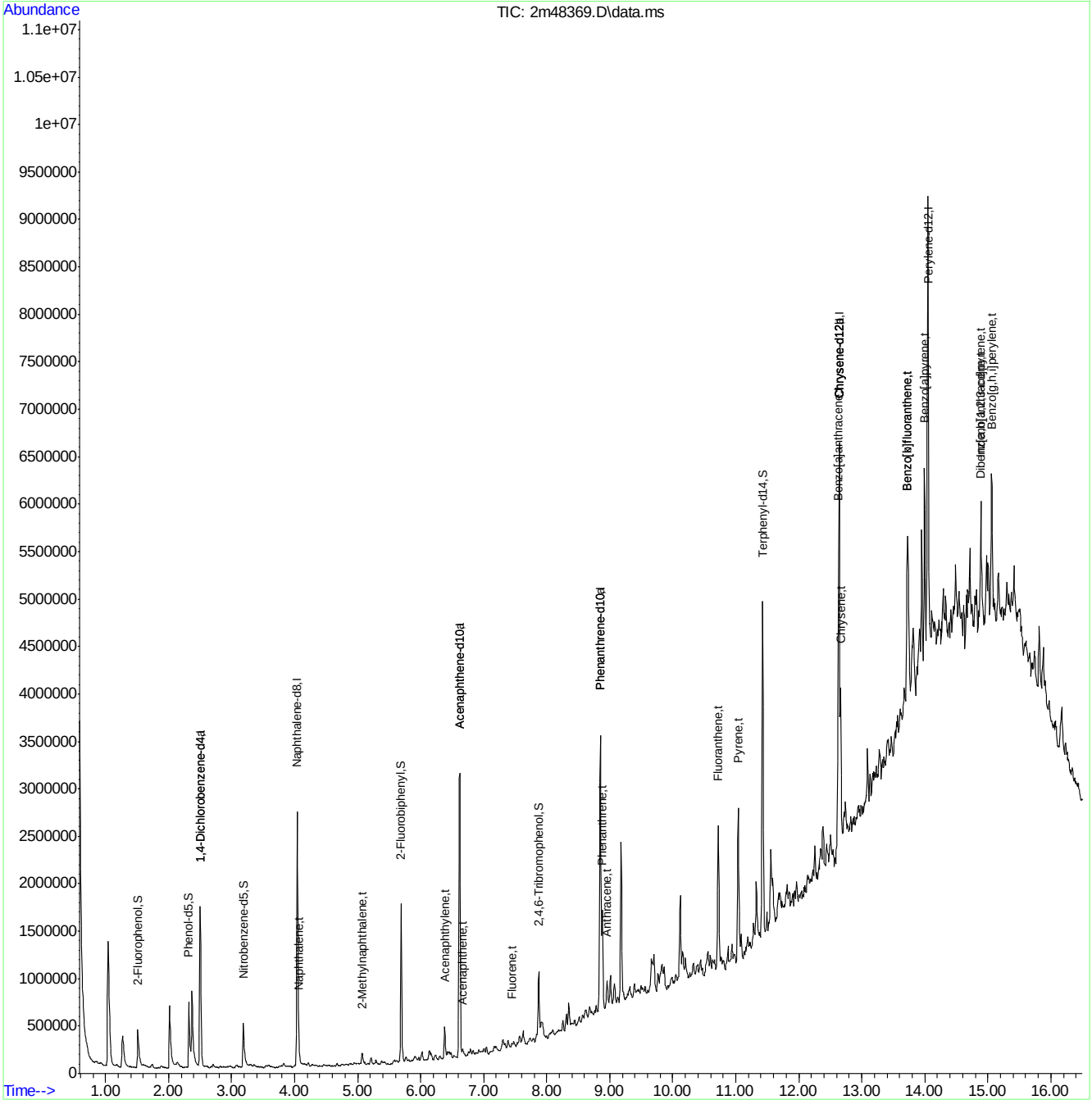
Target Compounds						Qvalue
38) Naphthalene	4.069	128	52265	1.20	ppb	97
44) 2-Methylnaphthalene	5.069	141	44928	1.68	ppb	87
56) Acenaphthylene	6.379	152	248470	5.61	ppb	95
59) Acenaphthene	6.663	153	28418	1.00	ppb	92
66) Fluorene	7.444	166	37232	1.21	ppb	96
77) Phenanthrene	8.883	178	579812	12.88	ppb	99
78) Anthracene	8.957	178	191887	4.30	ppb	98
81) Fluoranthene	10.723	202	889075	20.01	ppb	99
84) Pyrene	11.038	202	929060	18.86	ppb	99
88) Benzo[a]anthracene	12.627	228	653185	13.94	ppb	95
90) Chrysene	12.664	228	672345	14.48	ppb	100
94) Benzo[b]fluoranthene	13.723	252	656271m	12.49	ppb	
95) Benzo[k]fluoranthene	13.728	252	521242m	11.03	ppb	
96) Benzo[a]pyrene	13.996	252	652976	14.63	ppb	99
97) Indeno[1,2,3-cd]pyrene	14.889	276	540689	10.44	ppb	95
99) Dibenz[a,h]anthracene	14.900	278	158218m	3.63	ppb	
101) Benzo[g,h,i]perylene	15.066	276	522035	11.80	ppb	91

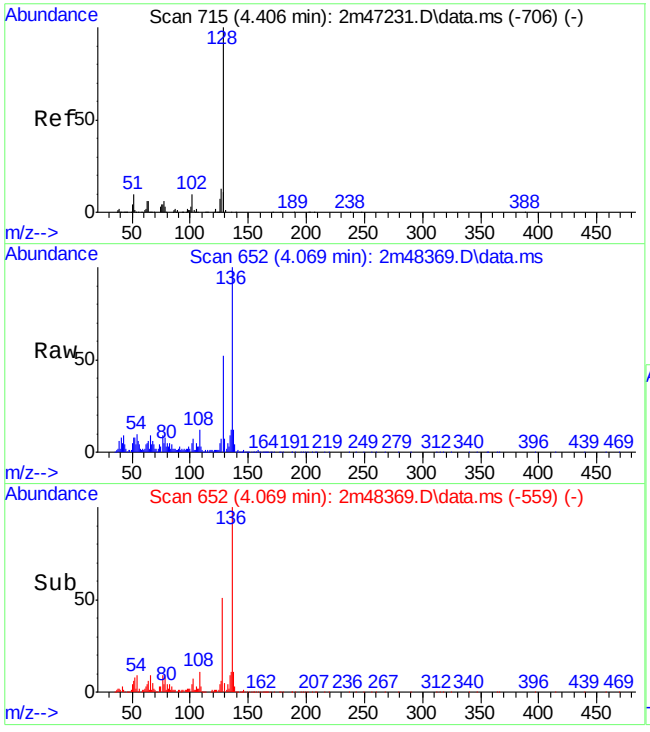
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48369.D
Acq On : 8 Dec 2012 5:13 pm
Operator : kristis
Sample : jb22267-5
Misc : op61828,e2m2073,32.8,,,1,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 11 17:51:39 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

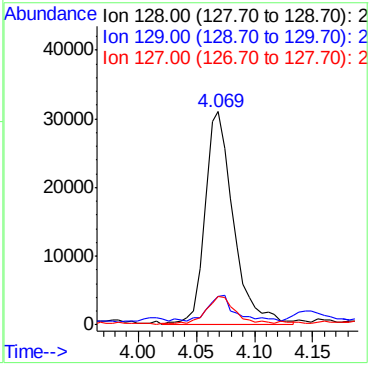


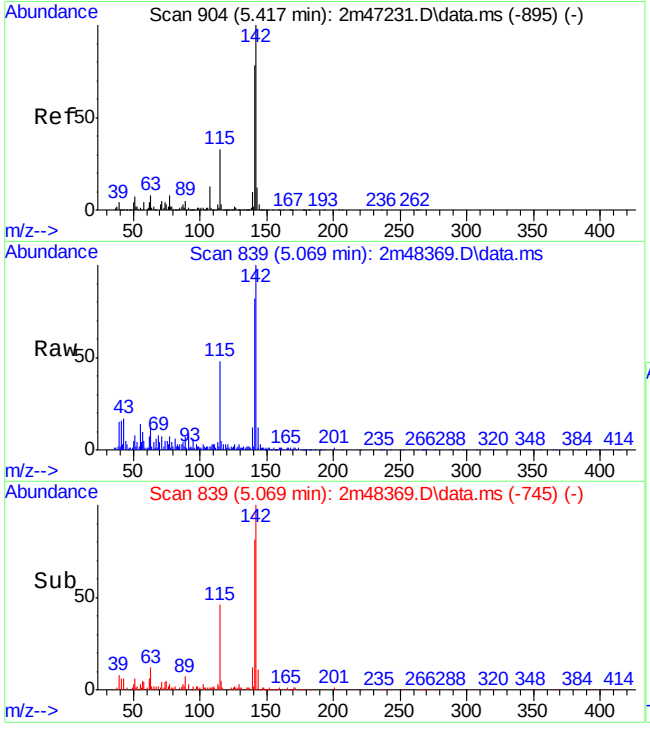


#38
Naphthalene
Concen: 1.20 ppb
RT: 4.069 min Scan# 652
Delta R.T. 0.000 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:128 Resp: 52265

Ion	Ratio	Lower	Upper
128	100		
129	9.7	0.0	40.9
127	12.2	0.0	43.3

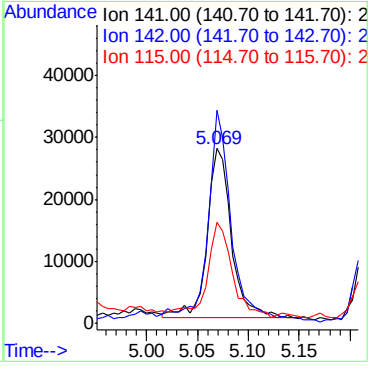


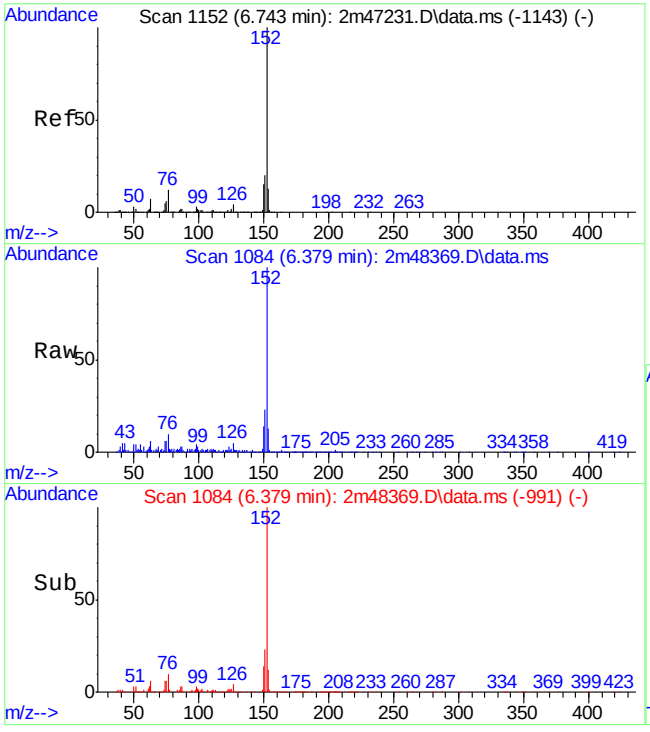


#44
2-Methylnaphthalene
Concen: 1.68 ppb
RT: 5.069 min Scan# 839
Delta R.T. 0.005 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:141 Resp: 44928

Ion	Ratio	Lower	Upper
141	100		
142	122.9	81.7	141.7
115	54.6	12.0	72.0

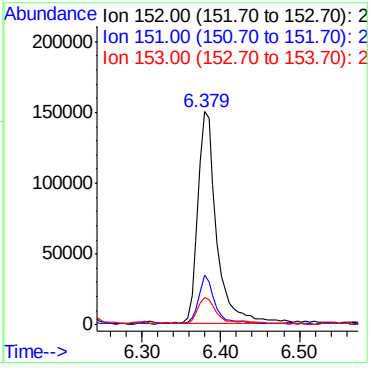


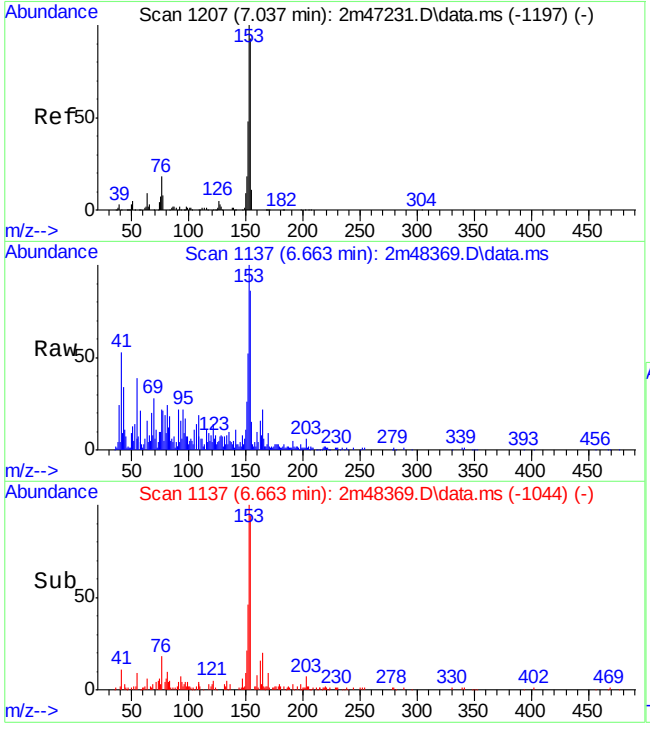


#56
Acenaphthylene
Concen: 5.61 ppb
RT: 6.379 min Scan# 1084
Delta R.T. 0.000 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:152 Resp: 248470

Ion	Ratio	Lower	Upper
152	100		
151	22.8	0.0	49.4
153	12.2	0.0	43.0

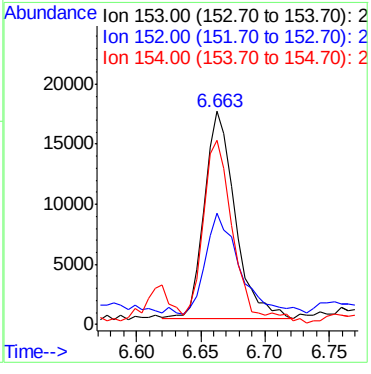




#59
Acenaphthene
Concen: 1.00 ppb
RT: 6.663 min Scan# 1137
Delta R.T. 0.000 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

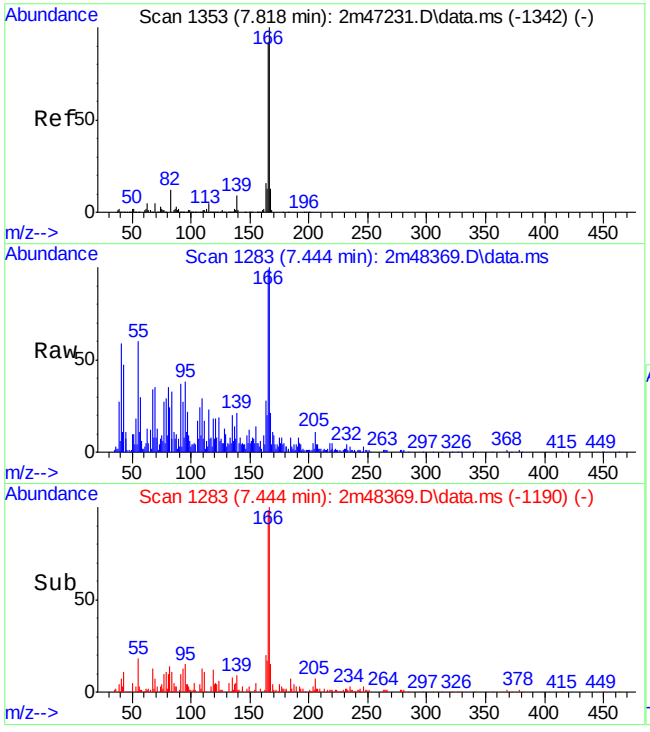
Tgt Ion:153 Resp: 28418

Ion	Ratio	Lower	Upper
153	100		
152	46.8	15.8	75.8
154	78.6	59.7	119.7



9.1.5

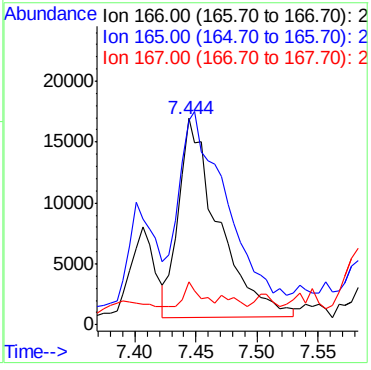
9

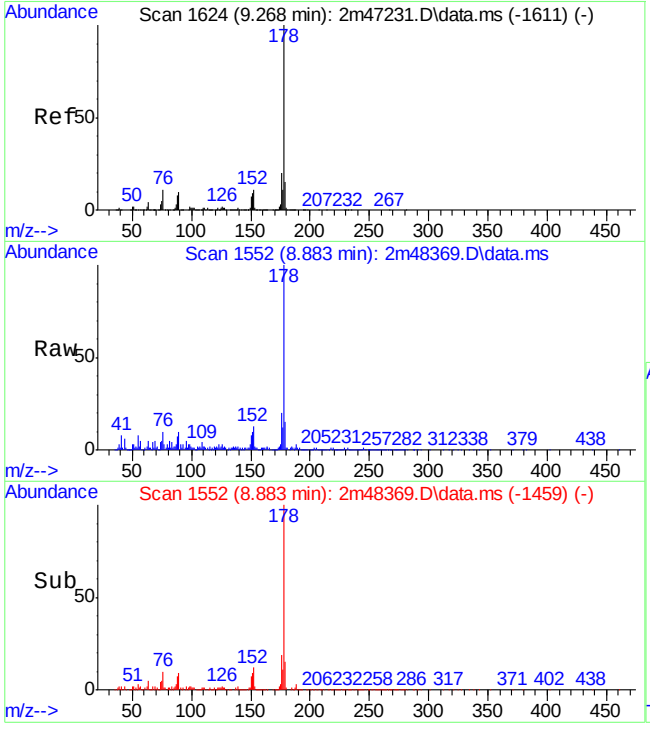


#66
Fluorene
Concen: 1.21 ppb
RT: 7.444 min Scan# 1283
Delta R.T. 0.000 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:166 Resp: 37232

Ion	Ratio	Lower	Upper
166	100		
165	88.0	61.9	121.9
167	11.6	0.0	43.1

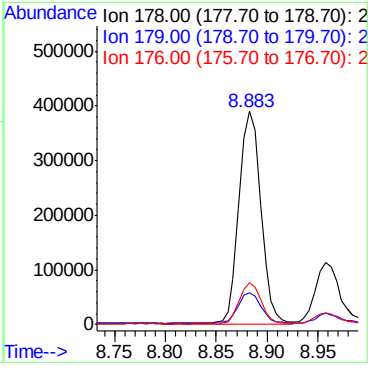


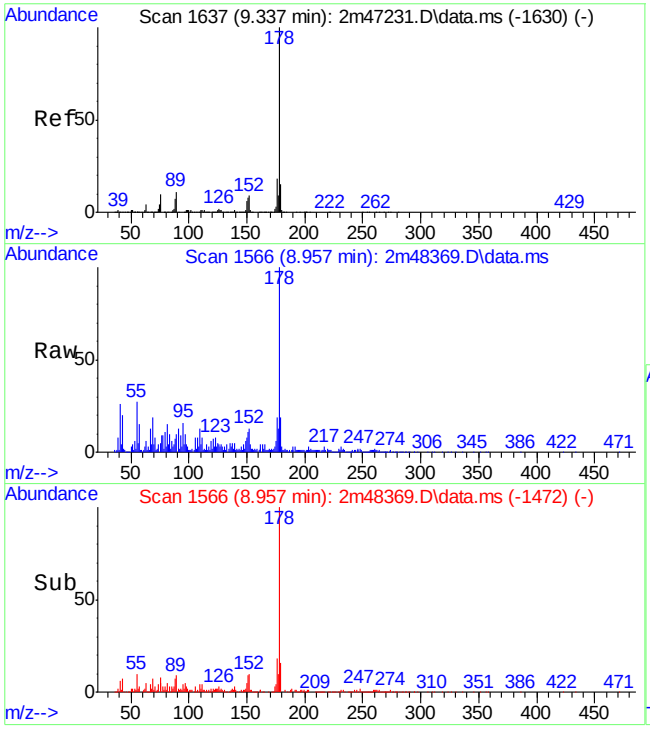


#77
Phenanthrene
Concen: 12.88 ppb
RT: 8.883 min Scan# 1552
Delta R.T. 0.000 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:178 Resp: 579812

Ion	Ratio	Lower	Upper
178	100		
179	14.5	0.0	44.9
176	19.5	0.0	49.1

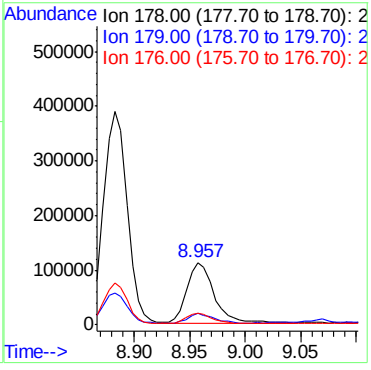


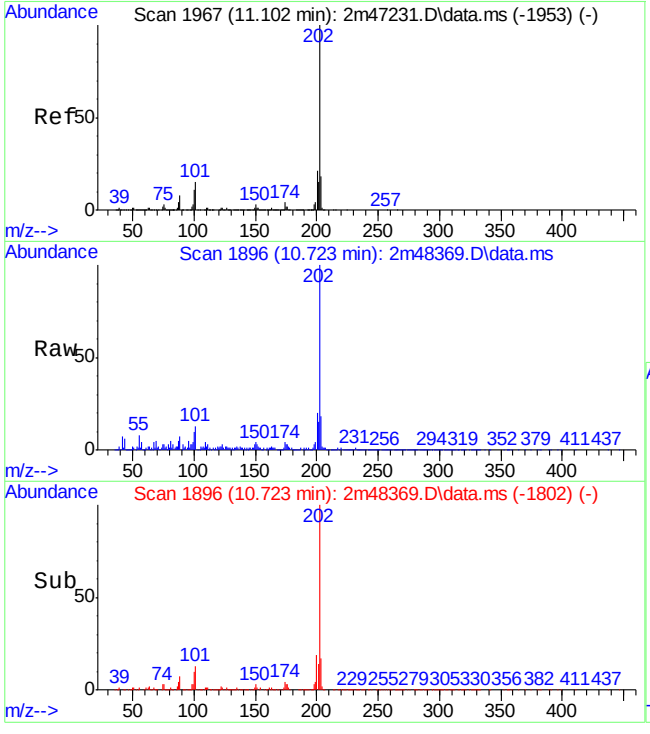


#78
Anthracene
Concen: 4.30 ppb
RT: 8.957 min Scan# 1566
Delta R.T. 0.005 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:178 Resp: 191887

Ion	Ratio	Lower	Upper
178	100		
179	15.8	0.0	44.3
176	18.3	0.0	48.3

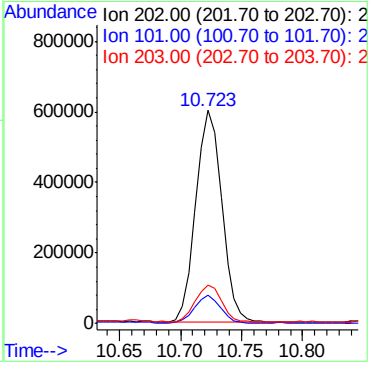


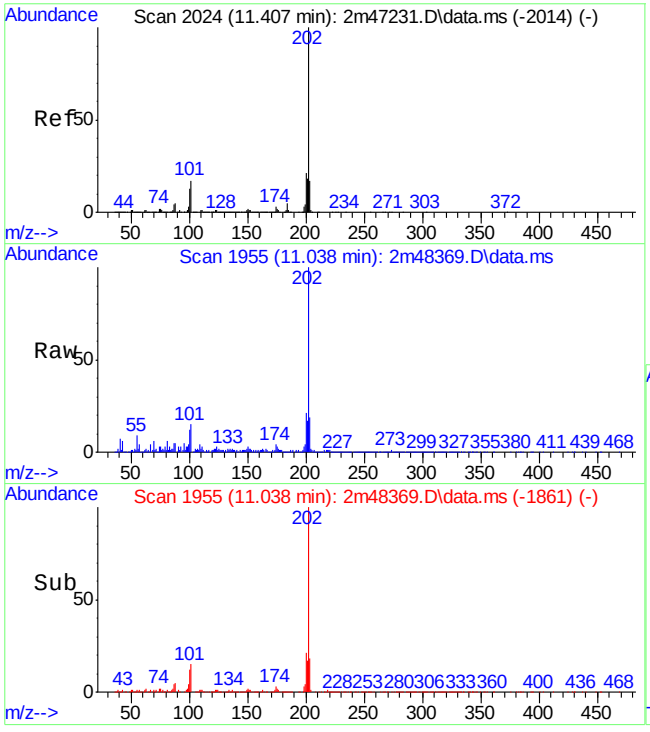


#81
Fluoranthene
Concen: 20.01 ppb
RT: 10.723 min Scan# 1896
Delta R.T. 0.005 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:202 Resp: 889075

Ion	Ratio	Lower	Upper
202	100		
101	13.1	0.0	43.8
203	17.0	0.0	47.5

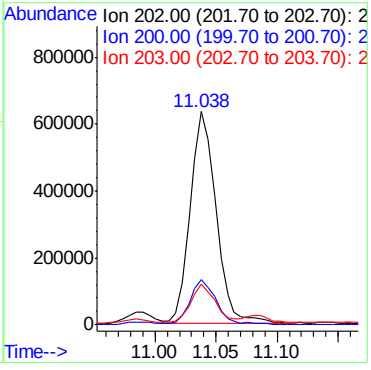


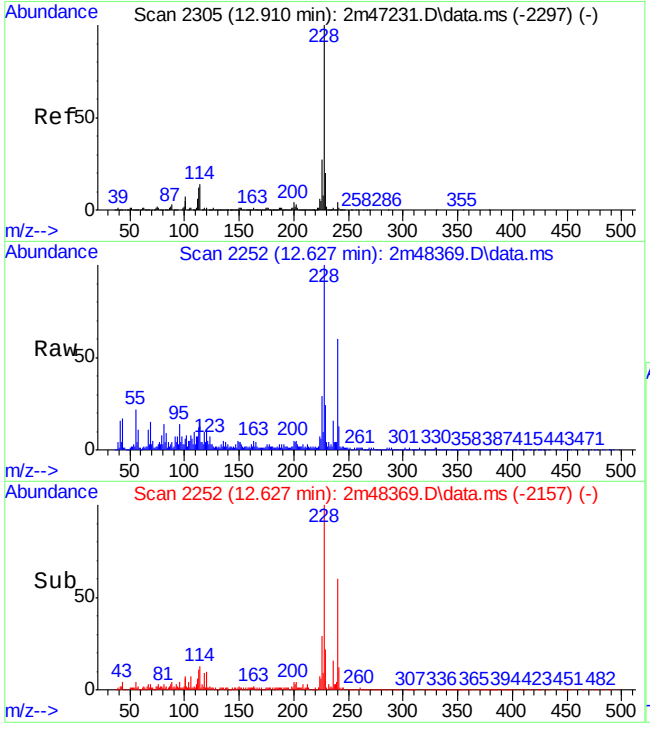


#84
Pyrene
Concen: 18.86 ppb
RT: 11.038 min Scan# 1955
Delta R.T. 0.005 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:202 Resp: 929060

Ion	Ratio	Lower	Upper
202	100		
200	21.1	0.0	51.3
203	18.0	0.0	47.6

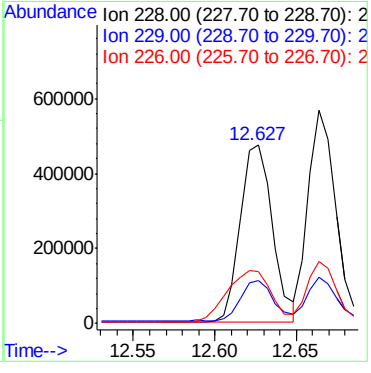


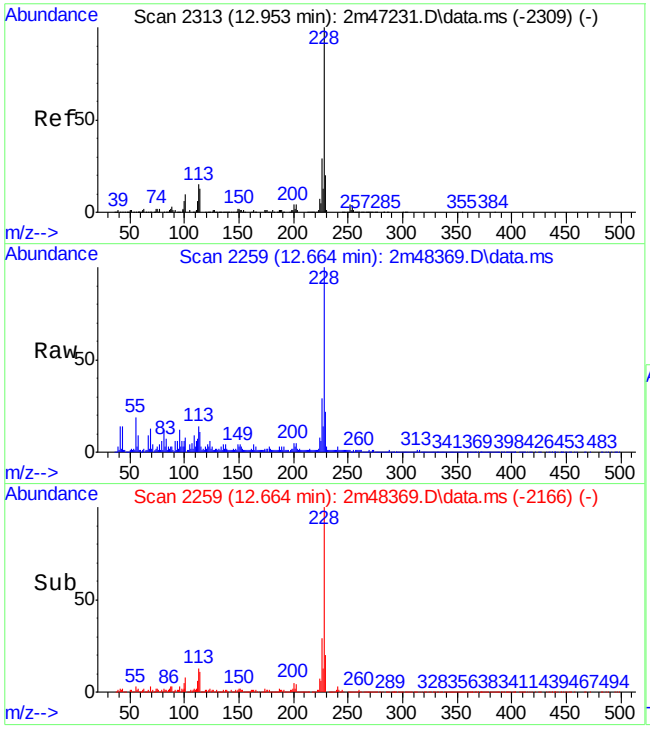


#88
Benzo[a]anthracene
Concen: 13.94 ppb
RT: 12.627 min Scan# 2252
Delta R.T. 0.011 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:228 Resp: 653185

Ion	Ratio	Lower	Upper
228	100		
229	22.3	0.0	49.3
226	28.2	0.0	56.0

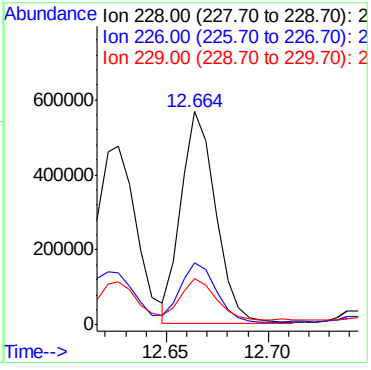


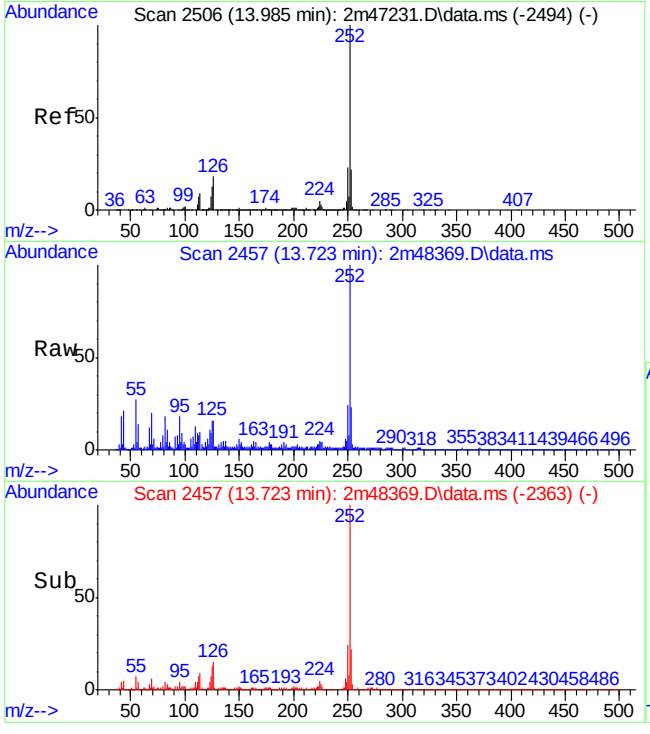


#90
Chrysene
Concen: 14.48 ppb
RT: 12.664 min Scan# 2259
Delta R.T. 0.000 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:228 Resp: 672345

Ion	Ratio	Lower	Upper
228	100		
226	28.1	0.0	57.7
229	19.3	0.0	49.3

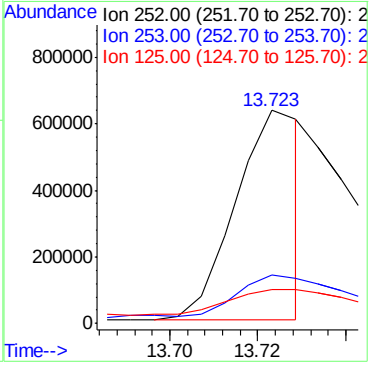


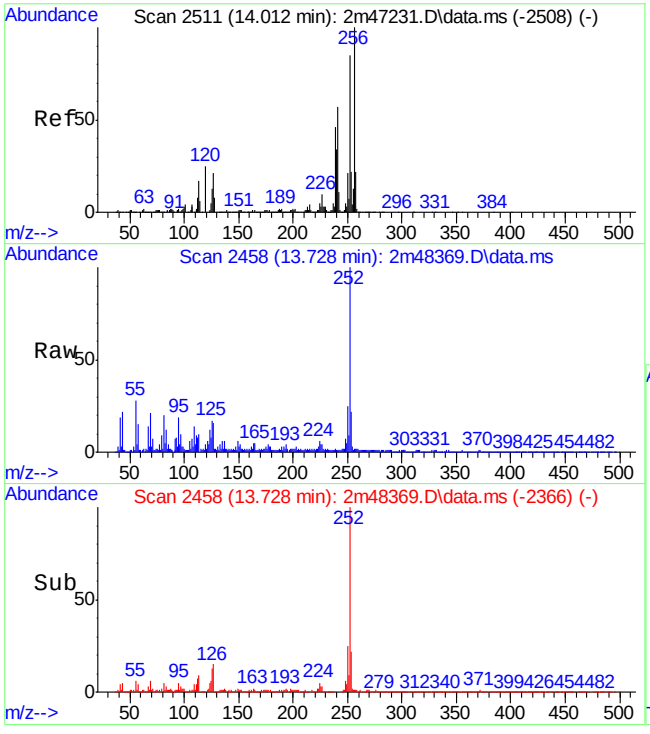


#94
Benzo[b]fluoranthene
Concen: 12.49 ppb m
RT: 13.723 min Scan# 2457
Delta R.T. 0.005 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:252 Resp: 656271

Ion	Ratio	Lower	Upper
252	100		
253	22.7	0.0	51.6
125	16.2	0.0	40.1

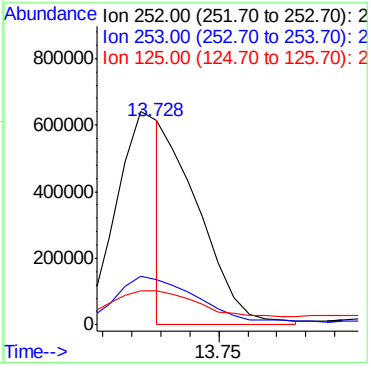


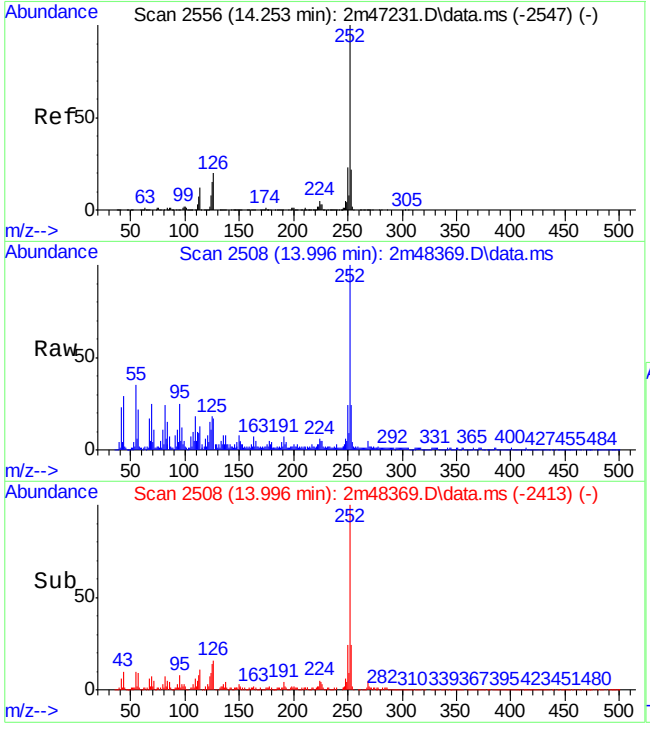


#95
Benzo[k]fluoranthene
Concen: 11.03 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.005 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:252 Resp: 521242

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	52.7
125	16.5	0.0	42.9

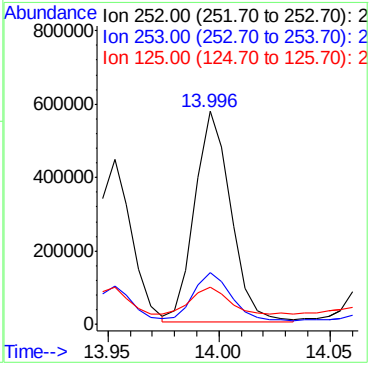


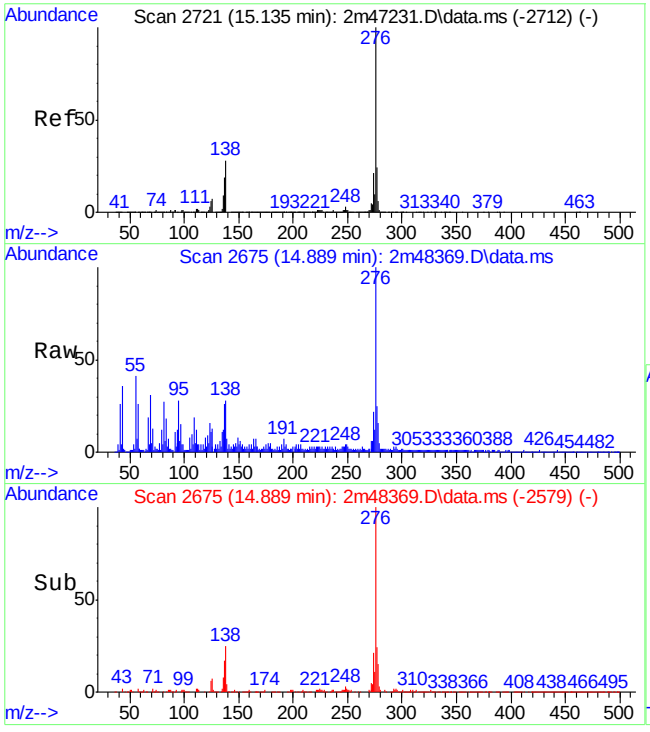


#96
Benzo[a]pyrene
Concen: 14.63 ppb
RT: 13.996 min Scan# 2508
Delta R.T. 0.011 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:252 Resp: 652976

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	52.4
125	13.3	0.0	42.7

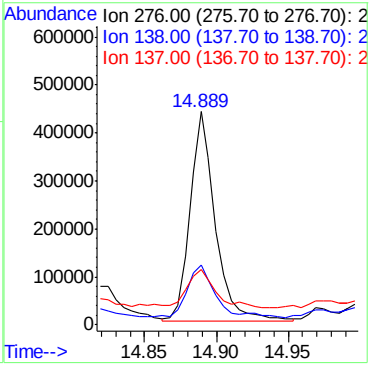


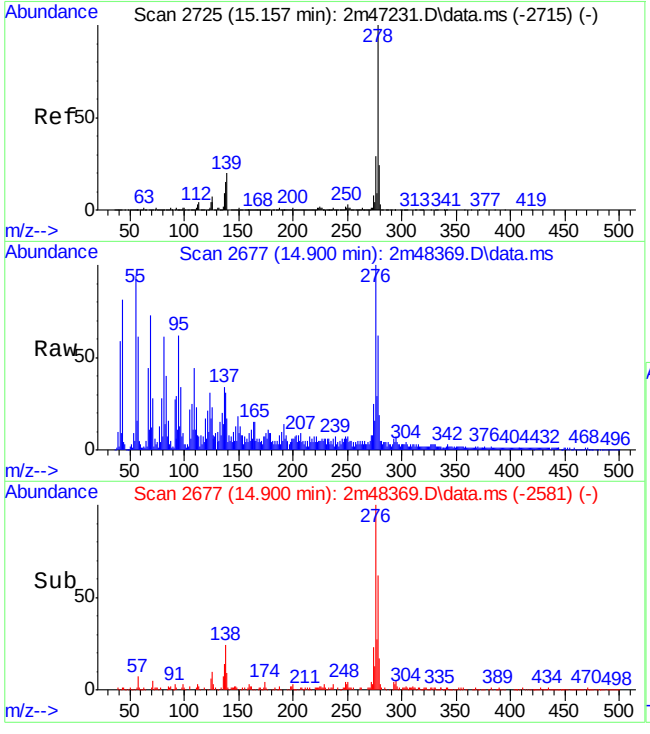


#97
Indeno[1,2,3-cd]pyrene
Concen: 10.44 ppb
RT: 14.889 min Scan# 2675
Delta R.T. 0.016 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:276 Resp: 540689

Ion	Ratio	Lower	Upper
276	100		
138	24.4	0.0	57.6
137	17.2	0.0	48.9

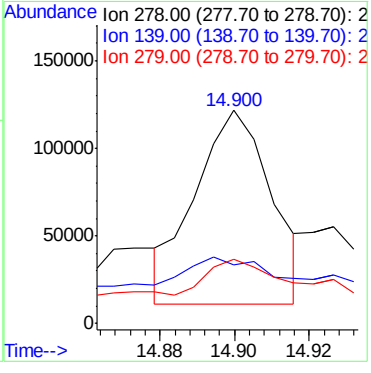


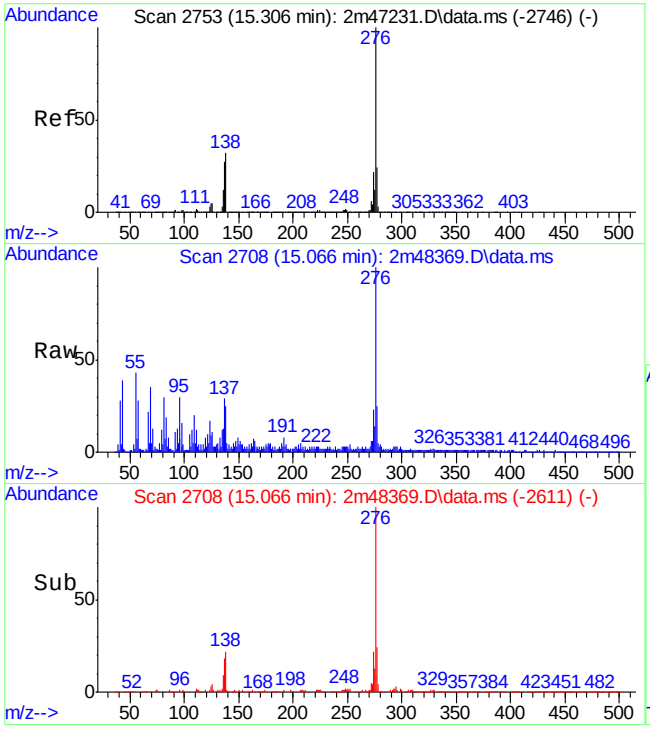


#99
Dibenz[a,h]anthracene
Concen: 3.63 ppb m
RT: 14.900 min Scan# 2677
Delta R.T. 0.016 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:278 Resp: 158218

Ion	Ratio	Lower	Upper
278	100		
139	27.6	0.0	52.4
279	30.0	0.0	54.1

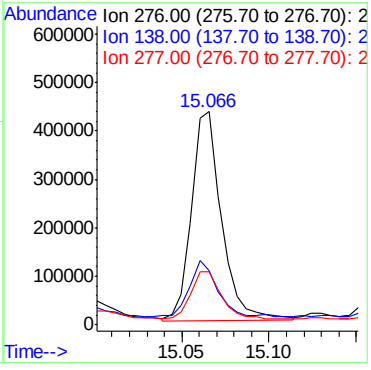




#101
Benzo[g,h,i]perylene
Concen: 11.80 ppb
RT: 15.066 min Scan# 2708
Delta R.T. 0.021 min
Lab File: 2m48369.D
Acq: 8 Dec 2012 5:13 pm

Tgt Ion:276 Resp: 522035

Ion	Ratio	Lower	Upper
276	100		
138	21.8	0.1	60.1
277	22.6	0.0	53.2



9.1.5

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48376.D
Acq On : 8 Dec 2012 7:54 pm
Operator : kristis
Sample : jb22267-6
Misc : op61828,e2m2073,35.4,,,1,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 11 18:00:19 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.501	152	314400	40.00	ppb	0.00
24) Naphthalene-d8	4.047	136	1417204	40.00	ppb	0.00
47) Acenaphthene-d10	6.625	164	823722	40.00	ppb	0.01
69) Phenanthrene-d10	8.861	188	1316809	40.00	ppb	0.01
83) Chrysene-d12	12.648	240	1399129	40.00	ppb	0.02
92) Perylene-d12	14.054	264	1448461	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.501	152	314400	40.00	ppb	0.00
104) Acenaphthene-d10a	6.625	164	823722	40.00	ppb	0.01
106) Chrysene-d12a	12.648	240	1399129	40.00	ppb	0.02
108) Phenanthrene-d10a	8.861	188	1316809	40.00	ppb	0.01
110) Chrysene-d12b	12.648	240	1399129	40.00	ppb	0.02

System Monitoring Compounds						
5) 2-Fluorophenol	1.517	112	277017	24.21	ppb	0.02
Spiked Amount 50.000			Recovery	=	48.42%	
8) Phenol-d5	2.336	99	410483	26.77	ppb	0.03
Spiked Amount 50.000			Recovery	=	53.54%	
25) Nitrobenzene-d5	3.191	82	333839	21.95	ppb	0.01
Spiked Amount 50.000			Recovery	=	43.90%	
51) 2-Fluorobiphenyl	5.695	172	742012	27.40	ppb	0.00
Spiked Amount 50.000			Recovery	=	54.80%	
73) 2,4,6-Tribromophenol	7.882	330	131772	42.58	ppb	0.01
Spiked Amount 50.000			Recovery	=	85.16%	
85) Terphenyl-d14	11.434	244	1203290	42.56	ppb	0.01
Spiked Amount 50.000			Recovery	=	85.12%	

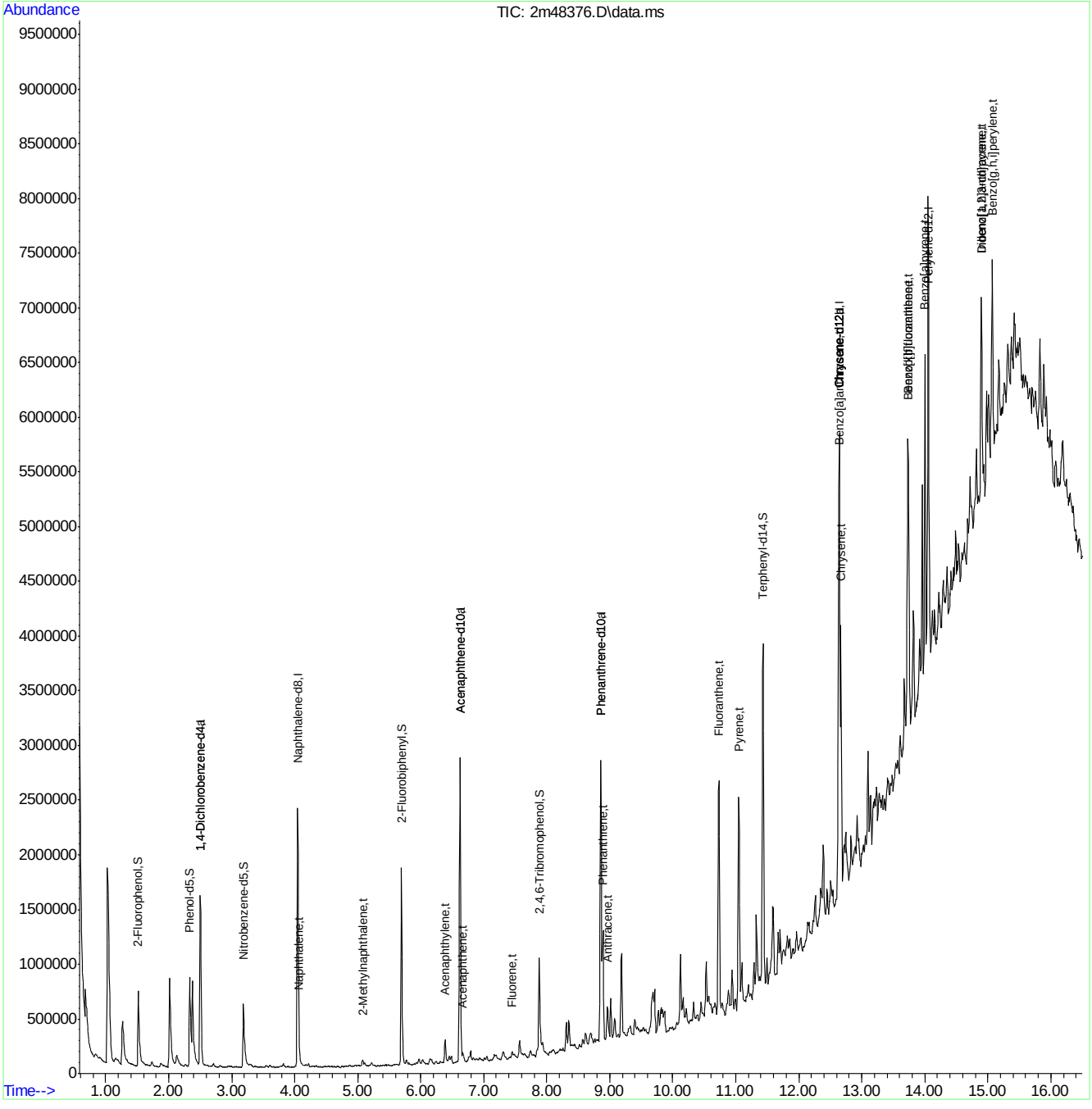
Target Compounds						Qvalue
38) Naphthalene	4.074	128	39548	1.00	ppb	93
44) 2-Methylnaphthalene	5.079	141	19986	0.83	ppb	95
56) Acenaphthylene	6.385	152	166631	4.19	ppb	96
59) Acenaphthene	6.668	153	28413	1.11	ppb	92
66) Fluorene	7.454	166	32296	1.17	ppb	99
77) Phenanthrene	8.893	178	573286	14.22	ppb	99
78) Anthracene	8.963	178	192054	4.81	ppb	98
81) Fluoranthene	10.733	202	1288210	32.39	ppb	98
84) Pyrene	11.049	202	1145237	25.31	ppb	100
88) Benzo[a]anthracene	12.632	228	1066892	24.79	ppb	95
90) Chrysene	12.674	228	993306	23.28	ppb	99
94) Benzo[b]fluoranthene	13.734	252	1254144m	24.87	ppb	
95) Benzo[k]fluoranthene	13.739	252	548986m	12.10	ppb	
96) Benzo[a]pyrene	14.001	252	1033432	24.13	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.894	276	731434	14.71	ppb	97
99) Dibenz[a,h]anthracene	14.905	278	241249m	5.77	ppb	
101) Benzo[g,h,i]perylene	15.071	276	628678	14.81	ppb	93

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

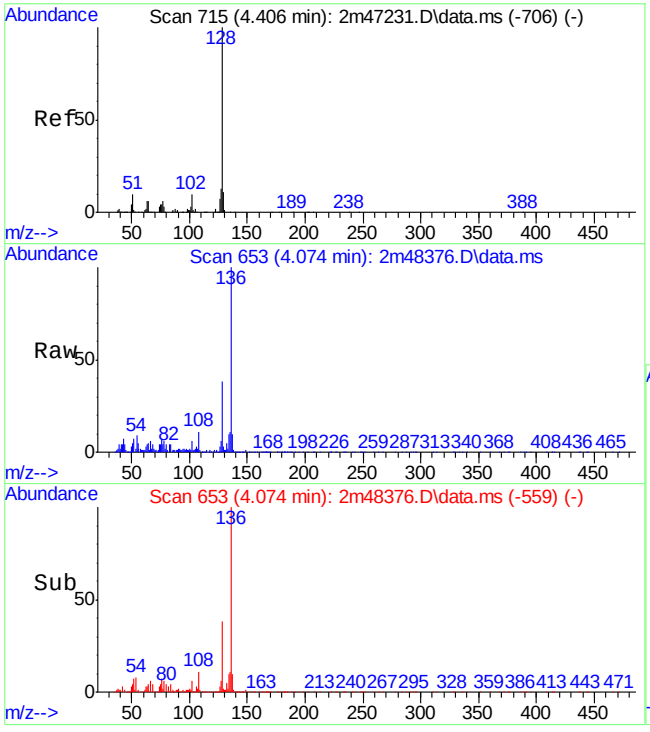
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48376.D
Acq On : 8 Dec 2012 7:54 pm
Operator : kristis
Sample : jb22267-6
Misc : op61828,e2m2073,35.4,,,1,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 11 18:00:19 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration



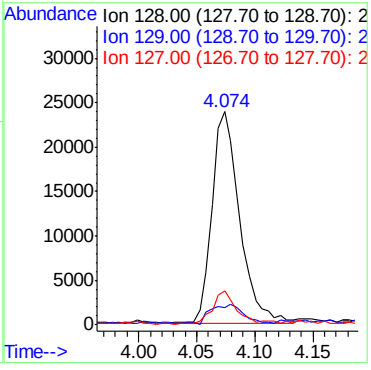
M2M2034.M Tue Dec 11 18:00:29 2012 MS2M Page: 2

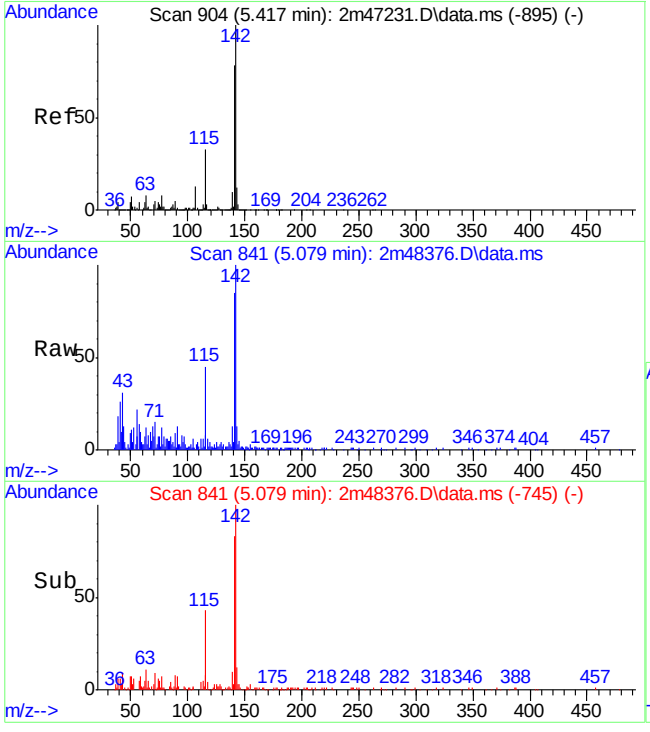


#38
Naphthalene
Concen: 1.00 ppb
RT: 4.074 min Scan# 653
Delta R.T. 0.005 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:128 Resp: 39548

Ion	Ratio	Lower	Upper
128	100		
129	6.9	0.0	40.9
127	15.0	0.0	43.3

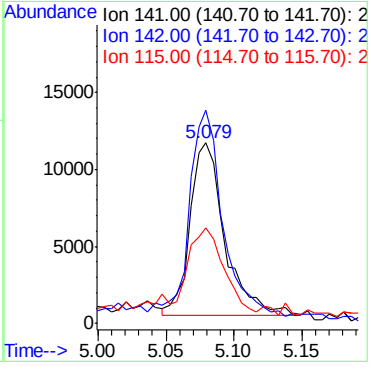


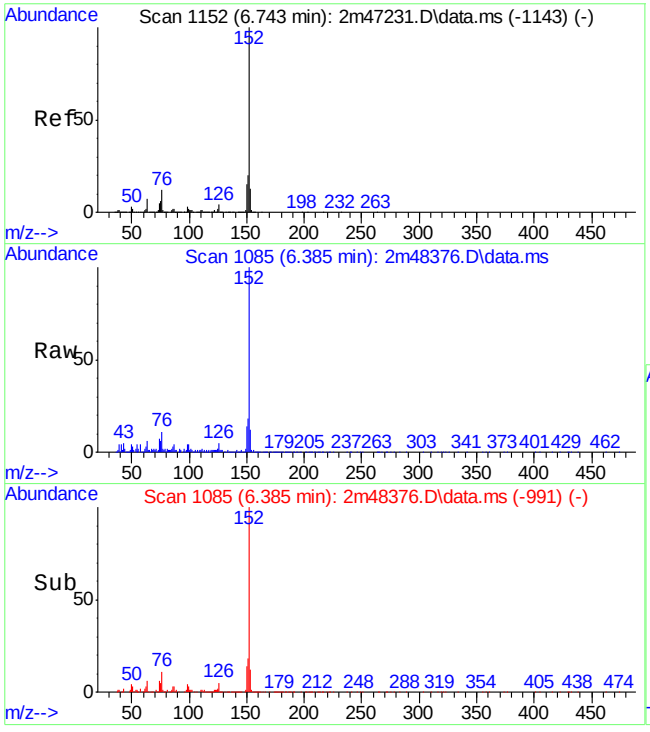


#44
2-Methylnaphthalene
Concen: 0.83 ppb
RT: 5.079 min Scan# 841
Delta R.T. 0.016 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:141 Resp: 19986

Ion	Ratio	Lower	Upper
141	100		
142	117.7	81.7	141.7
115	45.3	12.0	72.0

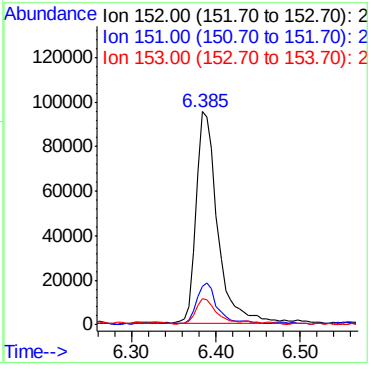


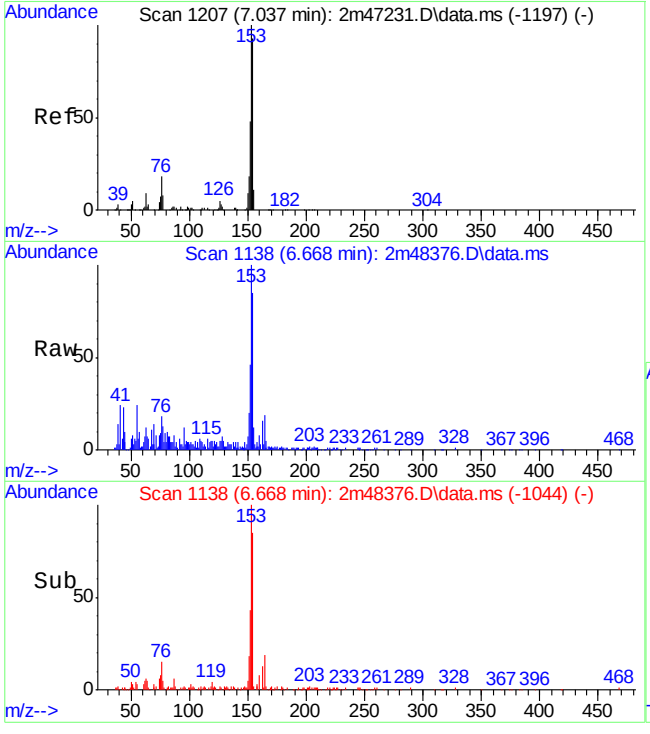


#56
Acenaphthylene
Concen: 4.19 ppb
RT: 6.385 min Scan# 1085
Delta R.T. 0.005 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:152 Resp: 166631

Ion	Ratio	Lower	Upper
152	100		
151	17.4	0.0	49.4
153	11.8	0.0	43.0

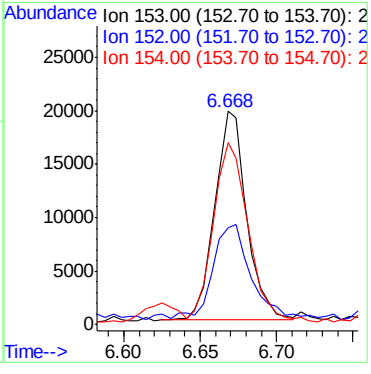




#59
Acenaphthene
Concen: 1.11 ppb
RT: 6.668 min Scan# 1138
Delta R.T. 0.005 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

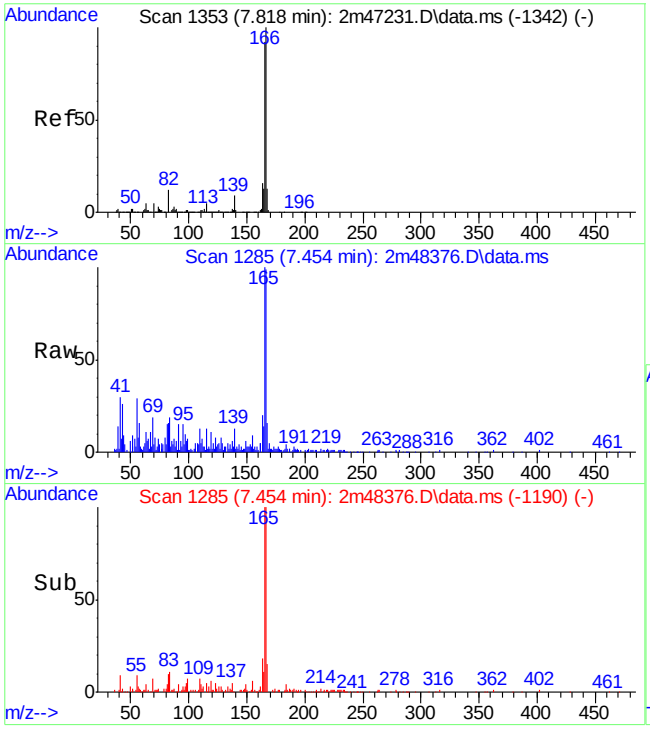
Tgt Ion:153 Resp: 28413

Ion	Ratio	Lower	Upper
153	100		
152	41.9	15.8	75.8
154	81.1	59.7	119.7



9.1.6

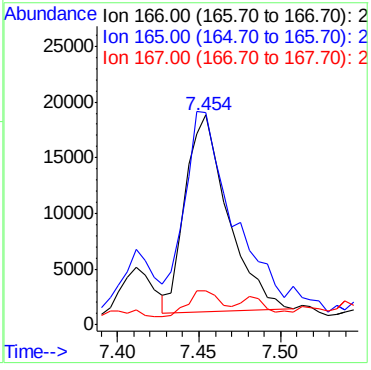
9

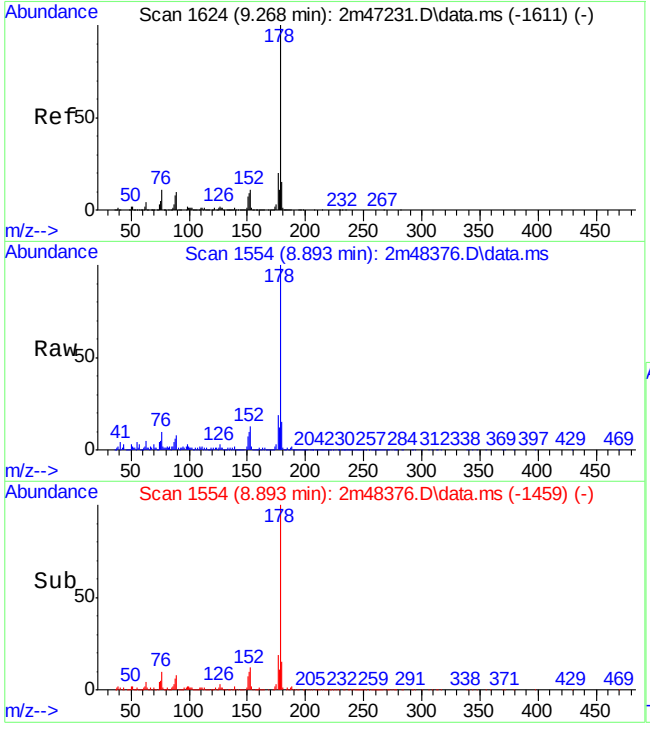


#66
Fluorene
Concen: 1.17 ppb
RT: 7.454 min Scan# 1285
Delta R.T. 0.010 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:166 Resp: 32296

Ion	Ratio	Lower	Upper
166	100		
165	92.4	61.9	121.9
167	12.4	0.0	43.1

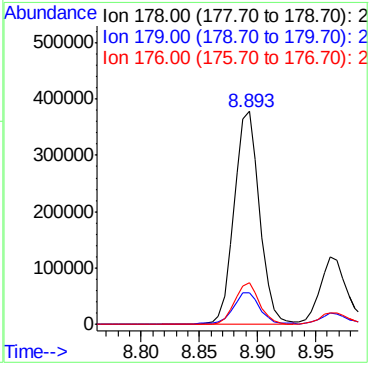




#77
Phenanthrene
Concen: 14.22 ppb
RT: 8.893 min Scan# 1554
Delta R.T. 0.010 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

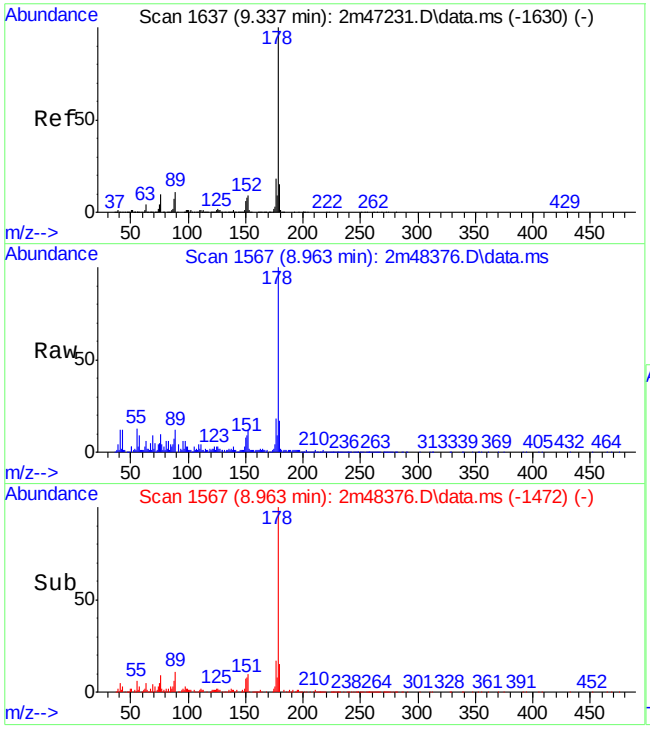
Tgt Ion:178 Resp: 573286

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	44.9
176	19.3	0.0	49.1



9.1.6

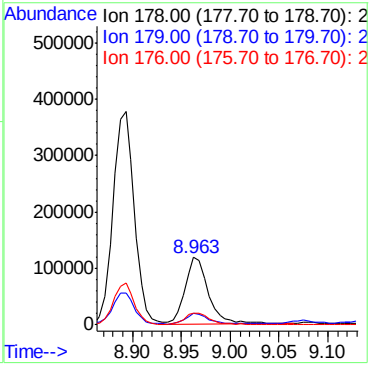
9

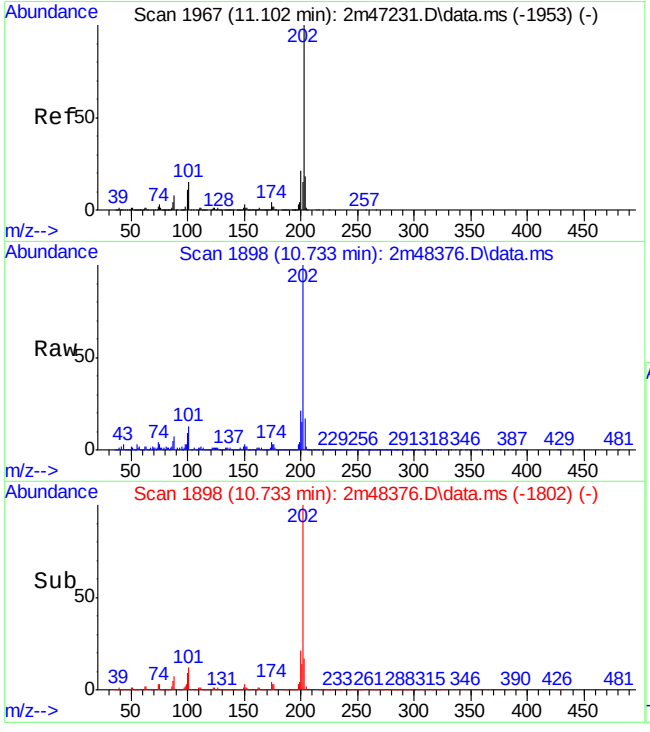


#78
Anthracene
Concen: 4.81 ppb
RT: 8.963 min Scan# 1567
Delta R.T. 0.010 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:178 Resp: 192054

Ion	Ratio	Lower	Upper
178	100		
179	13.6	0.0	44.3
176	17.2	0.0	48.3

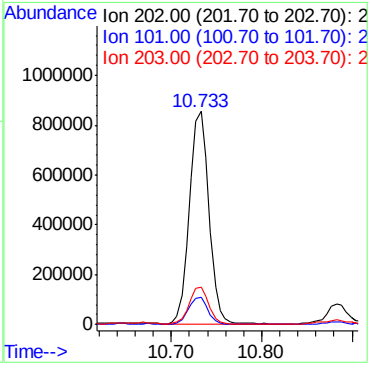


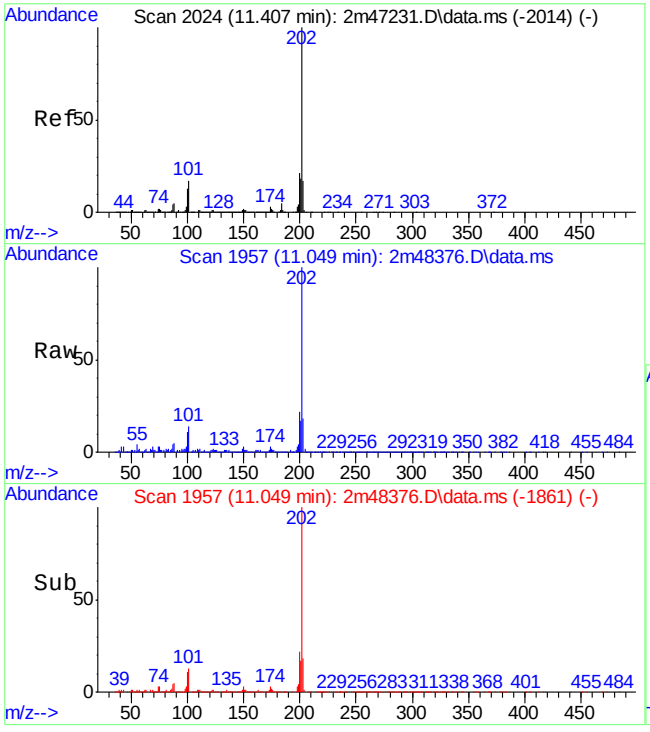


#81
Fluoranthene
Concen: 32.39 ppb
RT: 10.733 min Scan# 1898
Delta R.T. 0.016 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:202 Resp: 1288210

Ion	Ratio	Lower	Upper
202	100		
101	12.4	0.0	43.8
203	17.0	0.0	47.5

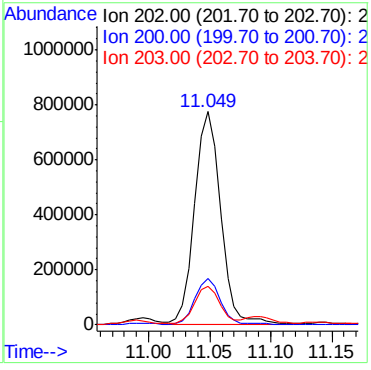


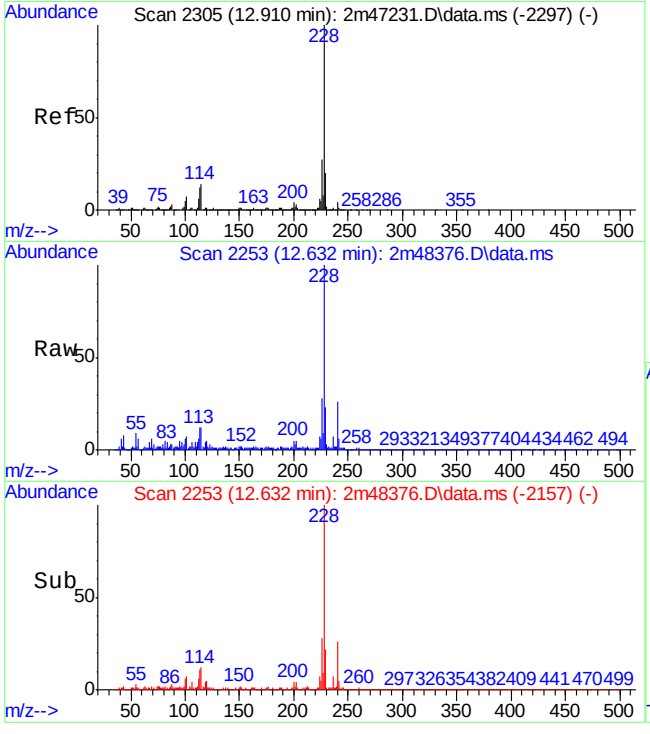


#84
Pyrene
Concen: 25.31 ppb
RT: 11.049 min Scan# 1957
Delta R.T. 0.016 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:202 Resp: 1145237

Ion	Ratio	Lower	Upper
202	100		
200	21.5	0.0	51.3
203	17.5	0.0	47.6

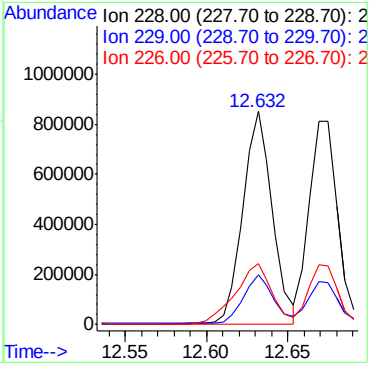


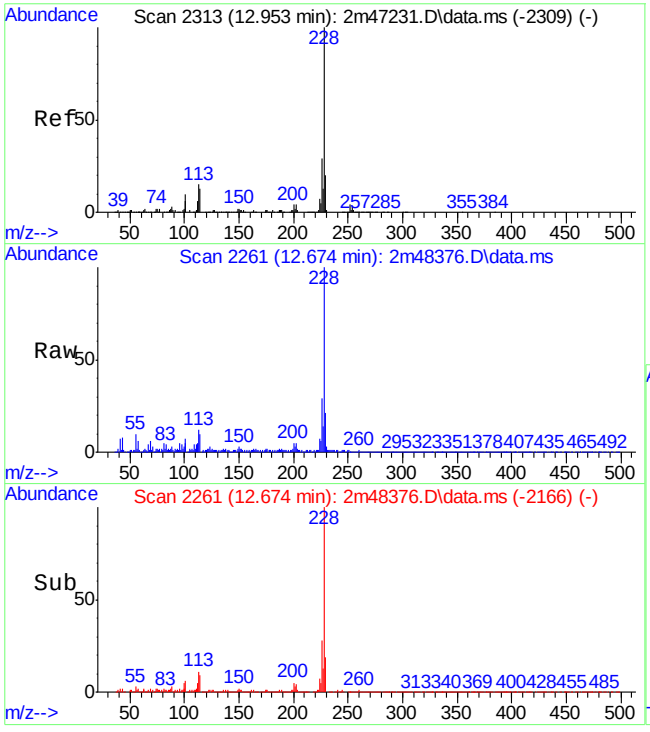


#88
Benzo[a]anthracene
Concen: 24.79 ppb
RT: 12.632 min Scan# 2253
Delta R.T. 0.016 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:228 Resp: 1066892

Ion	Ratio	Lower	Upper
228	100		
229	22.0	0.0	49.3
226	27.9	0.0	56.0

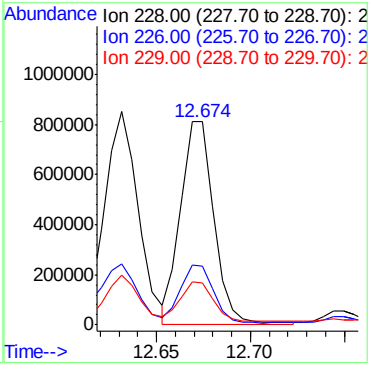


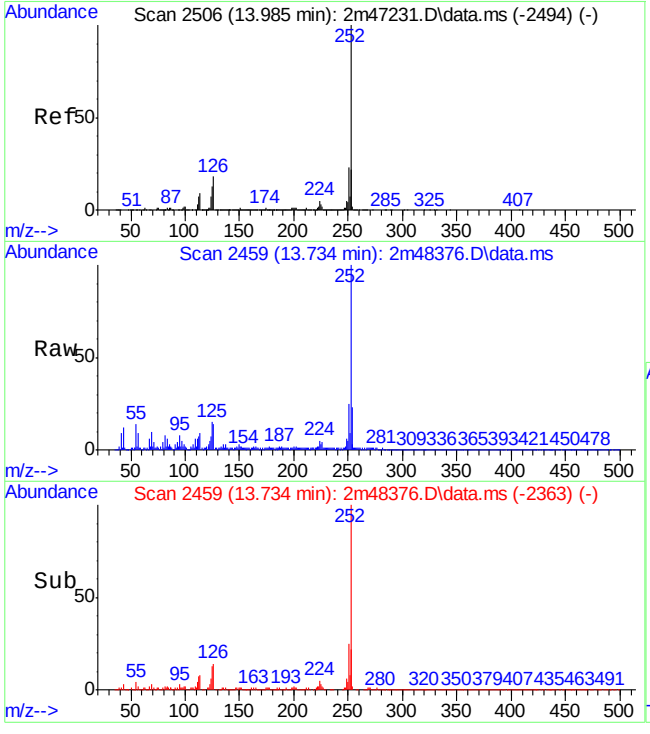


#90
Chrysene
Concen: 23.28 ppb
RT: 12.674 min Scan# 2261
Delta R.T. 0.010 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:228 Resp: 993306

Ion	Ratio	Lower	Upper
228	100		
226	27.7	0.0	57.7
229	18.7	0.0	49.3

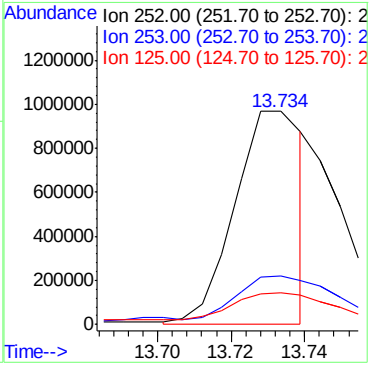




#94
Benzo[b]fluoranthene
Concen: 24.87 ppb m
RT: 13.734 min Scan# 2459
Delta R.T. 0.016 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:252 Resp: 1254144

Ion	Ratio	Lower	Upper
252	100		
253	22.5	0.0	51.6
125	14.8	0.0	40.1



9.1.6

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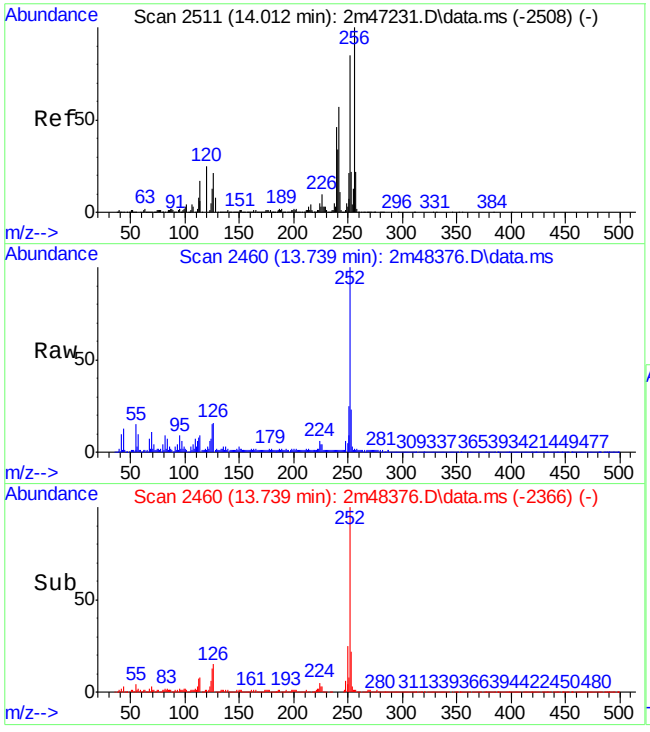
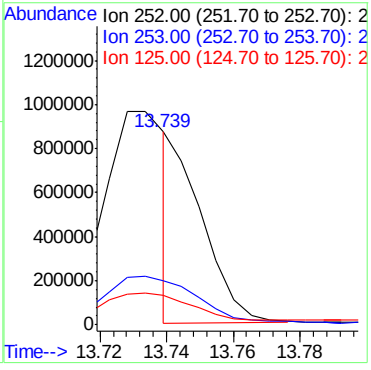
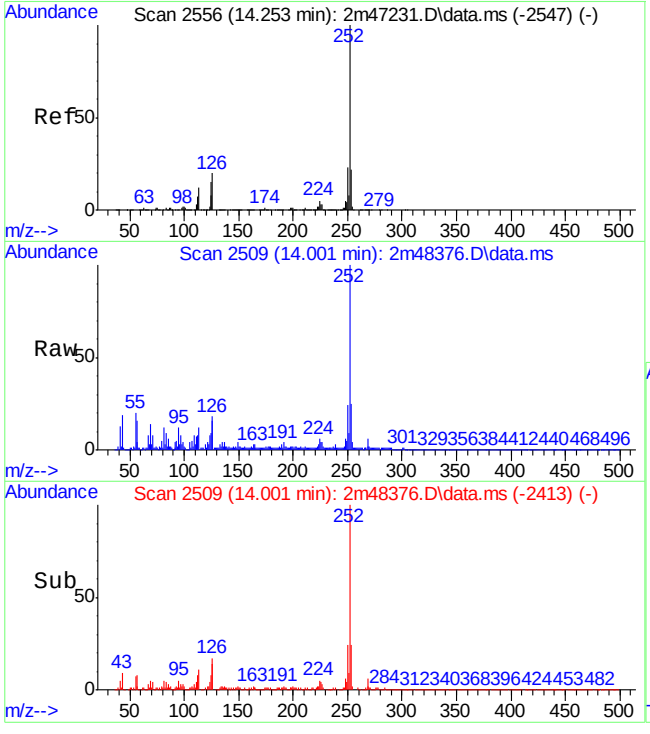


#95
Benzo[k]fluoranthene
Concen: 12.10 ppb m
RT: 13.739 min Scan# 2460
Delta R.T. 0.005 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:252 Resp: 548986

Ion	Ratio	Lower	Upper
252	100		
253	22.7	0.0	52.7
125	15.1	0.0	42.9

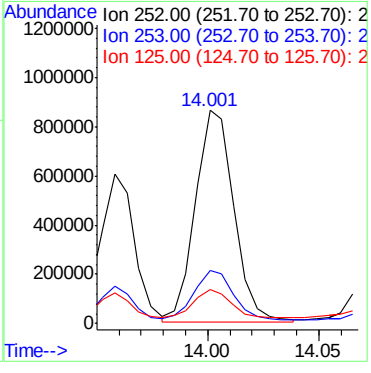




#96
Benzo[a]pyrene
Concen: 24.13 ppb
RT: 14.001 min Scan# 2509
Delta R.T. 0.016 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

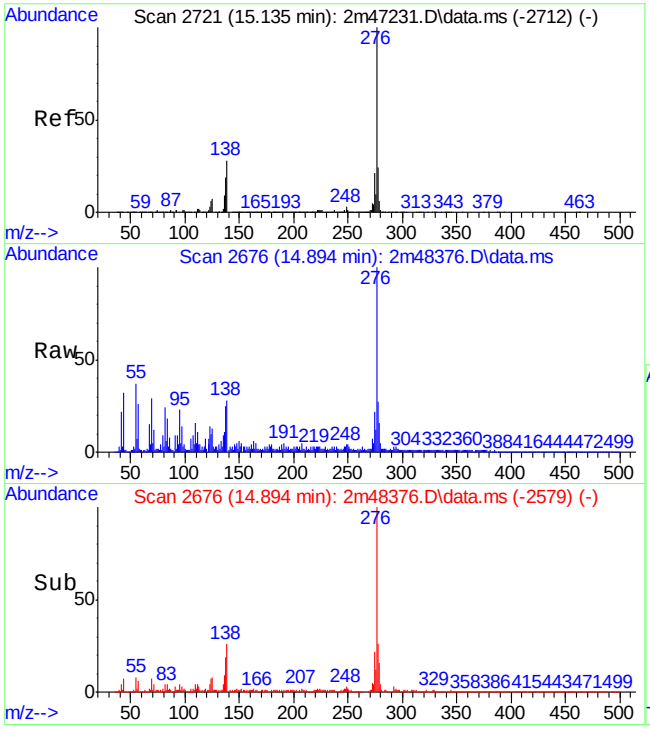
Tgt Ion:252 Resp: 1033432

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	52.4
125	13.3	0.0	42.7



9.1.6

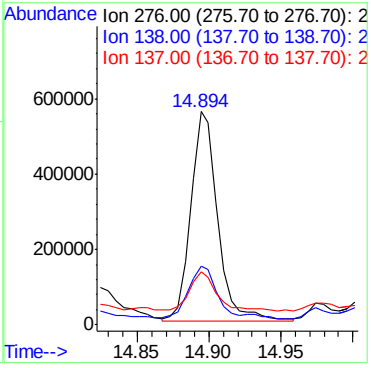
6

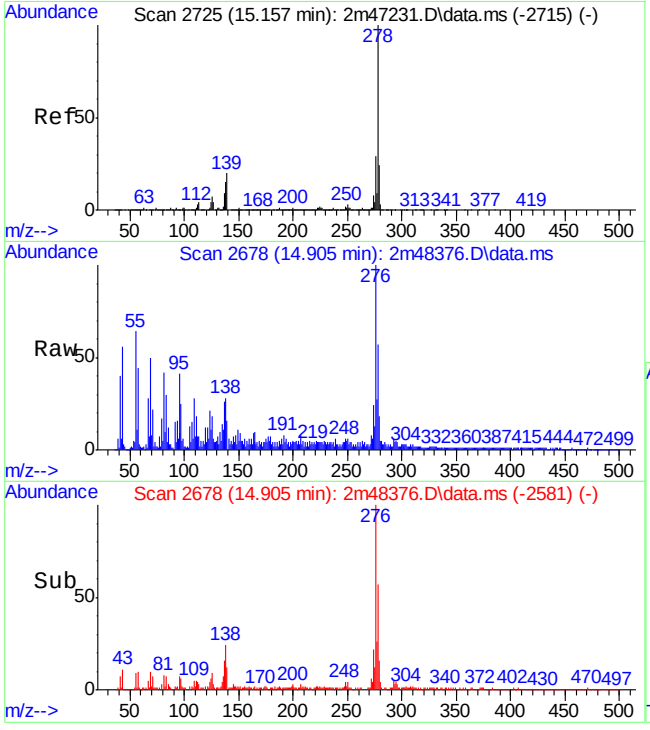


#97
Indeno[1,2,3-cd]pyrene
Concen: 14.71 ppb
RT: 14.894 min Scan# 2676
Delta R.T. 0.021 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:276 Resp: 731434

Ion	Ratio	Lower	Upper
276	100		
138	25.2	0.0	57.6
137	18.6	0.0	48.9

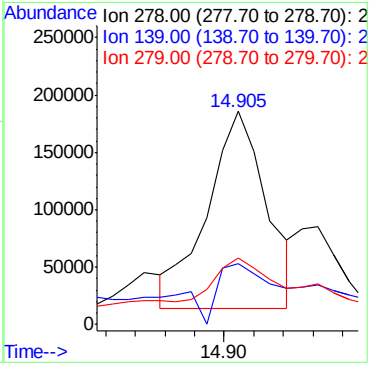


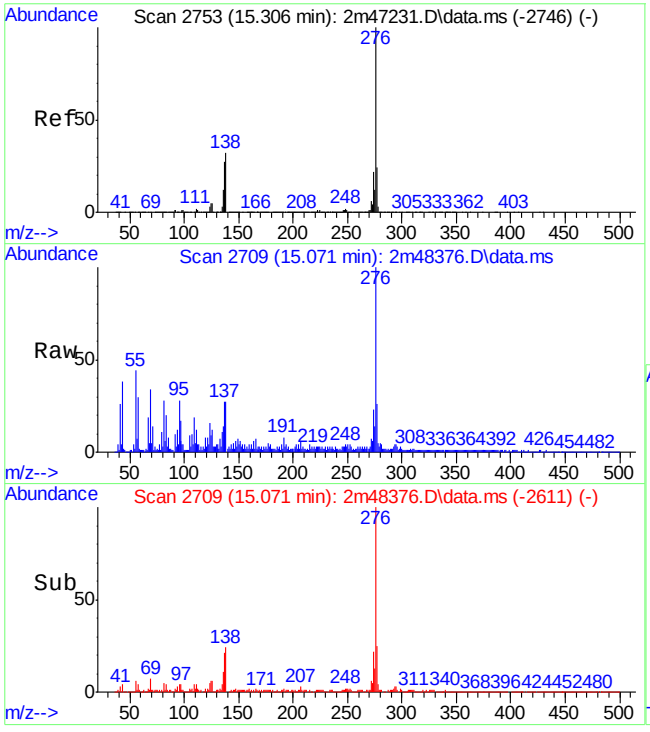


#99
Dibenz[a,h]anthracene
Concen: 5.77 ppb m
RT: 14.905 min Scan# 2678
Delta R.T. 0.021 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:278 Resp: 241249

Ion	Ratio	Lower	Upper
278	100		
139	28.4	0.0	52.4
279	31.2	0.0	54.1

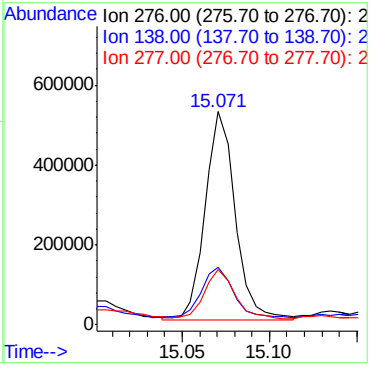




#101
Benzo[g,h,i]perylene
Concen: 14.81 ppb
RT: 15.071 min Scan# 2709
Delta R.T. 0.027 min
Lab File: 2m48376.D
Acq: 8 Dec 2012 7:54 pm

Tgt Ion:276 Resp: 628678

Ion	Ratio	Lower	Upper
276	100		
138	24.1	0.1	60.1
277	23.5	0.0	53.2



9.1.6

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48370.D
Acq On : 8 Dec 2012 5:36 pm
Operator : kristis
Sample : jb22267-7
Misc : op61828,e2m2073,33.7,,,1,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 11 17:52:53 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	282277	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1246579	40.00	ppb	0.00
47) Acenaphthene-d10	6.615	164	729478	40.00	ppb	0.00
69) Phenanthrene-d10	8.845	188	1169383	40.00	ppb	0.00
83) Chrysene-d12	12.637	240	1175230	40.00	ppb	0.00
92) Perylene-d12	14.039	264	1150089	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.502	152	282277	40.00	ppb	0.00
104) Acenaphthene-d10a	6.615	164	729478	40.00	ppb	0.00
106) Chrysene-d12a	12.637	240	1175230	40.00	ppb	0.00
108) Phenanthrene-d10a	8.845	188	1169383	40.00	ppb	0.00
110) Chrysene-d12b	12.637	240	1175230	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.518	112	186802	18.18	ppb	0.02
Spiked Amount 50.000			Recovery = 36.36%			
8) Phenol-d5	2.325	99	285095	20.71	ppb	0.02
Spiked Amount 50.000			Recovery = 41.42%			
25) Nitrobenzene-d5	3.186	82	285352	21.33	ppb	0.00
Spiked Amount 50.000			Recovery = 42.66%			
51) 2-Fluorobiphenyl	5.689	172	601155	25.06	ppb	0.00
Spiked Amount 50.000			Recovery = 50.12%			
73) 2,4,6-Tribromophenol	7.872	330	96835	35.24	ppb	0.00
Spiked Amount 50.000			Recovery = 70.48%			
85) Terphenyl-d14	11.423	244	1137733	47.91	ppb	0.00
Spiked Amount 50.000			Recovery = 95.82%			

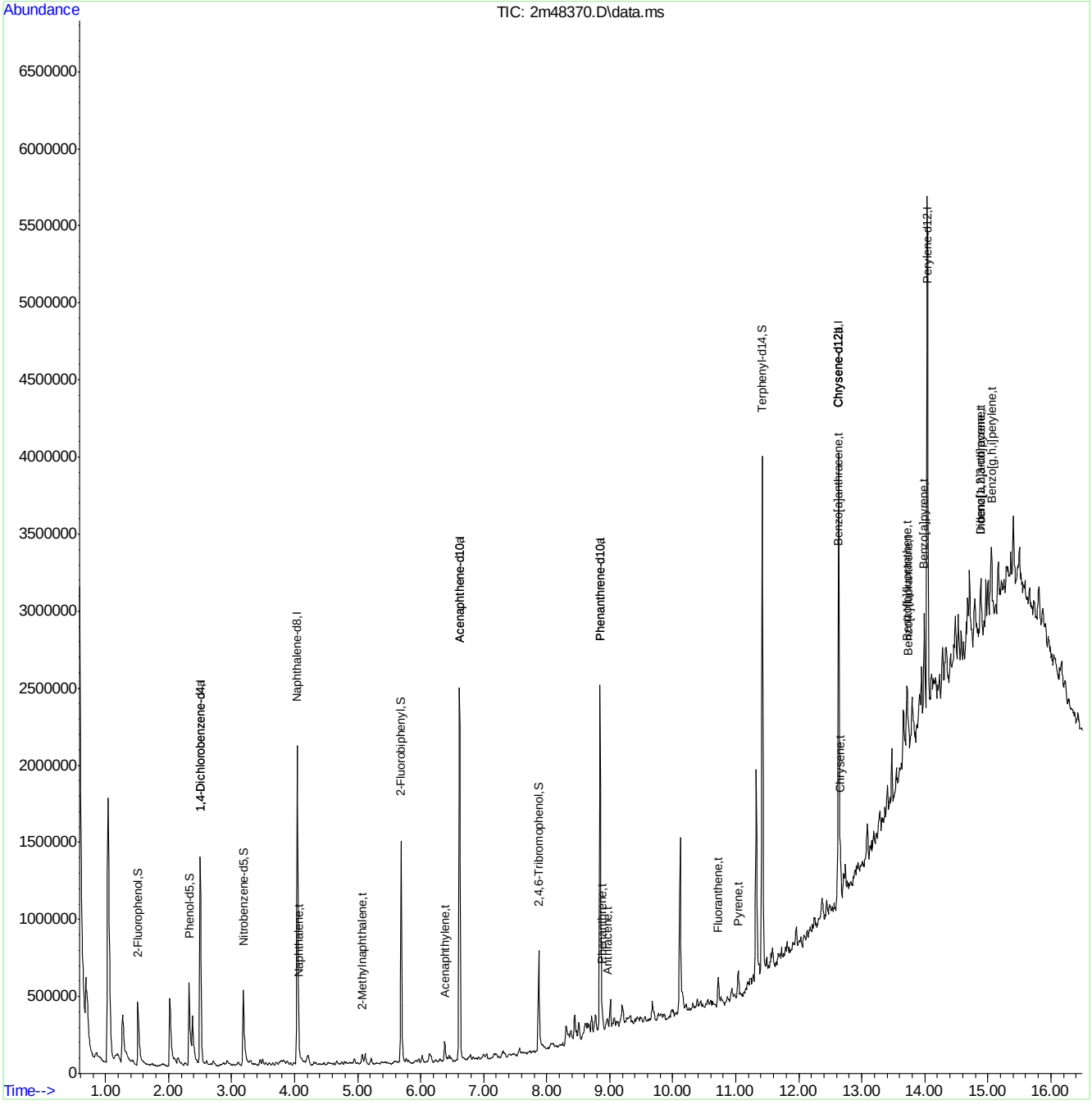
Target Compounds						Qvalue
38) Naphthalene	4.069	128	25521	0.74	ppb	90
44) 2-Methylnaphthalene	5.074	141	19645	0.92	ppb	93
56) Acenaphthylene	6.379	152	98360	2.79	ppb	99
77) Phenanthrene	8.883	178	66174	1.85	ppb	99
78) Anthracene	8.963	178	45913	1.29	ppb	95
81) Fluoranthene	10.723	202	99998	2.83	ppb	96
84) Pyrene	11.038	202	97166	2.56	ppb	98
88) Benzo[a]anthracene	12.621	228	106803	2.95	ppb	94
90) Chrysene	12.659	228	130898	3.65	ppb	96
94) Benzo[b]fluoranthene	13.718	252	239013m	5.97	ppb	
95) Benzo[k]fluoranthene	13.734	252	60636m	1.68	ppb	
96) Benzo[a]pyrene	13.991	252	143081	4.21	ppb	99
97) Indeno[1,2,3-cd]pyrene	14.884	276	152154	3.85	ppb	97
99) Dibenz[a,h]anthracene	14.895	278	41983m	1.27	ppb	
101) Benzo[g,h,i]perylene	15.060	276	152629	4.53	ppb	93

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

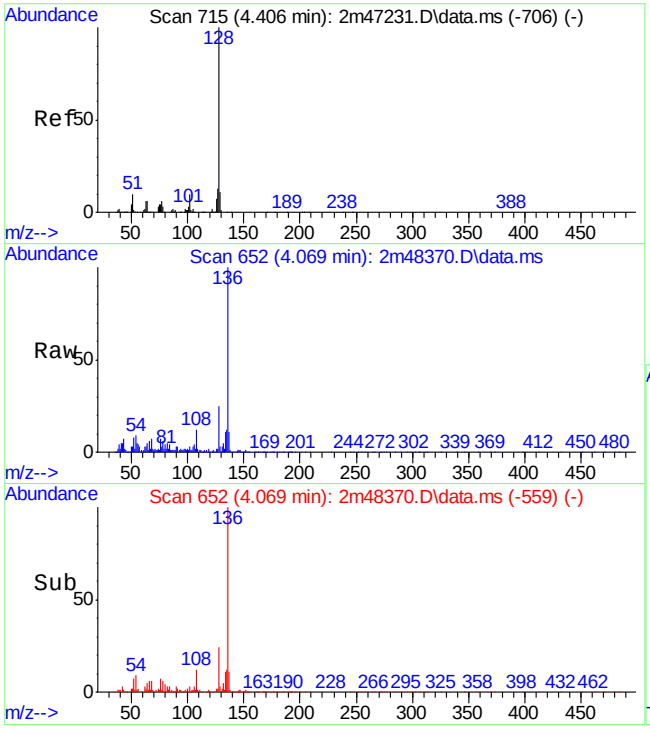
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48370.D
Acq On : 8 Dec 2012 5:36 pm
Operator : kristis
Sample : jb22267-7
Misc : op61828,e2m2073,33.7,,,1,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 11 17:52:53 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration



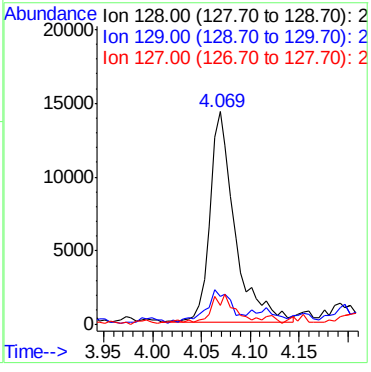
M2M2034.M Tue Dec 11 17:53:03 2012 MS2M Page: 2

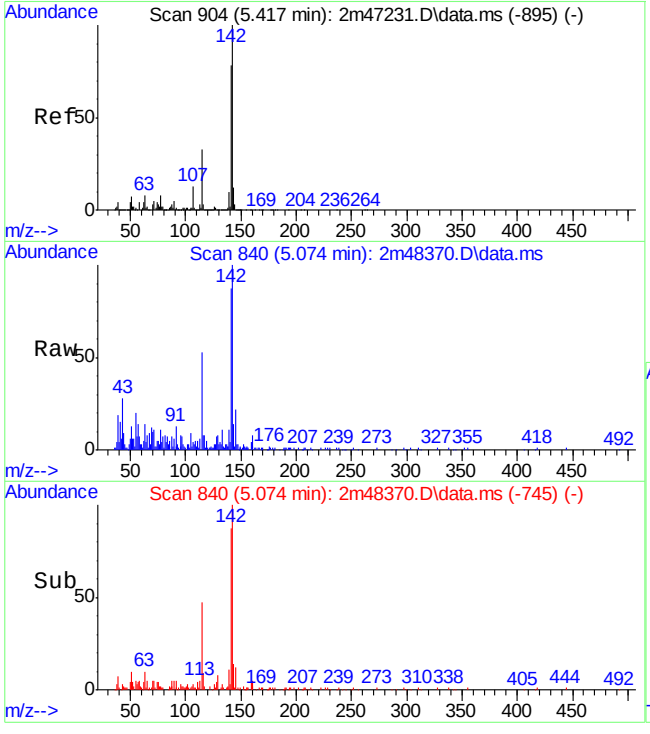


#38
Naphthalene
Concen: 0.74 ppb
RT: 4.069 min Scan# 652
Delta R.T. 0.000 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:128 Resp: 25521

Ion	Ratio	Lower	Upper
128	100		
129	10.6	0.0	40.9
127	6.7	0.0	43.3

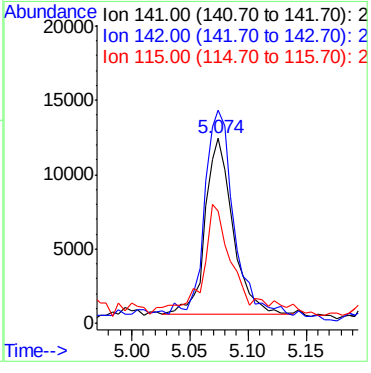




#44
2-Methylnaphthalene
Concen: 0.92 ppb
RT: 5.074 min Scan# 840
Delta R.T. 0.011 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:141 Resp: 19645

Ion	Ratio	Lower	Upper
141	100		
142	115.4	81.7	141.7
115	53.5	12.0	72.0



9.1.7

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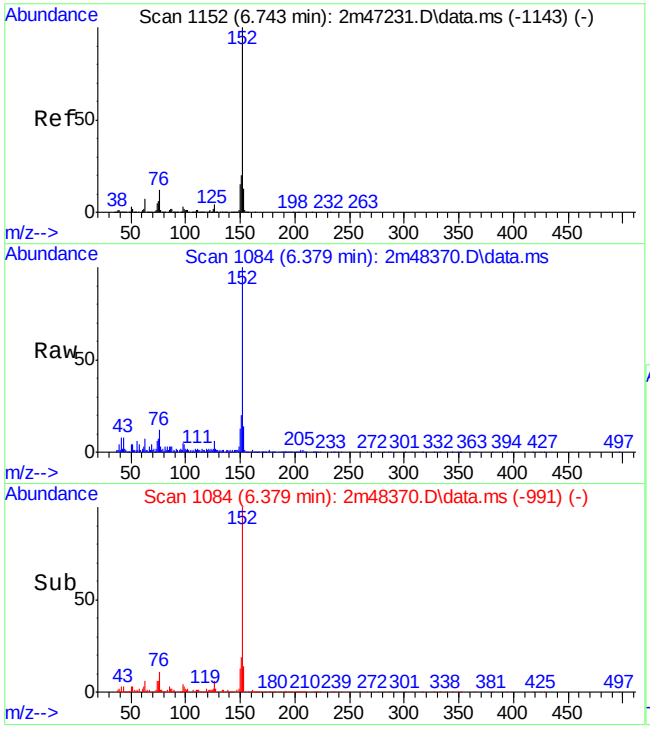
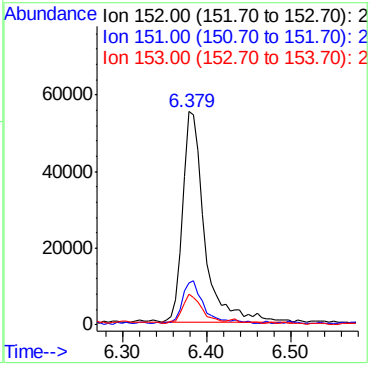
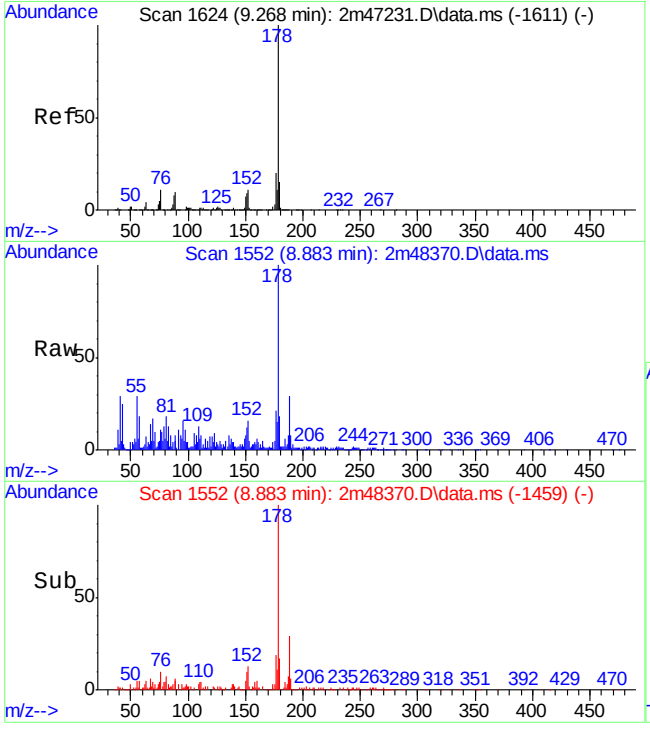


#56
Acenaphthylene
Concen: 2.79 ppb
RT: 6.379 min Scan# 1084
Delta R.T. 0.000 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:152 Resp: 98360

Ion	Ratio	Lower	Upper
152	100		
151	19.0	0.0	49.4
153	13.8	0.0	43.0

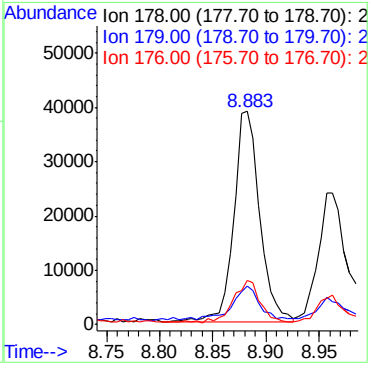




#77
Phenanthrene
Concen: 1.85 ppb
RT: 8.883 min Scan# 1552
Delta R.T. 0.000 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:178 Resp: 66174

Ion	Ratio	Lower	Upper
178	100		
179	15.7	0.0	44.9
176	19.6	0.0	49.1



9.1.7

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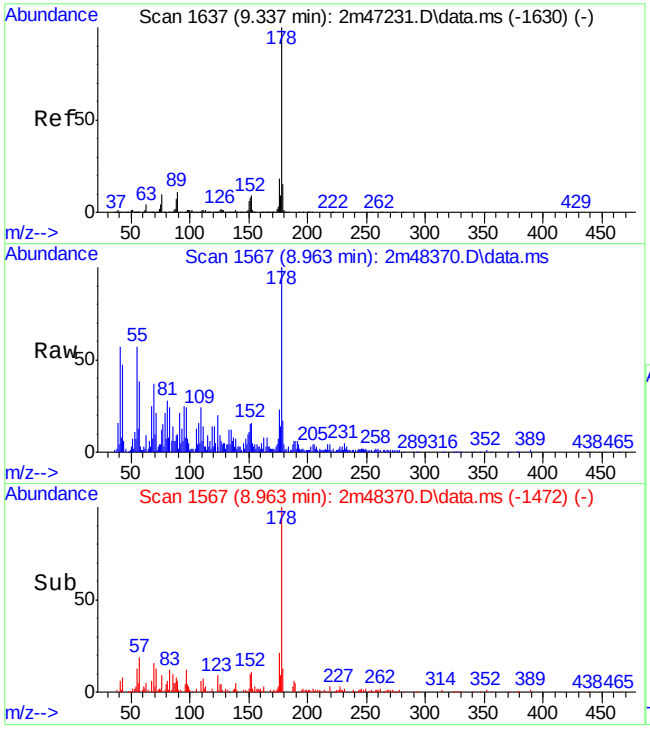
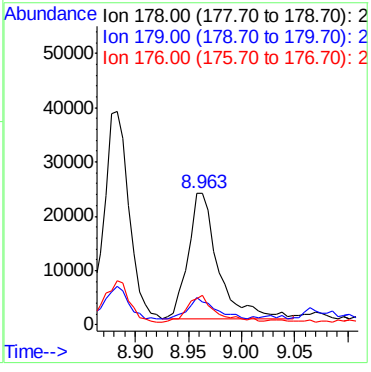
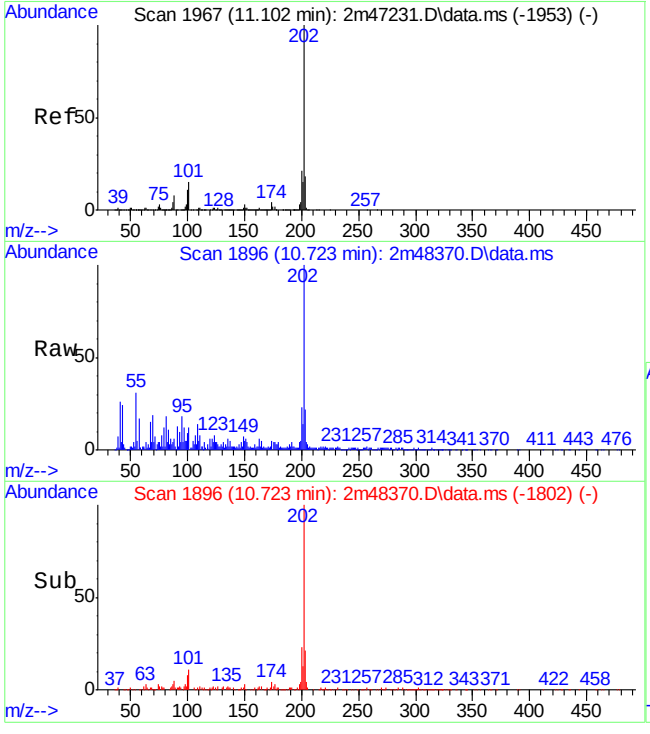


#78
Anthracene
Concen: 1.29 ppb
RT: 8.963 min Scan# 1567
Delta R.T. 0.011 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:178 Resp: 45913

Ion	Ratio	Lower	Upper
178	100		
179	12.8	0.0	44.3
176	21.3	0.0	48.3

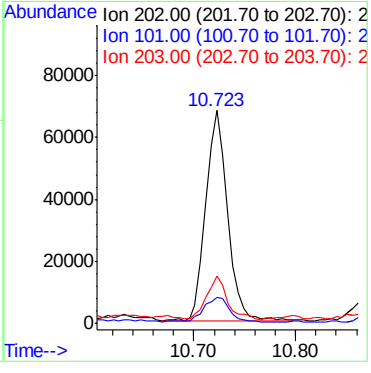


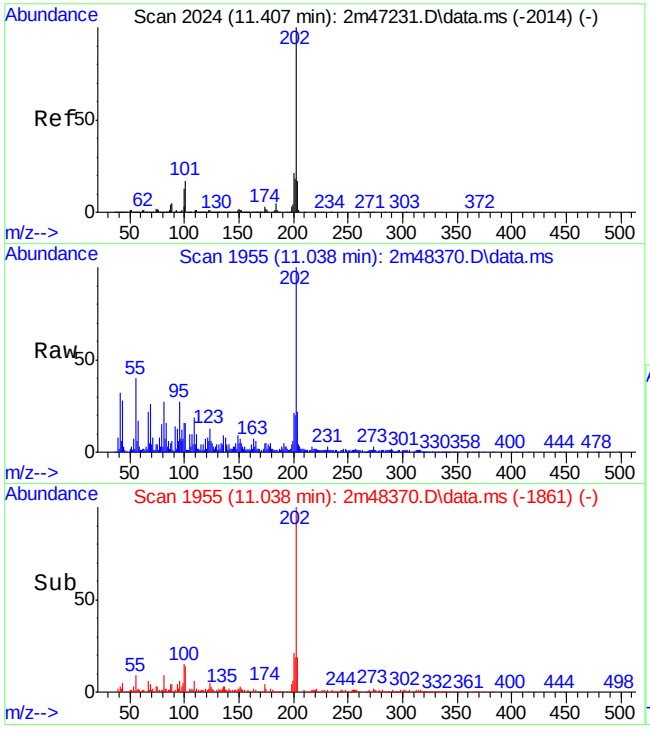


#81
Fluoranthene
Concen: 2.83 ppb
RT: 10.723 min Scan# 1896
Delta R.T. 0.005 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:202 Resp: 99998

Ion	Ratio	Lower	Upper
202	100		
101	11.7	0.0	43.8
203	18.7	0.0	47.5

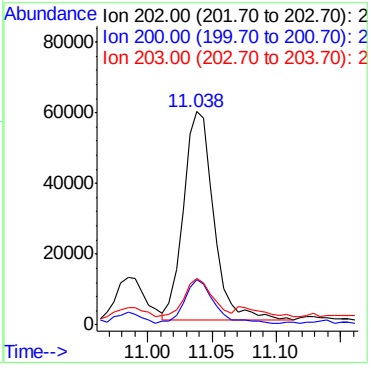


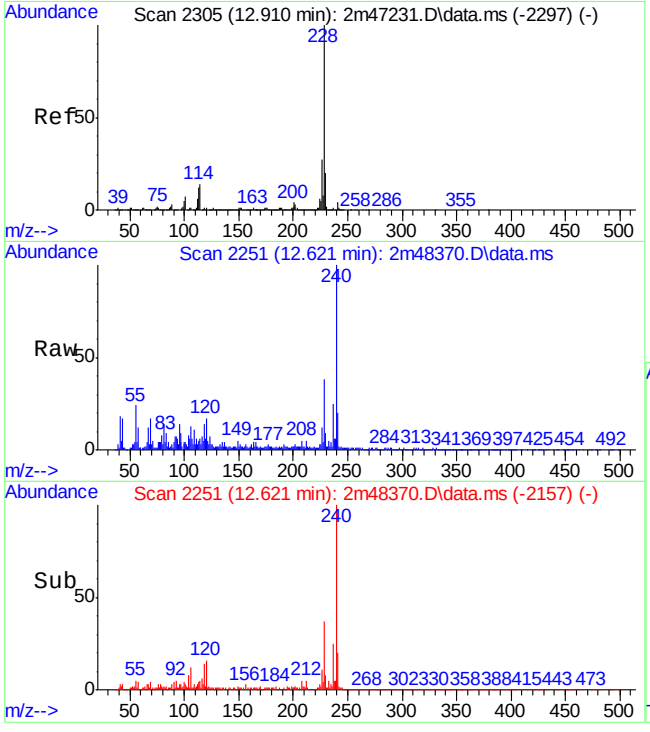


#84
Pyrene
Concen: 2.56 ppb
RT: 11.038 min Scan# 1955
Delta R.T. 0.005 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:202 Resp: 97166

Ion	Ratio	Lower	Upper
202	100		
200	20.2	0.0	51.3
203	18.3	0.0	47.6

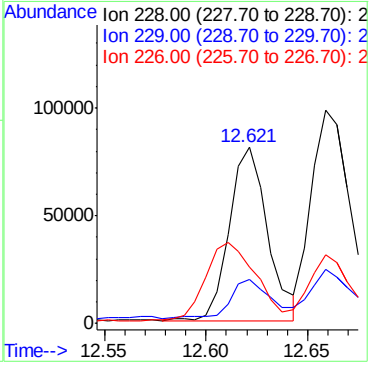




#88
Benzo[a]anthracene
Concen: 2.95 ppb
RT: 12.621 min Scan# 2251
Delta R.T. 0.005 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

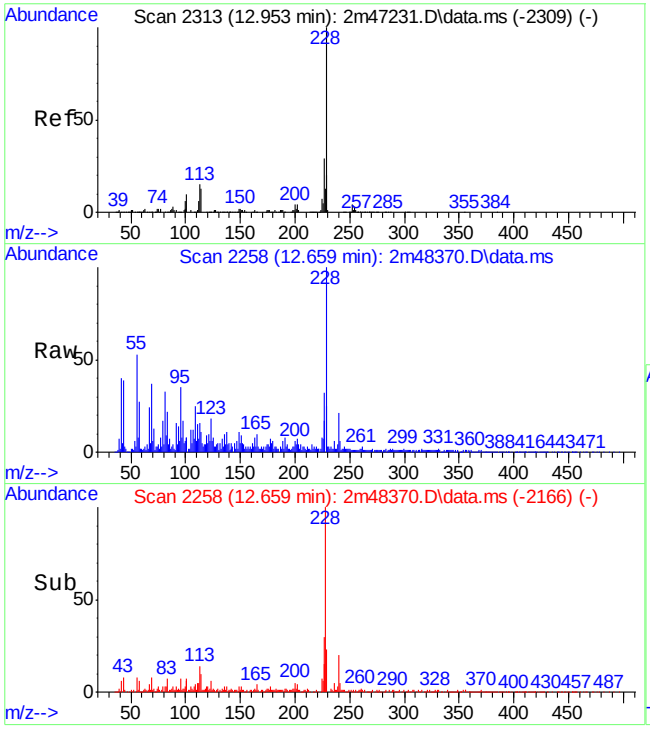
Tgt Ion:228 Resp: 106803

Ion	Ratio	Lower	Upper
228	100		
229	20.7	0.0	49.3
226	29.8	0.0	56.0



9.1.7

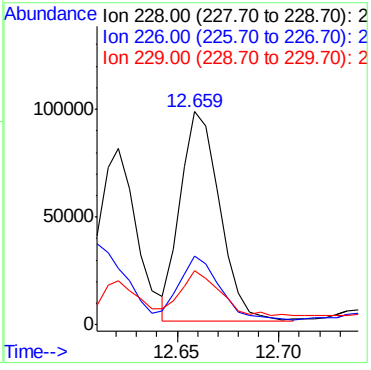
9

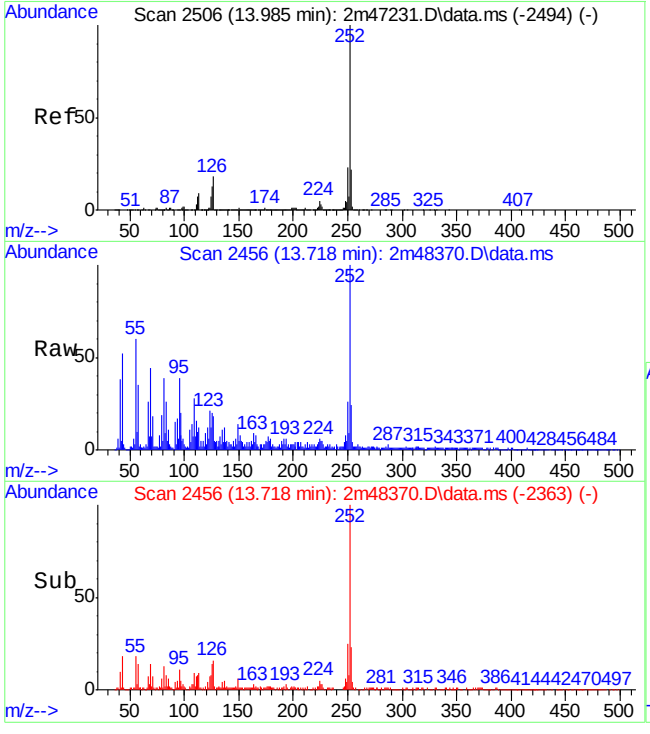


#90
Chrysene
Concen: 3.65 ppb
RT: 12.659 min Scan# 2258
Delta R.T. -0.005 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:228 Resp: 130898

Ion	Ratio	Lower	Upper
228	100		
226	30.0	0.0	57.7
229	21.1	0.0	49.3

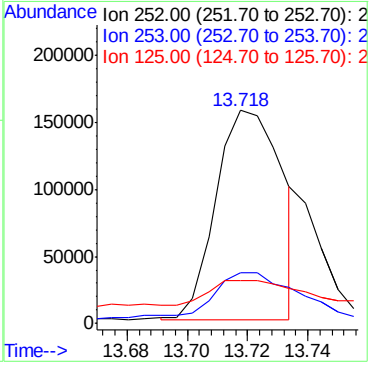


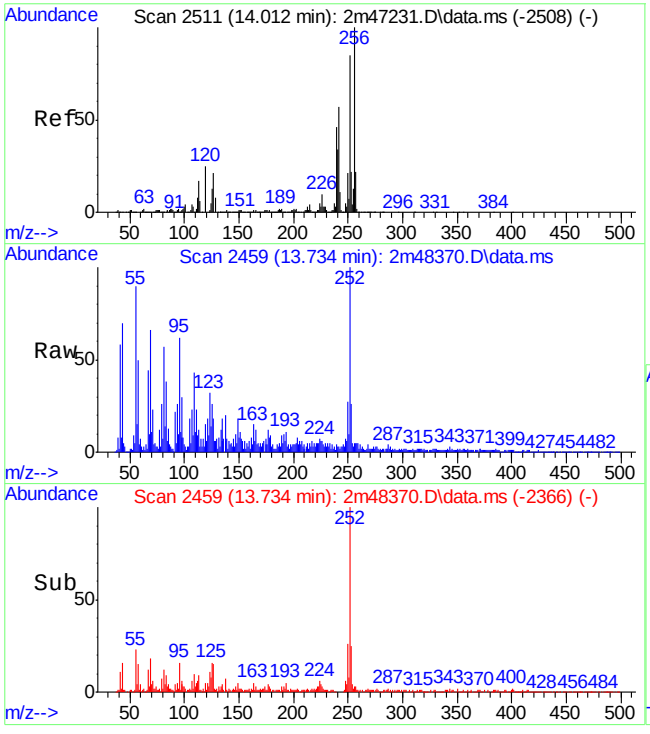


#94
Benzo[b]fluoranthene
Concen: 5.97 ppb m
RT: 13.718 min Scan# 2456
Delta R.T. 0.000 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:252 Resp: 239013

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	51.6
125	20.2	0.0	40.1

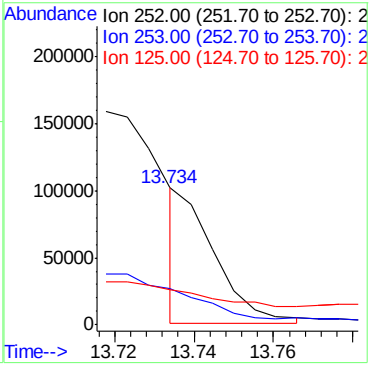


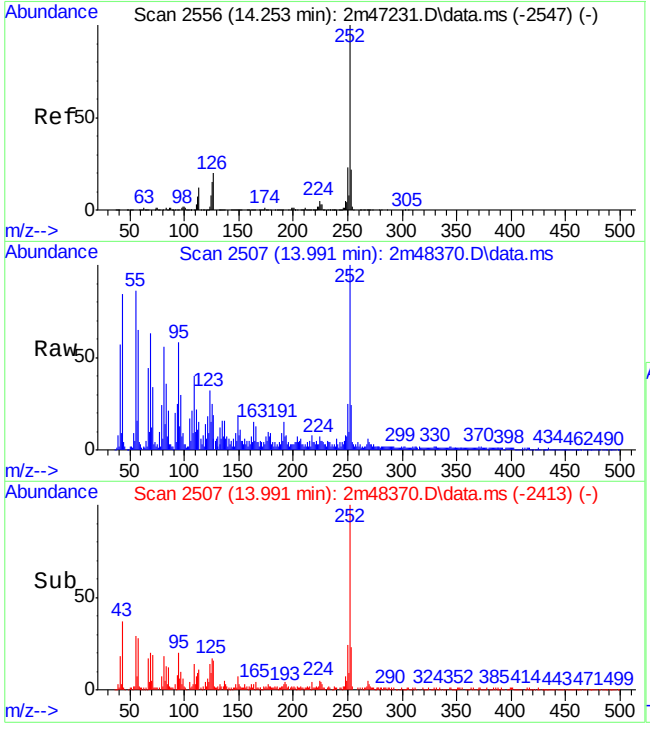


#95
Benzo[k]fluoranthene
Concen: 1.68 ppb m
RT: 13.734 min Scan# 2459
Delta R.T. 0.000 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:252 Resp: 60636

Ion	Ratio	Lower	Upper
252	100		
253	26.2	0.0	52.7
125	25.7	0.0	42.9

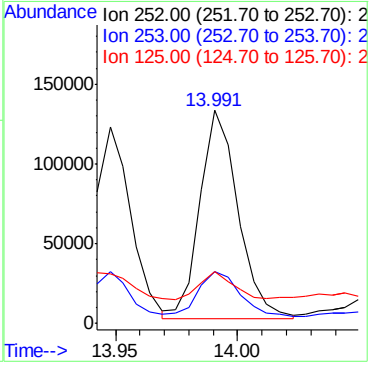




#96
Benzo[a]pyrene
Concen: 4.21 ppb
RT: 13.991 min Scan# 2507
Delta R.T. 0.005 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:252 Resp: 143081

Ion	Ratio	Lower	Upper
252	100		
253	21.8	0.0	52.4
125	13.1	0.0	42.7



9.1.7

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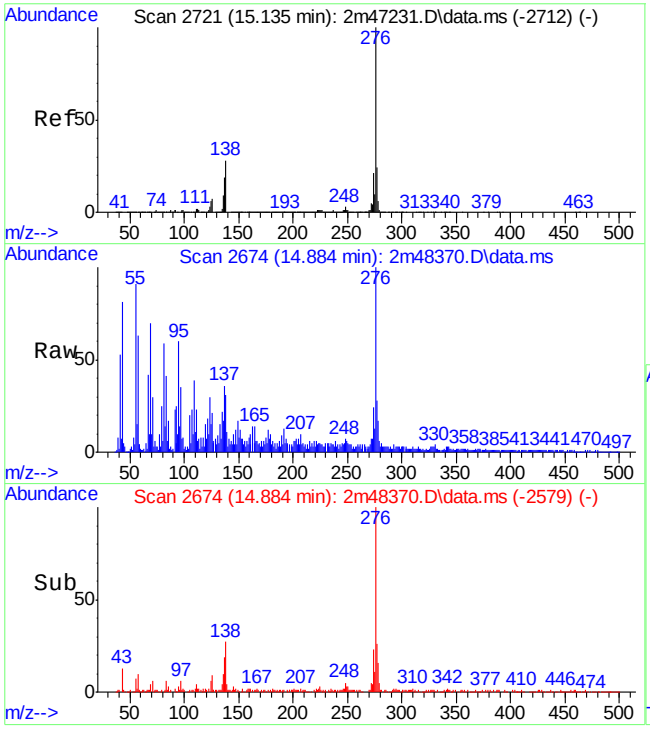
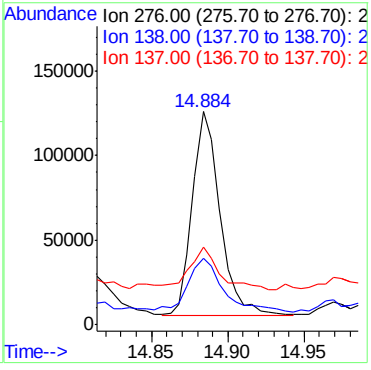
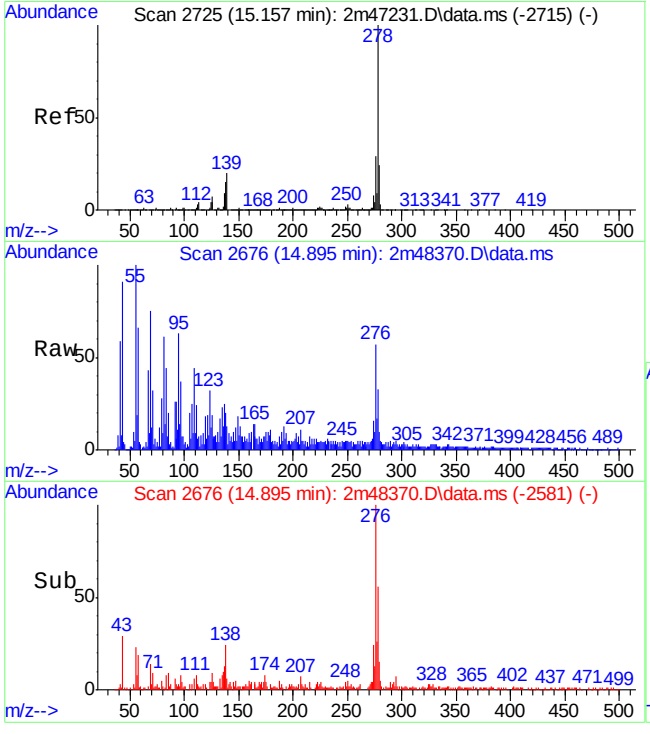


#97
Indeno[1,2,3-cd]pyrene
Concen: 3.85 ppb
RT: 14.884 min Scan# 2674
Delta R.T. 0.011 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:276 Resp: 152154

Ion	Ratio	Lower	Upper
276	100		
138	25.3	0.0	57.6
137	19.0	0.0	48.9

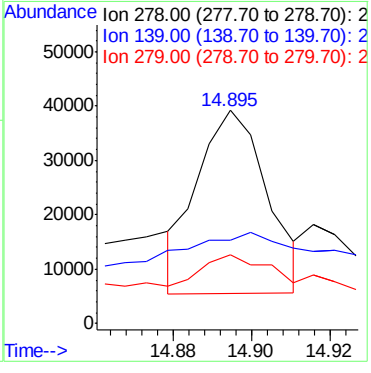


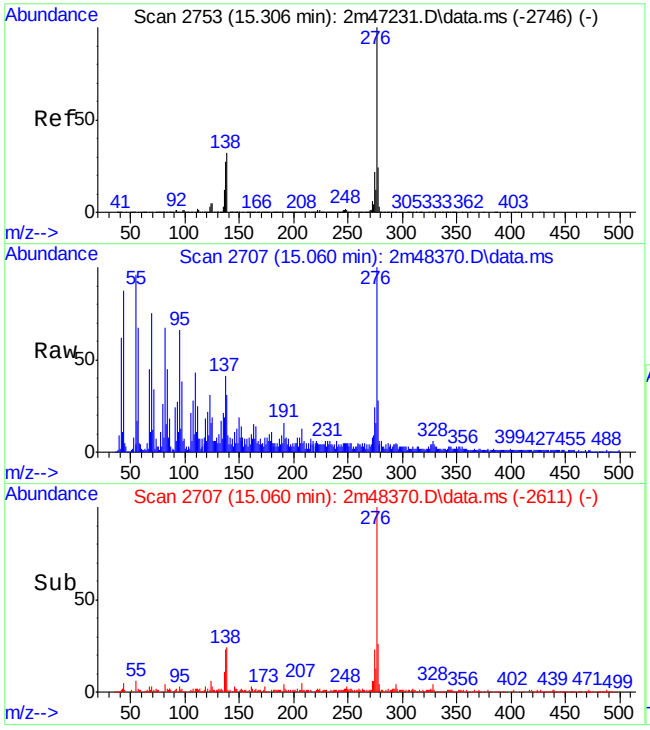


#99
Dibenz[a,h]anthracene
Concen: 1.27 ppb m
RT: 14.895 min Scan# 2676
Delta R.T. 0.011 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:278 Resp: 41983

Ion	Ratio	Lower	Upper
278	100		
139	39.0	0.0	52.4
279	32.0	0.0	54.1

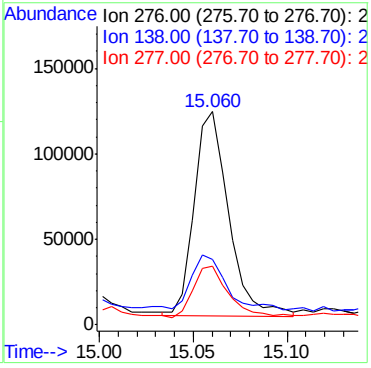




#101
Benzo[g,h,i]perylene
Concen: 4.53 ppb
RT: 15.060 min Scan# 2707
Delta R.T. 0.016 min
Lab File: 2m48370.D
Acq: 8 Dec 2012 5:36 pm

Tgt Ion:276 Resp: 152629

Ion	Ratio	Lower	Upper
276	100		
138	24.2	0.1	60.1
277	24.7	0.0	53.2



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48371.D
Acq On : 8 Dec 2012 5:59 pm
Operator : kristis
Sample : jb22267-8
Misc : op61828,e2m2073,30.7,,,1,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 11 17:54:16 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	228677	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1019274	40.00	ppb	0.00
47) Acenaphthene-d10	6.615	164	604233	40.00	ppb	0.00
69) Phenanthrene-d10	8.850	188	977697	40.00	ppb	0.00
83) Chrysene-d12	12.637	240	1028242	40.00	ppb	0.00
92) Perylene-d12	14.049	264	1037222	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.502	152	228677	40.00	ppb	0.00
104) Acenaphthene-d10a	6.615	164	604233	40.00	ppb	0.00
106) Chrysene-d12a	12.637	240	1028242	40.00	ppb	0.00
108) Phenanthrene-d10a	8.850	188	977697	40.00	ppb	0.00
110) Chrysene-d12b	12.637	240	1028242	40.00	ppb	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	173273	20.82	ppb	0.01
Spiked Amount 50.000			Recovery	=	41.64%	
8) Phenol-d5	2.325	99	248929	22.32	ppb	0.02
Spiked Amount 50.000			Recovery	=	44.64%	
25) Nitrobenzene-d5	3.186	82	230521	21.08	ppb	0.00
Spiked Amount 50.000			Recovery	=	42.16%	
51) 2-Fluorobiphenyl	5.689	172	481756	24.25	ppb	0.00
Spiked Amount 50.000			Recovery	=	48.50%	
73) 2,4,6-Tribromophenol	7.872	330	95963	41.77	ppb	0.00
Spiked Amount 50.000			Recovery	=	83.54%	
85) Terphenyl-d14	11.423	244	836618	40.26	ppb	0.00
Spiked Amount 50.000			Recovery	=	80.52%	
Target Compounds						Qvalue
38) Naphthalene	4.069	128	247364	8.72	ppb	98
44) 2-Methylnaphthalene	5.064	141	181266	10.42	ppb	90
56) Acenaphthylene	6.379	152	142483	4.88	ppb	98
59) Acenaphthene	6.663	153	34420	1.83	ppb	89
66) Fluorene	7.438	166	62237	3.06	ppb	97
77) Phenanthrene	8.882	178	404143	13.50	ppb	98
78) Anthracene	8.957	178	167253	5.64	ppb	98
81) Fluoranthene	10.722	202	378253	12.81	ppb	97
84) Pyrene	11.038	202	395398	11.89	ppb	99
88) Benzo[a]anthracene	12.621	228	316740	10.01	ppb	91
90) Chrysene	12.664	228	357653	11.41	ppb	97
94) Benzo[b]fluoranthene	13.723	252	365283m	10.12	ppb	
95) Benzo[k]fluoranthene	13.728	252	252578m	7.77	ppb	
96) Benzo[a]pyrene	13.996	252	353557	11.53	ppb	99
97) Indeno[1,2,3-cd]pyrene	14.889	276	323768	9.09	ppb	94
99) Dibenz[a,h]anthracene	14.900	278	118218m	3.95	ppb	
101) Benzo[g,h,i]perylene	15.066	276	330879	10.88	ppb	93

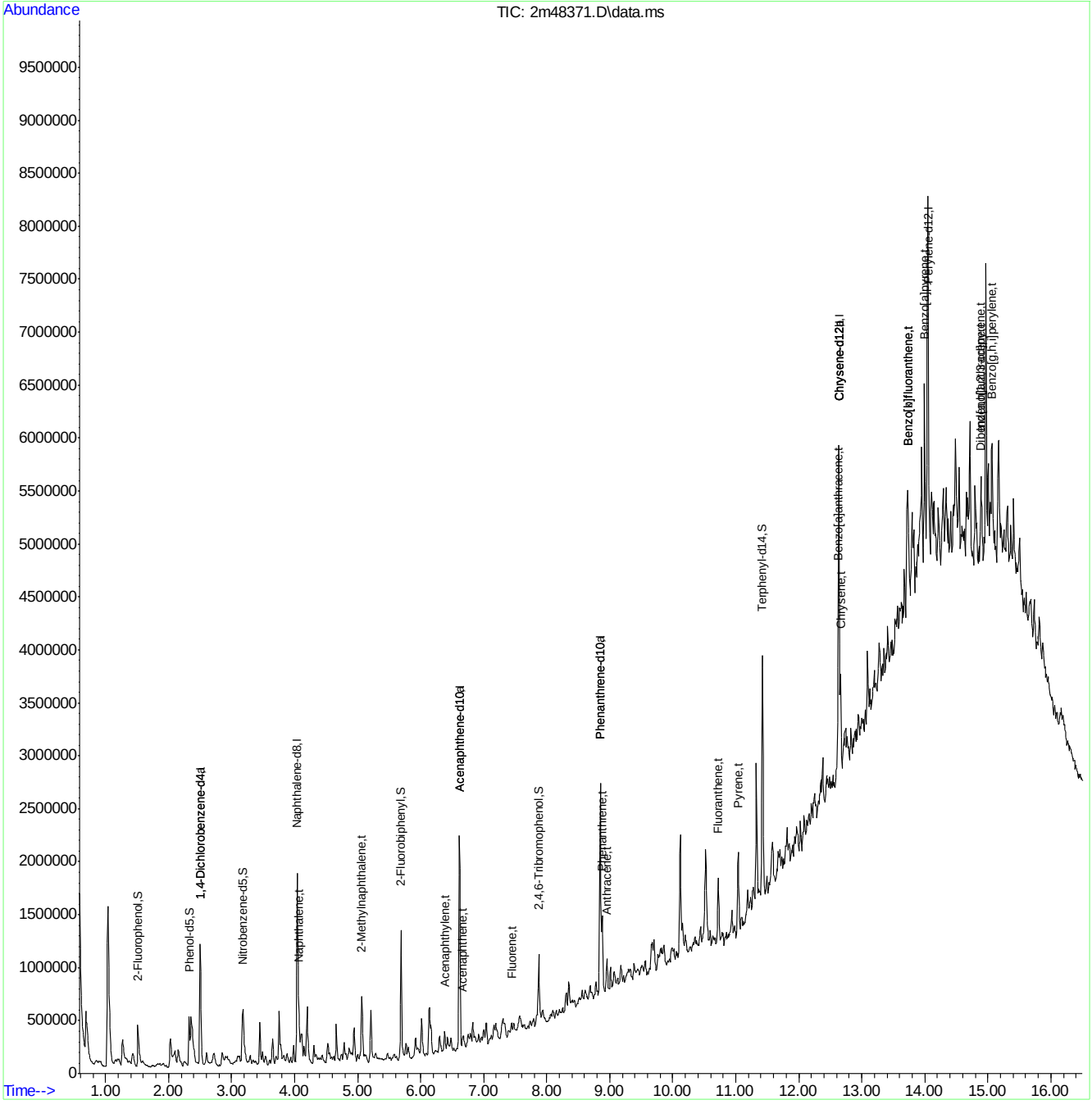
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.8
9

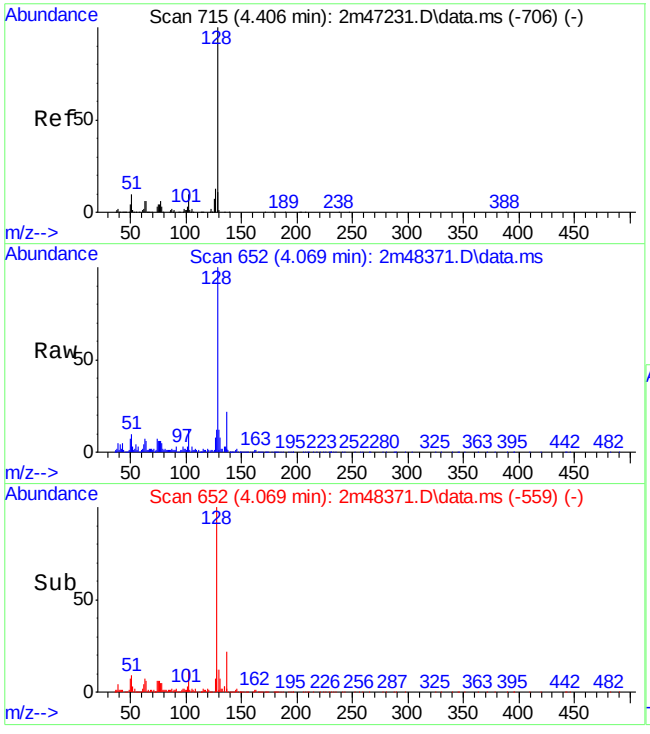
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48371.D
Acq On : 8 Dec 2012 5:59 pm
Operator : kristis
Sample : jb22267-8
Misc : op61828,e2m2073,30.7,,,1,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 11 17:54:16 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration



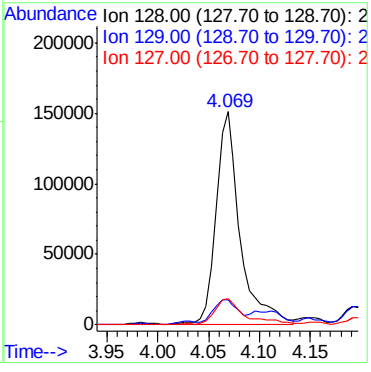
M2M2034.M Tue Dec 11 17:54:25 2012 MS2M Page: 2

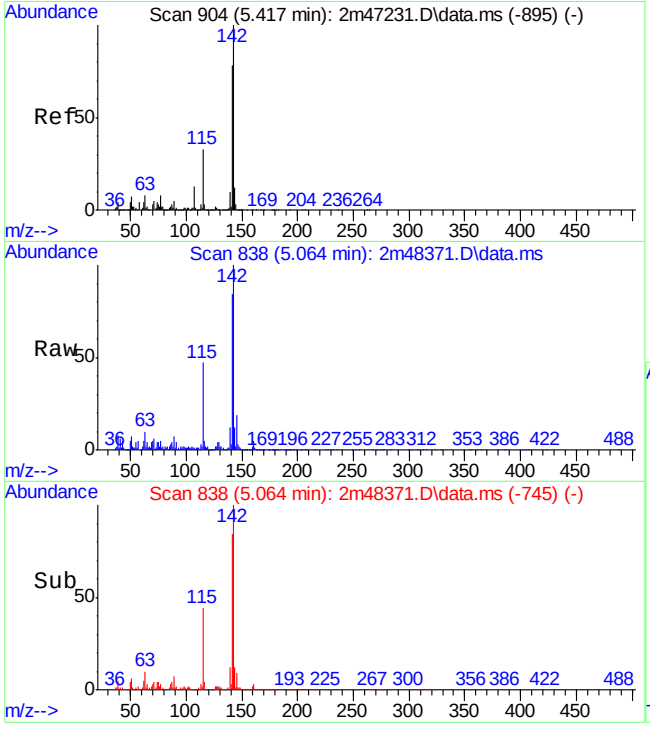


#38
Naphthalene
Concen: 8.72 ppb
RT: 4.069 min Scan# 652
Delta R.T. -0.000 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:128 Resp: 247364

Ion	Ratio	Lower	Upper
128	100		
129	10.8	0.0	40.9
127	12.2	0.0	43.3

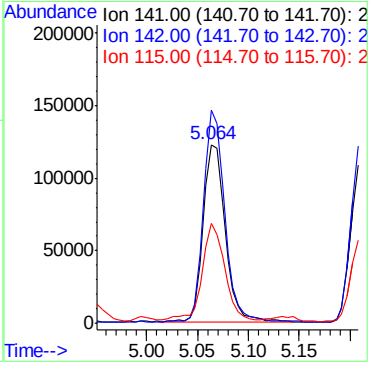


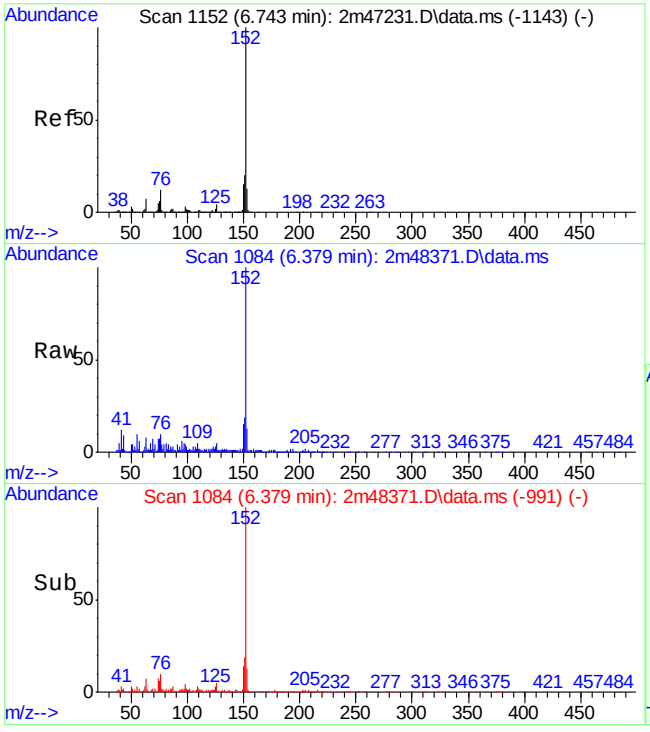


#44
2-Methylnaphthalene
Concen: 10.42 ppb
RT: 5.064 min Scan# 838
Delta R.T. -0.000 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:141 Resp: 181266

Ion	Ratio	Lower	Upper
141	100		
142	119.3	81.7	141.7
115	53.6	12.0	72.0

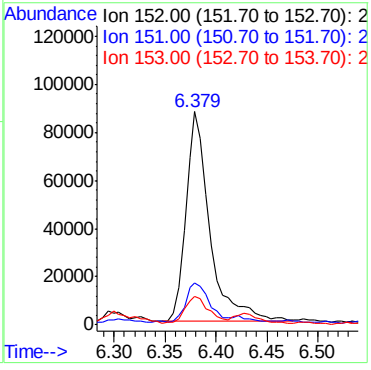


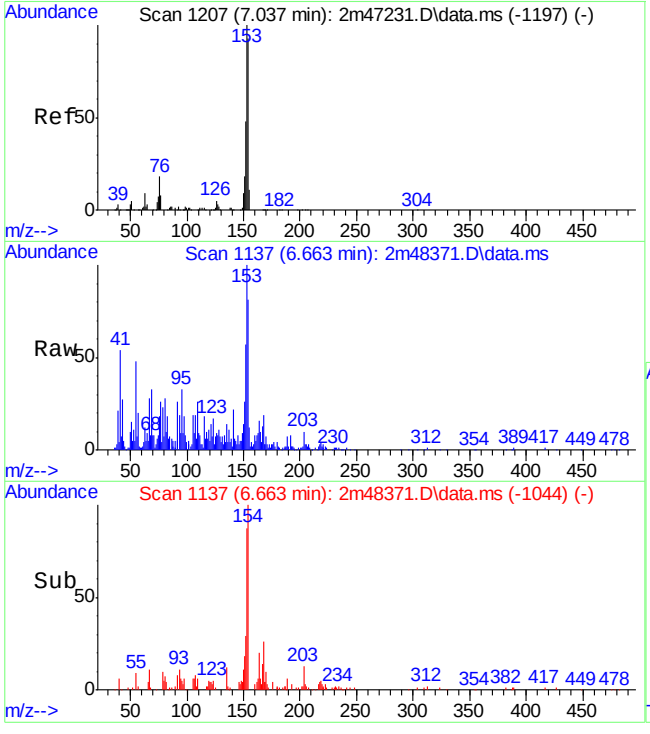


#56
Acenaphthylene
Concen: 4.88 ppb
RT: 6.379 min Scan# 1084
Delta R.T. -0.000 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:152 Resp: 142483

Ion	Ratio	Lower	Upper
152	100		
151	18.1	0.0	49.4
153	12.9	0.0	43.0

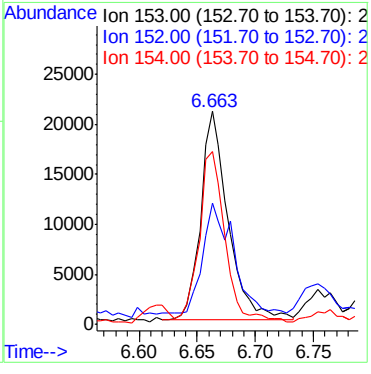




#59
Acenaphthene
Concen: 1.83 ppb
RT: 6.663 min Scan# 1137
Delta R.T. -0.000 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:153 Resp: 34420

Ion	Ratio	Lower	Upper
153	100		
152	52.1	15.8	75.8
154	78.1	59.7	119.7



9.1.8

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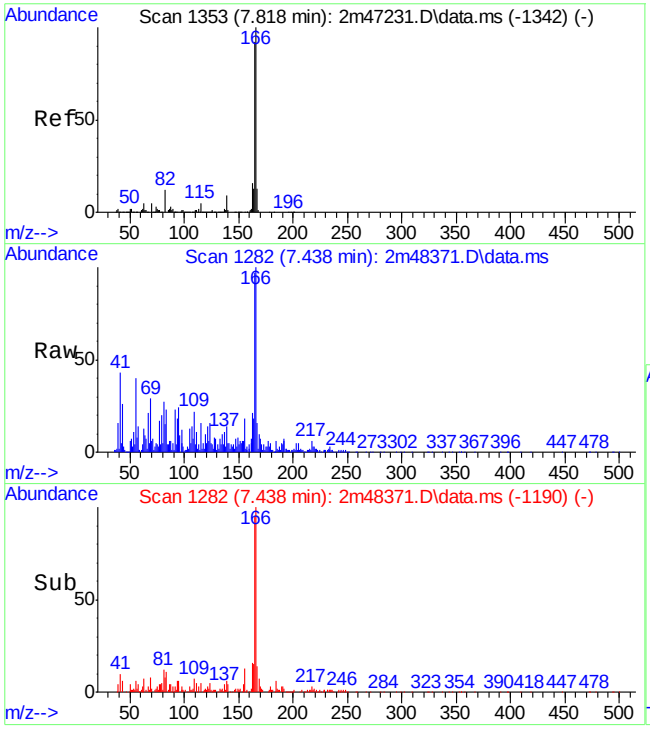
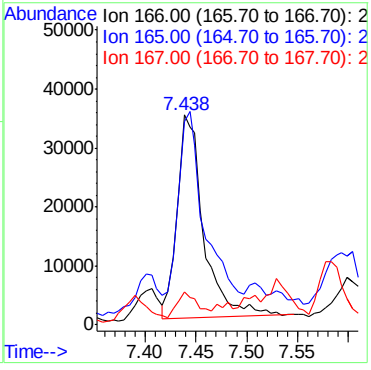
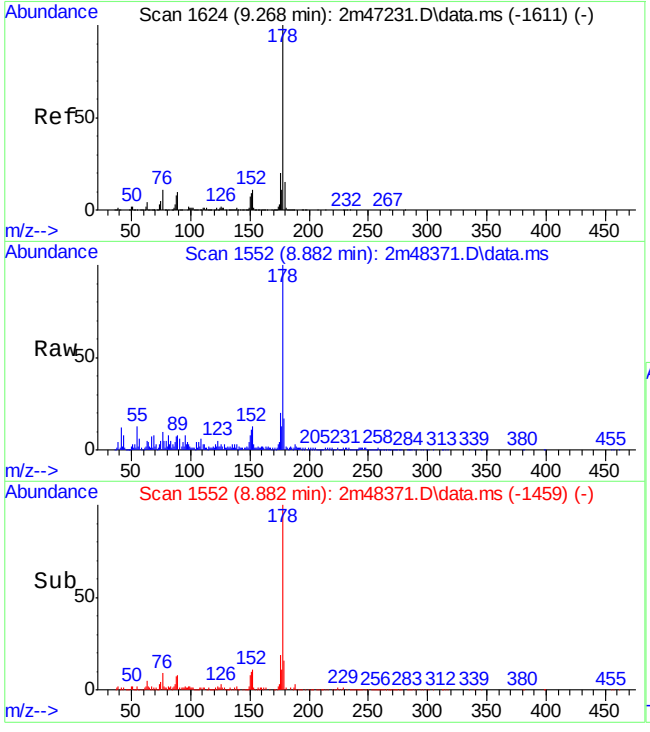


#66
Fluorene
Concen: 3.06 ppb
RT: 7.438 min Scan# 1282
Delta R.T. -0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:166 Resp: 62237

Ion	Ratio	Lower	Upper
166	100		
165	90.2	61.9	121.9
167	8.3	0.0	43.1

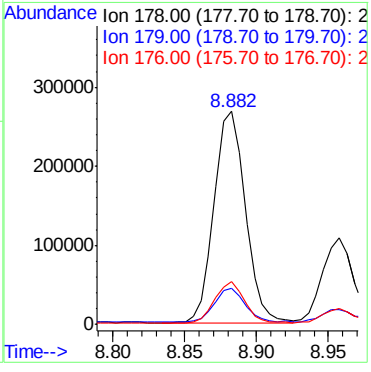




#77
Phenanthrene
Concen: 13.50 ppb
RT: 8.882 min Scan# 1552
Delta R.T. -0.000 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:178 Resp: 404143

Ion	Ratio	Lower	Upper
178	100		
179	16.0	0.0	44.9
176	19.7	0.0	49.1



9.1.8

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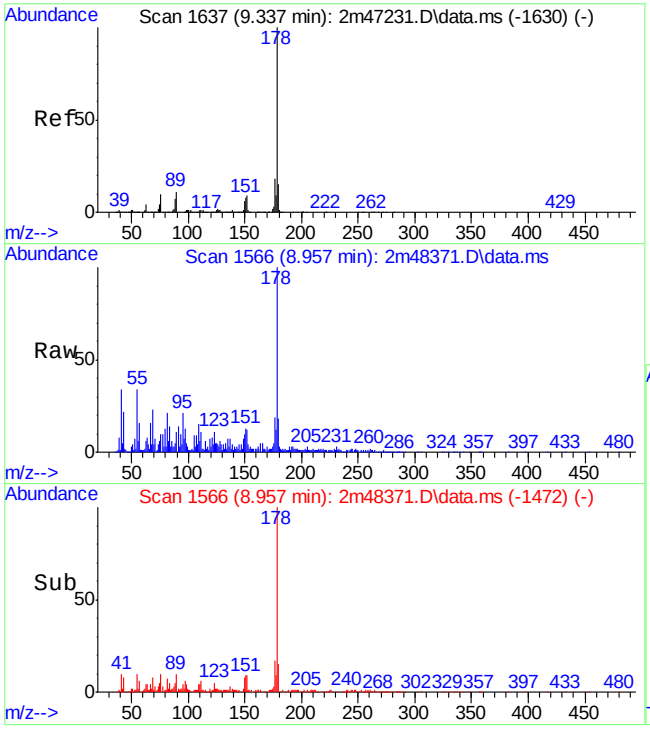
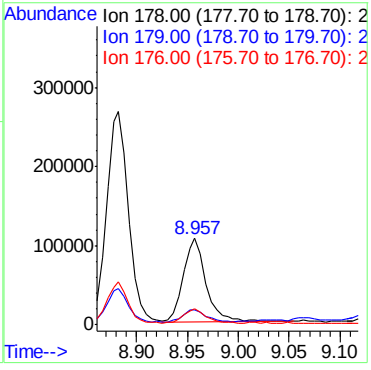
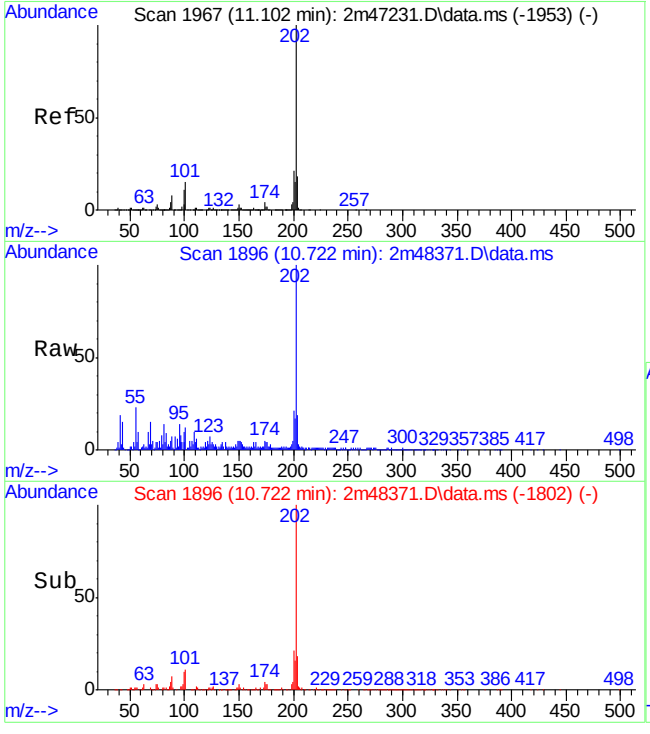


#78
Anthracene
Concen: 5.64 ppb
RT: 8.957 min Scan# 1566
Delta R.T. 0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:178 Resp: 167253

Ion	Ratio	Lower	Upper
178	100		
179	13.1	0.0	44.3
176	17.6	0.0	48.3

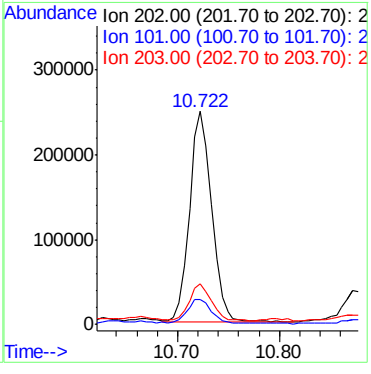


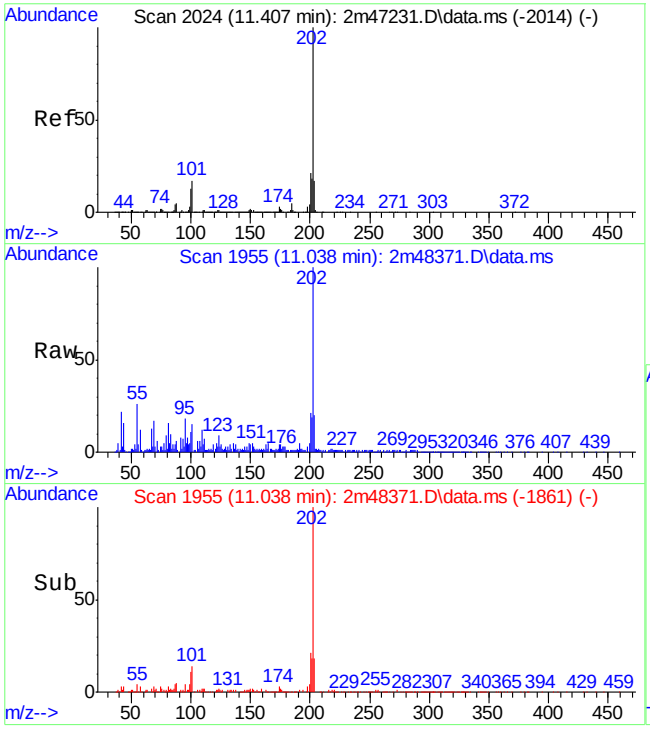


#81
Fluoranthene
Concen: 12.81 ppb
RT: 10.722 min Scan# 1896
Delta R.T. 0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:202 Resp: 378253

Ion	Ratio	Lower	Upper
202	100		
101	11.1	0.0	43.8
203	17.3	0.0	47.5

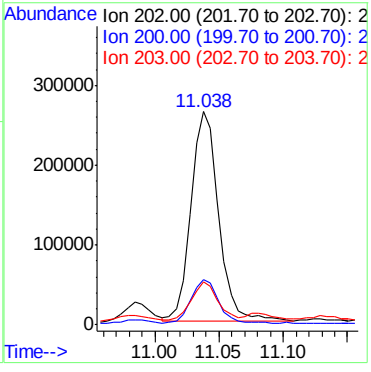


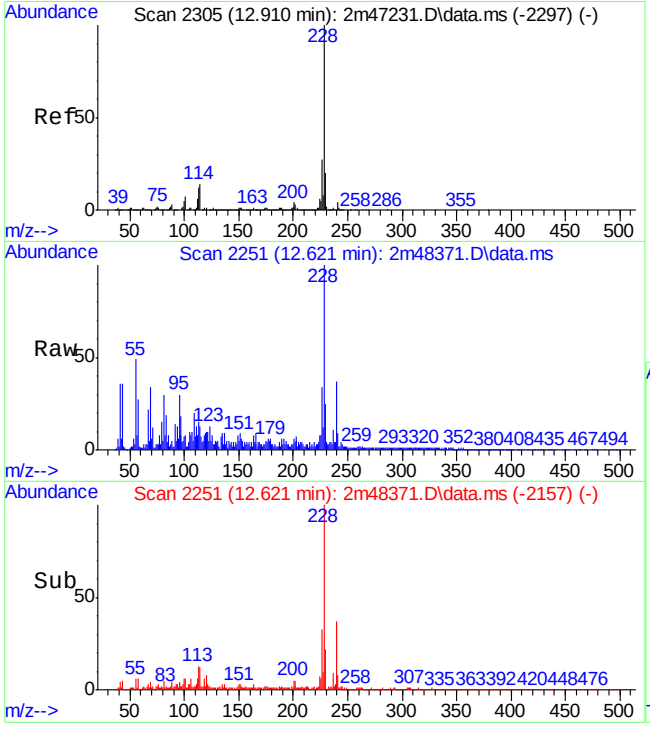


#84
Pyrene
Concen: 11.89 ppb
RT: 11.038 min Scan# 1955
Delta R.T. 0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:202 Resp: 395398

Ion	Ratio	Lower	Upper
202	100		
200	21.1	0.0	51.3
203	18.0	0.0	47.6

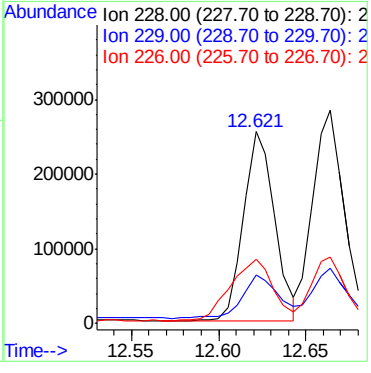


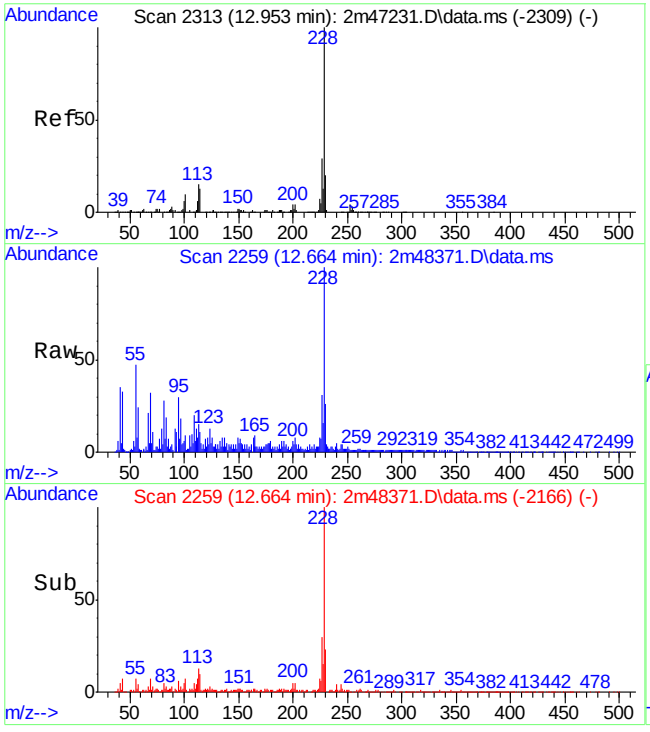


#88
Benzo[a]anthracene
Concen: 10.01 ppb
RT: 12.621 min Scan# 2251
Delta R.T. 0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:228 Resp: 316740

Ion	Ratio	Lower	Upper
228	100		
229	21.3	0.0	49.3
226	32.5	0.0	56.0

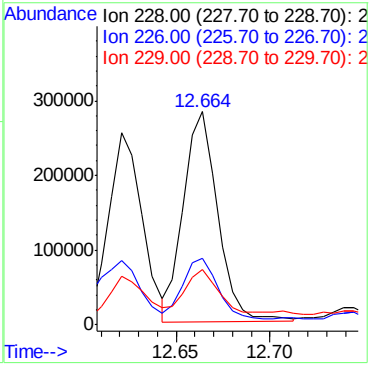


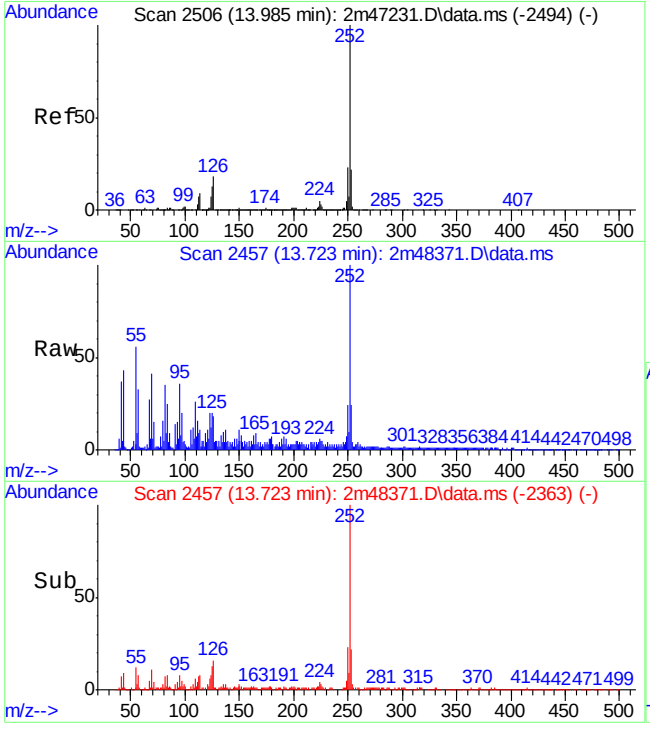


#90
Chrysene
Concen: 11.41 ppb
RT: 12.664 min Scan# 2259
Delta R.T. -0.000 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:228 Resp: 357653

Ion	Ratio	Lower	Upper
228	100		
226	29.0	0.0	57.7
229	20.8	0.0	49.3

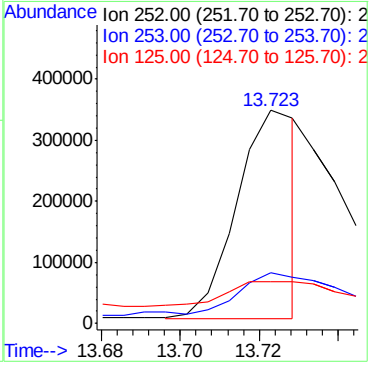


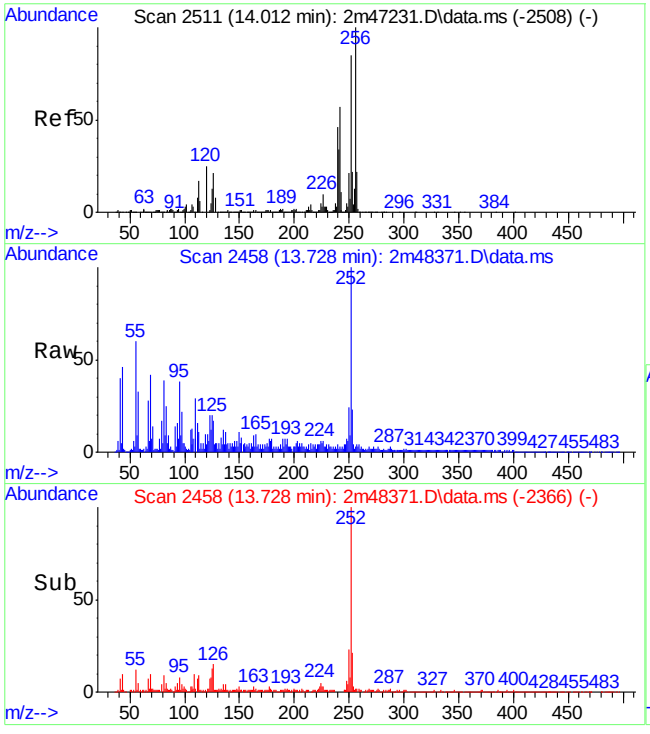


#94
Benzo[b]fluoranthene
Concen: 10.12 ppb m
RT: 13.723 min Scan# 2457
Delta R.T. 0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:252 Resp: 365283

Ion	Ratio	Lower	Upper
252	100		
253	23.6	0.0	51.6
125	19.8	0.0	40.1

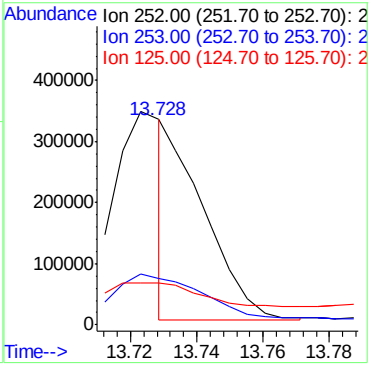


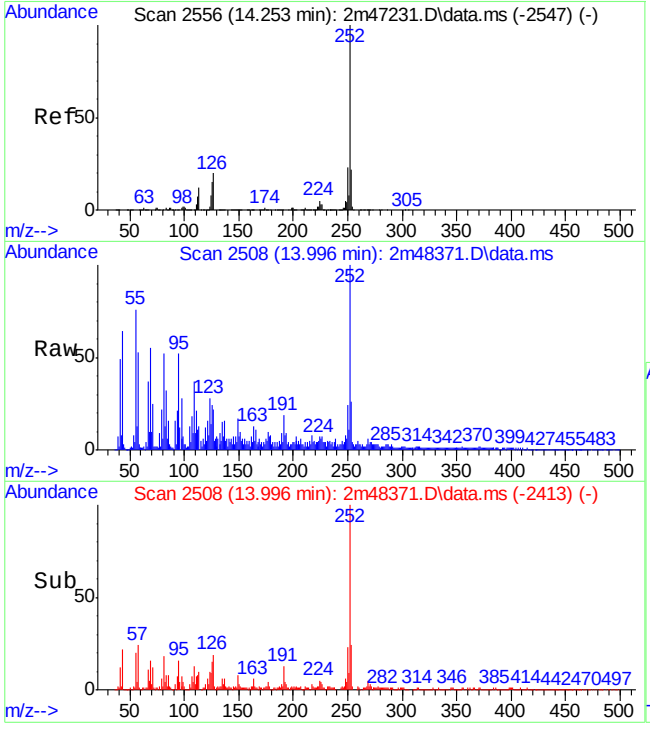


#95
Benzo[k]fluoranthene
Concen: 7.77 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.005 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:252 Resp: 252578

Ion	Ratio	Lower	Upper
252	100		
253	22.5	0.0	52.7
125	20.3	0.0	42.9

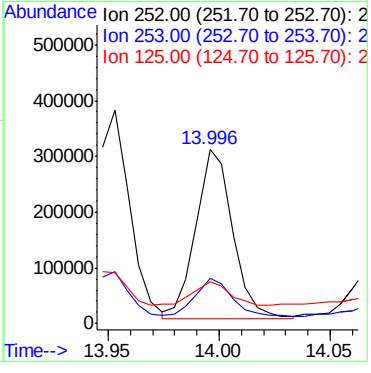


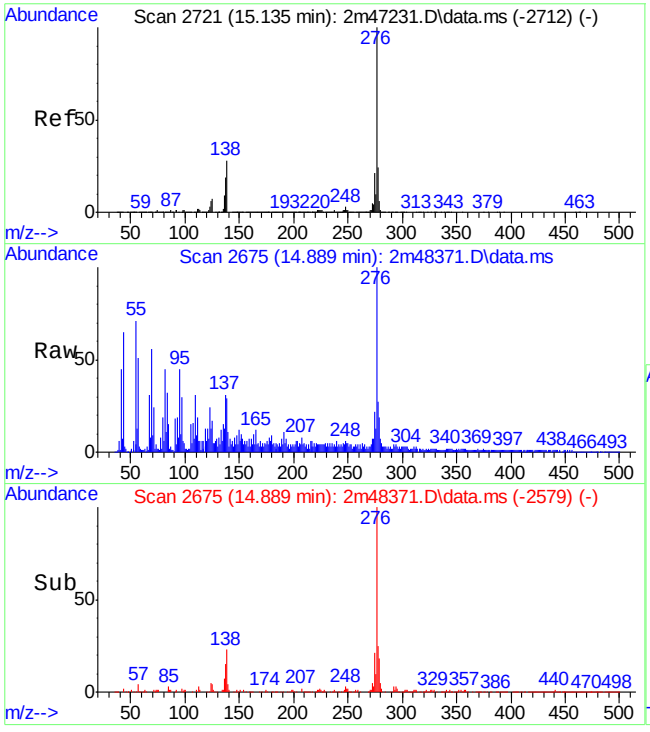


#96
Benzo[a]pyrene
Concen: 11.53 ppb
RT: 13.996 min Scan# 2508
Delta R.T. 0.011 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:252 Resp: 353557

Ion	Ratio	Lower	Upper
252	100		
253	22.6	0.0	52.4
125	13.9	0.0	42.7

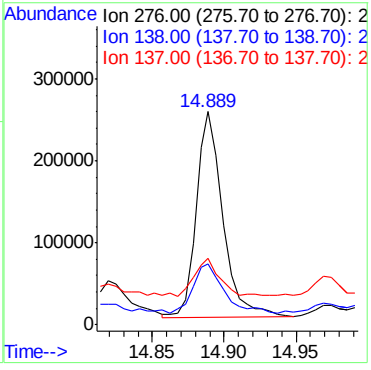


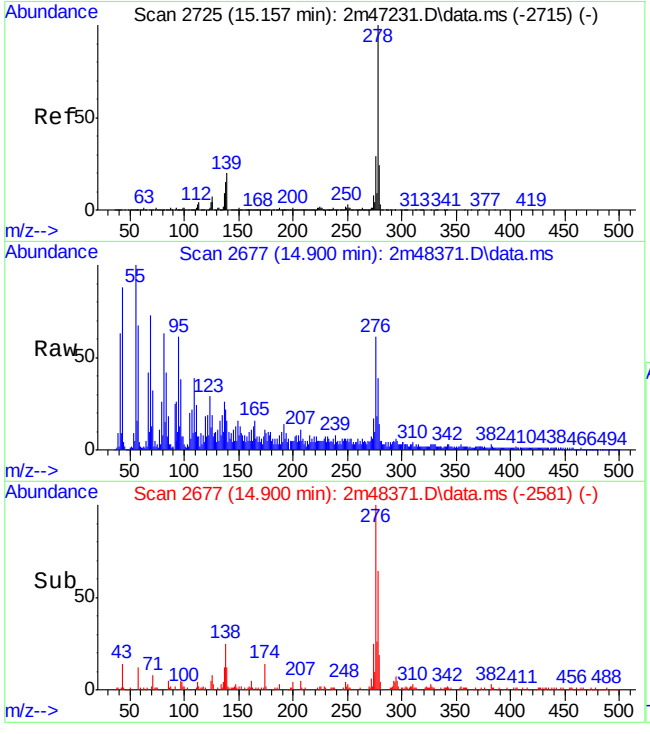


#97
Indeno[1,2,3-cd]pyrene
Concen: 9.09 ppb
RT: 14.889 min Scan# 2675
Delta R.T. 0.016 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:276 Resp: 323768

Ion	Ratio	Lower	Upper
276	100		
138	23.3	0.0	57.6
137	18.0	0.0	48.9

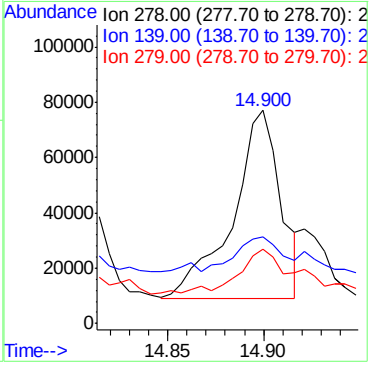


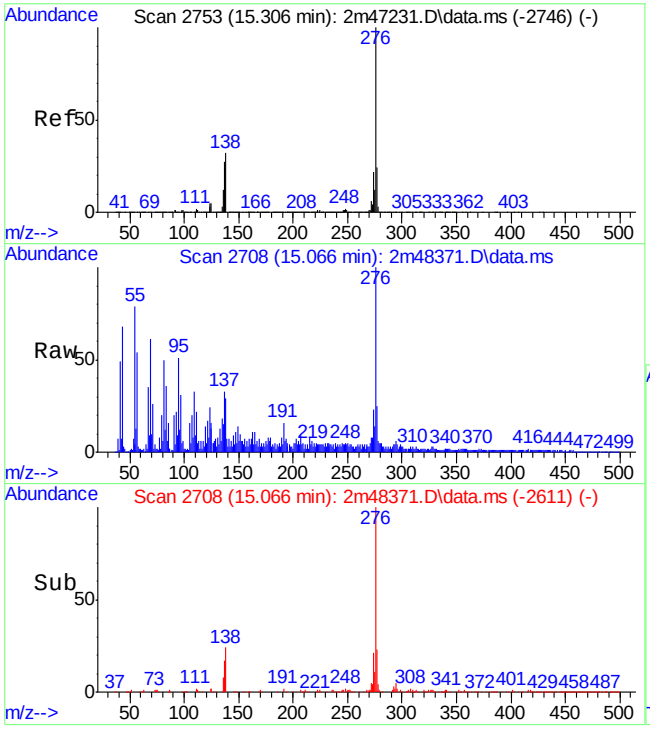


#99
Dibenz[a,h]anthracene
Concen: 3.95 ppb m
RT: 14.900 min Scan# 2677
Delta R.T. 0.016 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:278 Resp: 118218

Ion	Ratio	Lower	Upper
278	100		
139	40.4	0.0	52.4
279	35.1	0.0	54.1

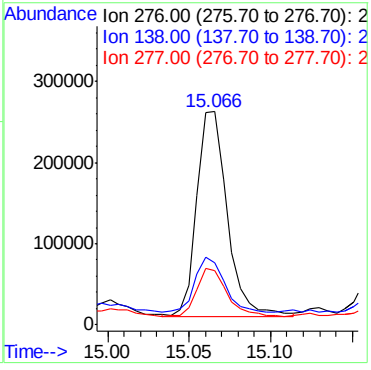




#101
Benzo[g,h,i]perylene
Concen: 10.88 ppb
RT: 15.066 min Scan# 2708
Delta R.T. 0.021 min
Lab File: 2m48371.D
Acq: 8 Dec 2012 5:59 pm

Tgt Ion:276 Resp: 330879

Ion	Ratio	Lower	Upper
276	100		
138	24.1	0.1	60.1
277	22.5	0.0	53.2



9.1.8

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48359.D
Acq On : 8 Dec 2012 1:24 pm
Operator : kristis
Sample : jb22267-9
Misc : op61828,e2m2073,35.3,,,1,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 11 17:37:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	273560	40.00	ppb	-0.06
24) Naphthalene-d8	4.042	136	1223215	40.00	ppb	-0.08
47) Acenaphthene-d10	6.615	164	745640	40.00	ppb	-0.09
69) Phenanthrene-d10	8.850	188	1202239	40.00	ppb	-0.08
83) Chrysene-d12	12.632	240	1261649	40.00	ppb	-0.06
92) Perylene-d12	14.033	264	1114195	40.00	ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.502	152	273560	40.00	ppb	-0.06
104) Acenaphthene-d10a	6.615	164	745640	40.00	ppb	-0.09
106) Chrysene-d12a	12.632	240	1261649	40.00	ppb	-0.06
108) Phenanthrene-d10a	8.850	188	1202239	40.00	ppb	-0.08
110) Chrysene-d12b	12.632	240	1261649	40.00	ppb	-0.06

System Monitoring Compounds						
5) 2-Fluorophenol	1.507	112	172598	17.34	ppb	-0.04
Spiked Amount 50.000			Recovery	=	34.68%	
8) Phenol-d5	2.320	99	232349	17.41	ppb	-0.05
Spiked Amount 50.000			Recovery	=	34.82%	
25) Nitrobenzene-d5	3.197	82	211828	16.14	ppb	-0.05
Spiked Amount 50.000			Recovery	=	32.28%	
51) 2-Fluorobiphenyl	5.695	172	437373	17.84	ppb	-0.08
Spiked Amount 50.000			Recovery	=	35.68%	
73) 2,4,6-Tribromophenol	7.877	330	118233	41.85	ppb	-0.07
Spiked Amount 50.000			Recovery	=	83.70%	
85) Terphenyl-d14	11.418	244	1253249	49.16	ppb	-0.08
Spiked Amount 50.000			Recovery	=	98.32%	

Target Compounds						Qvalue
77) Phenanthrene	8.893	178	18299	0.50	ppb	92
81) Fluoranthene	10.755	202	40774	1.12	ppb	94
84) Pyrene	11.070	202	32397	0.79	ppb	95
88) Benzo[a]anthracene	12.621	228	28215	0.73	ppb	96
90) Chrysene	12.675	228	23423	0.61	ppb	91
94) Benzo[b]fluoranthene	13.744	252	28577m	0.74	ppb	
95) Benzo[k]fluoranthene	13.760	252	15772m	0.45	ppb	
96) Benzo[a]pyrene	14.001	252	21041	0.64	ppb	96
97) Indeno[1,2,3-cd]pyrene	14.926	276	15561	0.41	ppb	80
101) Benzo[g,h,i]perylene	15.092	276	15839	0.48	ppb	92

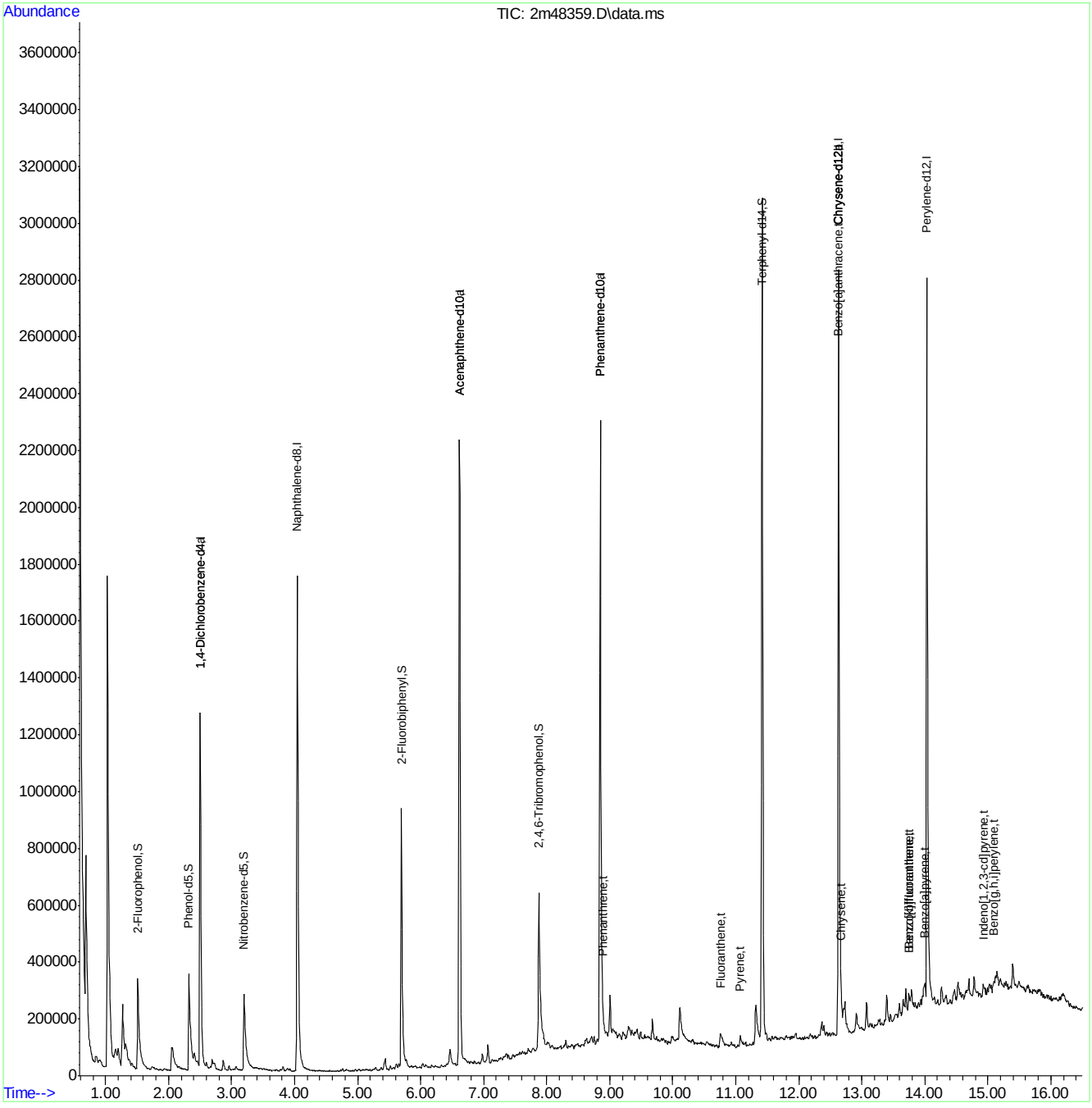
(#) = qualifier out of range (m) = manual integration (+) = signals summed

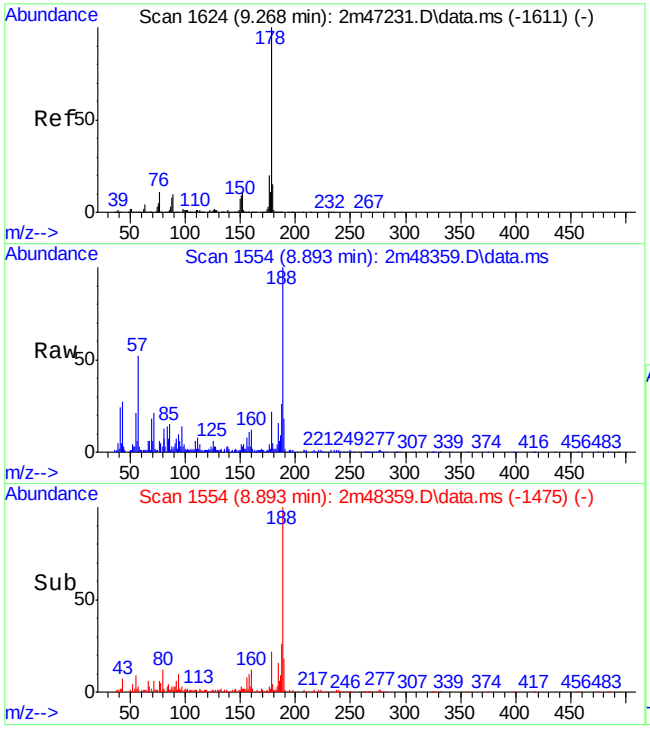
9.1.9
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48359.D
Acq On : 8 Dec 2012 1:24 pm
Operator : kristis
Sample : jb22267-9
Misc : op61828,e2m2073,35.3,,,1,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 11 17:37:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

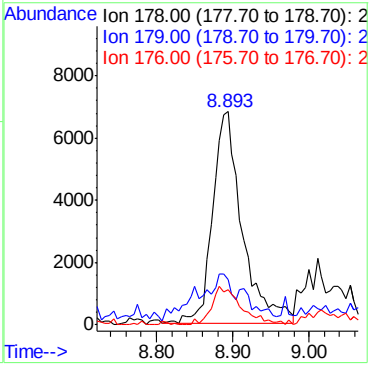


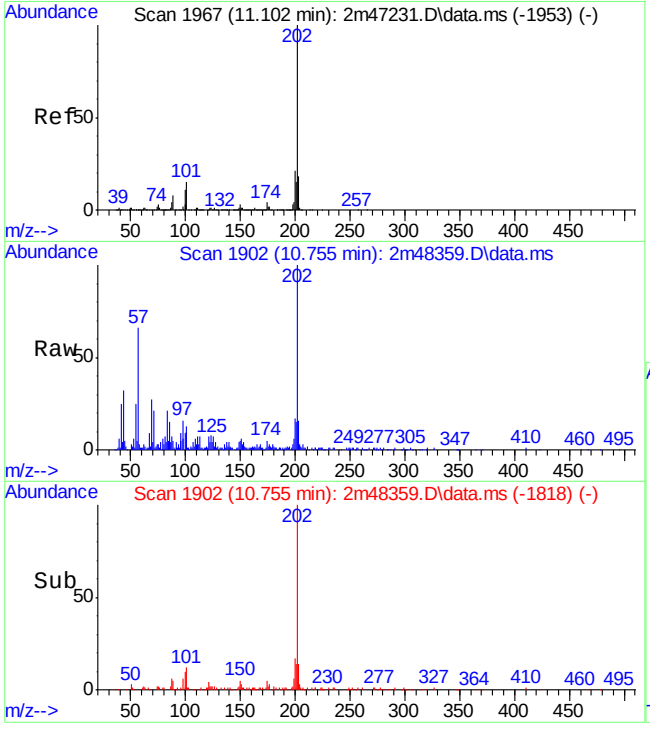


#77
Phenanthrene
Concen: 0.50 ppb
RT: 8.893 min Scan# 1554
Delta R.T. -0.075 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:178 Resp: 18299

Ion	Ratio	Lower	Upper
178	100		
179	18.5	0.0	44.9
176	15.7	0.0	49.1

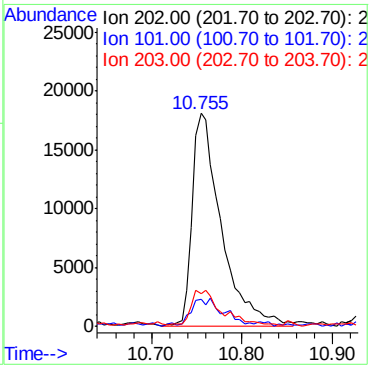


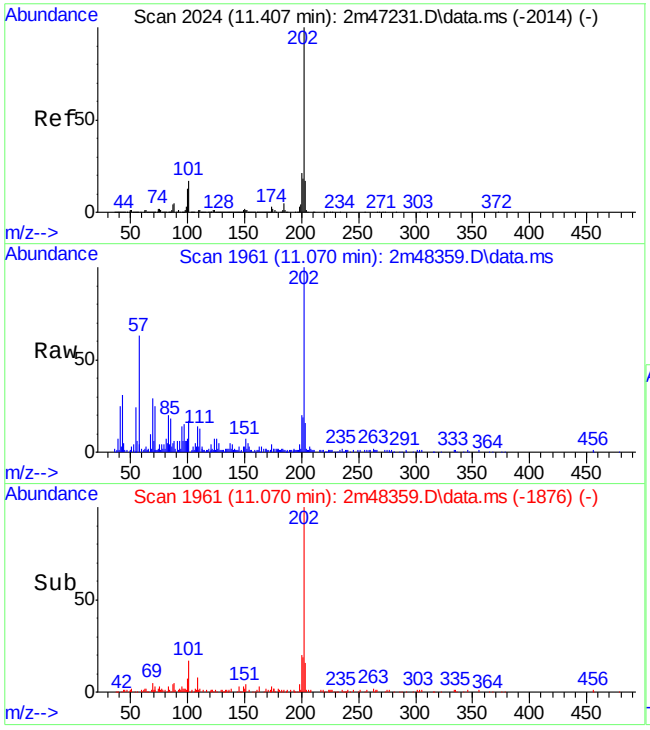


#81
Fluoranthene
Concen: 1.12 ppb
RT: 10.755 min Scan# 1902
Delta R.T. -0.048 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:202 Resp: 40774

Ion	Ratio	Lower	Upper
202	100		
101	12.5	0.0	43.8
203	13.8	0.0	47.5

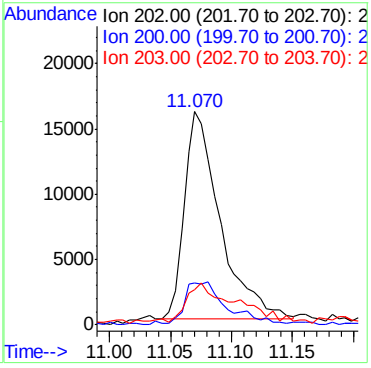


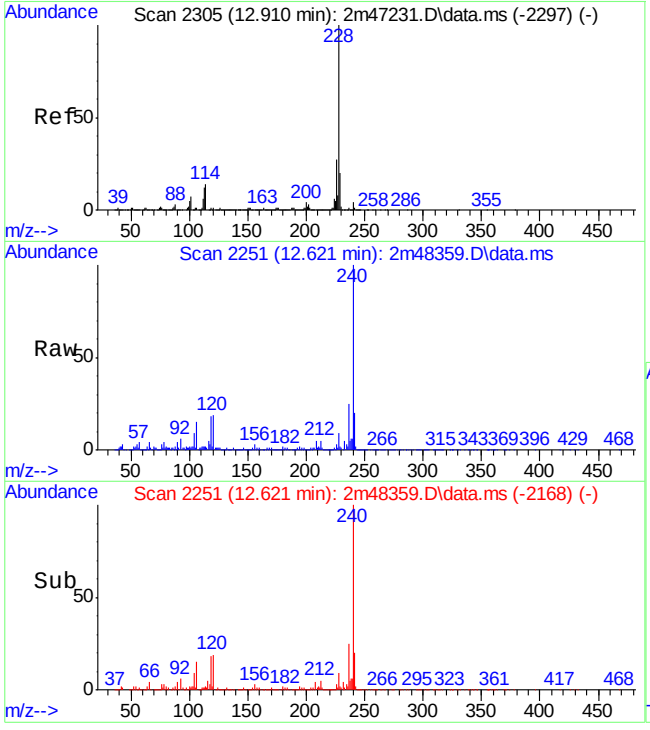


#84
Pyrene
Concen: 0.79 ppb
RT: 11.070 min Scan# 1961
Delta R.T. -0.043 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:202 Resp: 32397

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	51.3
203	14.6	0.0	47.6

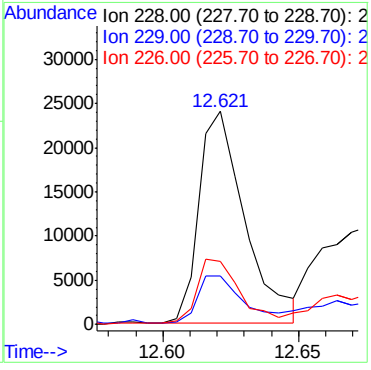


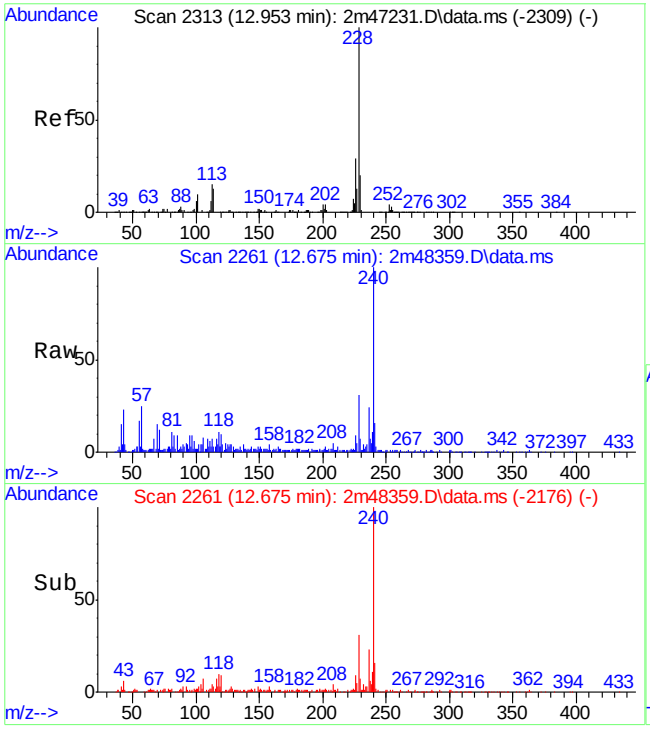


#88
Benzo[a]anthracene
Concen: 0.73 ppb
RT: 12.621 min Scan# 2251
Delta R.T. -0.054 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:228 Resp: 28215

Ion	Ratio	Lower	Upper
228	100		
229	20.6	0.0	49.3
226	28.5	0.0	56.0

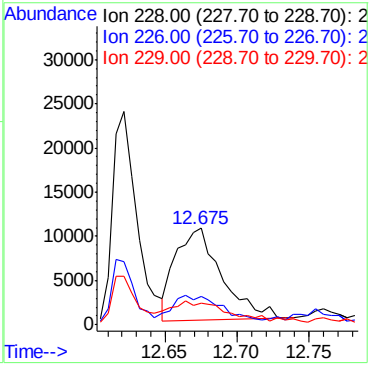


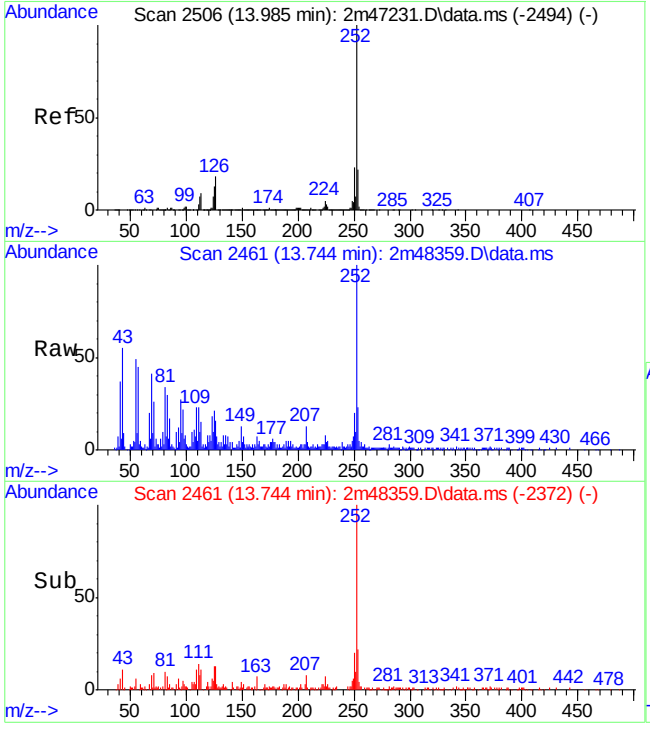


#90
Chrysene
Concen: 0.61 ppb
RT: 12.675 min Scan# 2261
Delta R.T. -0.043 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:228 Resp: 23423

Ion	Ratio	Lower	Upper
228	100		
226	22.6	0.0	57.7
229	15.2	0.0	49.3

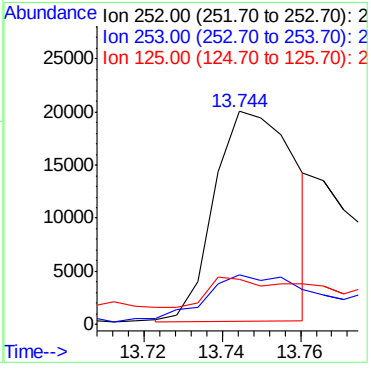


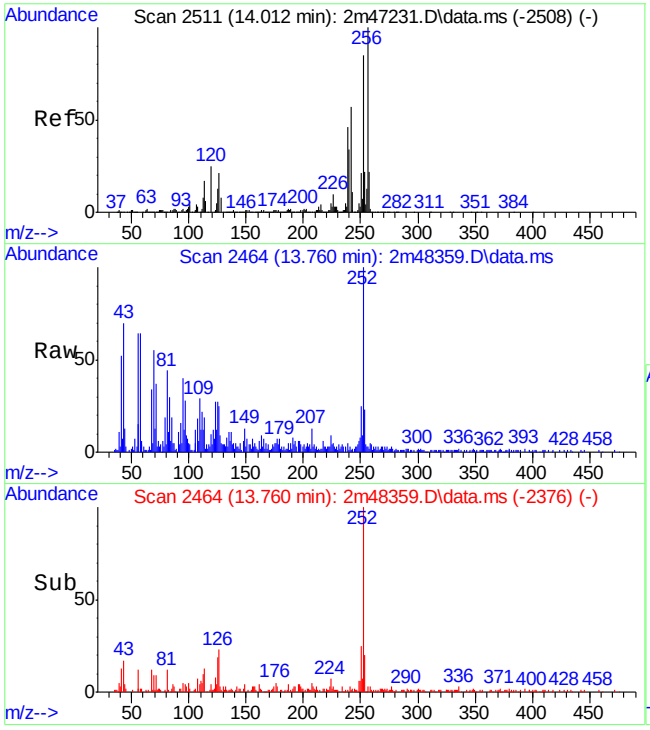


#94
Benzo[b]fluoranthene
Concen: 0.74 ppb m
RT: 13.744 min Scan# 2461
Delta R.T. -0.021 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:252 Resp: 28577

Ion	Ratio	Lower	Upper
252	100		
253	23.1	0.0	51.6
125	21.1	0.0	40.1

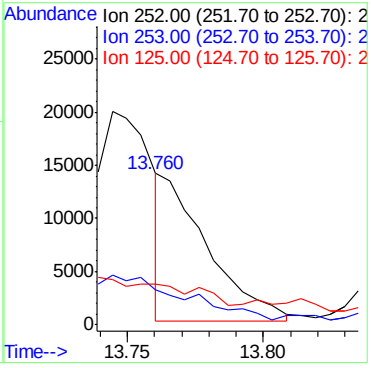


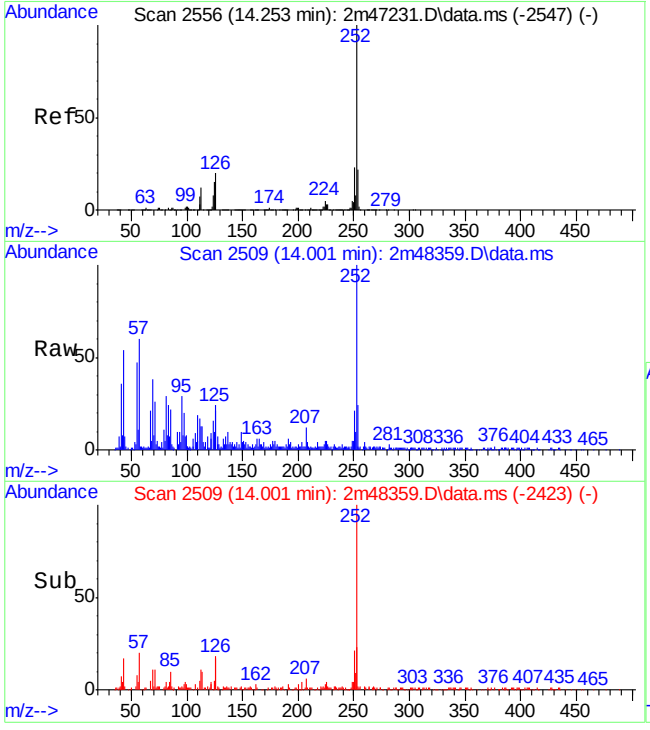


#95
Benzo[k]fluoranthene
Concen: 0.45 ppb m
RT: 13.760 min Scan# 2464
Delta R.T. -0.027 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:252 Resp: 15772

Ion	Ratio	Lower	Upper
252	100		
253	23.2	0.0	52.7
125	27.2	0.0	42.9

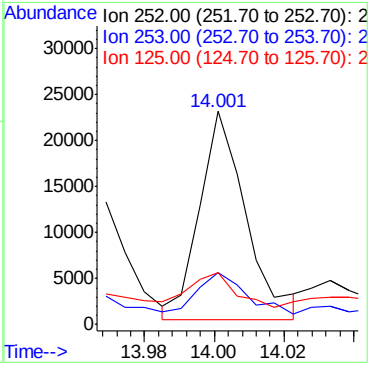




#96
Benzo[a]pyrene
Concen: 0.64 ppb
RT: 14.001 min Scan# 2509
Delta R.T. -0.037 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:252 Resp: 21041

Ion	Ratio	Lower	Upper
252	100		
253	21.3	0.0	52.4
125	15.5	0.0	42.7



9.1.9

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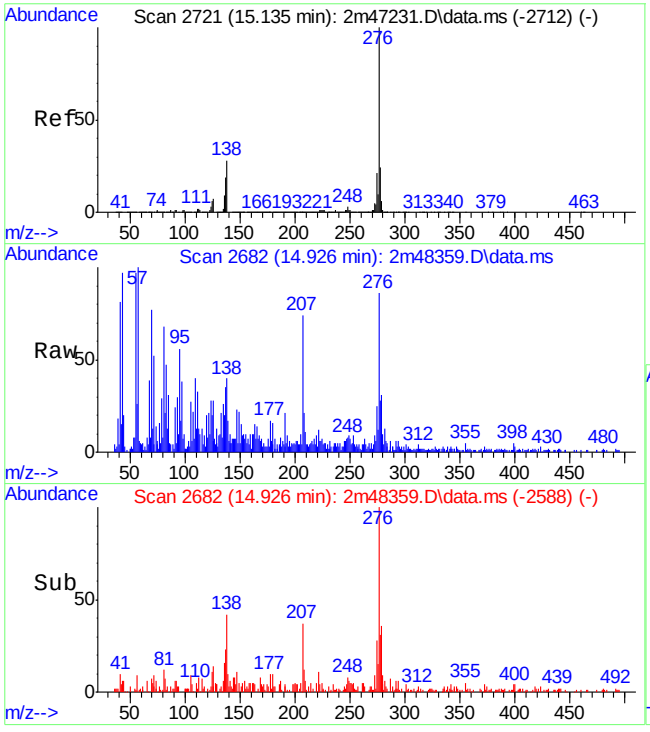
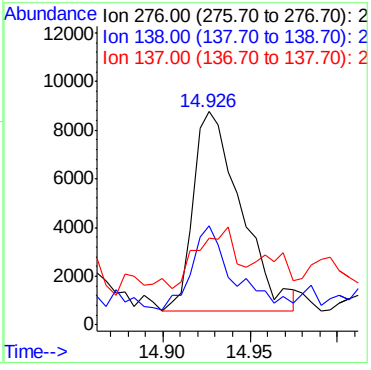
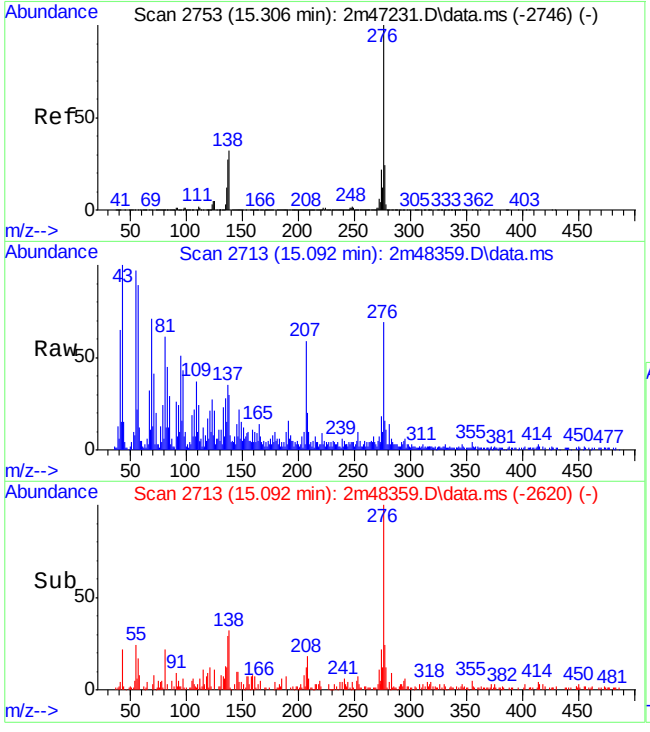


#97
Indeno[1,2,3-cd]pyrene
Concen: 0.41 ppb
RT: 14.926 min Scan# 2682
Delta R.T. 0.005 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:276 Resp: 15561

Ion	Ratio	Lower	Upper
276	100		
138	43.0	0.0	57.6
137	22.1	0.0	48.9

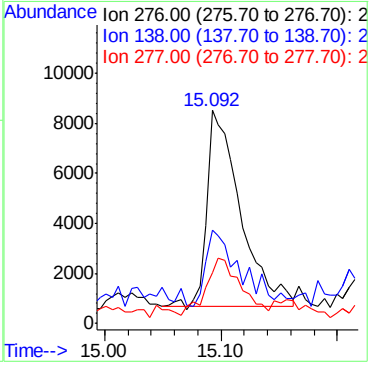




#101
Benzo[g,h,i]perylene
Concen: 0.48 ppb
RT: 15.092 min Scan# 2713
Delta R.T. 0.000 min
Lab File: 2m48359.D
Acq: 8 Dec 2012 1:24 pm

Tgt Ion:276 Resp: 15839

Ion	Ratio	Lower	Upper
276	100		
138	32.3	0.1	60.1
277	16.7	0.0	53.2



9.1.9

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48372.D
Acq On : 8 Dec 2012 6:22 pm
Operator : kristis
Sample : jb22267-10
Misc : op61828,e2m2073,33.5,,,1,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 11 17:55:34 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	302362	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1364833	40.00	ppb	0.00
47) Acenaphthene-d10	6.615	164	793181	40.00	ppb	0.00
69) Phenanthrene-d10	8.850	188	1281515	40.00	ppb	0.00
83) Chrysene-d12	12.643	240	1403890	40.00	ppb	0.01
92) Perylene-d12	14.055	264	1459076	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.496	152	302362	40.00	ppb	0.00
104) Acenaphthene-d10a	6.615	164	793181	40.00	ppb	0.00
106) Chrysene-d12a	12.643	240	1403890	40.00	ppb	0.01
108) Phenanthrene-d10a	8.850	188	1281515	40.00	ppb	0.00
110) Chrysene-d12b	12.643	240	1403890	40.00	ppb	0.01

System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	235504	21.40	ppb	0.01
Spiked Amount 50.000			Recovery	=	42.80%	
8) Phenol-d5	2.320	99	338771	22.97	ppb	0.02
Spiked Amount 50.000			Recovery	=	45.94%	
25) Nitrobenzene-d5	3.181	82	304585	20.80	ppb	0.00
Spiked Amount 50.000			Recovery	=	41.60%	
51) 2-Fluorobiphenyl	5.689	172	672496	25.78	ppb	0.00
Spiked Amount 50.000			Recovery	=	51.56%	
73) 2,4,6-Tribromophenol	7.872	330	137454	45.64	ppb	0.00
Spiked Amount 50.000			Recovery	=	91.28%	
85) Terphenyl-d14	11.428	244	1234965	43.53	ppb	0.00
Spiked Amount 50.000			Recovery	=	87.06%	

Target Compounds						Qvalue
38) Naphthalene	4.069	128	319564	8.41	ppb	99
44) 2-Methylnaphthalene	5.064	141	264888	11.37	ppb	96
56) Acenaphthylene	6.379	152	232823	6.08	ppb	98
59) Acenaphthene	6.663	153	59759	2.43	ppb	91
66) Fluorene	7.444	166	69912	2.62	ppb	92
77) Phenanthrene	8.883	178	849239	21.65	ppb	100
78) Anthracene	8.957	178	302053	7.77	ppb	97
81) Fluoranthene	10.722	202	1046546	27.04	ppb	98
84) Pyrene	11.038	202	998139	21.98	ppb	99
88) Benzo[a]anthracene	12.627	228	782342	18.12	ppb	95
90) Chrysene	12.669	228	813722	19.01	ppb	97
94) Benzo[b]fluoranthene	13.728	252	1059955m	20.87	ppb	
95) Benzo[k]fluoranthene	13.739	252	376910m	8.24	ppb	
96) Benzo[a]pyrene	14.001	252	804967	18.66	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.894	276	656375	13.10	ppb	94
99) Dibenz[a,h]anthracene	14.905	278	235525m	5.60	ppb	
101) Benzo[g,h,i]perylene	15.066	276	635944	14.87	ppb	97

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

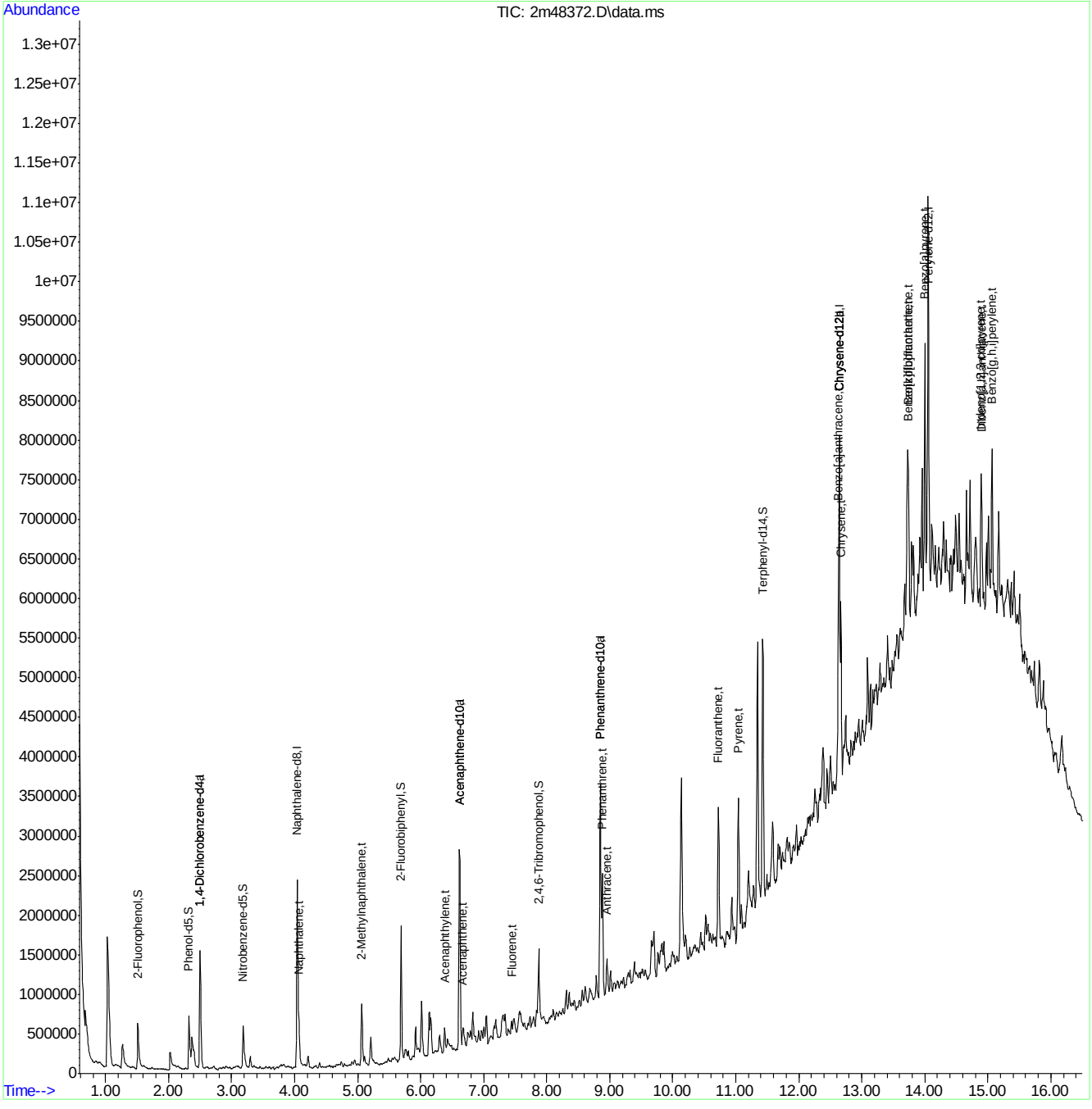
9.1.10

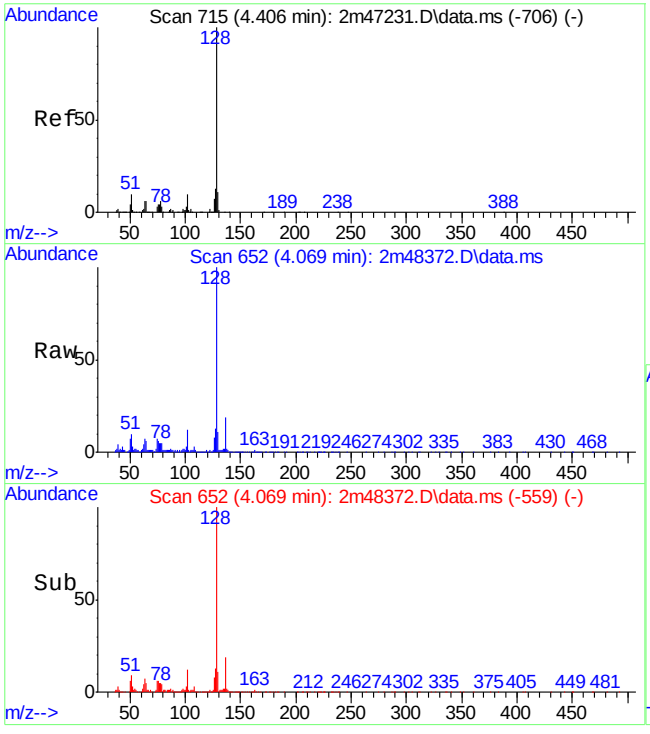
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48372.D
Acq On : 8 Dec 2012 6:22 pm
Operator : kristis
Sample : jb22267-10
Misc : op61828,e2m2073,33.5,,,1,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 11 17:55:34 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

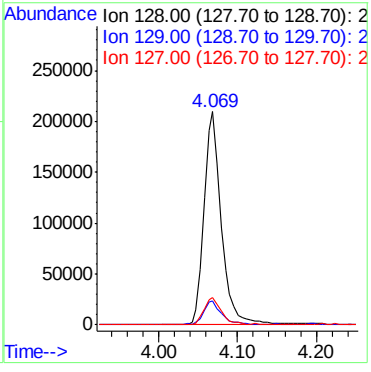


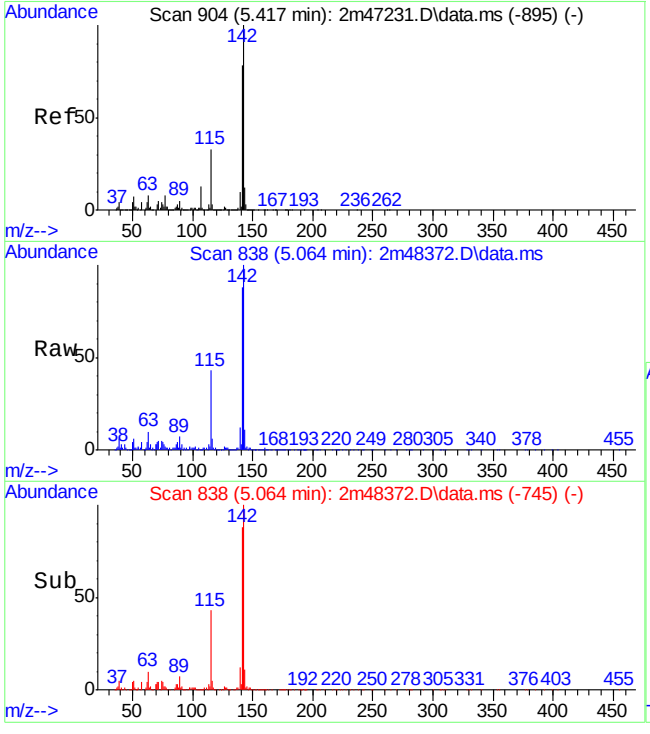


#38
Naphthalene
Concen: 8.41 ppb
RT: 4.069 min Scan# 652
Delta R.T. -0.000 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:128 Resp: 319564

Ion	Ratio	Lower	Upper
128	100		
129	10.8	0.0	40.9
127	12.9	0.0	43.3

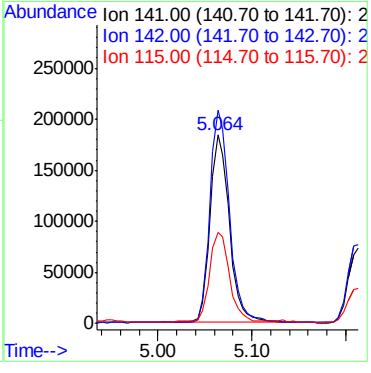




#44
2-Methylnaphthalene
Concen: 11.37 ppb
RT: 5.064 min Scan# 838
Delta R.T. -0.000 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:141 Resp: 264888

Ion	Ratio	Lower	Upper
141	100		
142	113.2	81.7	141.7
115	47.8	12.0	72.0



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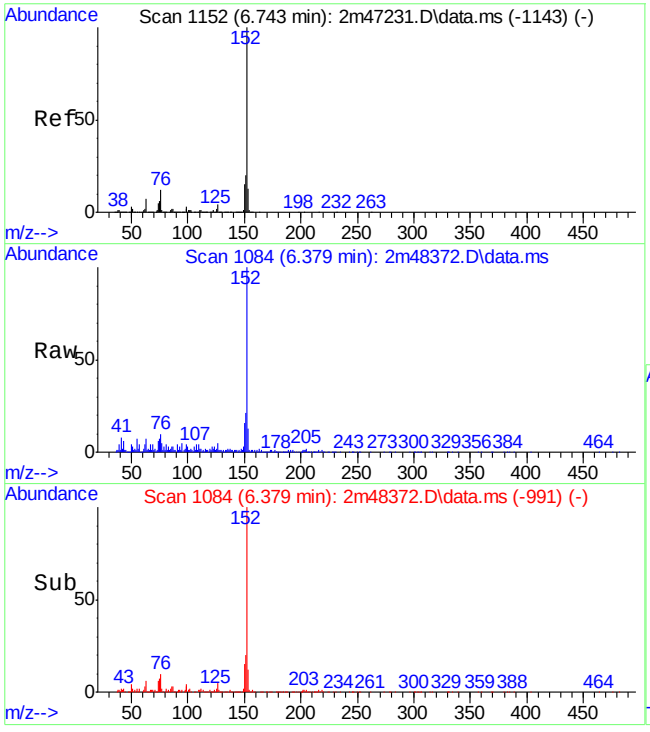
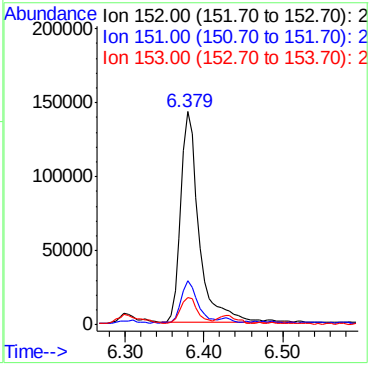
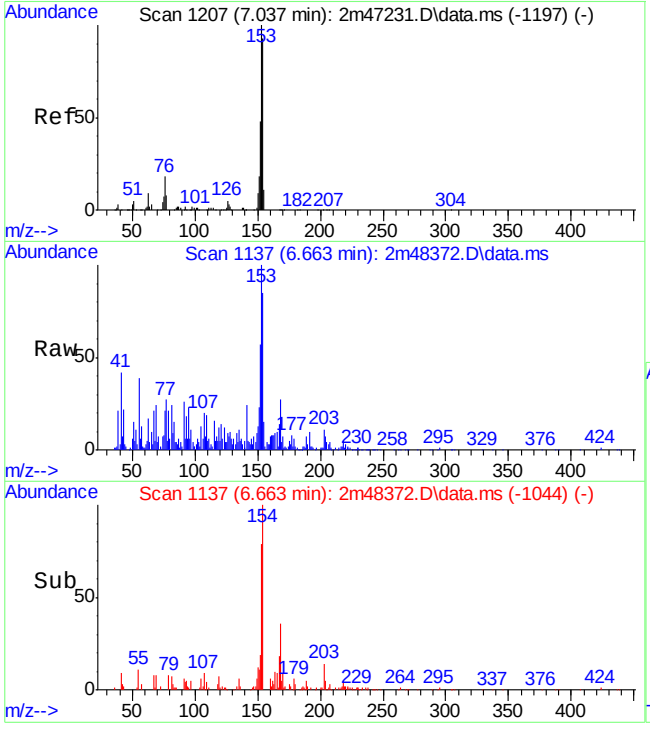


#56
Acenaphthylene
Concen: 6.08 ppb
RT: 6.379 min Scan# 1084
Delta R.T. -0.000 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:152 Resp: 232823

Ion	Ratio	Lower	Upper
152	100		
151	19.9	0.0	49.4
153	12.1	0.0	43.0

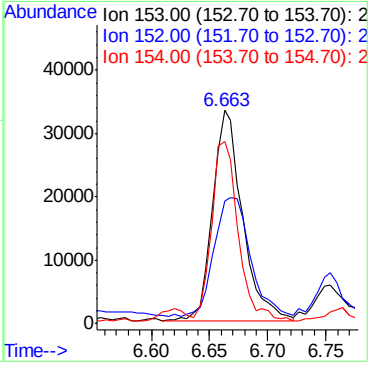




#59
Acenaphthene
Concen: 2.43 ppb
RT: 6.663 min Scan# 1137
Delta R.T. -0.000 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:153 Resp: 59759

Ion	Ratio	Lower	Upper
153	100		
152	54.4	15.8	75.8
154	83.4	59.7	119.7



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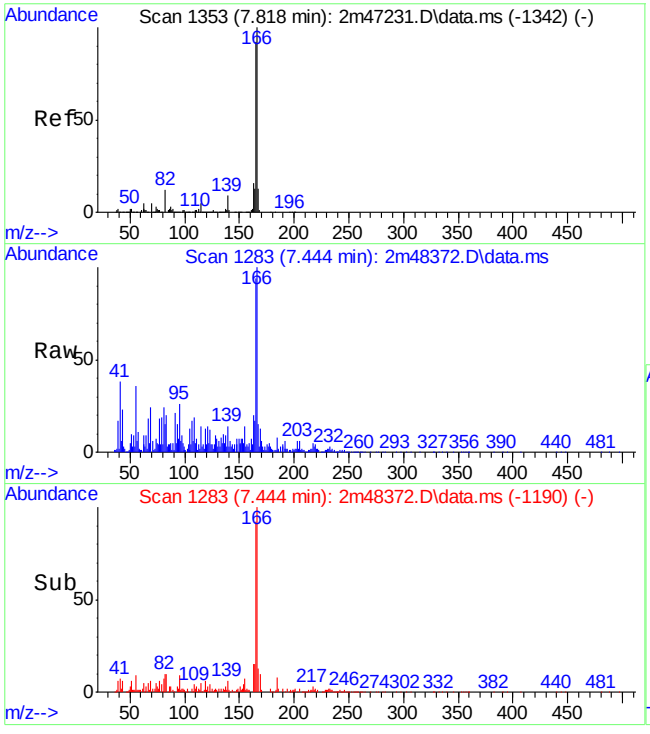
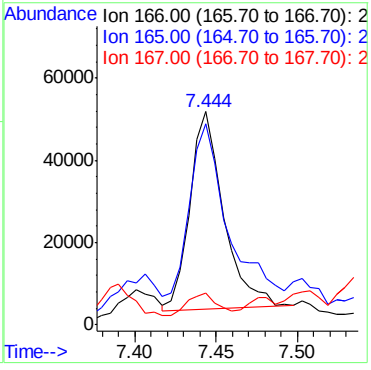
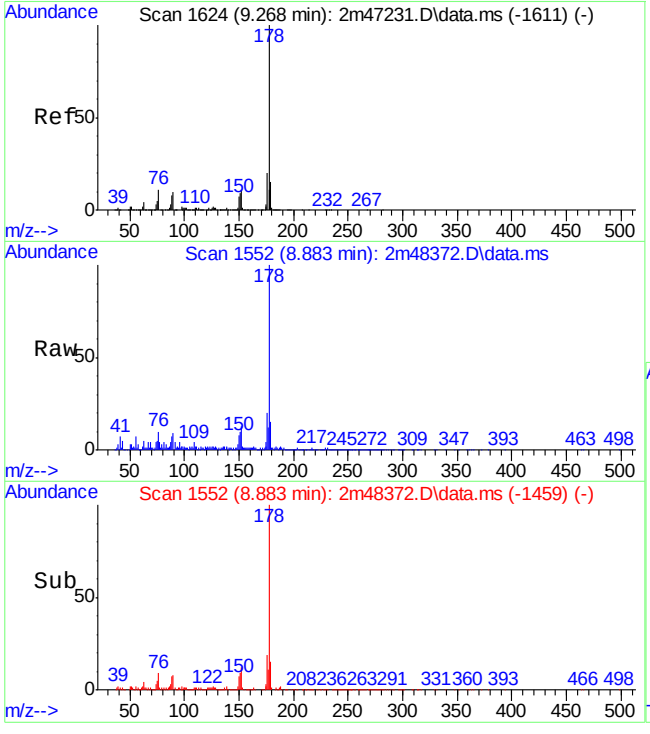


#66
Fluorene
Concen: 2.62 ppb
RT: 7.444 min Scan# 1283
Delta R.T. -0.000 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:166 Resp: 69912

Ion	Ratio	Lower	Upper
166	100		
165	85.2	61.9	121.9
167	6.1	0.0	43.1

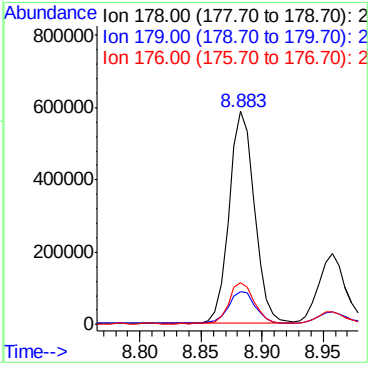


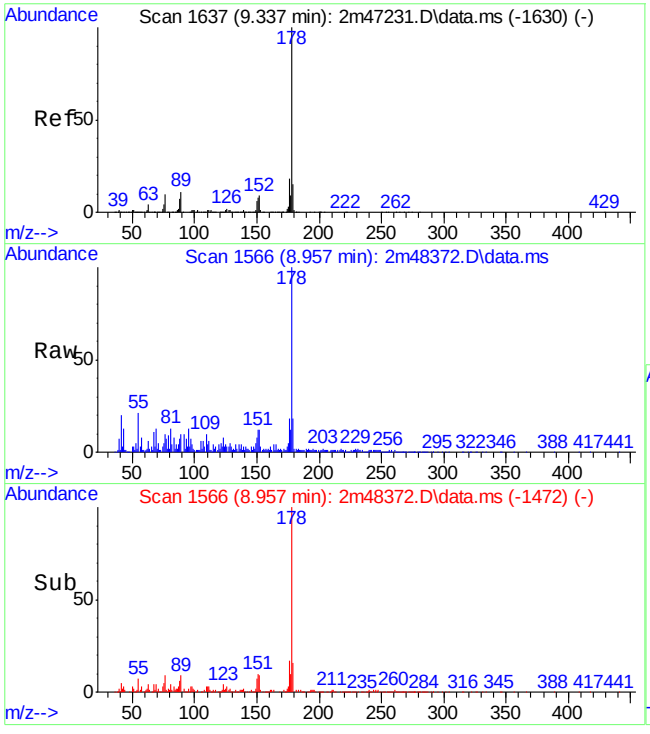


#77
Phenanthrene
Concen: 21.65 ppb
RT: 8.883 min Scan# 1552
Delta R.T. -0.000 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:178 Resp: 849239

Ion	Ratio	Lower	Upper
178	100		
179	14.8	0.0	44.9
176	19.3	0.0	49.1

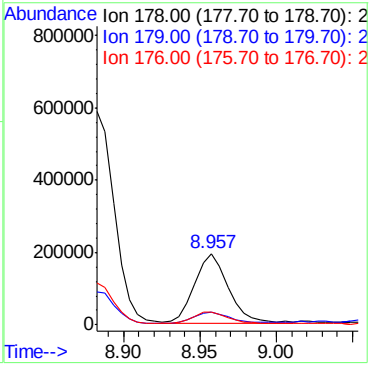


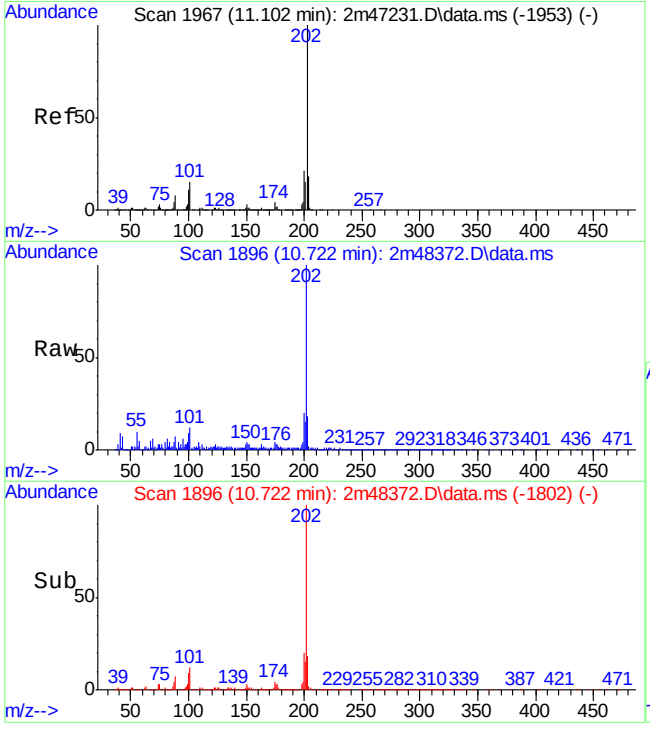


#78
Anthracene
Concen: 7.77 ppb
RT: 8.957 min Scan# 1566
Delta R.T. 0.005 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:178 Resp: 302053

Ion	Ratio	Lower	Upper
178	100		
179	15.3	0.0	44.3
176	16.6	0.0	48.3

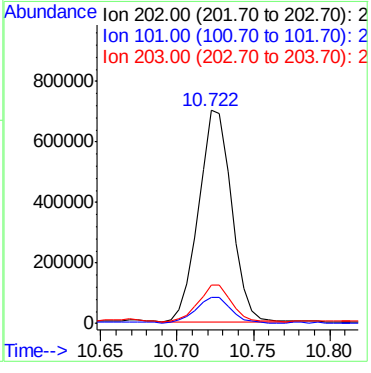


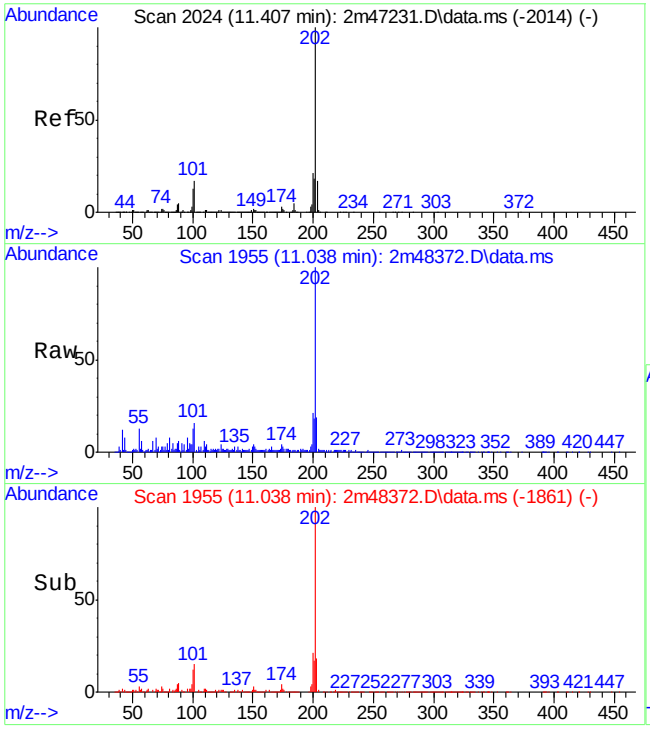


#81
Fluoranthene
Concen: 27.04 ppb
RT: 10.722 min Scan# 1896
Delta R.T. 0.005 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:202 Resp: 1046546

Ion	Ratio	Lower	Upper
202	100		
101	11.9	0.0	43.8
203	17.4	0.0	47.5

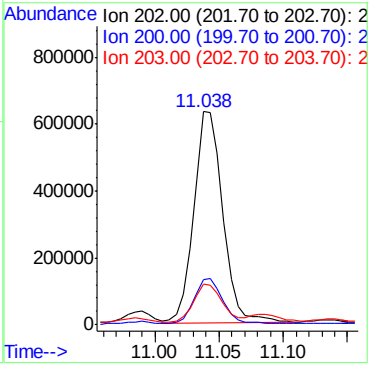


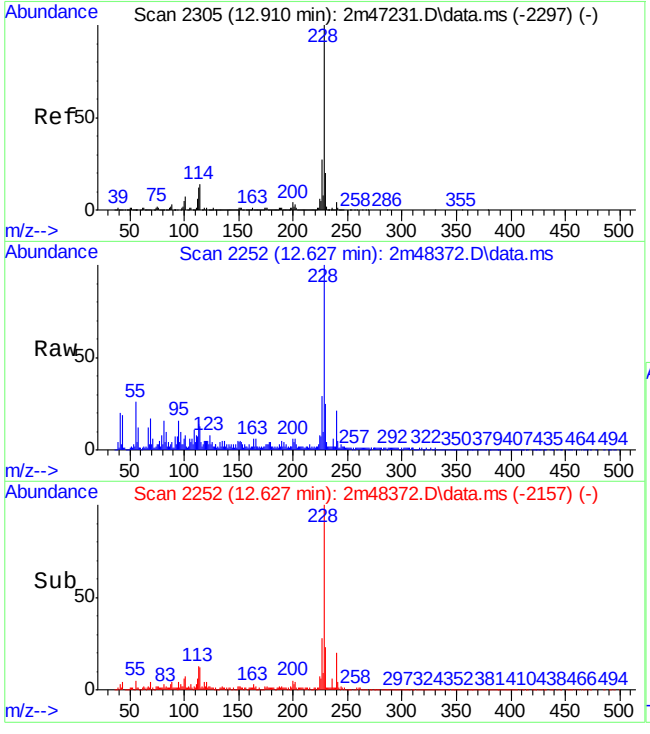


#84
Pyrene
Concen: 21.98 ppb
RT: 11.038 min Scan# 1955
Delta R.T. 0.005 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:202 Resp: 998139

Ion	Ratio	Lower	Upper
202	100		
200	20.8	0.0	51.3
203	17.5	0.0	47.6

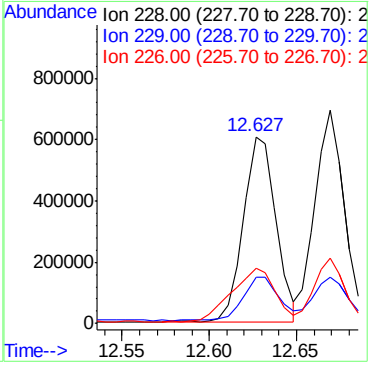




#88
Benzo[a]anthracene
Concen: 18.12 ppb
RT: 12.627 min Scan# 2252
Delta R.T. 0.011 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:228 Resp: 782342

Ion	Ratio	Lower	Upper
228	100		
229	21.8	0.0	49.3
226	28.2	0.0	56.0



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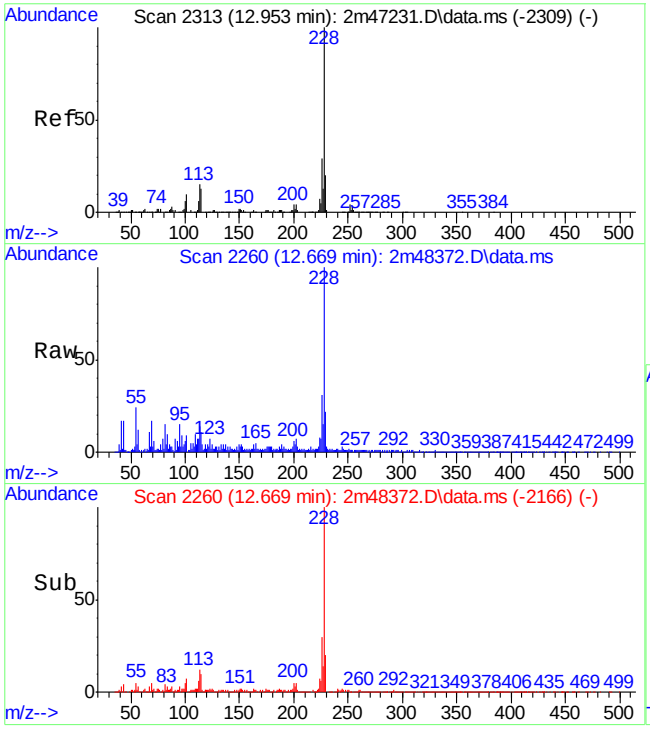
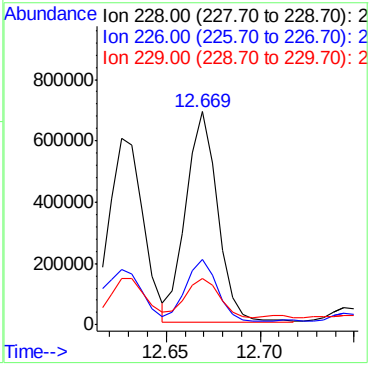
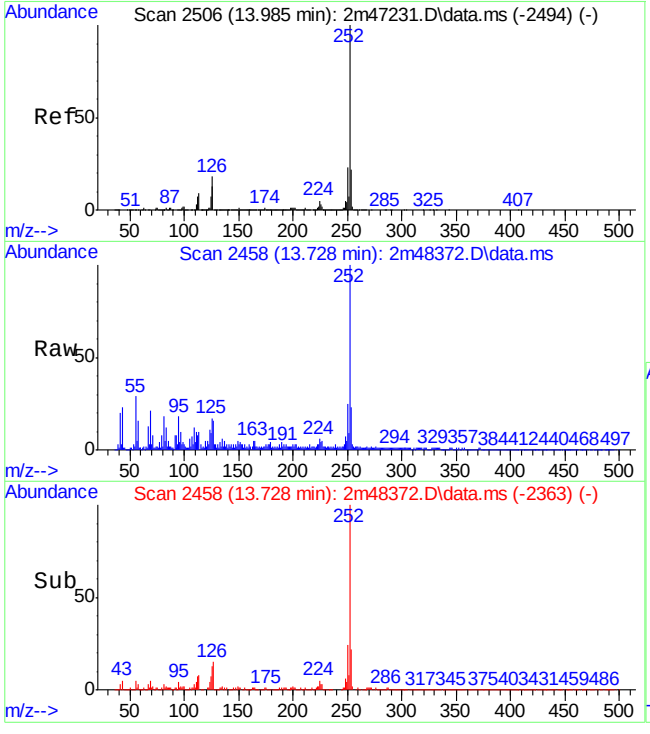


#90
Chrysene
Concen: 19.01 ppb
RT: 12.669 min Scan# 2260
Delta R.T. 0.005 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:228 Resp: 813722

Ion	Ratio	Lower	Upper
228	100		
226	29.5	0.0	57.7
229	18.3	0.0	49.3

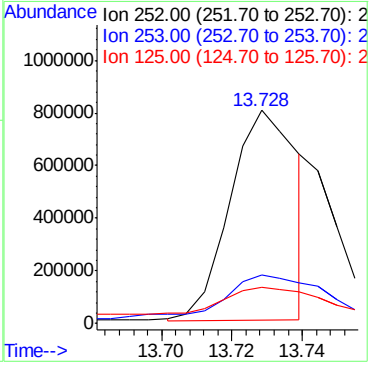


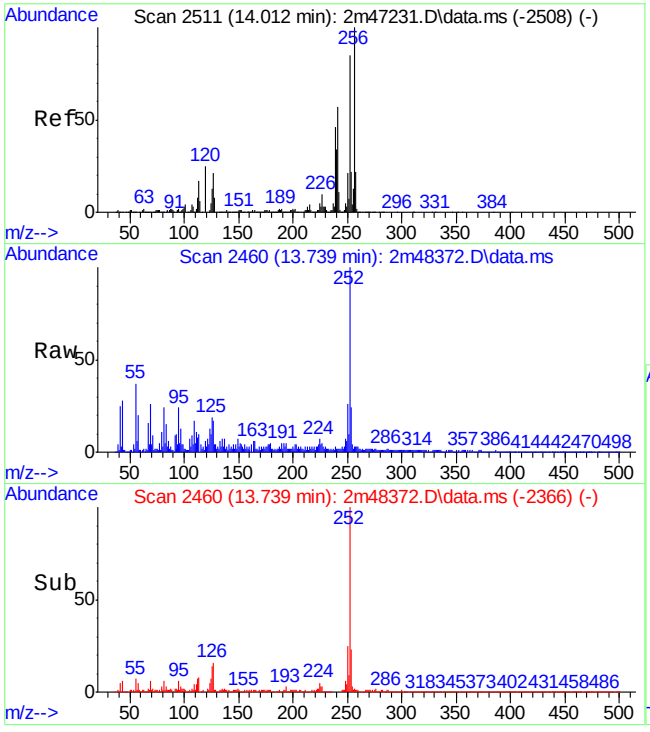


#94
Benzo[b]fluoranthene
Concen: 20.87 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. 0.011 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:252 Resp: 1059955

Ion	Ratio	Lower	Upper
252	100		
253	23.0	0.0	51.6
125	17.0	0.0	40.1

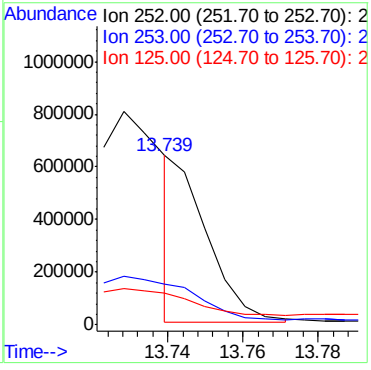


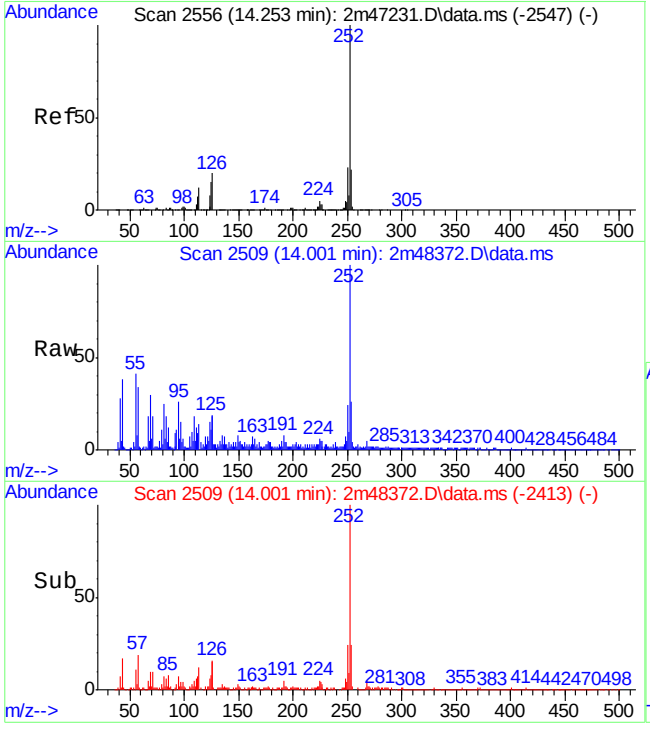


#95
Benzo[k]fluoranthene
Concen: 8.24 ppb m
RT: 13.739 min Scan# 2460
Delta R.T. 0.005 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:252 Resp: 376910

Ion	Ratio	Lower	Upper
252	100		
253	23.9	0.0	52.7
125	18.6	0.0	42.9

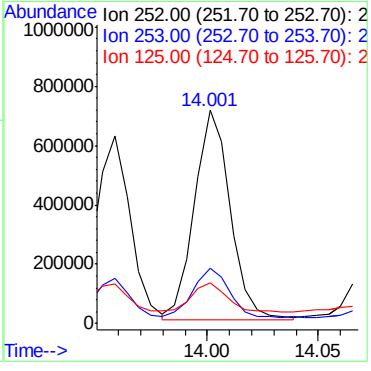




#96
Benzo[a]pyrene
Concen: 18.66 ppb
RT: 14.001 min Scan# 2509
Delta R.T. 0.016 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

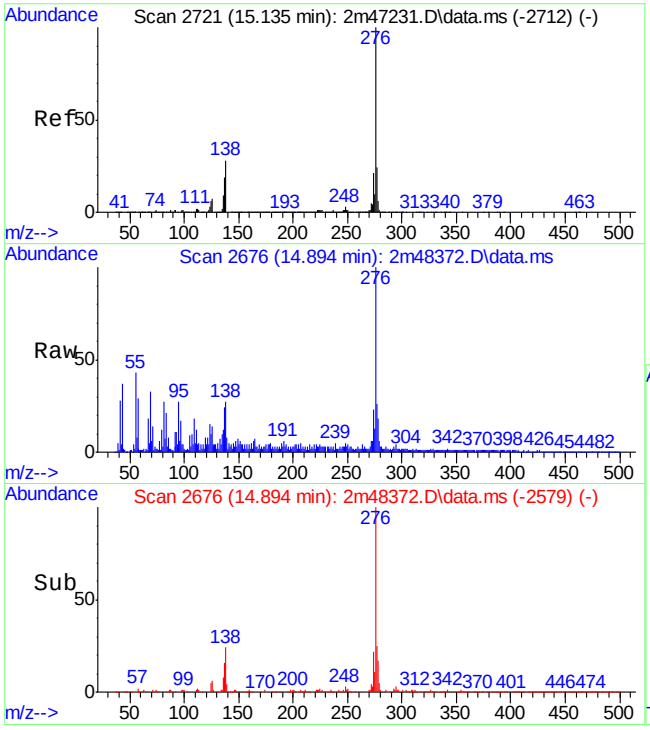
Tgt Ion:252 Resp: 804967

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	52.4
125	13.8	0.0	42.7



9.1.10

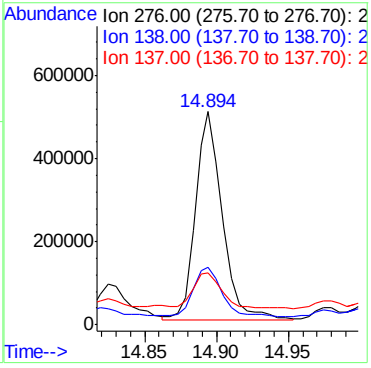
9

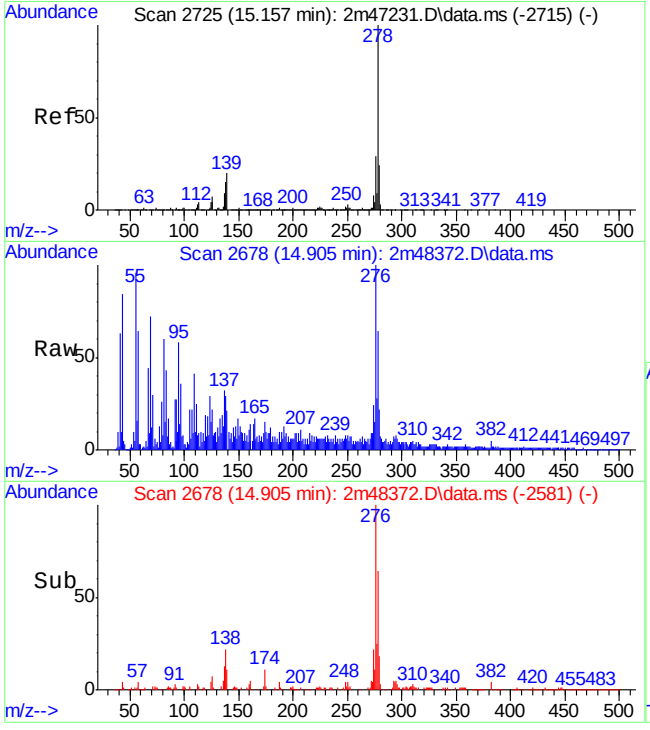


#97
Indeno[1,2,3-cd]pyrene
Concen: 13.10 ppb
RT: 14.894 min Scan# 2676
Delta R.T. 0.021 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:276 Resp: 656375

Ion	Ratio	Lower	Upper
276	100		
138	23.8	0.0	57.6
137	16.5	0.0	48.9

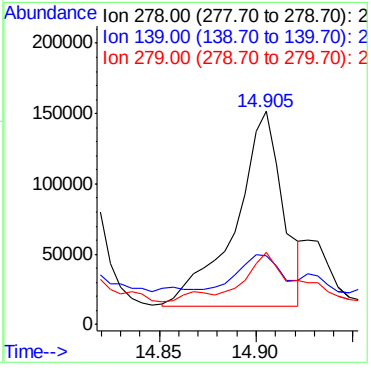


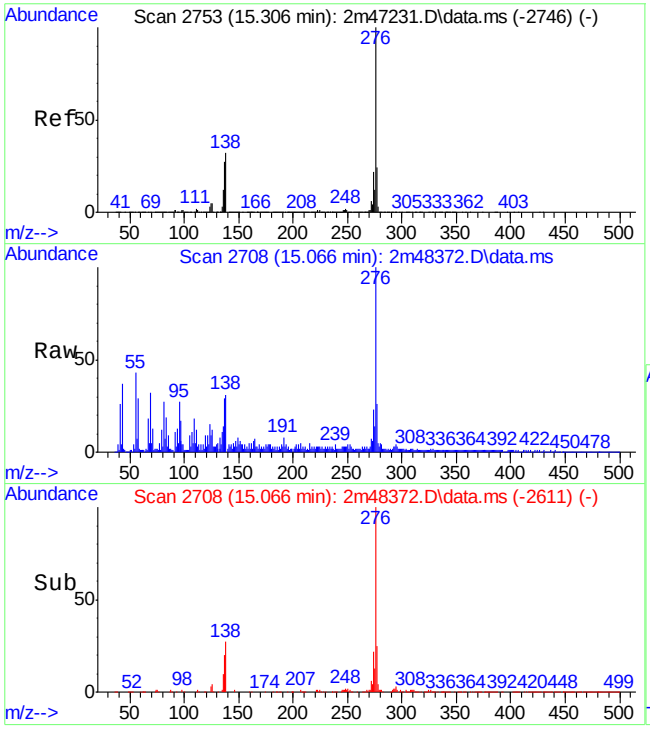


#99
Dibenz[a,h]anthracene
Concen: 5.60 ppb m
RT: 14.905 min Scan# 2678
Delta R.T. 0.021 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:278 Resp: 235525

Ion	Ratio	Lower	Upper
278	100		
139	32.1	0.0	52.4
279	33.9	0.0	54.1

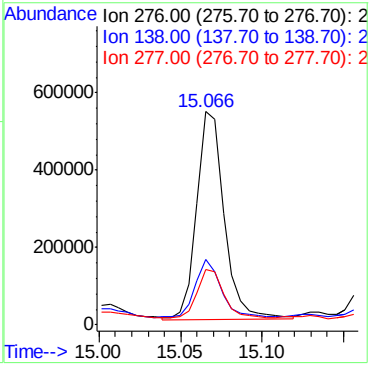




#101
Benzo[g,h,i]perylene
Concen: 14.87 ppb
RT: 15.066 min Scan# 2708
Delta R.T. 0.021 min
Lab File: 2m48372.D
Acq: 8 Dec 2012 6:22 pm

Tgt Ion:276 Resp: 635944

Ion	Ratio	Lower	Upper
276	100		
138	27.6	0.1	60.1
277	23.6	0.0	53.2



9.1.10

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48360.D
Acq On : 8 Dec 2012 1:47 pm
Operator : kristis
Sample : jb22267-11
Misc : op61828,e2m2073,34.5,,,1,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 11 17:38:23 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	267765	40.00	ppb	-0.07
24) Naphthalene-d8	4.042	136	1151175	40.00	ppb	-0.08
47) Acenaphthene-d10	6.615	164	677161	40.00	ppb	-0.09
69) Phenanthrene-d10	8.851	188	1104357	40.00	ppb	-0.08
83) Chrysene-d12	12.632	240	1131494	40.00	ppb	-0.06
92) Perylene-d12	14.033	264	1013844	40.00	ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	267765	40.00	ppb	-0.07
104) Acenaphthene-d10a	6.615	164	677161	40.00	ppb	-0.09
106) Chrysene-d12a	12.632	240	1131494	40.00	ppb	-0.06
108) Phenanthrene-d10a	8.851	188	1104357	40.00	ppb	-0.08
110) Chrysene-d12b	12.632	240	1131494	40.00	ppb	-0.06
System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	172643	17.72	ppb	-0.04
Spiked Amount 50.000			Recovery	=	35.44%	
8) Phenol-d5	2.320	99	225440	17.26	ppb	-0.05
Spiked Amount 50.000			Recovery	=	34.52%	
25) Nitrobenzene-d5	3.192	82	215497	17.45	ppb	-0.05
Spiked Amount 50.000			Recovery	=	34.90%	
51) 2-Fluorobiphenyl	5.695	172	446989	20.07	ppb	-0.08
Spiked Amount 50.000			Recovery	=	40.14%	
73) 2,4,6-Tribromophenol	7.877	330	80755	31.12	ppb	-0.07
Spiked Amount 50.000			Recovery	=	62.24%	
85) Terphenyl-d14	11.418	244	1011538	44.24	ppb	-0.08
Spiked Amount 50.000			Recovery	=	88.48%	

Target Compounds						Qvalue
77) Phenanthrene	8.888	178	51977	1.54	ppb	98
78) Anthracene	8.984	178	14694	0.44	ppb	85
81) Fluoranthene	10.739	202	93670	2.81	ppb	99
84) Pyrene	11.054	202	85150	2.33	ppb	96
88) Benzo[a]anthracene	12.621	228	47845	1.37	ppb	95
90) Chrysene	12.664	228	68646	1.99	ppb	98
94) Benzo[b]fluoranthene	13.734	252	69066m	1.96	ppb	
95) Benzo[k]fluoranthene	13.745	252	35066m	1.10	ppb	
96) Benzo[a]pyrene	13.996	252	39084	1.30	ppb	95
97) Indeno[1,2,3-cd]pyrene	14.911	276	31281m	0.90	ppb	
101) Benzo[g,h,i]perylene	15.082	276	30453	1.02	ppb	84

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

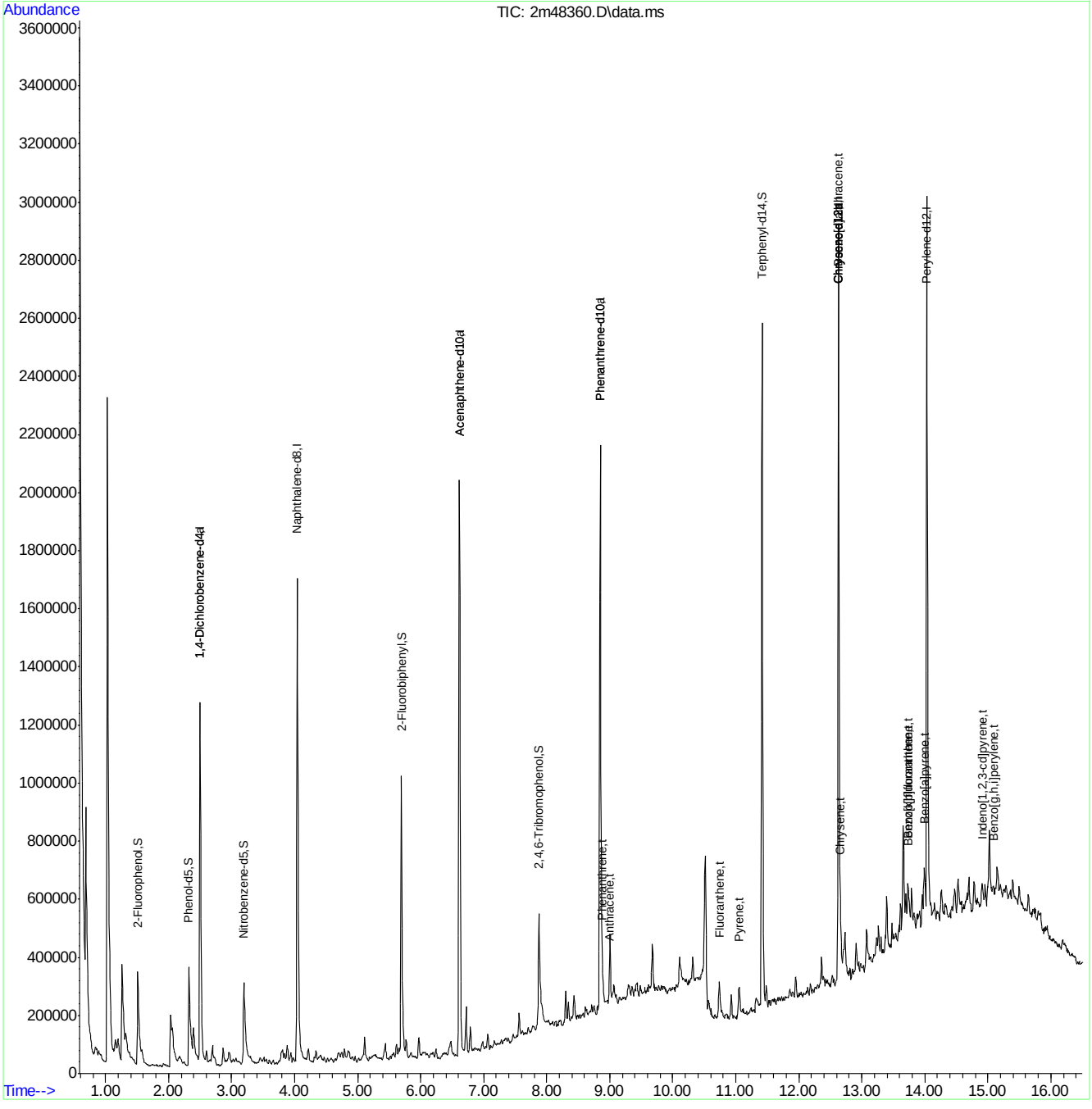
9.1.11

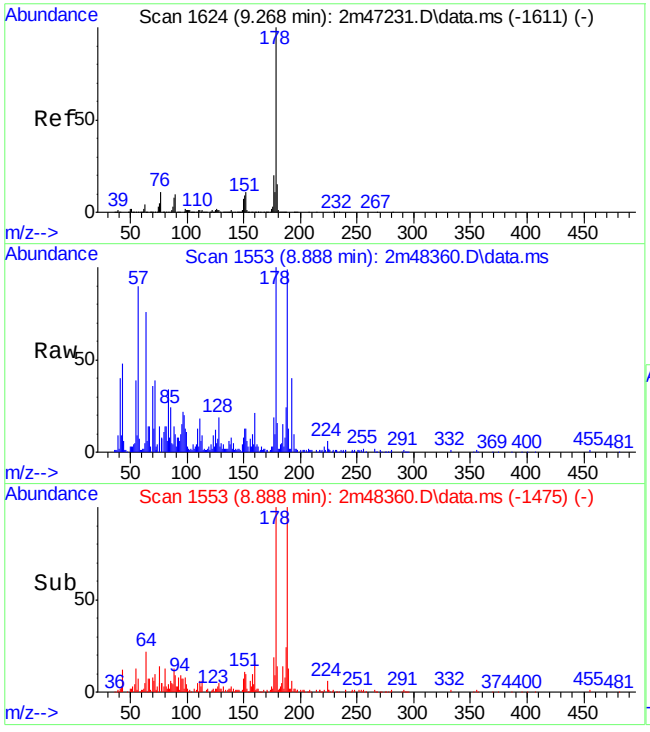
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48360.D
Acq On : 8 Dec 2012 1:47 pm
Operator : kristis
Sample : jb22267-11
Misc : op61828,e2m2073,34.5,,,1,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 11 17:38:23 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

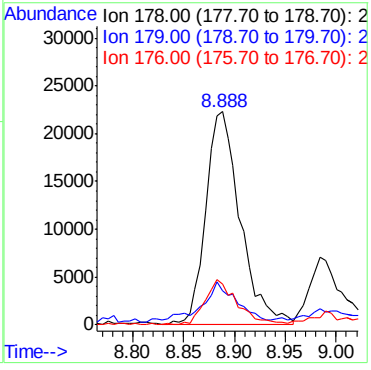


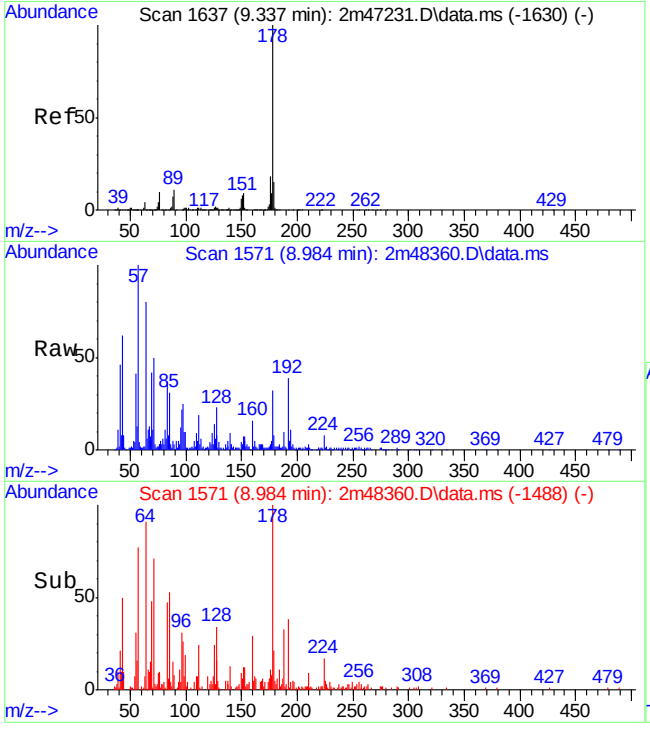


#77
Phenanthrene
Concen: 1.54 ppb
RT: 8.888 min Scan# 1553
Delta R.T. -0.080 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:178 Resp: 51977

Ion	Ratio	Lower	Upper
178	100		
179	13.5	0.0	44.9
176	18.4	0.0	49.1

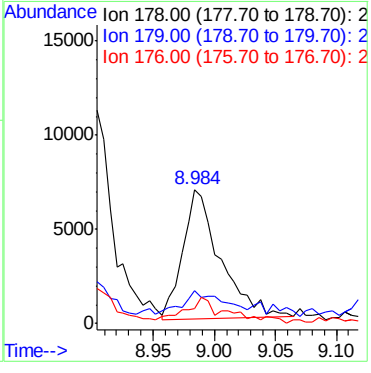




#78
Anthracene
Concen: 0.44 ppb
RT: 8.984 min Scan# 1571
Delta R.T. -0.053 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:178 Resp: 14694

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	44.3
176	7.7	0.0	48.3



9.1.11
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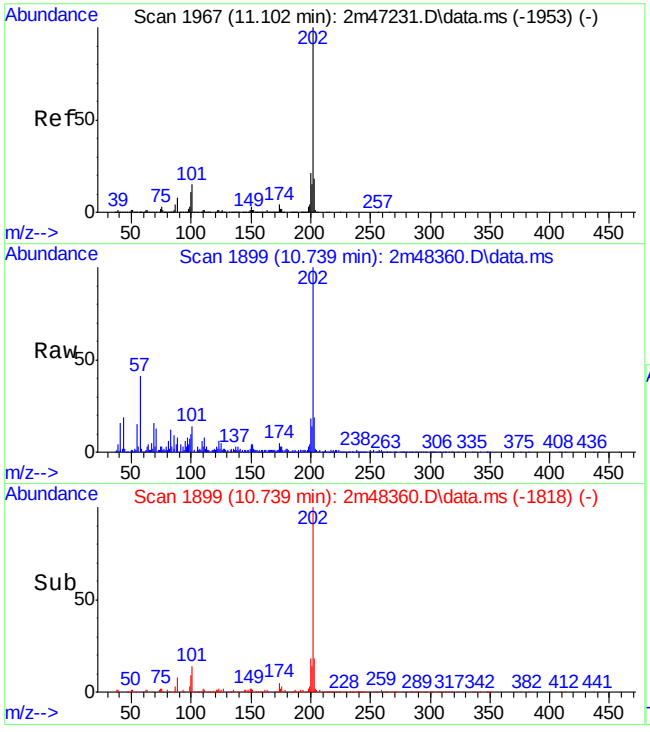
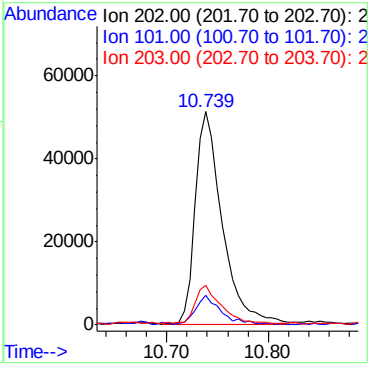
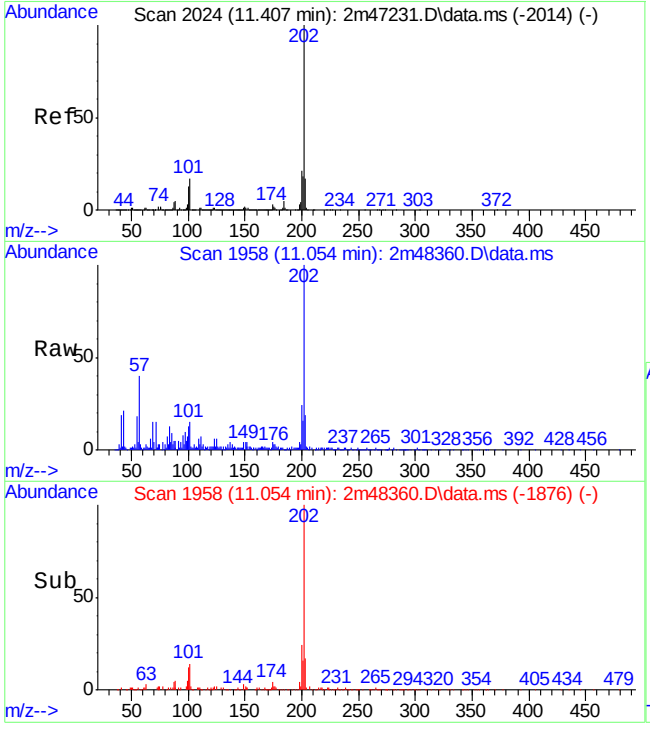


#81
Fluoranthene
Concen: 2.81 ppb
RT: 10.739 min Scan# 1899
Delta R.T. -0.064 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:202 Resp: 93670

Ion	Ratio	Lower	Upper
202	100		
101	13.1	0.0	43.8
203	17.6	0.0	47.5

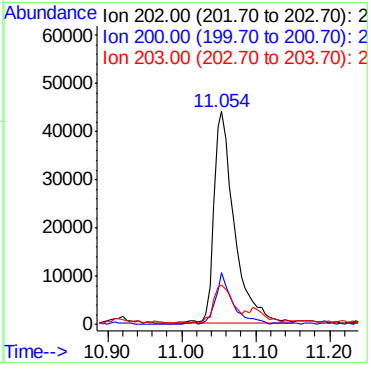




#84
Pyrene
Concen: 2.33 ppb
RT: 11.054 min Scan# 1958
Delta R.T. -0.059 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

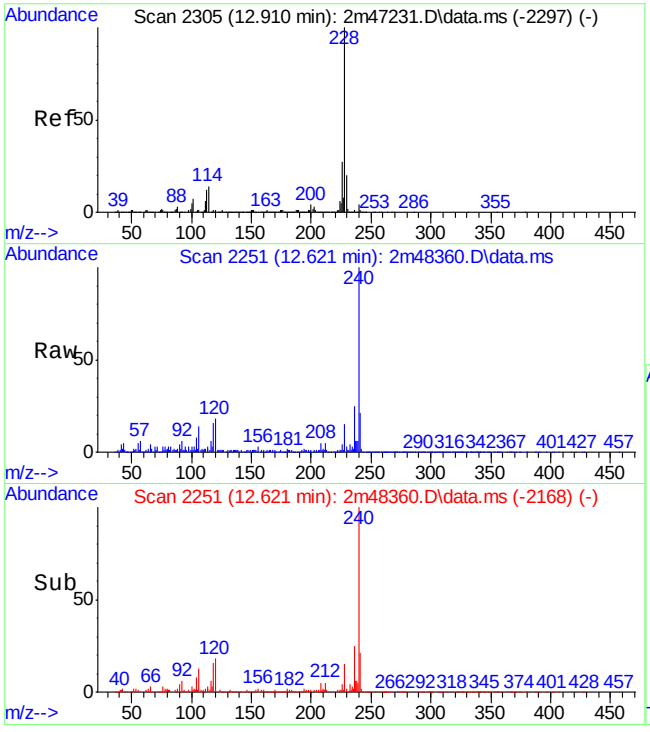
Tgt Ion:202 Resp: 85150

Ion	Ratio	Lower	Upper
202	100		
200	23.9	0.0	51.3
203	17.1	0.0	47.6



9.1.11

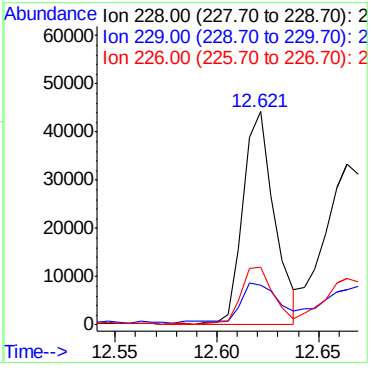
9

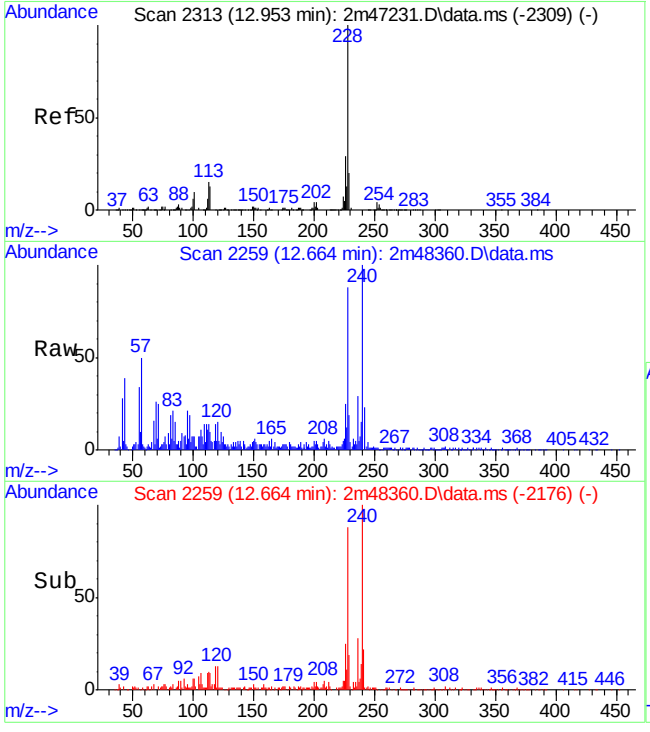


#88
Benzo[a]anthracene
Concen: 1.37 ppb
RT: 12.621 min Scan# 2251
Delta R.T. -0.053 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:228 Resp: 47845

Ion	Ratio	Lower	Upper
228	100		
229	16.1	0.0	49.3
226	27.4	0.0	56.0

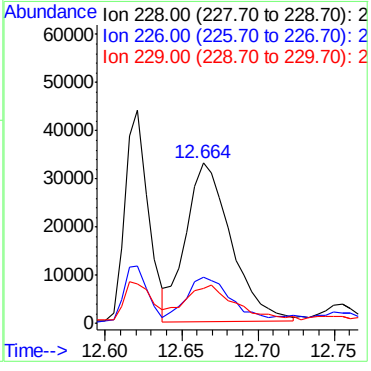


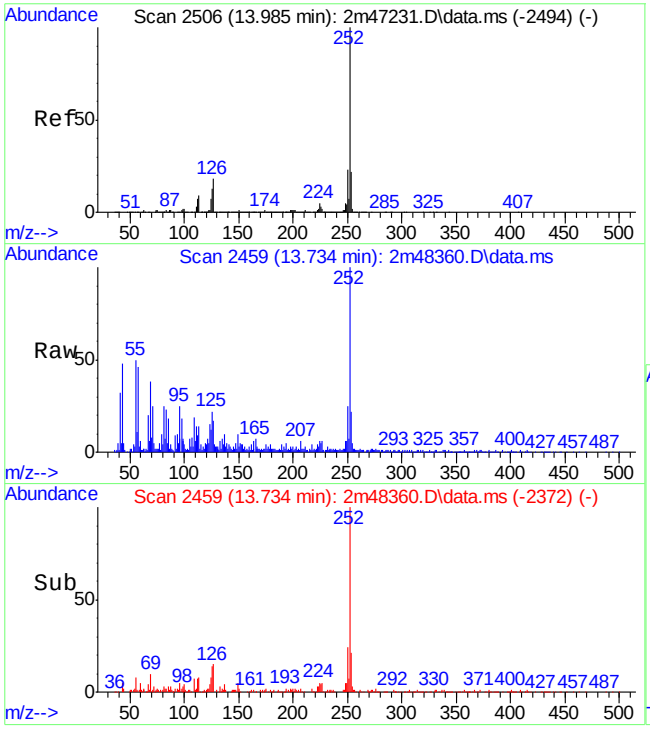


#90
Chrysene
Concen: 1.99 ppb
RT: 12.664 min Scan# 2259
Delta R.T. -0.053 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:228 Resp: 68646

Ion	Ratio	Lower	Upper
228	100		
226	27.9	0.0	57.7
229	17.8	0.0	49.3

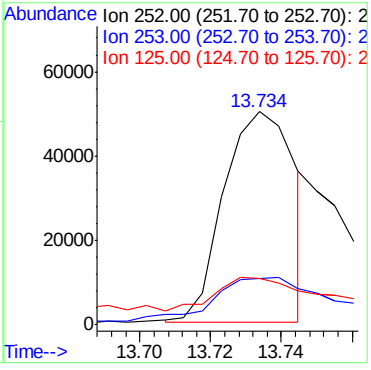


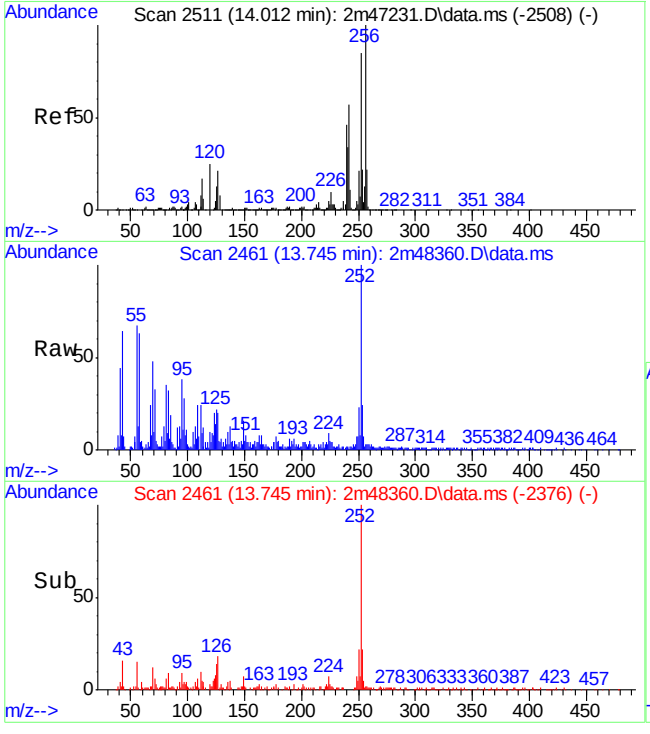


#94
Benzo[b]fluoranthene
Concen: 1.96 ppb m
RT: 13.734 min Scan# 2459
Delta R.T. -0.032 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:252 Resp: 69066

Ion	Ratio	Lower	Upper
252	100		
253	21.9	0.0	51.6
125	21.7	0.0	40.1

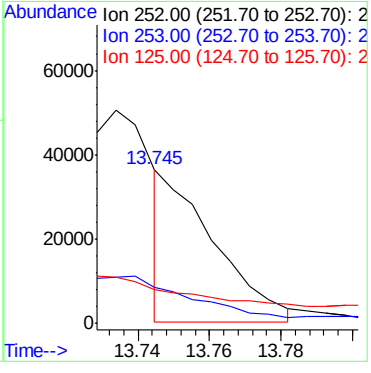




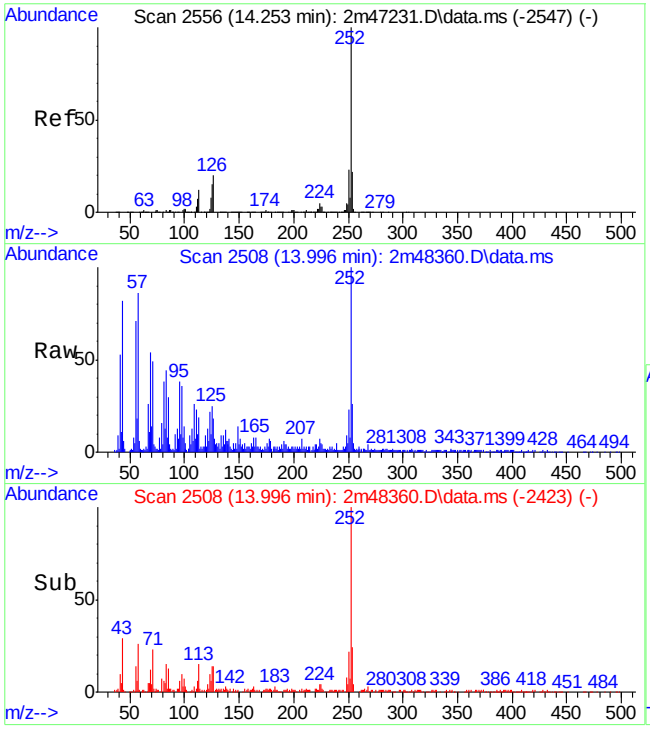
#95
Benzo[k]fluoranthene
Concen: 1.10 ppb m
RT: 13.745 min Scan# 2461
Delta R.T. -0.043 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:252 Resp: 35066

Ion	Ratio	Lower	Upper
252	100		
253	23.6	0.0	52.7
125	22.0	0.0	42.9



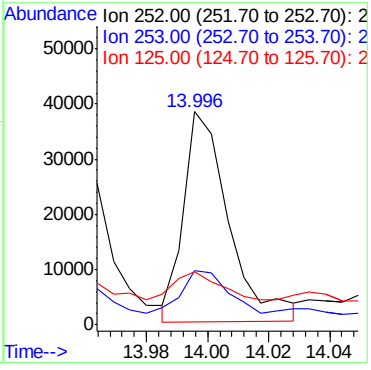
9.1.11
9

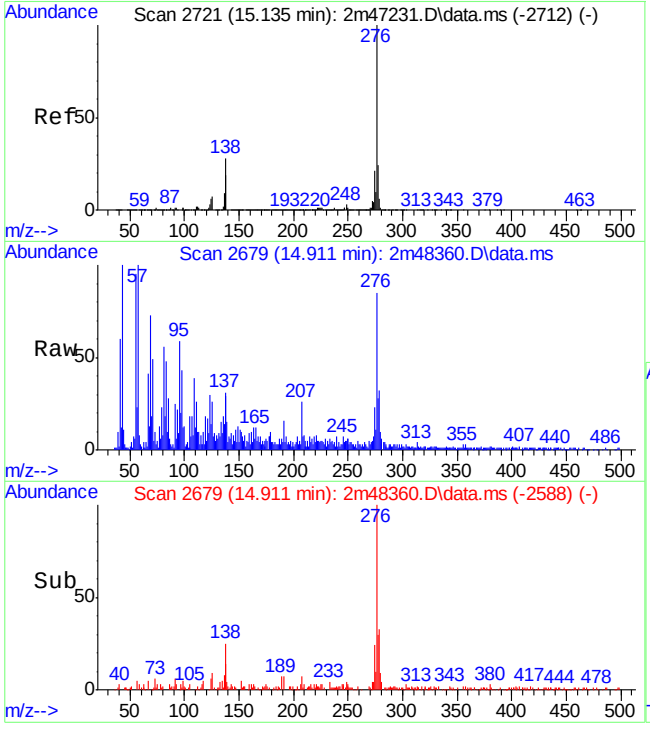


#96
Benzo[a]pyrene
Concen: 1.30 ppb
RT: 13.996 min Scan# 2508
Delta R.T. -0.043 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:252 Resp: 39084

Ion	Ratio	Lower	Upper
252	100		
253	19.6	0.0	52.4
125	11.9	0.0	42.7

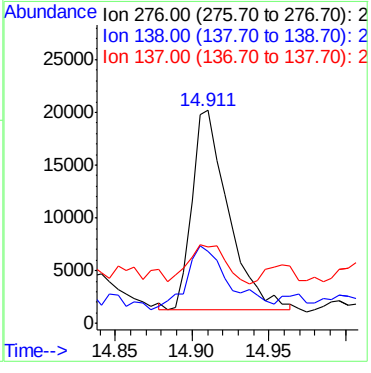




#97
Indeno[1,2,3-cd]pyrene
Concen: 0.90 ppb m
RT: 14.911 min Scan# 2679
Delta R.T. -0.011 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

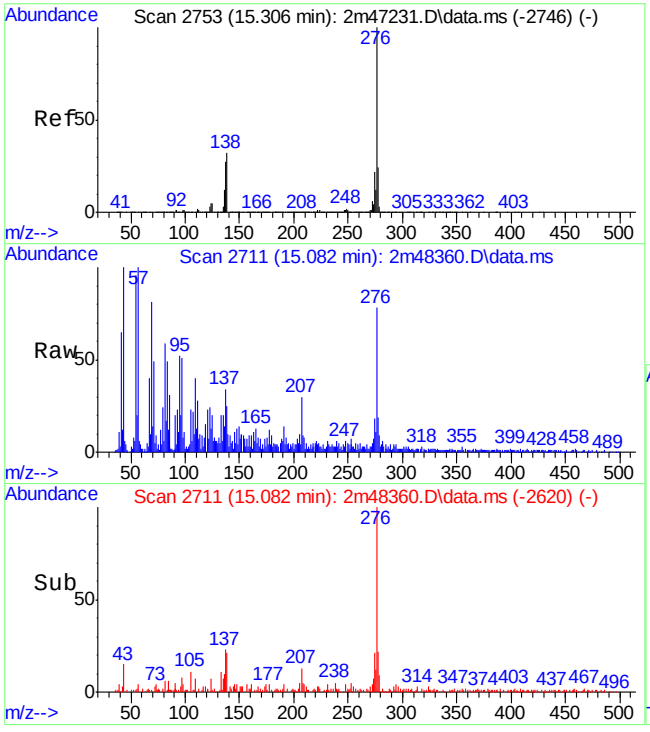
Tgt Ion:276 Resp: 31281

Ion	Ratio	Lower	Upper
276	100		
138	33.9	0.0	57.6
137	36.1	0.0	48.9



9.1.11

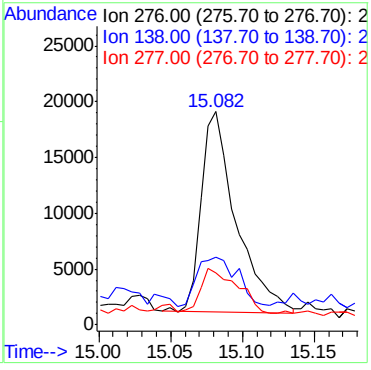
9



#101
Benzo[g,h,i]perylene
Concen: 1.02 ppb
RT: 15.082 min Scan# 2711
Delta R.T. -0.011 min
Lab File: 2m48360.D
Acq: 8 Dec 2012 1:47 pm

Tgt Ion:276 Resp: 30453

Ion	Ratio	Lower	Upper
276	100		
138	18.9	0.1	60.1
277	18.6	0.0	53.2



9.1.11

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48361.D
Acq On : 8 Dec 2012 2:10 pm
Operator : kristis
Sample : jb22267-12
Misc : op61828,e2m2073,33.7,,,1,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 11 17:39:33 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	247535	40.00	ppb	-0.07
24) Naphthalene-d8	4.042	136	1087187	40.00	ppb	-0.08
47) Acenaphthene-d10	6.615	164	651164	40.00	ppb	-0.09
69) Phenanthrene-d10	8.845	188	1080867	40.00	ppb	-0.09
83) Chrysene-d12	12.632	240	1097056	40.00	ppb	-0.06
92) Perylene-d12	14.033	264	965087	40.00	ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	247535	40.00	ppb	-0.07
104) Acenaphthene-d10a	6.615	164	651164	40.00	ppb	-0.09
106) Chrysene-d12a	12.632	240	1097056	40.00	ppb	-0.06
108) Phenanthrene-d10a	8.845	188	1080867	40.00	ppb	-0.09
110) Chrysene-d12b	12.632	240	1097056	40.00	ppb	-0.06

System Monitoring Compounds						
5) 2-Fluorophenol	1.507	112	175305	19.46	ppb	-0.04
Spiked Amount 50.000			Recovery = 38.92%			
8) Phenol-d5	2.320	99	249201	20.64	ppb	-0.05
Spiked Amount 50.000			Recovery = 41.28%			
25) Nitrobenzene-d5	3.192	82	226979	19.46	ppb	-0.05
Spiked Amount 50.000			Recovery = 38.92%			
51) 2-Fluorobiphenyl	5.689	172	470093	21.96	ppb	-0.09
Spiked Amount 50.000			Recovery = 43.92%			
73) 2,4,6-Tribromophenol	7.872	330	106349	41.87	ppb	-0.08
Spiked Amount 50.000			Recovery = 83.74%			
85) Terphenyl-d14	11.418	244	997051	44.98	ppb	-0.08
Spiked Amount 50.000			Recovery = 89.96%			

Target Compounds						Qvalue
38) Naphthalene	4.069	128	16064	0.53	ppb	97
44) 2-Methylnaphthalene	5.090	141	9509	0.51	ppb	85
56) Acenaphthylene	6.390	152	37930	1.21	ppb	99
77) Phenanthrene	8.888	178	33121	1.00	ppb	92
78) Anthracene	8.973	178	19046	0.58	ppb	87
81) Fluoranthene	10.728	202	74460	2.28	ppb	100
84) Pyrene	11.049	202	73931	2.08	ppb	98
88) Benzo[a]anthracene	12.616	228	54207	1.61	ppb	83
90) Chrysene	12.659	228	74853	2.24	ppb	97
94) Benzo[b]fluoranthene	13.723	252	117858m	3.51	ppb	
95) Benzo[k]fluoranthene	13.739	252	36978m	1.22	ppb	
96) Benzo[a]pyrene	13.996	252	57998	2.03	ppb	96
97) Indeno[1,2,3-cd]pyrene	14.894	276	59903	1.81	ppb	97
99) Dibenz[a,h]anthracene	14.900	278	22196m	0.80	ppb	
101) Benzo[g,h,i]perylene	15.066	276	57971m	2.05	ppb	

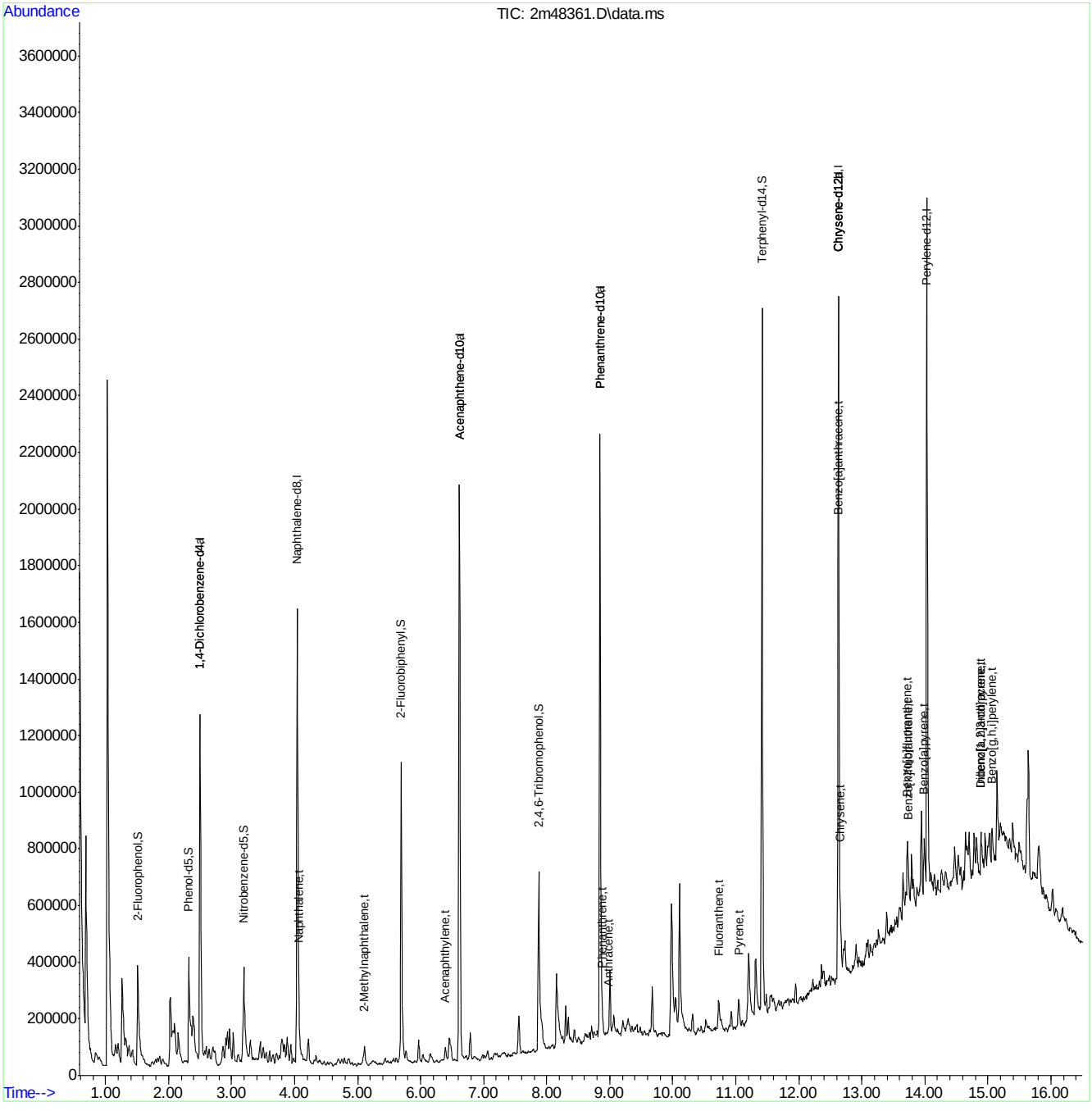
(#) = qualifier out of range (m) = manual integration (+) = signals summed

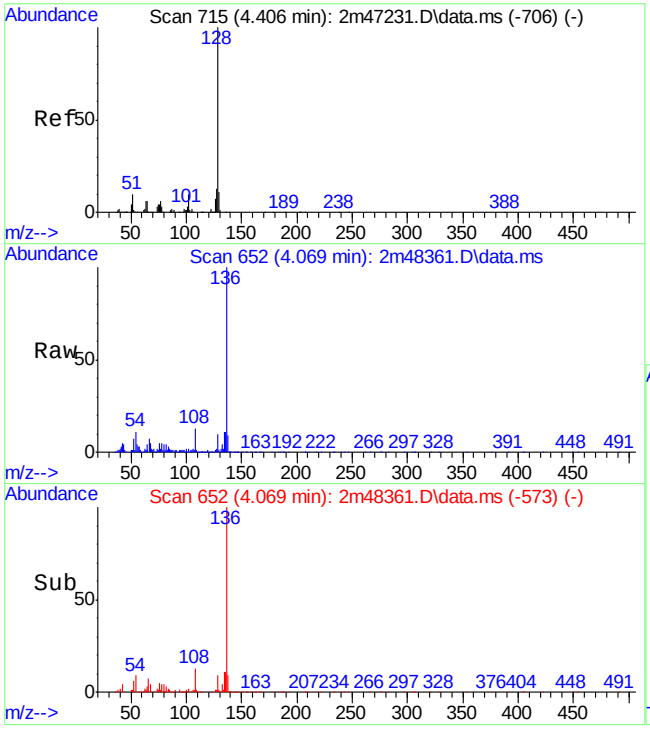
9.1.12
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48361.D
Acq On : 8 Dec 2012 2:10 pm
Operator : kristis
Sample : jb22267-12
Misc : op61828,e2m2073,33.7,,,1,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 11 17:39:33 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

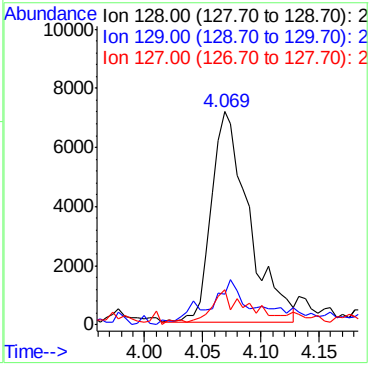


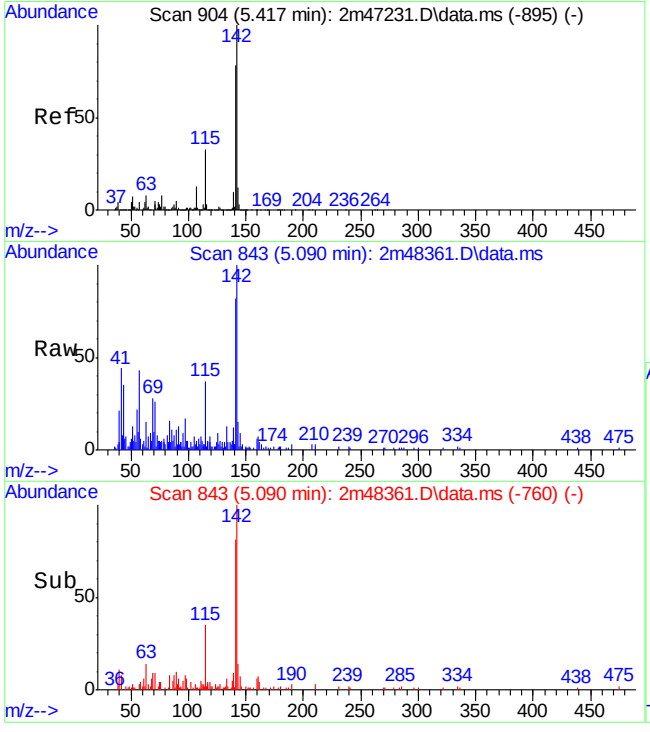


#38
Naphthalene
Concen: 0.53 ppb
RT: 4.069 min Scan# 652
Delta R.T. -0.075 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:128 Resp: 16064

Ion	Ratio	Lower	Upper
128	100		
129	9.6	0.0	40.9
127	14.0	0.0	43.3

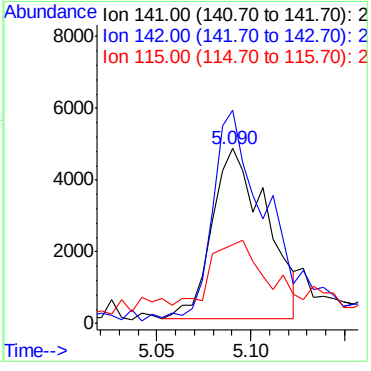




#44
2-Methylnaphthalene
Concen: 0.51 ppb
RT: 5.090 min Scan# 843
Delta R.T. -0.053 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:141 Resp: 9509

Ion	Ratio	Lower	Upper
141	100		
142	130.1	81.7	141.7
115	35.6	12.0	72.0



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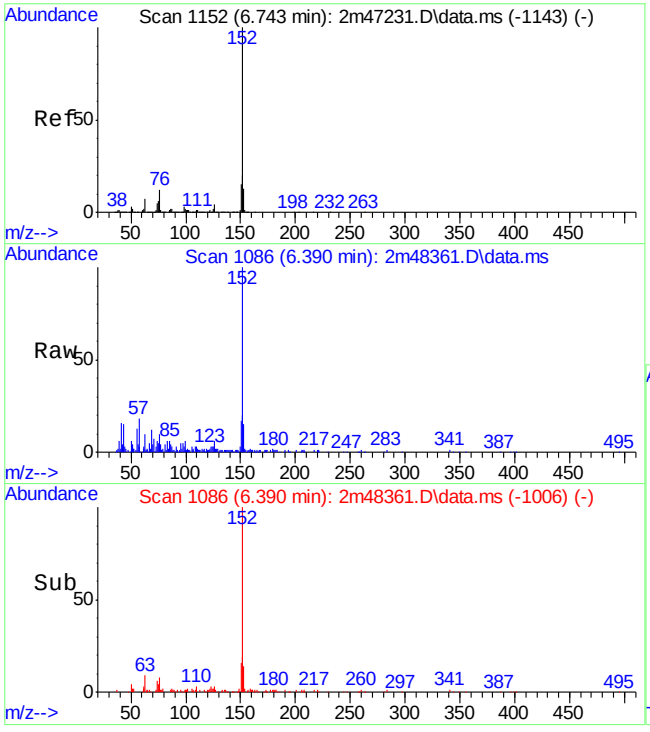
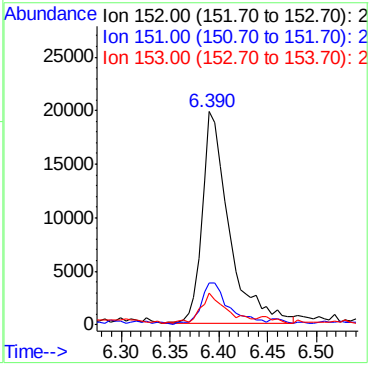
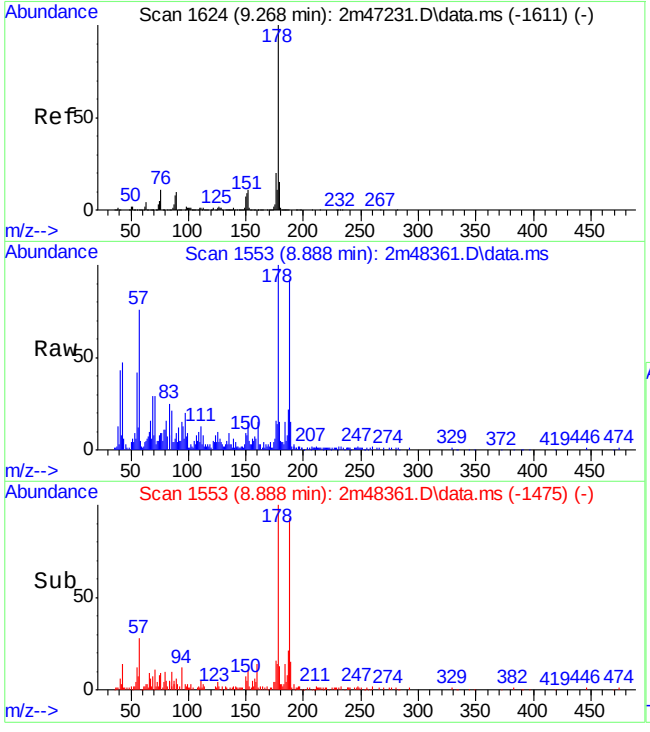


#56
Acenaphthylene
Concen: 1.21 ppb
RT: 6.390 min Scan# 1086
Delta R.T. -0.070 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:152 Resp: 37930

Ion	Ratio	Lower	Upper
152	100		
151	19.3	0.0	49.4
153	14.3	0.0	43.0

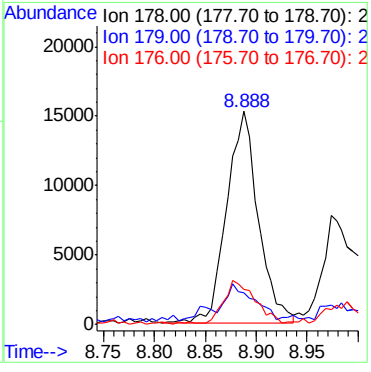


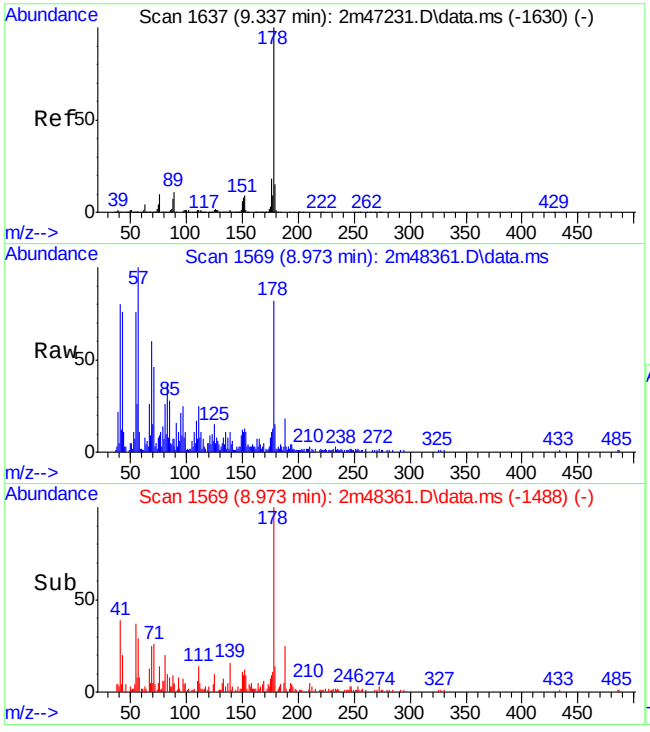


#77
Phenanthrene
Concen: 1.00 ppb
RT: 8.888 min Scan# 1553
Delta R.T. -0.080 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:178 Resp: 33121

Ion	Ratio	Lower	Upper
178	100		
179	11.3	0.0	44.9
176	15.7	0.0	49.1

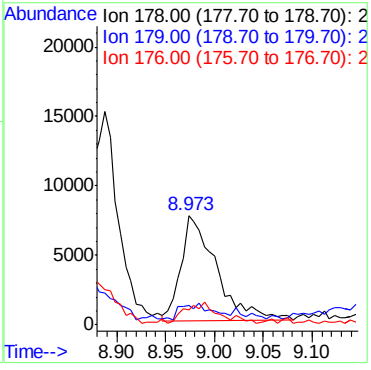


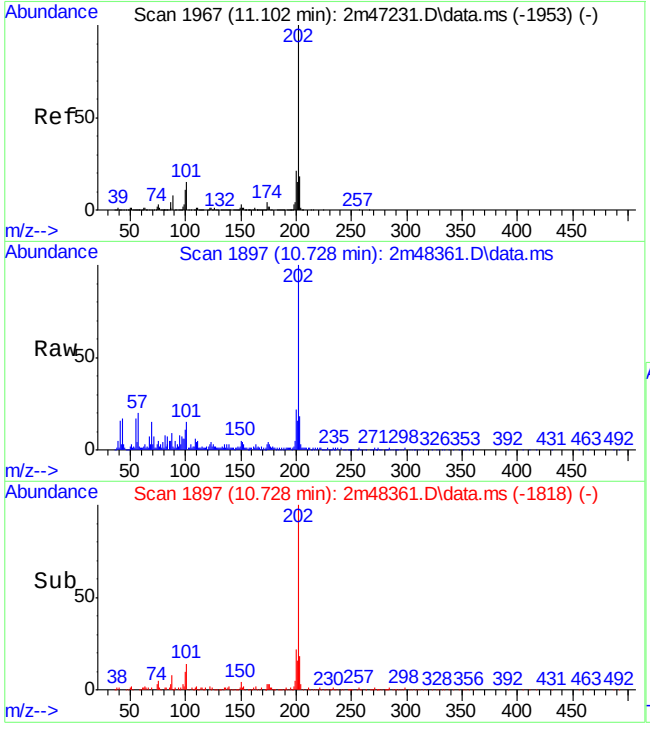


#78
Anthracene
Concen: 0.58 ppb
RT: 8.973 min Scan# 1569
Delta R.T. -0.064 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:178 Resp: 19046

Ion	Ratio	Lower	Upper
178	100		
179	10.9	0.0	44.3
176	11.0	0.0	48.3

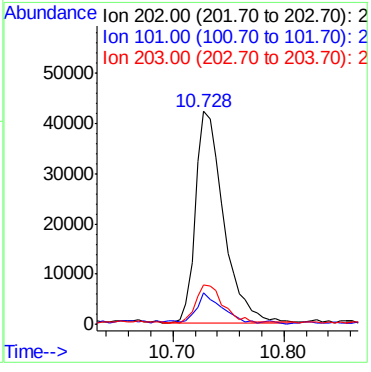


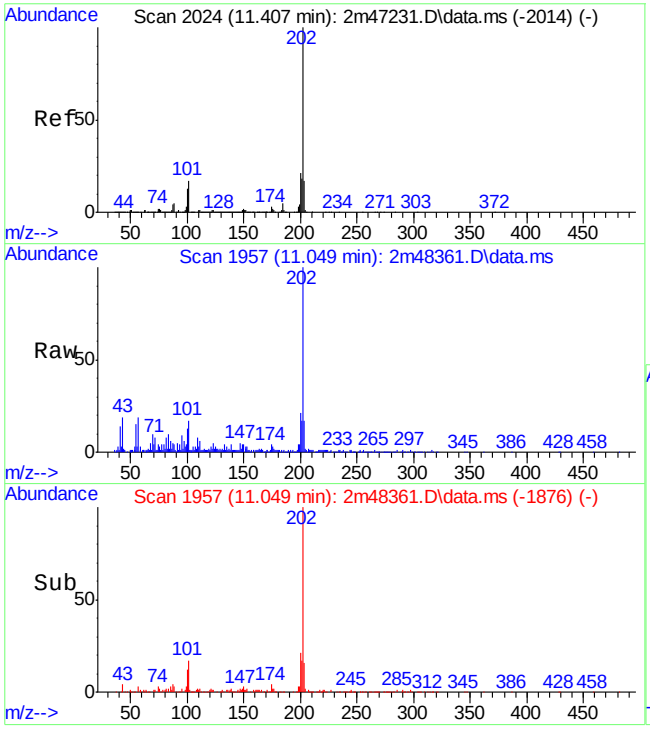


#81
Fluoranthene
Concen: 2.28 ppb
RT: 10.728 min Scan# 1897
Delta R.T. -0.075 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:202 Resp: 74460

Ion	Ratio	Lower	Upper
202	100		
101	13.8	0.0	43.8
203	17.2	0.0	47.5

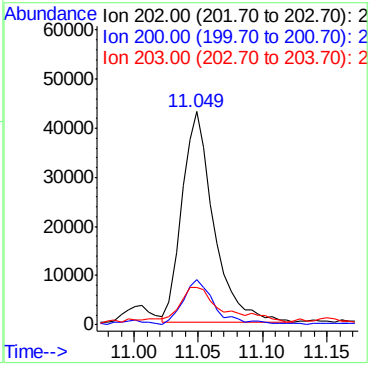


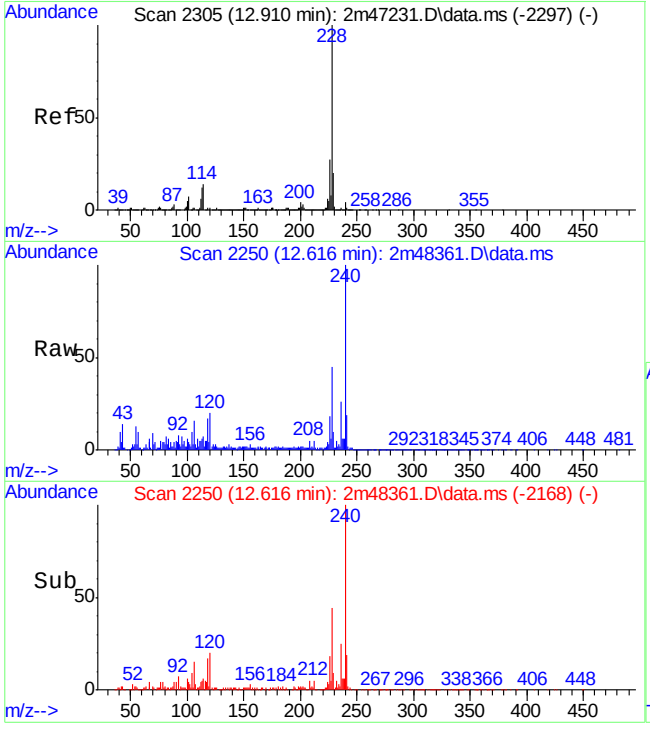


#84
Pyrene
Concen: 2.08 ppb
RT: 11.049 min Scan# 1957
Delta R.T. -0.064 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:202 Resp: 73931

Ion	Ratio	Lower	Upper
202	100		
200	21.1	0.0	51.3
203	15.5	0.0	47.6

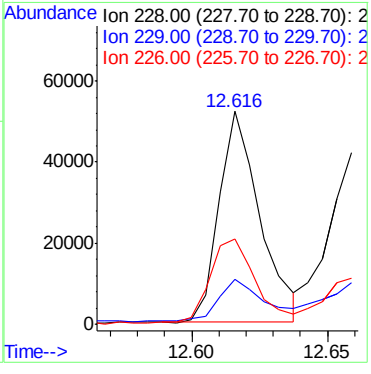




#88
Benzo[a]anthracene
Concen: 1.61 ppb
RT: 12.616 min Scan# 2250
Delta R.T. -0.059 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:228 Resp: 54207

Ion	Ratio	Lower	Upper
228	100		
229	18.4	0.0	49.3
226	40.0	0.0	56.0



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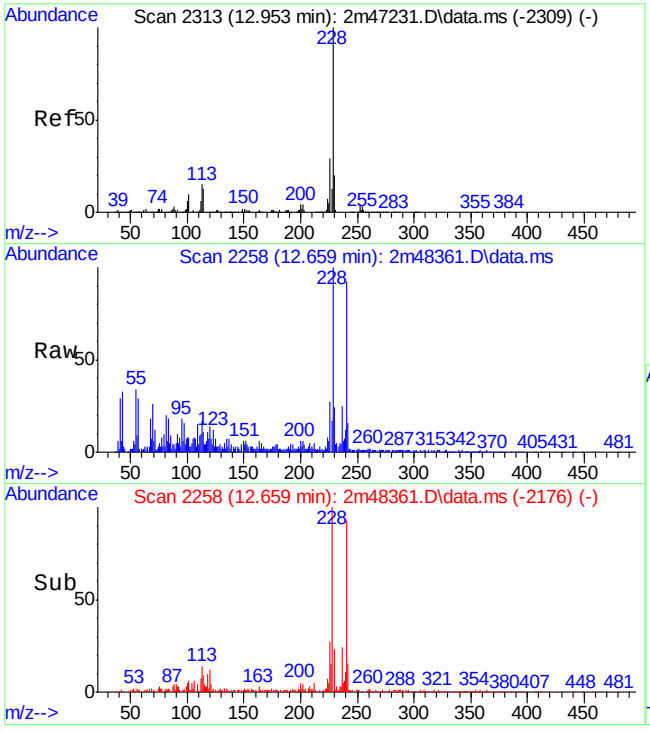
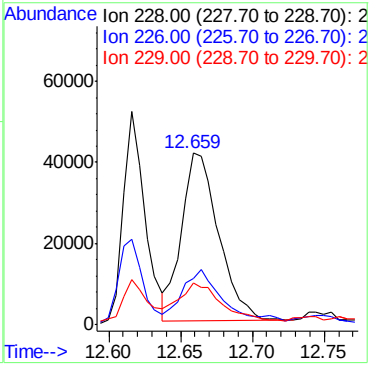
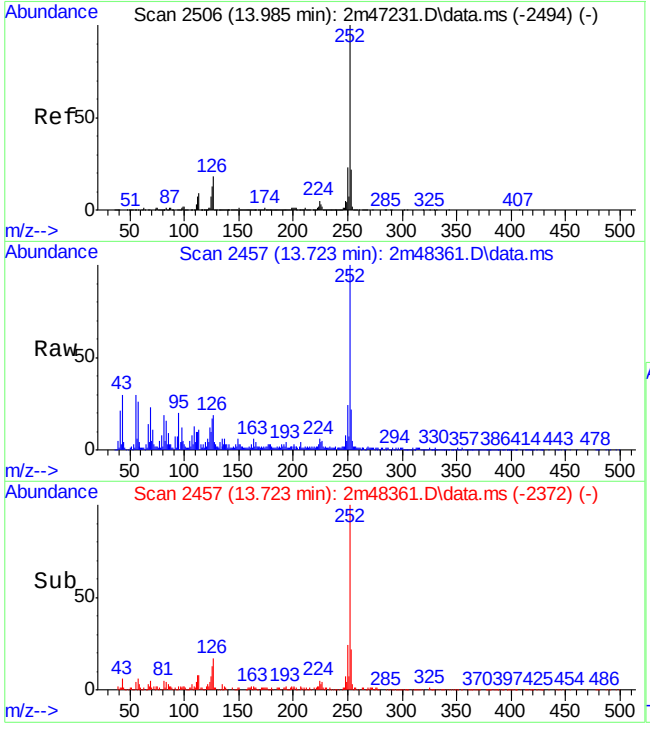


#90
Chrysene
Concen: 2.24 ppb
RT: 12.659 min Scan# 2258
Delta R.T. -0.059 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:228 Resp: 74853

Ion	Ratio	Lower	Upper
228	100		
226	24.8	0.0	57.7
229	19.5	0.0	49.3

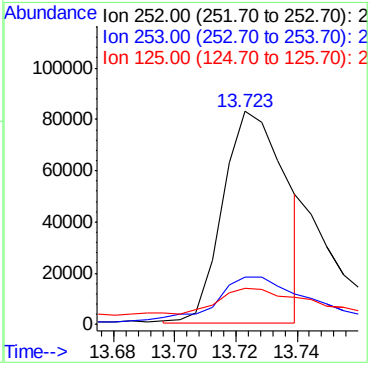




#94
Benzo[b]fluoranthene
Concen: 3.51 ppb m
RT: 13.723 min Scan# 2457
Delta R.T. -0.043 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:252 Resp: 117858

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	51.6
125	17.1	0.0	40.1



9.1.12

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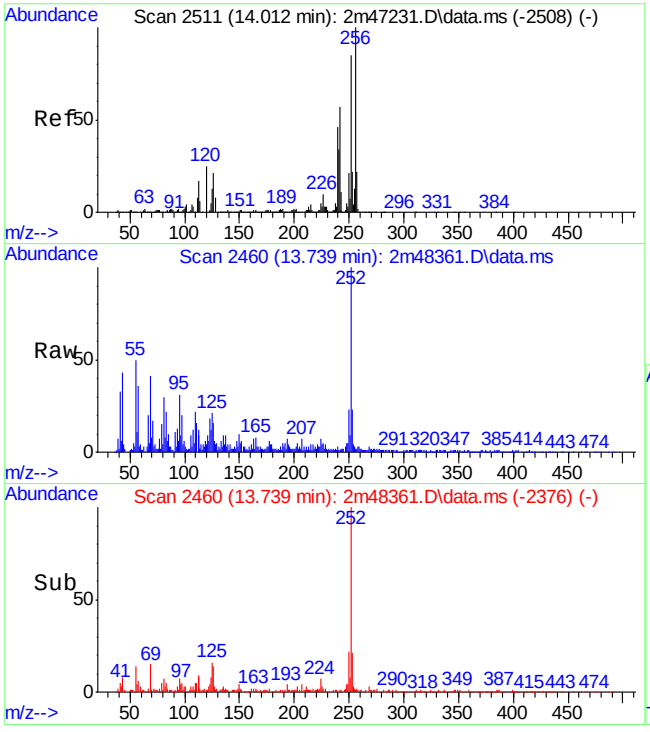
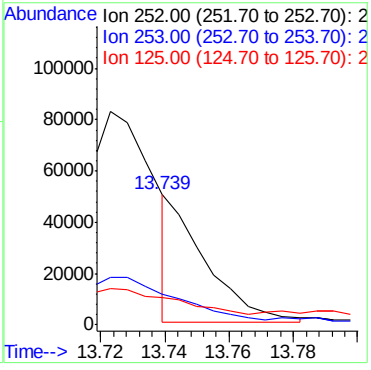
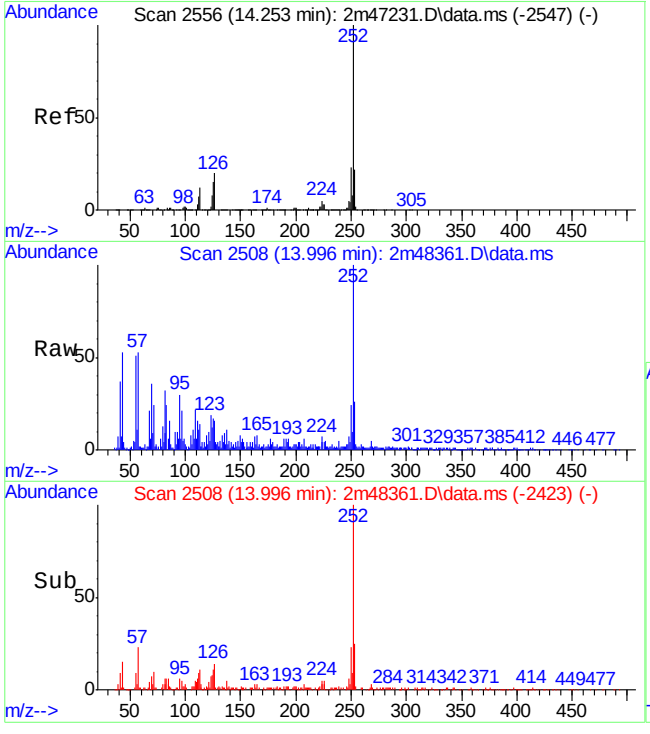


#95
Benzo[k]fluoranthene
Concen: 1.22 ppb m
RT: 13.739 min Scan# 2460
Delta R.T. -0.048 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:252 Resp: 36978

Ion	Ratio	Lower	Upper
252	100		
253	23.1	0.0	52.7
125	21.3	0.0	42.9

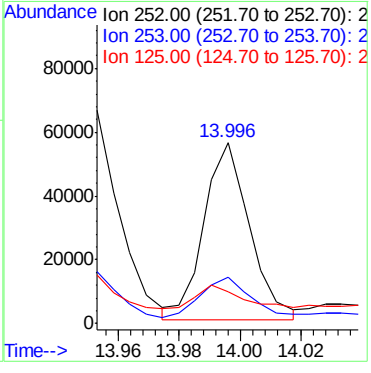


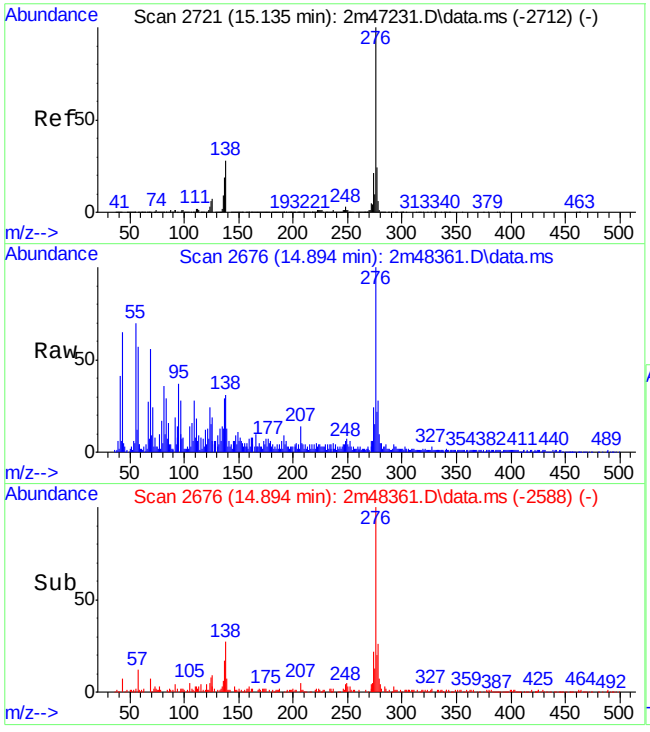


#96
Benzo[a]pyrene
Concen: 2.03 ppb
RT: 13.996 min Scan# 2508
Delta R.T. -0.043 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:252 Resp: 57998

Ion	Ratio	Lower	Upper
252	100		
253	23.4	0.0	52.4
125	9.4	0.0	42.7

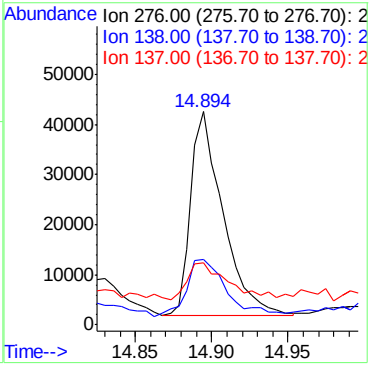


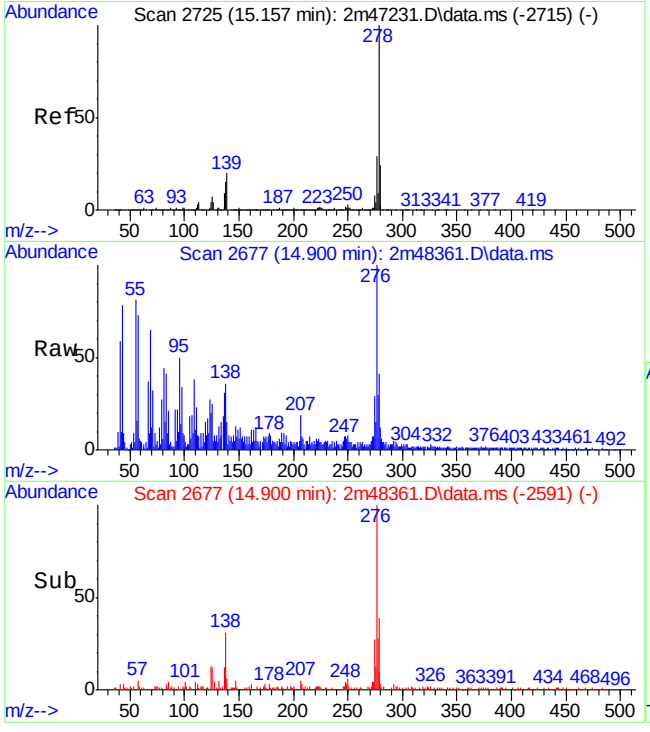


#97
Indeno[1,2,3-cd]pyrene
Concen: 1.81 ppb
RT: 14.894 min Scan# 2676
Delta R.T. -0.027 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:276 Resp: 59903

Ion	Ratio	Lower	Upper
276	100		
138	26.5	0.0	57.6
137	16.7	0.0	48.9

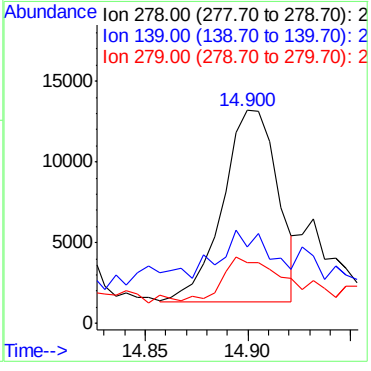




#99
Dibenz[a,h]anthracene
Concen: 0.80 ppb m
RT: 14.900 min Scan# 2677
Delta R.T. -0.037 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:278 Resp: 22196

Ion	Ratio	Lower	Upper
278	100		
139	36.1	0.0	52.4
279	28.8	0.0	54.1



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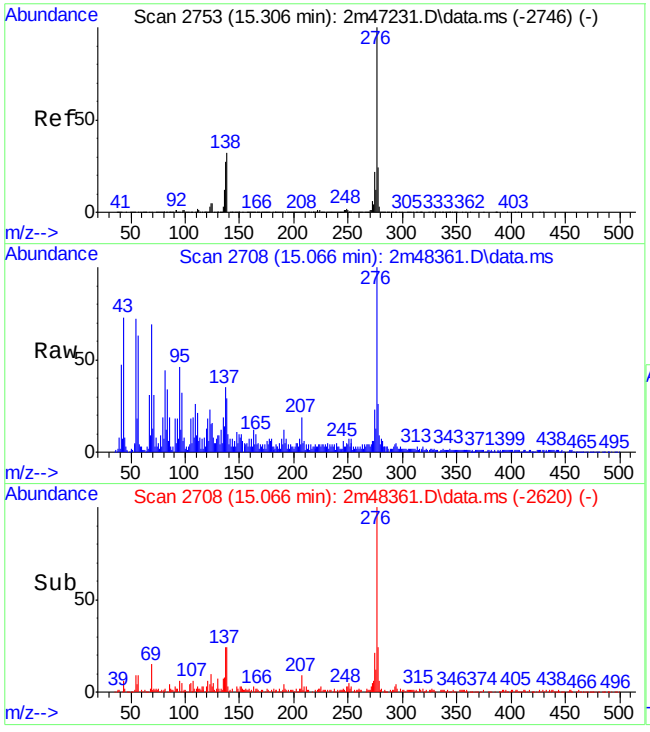
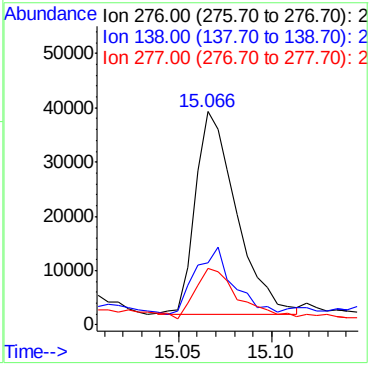


#101
Benzo[g,h,i]perylene
Concen: 2.05 ppb m
RT: 15.066 min Scan# 2708
Delta R.T. -0.027 min
Lab File: 2m48361.D
Acq: 8 Dec 2012 2:10 pm

Tgt Ion:276 Resp: 57971

Ion	Ratio	Lower	Upper
276	100		
138	29.3	0.1	60.1
277	26.3	0.0	53.2



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Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48373.D
Acq On : 8 Dec 2012 6:45 pm
Operator : kristis
Sample : jb22267-13
Misc : op61828,e2m2073,32.6,,,1,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 11 17:56:32 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	307355	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1373069	40.00	ppb	0.00
47) Acenaphthene-d10	6.615	164	810095	40.00	ppb	0.00
69) Phenanthrene-d10	8.851	188	1306288	40.00	ppb	0.00
83) Chrysene-d12	12.637	240	1278757	40.00	ppb	0.00
92) Perylene-d12	14.044	264	1265457	40.00	ppb	0.01
102) 1,4-Dichlorobenzene-d4a	2.502	152	307355	40.00	ppb	0.00
104) Acenaphthene-d10a	6.615	164	810095	40.00	ppb	0.00
106) Chrysene-d12a	12.637	240	1278757	40.00	ppb	0.00
108) Phenanthrene-d10a	8.851	188	1306288	40.00	ppb	0.00
110) Chrysene-d12b	12.637	240	1278757	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	219060	19.58	ppb	0.01
Spiked Amount 50.000			Recovery	=	39.16%	
8) Phenol-d5	2.325	99	347277	23.16	ppb	0.02
Spiked Amount 50.000			Recovery	=	46.32%	
25) Nitrobenzene-d5	3.186	82	303187	20.58	ppb	0.00
Spiked Amount 50.000			Recovery	=	41.16%	
51) 2-Fluorobiphenyl	5.689	172	666563	25.02	ppb	0.00
Spiked Amount 50.000			Recovery	=	50.04%	
73) 2,4,6-Tribromophenol	7.872	330	147056	47.90	ppb	0.00
Spiked Amount 50.000			Recovery	=	95.80%	
85) Terphenyl-d14	11.423	244	1348943	52.20	ppb	0.00
Spiked Amount 50.000			Recovery	=	104.40%	

Target Compounds						Qvalue
56) Acenaphthylene	6.385	152	30129	0.77	ppb	98
77) Phenanthrene	8.883	178	264760	6.62	ppb	98
78) Anthracene	8.957	178	68892	1.74	ppb	96
81) Fluoranthene	10.717	202	504204	12.78	ppb	97
84) Pyrene	11.038	202	438525	10.60	ppb	98
88) Benzo[a]anthracene	12.621	228	283244	7.20	ppb	92
90) Chrysene	12.664	228	268109	6.88	ppb	98
94) Benzo[b]fluoranthene	13.718	252	338221m	7.68	ppb	
95) Benzo[k]fluoranthene	13.728	252	131961m	3.33	ppb	
96) Benzo[a]pyrene	13.991	252	248973	6.65	ppb	97
97) Indeno[1,2,3-cd]pyrene	14.884	276	189858	4.37	ppb	98
99) Dibenz[a,h]anthracene	14.889	278	49891m	1.37	ppb	
101) Benzo[g,h,i]perylene	15.060	276	180516	4.87	ppb	93

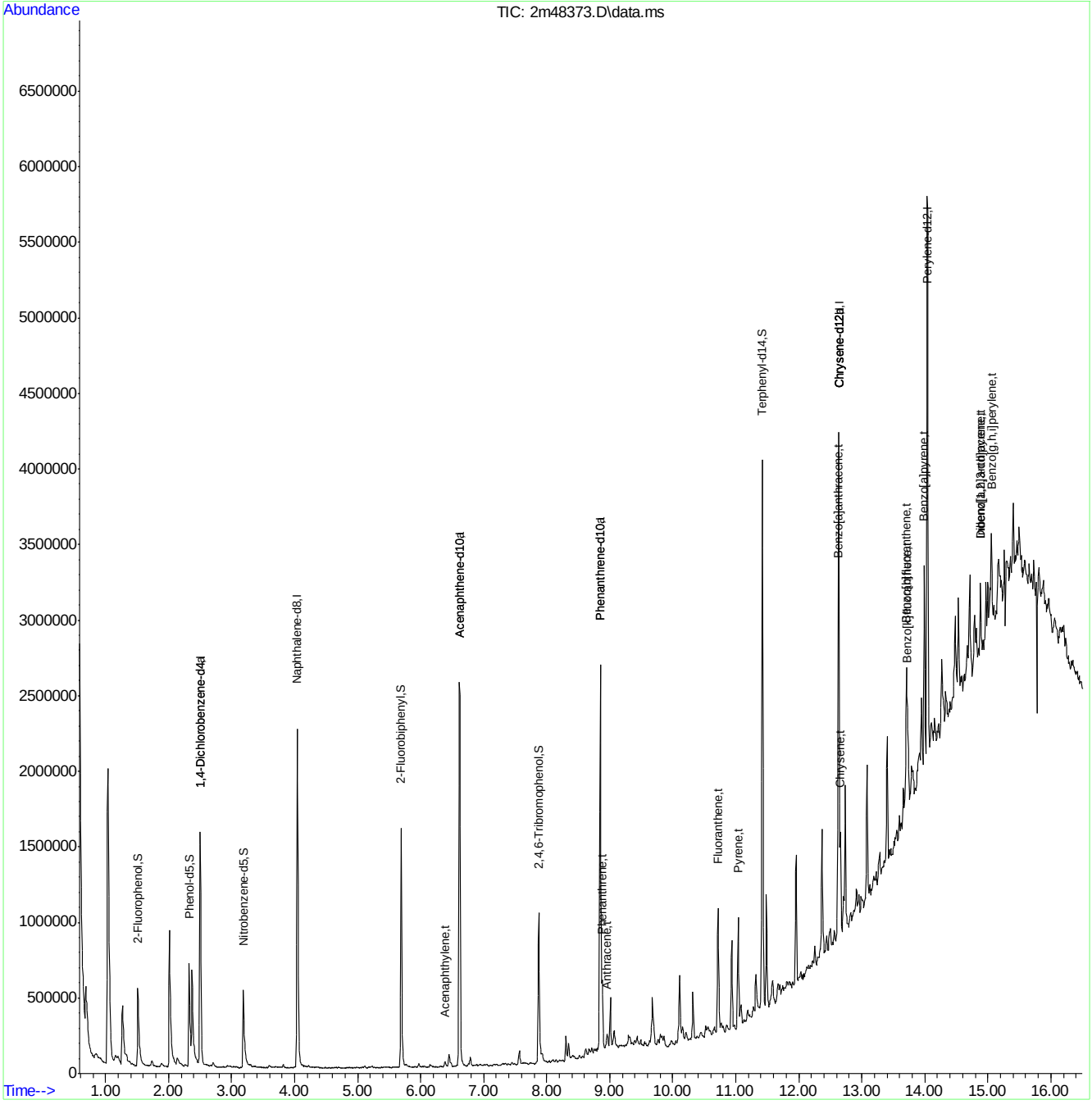
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.13
9

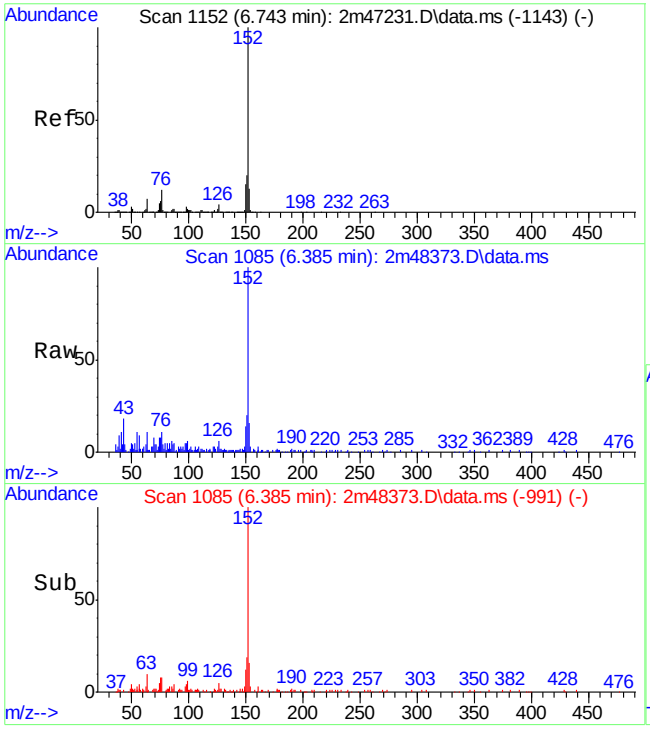
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48373.D
Acq On : 8 Dec 2012 6:45 pm
Operator : kristis
Sample : jb22267-13
Misc : op61828,e2m2073,32.6,,,1,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 11 17:56:32 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration



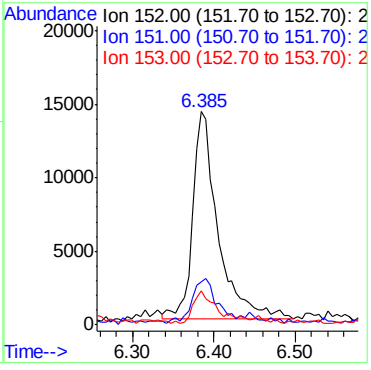
M2M2034.M Tue Dec 11 17:56:43 2012 MS2M Page: 2

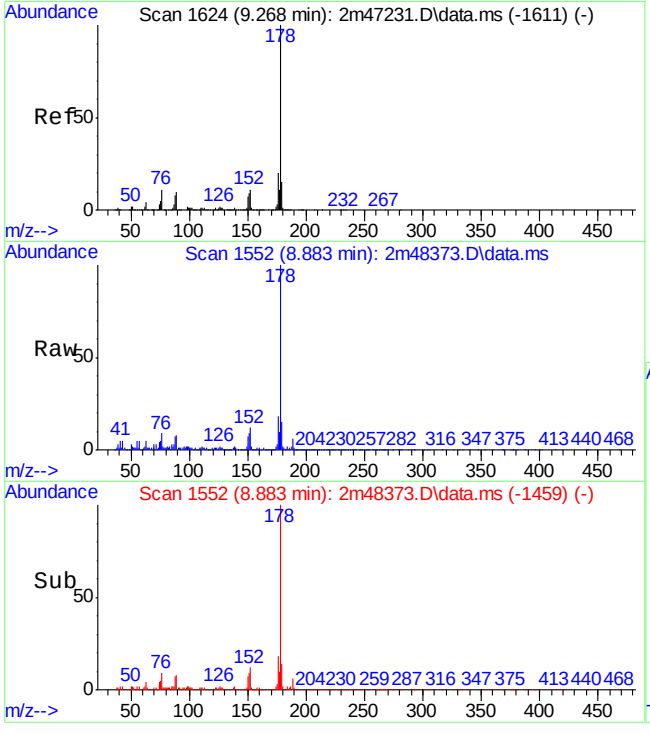


#56
Acenaphthylene
Concen: 0.77 ppb
RT: 6.385 min Scan# 1085
Delta R.T. 0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:152 Resp: 30129

Ion	Ratio	Lower	Upper
152	100		
151	19.1	0.0	49.4
153	15.1	0.0	43.0

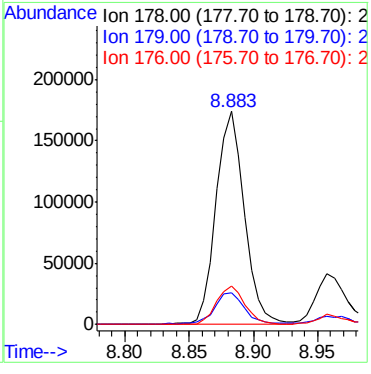




#77
Phenanthrene
Concen: 6.62 ppb
RT: 8.883 min Scan# 1552
Delta R.T. 0.000 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

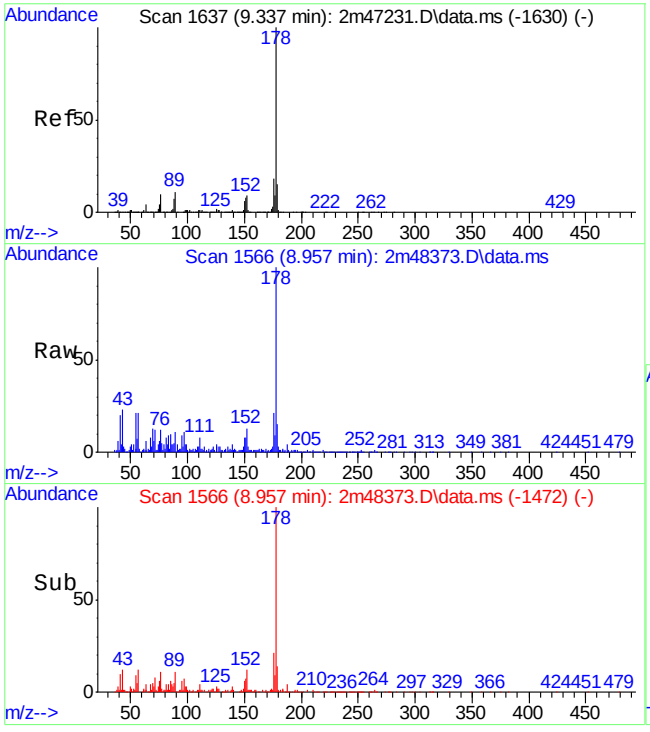
Tgt Ion:178 Resp: 264760

Ion	Ratio	Lower	Upper
178	100		
179	14.4	0.0	44.9
176	18.1	0.0	49.1



9.1.13

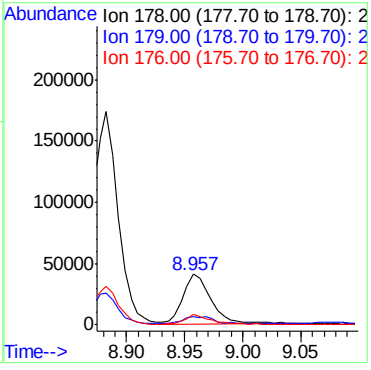
9

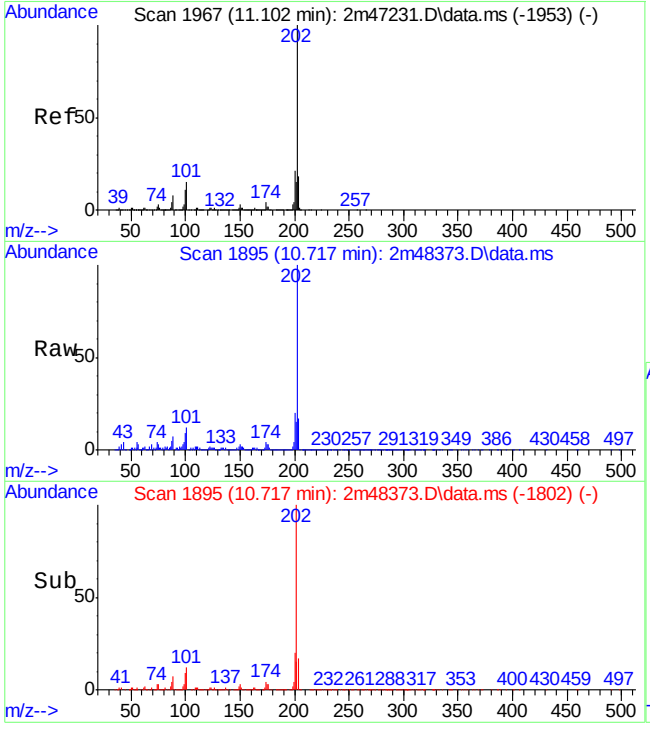


#78
Anthracene
Concen: 1.74 ppb
RT: 8.957 min Scan# 1566
Delta R.T. 0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:178 Resp: 68892

Ion	Ratio	Lower	Upper
178	100		
179	13.9	0.0	44.3
176	21.5	0.0	48.3

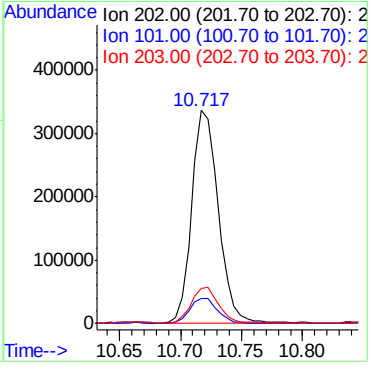


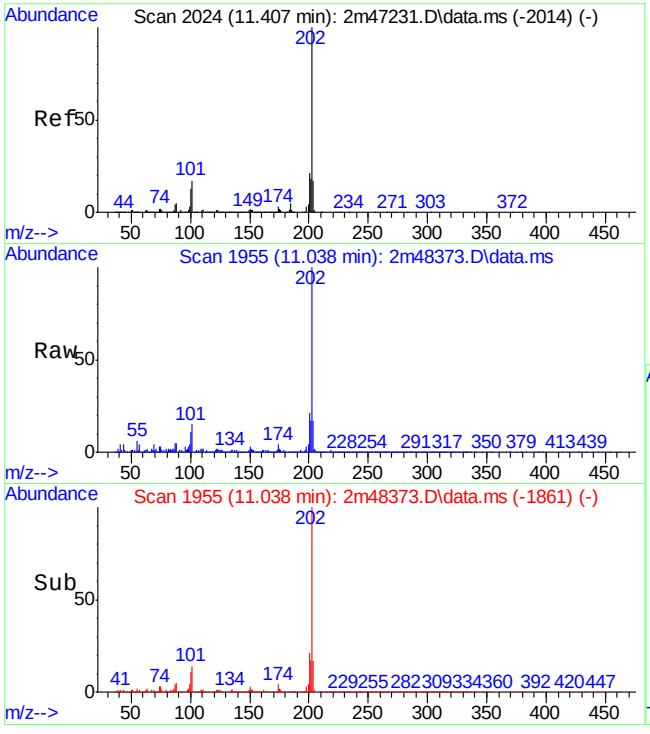


#81
Fluoranthene
Concen: 12.78 ppb
RT: 10.717 min Scan# 1895
Delta R.T. 0.000 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:202 Resp: 504204

Ion	Ratio	Lower	Upper
202	100		
101	11.8	0.0	43.8
203	16.5	0.0	47.5

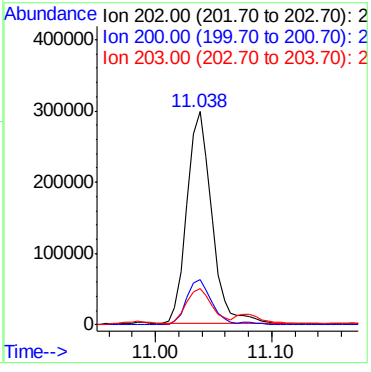


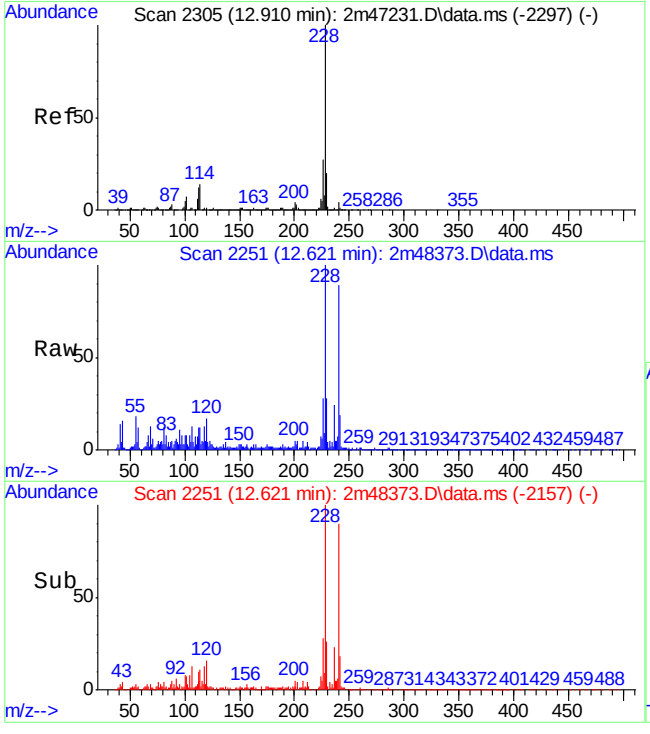


#84
Pyrene
Concen: 10.60 ppb
RT: 11.038 min Scan# 1955
Delta R.T. 0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:202 Resp: 438525

Ion	Ratio	Lower	Upper
202	100		
200	21.1	0.0	51.3
203	16.3	0.0	47.6

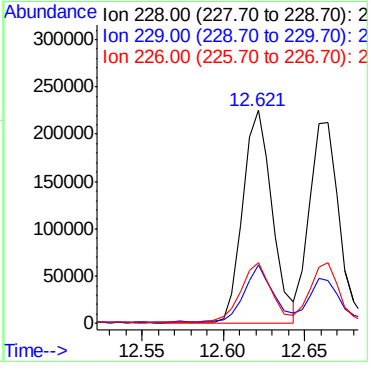




#88
Benzo[a]anthracene
Concen: 7.20 ppb
RT: 12.621 min Scan# 2251
Delta R.T. 0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

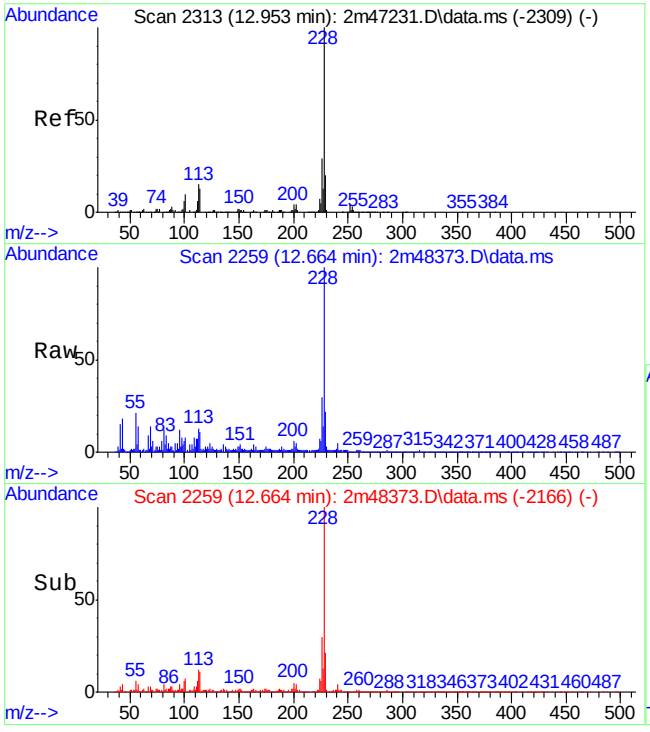
Tgt Ion:228 Resp: 283244

Ion	Ratio	Lower	Upper
228	100		
229	26.0	0.0	49.3
226	27.4	0.0	56.0



9.1.13

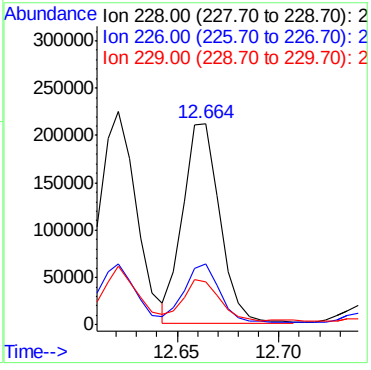
9

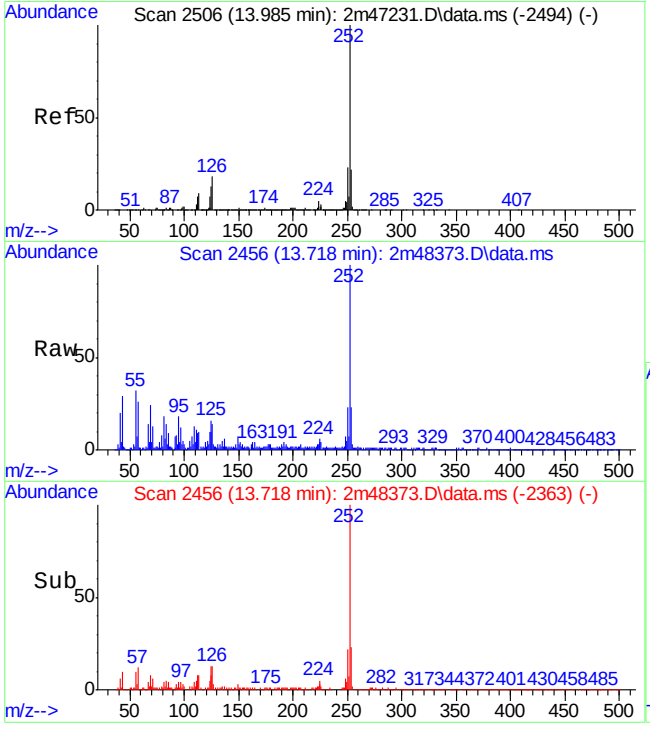


#90
Chrysene
Concen: 6.88 ppb
RT: 12.664 min Scan# 2259
Delta R.T. 0.000 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:228 Resp: 268109

Ion	Ratio	Lower	Upper
228	100		
226	29.4	0.0	57.7
229	18.8	0.0	49.3

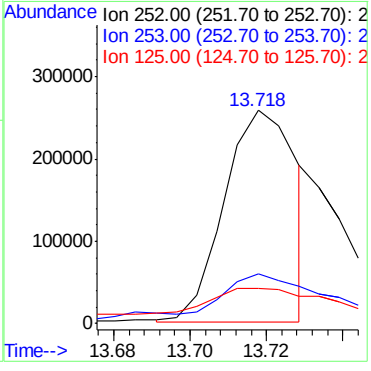


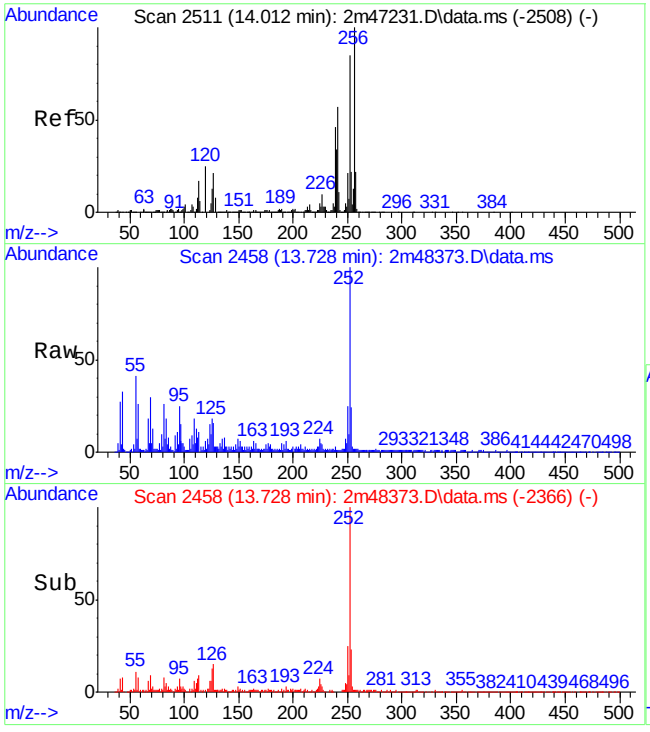


#94
Benzo[b]fluoranthene
Concen: 7.68 ppb m
RT: 13.718 min Scan# 2456
Delta R.T. 0.000 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:252 Resp: 338221

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	51.6
125	16.3	0.0	40.1

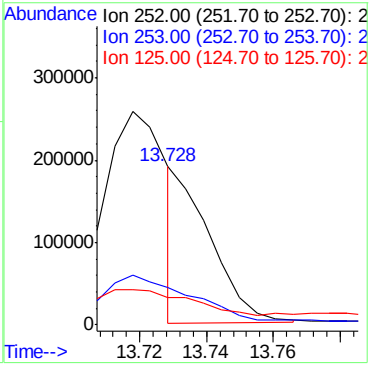


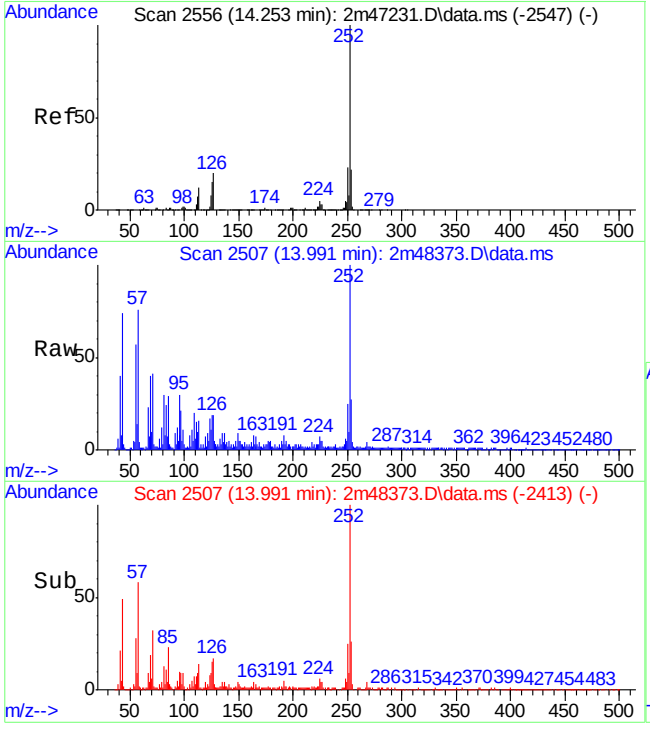


#95
Benzo[k]fluoranthene
Concen: 3.33 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:252 Resp: 131961

Ion	Ratio	Lower	Upper
252	100		
253	23.6	0.0	52.7
125	17.5	0.0	42.9

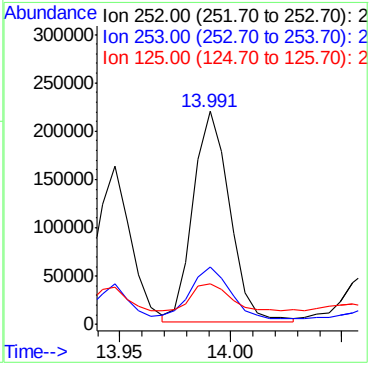




#96
Benzo[a]pyrene
Concen: 6.65 ppb
RT: 13.991 min Scan# 2507
Delta R.T. 0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

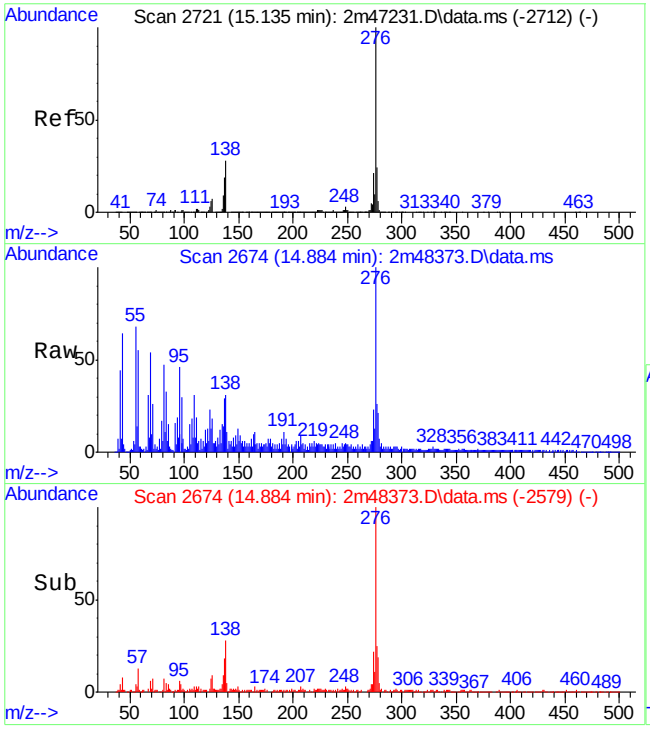
Tgt Ion:252 Resp: 248973

Ion	Ratio	Lower	Upper
252	100		
253	24.2	0.0	52.4
125	13.1	0.0	42.7



9.1.13

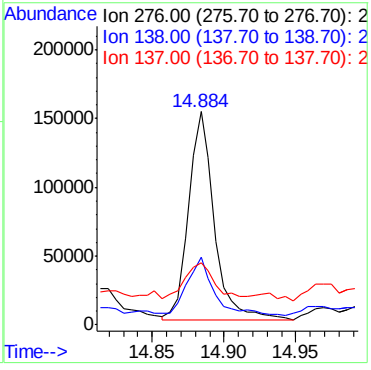
9

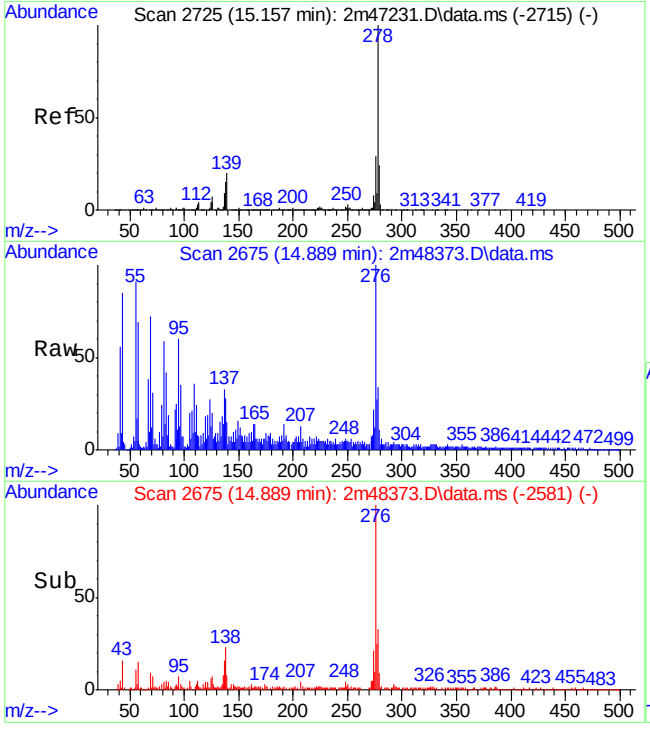


#97
Indeno[1,2,3-cd]pyrene
Concen: 4.37 ppb
RT: 14.884 min Scan# 2674
Delta R.T. 0.011 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:276 Resp: 189858

Ion	Ratio	Lower	Upper
276	100		
138	27.0	0.0	57.6
137	17.9	0.0	48.9

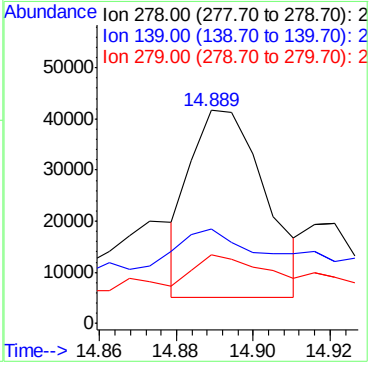


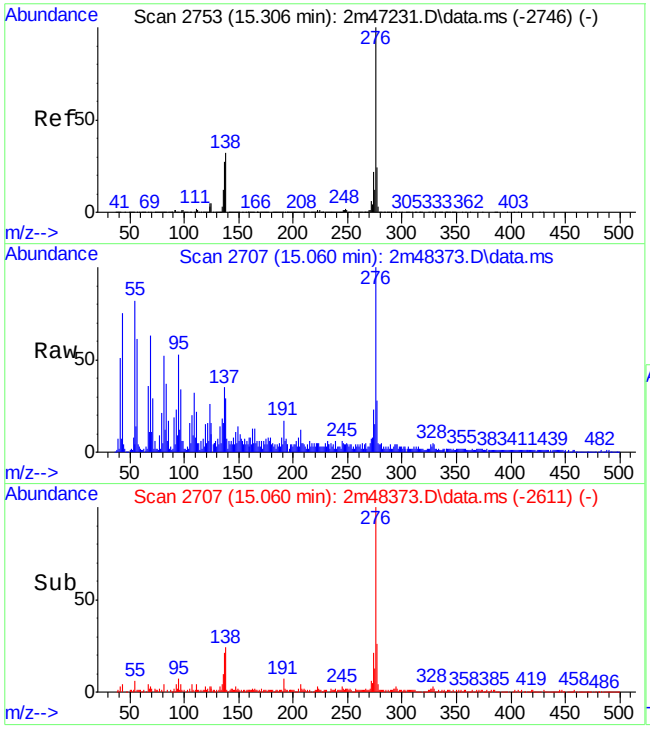


#99
Dibenz[a,h]anthracene
Concen: 1.37 ppb m
RT: 14.889 min Scan# 2675
Delta R.T. 0.005 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:278 Resp: 49891

Ion	Ratio	Lower	Upper
278	100		
139	44.6	0.0	52.4
279	32.3	0.0	54.1

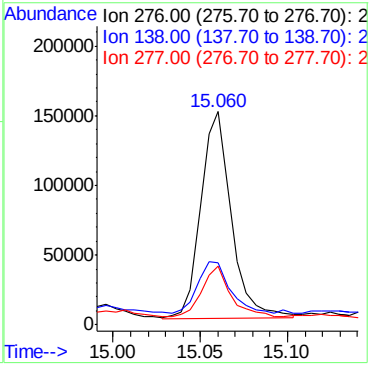




#101
Benzo[g,h,i]perylene
Concen: 4.87 ppb
RT: 15.060 min Scan# 2707
Delta R.T. 0.016 min
Lab File: 2m48373.D
Acq: 8 Dec 2012 6:45 pm

Tgt Ion:276 Resp: 180516

Ion	Ratio	Lower	Upper
276	100		
138	24.4	0.1	60.1
277	24.5	0.0	53.2



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48374.D
Acq On : 8 Dec 2012 7:08 pm
Operator : kristis
Sample : jb22267-14
Misc : op61828,e2m2073,36.6,,,1,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 11 17:57:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.501	152	276514	40.00	ppb	0.00
24) Naphthalene-d8	4.042	136	1244348	40.00	ppb	0.00
47) Acenaphthene-d10	6.620	164	721533	40.00	ppb	0.00
69) Phenanthrene-d10	8.856	188	1175730	40.00	ppb	0.00
83) Chrysene-d12	12.659	240	1438647	40.00	ppb	0.03
92) Perylene-d12	14.087	264	1856920	40.00	ppb	0.05
102) 1,4-Dichlorobenzene-d4a	2.501	152	276514	40.00	ppb	0.00
104) Acenaphthene-d10a	6.620	164	721533	40.00	ppb	0.00
106) Chrysene-d12a	12.659	240	1438647	40.00	ppb	0.03
108) Phenanthrene-d10a	8.856	188	1175730	40.00	ppb	0.00
110) Chrysene-d12b	12.659	240	1438647	40.00	ppb	0.03
System Monitoring Compounds						
5) 2-Fluorophenol	1.512	112	262198	26.06	ppb	0.01
Spiked Amount 50.000			Recovery	=	52.12%	
8) Phenol-d5	2.325	99	363034	26.92	ppb	0.02
Spiked Amount 50.000			Recovery	=	53.84%	
25) Nitrobenzene-d5	3.186	82	350337	26.24	ppb	0.00
Spiked Amount 50.000			Recovery	=	52.48%	
51) 2-Fluorobiphenyl	5.689	172	664699	28.02	ppb	0.00
Spiked Amount 50.000			Recovery	=	56.04%	
73) 2,4,6-Tribromophenol	7.877	330	87274	31.59	ppb	0.00
Spiked Amount 50.000			Recovery	=	63.18%	
85) Terphenyl-d14	11.439	244	856058	29.45	ppb	0.02
Spiked Amount 50.000			Recovery	=	58.90%	
Target Compounds						Qvalue
77) Phenanthrene	8.888	178	32964	0.92	ppb	97
78) Anthracene	8.963	178	29501	0.83	ppb	85
81) Fluoranthene	10.738	202	51083	1.44	ppb	84
84) Pyrene	11.054	202	51168	1.10	ppb	85
88) Benzo[a]anthracene	12.642	228	47100	1.06	ppb	91
90) Chrysene	12.685	228	49699	1.13	ppb	85
94) Benzo[b]fluoranthene	13.760	252	64366m	1.00	ppb	
95) Benzo[k]fluoranthene	13.766	252	34905m	0.60	ppb	
96) Benzo[a]pyrene	14.038	252	53384	0.97	ppb	86
97) Indeno[1,2,3-cd]pyrene	14.942	276	42539	0.67	ppb	88
101) Benzo[g,h,i]perylene	15.119	276	159700	2.93	ppb	96

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

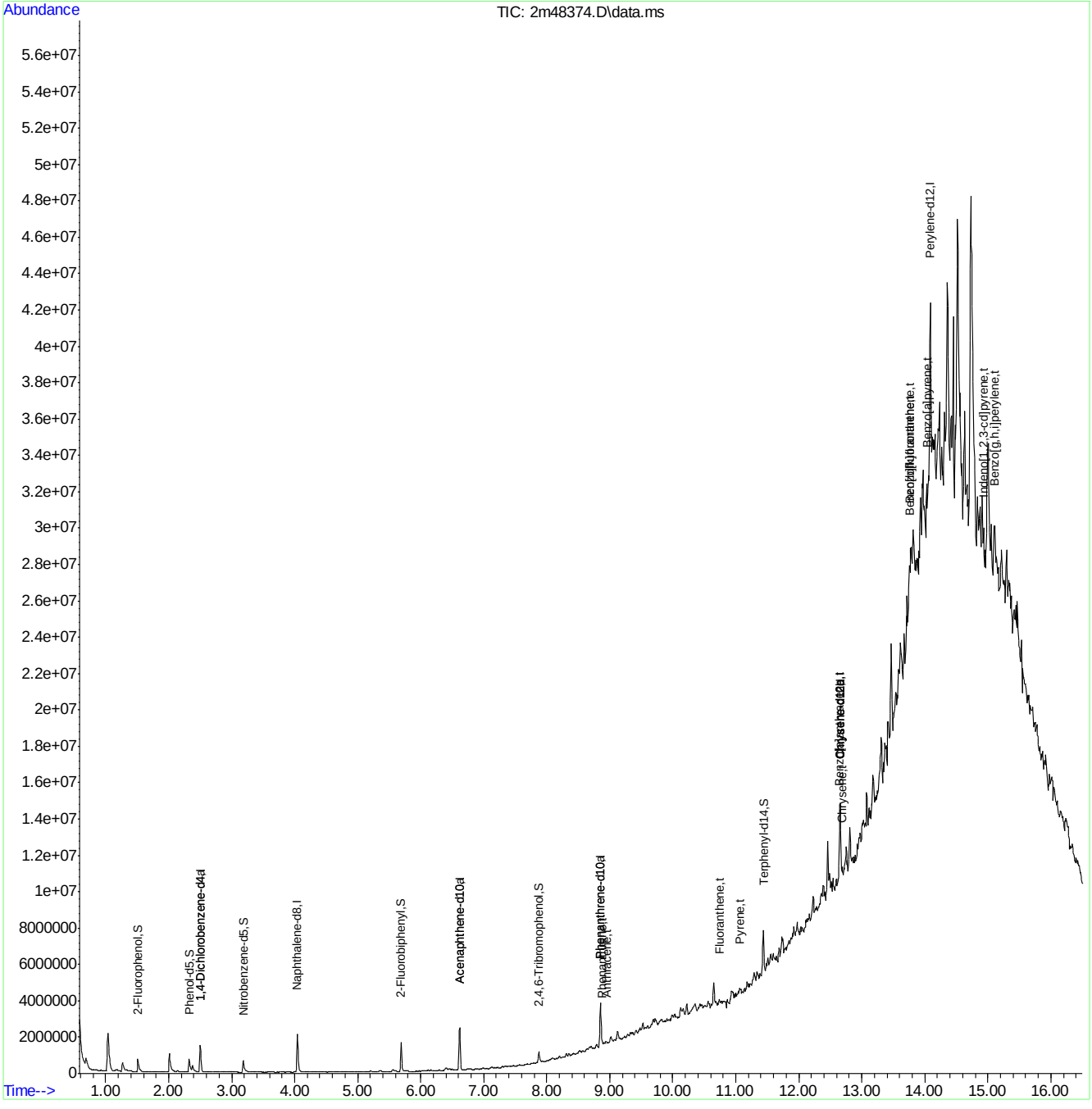
9.1.14

9

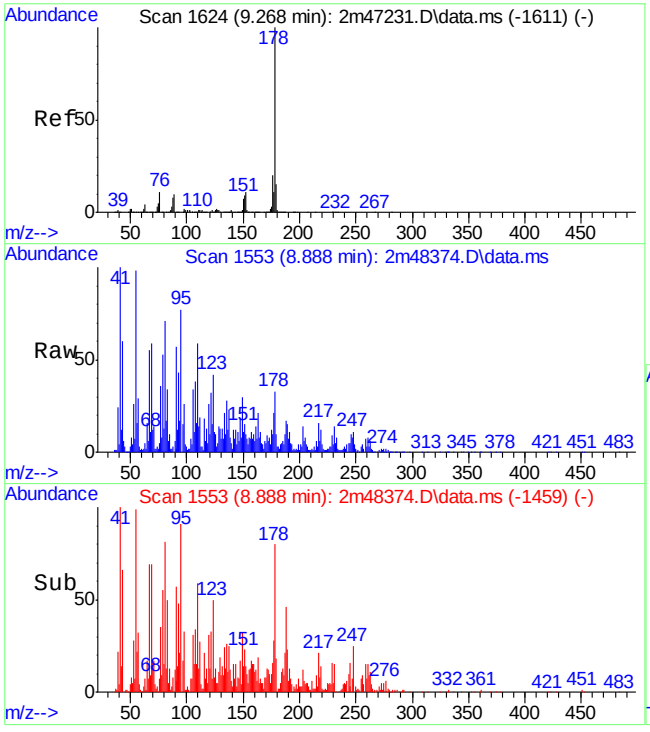
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48374.D
Acq On : 8 Dec 2012 7:08 pm
Operator : kristis
Sample : jb22267-14
Misc : op61828,e2m2073,36.6,,,1,1
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 11 17:57:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration



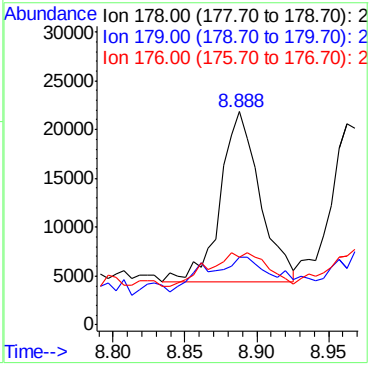
M2M2034.M Tue Dec 11 17:57:56 2012 MS2M Page: 2

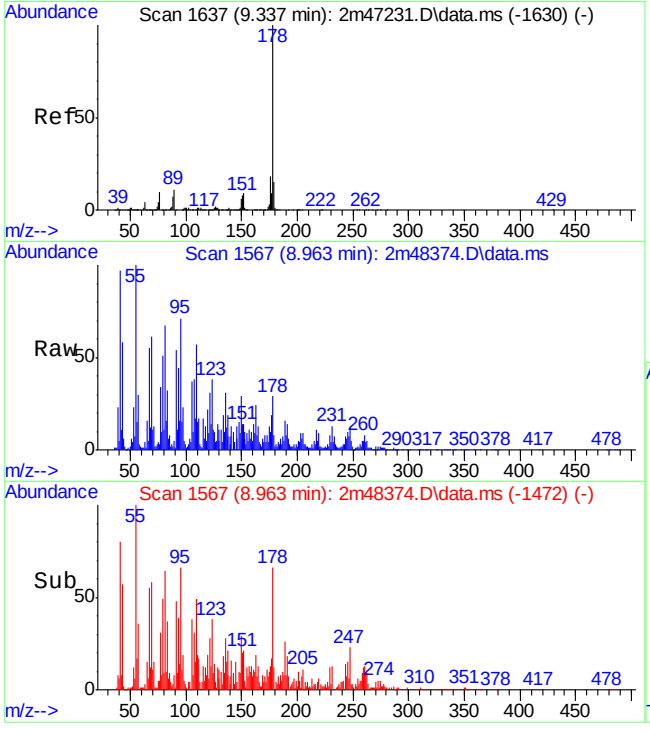


#77
Phenanthrene
Concen: 0.92 ppb
RT: 8.888 min Scan# 1553
Delta R.T. 0.005 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:178 Resp: 32964

Ion	Ratio	Lower	Upper
178	100		
179	15.7	0.0	44.9
176	17.0	0.0	49.1

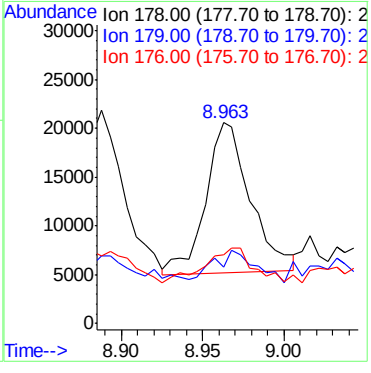


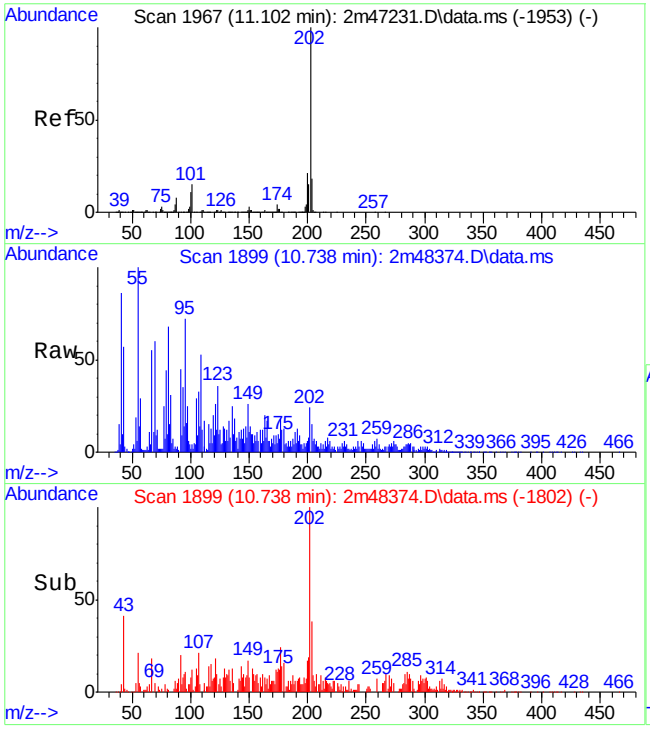


#78
Anthracene
Concen: 0.83 ppb
RT: 8.963 min Scan# 1567
Delta R.T. 0.011 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:178 Resp: 29501

Ion	Ratio	Lower	Upper
178	100		
179	2.0	0.0	44.3
176	16.8	0.0	48.3

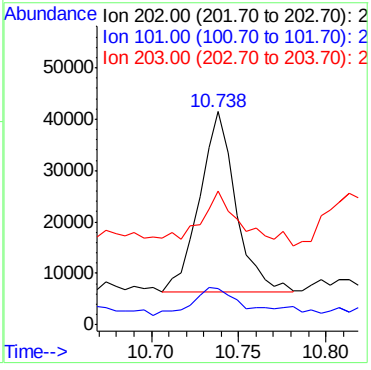


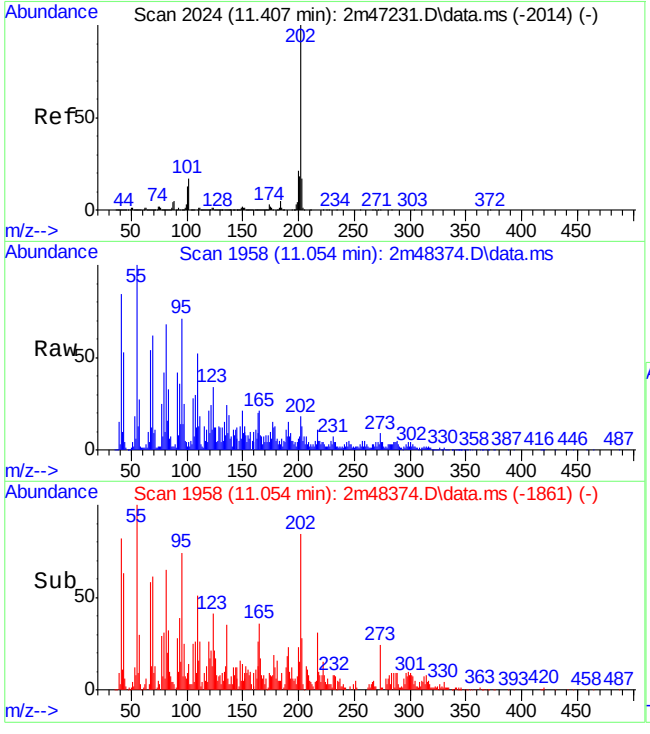


#81
Fluoranthene
Concen: 1.44 ppb
RT: 10.738 min Scan# 1899
Delta R.T. 0.021 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:202 Resp: 51083

Ion	Ratio	Lower	Upper
202	100		
101	11.1	0.0	43.8
203	28.0	0.0	47.5

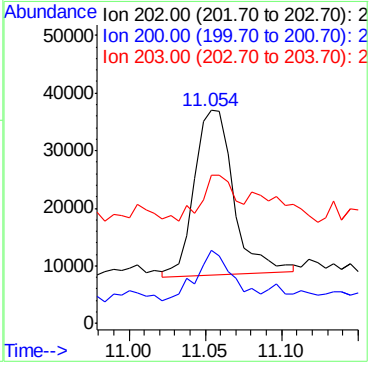




#84
Pyrene
Concen: 1.10 ppb
RT: 11.054 min Scan# 1958
Delta R.T. 0.021 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:202 Resp: 51168

Ion	Ratio	Lower	Upper
202	100		
200	29.7	0.0	51.3
203	22.7	0.0	47.6



9.1.14

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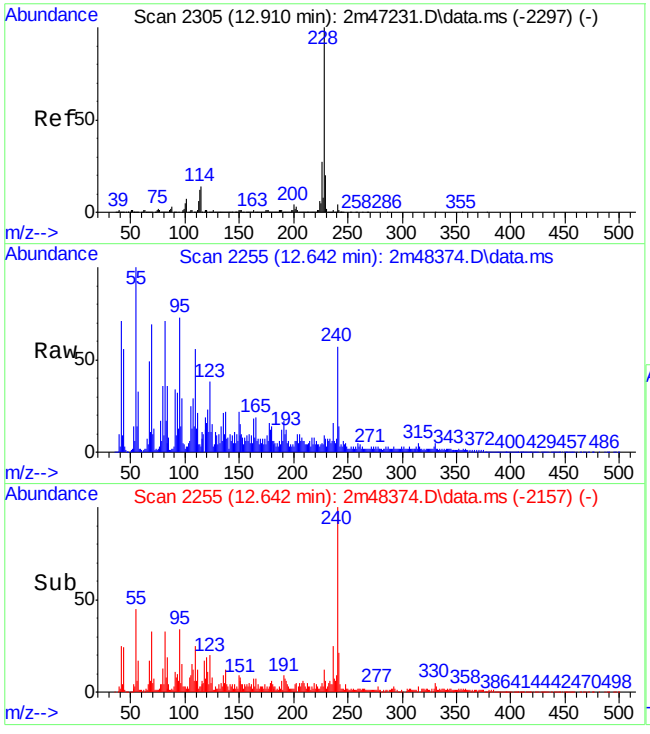
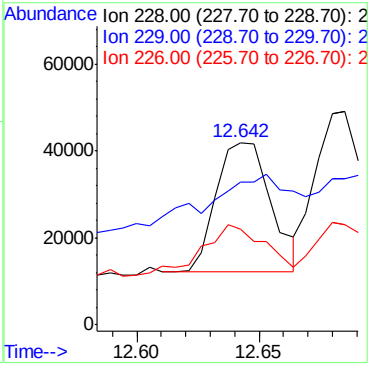
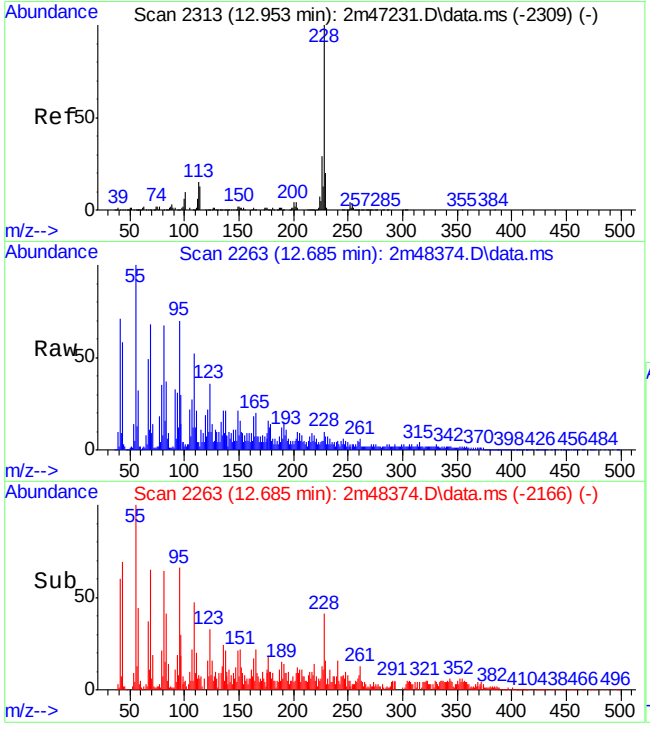


#88
Benzo[a]anthracene
Concen: 1.06 ppb
RT: 12.642 min Scan# 2255
Delta R.T. 0.027 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:228 Resp: 47100

Ion	Ratio	Lower	Upper
228	100		
229	19.4	0.0	49.3
226	33.6	0.0	56.0

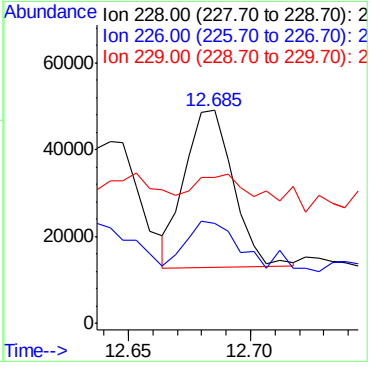




#90
Chrysene
Concen: 1.13 ppb
RT: 12.685 min Scan# 2263
Delta R.T. 0.021 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:228 Resp: 49699

Ion	Ratio	Lower	Upper
228	100		
226	31.3	0.0	57.7
229	7.7	0.0	49.3



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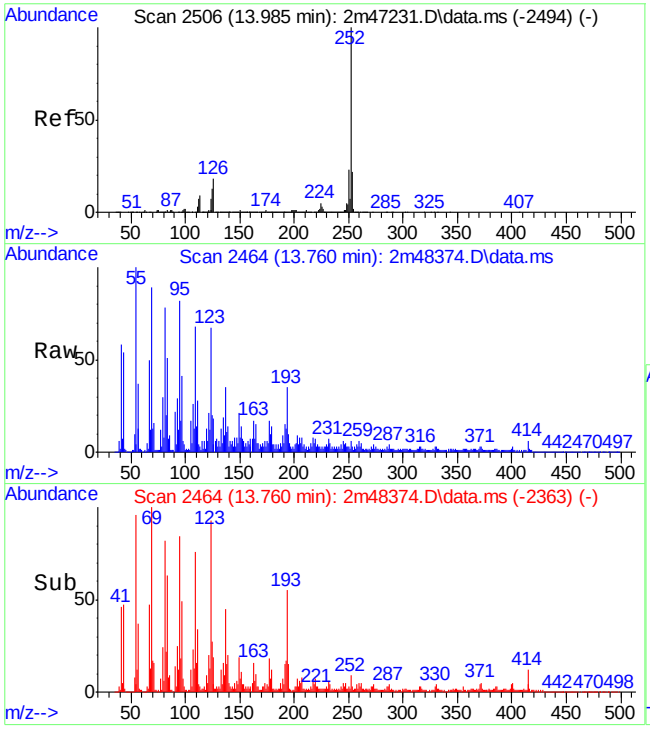
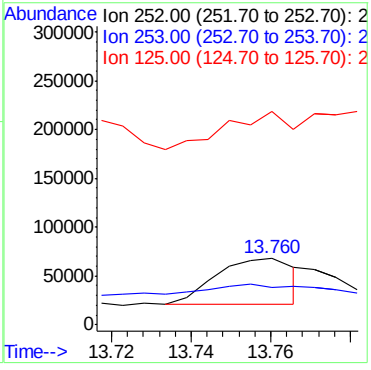
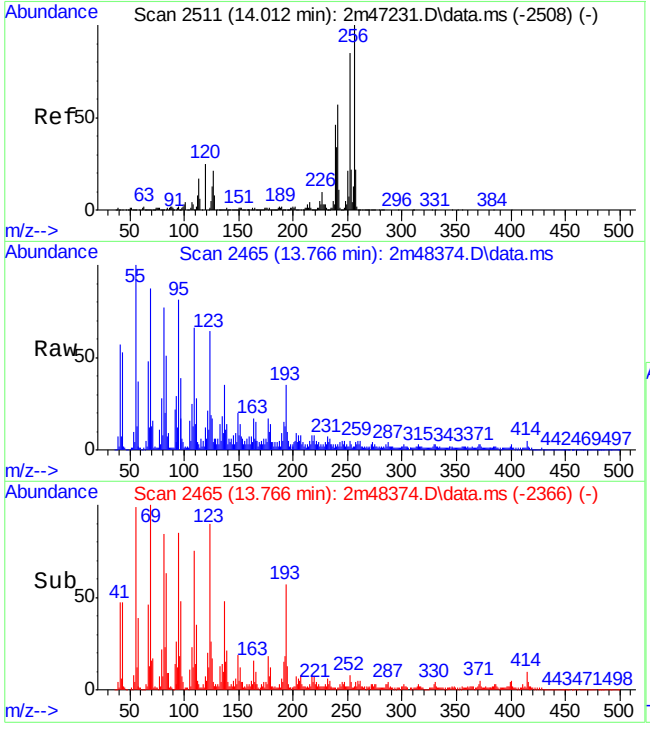


#94
Benzo[b]fluoranthene
Concen: 1.00 ppb m
RT: 13.760 min Scan# 2464
Delta R.T. 0.043 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:252 Resp: 64366

Ion	Ratio	Lower	Upper
252	100		
253	56.3	0.0	51.6#
125	319.2	0.0	40.1#

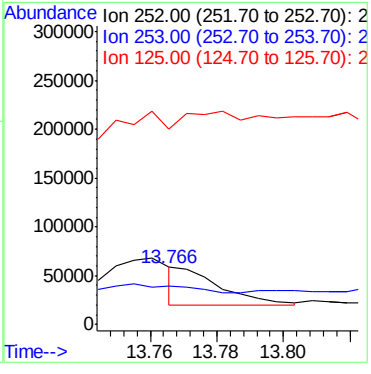


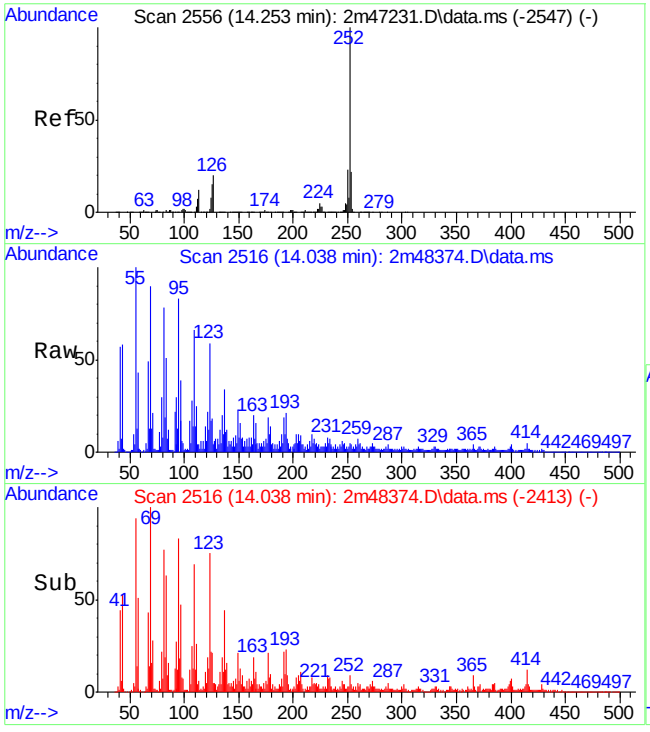


#95
Benzo[k]fluoranthene
Concen: 0.60 ppb m
RT: 13.766 min Scan# 2465
Delta R.T. 0.032 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:252 Resp: 34905

Ion	Ratio	Lower	Upper
252	100		
253	66.2	0.0	52.7#
125	340.8	0.0	42.9#

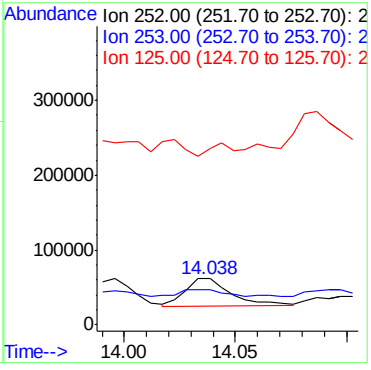


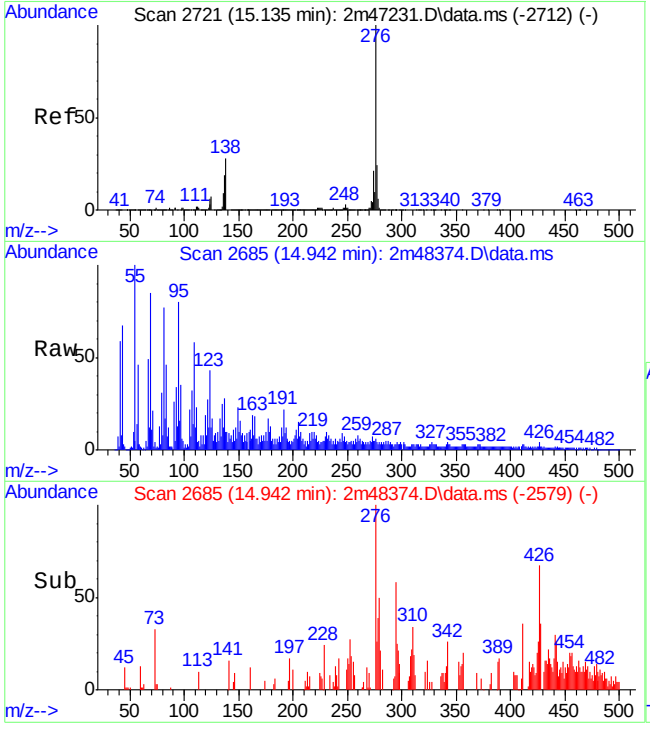


#96
Benzo[a]pyrene
Concen: 0.97 ppb
RT: 14.038 min Scan# 2516
Delta R.T. 0.053 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:252 Resp: 53384

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	52.4
125	0.0	0.0	42.7

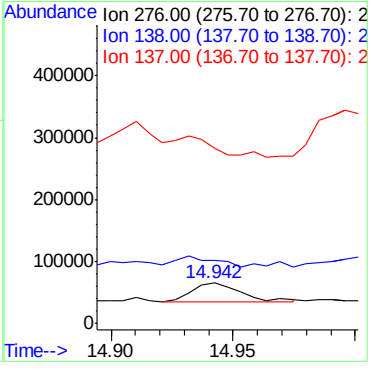




#97
Indeno[1,2,3-cd]pyrene
Concen: 0.67 ppb
RT: 14.942 min Scan# 2685
Delta R.T. 0.069 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:276 Resp: 42539

Ion	Ratio	Lower	Upper
276	100		
138	28.6	0.0	57.6
137	7.4	0.0	48.9



9.1.14

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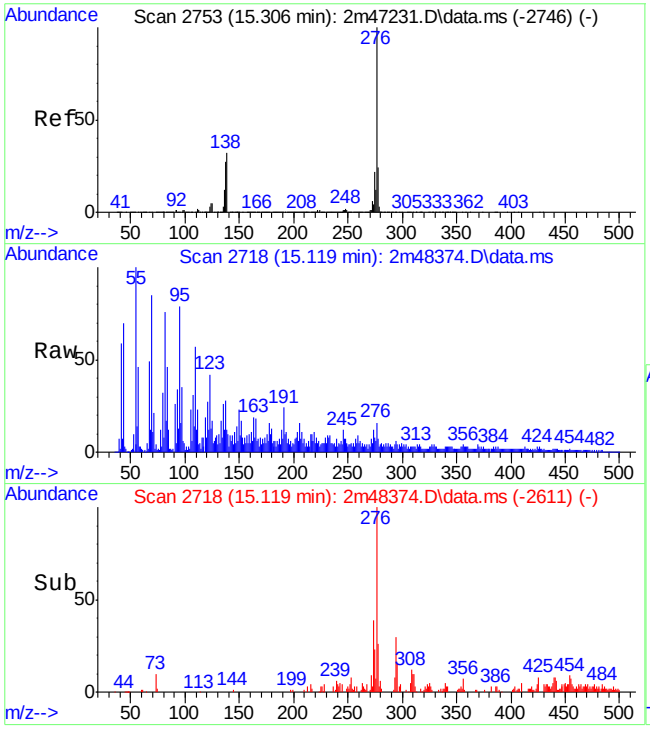
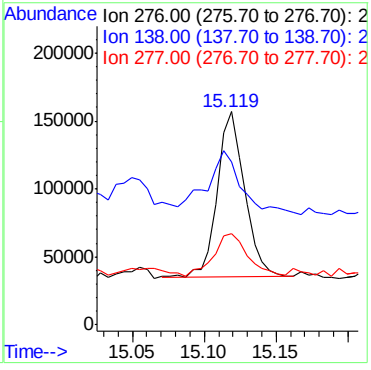


#101
Benzo[g,h,i]perylene
Concen: 2.93 ppb
RT: 15.119 min Scan# 2718
Delta R.T. 0.075 min
Lab File: 2m48374.D
Acq: 8 Dec 2012 7:08 pm

Tgt Ion:276 Resp: 159700

Ion	Ratio	Lower	Upper
276	100		
138	27.4	0.1	60.1
277	21.9	0.0	53.2



9.1.14

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48362.D
Acq On : 8 Dec 2012 2:33 pm
Operator : kristis
Sample : jb22267-15
Misc : op61828,e2m2073,33.6,,,1,1
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 11 17:41:09 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	218496	40.00	ppb	-0.07
24) Naphthalene-d8	4.042	136	995750	40.00	ppb	-0.08
47) Acenaphthene-d10	6.615	164	598080	40.00	ppb	-0.09
69) Phenanthrene-d10	8.845	188	973151	40.00	ppb	-0.09
83) Chrysene-d12	12.632	240	1011431	40.00	ppb	-0.06
92) Perylene-d12	14.033	264	889285	40.00	ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	218496	40.00	ppb	-0.07
104) Acenaphthene-d10a	6.615	164	598080	40.00	ppb	-0.09
106) Chrysene-d12a	12.632	240	1011431	40.00	ppb	-0.06
108) Phenanthrene-d10a	8.845	188	973151	40.00	ppb	-0.09
110) Chrysene-d12b	12.632	240	1011431	40.00	ppb	-0.06

System Monitoring Compounds						
5) 2-Fluorophenol	1.507	112	186435	23.45	ppb	-0.04
Spiked Amount 50.000			Recovery = 46.90%			
8) Phenol-d5	2.320	99	259330	24.33	ppb	-0.05
Spiked Amount 50.000			Recovery = 48.66%			
25) Nitrobenzene-d5	3.186	82	247334	23.15	ppb	-0.06
Spiked Amount 50.000			Recovery = 46.30%			
51) 2-Fluorobiphenyl	5.689	172	504806	25.67	ppb	-0.09
Spiked Amount 50.000			Recovery = 51.34%			
73) 2,4,6-Tribromophenol	7.877	330	67739	29.62	ppb	-0.08
Spiked Amount 50.000			Recovery = 59.24%			
85) Terphenyl-d14	11.418	244	707711	34.63	ppb	-0.08
Spiked Amount 50.000			Recovery = 69.26%			

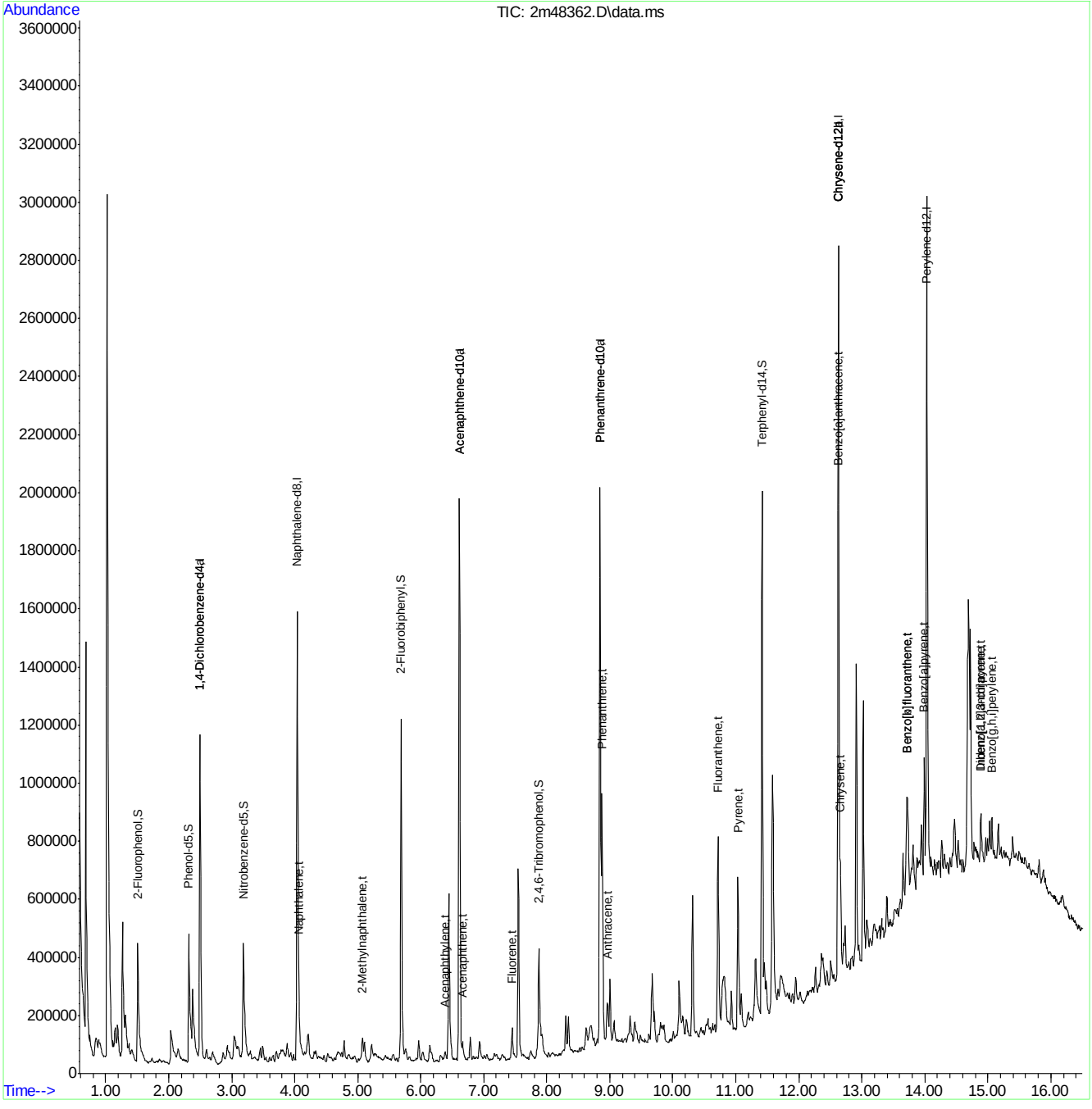
Target Compounds						Qvalue
38) Naphthalene	4.069	128	74479	2.69	ppb	96
44) 2-Methylnaphthalene	5.074	141	29989	1.76	ppb	95
56) Acenaphthylene	6.390	152	25011	0.87	ppb	93
59) Acenaphthene	6.663	153	26239	1.41	ppb	90
66) Fluorene	7.449	166	41730	2.08	ppb	99
77) Phenanthrene	8.877	178	519281	17.43	ppb	99
78) Anthracene	8.963	178	105185	3.56	ppb	96
81) Fluoranthene	10.722	202	435345	14.81	ppb	97
84) Pyrene	11.038	202	341696	10.45	ppb	99
88) Benzo[a]anthracene	12.616	228	185450	5.96	ppb	99
90) Chrysene	12.659	228	188742	6.12	ppb	98
94) Benzo[b]fluoranthene	13.723	252	162747m	5.26	ppb	
95) Benzo[k]fluoranthene	13.728	252	96498m	3.46	ppb	
96) Benzo[a]pyrene	13.990	252	117731	4.48	ppb	97
97) Indeno[1,2,3-cd]pyrene	14.889	276	78431	2.57	ppb	96
99) Dibenz[a,h]anthracene	14.900	278	30639	1.19	ppb	84
101) Benzo[g,h,i]perylene	15.065	276	69227	2.66	ppb	97

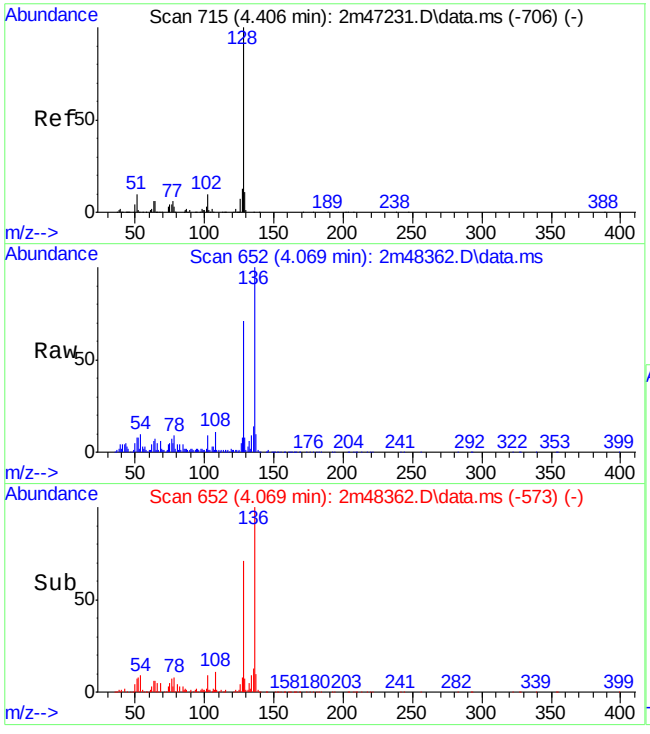
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48362.D
Acq On : 8 Dec 2012 2:33 pm
Operator : kristis
Sample : jb22267-15
Misc : op61828,e2m2073,33.6,,,1,1
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 11 17:41:09 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

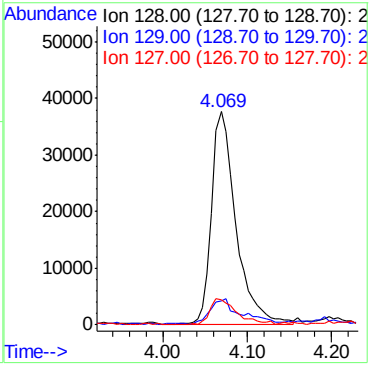


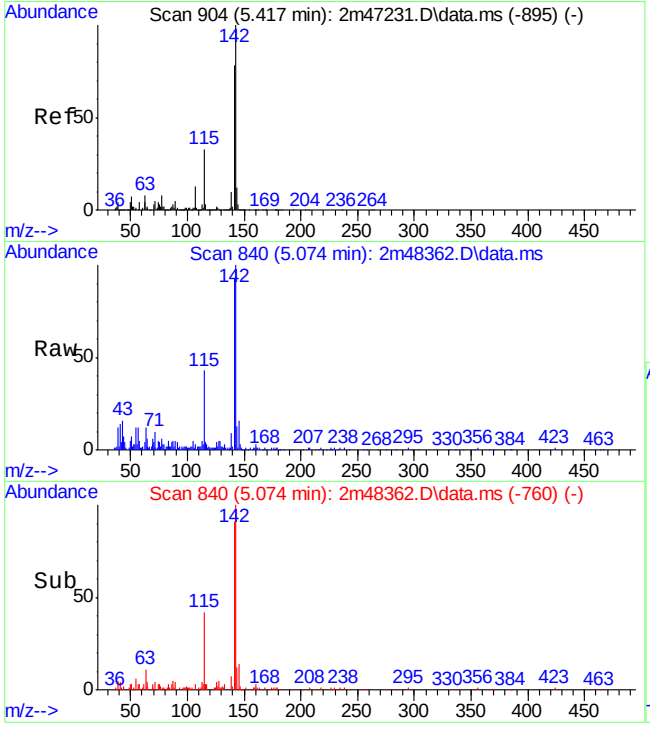


#38
Naphthalene
Concen: 2.69 ppb
RT: 4.069 min Scan# 652
Delta R.T. -0.075 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:128 Resp: 74479

Ion	Ratio	Lower	Upper
128	100		
129	10.4	0.0	40.9
127	10.8	0.0	43.3

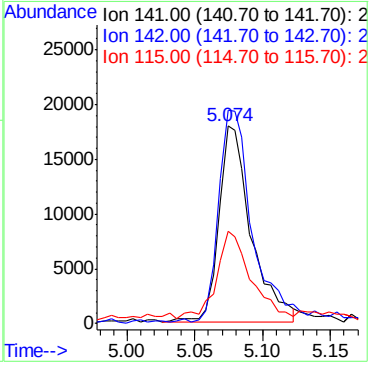


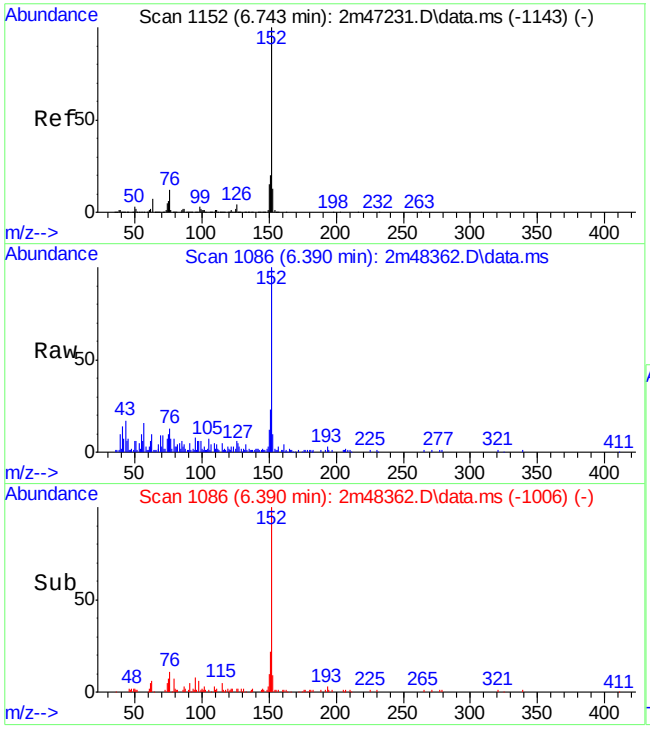


#44
2-Methylnaphthalene
Concen: 1.76 ppb
RT: 5.074 min Scan# 840
Delta R.T. -0.070 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:141 Resp: 29989

Ion	Ratio	Lower	Upper
141	100		
142	106.7	81.7	141.7
115	45.2	12.0	72.0

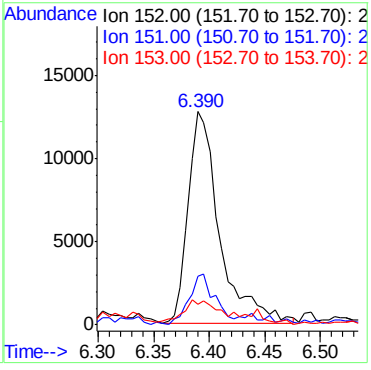


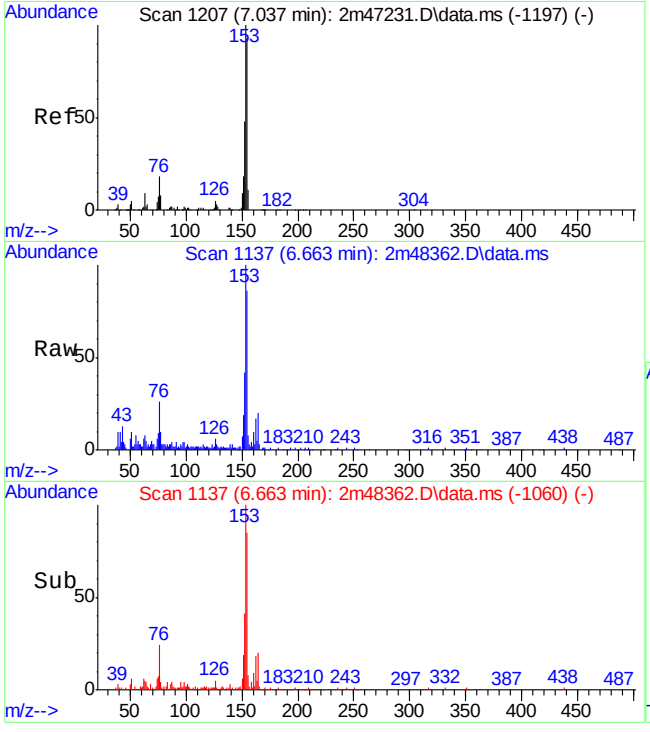


#56
Acenaphthylene
Concen: 0.87 ppb
RT: 6.390 min Scan# 1086
Delta R.T. -0.070 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:152 Resp: 25011

Ion	Ratio	Lower	Upper
152	100		
151	22.0	0.0	49.4
153	9.3	0.0	43.0

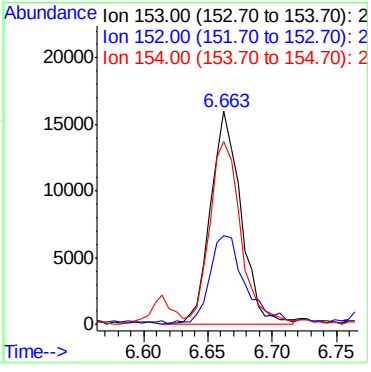




#59
Acenaphthene
Concen: 1.41 ppb
RT: 6.663 min Scan# 1137
Delta R.T. -0.086 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:153 Resp: 26239

Ion	Ratio	Lower	Upper
153	100		
152	40.6	15.8	75.8
154	78.8	59.7	119.7



9.1.15

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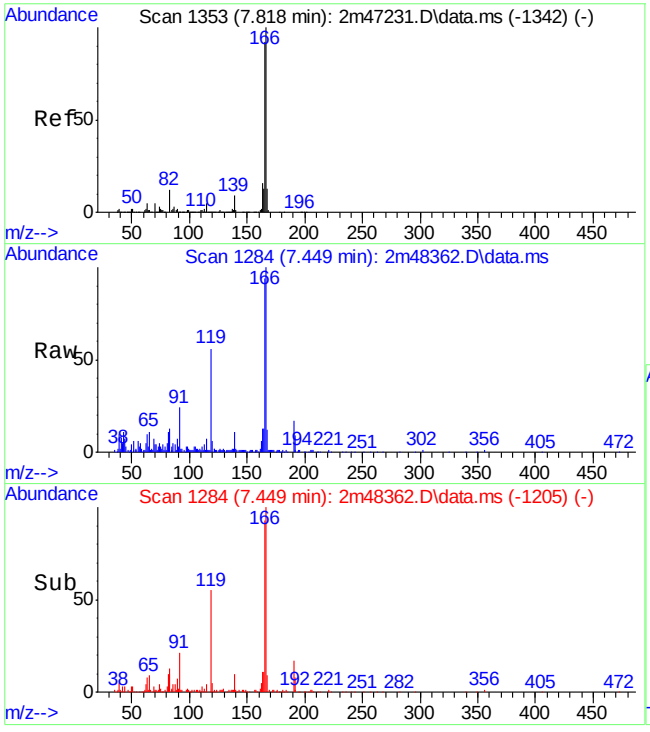
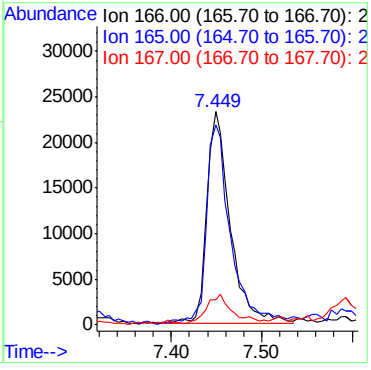
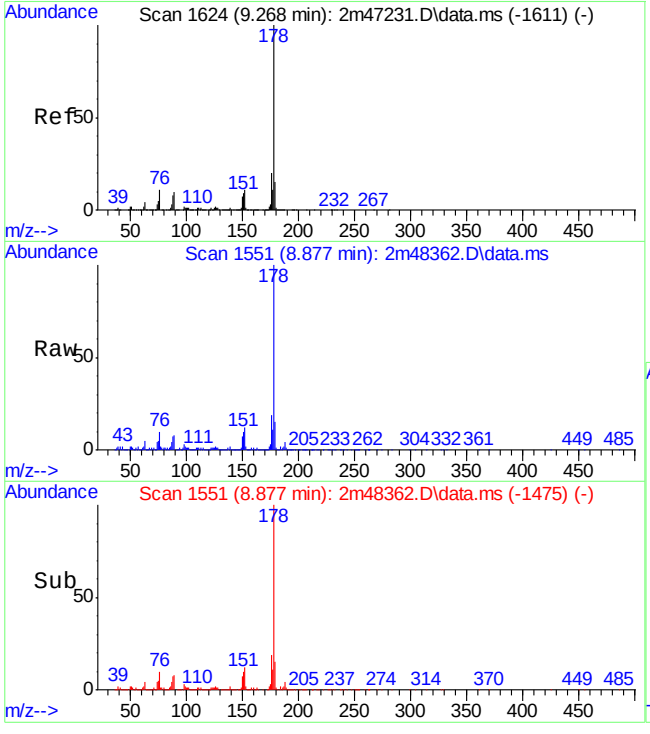


#66
Fluorene
Concen: 2.08 ppb
RT: 7.449 min Scan# 1284
Delta R.T. -0.075 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:166 Resp: 41730

Ion	Ratio	Lower	Upper
166	100		
165	92.4	61.9	121.9
167	10.1	0.0	43.1

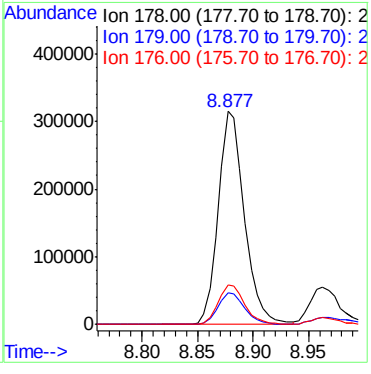




#77
Phenanthrene
Concen: 17.43 ppb
RT: 8.877 min Scan# 1551
Delta R.T. -0.091 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:178 Resp: 519281

Ion	Ratio	Lower	Upper
178	100		
179	15.0	0.0	44.9
176	18.5	0.0	49.1



9.1.15

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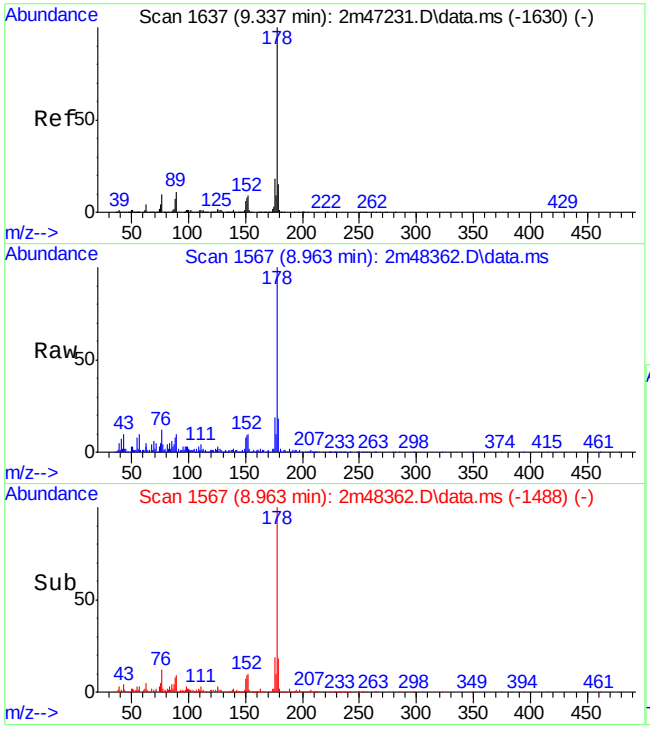
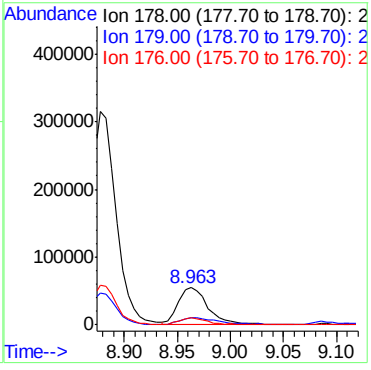
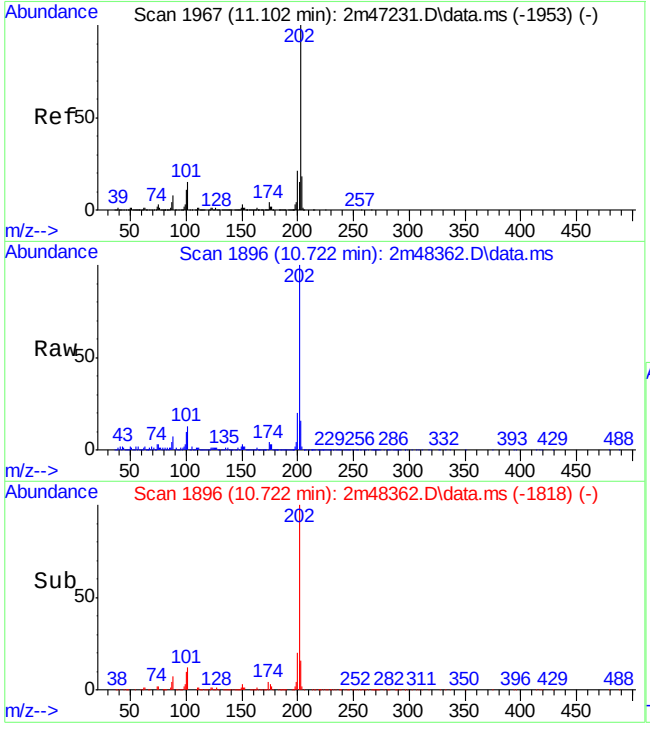


#78
Anthracene
Concen: 3.56 ppb
RT: 8.963 min Scan# 1567
Delta R.T. -0.075 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:178 Resp: 105185

Ion	Ratio	Lower	Upper
178	100		
179	17.2	0.0	44.3
176	19.3	0.0	48.3

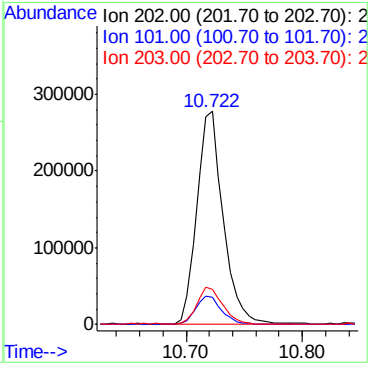




#81
Fluoranthene
Concen: 14.81 ppb
RT: 10.722 min Scan# 1896
Delta R.T. -0.080 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

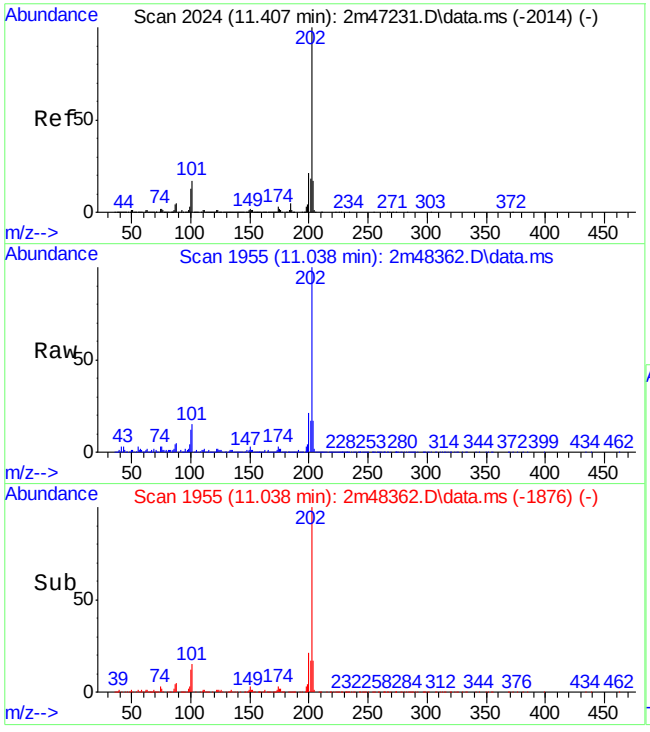
Tgt Ion:202 Resp: 435345

Ion	Ratio	Lower	Upper
202	100		
101	12.4	0.0	43.8
203	16.1	0.0	47.5



9.1.15

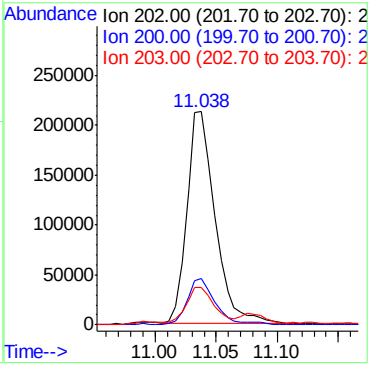
9

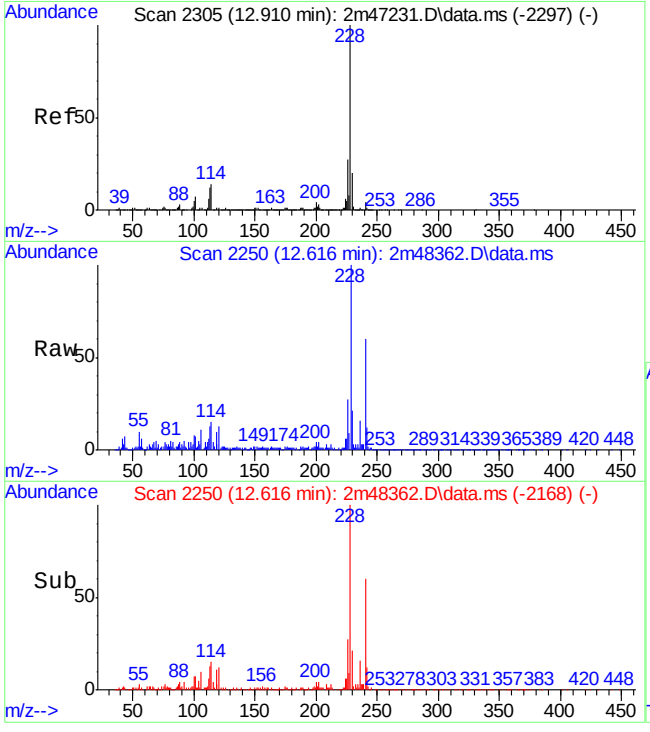


#84
Pyrene
Concen: 10.45 ppb
RT: 11.038 min Scan# 1955
Delta R.T. -0.075 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:202 Resp: 341696

Ion	Ratio	Lower	Upper
202	100		
200	21.4	0.0	51.3
203	16.4	0.0	47.6

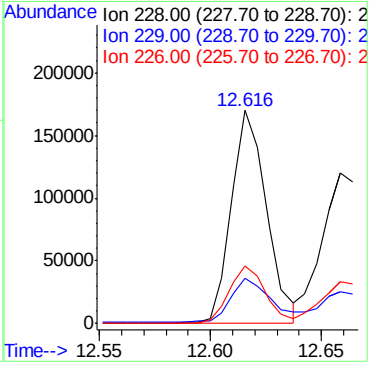


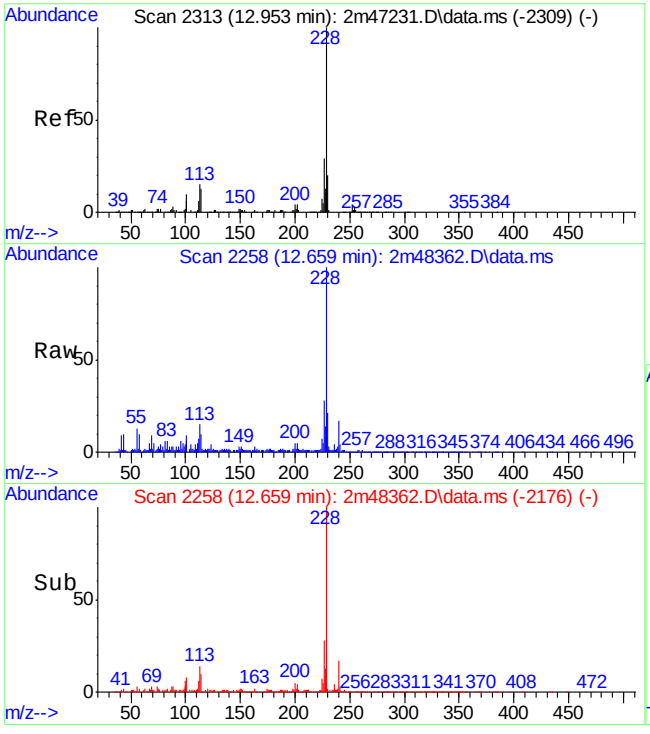


#88
Benzo[a]anthracene
Concen: 5.96 ppb
RT: 12.616 min Scan# 2250
Delta R.T. -0.059 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:228 Resp: 185450

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	49.3
226	26.9	0.0	56.0

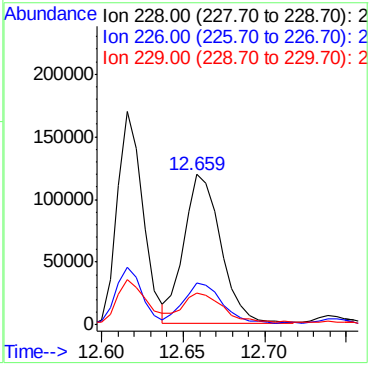


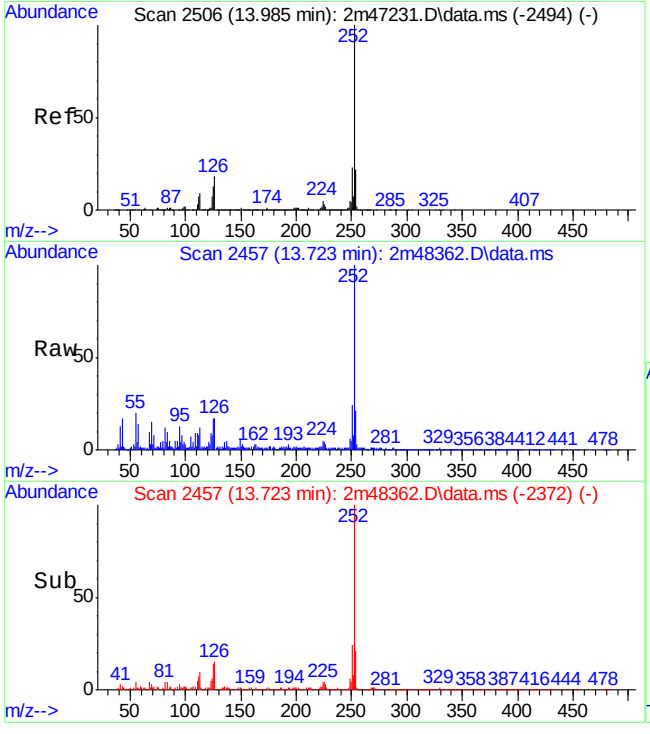


#90
Chrysene
Concen: 6.12 ppb
RT: 12.659 min Scan# 2258
Delta R.T. -0.059 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:228 Resp: 188742

Ion	Ratio	Lower	Upper
228	100		
226	27.8	0.0	57.7
229	17.3	0.0	49.3

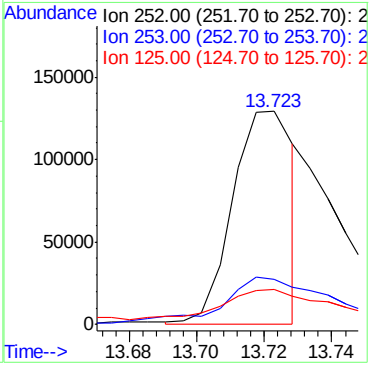


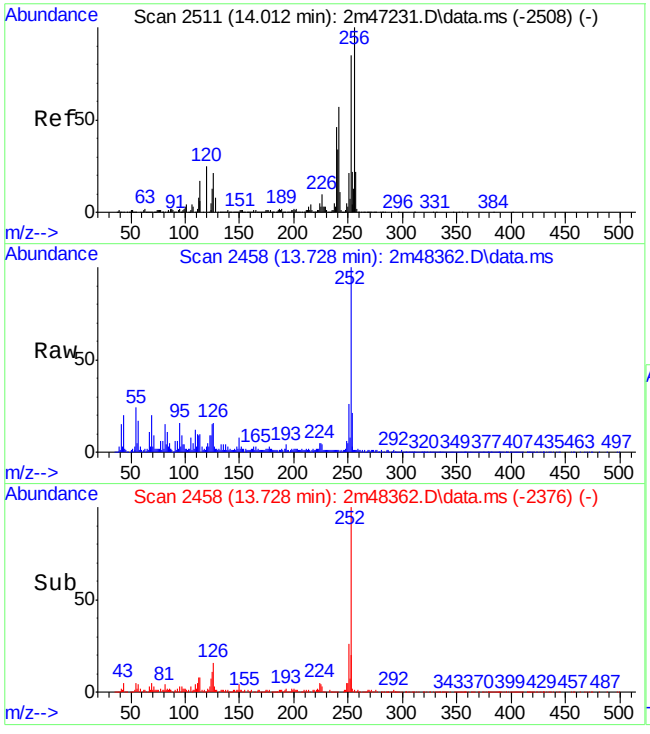


#94
Benzo[b]fluoranthene
Concen: 5.26 ppb m
RT: 13.723 min Scan# 2457
Delta R.T. -0.043 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:252 Resp: 162747

Ion	Ratio	Lower	Upper
252	100		
253	21.3	0.0	51.6
125	16.7	0.0	40.1

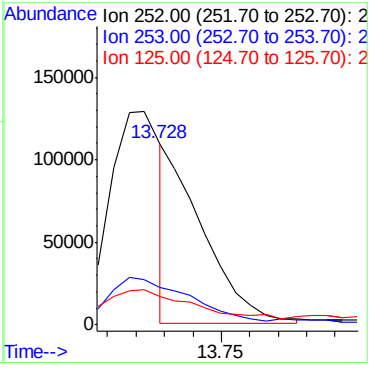


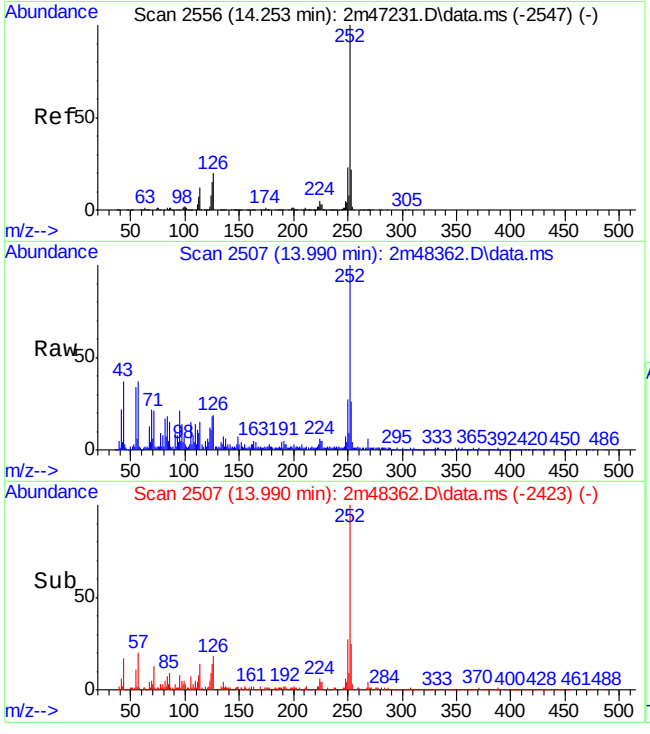


#95
Benzo[k]fluoranthene
Concen: 3.46 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.059 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:252 Resp: 96498

Ion	Ratio	Lower	Upper
252	100		
253	20.6	0.0	52.7
125	15.4	0.0	42.9

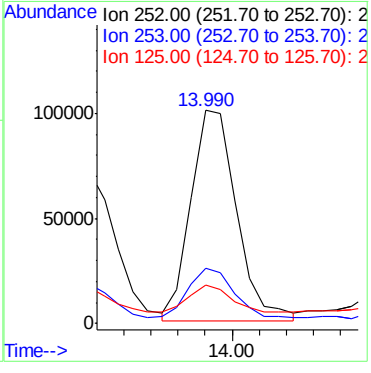




#96
Benzo[a]pyrene
Concen: 4.48 ppb
RT: 13.990 min Scan# 2507
Delta R.T. -0.048 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:252 Resp: 117731

Ion	Ratio	Lower	Upper
252	100		
253	23.9	0.0	52.4
125	13.3	0.0	42.7



9.1.15

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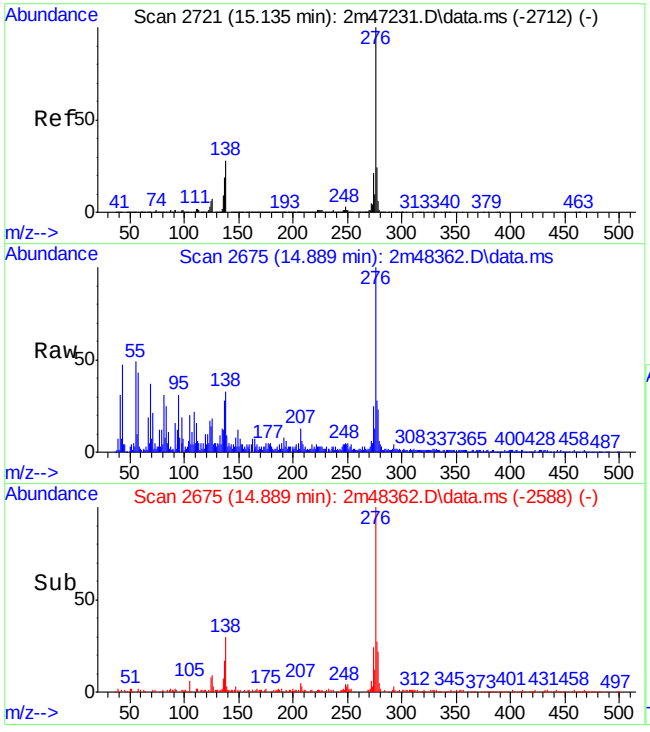
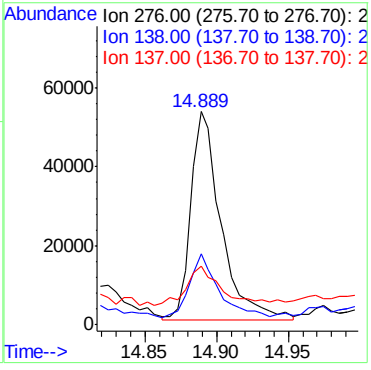
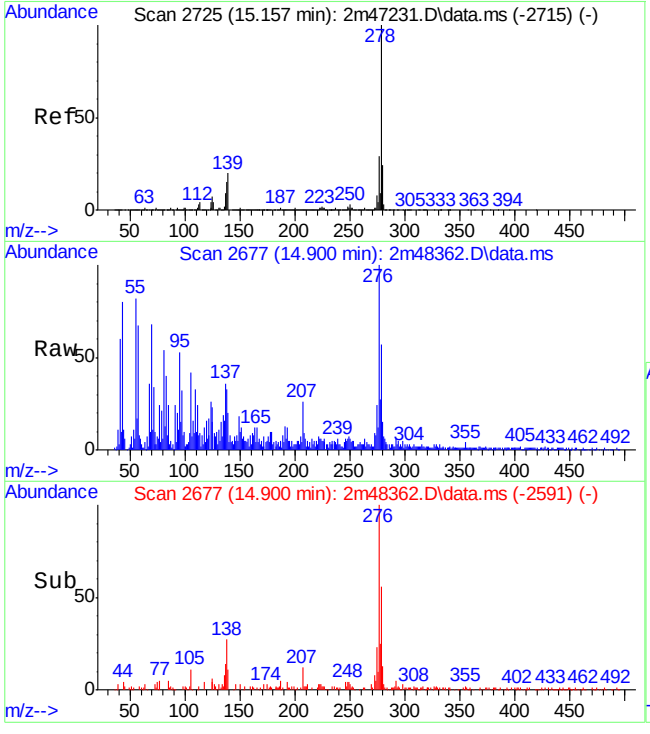


#97
Indeno[1,2,3-cd]pyrene
Concen: 2.57 ppb
RT: 14.889 min Scan# 2675
Delta R.T. -0.032 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:276 Resp: 78431

Ion	Ratio	Lower	Upper
276	100		
138	30.6	0.0	57.6
137	17.7	0.0	48.9

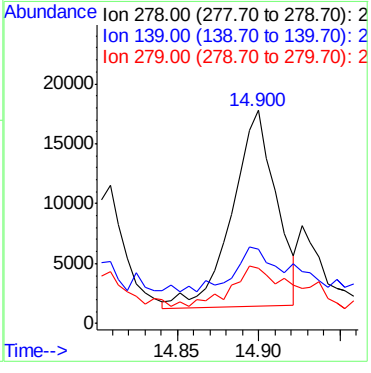


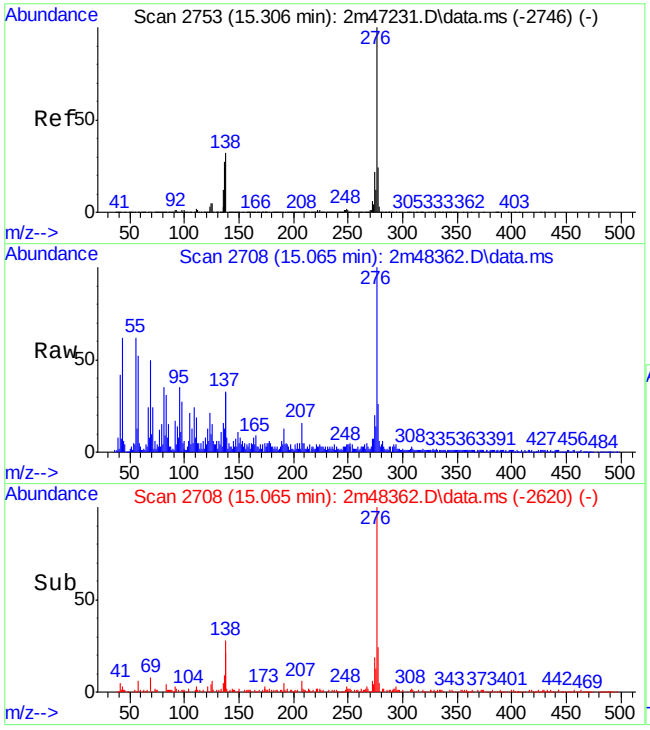


#99
Dibenz[a,h]anthracene
Concen: 1.19 ppb
RT: 14.900 min Scan# 2677
Delta R.T. -0.038 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:278 Resp: 30639

Ion	Ratio	Lower	Upper
278	100		
139	16.4	0.0	52.4
279	14.2	0.0	54.1

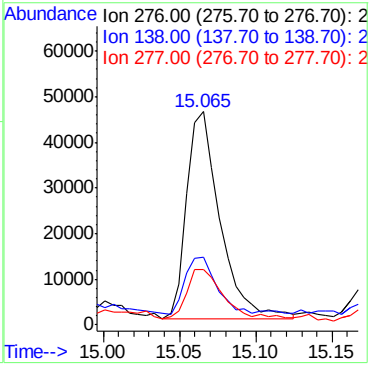




#101
Benzo[g,h,i]perylene
Concen: 2.66 ppb
RT: 15.065 min Scan# 2708
Delta R.T. -0.027 min
Lab File: 2m48362.D
Acq: 8 Dec 2012 2:33 pm

Tgt Ion:276 Resp: 69227

Ion	Ratio	Lower	Upper
276	100		
138	27.4	0.1	60.1
277	23.7	0.0	53.2



9.1.15

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:56

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48375.D
Acq On : 8 Dec 2012 7:31 pm
Operator : kristis
Sample : jb22267-16
Misc : op61828,e2m2073,32.4,,,1,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 11 17:59:08 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.502	152	249863	40.00	ppb	0.00
24) Naphthalene-d8	4.047	136	1162593	40.00	ppb	0.00
47) Acenaphthene-d10	6.625	164	689123	40.00	ppb	0.01
69) Phenanthrene-d10	8.861	188	1112311	40.00	ppb	0.01
83) Chrysene-d12	12.643	240	1116939	40.00	ppb	0.01
92) Perylene-d12	14.049	264	1168258	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.502	152	249863	40.00	ppb	0.00
104) Acenaphthene-d10a	6.625	164	689123	40.00	ppb	0.01
106) Chrysene-d12a	12.643	240	1116939	40.00	ppb	0.01
108) Phenanthrene-d10a	8.861	188	1112311	40.00	ppb	0.01
110) Chrysene-d12b	12.643	240	1116939	40.00	ppb	0.01

System Monitoring Compounds						
5) 2-Fluorophenol	1.517	112	209267	23.01	ppb	0.02
Spiked Amount 50.000			Recovery = 46.02%			
8) Phenol-d5	2.336	99	335793	27.55	ppb	0.03
Spiked Amount 50.000			Recovery = 55.10%			
25) Nitrobenzene-d5	3.192	82	271483	21.76	ppb	0.01
Spiked Amount 50.000			Recovery = 43.52%			
51) 2-Fluorobiphenyl	5.700	172	653501	28.84	ppb	0.01
Spiked Amount 50.000			Recovery = 57.68%			
73) 2,4,6-Tribromophenol	7.882	330	109210	41.78	ppb	0.01
Spiked Amount 50.000			Recovery = 83.56%			
85) Terphenyl-d14	11.434	244	979942	43.42	ppb	0.01
Spiked Amount 50.000			Recovery = 86.84%			

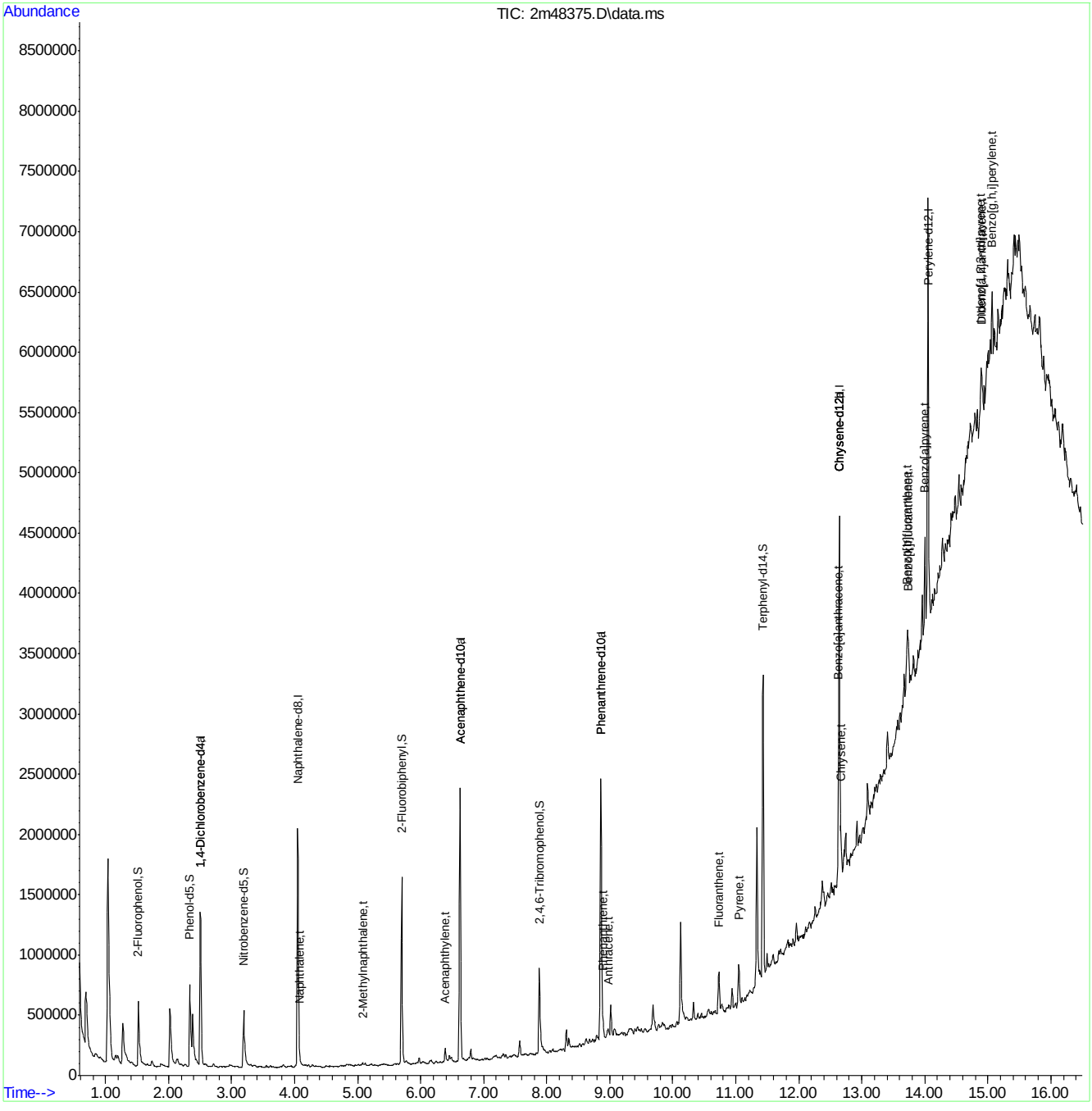
Target Compounds						Qvalue
38) Naphthalene	4.079	128	17299	0.53	ppb	96
44) 2-Methylnaphthalene	5.080	141	10744	0.54	ppb	79
56) Acenaphthylene	6.390	152	85356	2.56	ppb	97
77) Phenanthrene	8.893	178	100630	2.96	ppb	97
78) Anthracene	8.968	178	52571	1.56	ppb	94
81) Fluoranthene	10.733	202	194108	5.78	ppb	98
84) Pyrene	11.049	202	197250	5.46	ppb	99
88) Benzo[a]anthracene	12.627	228	158889	4.62	ppb	90
90) Chrysene	12.669	228	177334	5.21	ppb	96
94) Benzo[b]fluoranthene	13.728	252	245794m	6.04	ppb	
95) Benzo[k]fluoranthene	13.739	252	89283m	2.44	ppb	
96) Benzo[a]pyrene	14.001	252	184600	5.34	ppb	97
97) Indeno[1,2,3-cd]pyrene	14.894	276	168512	4.20	ppb	94
99) Dibenz[a,h]anthracene	14.905	278	51634m	1.53	ppb	
101) Benzo[g,h,i]perylene	15.066	276	195507	5.71	ppb	93

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

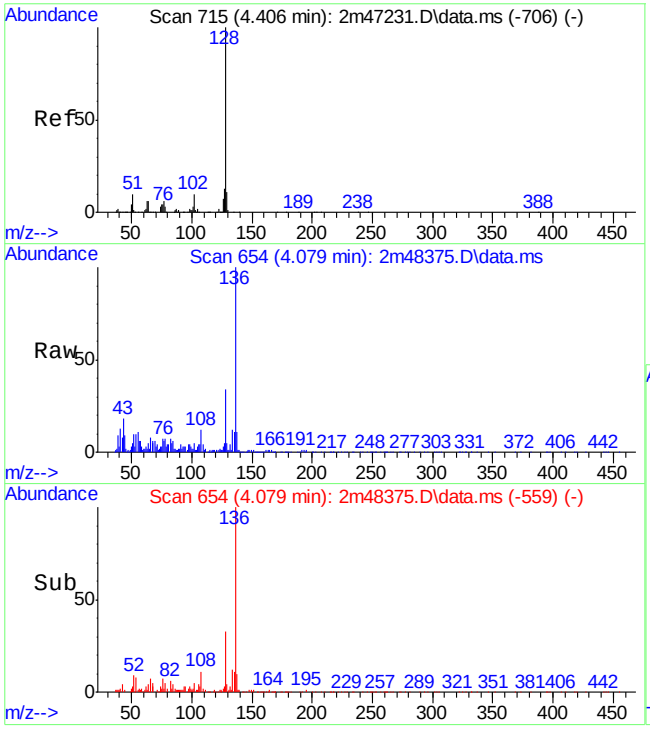
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48375.D
Acq On : 8 Dec 2012 7:31 pm
Operator : kristis
Sample : jb22267-16
Misc : op61828,e2m2073,32.4,,,1,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 11 17:59:08 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 17:34:35 2012
Response via : Initial Calibration



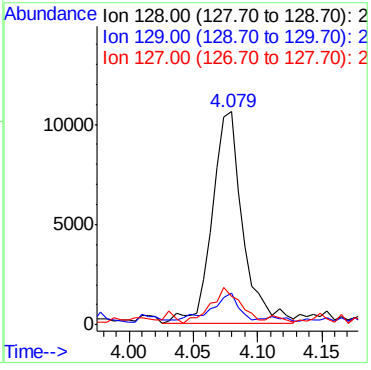
M2M2034.M Tue Dec 11 17:59:20 2012 MS2M Page: 2

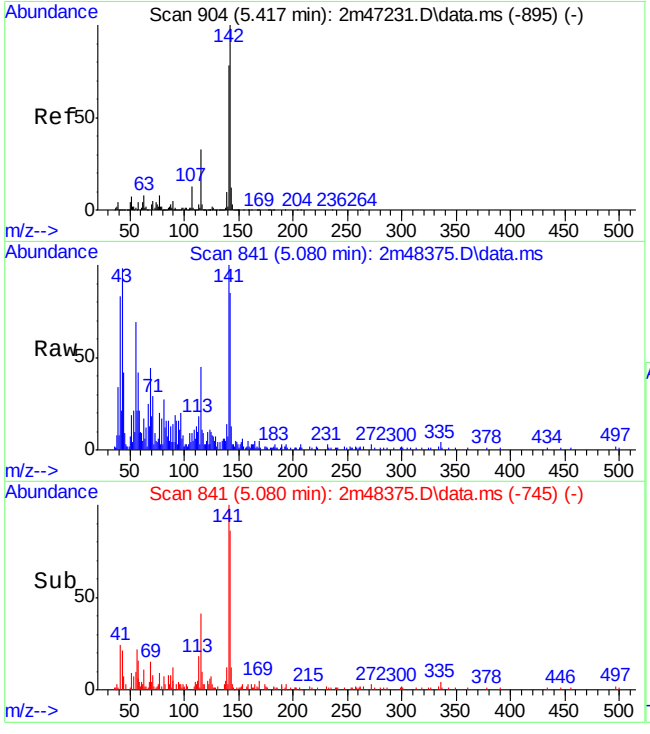


#38
Naphthalene
Concen: 0.53 ppb
RT: 4.079 min Scan# 654
Delta R.T. 0.011 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:128 Resp: 17299

Ion	Ratio	Lower	Upper
128	100		
129	12.9	0.0	40.9
127	12.0	0.0	43.3

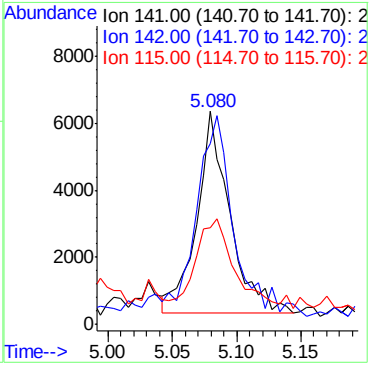


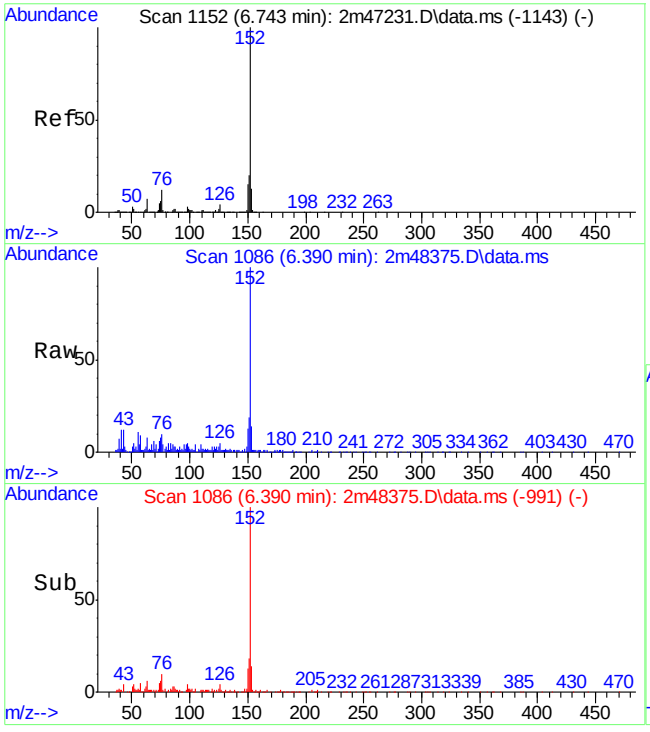


#44
2-Methylnaphthalene
Concen: 0.54 ppb
RT: 5.080 min Scan# 841
Delta R.T. 0.016 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:141 Resp: 10744

Ion	Ratio	Lower	Upper
141	100		
142	82.1	81.7	141.7
115	39.4	12.0	72.0

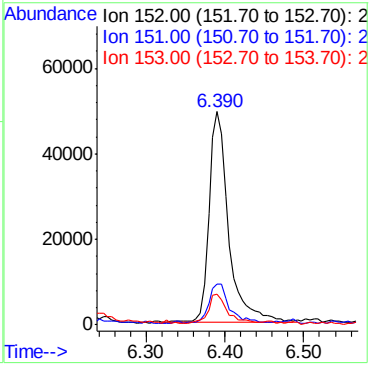


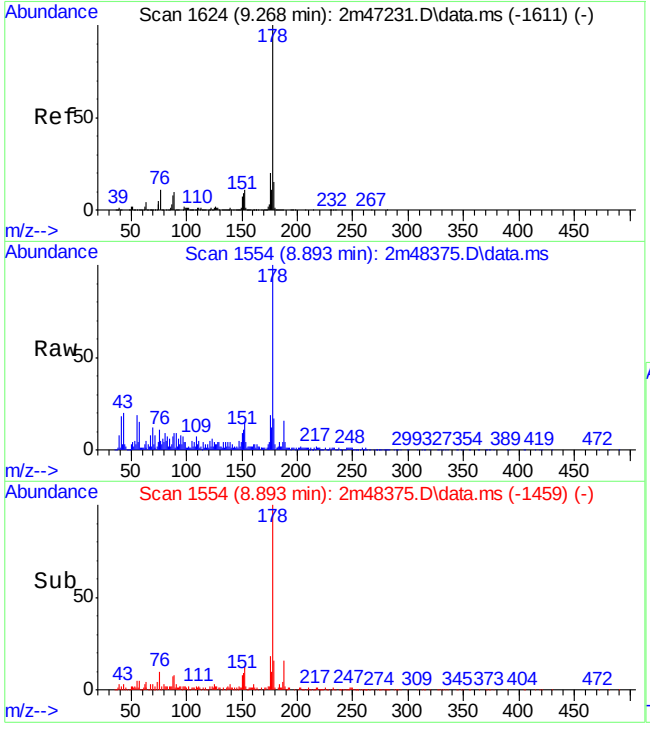


#56
Acenaphthylene
Concen: 2.56 ppb
RT: 6.390 min Scan# 1086
Delta R.T. 0.011 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:152 Resp: 85356

Ion	Ratio	Lower	Upper
152	100		
151	17.5	0.0	49.4
153	13.3	0.0	43.0

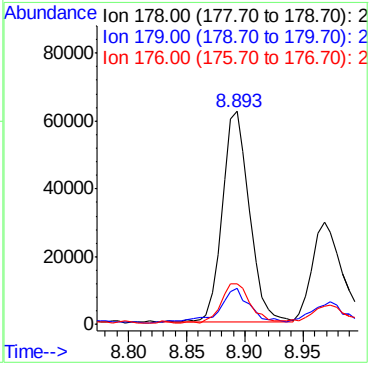




#77
Phenanthrene
Concen: 2.96 ppb
RT: 8.893 min Scan# 1554
Delta R.T. 0.011 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:178 Resp: 100630

Ion	Ratio	Lower	Upper
178	100		
179	15.6	0.0	44.9
176	17.6	0.0	49.1



9.1.16

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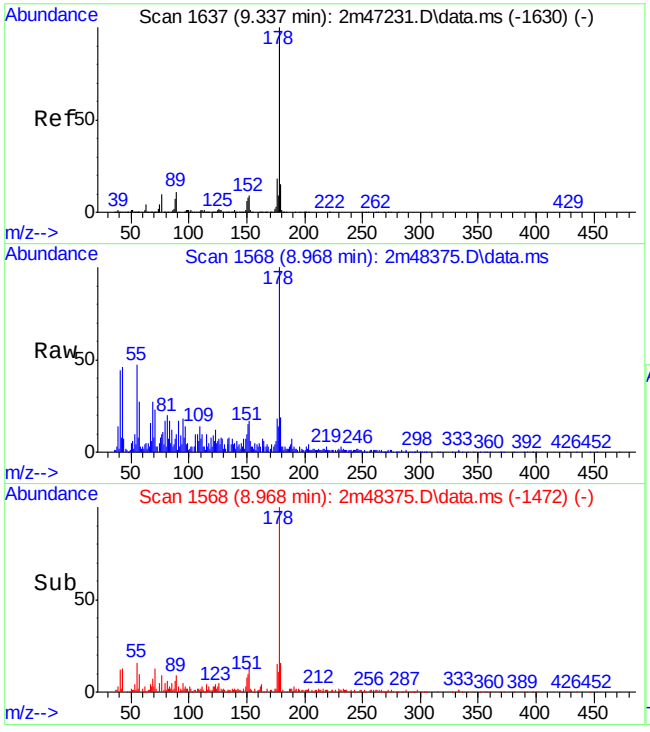
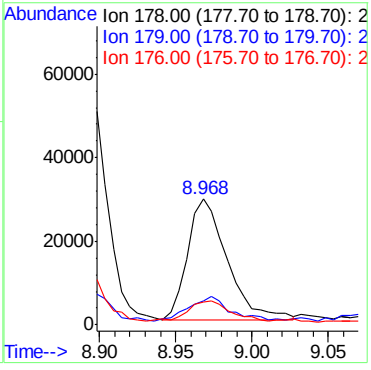
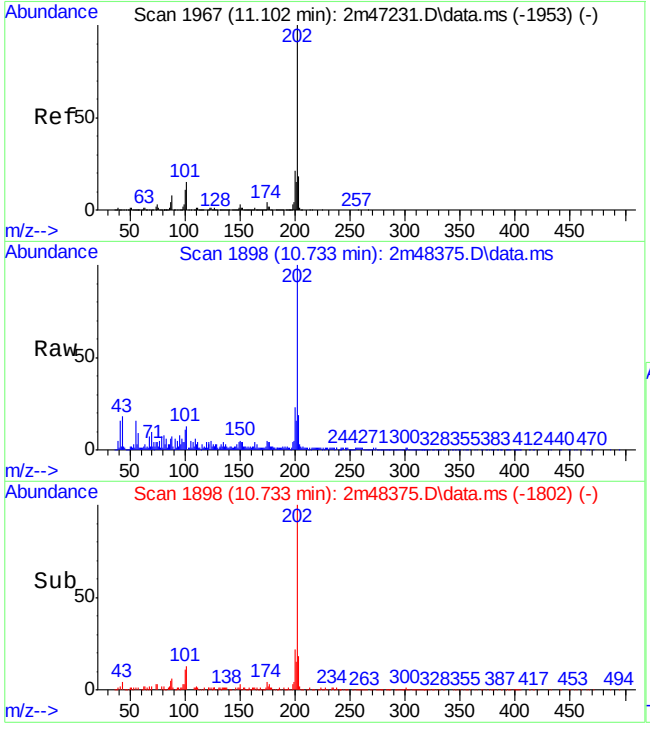


#78
Anthracene
Concen: 1.56 ppb
RT: 8.968 min Scan# 1568
Delta R.T. 0.016 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:178 Resp: 52571

Ion	Ratio	Lower	Upper
178	100		
179	14.5	0.0	44.3
176	13.6	0.0	48.3

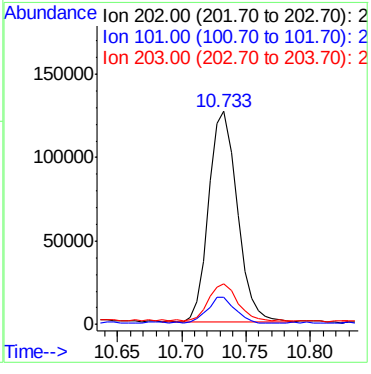


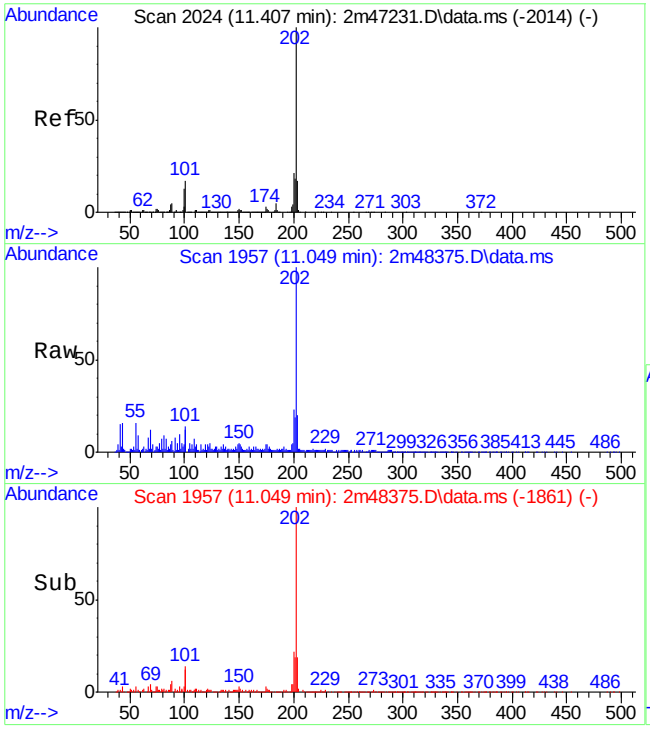


#81
Fluoranthene
Concen: 5.78 ppb
RT: 10.733 min Scan# 1898
Delta R.T. 0.016 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:202 Resp: 194108

Ion	Ratio	Lower	Upper
202	100		
101	12.1	0.0	43.8
203	17.4	0.0	47.5

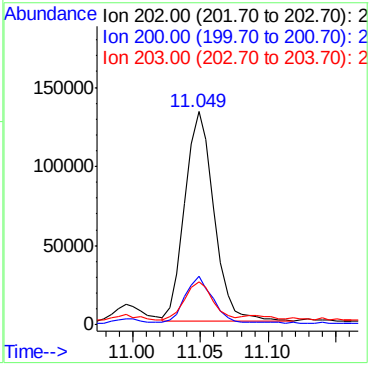


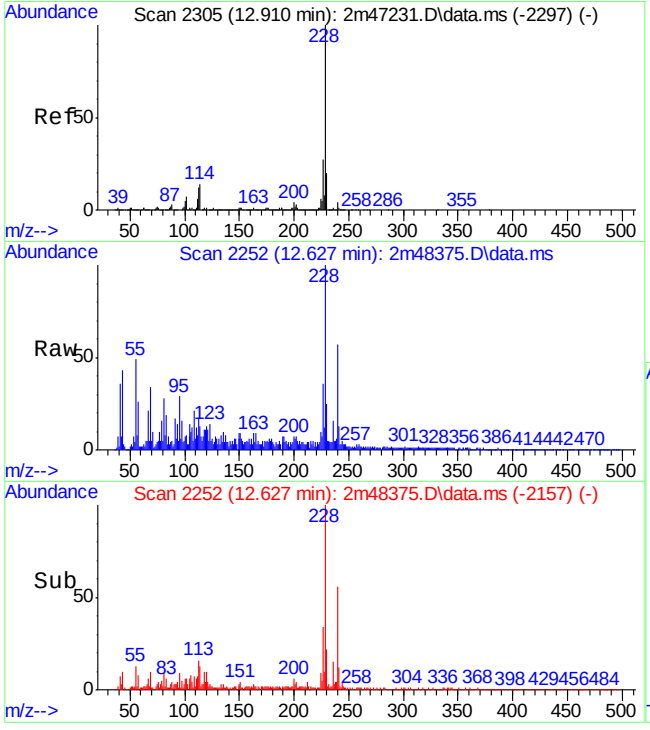


#84
Pyrene
Concen: 5.46 ppb
RT: 11.049 min Scan# 1957
Delta R.T. 0.016 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:202 Resp: 197250

Ion	Ratio	Lower	Upper
202	100		
200	22.0	0.0	51.3
203	18.1	0.0	47.6

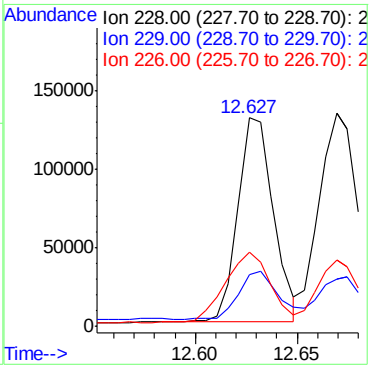


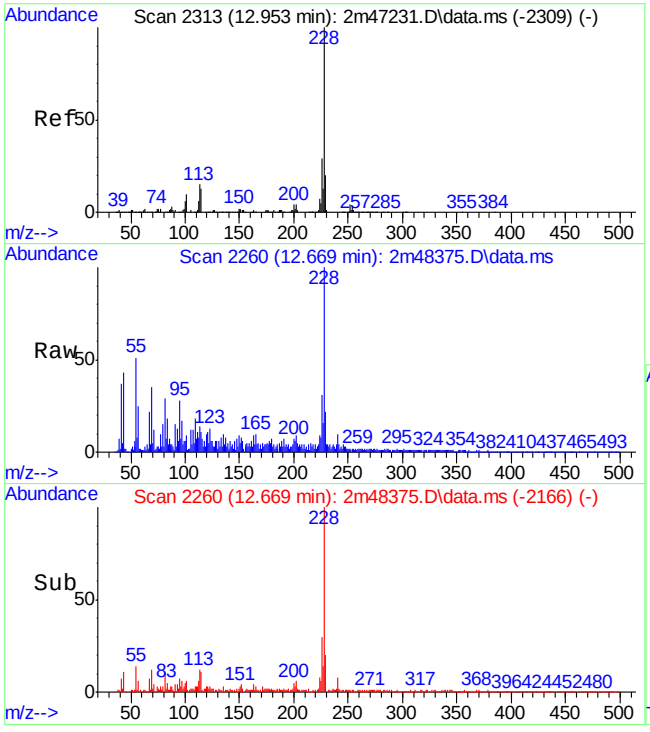


#88
Benzo[a]anthracene
Concen: 4.62 ppb
RT: 12.627 min Scan# 2252
Delta R.T. 0.011 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:228 Resp: 158889

Ion	Ratio	Lower	Upper
228	100		
229	20.1	0.0	49.3
226	34.5	0.0	56.0

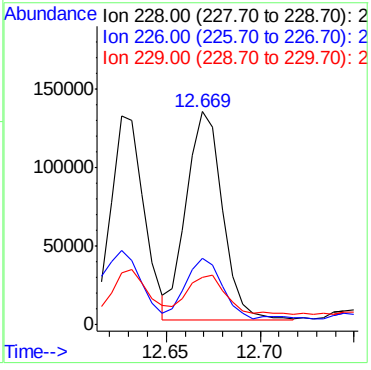


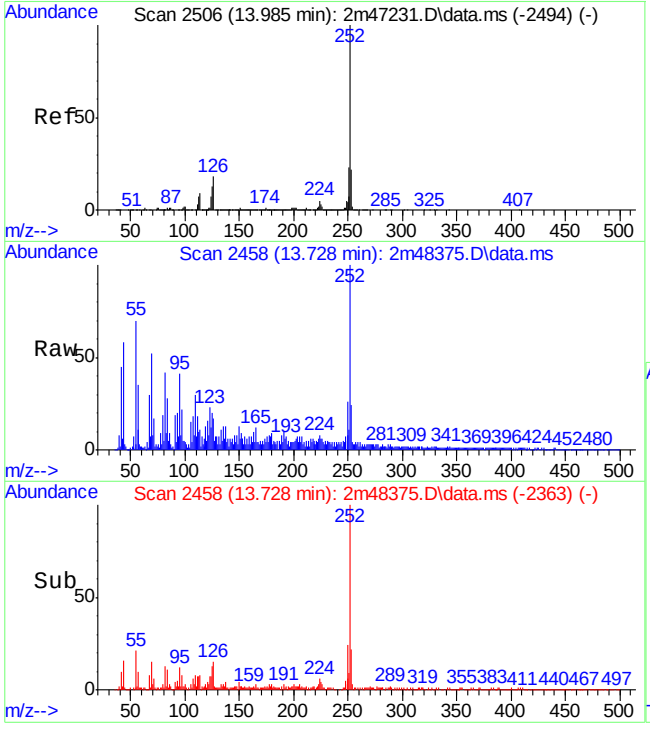


#90
Chrysene
Concen: 5.21 ppb
RT: 12.669 min Scan# 2260
Delta R.T. 0.005 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:228 Resp: 177334

Ion	Ratio	Lower	Upper
228	100		
226	29.5	0.0	57.7
229	16.6	0.0	49.3

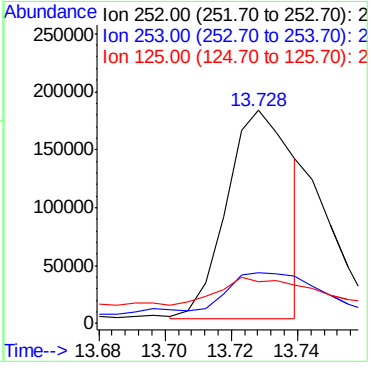




#94
Benzo[b]fluoranthene
Concen: 6.04 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. 0.011 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

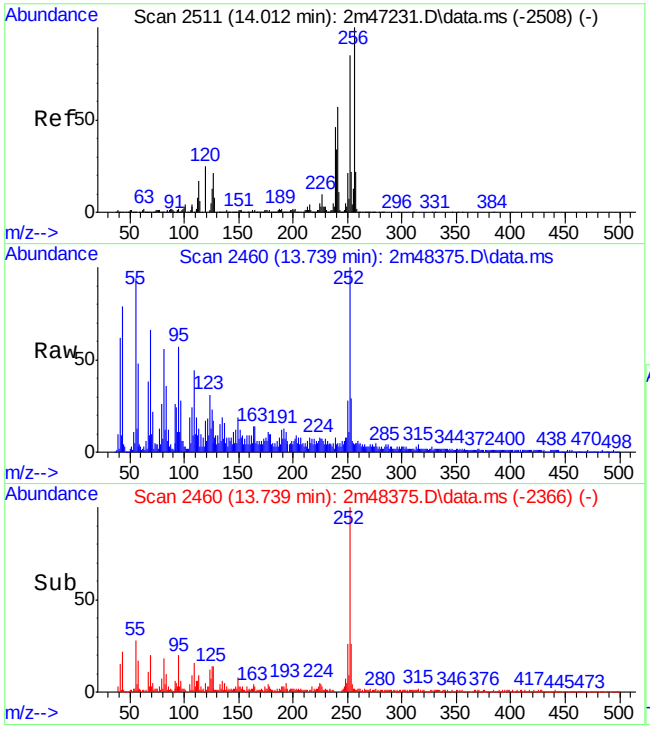
Tgt Ion:252 Resp: 245794

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	51.6
125	19.9	0.0	40.1



9.1.16

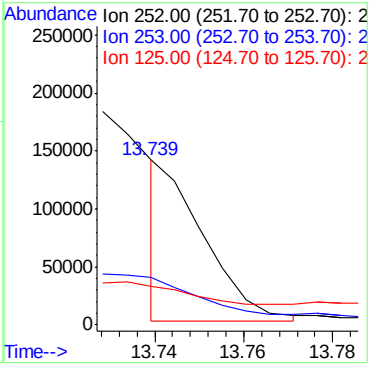
9

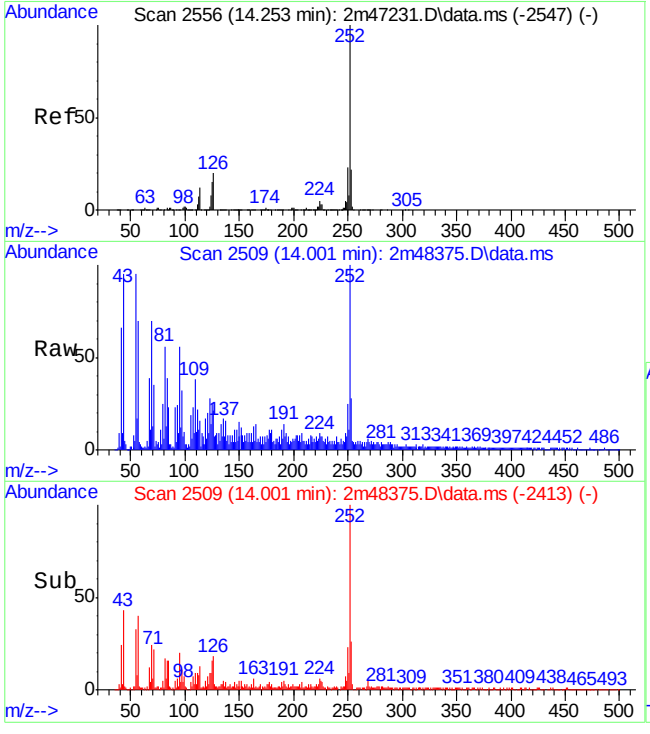


#95
Benzo[k]fluoranthene
Concen: 2.44 ppb m
RT: 13.739 min Scan# 2460
Delta R.T. 0.005 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:252 Resp: 89283

Ion	Ratio	Lower	Upper
252	100		
253	28.6	0.0	52.7
125	23.4	0.0	42.9

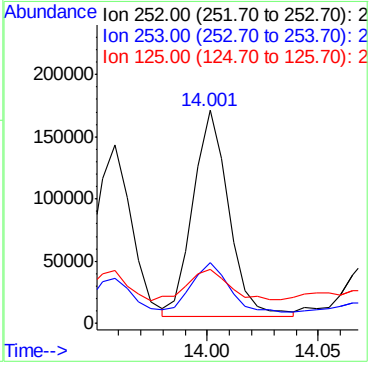




#96
Benzo[a]pyrene
Concen: 5.34 ppb
RT: 14.001 min Scan# 2509
Delta R.T. 0.016 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:252 Resp: 184600

Ion	Ratio	Lower	Upper
252	100		
253	24.0	0.0	52.4
125	13.7	0.0	42.7



9.1.16

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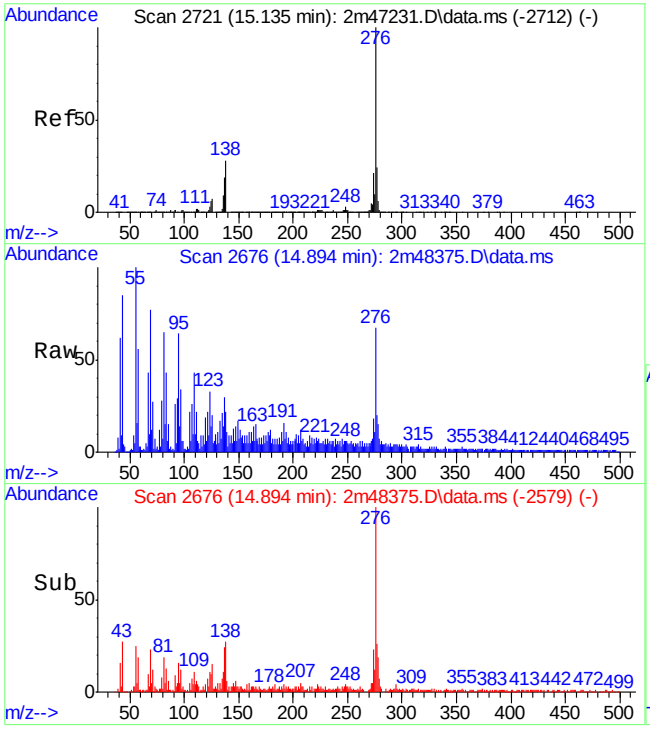
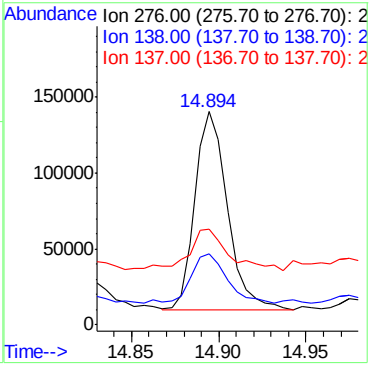
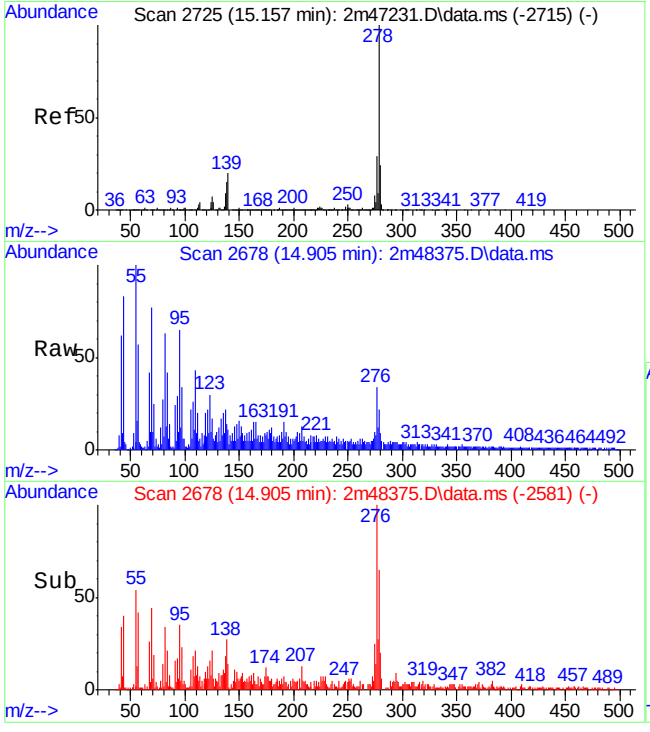


#97
Indeno[1,2,3-cd]pyrene
Concen: 4.20 ppb
RT: 14.894 min Scan# 2676
Delta R.T. 0.021 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:276 Resp: 168512

Ion	Ratio	Lower	Upper
276	100		
138	23.8	0.0	57.6
137	17.4	0.0	48.9

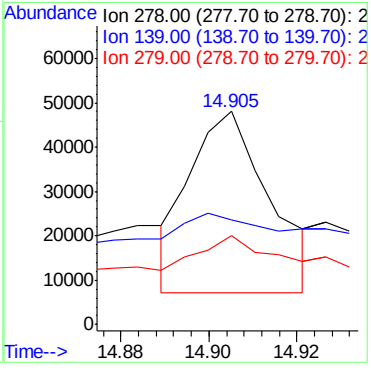




#99
Dibenz[a,h]anthracene
Concen: 1.53 ppb m
RT: 14.905 min Scan# 2678
Delta R.T. 0.021 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:278 Resp: 51634

Ion	Ratio	Lower	Upper
278	100		
139	49.0	0.0	52.4
279	41.5	0.0	54.1



9.1.16

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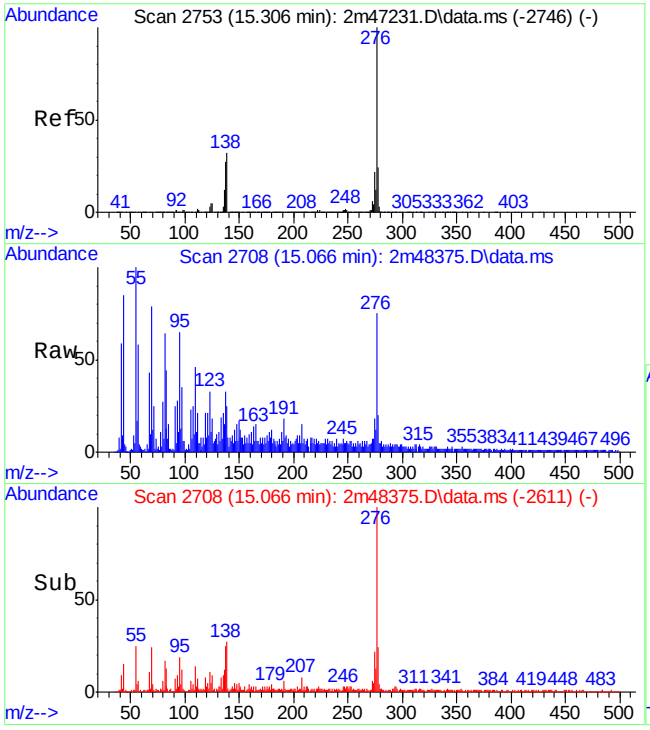
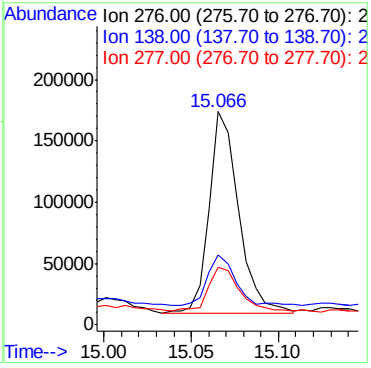


#101
Benzo[g,h,i]perylene
Concen: 5.71 ppb
RT: 15.066 min Scan# 2708
Delta R.T. 0.021 min
Lab File: 2m48375.D
Acq: 8 Dec 2012 7:31 pm

Tgt Ion:276 Resp: 195507

Ion	Ratio	Lower	Upper
276	100		
138	24.7	0.1	60.1
277	21.7	0.0	53.2



9.1.16

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/12/12 11:47

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48363.D
Acq On : 8 Dec 2012 2:55 pm
Operator : kristis
Sample : jb22267-17
Misc : op61828,e2m2073,36.4,,,1,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 11 17:42:13 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	273902	40.00	ppb	-0.07
24) Naphthalene-d8	4.042	136	1208022	40.00	ppb	-0.08
47) Acenaphthene-d10	6.615	164	694016	40.00	ppb	-0.09
69) Phenanthrene-d10	8.845	188	1122077	40.00	ppb	-0.09
83) Chrysene-d12	12.632	240	1061295	40.00	ppb	-0.06
92) Perylene-d12	14.033	264	923080	40.00	ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	273902	40.00	ppb	-0.07
104) Acenaphthene-d10a	6.615	164	694016	40.00	ppb	-0.09
106) Chrysene-d12a	12.632	240	1061295	40.00	ppb	-0.06
108) Phenanthrene-d10a	8.845	188	1122077	40.00	ppb	-0.09
110) Chrysene-d12b	12.632	240	1061295	40.00	ppb	-0.06

System Monitoring Compounds						
5) 2-Fluorophenol	1.507	112	230058	23.08	ppb	-0.04
Spiked Amount 50.000			Recovery	=	46.16%	
8) Phenol-d5	2.314	99	339516	25.41	ppb	-0.05
Spiked Amount 50.000			Recovery	=	50.82%	
25) Nitrobenzene-d5	3.186	82	294380	22.71	ppb	-0.06
Spiked Amount 50.000			Recovery	=	45.42%	
51) 2-Fluorobiphenyl	5.689	172	638851	27.99	ppb	-0.09
Spiked Amount 50.000			Recovery	=	55.98%	
73) 2,4,6-Tribromophenol	7.872	330	121437	46.05	ppb	-0.08
Spiked Amount 50.000			Recovery	=	92.10%	
85) Terphenyl-d14	11.418	244	1155997	53.90	ppb	-0.08
Spiked Amount 50.000			Recovery	=	107.80%	

Target Compounds						Qvalue
66) Fluorene	7.454	166	15048	0.65	ppb	92
77) Phenanthrene	8.882	178	251229	7.31	ppb	98
78) Anthracene	8.963	178	51248	1.51	ppb	95
81) Fluoranthene	10.717	202	366130	10.80	ppb	98
84) Pyrene	11.038	202	318191	9.27	ppb	99
88) Benzo[a]anthracene	12.616	228	167063	5.12	ppb	97
90) Chrysene	12.659	228	164603	5.09	ppb	96
94) Benzo[b]fluoranthene	13.718	252	170505m	5.31	ppb	
95) Benzo[k]fluoranthene	13.728	252	93785m	3.24	ppb	
96) Benzo[a]pyrene	13.990	252	147386	5.40	ppb	99
97) Indeno[1,2,3-cd]pyrene	14.884	276	96815	3.05	ppb	96
99) Dibenz[a,h]anthracene	14.900	278	33066m	1.24	ppb	
101) Benzo[g,h,i]perylene	15.060	276	96754	3.58	ppb	94

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

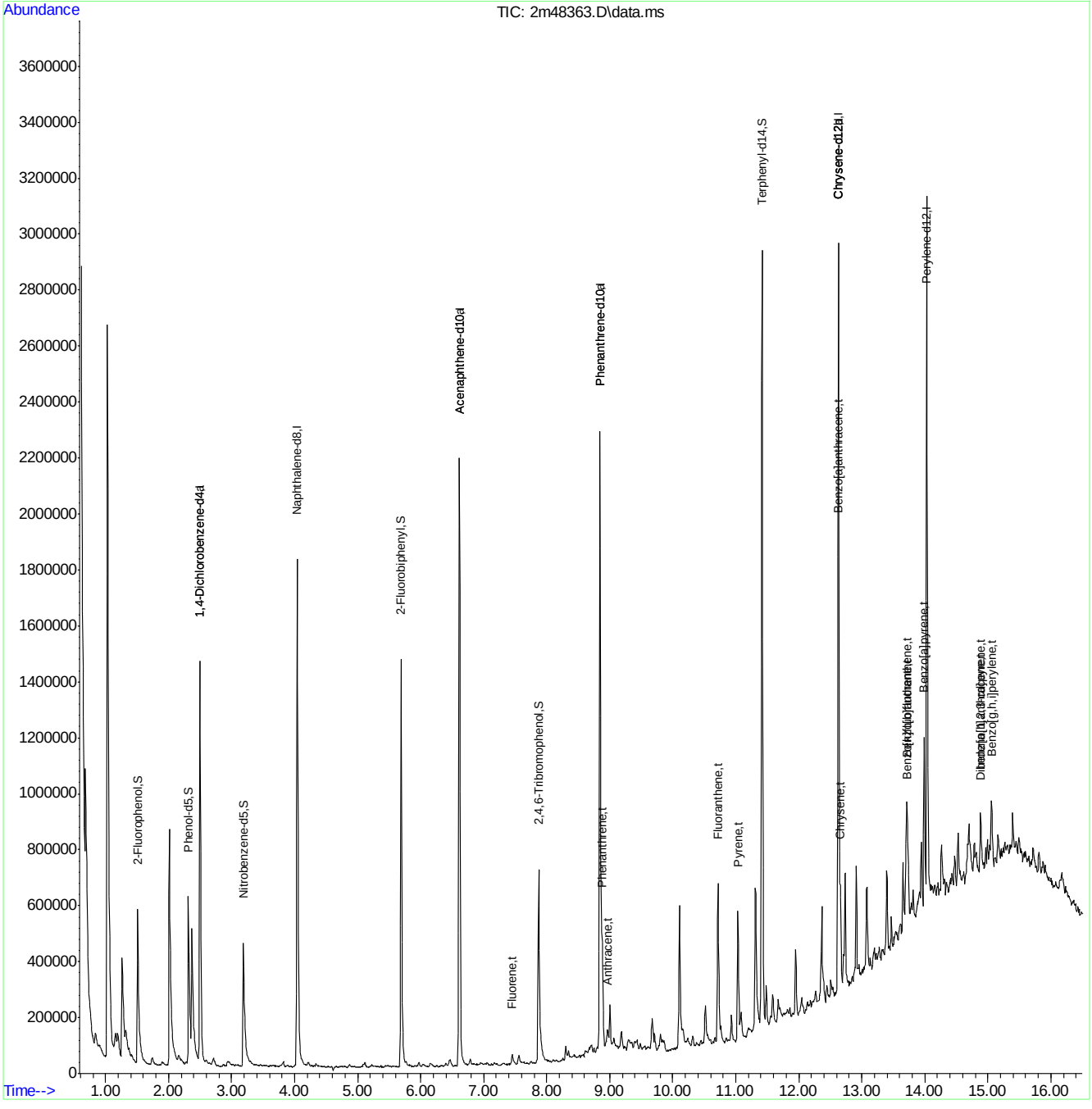
9.1.17

9

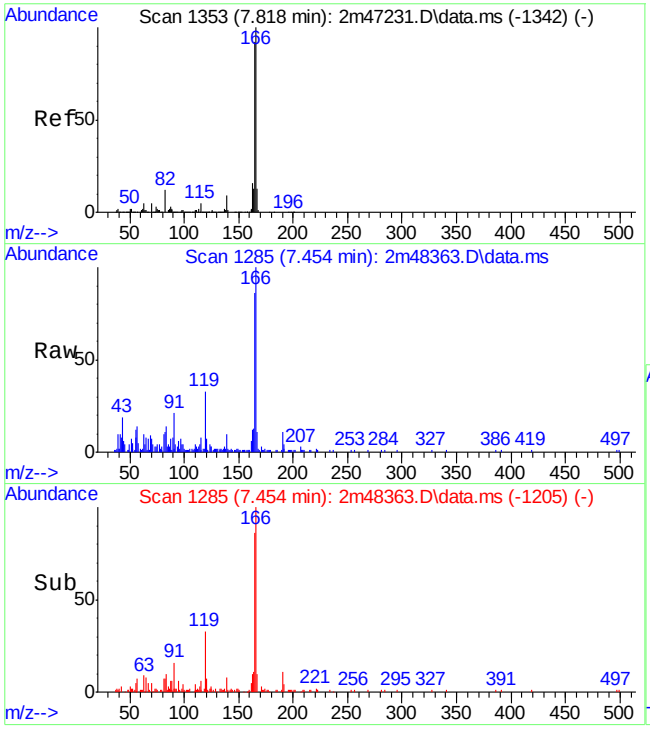
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48363.D
Acq On : 8 Dec 2012 2:55 pm
Operator : kristis
Sample : jb22267-17
Misc : op61828,e2m2073,36.4,,,1,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 11 17:42:13 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration



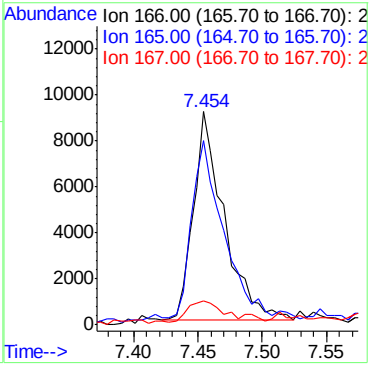
M2M2034.M Tue Dec 11 17:42:22 2012 MS2M Page: 2

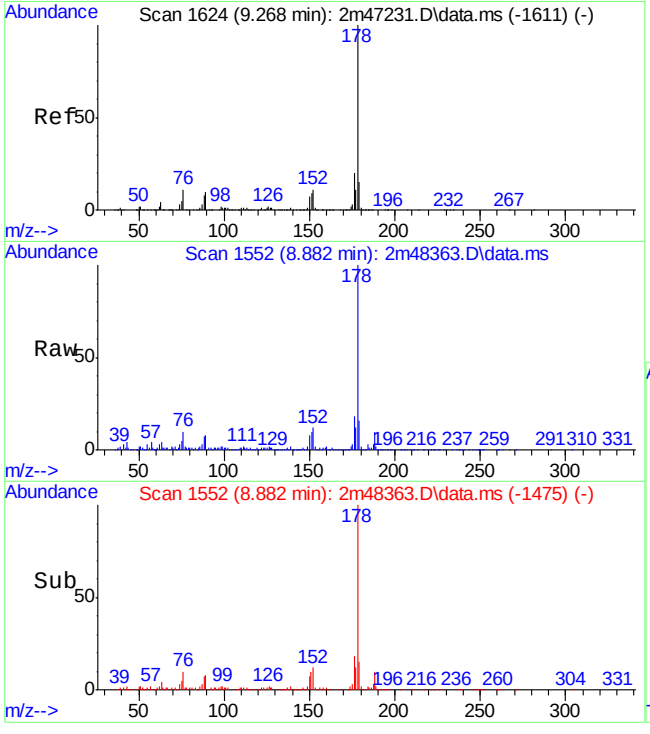


#66
Fluorene
Concen: 0.65 ppb
RT: 7.454 min Scan# 1285
Delta R.T. -0.070 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:166 Resp: 15048

Ion	Ratio	Lower	Upper
166	100		
165	84.4	61.9	121.9
167	8.9	0.0	43.1

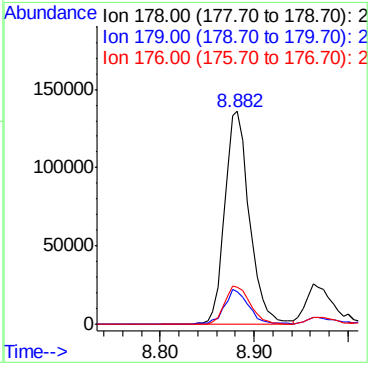




#77
Phenanthrene
Concen: 7.31 ppb
RT: 8.882 min Scan# 1552
Delta R.T. -0.086 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:178 Resp: 251229

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	44.9
176	17.7	0.0	49.1



9.1.17

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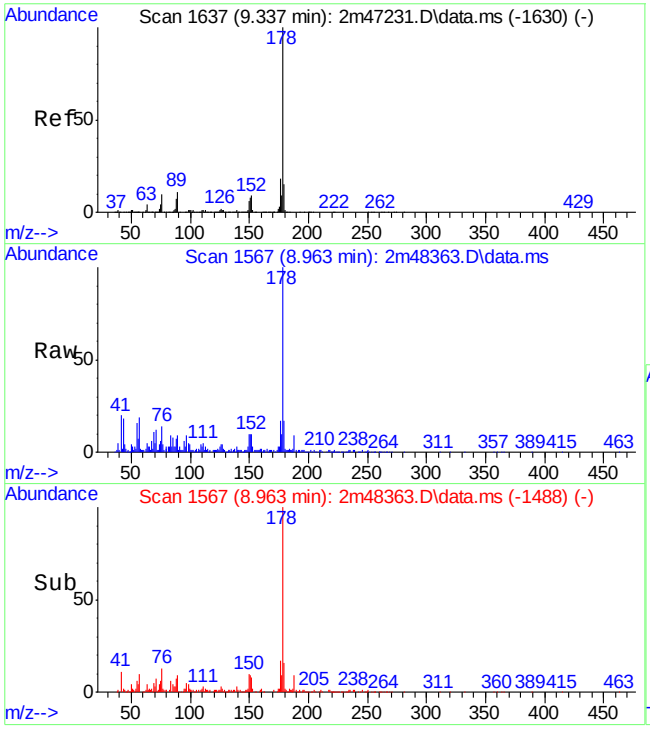
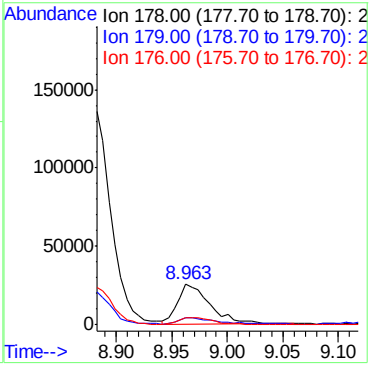
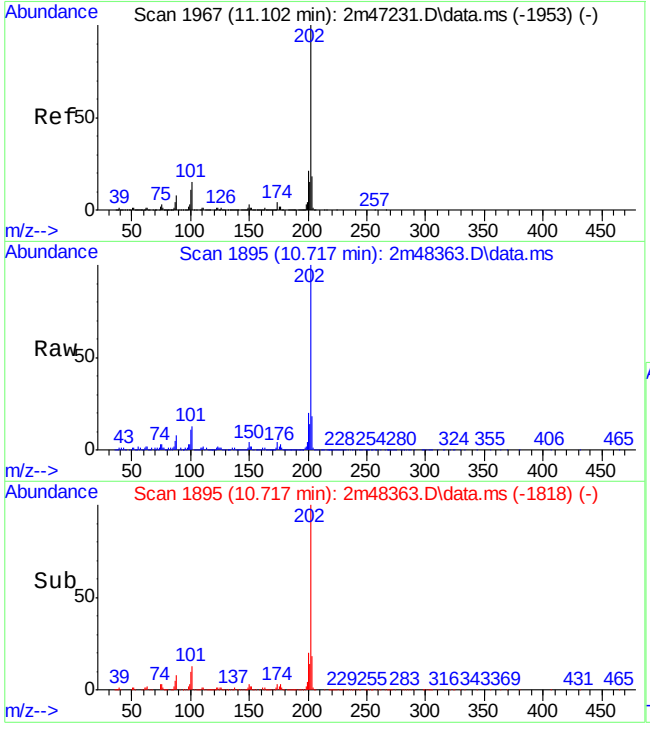


#78
Anthracene
Concen: 1.51 ppb
RT: 8.963 min Scan# 1567
Delta R.T. -0.075 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:178 Resp: 51248

Ion	Ratio	Lower	Upper
178	100		
179	16.6	0.0	44.3
176	16.4	0.0	48.3

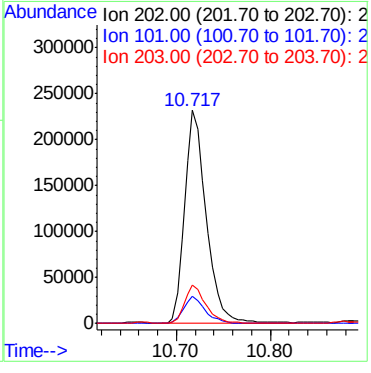


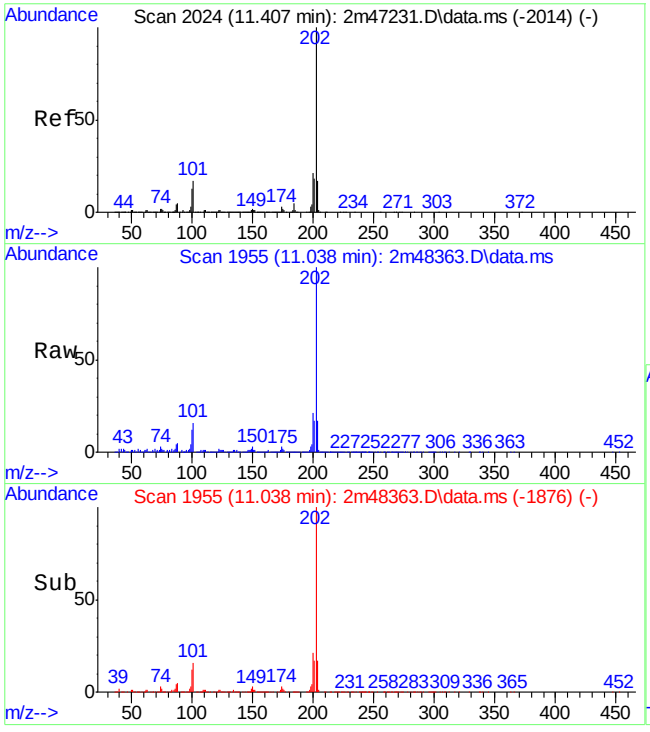


#81
Fluoranthene
Concen: 10.80 ppb
RT: 10.717 min Scan# 1895
Delta R.T. -0.086 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:202 Resp: 366130

Ion	Ratio	Lower	Upper
202	100		
101	12.6	0.0	43.8
203	17.9	0.0	47.5

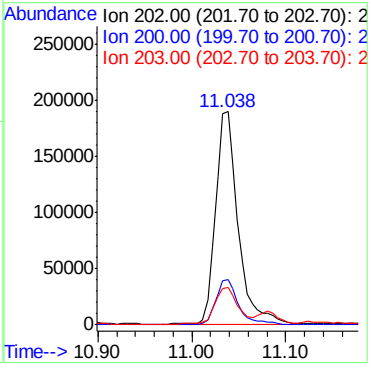


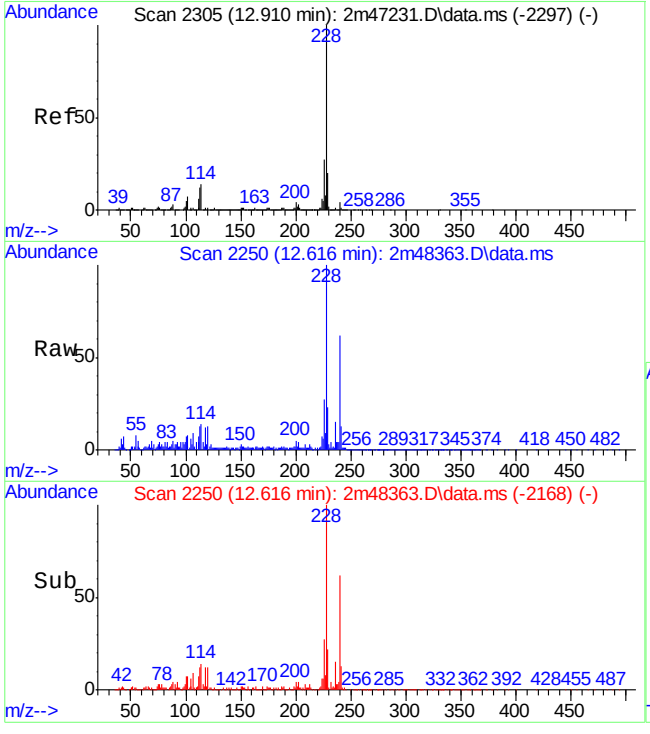


#84
Pyrene
Concen: 9.27 ppb
RT: 11.038 min Scan# 1955
Delta R.T. -0.075 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:202 Resp: 318191

Ion	Ratio	Lower	Upper
202	100		
200	21.0	0.0	51.3
203	16.8	0.0	47.6

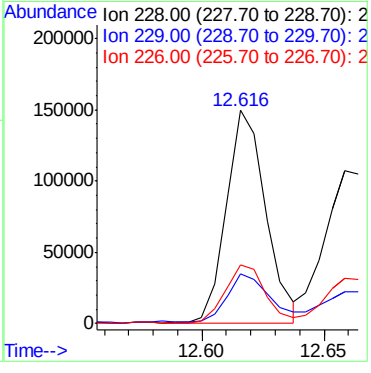




#88
Benzo[a]anthracene
Concen: 5.12 ppb
RT: 12.616 min Scan# 2250
Delta R.T. -0.059 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:228 Resp: 167063

Ion	Ratio	Lower	Upper
228	100		
229	21.1	0.0	49.3
226	27.3	0.0	56.0



9.1.17

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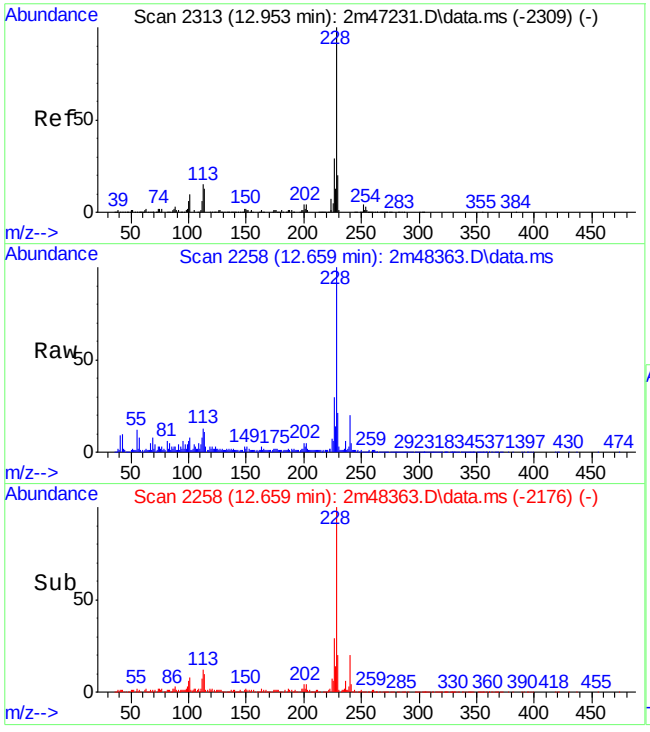
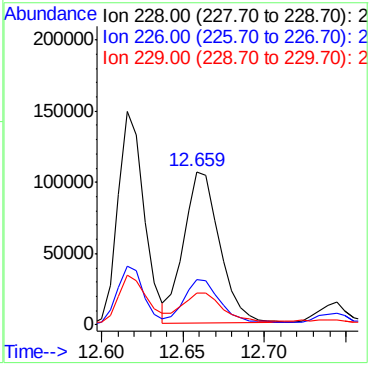
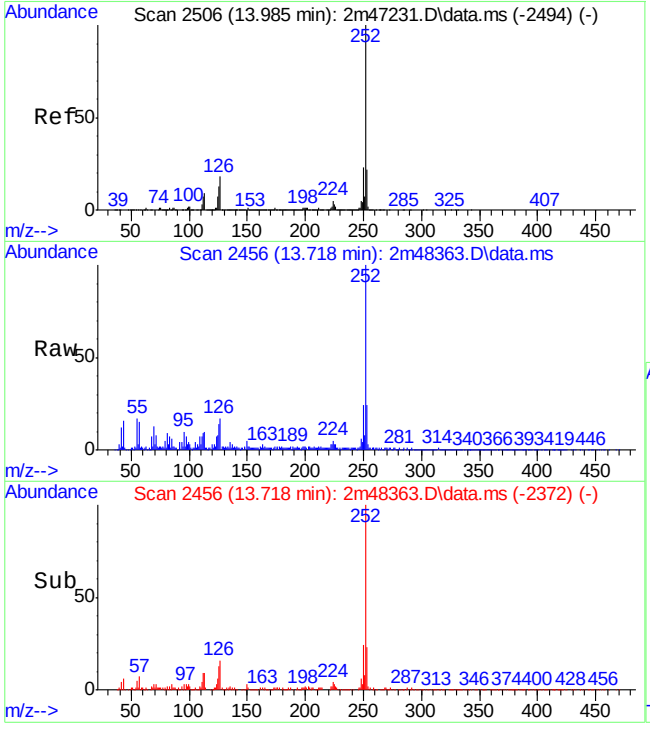


#90
Chrysene
Concen: 5.09 ppb
RT: 12.659 min Scan# 2258
Delta R.T. -0.059 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:228 Resp: 164603

Ion	Ratio	Lower	Upper
228	100		
226	29.5	0.0	57.7
229	17.0	0.0	49.3

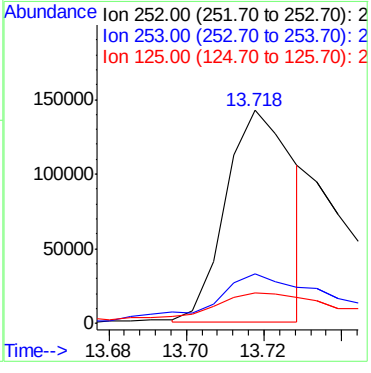


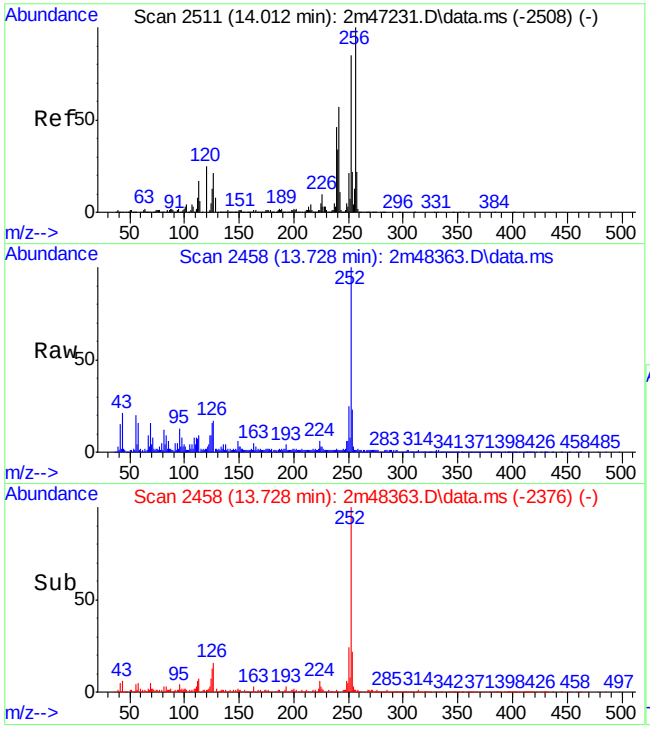


#94
Benzo[b]fluoranthene
Concen: 5.31 ppb m
RT: 13.718 min Scan# 2456
Delta R.T. -0.048 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:252 Resp: 170505

Ion	Ratio	Lower	Upper
252	100		
253	23.5	0.0	51.6
125	14.5	0.0	40.1

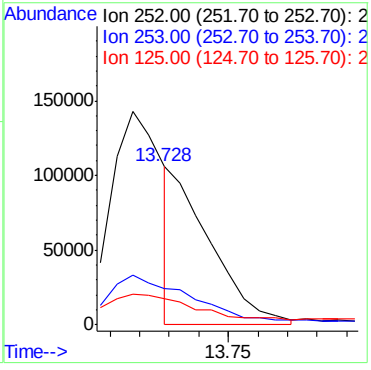


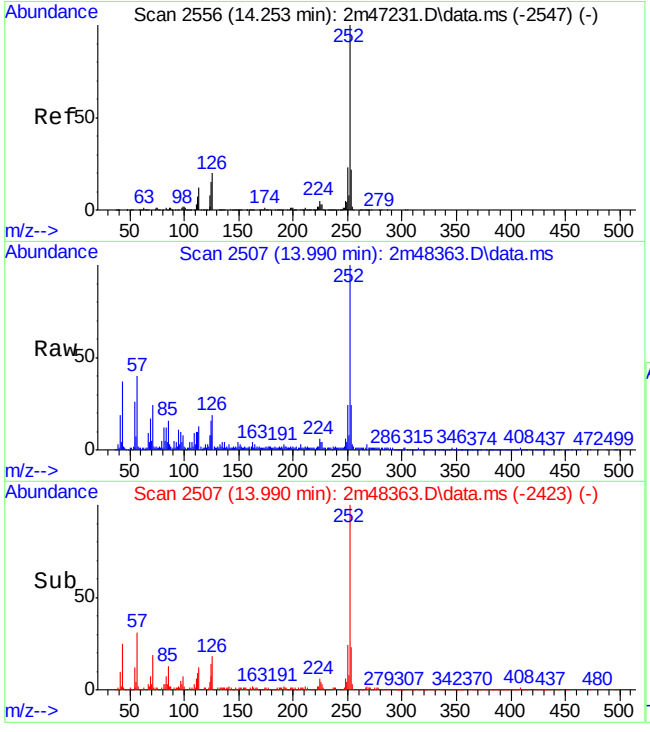


#95
Benzo[k]fluoranthene
Concen: 3.24 ppb m
RT: 13.728 min Scan# 2458
Delta R.T. -0.059 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:252 Resp: 93785

Ion	Ratio	Lower	Upper
252	100		
253	22.8	0.0	52.7
125	16.4	0.0	42.9

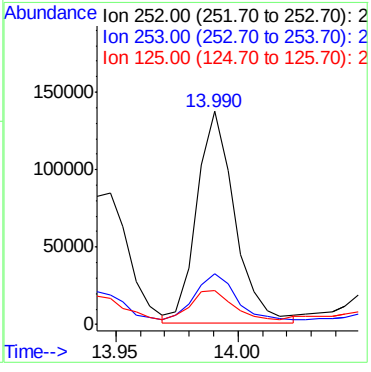




#96
Benzo[a]pyrene
Concen: 5.40 ppb
RT: 13.990 min Scan# 2507
Delta R.T. -0.048 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

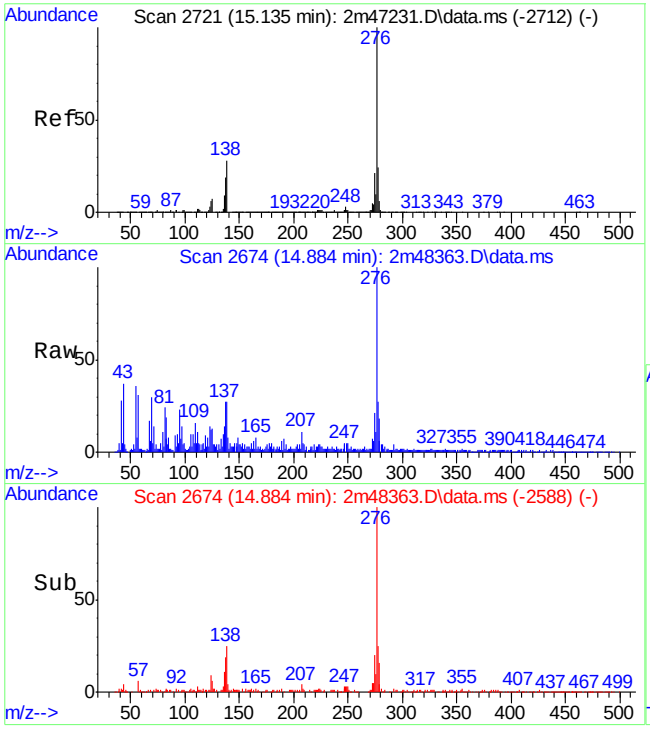
Tgt Ion:252 Resp: 147386

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	52.4
125	13.6	0.0	42.7



9.1.17

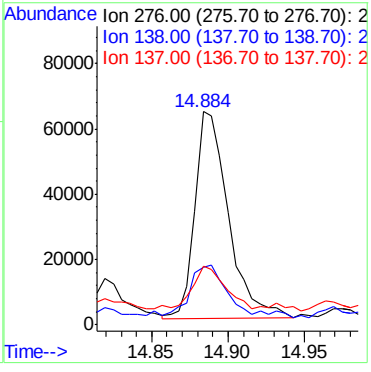
9

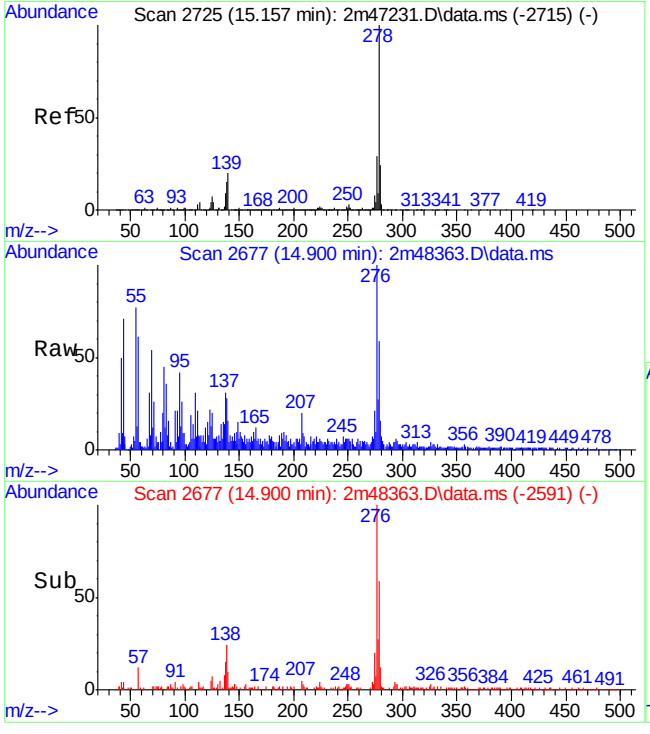


#97
Indeno[1,2,3-cd]pyrene
Concen: 3.05 ppb
RT: 14.884 min Scan# 2674
Delta R.T. -0.037 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:276 Resp: 96815

Ion	Ratio	Lower	Upper
276	100		
138	24.1	0.0	57.6
137	19.2	0.0	48.9

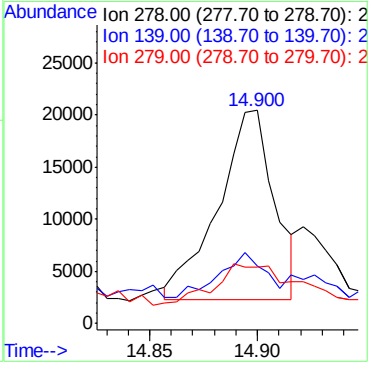


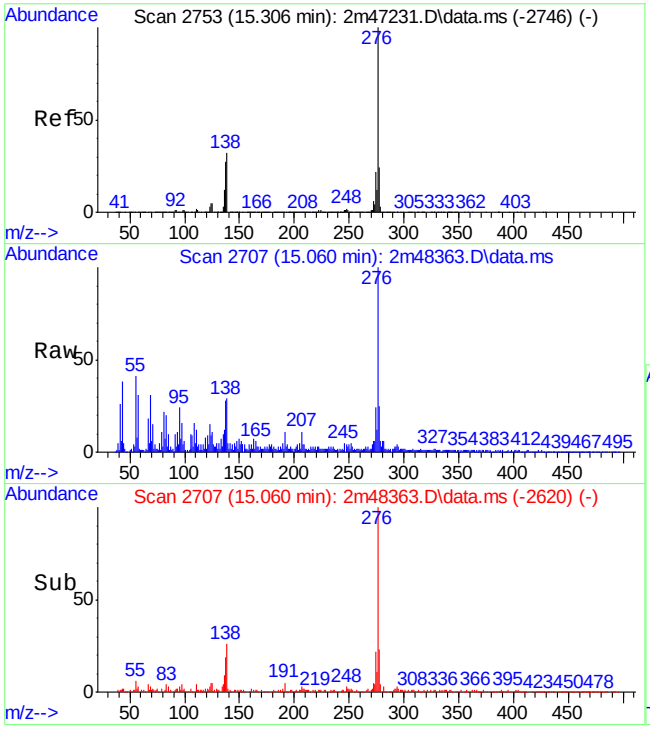


#99
Dibenz[a,h]anthracene
Concen: 1.24 ppb m
RT: 14.900 min Scan# 2677
Delta R.T. -0.037 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:278 Resp: 33066

Ion	Ratio	Lower	Upper
278	100		
139	27.2	0.0	52.4
279	26.3	0.0	54.1

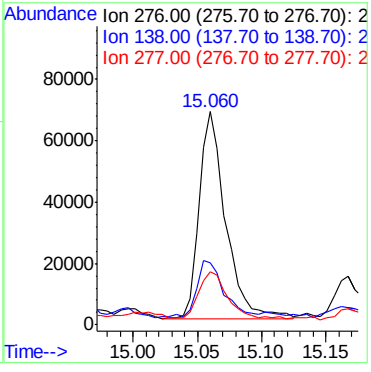




#101
Benzo[g,h,i]perylene
Concen: 3.58 ppb
RT: 15.060 min Scan# 2707
Delta R.T. -0.032 min
Lab File: 2m48363.D
Acq: 8 Dec 2012 2:55 pm

Tgt Ion:276 Resp: 96754

Ion	Ratio	Lower	Upper
276	100		
138	25.7	0.1	60.1
277	21.4	0.0	53.2



9.1.17

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48356.D
Acq On : 8 Dec 2012 12:08 pm
Operator : kristis
Sample : op61828-mb1
Misc : op61828,e2m2073,35.0,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 11 17:33:35 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.496	152	265730	40.00 ppb	-0.07
24) Naphthalene-d8	4.042	136	1142572	40.00 ppb	-0.08
47) Acenaphthene-d10	6.615	164	705142	40.00 ppb	-0.09
69) Phenanthrene-d10	8.850	188	1213908	40.00 ppb	-0.08
83) Chrysene-d12	12.632	240	1323973	40.00 ppb	-0.06
92) Perylene-d12	14.033	264	1194884	40.00 ppb	-0.05
102) 1,4-Dichlorobenzene-d4a	2.496	152	265730	40.00 ppb	-0.07
104) Acenaphthene-d10a	6.615	164	705142	40.00 ppb	-0.09
106) Chrysene-d12a	12.632	240	1323973	40.00 ppb	-0.06
108) Phenanthrene-d10a	8.850	188	1213908	40.00 ppb	-0.08
110) Chrysene-d12b	12.632	240	1323973	40.00 ppb	-0.06

System Monitoring Compounds					
5) 2-Fluorophenol	1.501	112	346785	35.86 ppb	-0.05
Spiked Amount 50.000			Recovery	= 71.72%	
8) Phenol-d5	2.314	99	440718	34.00 ppb	-0.05
Spiked Amount 50.000			Recovery	= 68.00%	
25) Nitrobenzene-d5	3.186	82	410444	33.48 ppb	-0.06
Spiked Amount 50.000			Recovery	= 66.96%	
51) 2-Fluorobiphenyl	5.689	172	807764	34.84 ppb	-0.09
Spiked Amount 50.000			Recovery	= 69.68%	
73) 2,4,6-Tribromophenol	7.877	330	119012	41.72 ppb	-0.07
Spiked Amount 50.000			Recovery	= 83.44%	
85) Terphenyl-d14	11.418	244	1182004	44.18 ppb	-0.08
Spiked Amount 50.000			Recovery	= 88.36%	

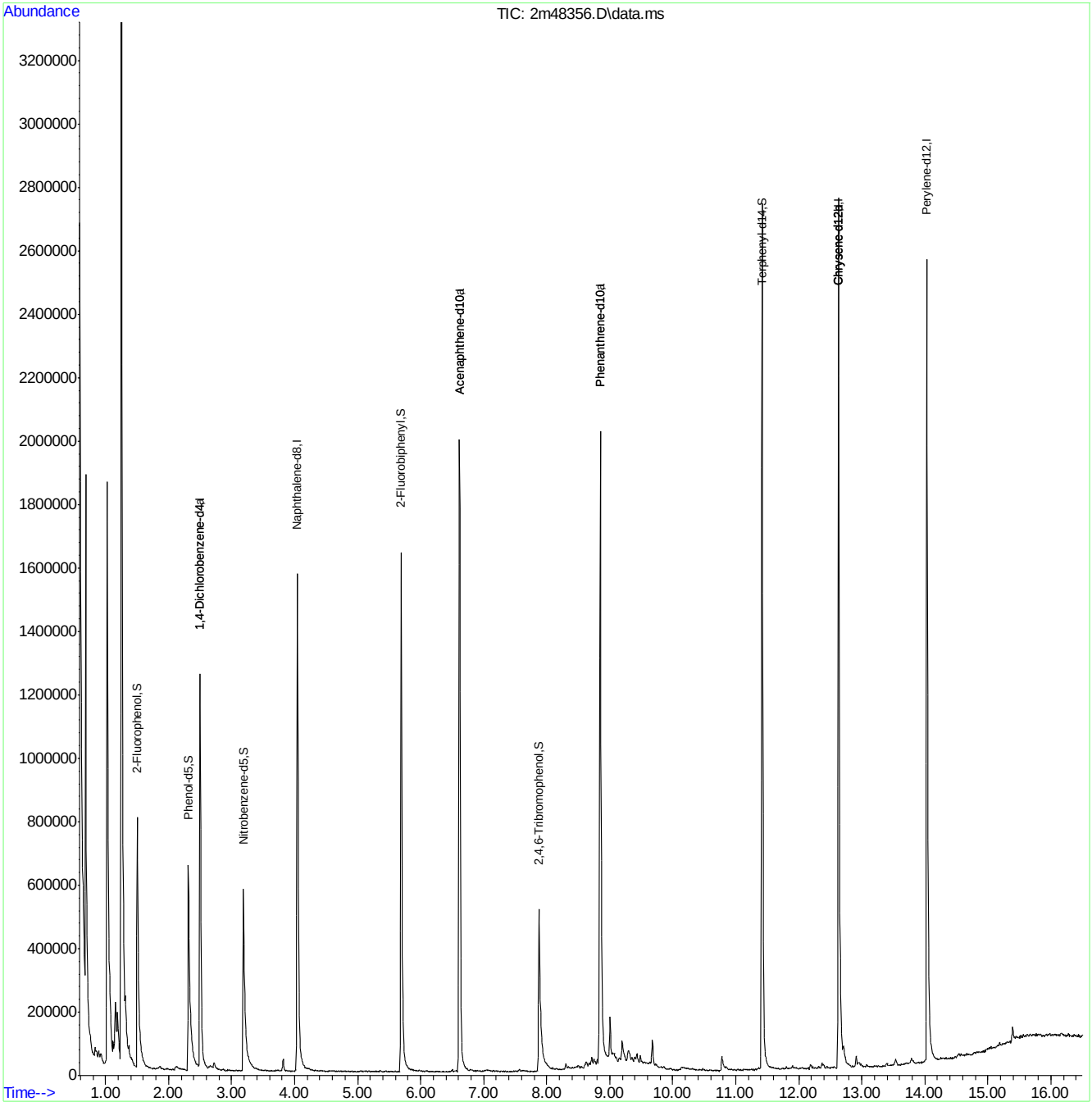
Target Compounds	Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2073\
Data File : 2m48356.D
Acq On : 8 Dec 2012 12:08 pm
Operator : kristis
Sample : op61828-mb1
Misc : op61828,e2m2073,35.0,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 11 17:33:35 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 05 13:12:08 2012
Response via : Initial Calibration



M2M2034.M Tue Dec 11 17:33:44 2012 MS2M

New Jersey
ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:34	MA29991-STD1	1		STDA
09:41	MA29991-STD2	1		STDB
09:47	MA29991-STD3	1		STDC
09:53	MA29991-STD4	1		STDD
09:59	MA29991-CCV1	1		
10:05	MA29991-CCB1	1		
10:11	MA29991-CRI1	1		
10:17	MA29991-CRID1	1		See rerun.
10:24	MA29991-CRIA1	1		
10:30	MA29991-CRID2	1		
10:36	MA29991-ICV1	1		High RSD's, but all reps within ranges for 6010C.
10:42	MA29991-ICB1	1		
10:49	MA29991-CCV2	1		
10:55	MA29991-CCB2	1		
11:01	MA29991-ICSA1	1		
11:07	MA29991-ICSAB1	1		
11:14	ZZZZZZ	1		
11:20	ZZZZZZ	1		
11:26	MA29991-CCV3	1		
11:32	MA29991-CCB3	1		
11:39	MP68311-MB1	1		Bad reading.
11:45	ZZZZZZ	1		
11:51	ZZZZZZ	1		
11:57	ZZZZZZ	1		
12:04	MP68311-LC1	1		
12:10	MP68311-B1	1		
12:16	MP68311-S1	1		
12:22	MP68311-S2	1		
12:28	JB22871-25	1		(sample used for QC only; not part of login JB22267)
12:34	MP68311-SD1	5		
12:40	MA29991-CCV4	1		
12:46	MA29991-CCB4	1		
12:53	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:59	ZZZZZZ	1		
13:05	ZZZZZZ	1		
13:11	ZZZZZZ	1		
13:17	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:30	ZZZZZZ	1		
13:36	ZZZZZZ	1		
13:42	ZZZZZZ	1		
13:48	ZZZZZZ	1		
13:54	MA29991-CCV5	1		
14:00	MA29991-CCB5	1		
14:07	ZZZZZZ	1		
14:13	MP68311-MB1	1		
14:19	ZZZZZZ	1		
14:25	ZZZZZZ	1		
14:32	ZZZZZZ	1		
14:38	ZZZZZZ	1		
14:44	ZZZZZZ	1		
14:50	ZZZZZZ	1		
14:56	ZZZZZZ	1		
15:03	ZZZZZZ	1		
15:09	MA29991-CCV6	1		
15:15	MA29991-CCB6	1		
15:21	ZZZZZZ	1		
15:28	ZZZZZZ	1		
15:34	MP68280-B1	1		
15:40	MP68280-MB1	1		
15:47	MP68280-LC1	1		
15:53	MP68280-S1	1		
15:59	MP68280-S2	1		
16:05	JB22102-12AB	1		(sample used for QC only; not part of login JB22267)
16:11	MP68280-SD1	5		
16:17	MA29991-CCV7	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:23	MA29991-CCB7	1		
16:30	MA29991-CRI2	1		
16:36	MA29991-CRID3	1		TLNJ out.
16:42	MA29991-CRIA2	1		
16:49	MA29991-CRID4	1		
16:55	MA29991-ICSA2	1		
17:01	MA29991-ICSAB2	1		
17:08	MA29991-CCV8	1		
17:14	MA29991-CCB8	1		
17:20	MA29991-CCV9	1		
17:26	MA29991-CCB9	1		
17:32	MP68317-MB1	1		
17:39	MP68317-B1	1		
17:45	MP68317-S1	1		
17:51	MP68317-S2	1		
17:57	JB22873-16	1		(sample used for QC only; not part of login JB22267)
18:03	MP68317-SD1	5		
18:09	ZZZZZZ	1		
18:15	ZZZZZZ	1		
18:21	ZZZZZZ	1		
18:28	MA29991-CCV10	1		
18:34	MA29991-CCB10	1		
18:40	ZZZZZZ	1		
18:46	ZZZZZZ	1		
18:52	ZZZZZZ	1		
18:59	ZZZZZZ	1		
19:05	ZZZZZZ	1		
19:11	ZZZZZZ	1		
19:17	ZZZZZZ	1		
19:23	ZZZZZZ	1		
19:30	ZZZZZZ	1		
19:36	ZZZZZZ	1		
19:42	MA29991-CCV11	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:48	MA29991-CCB11	1		
19:54	ZZZZZZ	1		
20:01	ZZZZZZ	1		
20:07	ZZZZZZ	1		
20:13	ZZZZZZ	1		
20:19	ZZZZZZ	1		
20:25	ZZZZZZ	1		
20:32	ZZZZZZ	1		
20:38	ZZZZZZ	1		
20:44	MP68257-LC1	1		
20:50	MP68257-MB2	1		
20:56	MA29991-CCV12	1		
21:02	MA29991-CCB12	1		
21:09	ZZZZZZ	1		
21:15	ZZZZZZ	1		
21:21	ZZZZZZ	1		
21:28	ZZZZZZ	1		
21:34	ZZZZZZ	1		
21:41	ZZZZZZ	1		
21:47	ZZZZZZ	1		
21:53	ZZZZZZ	1		
22:00	ZZZZZZ	1		
22:06	ZZZZZZ	1		
22:13	MA29991-CCV13	1		
22:19	MA29991-CCB13	1		
22:25	ZZZZZZ	1		
22:31	ZZZZZZ	1		
22:38	ZZZZZZ	5		
22:44	ZZZZZZ	5		
22:50	ZZZZZZ	5		
22:57	ZZZZZZ	5		
23:03	ZZZZZZ	5		
23:09	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:16	ZZZZZZ	5		
23:22	ZZZZZZ	5		
23:29	MA29991-CCV14	1		
23:35	MA29991-CCB14	1		
23:41	ZZZZZZ	5		
23:47	ZZZZZZ	5		
23:54	ZZZZZZ	5		
00:00	ZZZZZZ	5		
00:06	ZZZZZZ	1		
00:13	ZZZZZZ	1		
00:19	ZZZZZZ	1		
00:25	ZZZZZZ	1		
00:32	ZZZZZZ	1		
00:38	ZZZZZZ	1		
00:44	MA29991-CCV15	1		
00:50	MA29991-CCB15	1		
00:57	MA29991-CRI3	1		
01:03	MA29991-CRID5	1		
01:09	MA29991-CRIA3	1		
01:16	MA29991-ICSA3	1		
01:22	MA29991-ICSAB3	1		
01:28	MA29991-CCV16	1		
01:34	MA29991-CCB16	1		
01:41	ZZZZZZ	1		
01:47	ZZZZZZ	1		
01:53	ZZZZZZ	1		
01:59	ZZZZZZ	1		
02:06	MP68282-S1	1		Ag and Cd.
02:12	MP68282-S2	1		Ag and Cd.
02:18	JB22277-2	1		(sample used for QC only; not part of login JB22267)
02:25	MP68282-SD1	5		
02:31	ZZZZZZ	1		
02:37	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:44	MA29991-CCV17	1		
02:50	MA29991-CCB17	1		
02:56	ZZZZZZ	1		
03:02	ZZZZZZ	1		
03:09	ZZZZZZ	5		
03:15	ZZZZZZ	2		
03:22	ZZZZZZ	2		
03:28	ZZZZZZ	1		
03:34	ZZZZZZ	1		
03:40	ZZZZZZ	1		
03:46	ZZZZZZ	1		
03:52	ZZZZZZ	1		
03:59	MA29991-CCV18	1		
04:05	MA29991-CCB18	1		
04:11	ZZZZZZ	1		
04:17	ZZZZZZ	1		
04:23	ZZZZZZ	1		
04:29	ZZZZZZ	1		
04:36	ZZZZZZ	1		
04:42	ZZZZZZ	1		
04:48	ZZZZZZ	1		
04:54	ZZZZZZ	1		
05:00	ZZZZZZ	1		
05:07	ZZZZZZ	1		
05:13	MA29991-CCV19	1		
05:19	MA29991-CCB19	1		
05:25	MP68325-MB1	1		Y3710 out.
05:32	MP68325-B1	1		
05:38	MP68325-S1	1		
05:44	MP68325-S2	1		
05:51	JB22267-1	1		Ca=950ppm. Fe=1300ppm, Mn=60ppm
05:57	MP68325-SD1	5		
06:03	JB22267-2	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	06:10	JB22267-3	1		
	06:16	JB22267-4	1		
	06:22	JB22267-5	1		
---------->	Last reportable sample/prep for job JB22267				
	06:28	MA29991-CCV20	1		
	06:34	MA29991-CCB20	1		
	06:41	MA29991-CRI4	1		
	06:47	MA29991-CRID6	1		
	06:53	MA29991-CRIA4	1		
	07:00	MA29991-ICSA4	1		
	07:06	MA29991-ICSAB4	1		
	07:12	MA29991-CCV21	1		
	07:18	MA29991-CCB21	1		
---------->	Last reportable CCB for job JB22267				
	07:30	ZZZZZZ	1		
	07:37	ZZZZZZ	1		
	07:43	ZZZZZZ	1		
	07:49	ZZZZZZ	1		
	07:56	ZZZZZZ	1		
	08:02	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
09:34	MA29991-STD1	2177 R	131710 R	21956 R	7037 R
09:41	MA29991-STD2	2127	128540	21726	6606
09:47	MA29991-STD3	2107	125170	21601	6438
09:53	MA29991-STD4	2035	121040	21219	6176
09:59	MA29991-CCV1	No results reported for the elements associated with this internal standard.			
10:05	MA29991-CCB1	No results reported for the elements associated with this internal standard.			
10:11	MA29991-CRI1	2158	130590	21861	6893
10:17	MA29991-CRID1	No results reported for the elements associated with this internal standard.			
10:24	MA29991-CRIA1	2178	132330	21797	7010
10:30	MA29991-CRID2	2154	131650	21897	6925
10:36	MA29991-ICV1	2105	123000	22032	6418
10:42	MA29991-ICB1	2162	132090	21778	6944
10:49	MA29991-CCV2	2092	125670	21688	6377
10:55	MA29991-CCB2	2167	132320	22048	6965
11:01	MA29991-ICSA1	1938	111390	20384	5718
11:07	MA29991-ICSAB1	1925	113710	20469	5702
11:14	ZZZZZZ	2179	124480	21694	6276
11:20	ZZZZZZ	2135	128640	21583	7023
11:26	MA29991-CCV3	2112	125580	21434	6418
11:32	MA29991-CCB3	2162	133030	22129	6936
11:39	MP68311-MB1	No results reported for the elements associated with this internal standard.			
11:45	ZZZZZZ	2211	133150	22403	7123
11:51	ZZZZZZ	2172	131210	22149	6965
11:57	ZZZZZZ	1905	116280	21523	5672
12:04	MP68311-LC1	2128	128190	21846	6476
12:10	MP68311-B1	2100	127020	21426	6571
12:16	MP68311-S1	2115	128020	22140	6362
12:22	MP68311-S2	2112	130260	22619	6372
12:28	JB22871-25	2173	131770	22391	6564
12:34	MP68311-SD1	2175	129650	22537	6809
12:40	MA29991-CCV4	2095	126270	21370	6369
12:46	MA29991-CCB4	2177	133490	21463	6988
12:53	ZZZZZZ	2149	130530	22119	6549

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
12:59	ZZZZZZ	2112	128530	22433	6743
13:05	ZZZZZZ	2184	133420	22938	6646
13:11	ZZZZZZ	2160	130980	22545	6504
13:17	ZZZZZZ	2287	138940	23663	6794
13:24	ZZZZZZ	2144	131270	22512	6492
13:30	ZZZZZZ	2139	130600	21946	6551
13:36	ZZZZZZ	2170	133160	22599	6636
13:42	ZZZZZZ	2169	133110	22572	6640
13:48	ZZZZZZ	2179	132710	22253	6795
13:54	MA29991-CCV5	2094	126850	21410	6447
14:00	MA29991-CCB5	2145	132220	21576	6992
14:07	ZZZZZZ	2148	132450	22356	6643
14:13	MP68311-MB1	2152	134250	22043	7030
14:19	ZZZZZZ	2140	132200	22412	6561
14:25	ZZZZZZ	2172	133960	22837	6652
14:32	ZZZZZZ	2158	133320	22347	6718
14:38	ZZZZZZ	2158	132770	22374	6615
14:44	ZZZZZZ	2142	131390	22284	6538
14:50	ZZZZZZ	2131	131340	22508	6570
14:56	ZZZZZZ	1519 !a	94290	18623	4498 !a
15:03	ZZZZZZ	2115	133150	21803	6956
15:09	MA29991-CCV6	2063	127370	21551	6382
15:15	MA29991-CCB6	2133	134590	21851	6952
15:21	ZZZZZZ	1853	115490	20493	5633
15:28	ZZZZZZ	1603	99931	19134	4766 !a
15:34	MP68280-B1	2094	128700	21659	6660
15:40	MP68280-MB1	2124	134460	21958	6974
15:47	MP68280-LC1	2140	132650	22379	6606
15:53	MP68280-S1	2150	131070	22819	6556
15:59	MP68280-S2	2148	132890	22408	6581
16:05	JB22102-12AB	2165	135930	22562	6688
16:11	MP68280-SD1	2168	134830	21974	6906
16:17	MA29991-CCV7	2064	127260	21489	6373

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:23	MA29991-CCB7	2127	133940	21707	6923
16:30	MA29991-CRI2	2127	132610	21549	6878
16:36	MA29991-CRID3	2139	133310	21462	6948
16:42	MA29991-CRIA2	2137	134190	21552	6969
16:49	MA29991-CRID4	2136	133340	21679	6950
16:55	MA29991-ICSA2	1911	116430	20421	5728
17:01	MA29991-ICSAB2	1902	116120	20428	5716
17:08	MA29991-CCV8	2077	127850	21269	6400
17:14	MA29991-CCB8	2147	134800	21526	6981
17:20	MA29991-CCV9	2073	128200	21498	6400
17:26	MA29991-CCB9	2169	135490	21720	7045
17:32	MP68317-MB1	2149	135790	22106	7035
17:39	MP68317-B1	2091	130850	21724	6644
17:45	MP68317-S1	2165	133820	22652	6480
17:51	MP68317-S2	2173	134340	22574	6516
17:57	JB22873-16	2181	137500	22740	6637
18:03	MP68317-SD1	2173	135950	22094	6909
18:09	ZZZZZZ	2183	131580	22525	6680
18:15	ZZZZZZ	2209	137400	22818	6751
18:21	ZZZZZZ	2229	132120	22620	6720
18:28	MA29991-CCV10	2068	128220	21281	6383
18:34	MA29991-CCB10	2196	136730	21517	7134
18:40	ZZZZZZ	2194	135340	22448	6669
18:46	ZZZZZZ	2184	134270	22510	6617
18:52	ZZZZZZ	2085	130700	22148	6250
18:59	ZZZZZZ	2136	134530	22309	6541
19:05	ZZZZZZ	2147	133800	21969	6707
19:11	ZZZZZZ	2118	133550	21708	6852
19:17	ZZZZZZ	2184	136190	22536	6593
19:23	ZZZZZZ	2194	131560	22201	6500
19:30	ZZZZZZ	2172	135640	22141	6725
19:36	ZZZZZZ	2223	139620	22902	6668
19:42	MA29991-CCV11	2056	128530	21154	6352

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
19:48	MA29991-CCB11	2164	136740	21387	7034
19:54	ZZZZZZ	2177	136780	22223	6797
20:01	ZZZZZZ	2196	137140	22446	6727
20:07	ZZZZZZ	2194	137300	22520	6690
20:13	ZZZZZZ	2191	137190	22488	6747
20:19	ZZZZZZ	2202	136900	22330	6700
20:25	ZZZZZZ	2193	137190	22346	6742
20:32	ZZZZZZ	2186	136260	21359	6748
20:38	ZZZZZZ	2195	138550	22589	6726
20:44	MP68257-LC1	2115	134050	21536	6806
20:50	MP68257-MB2	2077	132470	22049	6725
20:56	MA29991-CCV12	2095	130660	21291	6452
21:02	MA29991-CCB12	2149	136280	21495	6994
21:09	ZZZZZZ	1501 !a	96749	18554	4502 !a
21:15	ZZZZZZ	1539	99824	18958	4531 !a
21:21	ZZZZZZ	1474 !a	95171	18387	4468 !a
21:28	ZZZZZZ	1476 !a	95891	18533	4477 !a
21:34	ZZZZZZ	1491 !a	96053	18646	4477 !a
21:41	ZZZZZZ	1494 !a	96580	18607	4479 !a
21:47	ZZZZZZ	1582	101470	19330	4772 !a
21:53	ZZZZZZ	1471 !a	95704	18582	4476 !a
22:00	ZZZZZZ	1482 !a	96056	18618	4494 !a
22:06	ZZZZZZ	1530	97932	18815	4569 !a
22:13	MA29991-CCV13	2083	131030	21186	6433
22:19	MA29991-CCB13	2147	137720	21405	7036
22:25	ZZZZZZ	1541	99432	18872	4598 !a
22:31	ZZZZZZ	1509 !a	98169	18578	4545 !a
22:38	ZZZZZZ	1840	116780	19884	5610
22:44	ZZZZZZ	1864	118320	19879	5630
22:50	ZZZZZZ	1838	116700	19815	5588
22:57	ZZZZZZ	1844	116470	19801	5609
23:03	ZZZZZZ	1853	117030	19767	5606
23:09	ZZZZZZ	1837	113860	19458	5569

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:16	ZZZZZZ	1886	119520	19895	5793
23:22	ZZZZZZ	1837	116650	19840	5613
23:29	MA29991-CCV14	2076	131380	20640	6434
23:35	MA29991-CCB14	2188	140180	21272	7145
23:41	ZZZZZZ	1857	117100	19743	5660
23:47	ZZZZZZ	1873	118740	19877	5682
23:54	ZZZZZZ	1882	119250	19957	5710
00:00	ZZZZZZ	1873	118560	19793	5688
00:06	ZZZZZZ	1748	108040	19385	5070
00:13	ZZZZZZ	1767	109330	19257	5155
00:19	ZZZZZZ	1712	106900	19644	4933
00:25	ZZZZZZ	1946	122920	20346	5933
00:32	ZZZZZZ	1788	112090	19378	5258
00:38	ZZZZZZ	1733	107880	19020	5045
00:44	MA29991-CCV15	2083	132820	20534	6457
00:50	MA29991-CCB15	2174	140110	20874	7108
00:57	MA29991-CRI3	2139	137410	20810	6948
01:03	MA29991-CRID5	2155	138930	20887	7042
01:09	MA29991-CRIA3	2177	139950	20846	7124
01:16	MA29991-ICSA3	1940	121510	19880	5839
01:22	MA29991-ICSAB3	1948	121770	19650	5850
01:28	MA29991-CCV16	2103	133820	20607	6508
01:34	MA29991-CCB16	2188	140030	20716	7149
01:41	ZZZZZZ	1807	112790	19377	5305
01:47	ZZZZZZ	2158	139310	20972	7104
01:53	ZZZZZZ	2163	141190	21012	7111
01:59	ZZZZZZ	2183	142510	21353	7190
02:06	MP68282-S1	1772	113400	19136	5303
02:12	MP68282-S2	1763	114040	19272	5296
02:18	JB22277-2	1760	113420	19253	5281
02:25	MP68282-SD1	1973	121970	19411	6113
02:31	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:37	ZZZZZZ	No results reported for the elements associated with this internal standard.			

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:44	MA29991-CCV17	2113	135980	20822	6561
02:50	MA29991-CCB17	2165	140850	19872	7096
02:56	ZZZZZZ	2113	144630	21005	6928
03:02	ZZZZZZ	1968	127460	20145	6092
03:09	ZZZZZZ	1666	106850	18519	4894 !a
03:15	ZZZZZZ	2021	129150	20225	5945
03:22	ZZZZZZ	2069	135200	20360	6556
03:28	ZZZZZZ	2224	142430	21709	6816
03:34	ZZZZZZ	2112	137540	20430	6456
03:40	ZZZZZZ	2117	137940	21283	6535
03:46	ZZZZZZ	2189	142430	21570	6747
03:52	ZZZZZZ	2100	140190	21490	6781
03:59	MA29991-CCV18	2079	134430	20692	6465
04:05	MA29991-CCB18	2171	142360	21013	7121
04:11	ZZZZZZ	2171	140500	21609	6688
04:17	ZZZZZZ	2229	143910	21954	6738
04:23	ZZZZZZ	2134	138700	21246	7119
04:29	ZZZZZZ	2115	136960	21149	6517
04:36	ZZZZZZ	2127	138930	21236	6794
04:42	ZZZZZZ	2043	133940	20729	6405
04:48	ZZZZZZ	2221	143070	21903	6717
04:54	ZZZZZZ	2192	141160	22003	6446
05:00	ZZZZZZ	2438	155680	23907	6923
05:07	ZZZZZZ	2226	140430	21622	6772
05:13	MA29991-CCV19	2092	136180	20586	6475
05:19	MA29991-CCB19	2187	143670	20779	7138
05:25	MP68325-MB1	2170	140230	999999 !a	7134
05:32	MP68325-B1	2125	140830	21651	6779
05:38	MP68325-S1	1700	119550	19298	6531
05:44	MP68325-S2	1712	119300	19117	6637
05:51	JB22267-1	1691	119330	19179	6780
05:57	MP68325-SD1	1992	133150	20358	6681
06:03	JB22267-2	2201	145130	21836	6701

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA29991
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:10	JB22267-3	2020	136180	20841	6585
06:16	JB22267-4	2186	145240	21782	6741
06:22	JB22267-5	2197	145860	22054	6678
06:28	MA29991-CCV20	2098	137420	20689	6490
06:34	MA29991-CCB20	2189	145060	20957	7142
06:41	MA29991-CRI4	2165	143910	20917	7005
06:47	MA29991-CRID6	2148	146940	20706	7005
06:53	MA29991-CRIA4	2155	144800	21035	7039
07:00	MA29991-ICSA4	1944	125920	19852	5817
07:06	MA29991-ICSAB4	1934	126220	19864	5804
07:12	MA29991-CCV21	2086	137960	20767	6452
07:18	MA29991-CCB21	2162	144470	20903	7050
07:30	ZZZZZZ	2052	144270	20909	7029
07:37	ZZZZZZ	2158	145410	21071	7069
07:43	ZZZZZZ	2153	144830	20997	7015
07:49	ZZZZZZ	2171	145370	20988	7074
07:56	ZZZZZZ	2163	144930	21169	7044
08:02	ZZZZZZ	2146	142970	21167	6984

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

(a) No samples reported for the elements associated with this internal standard.

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:			10:42		10:55		11:32		12:46	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.10	<3.0	-0.10	<3.0	-0.10	<3.0	0.50	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:			14:00		15:15		16:23		17:14	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.30	<3.0	0.30	<3.0	0.0	<3.0	0.50	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:			17:26		18:34		19:48		21:02	
Sample ID:			CCB9		CCB10		CCB11		CCB12	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	1.2	<3.0	0.40	<3.0	0.70	<3.0	0.70	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:			22:19		23:35		00:50		01:34	
Sample ID:			CCB13		CCB14		CCB15		CCB16	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.30	<3.0	0.90	<3.0	2.0	<3.0	0.90	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:			02:50		04:05		05:19		06:34	
Sample ID:			CCB17		CCB18		CCB19		CCB20	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.50	<3.0	0.30	<3.0	-0.50	<3.0	0.90	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:			07:18	
Sample ID:			CCB21	
Metal	RL	IDL	raw	final
Aluminum	200	10	anr	
Antimony	6.0	1.2	anr	
Arsenic	3.0	.9	anr	
Barium	200	.3	anr	
Beryllium	1.0	.1	anr	
Bismuth	20	.8		
Boron	100	2.4	anr	
Cadmium	3.0	.2	anr	
Calcium	5000	36	anr	
Chromium	10	.4	anr	
Cobalt	50	.2	anr	
Copper	10	.5	anr	
Iron	100	6.6	anr	
Lead	3.0	1.1	0.50	<3.0
Lithium	20	.7		
Magnesium	5000	16	anr	
Manganese	15	.3	anr	
Molybdenum	20	.6	anr	
Nickel	10	.5	anr	
Palladium	50	1.1		
Potassium	10000	2.7	anr	
Selenium	10	1.8	anr	
Silicon	200	8.1		
Silver	10	.3	anr	
Sodium	10000	12	anr	
Sulfur	50	18		
Strontium	10	.2		
Thallium	2.0	1.2		
Tin	10	.6		
Titanium	10	.5		
Tungsten	50	13		
Vanadium	50	.7	anr	
Zinc	20	2.2	anr	

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		10:36			10:49			11:26	
Sample ID:	ICV	ICV1		CCV	CCV2		CCV	CCV3	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2000	100.0	2000	2010	100.5	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		12:40			13:54			15:09	
Sample ID:	CCV	CCV4		CCV	CCV5		CCV	CCV6	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2030	101.5	2000	2000	100.0	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		16:17			17:08			17:20	
Sample ID:	CCV	CCV7		CCV	CCV8		CCV	CCV9	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2040	102.0	2000	2040	102.0	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		18:28			19:42			20:56	
Sample ID:	CCV	CCV10		CCV	CCV11		CCV	CCV12	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2050	102.5	2000	2070	103.5	2000	2040	102.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		22:13			23:29			00:44	
Sample ID:	CCV	CCV13		CCV	CCV14		CCV	CCV15	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2050	102.5	2000	2070	103.5	2000	2070	103.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		01:28			02:44			03:59	
Sample ID:	CCV	CCV16		CCV	CCV17		CCV	CCV18	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2070	103.5	2000	2040	102.0	2000	2050	102.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:		05:13			06:28			07:12	
Sample ID:	CCV	CCV19		CCV	CCV20		CCV	CCV21	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2050	102.5	2000	2050	102.5	2000	2070	103.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA29991 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.3
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:				10:11		10:24		10:30	
Sample ID:	CRI	CRIA	CRID	CRI1		CRIA1		CRID2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10	anr					
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.4	80.0	19.6	98.0	2.1	84.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:				16:30		16:36		16:42	
Sample ID:	CRI	CRIA	CRID	CRI2		CRID3		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10	anr					
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.9	96.7	2.6	104.0	19.4	97.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:				16:49		00:57		01:03	
Sample ID:	CRI	CRIA	CRID	CRID4		CRI3		CRID5	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500							
Lead	3.0	20	2.5	2.3	92.0	3.7	123.3	2.8	112.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:				01:09		06:41		06:47	
Sample ID:	CRI	CRIA	CRID	CRIA3		CRI4		CRID6	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0						
Beryllium	2.0		1.0						
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0						
Calcium	5000		1000						
Chromium	10		2.0						
Cobalt	50		3.0						
Copper	10		2.0						
Iron	100	500		anr					
Lead	3.0	20	2.5	20.6	103.0	3.5	116.7	2.5	100.0
Lithium	20								
Magnesium	5000		100						
Manganese	15		3.0						
Molybdenum	20		4.0						
Nickel	10		4.0						
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0						
Sodium	5000		1000						
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0						
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0						
Zinc	20		10						

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:				06:53	
Sample ID:	CRI	CRIA	CRID	CRIA4	
Metal	True	True	True	Results	% Rec
Aluminum	200	500	100	anr	
Antimony	6.0	20	3.0	anr	
Arsenic	8.0	20	3.0	anr	
Barium	200		4.0		
Beryllium	2.0		1.0		
Bismuth	20				
Boron	100		10		
Cadmium	3.0		1.0		
Calcium	5000		1000		
Chromium	10		2.0		
Cobalt	50		3.0		
Copper	10		2.0		
Iron	100	500		anr	
Lead	3.0	20	2.5	19.1	95.5
Lithium	20				
Magnesium	5000		100		
Manganese	15		3.0		
Molybdenum	20		4.0		
Nickel	10		4.0		
Palladium	50				
Potassium	5000		2000		
Selenium	10	20	5.0	anr	
Silicon	200				
Silver	5.0		1.0		
Sodium	5000		1000		
Sulfur	50	50	50		
Strontium	10				
Thallium	10		2.0		
Tin	10				
Titanium	10				
Tungsten	50				
Vanadium	50		2.0		
Zinc	20		10		

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA29991 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

10.1.4
10

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA29991 Units: ug/l

Time:			11:01		11:07		16:55		17:01	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	503000	100.6	497000	99.4	505000	101.0	505000	101.0
Antimony		1000	3.5		973	97.3	6.2		999	99.9
Arsenic		1000	2.2		1040	104.0	0.50		1040	104.0
Barium		500	-0.30		490	98.0	-0.30		487	97.4
Beryllium		500	-0.10		471	94.2	-0.10		471	94.2
Bismuth		500	-16		499	99.8	-16		510	102.0
Boron			-6.7		-8.1		-6.5		-6.8	
Cadmium		1000	2.4		999	99.9	2.4		1020	102.0
Calcium	400000	400000	376000	94.0	363000	90.8	377000	94.3	365000	91.3
Chromium		500	0.80		453	90.6	0.90		444	88.8
Cobalt		500	2.1		448	89.6	2.0		459	91.8
Copper		500	1.5		489	97.8	1.2		480	96.0
Iron	200000	200000	206000	103.0	200000	100.0	199000	99.5	196000	98.0
Lead		1000	-2.1		897	89.7	-0.80		904	90.4
Lithium		500	4.9		528	105.6	5.5		535	107.0
Magnesium	500000	500000	527000	105.4	528000	105.6	523000	104.6	526000	105.2
Manganese		500	2.3		469	93.8	1.2		463	92.6
Molybdenum		500	9.0		493	98.6	8.4		499	99.8
Nickel		1000	1.8		908	90.8	1.7		920	92.0
Palladium		500	-7.7		535	107.0	-5.3		525	105.0
Potassium			90.3		103		67.5		101	
Selenium		1000	8.5		996	99.6	2.6		1010	101.0
Silicon			11.3		13.3		11.2		12.8	
Silver		1000	4.3		1060	106.0	4.6		1050	105.0
Sodium			8.6		29.8		9.1		26.2	
Sulfur		500	12.3		494	98.8	11.2		500	100.0
Strontium			-6.1		-6.2		-5.8		-5.8	
Thallium		1000	2.6		931	93.1	-1.6		914	91.4
Tin			-6.8		-6.3		-7.5		-8.1	
Titanium			4.2		7.3		3.9		7.0	
Tungsten		500	33.7		522	104.4	17.7		518	103.6
Vanadium		500	1.1		452	90.4	1.1		441	88.2
Zinc		1000	1.8		892	89.2	1.8		918	91.8

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA29991 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-7.6	501	100.2	-7.9	493	98.6

(*) Outside of QC limits
(anr) Analyte not requested

10.1.5
10

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA29991 Units: ug/l

Time:			01:16		01:22		07:00		07:06	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3		ICSA4		ICSAB4	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	502000	100.4	504000	100.8	508000	101.6	504000	100.8
Antimony		1000	6.5		996	99.6	7.1		1010	101.0
Arsenic		1000	3.1		1030	103.0	2.9		1030	103.0
Barium		500	-0.40		482	96.4	-0.30		491	98.2
Beryllium		500	0.0		467	93.4	-0.10		468	93.6
Bismuth		500	-16		505	101.0	-17		517	103.4
Boron			-2.5		-2.3		-2.6		-2.4	
Cadmium		1000	2.2		1020	102.0	2.6		1020	102.0
Calcium	400000	400000	374000	93.5	369000	92.3	379000	94.8	364000	91.0
Chromium		500	1.3		433	86.6	1.2		419	83.8
Cobalt		500	1.9		460	92.0	1.6		458	91.6
Copper		500	1.8		464	92.8	0.50		456	91.2
Iron	200000	200000	194000	97.0	191000	95.5	191000	95.5	188000	94.0
Lead		1000	0.50		916	91.6	-2.6		912	91.2
Lithium		500	6.7		537	107.4	6.9		540	108.0
Magnesium	500000	500000	514000	102.8	528000	105.6	523000	104.6	524000	104.8
Manganese		500	0.70		451	90.2	0.40		431	86.2
Molybdenum		500	7.9		497	99.4	7.6		500	100.0
Nickel		1000	0.40		932	93.2	-0.10		932	93.2
Palladium		500	-5.3		515	103.0	-3.4		508	101.6
Potassium			36.8		78.8		10.3		50.5	
Selenium		1000	-0.50		996	99.6	-6.4		1000	100.0
Silicon			10.4		14.1		10.5		14.6	
Silver		1000	4.7		1020	102.0	4.9		990	99.0
Sodium			55.0		70.7		22.1		27.9	
Sulfur		500	17.3		502	100.4	13.7		504	100.8
Strontium			-5.0		-5.3		-6.3		-6.1	
Thallium		1000	0.10		894	89.4	1.9		896	89.6
Tin			-6.0		-4.9		-4.2		-5.3	
Titanium			3.9		7.1		3.7		6.7	
Tungsten		500	14.7		517	103.4	12.3		520	104.0
Vanadium		500	1.1		429	85.8	1.2		417	83.4
Zinc		1000	1.8		949	94.9	1.3		961	96.1

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120612M1.ICP Date Analyzed: 12/06/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA29991 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-7.7	481	96.2	-7.5	468	93.6

(*) Outside of QC limits
(anr) Analyte not requested

10.1.5
10

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:51	MA30003-STD1	1		STDA
09:58	MA30003-STD2	1		STDB
10:04	MA30003-STD3	1		STDC
10:10	MA30003-STD4	1		STDD
10:16	MA30003-CCV1	1		
10:22	MA30003-CCB1	1		
10:28	MA30003-CRI1	1		
10:35	MA30003-CRID1	1		
10:41	MA30003-CRIA1	1		
10:47	MA30003-ICV1	1		
10:53	MA30003-ICB1	1		
11:00	MA30003-CCV2	1		
11:06	MA30003-CCB2	1		
11:12	MA30003-ICSA1	1		
11:18	MA30003-ICSAB1	1		
11:25	ZZZZZZ	1		
11:31	ZZZZZZ	1		
11:37	ZZZZZZ	1		
11:44	MA30003-CCV3	1		
11:50	MA30003-CCB3	1		
11:56	ZZZZZZ	1		
12:02	ZZZZZZ	1		
12:09	ZZZZZZ	5		
12:15	ZZZZZZ	1		
12:21	ZZZZZZ	3		
12:28	ZZZZZZ	1		
12:34	ZZZZZZ	1		
12:41	ZZZZZZ	3		
12:47	MP68302-SD1	5		
12:53	MA30003-CCV4	1		
12:59	MA30003-CCB4	1		
13:06	MP68268-MB3	1		
13:12	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:18	MP68268-B2	1		
13:24	MP68268-LC2	1		
13:30	MP68268-S1	1		
13:37	MP68268-S2	1		
13:43	JB22227-2	1		(sample used for QC only; not part of login JB22267)
13:49	MP68268-SD1	5		
13:55	ZZZZZZ	1		
14:01	MA30003-CCV5	1		
14:07	MA30003-CCB5	1		
14:14	ZZZZZZ	1		
14:20	ZZZZZZ	1		
14:26	ZZZZZZ	1		
14:32	ZZZZZZ	1		
14:39	ZZZZZZ	1		
14:45	ZZZZZZ	1		
14:52	ZZZZZZ	1		
14:58	ZZZZZZ	1		
15:04	ZZZZZZ	1		
15:10	MA30003-CCV6	1		
15:17	MA30003-CCB6	1		
15:23	ZZZZZZ	1		
15:29	ZZZZZZ	1		
15:35	ZZZZZZ	1		
15:42	ZZZZZZ	1		
15:48	ZZZZZZ	1		
15:54	ZZZZZZ	1		
16:01	ZZZZZZ	1		
16:07	ZZZZZZ	1		
16:13	ZZZZZZ	1		
16:19	MA30003-CCV7	1		
16:25	MA30003-CCB7	1		
16:32	MA30003-CRID2	1		
16:38	MA30003-CRI2	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:44	MA30003-CRID3	1		
16:50	MA30003-CRIA2	1		
16:57	MA30003-ICSA2	1		
17:03	MA30003-ICSAB2	1		
17:09	MA30003-CCV8	1		
17:16	MA30003-CCB8	1		
17:22	ZZZZZZ	5		
17:29	ZZZZZZ	10		
17:35	MP68357-MB1	1		
17:42	MP68357-B1	1		
17:48	MP68357-S1	1		
17:54	MP68357-S2	1		
18:01	JB22730-1	1		(sample used for QC only; not part of login JB22267)
18:07	MP68357-SD1	5		
18:13	ZZZZZZ	1		
18:20	MP68256-MB2	1		
18:26	MA30003-CCV9	1		
18:32	MA30003-CCB9	1		
18:38	MP68256-LC1	1		
18:45	ZZZZZZ	1		
18:51	MP68327-MB1	1		
18:57	MP68327-B1	1		
19:03	MP68327-S1	5		
19:09	MP68327-S2	5		
19:16	JB21588-42	5		(sample used for QC only; not part of login JB22267)
19:22	MP68327-SD1	25		
19:28	ZZZZZZ	5		
19:35	ZZZZZZ	5		
19:41	MA30003-CCV10	1		
19:47	MA30003-CCB10	1		
19:53	ZZZZZZ	5		
20:00	ZZZZZZ	5		
20:06	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:12	ZZZZZZ	5		
20:19	ZZZZZZ	5		
20:25	ZZZZZZ	5		
20:31	MP68348-MB1	1		Batch to reanalyze for Ag, LC very low
20:38	MP68348-LC1	1		
20:44	MP68348-B1	1		
20:50	MA30003-CCV11	1		
20:56	MA30003-CCB11	1		
21:02	MP68348-S1	1		
21:08	MP68348-S2	1		
21:15	JB22992-1A	1		(sample used for QC only; not part of login JB22267)
21:21	MP68348-SD1	5		
21:27	ZZZZZZ	1		
21:33	ZZZZZZ	1		
21:39	ZZZZZZ	1		
21:45	ZZZZZZ	1		
21:52	ZZZZZZ	1		
21:58	ZZZZZZ	1		
22:04	MA30003-CCV12	1		
22:10	MA30003-CCB12	1		
22:16	ZZZZZZ	1		
22:23	ZZZZZZ	1		
22:29	ZZZZZZ	1		
22:35	ZZZZZZ	1		
22:41	ZZZZZZ	1		
22:47	ZZZZZZ	1		
22:53	ZZZZZZ	1		
22:59	ZZZZZZ	1		
23:05	ZZZZZZ	1		
23:12	ZZZZZZ	1		
23:18	MA30003-CCV13	1		
23:24	MA30003-CCB13	1		
23:30	MP68357-S1	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:36	MP68357-S2	5		
23:43	JB22730-1	5		(sample used for QC only; not part of login JB22267)
23:49	MP68357-SD1	25		
23:55	JB22730-1	1		(sample used for QC only; not part of login JB22267)
00:02	MA30003-CCV14	1		
00:08	MA30003-CCB14	1		
00:14	MA30003-CRI3	1		
00:20	MA30003-CRID4	1		
00:27	MA30003-CRIA3	1		
00:33	MA30003-ICSA3	1		
00:39	MA30003-ICSAB3	1		
00:46	MA30003-CCV15	1		
00:52	MA30003-CCB15	1		
00:58	ZZZZZZ	1		
01:04	ZZZZZZ	1		
01:11	ZZZZZZ	1		
01:17	ZZZZZZ	1		
01:23	MA30003-CCV16	1		
01:29	MA30003-CCB16	1		
01:36	ZZZZZZ	1		
01:42	ZZZZZZ	1		
01:48	ZZZZZZ	1		
01:54	ZZZZZZ	1		
02:00	MP68326-MB1	1		
02:07	MP68326-B1	1		
02:13	MP68326-S1	5		Bad reading on IN
02:19	MP68326-S2	5		Bad reading on IN
02:25	JB21588-13	5		(sample used for QC only; not part of login JB22267)
02:32	MP68326-SD1	25		Bad reading on IN
02:38	MA30003-CCV17	1		
02:44	MA30003-CCB17	1		
02:50	ZZZZZZ	5		
02:57	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:03	ZZZZZZ	5		
03:09	ZZZZZZ	5		
03:15	ZZZZZZ	5		
03:22	ZZZZZZ	5		
03:28	ZZZZZZ	5		
03:35	ZZZZZZ	5		
03:41	ZZZZZZ	5		
03:47	ZZZZZZ	5		
03:54	MA30003-CCV18	1		
04:00	MA30003-CCB18	1		
04:06	ZZZZZZ	5		
04:13	ZZZZZZ	5		
04:19	ZZZZZZ	5		
04:25	ZZZZZZ	5		
04:32	ZZZZZZ	5		
04:38	ZZZZZZ	5		
04:44	ZZZZZZ	5		
04:51	ZZZZZZ	5		
04:57	ZZZZZZ	5		
05:03	ZZZZZZ	1		
05:10	MA30003-CCV19	1		
05:16	MA30003-CCB19	1		
05:22	ZZZZZZ	1		
05:28	ZZZZZZ	1		
05:35	ZZZZZZ	1		
05:41	JB22267-6	1		%sol
05:47	JB22267-7	1		%sol
05:53	JB22267-8	1		%sol
05:59	JB22267-9	1		%sol
06:05	JB22267-10	1		%sol
06:12	JB22267-11	1		%sol
06:18	JB22267-12	1		%sol
06:24	MA30003-CCV20	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:30	MA30003-CCB20	1		
06:36	JB22267-13	1		%sol
06:43	JB22267-14	1		FE high
06:49	JB22267-15	1		%sol
06:55	JB22267-16	1		%sol
07:02	JB22267-17	1		%sol
---------->	Last reportable sample/prep for job JB22267			
07:08	MA30003-CCV21	1		
07:14	MA30003-CCB21	1		
07:20	MA30003-CRI4	1		
07:26	MA30003-CRID5	1		
07:33	MA30003-CRIA4	1		
07:39	MA30003-ICSA4	1		
07:45	MA30003-ICSAB4	1		
07:52	MA30003-CCV22	1		
07:58	MA30003-CCB22	1		
---------->	Last reportable CCB for job JB22267			

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
09:51	MA30003-STD1	2020 R	140110 R	20061 R	13297 R
09:58	MA30003-STD2	2003	133150	20337	12555
10:04	MA30003-STD3	1969	132250	20246	12144
10:10	MA30003-STD4	1908	128120	20008	11593
10:16	MA30003-CCV1	1966	130800	20514	12122
10:22	MA30003-CCB1	2038	139610	20970	13504
10:28	MA30003-CRI1	2016	135160	20378	13238
10:35	MA30003-CRID1	2025	136940	20362	13369
10:41	MA30003-CRIA1	2041	136800	20933	13516
10:47	MA30003-ICV1	1982	130010	21020	12248
10:53	MA30003-ICB1	2044	139580	20719	13544
11:00	MA30003-CCV2	1980	131790	20620	12264
11:06	MA30003-CCB2	2035	139220	20825	13494
11:12	MA30003-ICSA1	1798	121180	19300	10542
11:18	MA30003-ICSAB1	1808	121300	19663	10601
11:25	ZZZZZZ	2083	131090	20550	12294
11:31	ZZZZZZ	1978	134400	20121	13162
11:37	ZZZZZZ	1859	126420	19707	11610
11:44	MA30003-CCV3	1977	133530	20549	12240
11:50	MA30003-CCB3	2028	136530	20682	13399
11:56	ZZZZZZ	1841	123320	20624	10031
12:02	ZZZZZZ	1586	104850	18522	8984 !
12:09	ZZZZZZ	1825	120860	19725	11006
12:15	ZZZZZZ	1791	120120	19697	10805
12:21	ZZZZZZ	1757	117940	19311	10556
12:28	ZZZZZZ	1640	110790	18768	9752
12:34	ZZZZZZ	1653	110510	18793	9652
12:41	ZZZZZZ	1754	115110	19236	10208
12:47	MP68302-SD1	2039	139740	20977	13515
12:53	MA30003-CCV4	1979	133840	20720	12293
12:59	MA30003-CCB4	2044	136950	20882	13559
13:06	MP68268-MB3	2019	139620	20936	13472
13:12	ZZZZZZ	2024	139680	21081	13524

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
13:18	MP68268-B2	1967	134980	20421	12620
13:24	MP68268-LC2	1977	135450	20647	12952
13:30	MP68268-S1	1929	131710	20711	12150
13:37	MP68268-S2	1897	130760	20511	11954
13:43	JB22227-2	1923	132370	20790	12412
13:49	MP68268-SD1	1998	136530	20970	13172
13:55	ZZZZZZ	1875	127780	20129	11841
14:01	MA30003-CCV5	1973	133860	20596	12254
14:07	MA30003-CCB5	2014	138950	20815	13349
14:14	ZZZZZZ	1834	123890	19801	11445
14:20	ZZZZZZ	1868	127880	20128	11796
14:26	ZZZZZZ	1825	124840	19988	11316
14:32	ZZZZZZ	1734	117950	19352	10590
14:39	ZZZZZZ	1838	123740	20208	11125
14:45	ZZZZZZ	1777	119760	19711	10749
14:52	ZZZZZZ	1884	128420	20307	11838
14:58	ZZZZZZ	1912	128580	20625	11890
15:04	ZZZZZZ	1481	99761	17803	8098 !
15:10	MA30003-CCV6	1957	132070	20462	12131
15:17	MA30003-CCB6	2052	139010	20750	13571
15:23	ZZZZZZ	1919	130460	20355	12244
15:29	ZZZZZZ	1807	121270	19621	10908
15:35	ZZZZZZ	1784	120430	19625	10784
15:42	ZZZZZZ	1873	127630	20229	11803
15:48	ZZZZZZ	1900	127610	20146	11793
15:54	ZZZZZZ	1424	91606 !	17790	7698 !
16:01	ZZZZZZ	1905	131120	20279	12198
16:07	ZZZZZZ	1960	135330	20821	12920
16:13	ZZZZZZ	2021	140920	20968	13473
16:19	MA30003-CCV7	1966	133740	20531	12216
16:25	MA30003-CCB7	2042	140240	20936	13545
16:32	MA30003-CRID2	2024	139560	20525	13403
16:38	MA30003-CRI2	2025	139490	20746	13319

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:44	MA30003-CRID3	2041	138240	20934	13500
16:50	MA30003-CRIA2	2020	138860	20889	13387
16:57	MA30003-ICSA2	1802	121020	19670	10583
17:03	MA30003-ICSAB2	1821	121450	19669	10669
17:09	MA30003-CCV8	1991	129450	20144	12285
17:16	MA30003-CCB8	2060	139500	20423	13584
17:22	ZZZZZZ	1760	113300	19240	10200
17:29	ZZZZZZ	1833	122140	19233	10910
17:35	MP68357-MB1	1767	116770	19811	10584
17:42	MP68357-B1	1750	116540	19916	10470
17:48	MP68357-S1	1700	115370	19614	10024
17:54	MP68357-S2	1685	115240	19484	9963
18:01	JB22730-1	1664	112110	19265	9852
18:07	MP68357-SD1	1907	128840	20381	11820
18:13	ZZZZZZ	1716	116270	28976 !	9993
18:20	MP68256-MB2	1754	117340	19938	10539
18:26	MA30003-CCV9	1979	133970	20248	12275
18:32	MA30003-CCB9	2048	141230	20671	13604
18:38	MP68256-LC1	1968	135730	20450	12936
18:45	ZZZZZZ	1787	118050	19720	10390
18:51	MP68327-MB1	1996	140990	21297	13710
18:57	MP68327-B1	2018	141440	21373	13760
19:03	MP68327-S1	1814	123930	19748	11210
19:09	MP68327-S2	1791	122930	19573	11071
19:16	JB21588-42	1799	123280	19737	11125
19:22	MP68327-SD1	1953	134460	20137	12517
19:28	ZZZZZZ	1812	124190	19808	11256
19:35	ZZZZZZ	1810	123850	19872	11256
19:41	MA30003-CCV10	1987	133920	20540	12321
19:47	MA30003-CCB10	2068	142270	19655	13717
19:53	ZZZZZZ	1822	125650	19823	11306
20:00	ZZZZZZ	1822	124390	19668	11285
20:06	ZZZZZZ	1822	124730	19885	11284

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:12	ZZZZZZ	1836	125430	19892	11358
20:19	ZZZZZZ	1814	123340	19650	11240
20:25	ZZZZZZ	1810	122280	19652	11198
20:31	MP68348-MB1	2049	140070	21111	13673
20:38	MP68348-LC1	2037	139840	21162	12680
20:44	MP68348-B1	2002	136280	20459	12828
20:50	MA30003-CCV11	1981	133640	20364	12288
20:56	MA30003-CCB11	2059	140890	20730	13659
21:02	MP68348-S1	2031	137500	21150	12190
21:08	MP68348-S2	2011	136970	21097	12071
21:15	JB22992-1A	2078	141120	21535	12603
21:21	MP68348-SD1	2067	140970	20838	13235
21:27	ZZZZZZ	2086	142250	21442	12996
21:33	ZZZZZZ	2092	142510	21531	13013
21:39	ZZZZZZ	2086	142510	21650	12906
21:45	ZZZZZZ	2087	143290	21660	13058
21:52	ZZZZZZ	2074	142050	21113	13017
21:58	ZZZZZZ	2081	142110	21437	13083
22:04	MA30003-CCV12	1981	134470	20549	12320
22:10	MA30003-CCB12	2069	142140	20673	13736
22:16	ZZZZZZ	2077	142120	21320	12955
22:23	ZZZZZZ	2055	139700	21200	12566
22:29	ZZZZZZ	2007	136350	21145	11992
22:35	ZZZZZZ	2092	142610	21775	12930
22:41	ZZZZZZ	2071	141540	21561	12866
22:47	ZZZZZZ	2077	142220	21566	12912
22:53	ZZZZZZ	2104	143010	21857	12973
22:59	ZZZZZZ	2091	146420	21701	12878
23:05	ZZZZZZ	2081	143210	21776	12835
23:12	ZZZZZZ	2060	141970	21918	12686
23:18	MA30003-CCV13	1983	134770	20758	12346
23:24	MA30003-CCB13	2042	140890	21054	13638
23:30	MP68357-S1	No results reported for the elements associated with this internal standard.			

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:36	MP68357-S2	No results reported for the elements associated with this internal standard.			
23:43	JB22730-1	No results reported for the elements associated with this internal standard.			
23:49	MP68357-SD1	No results reported for the elements associated with this internal standard.			
23:55	JB22730-1	1696	115240	19488	10022
00:02	MA30003-CCV14	1983	134990	20682	12343
00:08	MA30003-CCB14	2053	141750	20931	13672
00:14	MA30003-CRI3	2022	139090	20734	13321
00:20	MA30003-CRID4	2049	141240	20991	13630
00:27	MA30003-CRIA3	2069	142560	21105	13726
00:33	MA30003-ICSA3	1817	120800	19680	10664
00:39	MA30003-ICSAB3	1825	123310	19838	10746
00:46	MA30003-CCV15	1978	135200	20851	12294
00:52	MA30003-CCB15	6027 !a	999999 !a	21069	37882 !a
00:58	ZZZZZZ	1941	141480	21008	13587
01:04	ZZZZZZ	2046	141670	21134	13630
01:11	ZZZZZZ	2055	142000	21192	13655
01:17	ZZZZZZ	1874	128800	20388	11805
01:23	MA30003-CCV16	1987	135530	20932	12372
01:29	MA30003-CCB16	2050	142050	21191	13676
01:36	ZZZZZZ	2137	146660	22494	13063
01:42	ZZZZZZ	2069	142320	22053	12814
01:48	ZZZZZZ	2067	143780	22312	12840
01:54	ZZZZZZ	2041	141520	21407	13658
02:00	MP68326-MB1	1972	139690	22041	13574
02:07	MP68326-B1	1994	141980	22038	13691
02:13	MP68326-S1	1793	123240	20209	11125
02:19	MP68326-S2	1799	123590	20326	11157
02:25	JB21588-13	1959	125700	20223	999999 !
02:32	MP68326-SD1	1949	134210	20962	12564
02:38	MA30003-CCV17	1970	134600	21017	12273
02:44	MA30003-CCB17	2049	141880	21305	13637
02:50	ZZZZZZ	1791	123660	20622	11103
02:57	ZZZZZZ	1794	123930	20383	11196

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:03	ZZZZZZ	1821	124070	20427	11349
03:09	ZZZZZZ	1797	122960	20368	11285
03:15	ZZZZZZ	1749	120650	20155	10760
03:22	ZZZZZZ	1762	121030	19950	10787
03:28	ZZZZZZ	1739	119690	19933	10644
03:35	ZZZZZZ	1805	124230	20157	11222
03:41	ZZZZZZ	1803	125080	20371	11247
03:47	ZZZZZZ	1805	124610	20425	11211
03:54	MA30003-CCV18	1973	135250	20950	12327
04:00	MA30003-CCB18	2037	142050	21457	13624
04:06	ZZZZZZ	1738	120570	20010	10714
04:13	ZZZZZZ	1802	124850	20366	11245
04:19	ZZZZZZ	1795	124400	20256	11166
04:25	ZZZZZZ	1787	123880	20334	11104
04:32	ZZZZZZ	1800	124700	20385	11256
04:38	ZZZZZZ	1788	123520	20189	11138
04:44	ZZZZZZ	1777	123450	20415	11049
04:51	ZZZZZZ	1802	123670	20332	11253
04:57	ZZZZZZ	1805	125030	20396	11255
05:03	ZZZZZZ	1791	117610	20331	10843
05:10	MA30003-CCV19	1973	135100	21029	12310
05:16	MA30003-CCB19	2040	142890	21412	13620
05:22	ZZZZZZ	1720	118110	19927	10564
05:28	ZZZZZZ	1796	122630	20145	10958
05:35	ZZZZZZ	1798	123280	20197	10943
05:41	JB22267-6	2045	141810	22035	12944
05:47	JB22267-7	2094	143670	22363	12750
05:53	JB22267-8	2122	146560	22624	12683
05:59	JB22267-9	2089	143410	22142	13019
06:05	JB22267-10	2100	144020	22346	12794
06:12	JB22267-11	1963	134740	21586	11701
06:18	JB22267-12	1972	137190	21542	12160
06:24	MA30003-CCV20	1971	135850	21139	12327

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30003
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:30	MA30003-CCB20	2036	141990	21245	13624
06:36	JB22267-13	1813	126990	21170	10907
06:43	JB22267-14	1620	119020	19813	10692
06:49	JB22267-15	1852	130800	20854	11661
06:55	JB22267-16	2090	143150	22304	12563
07:02	JB22267-17	1669	116230	19680	9802
07:08	MA30003-CCV21	1984	135060	20814	12372
07:14	MA30003-CCB21	2039	141750	21224	13634
07:20	MA30003-CRI4	2033	140810	21206	13465
07:26	MA30003-CRID5	2047	142210	21207	13649
07:33	MA30003-CRIA4	2043	142480	21375	13659
07:39	MA30003-ICSA4	1809	122310	19910	10670
07:45	MA30003-ICSAB4	1823	123920	19740	10742
07:52	MA30003-CCV22	1986	136370	20934	12393
07:58	MA30003-CCB22	2055	142950	21301	13743

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

(a) No samples reported for the elements associated with this internal standard.

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:			10:22		10:53		11:06		11:50	
Sample ID:			CCB1		ICB1		CCB2		CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.30	<3.0	0.40	<3.0	0.70	<3.0	0.50	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:			12:59		14:07		15:17		16:25	
Sample ID:			CCB4		CCB5		CCB6		CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.30	<3.0	0.80	<3.0	0.30	<3.0	0.30	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

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Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:			17:16		18:32		19:47		20:56	
Sample ID:			CCB8		CCB9		CCB10		CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.0	<3.0	0.50	<3.0	0.60	<3.0	0.10	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

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Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:			22:10		23:24		00:08		00:52	
Sample ID:			CCB12		CCB13		CCB14		CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	0.40	<3.0	0.80	<3.0	0.10	<3.0	1.3	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:			01:29		02:44		04:00		05:16	
Sample ID:			CCB16		CCB17		CCB18		CCB19	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	10	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	.8								
Boron	100	2.4	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	36	anr							
Chromium	10	.4	anr							
Cobalt	50	.2	anr							
Copper	10	.5	anr							
Iron	100	6.6	anr							
Lead	3.0	1.1	1.0	<3.0	0.50	<3.0	0.60	<3.0	1.1	<3.0
Lithium	20	.7								
Magnesium	5000	16	anr							
Manganese	15	.3	anr							
Molybdenum	20	.6	anr							
Nickel	10	.5	anr							
Palladium	50	1.1								
Potassium	10000	2.7	anr							
Selenium	10	1.8	anr							
Silicon	200	8.1								
Silver	10	.3	anr							
Sodium	10000	12	anr							
Sulfur	50	18								
Strontium	10	.2								
Thallium	2.0	1.2	anr							
Tin	10	.6								
Titanium	10	.5								
Tungsten	50	13								
Vanadium	50	.7	anr							
Zinc	20	2.2	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
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File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

10.2.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:			06:30		07:14		07:58	
Sample ID:			CCB20		CCB21		CCB22	
Metal	RL	IDL	raw	final	raw	final	raw	final
Aluminum	200	10	anr					
Antimony	6.0	1.2	anr					
Arsenic	3.0	.9	anr					
Barium	200	.3	anr					
Beryllium	1.0	.1	anr					
Bismuth	20	.8						
Boron	100	2.4	anr					
Cadmium	3.0	.2	anr					
Calcium	5000	36	anr					
Chromium	10	.4	anr					
Cobalt	50	.2	anr					
Copper	10	.5	anr					
Iron	100	6.6	anr					
Lead	3.0	1.1	0.40	<3.0	0.60	<3.0	0.40	<3.0
Lithium	20	.7						
Magnesium	5000	16	anr					
Manganese	15	.3	anr					
Molybdenum	20	.6	anr					
Nickel	10	.5	anr					
Palladium	50	1.1						
Potassium	10000	2.7	anr					
Selenium	10	1.8	anr					
Silicon	200	8.1						
Silver	10	.3	anr					
Sodium	10000	12	anr					
Sulfur	50	18						
Strontium	10	.2						
Thallium	2.0	1.2	anr					
Tin	10	.6						
Titanium	10	.5						
Tungsten	50	13						
Vanadium	50	.7	anr					
Zinc	20	2.2	anr					

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
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Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		10:16			10:47			11:00	
Sample ID:	CCV	CCV1		ICV	ICV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	1990	99.5	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
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Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		11:44			12:53			14:01	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1980	99.0	2000	1970	98.5	2000	1970	98.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
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Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		15:10			16:19			17:09	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2000	100.0	2000	1970	98.5	2000	1960	98.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
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Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.3 10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		18:26			19:41			20:50	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1970	98.5	2000	1960	98.0	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
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Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		22:04			23:18			00:02	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1960	98.0	2000	1950	97.5	2000	1960	98.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
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Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		00:46			01:23			02:38	
Sample ID:	CCV	CCV15		CCV	CCV16		CCV	CCV17	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1970	98.5	2000	1940	97.0	2000	1960	98.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		03:54			05:10			06:24	
Sample ID:	CCV	CCV18		CCV	CCV19		CCV	CCV20	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1930	96.5	2000	1940	97.0	2000	1920	96.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:		07:08			07:52	
Sample ID:	CCV	CCV21		CCV	CCV22	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron	anr					
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	2000	1920	96.0	2000	1920	96.0
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30003 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.3
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:				10:28		10:35		10:41	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10	anr					
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.4	80.0	3.0	120.0	19.8	99.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:				16:32		16:38		16:44	
Sample ID:	CRI	CRIA	CRID	CRID2		CRI2		CRID3	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0						
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10	anr					
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0						
Iron	100	500							
Lead	3.0	20	2.5	2.8	112.0	3.4	113.3	2.9	116.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0						
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:				16:50		00:14		00:20	
Sample ID:	CRI	CRIA	CRID	CRIA2		CRI3		CRID4	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0						
Beryllium	2.0		1.0						
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0						
Calcium	5000		1000						
Chromium	10		2.0						
Cobalt	50		3.0						
Copper	10		2.0						
Iron	100	500		anr					
Lead	3.0	20	2.5	19.0	95.0	2.8	93.3	2.1	84.0
Lithium	20								
Magnesium	5000		100						
Manganese	15		3.0						
Molybdenum	20		4.0						
Nickel	10		4.0						
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0						
Sodium	5000		1000						
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0						
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0						
Zinc	20		10						

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:				00:27		07:20		07:26	
Sample ID:	CRI	CRIA	CRID	CRIA3		CRI4		CRID5	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0						
Beryllium	2.0		1.0						
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0						
Calcium	5000		1000						
Chromium	10		2.0						
Cobalt	50		3.0						
Copper	10		2.0						
Iron	100	500		anr					
Lead	3.0	20	2.5	19.2	96.0	2.4	80.0	2.3	92.0
Lithium	20								
Magnesium	5000		100						
Manganese	15		3.0						
Molybdenum	20		4.0						
Nickel	10		4.0						
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0						
Sodium	5000		1000						
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0						
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0						
Zinc	20		10						

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:				07:33	
Sample ID:	CRI	CRIA	CRID	CRIA4	
Metal	True	True	True	Results	% Rec
Aluminum	200	500	100	anr	
Antimony	6.0	20	3.0	anr	
Arsenic	8.0	20	3.0	anr	
Barium	200		4.0		
Beryllium	2.0		1.0		
Bismuth	20				
Boron	100		10		
Cadmium	3.0		1.0		
Calcium	5000		1000		
Chromium	10		2.0		
Cobalt	50		3.0		
Copper	10		2.0		
Iron	100	500		anr	
Lead	3.0	20	2.5	19.0	95.0
Lithium	20				
Magnesium	5000		100		
Manganese	15		3.0		
Molybdenum	20		4.0		
Nickel	10		4.0		
Palladium	50				
Potassium	5000		2000		
Selenium	10	20	5.0	anr	
Silicon	200				
Silver	5.0		1.0		
Sodium	5000		1000		
Sulfur	50	50	50		
Strontium	10				
Thallium	10		2.0		
Tin	10				
Titanium	10				
Tungsten	50				
Vanadium	50		2.0		
Zinc	20		10		

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30003 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30003 Units: ug/l

Time:			11:12		11:18		16:57		17:03	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	515000	103.0	509000	101.8	499000	99.8	497000	99.4
Antimony		1000	8.5		990	99.0	5.1		975	97.5
Arsenic		1000	2.8		1060	106.0	3.9		1040	104.0
Barium		500	-0.40		488	97.6	-0.40		490	98.0
Beryllium		500	0.0		472	94.4	0.0		472	94.4
Bismuth		500	-19		499	99.8	-18		499	99.8
Boron			-2.9		-5.0		-2.9		-4.5	
Cadmium		1000	2.5		1020	102.0	2.7		1010	101.0
Calcium	400000	400000	385000	96.3	369000	92.3	374000	93.5	363000	90.8
Chromium		500	1.1		455	91.0	1.7		461	92.2
Cobalt		500	1.2		456	91.2	1.2		449	89.8
Copper		500	5.6		502	100.4	4.3		502	100.4
Iron	200000	200000	211000	105.5	203000	101.5	204000	102.0	199000	99.5
Lead		1000	-0.40		931	93.1	-1.5		921	92.1
Lithium		500	4.9		530	106.0	4.6		529	105.8
Magnesium	500000	500000	537000	107.4	530000	106.0	514000	102.8	524000	104.8
Manganese		500	0.50		473	94.6	-0.50		470	94.0
Molybdenum		500	7.9		503	100.6	7.7		500	100.0
Nickel		1000	-0.60		938	93.8	-0.30		928	92.8
Palladium		500	-5.1		545	109.0	-4.9		551	110.2
Potassium			107		137		82.7		132	
Selenium		1000	-2.6		1020	102.0	-5.4		1010	101.0
Silicon			3.7		7.1		6.7		9.1	
Silver		1000	4.6		1080	108.0	4.8		1080	108.0
Sodium			9.8		26.1		45.7		61.1	
Sulfur		500	13.7		501	100.2	10.5		496	99.2
Strontium			-6.5		-6.6		-6.1		-6.1	
Thallium		1000	-0.90		961	96.1	0.20		948	94.8
Tin			-6.7		-6.4		-4.0		-6.0	
Titanium			3.9		6.5		3.3		6.2	
Tungsten		500	27.0		521	104.2	16.6		505	101.0
Vanadium		500	1.1		457	91.4	1.4		460	92.0
Zinc		1000	0.80		914	91.4	1.4		919	91.9

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30003 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-8.0	498	99.6	-8.5	500	100.0

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30003 Units: ug/l

Time:			00:33		00:39		07:39		07:45	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3		ICSA4		ICSAB4	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	486000	97.2	478000	95.6	480000	96.0	475000	95.0
Antimony		1000	-5.6		968	96.8	-11		966	96.6
Arsenic		1000	4.1		1040	104.0	3.7		1030	103.0
Barium		500	-0.30		464	92.8	-0.30		464	92.8
Beryllium		500	0.0		466	93.2	0.0		473	94.6
Bismuth		500	-17		495	99.0	-18		495	99.0
Boron			-3.8		-3.7		-5.0		-4.6	
Cadmium		1000	2.5		1000	100.0	2.3		999	99.9
Calcium	400000	400000	373000	93.3	357000	89.3	370000	92.5	363000	90.8
Chromium		500	2.2		458	91.6	2.0		458	91.6
Cobalt		500	1.1		446	89.2	1.4		441	88.2
Copper		500	2.0		496	99.2	-0.40		504	100.8
Iron	200000	200000	199000	99.5	193000	96.5	194000	97.0	192000	96.0
Lead		1000	0.20		913	91.3	1.2		906	90.6
Lithium		500	4.2		513	102.6	3.7		509	101.8
Magnesium	500000	500000	511000	102.2	509000	101.8	502000	100.4	513000	102.6
Manganese		500	-3.1		466	93.2	-4.4		462	92.4
Molybdenum		500	7.2		503	100.6	7.1		508	101.6
Nickel		1000	-0.20		925	92.5	0.50		924	92.4
Palladium		500	-5.8		543	108.6	-2.6		539	107.8
Potassium			78.5		125		83.1		119	
Selenium		1000	-12		1000	100.0	-14		1010	101.0
Silicon			4.1		6.1		4.2		5.7	
Silver		1000	4.1		1090	109.0	3.4		1120	112.0
Sodium			25.9		43.6		22.7		33.2	
Sulfur		500	8.9		502	100.4	9.5		505	101.0
Strontium			-6.5		-6.2		-6.3		-6.5	
Thallium		1000	1.3		917	91.7	3.4		909	90.9
Tin			-4.5		-4.9		-4.7		-5.4	
Titanium			3.0		6.2		3.2		6.2	
Tungsten		500	15.3		503	100.6	15.7		499	99.8
Vanadium		500	1.7		457	91.4	1.9		458	91.6
Zinc		1000	2.1		939	93.9	2.0		951	95.1

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SB120712M1.ICP Date Analyzed: 12/07/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30003 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-8.5	494	98.8	-8.4	496	99.2

(*) Outside of QC limits
(anr) Analyte not requested

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:52	MA30031-STD1	1		STDA
16:58	MA30031-STD2	1		STDB
17:04	MA30031-STD3	1		STDC
17:10	MA30031-STD4	1		STDD
17:16	MA30031-CCV1	1		
17:21	MA30031-CCB1	1		
17:28	MA30031-CRI1	1		
17:34	MA30031-CRID1	1		
17:40	MA30031-CRIA1	1		
17:46	MA30031-CRI2	1		
17:52	MA30031-ICV1	1		
17:58	MA30031-ICB1	1		
18:04	MA30031-CCV2	1		
18:10	MA30031-CCB2	1		
18:16	MA30031-ICSA1	1		
18:22	MA30031-ICSAB1	1		
18:28	ZZZZZZ	1		
18:34	ZZZZZZ	1		
18:40	MA30031-CCV3	1		
18:46	MA30031-CCB3	1		
18:52	MP68391-S1	2		
18:58	MP68391-S2	2		
19:04	MP68391-SD1	10		
19:10	MP68392-S1	5		
19:16	MP68392-S2	5		
19:22	JB23106-1	5		(sample used for QC only; not part of login JB22267)
19:29	MP68392-SD1	25		
19:35	ZZZZZZ	1		
19:41	ZZZZZZ	1		
19:47	MA30031-CCV4	1		
19:53	MA30031-CCB4	1		
19:59	ZZZZZZ	1		
20:05	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:11	ZZZZZZ	1		
20:17	ZZZZZZ	3		
20:23	ZZZZZZ	1		
20:29	ZZZZZZ	1		
20:35	ZZZZZZ	1		
20:41	ZZZZZZ	1		
20:47	ZZZZZZ	1		
20:53	MA30031-CCV5	1		
20:59	MA30031-CCB5	1		
21:05	ZZZZZZ	1		
21:11	MP68366-S1	2		%sol
21:17	MP68366-S2	2		%sol
21:23	JB22710-1	2		(sample used for QC only; not part of login JB22267)
21:29	MP68366-SD1	10		%sol
21:35	ZZZZZZ	10		
21:41	MP68411-MB1	1		
21:47	MP68411-B1	1		
21:53	MP68411-S1	1		
22:00	MP68411-S2	1		
22:06	MA30031-CCV6	1		
22:11	MA30031-CCB6	1		
22:18	ZZZZZZ	1		
22:24	ZZZZZZ	1		
22:30	MA30031-CRI3	1		
22:36	MA30031-CRID2	1		
22:42	MA30031-CRIA2	1		
22:48	MA30031-ICSA2	1		
22:54	MA30031-ICSAB2	1		
23:00	MA30031-CCV7	1		
23:06	MA30031-CCB7	1		
23:12	ZZZZZZ	1		
23:18	ZZZZZZ	1		
23:24	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:30	ZZZZZZ	1		
23:36	ZZZZZZ	1		
23:42	ZZZZZZ	1		
23:48	ZZZZZZ	1		
23:54	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:06	MA30031-CCV8	1		
00:12	MA30031-CCB8	1		
00:18	JB22536-1	1		(sample used for QC only; not part of login JB22267)
00:24	MP68411-SD1	5		
00:30	ZZZZZZ	1		
00:36	ZZZZZZ	1		
00:42	MP68392-MB2	1		
00:49	MP68392-LC1	1		
00:54	ZZZZZZ	1		
01:01	ZZZZZZ	1		
01:07	ZZZZZZ	1		
01:13	ZZZZZZ	1		
01:19	MA30031-CCV9	1		
01:25	MA30031-CCB9	1		
01:31	ZZZZZZ	1		
01:37	ZZZZZZ	1		
01:43	MP68447-S1	1		
01:49	MP68447-S2	1		High RSd
01:55	MP68447-SD1	5		
02:01	MP68395-MB2	1		
02:07	MP68395-LC1	1		
02:13	ZZZZZZ	1		
02:19	ZZZZZZ	10		
02:25	MA30031-CCV10	1		
02:31	MA30031-CCB10	1		
02:37	ZZZZZZ	1		
02:43	MP68325-S1	10		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:49	MP68325-S2	10		
02:55	JB22267-1	10		
03:02	MP68325-SD1	50		
03:08	JB22267-14	5		
03:14	ZZZZZZ	1		
03:20	ZZZZZZ	1		
03:26	ZZZZZZ	1		
03:32	MA30031-CCV11	1		
03:38	MA30031-CCB11	1		
03:44	MP68322-MB1	1		
03:50	MP68322-MB2	1		
03:56	MP68322-LC1	1		
04:02	MP68322-MB3	1		
04:08	MP68322-MB4	1		
04:14	MP68322-LC2	1		
04:20	MP68322-S1	1		
04:26	MP68322-S2	1		
04:32	JB22373-14	1		(sample used for QC only; not part of login JB22267)
04:38	MP68322-SD1	5		
04:44	MA30031-CCV12	1		
04:50	MA30031-CCB12	1		
04:56	MP68322-S3	1		
05:02	MP68322-S4	1		
05:08	JB22373-14F	1		(sample used for QC only; not part of login JB22267)
05:14	MP68322-SD2	5		
05:20	ZZZZZZ	1		
05:26	ZZZZZZ	1		
05:32	ZZZZZZ	1		
05:38	ZZZZZZ	1		
05:44	MP68431-MB1	1		
05:51	MP68431-LC1	1		
05:56	MA30031-CCV13	1		
06:02	MA30031-CCB13	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:08	MA30031-CRI4	1		
06:15	MA30031-CRID3	1		
06:21	MA30031-CRIA3	1		
06:27	MA30031-ICSA3	1		
06:33	MA30031-ICSAB3	1		
06:39	ZZZZZZ	1		
06:45	ZZZZZZ	1		
06:51	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:52	MA30031-STD1	1445 R	44610 R	20207 R	2356 R
16:58	MA30031-STD2	1428	43658	20172	2237
17:04	MA30031-STD3	1373	42105	19589	2123
17:10	MA30031-STD4	1327	40975	19516	2037
17:16	MA30031-CCV1	No results reported for the elements associated with this internal standard.			
17:21	MA30031-CCB1	No results reported for the elements associated with this internal standard.			
17:28	MA30031-CRI1	No results reported for the elements associated with this internal standard.			
17:34	MA30031-CRID1	1442	44601	20239	2340
17:40	MA30031-CRIA1	1437	45417	20527	2341
17:46	MA30031-CRI2	1435	44245	20207	2316
17:52	MA30031-ICV1	1380	42955	19859	2137
17:58	MA30031-ICB1	1451	44520	20075	2360
18:04	MA30031-CCV2	1368	42466	19709	2114
18:10	MA30031-CCB2	1438	43274	20552	2345
18:16	MA30031-ICSA1	1247	38895	18642	1873
18:22	MA30031-ICSAB1	1258	38802	18559	1889
18:28	ZZZZZZ	1461	42725	19957	2142
18:34	ZZZZZZ	1414	43931	19613	2333
18:40	MA30031-CCV3	1387	42630	19417	2140
18:46	MA30031-CCB3	1468	44765	20010	2386
18:52	MP68391-S1	1234	39633	18956	1903
18:58	MP68391-S2	1237	39717	18974	1904
19:04	MP68391-SD1	1351	42513	19399	2143
19:10	MP68392-S1	1309	41017	19199	2004
19:16	MP68392-S2	1317	41225	19225	2016
19:22	JB23106-1	1301	41186	19134	1991
19:29	MP68392-SD1	1431	43623	18215	2253
19:35	ZZZZZZ	999999 !	45321	20453	2371
19:41	ZZZZZZ	1384	44482	20099	2316
19:47	MA30031-CCV4	1371	42395	19468	2121
19:53	MA30031-CCB4	1445	44617	19937	2355
19:59	ZZZZZZ	1216	37155	19210	1821
20:05	ZZZZZZ	1466	45768	20635	2402

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:11	ZZZZZZ	1450	44509	18635	2360
20:17	ZZZZZZ	1298	41249	19184	2059
20:23	ZZZZZZ	1409	43689	20078	2145
20:29	ZZZZZZ	1398	44025	20649	2103
20:35	ZZZZZZ	1440	44702	20436	2173
20:41	ZZZZZZ	1445	44421	20333	2198
20:47	ZZZZZZ	1469	45497	20951	2148
20:53	MA30031-CCV5	1396	42602	19493	2149
20:59	MA30031-CCB5	1467	45092	19943	2378
21:05	ZZZZZZ	1476	45544	20381	2409
21:11	MP68366-S1	1278	40087	18977	1889
21:17	MP68366-S2	1267	39821	18936	1861
21:23	JB22710-1	1282	40233	18935	1926
21:29	MP68366-SD1	1379	42894	19557	2164
21:35	ZZZZZZ	1432	44093	20178	2111
21:41	MP68411-MB1	1201	37413	18696	1791
21:47	MP68411-B1	1205	38090	18710	1791
21:53	MP68411-S1	1187	37538	18621	1732
22:00	MP68411-S2	1200	37885	18611	1749
22:06	MA30031-CCV6	1388	42666	20753	2141
22:11	MA30031-CCB6	1465	44869	19651	2375
22:18	ZZZZZZ	5540 !	115960 !	31041 !	8033 !
22:24	ZZZZZZ	1468	44969	20036	2367
22:30	MA30031-CRI3	1434	44432	19624	2304
22:36	MA30031-CRID2	1465	44871	19753	2370
22:42	MA30031-CRIA2	1455	44893	19938	2360
22:48	MA30031-ICSA2	1274	39466	18741	1905
22:54	MA30031-ICSAB2	1267	39344	18532	1896
23:00	MA30031-CCV7	1392	42465	19440	2144
23:06	MA30031-CCB7	1481	45186	20049	2398
23:12	ZZZZZZ	1445	43829	20811	2158
23:18	ZZZZZZ	1482	45516	20813	2238
23:24	ZZZZZZ	1463	44950	20469	2222

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:30	ZZZZZZ	1450	44626	20242	2199
23:36	ZZZZZZ	1477	45088	20484	2242
23:42	ZZZZZZ	1498	45680	20565	2298
23:48	ZZZZZZ	1466	44897	20151	2237
23:54	ZZZZZZ	1476	45431	20483	2255
00:00	ZZZZZZ	1531	46315	20956	2247
00:06	MA30031-CCV8	1391	42379	18984	2142
00:12	MA30031-CCB8	1488	45533	19712	2407
00:18	JB22536-1	1205	37721	18077	1757
00:24	MP68411-SD1	1378	42303	19235	2092
00:30	ZZZZZZ	1220	37819	18175	1787
00:36	ZZZZZZ	1245	39568	18423	1824
00:42	MP68392-MB2	1244	38485	18249	1853
00:49	MP68392-LC1	1447	44115	19390	2301
00:54	ZZZZZZ	23160 !	671450 !	348270 !	1838
01:01	ZZZZZZ	1394	42924	20458	1851
01:07	ZZZZZZ	5282 !	161450 !	78306 !	1859
01:13	ZZZZZZ	1135	36488	17552	1687
01:19	MA30031-CCV9	1420	43354	19212	2182
01:25	MA30031-CCB9	1504	45770	19711	2431
01:31	ZZZZZZ	1171	38551	18710	1686
01:37	ZZZZZZ	1215	38165	18376	1815
01:43	MP68447-S1	1431	44062	19698	2263
01:49	MP68447-S2	1451	44520	20316	2286
01:55	MP68447-SD1	1483	45225	19728	2379
02:01	MP68395-MB2	1470	45205	19498	2384
02:07	MP68395-LC1	1469	43791	19208	2334
02:13	ZZZZZZ	1461	45026	19483	2344
02:19	ZZZZZZ	1372	41737	18763	2073
02:25	MA30031-CCV10	1424	43175	19164	2184
02:31	MA30031-CCB10	1493	45455	19519	2412
02:37	ZZZZZZ	1494	46056	20012	2433
02:43	MP68325-S1	1401	43371	19207	2240

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:49	MP68325-S2	1417	43119	18963	2269
02:55	JB22267-1	1403	43268	18927	2260
03:02	MP68325-SD1	1505	45595	19536	2407
03:08	JB22267-14	1369	42985	19076	2184
03:14	ZZZZZZ	1516	46331	19777	2471
03:20	ZZZZZZ	1463	44979	20500	2365
03:26	ZZZZZZ	1691	51282	22580	2296
03:32	MA30031-CCV11	1440	43237	18955	2203
03:38	MA30031-CCB11	1511	45450	19107	2430
03:44	MP68322-MB1	1499	45392	19376	2420
03:50	MP68322-MB2	1488	45343	19250	2406
03:56	MP68322-LC1	1488	44686	19057	2354
04:02	MP68322-MB3	1495	45460	19222	2409
04:08	MP68322-MB4	1501	45668	19365	2415
04:14	MP68322-LC2	1491	44841	18929	2358
04:20	MP68322-S1	1388	42216	18487	2128
04:26	MP68322-S2	1380	42293	18526	2117
04:32	JB22373-14	1418	42759	18656	2187
04:38	MP68322-SD1	1484	44835	19228	2349
04:44	MA30031-CCV12	1442	43575	18963	2206
04:50	MA30031-CCB12	1526	45773	19266	2453
04:56	MP68322-S3	1394	42251	18580	2137
05:02	MP68322-S4	1380	42311	18546	2116
05:08	JB22373-14F	1418	42946	18639	2194
05:14	MP68322-SD2	1481	44902	19177	2346
05:20	ZZZZZZ	1474	44695	18985	2334
05:26	ZZZZZZ	1456	44367	19170	2292
05:32	ZZZZZZ	1461	44629	19168	2304
05:38	ZZZZZZ	1457	44092	18839	2304
05:44	MP68431-MB1	1502	45774	19476	2420
05:51	MP68431-LC1	1485	44719	19066	2346
05:56	MA30031-CCV13	1453	43408	18746	2215
06:02	MA30031-CCB13	1524	45813	19208	2446

INTERNAL STANDARD SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
Analyst: GT Run ID: MA30031
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:08	MA30031-CRI4	1500	45783	19359	2389
06:15	MA30031-CRID3	1530	45570	19291	2445
06:21	MA30031-CRIA3	1547	46251	19572	2475
06:27	MA30031-ICSA3	1308	39737	17990	1946
06:33	MA30031-ICSAB3	1305	39624	17869	1938
06:39	ZZZZZZ	1512	42357	19578	2426
06:45	ZZZZZZ	1520	45518	19133	2434
06:51	ZZZZZZ	1523	45833	19438	2446

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:			17:58		18:10		18:46		19:53	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9	anr							
Antimony	6.0	1.3	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.3	anr							
Beryllium	1.0	.3	anr							
Bismuth	20	2.7								
Boron	100	2.6								
Cadmium	3.0	.3	anr							
Calcium	5000	45	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	2.5	anr							
Iron	100	6.3	anr							
Lead	3.0	2.3	-0.60	<3.0	-1.3	<3.0	-0.40	<3.0	-0.30	<3.0
Lithium	20	1								
Magnesium	5000	43	anr							
Manganese	15	.2	anr							
Molybdenum	20	.9								
Nickel	10	.6	anr							
Palladium	50	1.4								
Potassium	10000	40	anr							
Selenium	10	2.5	anr							
Silicon	200	17								
Silver	10	.5	anr							
Sodium	10000	26	anr							
Sulfur	50	9.6								
Strontium	10	.08								
Thallium	2.0	1.6	anr							
Tin	10	.7								
Titanium	10	.5								
Tungsten	50	9.3								
Vanadium	50	.3	anr							
Zinc	20	15	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:			20:59		22:11		23:06		00:12	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9	anr							
Antimony	6.0	1.3	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.3	anr							
Beryllium	1.0	.3	anr							
Bismuth	20	2.7								
Boron	100	2.6								
Cadmium	3.0	.3	anr							
Calcium	5000	45	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	2.5	anr							
Iron	100	6.3	anr							
Lead	3.0	2.3	-0.30	<3.0	-0.90	<3.0	-0.20	<3.0	-0.80	<3.0
Lithium	20	1								
Magnesium	5000	43	anr							
Manganese	15	.2	anr							
Molybdenum	20	.9								
Nickel	10	.6	anr							
Palladium	50	1.4								
Potassium	10000	40	anr							
Selenium	10	2.5	anr							
Silicon	200	17								
Silver	10	.5	anr							
Sodium	10000	26	anr							
Sulfur	50	9.6								
Strontium	10	.08								
Thallium	2.0	1.6	anr							
Tin	10	.7								
Titanium	10	.5								
Tungsten	50	9.3								
Vanadium	50	.3	anr							
Zinc	20	15	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

10.3.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:			01:25		02:31		03:38		04:50	
Sample ID:			CCB9		CCB10		CCB11		CCB12	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9	anr							
Antimony	6.0	1.3	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.3	anr							
Beryllium	1.0	.3	anr							
Bismuth	20	2.7								
Boron	100	2.6								
Cadmium	3.0	.3	anr							
Calcium	5000	45	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	2.5	anr							
Iron	100	6.3	anr							
Lead	3.0	2.3	-0.70	<3.0	1.0	<3.0	0.10	<3.0	0.20	<3.0
Lithium	20	1								
Magnesium	5000	43	anr							
Manganese	15	.2	anr							
Molybdenum	20	.9								
Nickel	10	.6	anr							
Palladium	50	1.4								
Potassium	10000	40	anr							
Selenium	10	2.5	anr							
Silicon	200	17								
Silver	10	.5	anr							
Sodium	10000	26	anr							
Sulfur	50	9.6								
Strontium	10	.08								
Thallium	2.0	1.6	anr							
Tin	10	.7								
Titanium	10	.5								
Tungsten	50	9.3								
Vanadium	50	.3	anr							
Zinc	20	15	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:			06:02	
Sample ID:			CCB13	
Metal	RL	IDL	raw	final
Aluminum	200	9	anr	
Antimony	6.0	1.3	anr	
Arsenic	3.0	1.3	anr	
Barium	200	.3	anr	
Beryllium	1.0	.3	anr	
Bismuth	20	2.7		
Boron	100	2.6		
Cadmium	3.0	.3	anr	
Calcium	5000	45	anr	
Chromium	10	.5	anr	
Cobalt	50	.3	anr	
Copper	10	2.5	anr	
Iron	100	6.3	anr	
Lead	3.0	2.3	-1.6	<3.0
Lithium	20	1		
Magnesium	5000	43	anr	
Manganese	15	.2	anr	
Molybdenum	20	.9		
Nickel	10	.6	anr	
Palladium	50	1.4		
Potassium	10000	40	anr	
Selenium	10	2.5	anr	
Silicon	200	17		
Silver	10	.5	anr	
Sodium	10000	26	anr	
Sulfur	50	9.6		
Strontium	10	.08		
Thallium	2.0	1.6	anr	
Tin	10	.7		
Titanium	10	.5		
Tungsten	50	9.3		
Vanadium	50	.3	anr	
Zinc	20	15	anr	

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.5

(*) Outside of QC limits
(anr) Analyte not requested

10.3.2
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:		17:52			18:04			18:40	
Sample ID:	ICV	ICV1		CCV	CCV2		CCV	CCV3	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2060	103.0	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:		19:47			20:53			22:06	
Sample ID:	CCV	CCV4		CCV	CCV5		CCV	CCV6	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2010	100.5	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:		23:00			00:06			01:19	
Sample ID:	CCV	CCV7		CCV	CCV8		CCV	CCV9	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2050	102.5	2000	2060	103.0	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:		02:25			03:32			04:44	
Sample ID:	CCV	CCV10		CCV	CCV11		CCV	CCV12	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2030	101.5	2000	2050	102.5	2000	2050	102.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:		05:56	
Sample ID:	CCV	CCV13	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	2080	104.0
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30031 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30031 Units: ug/l

Time:				17:34		17:40		17:46	
Sample ID:	CRI	CRIA	CRID	CRID1		CRIA1		CRI2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0						
Iron	100	500							
Lead	3.0	20	2.5			18.1	90.5	3.1	103.3
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0						
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10						

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30031 Units: ug/l

Time:				22:30		22:36		22:42	
Sample ID:	CRI	CRIA	CRID	CRI3		CRID2		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.7	90.0			18.8	94.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30031 Units: ug/l

Time:				06:08		06:15		06:21	
Sample ID:	CRI	CRIA	CRID	CRI4		CRID3		CRIA3	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.7	90.0			19.3	96.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30031 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30031 Units: ug/l

Time:			18:16		18:22		22:48		22:54	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	513000	102.6	501000	100.2	503000	100.6	492000	98.4
Antimony		1000	5.0		1020	102.0	4.8		1030	103.0
Arsenic		1000	4.4		1030	103.0	2.8		1050	105.0
Barium		500	-1.0		506	101.2	-1.0		495	99.0
Beryllium		500	0.70		483	96.6	0.70		483	96.6
Bismuth		500	35.4		531	106.2	33.9		532	106.4
Boron			4.5		-1.5		2.7		-2.9	
Cadmium		1000	2.2		1010	101.0	1.9		1020	102.0
Calcium	400000	400000	382000	95.5	373000	93.3	379000	94.8	375000	93.8
Chromium		500	2.8		461	92.2	2.4		467	93.4
Cobalt		500	0.30		453	90.6	0.20		459	91.8
Copper		500	-1.4		503	100.6	-1.7		500	100.0
Iron	200000	200000	206000	103.0	190000	95.0	207000	103.5	193000	96.5
Lead		1000	2.2		894	89.4	-2.3		904	90.4
Lithium		500	6.4		537	107.4	6.7		519	103.8
Magnesium	500000	500000	536000	107.2	538000	107.6	531000	106.2	540000	108.0
Manganese		500	2.7		471	94.2	3.5		468	93.6
Molybdenum		500	3.9		484	96.8	0.70		486	97.2
Nickel		1000	-1.0		913	91.3	-1.2		923	92.3
Palladium		500	27.8		567	113.4	24.9		566	113.2
Potassium			11.6		14.9		8.8		35.5	
Selenium		1000	4.7		1010	101.0	4.0		1020	102.0
Silicon			15.8		-3.9		15.2		-5.2	
Silver		1000	-1.7		989	98.9	3.2		990	99.0
Sodium			-4.1		-8.1		8.0		-3.7	
Sulfur		500	-5.5		471	94.2	-6.5		473	94.6
Strontium			0.70		0.40		0.30		-0.20	
Thallium		1000	-0.80		930	93.0	1.6		935	93.5
Tin			-0.80		-1.8		-2.0		-1.5	
Titanium			0.50		0.50		1.0		0.60	
Tungsten		500	-31		448	89.6	-41		445	89.0
Vanadium		500	-0.90		464	92.8	-1.2		463	92.6
Zinc		1000	3.0		904	90.4	3.1		921	92.1

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30031 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	2.5	493	98.6	2.1	491	98.2

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30031 Units: ug/l

Time:			06:27		06:33	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3	
Metal	True	True	Results	% Rec	Results	% Rec
Aluminum	500000	500000	517000	103.4	506000	101.2
Antimony		1000	5.4		1020	102.0
Arsenic		1000	2.3		1060	106.0
Barium		500	-1.1		495	99.0
Beryllium		500	0.80		499	99.8
Bismuth		500	36.3		526	105.2
Boron			3.9		-2.4	
Cadmium		1000	1.3		1030	103.0
Calcium	400000	400000	404000	101.0	394000	98.5
Chromium		500	2.8		492	98.4
Cobalt		500	-0.10		466	93.2
Copper		500	-2.7		509	101.8
Iron	200000	200000	219000	109.5	202000	101.0
Lead		1000	-3.0		922	92.2
Lithium		500	7.4		515	103.0
Magnesium	500000	500000	577000	115.4	579000	115.8
Manganese		500	4.3		479	95.8
Molybdenum		500	1.4		486	97.2
Nickel		1000	-1.1		944	94.4
Palladium		500	27.0		582	116.4
Potassium			92.2		64.6	
Selenium		1000	7.8		1010	101.0
Silicon			14.3		-4.0	
Silver		1000	6.3		1030	103.0
Sodium			-1.7		-3.0	
Sulfur		500	-5.5		482	96.4
Strontium			-1.0		-1.2	
Thallium		1000	0.80		953	95.3
Tin			-2.2		-2.2	
Titanium			0.80		0.80	
Tungsten		500	-43		440	88.0
Vanadium		500	-1.5		484	96.8
Zinc		1000	3.8		951	95.1

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SC121112M2.ICP Date Analyzed: 12/11/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30031 Units: ug/l

Time:				
Sample ID:				
Metal				
Zirconium	500	2.4	509	101.8

(*) Outside of QC limits
(anr) Analyte not requested

10.3.5
10

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.7	.74		
Antimony	2.0	.12	.15		
Arsenic	2.0	.09	.13		
Barium	20	.03	.054		
Beryllium	0.20	.01	.02		
Bismuth	2.0	.08	.14		
Boron	10	.12	.14		
Cadmium	0.50	.02	.025		
Calcium	500	4.4	2.3		
Chromium	1.0	.04	.11		
Cobalt	5.0	.02	.031		
Copper	2.5	.05	.13		
Iron	50	1	.79		
Lead	2.0	.11	.11	0.0	<2.0
Lithium	2.0	.07	.25		
Magnesium	500	1.8	3.1		
Manganese	1.5	.02	.048		
Molybdenum	2.0	.05	.074		
Nickel	4.0	.04	.11		
Palladium	5.0	.11	.17		
Potassium	1000	2.7	14		
Selenium	2.0	.18	.24		
Silicon	20	.51	1.9		
Silver	0.50	.03	.063		
Sodium	1000	.9	13		
Strontium	1.0	.02	.17		
Sulfur	5.0	.74	.65		
Thallium	1.0	.12	.22		
Tin	5.0	.06	1.5		
Titanium	1.0	.04	.62		
Tungsten	5.0	.6	1.1		
Vanadium	5.0	.04	.1		
Zinc	2.0	.21	.19		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal			
Zirconium	2.0	.04	.1

Associated samples MP68325: JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

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: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	JB22267-1 Original	MS	Spikelot MPIRS1	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium	anr				
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	291	432	119	118.5	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	anr				
Palladium					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				
Zinc	anr				

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325 | Methods: SW846 6010C
Matrix Type: SOLID | Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP68325: JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

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: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	JB22267-1 Original	MSD	Spikelot MPIRS1	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	291	402	125	88.8	7.2	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Sulfur						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal
Zirconium

Associated samples MP68325: JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

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: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/06/12

Metal	BSP Result	Spikelot MPIRS1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	96.0	100	96.0	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP68325: JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/06/12

Metal	JB22267-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	2420	2450	1.4	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB22267
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68325 Methods: SW846 6010C
Matrix Type: SOLID Units: ug/l

Prep Date:

Metal

Zirconium

Associated samples MP68325: JB22267-1, JB22267-2, JB22267-3, JB22267-4, JB22267-5, JB22267-6, JB22267-7, JB22267-8, JB22267-9, JB22267-10, JB22267-11, JB22267-12, JB22267-13, JB22267-14, JB22267-15, JB22267-16, JB22267-17

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

New Jersey
ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22267-1 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-91_0.5'

Wet Weight (Total)	31.76	g
Tare Weight	23.16	g
Dry Weight (Total)	30.18	g
Solids, Percent	81.6	%

Sample: JB22267-2 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-92_0.5'

Wet Weight (Total)	32.49	g
Tare Weight	27.44	g
Dry Weight (Total)	31.8	g
Solids, Percent	86.3	%

Sample: JB22267-3 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-94_1.0'

Wet Weight (Total)	30.57	g
Tare Weight	22.42	g
Dry Weight (Total)	28.83	g
Solids, Percent	78.7	%

Sample: JB22267-4 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-87_1.0'

Wet Weight (Total)	31.68	g
Tare Weight	25.65	g
Dry Weight (Total)	30.18	g
Solids, Percent	75.1	%

Sample: JB22267-5 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-87_3.0'

Wet Weight (Total)	26.31	g
Tare Weight	21.11	g
Dry Weight (Total)	24.45	g
Solids, Percent	64.2	%

Sample: JB22267-6 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-100_3.0'

Wet Weight (Total)	37.19	g
Tare Weight	29.54	g
Dry Weight (Total)	36.09	g
Solids, Percent	85.6	%

Percent Solids Raw Data Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22267-7 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-85_1.5'

Wet Weight (Total)	31.93	g
Tare Weight	26.5	g
Dry Weight (Total)	30.21	g
Solids, Percent	68.3	%

Sample: JB22267-8 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-85_3.0'

Wet Weight (Total)	32.51	g
Tare Weight	24.74	g
Dry Weight (Total)	30.31	g
Solids, Percent	71.7	%

Sample: JB22267-9 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-83_1.0'

Wet Weight (Total)	27.46	g
Tare Weight	20.7	g
Dry Weight (Total)	26.93	g
Solids, Percent	92.2	%

Sample: JB22267-10 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-83_3.0'

Wet Weight (Total)	26.19	g
Tare Weight	20.69	g
Dry Weight (Total)	24.21	g
Solids, Percent	64	%

Sample: JB22267-11 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-84_3.0'

Wet Weight (Total)	26.77	g
Tare Weight	19.66	g
Dry Weight (Total)	25.9	g
Solids, Percent	87.8	%

Sample: JB22267-12 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-88_2.5'

Wet Weight (Total)	31.65	g
Tare Weight	23.41	g
Dry Weight (Total)	30.05	g
Solids, Percent	80.6	%

Percent Solids Raw Data Summary

Job Number: JB22267
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22267-13 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-79_1.0'

Wet Weight (Total)	31.07	g
Tare Weight	24.63	g
Dry Weight (Total)	30.01	g
Solids, Percent	83.5	%

Sample: JB22267-14 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-82_1.0'

Wet Weight (Total)	30.88	g
Tare Weight	24.23	g
Dry Weight (Total)	29.27	g
Solids, Percent	75.8	%

Sample: JB22267-15 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-78_1.0'

Wet Weight (Total)	33.66	g
Tare Weight	26.82	g
Dry Weight (Total)	32.9	g
Solids, Percent	88.9	%

Sample: JB22267-16 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-78_2.0'

Wet Weight (Total)	32.65	g
Tare Weight	25.53	g
Dry Weight (Total)	31.19	g
Solids, Percent	79.5	%

Sample: JB22267-17 **Analyzed:** 09-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-80_3.0'

Wet Weight (Total)	31.37	g
Tare Weight	26	g
Dry Weight (Total)	30.96	g
Solids, Percent	92.4	%