New Jersey
ACCUTEST LABORATORIES

04/04/13

Technical Report for

Aquaterra Technologies, Inc.

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

AOI-7

Accutest Job Number: JB31265

Sampling Date: 03/13/13

Report to:

AquaTerra Technologies
122 South Church Street P.O. Box 744
West Chester, PA 19382
jennifer.menges@stantec.com; kward@langan.com;
ptroy@langan.com; ajelinek@langan.com;
ATTN: Tiffani Doerr

Total number of pages in report: **380**

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
Nancy Cole
Laboratory Director

Client Service contact: Kristin Beebe 732-329-0200

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

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

Accutest Laboratories is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

Table of Contents

-1-

Section 1: Sample Summary **4**
Section 2: Case Narrative/Conformance Summary **5**
Section 3: Summary of Hits **7**
Section 4: Sample Results **10**
- **4.1:** JB31265-1: AOI7-BH-13-48_1.5-2_031313 11
- **4.2:** JB31265-2: AOI7-BH-13-48_2.5-3_031313 14
- **4.3:** JB31265-3: AOI7-BH-13-45_1.5-2_031313 17
- **4.4:** JB31265-4: AOI7-BH-13-45_2-2.5_031313 20
- **4.5:** JB31265-5: AOI7-BH-13-47_1.5-2_031313 23
- **4.6:** JB31265-6: AOI7-BH-13-47_2.5-3_031313 26
- **4.7:** JB31265-7: AOI7-BH-13-46_1.5-2_031313 29

Section 5: Misc. Forms **32**
- **5.1:** Chain of Custody 33
- **5.2:** Sample Tracking Chronicle 36
- **5.3:** Internal Chain of Custody 38

Section 6: GC/MS Volatiles - QC Data Summaries **42**
- **6.1:** Method Blank Summary 43
- **6.2:** Blank Spike Summary 46
- **6.3:** Matrix Spike/Matrix Spike Duplicate Summary 49
- **6.4:** Instrument Performance Checks (BFB) 52
- **6.5:** Internal Standard Area Summaries 57
- **6.6:** Surrogate Recovery Summaries 60
- **6.7:** Initial and Continuing Calibration Summaries 61

Section 7: GC/MS Volatiles - Raw Data **97**
- **7.1:** Samples 98
- **7.2:** Method Blanks 143

Section 8: GC/MS Semi-volatiles - QC Data Summaries **149**
- **8.1:** Method Blank Summary 150
- **8.2:** Blank Spike Summary 152
- **8.3:** Matrix Spike/Matrix Spike Duplicate Summary 153
- **8.4:** Instrument Performance Checks (DFTPP) 154
- **8.5:** Internal Standard Area Summaries 163
- **8.6:** Surrogate Recovery Summaries 166
- **8.7:** Initial and Continuing Calibration Summaries 167

Section 9: GC/MS Semi-volatiles - Raw Data **204**
- **9.1:** Samples 205
- **9.2:** Method Blanks 277

Section 10: Metals Analysis - QC Data Summaries **281**
- **10.1:** Inst QC MA30777: Pb 282
- **10.2:** Inst QC MA30797: Pb 334
- **10.3:** Prep QC MP70634: Pb 368

Section 11: General Chemistry - QC Data Summaries **378**

Table of Contents

-2-

11.1: Percent Solids Raw Data Summary 379

Sample Summary

Aquaterra Technologies, Inc.

Job No: JB31265

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
JB31265-1	03/13/13	09:00	ED	03/13/13	SO	Soil	AOI7-BH-13-48_1.5-2_031313
JB31265-2	03/13/13	09:40	ED	03/13/13	SO	Soil	AOI7-BH-13-48_2.5-3_031313
JB31265-3	03/13/13	12:30	ED	03/13/13	SO	Soil	AOI7-BH-13-45_1.5-2_031313
JB31265-4	03/13/13	12:45	ED	03/13/13	SO	Soil	AOI7-BH-13-45_2-2.5_031313
JB31265-5	03/13/13	14:15	ED	03/13/13	SO	Soil	AOI7-BH-13-47_1.5-2_031313
JB31265-6	03/13/13	14:30	ED	03/13/13	SO	Soil	AOI7-BH-13-47_2.5-3_031313
JB31265-7	03/13/13	16:00	ED	03/13/13	SO	Soil	AOI7-BH-13-46_1.5-2_031313

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Aquaterra Technologies, Inc.	**Job No**	JB31265
Site:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, P	**Report Date**	3/29/2013 6:57:31 PM

On 03/13/2013, 7 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 2.4 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB31265 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:** VE8851

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB31265-2MS, JB31265-2MSD were used as the QC samples indicated.
- JB31265-2: Dilution required due to matrix interference.
- JB31265-4: Dilution required due to matrix interference.
- JB31265-1: Dilution required due to matrix interference.
- JB31265-6: Dilution required due to matrix interference.
- JB31265-3: Dilution required due to matrix interference.

Matrix: SO **Batch ID:** VE8852

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB32254-4MS, JB32254-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB31265-5: Dilution required due to matrix interference.

Matrix: SO **Batch ID:** VV5767

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB31814-14MS, JB31814-14MSD 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:** OP64470

- All samples were extracted within the recommended method holding time.
- Sample(s) JB31265-1MS, JB31265-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB31265-3: Dilution required due to sample high viscous matrix.
- JB31265-6: Dilution required due to sample high viscous matrix.
- JB31265-2: Dilution required due to matrix interference.
- JB31265-4: Dilution required due to sample high viscous matrix.

Metals By Method SW846 6010C

Matrix: SO	**Batch ID:** MP70634

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB31267-5MS, JB31267-5MSD, JB31267-5SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lead are outside control limits for sample MP70634-SD1. Serial dilution indicates possible matrix interference.

Wet Chemistry By Method SM2540 G-97

Matrix: SO	**Batch ID:** GN81873

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

Matrix: SO	**Batch ID:** GN81877

- 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: JB31265
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 03/13/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB31265-1	**AOI7-BH-13-48_1.5-2_031313**					
Benzene [a]		2.66	0.088		mg/kg	SW846 8260B
Toluene [a]		3.45	0.088		mg/kg	SW846 8260B
Ethylbenzene [a]		0.643	0.088		mg/kg	SW846 8260B
Xylene (total) [a]		4.53	0.088		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene [a]		0.499	0.44		mg/kg	SW846 8260B
Anthracene		0.332	0.034		mg/kg	SW846 8270D
Benzo(a)anthracene		0.797	0.034		mg/kg	SW846 8270D
Benzo(a)pyrene		0.934	0.034		mg/kg	SW846 8270D
Benzo(b)fluoranthene		1.10	0.034		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.590	0.034		mg/kg	SW846 8270D
Chrysene		1.00	0.034		mg/kg	SW846 8270D
Fluorene		0.428	0.034		mg/kg	SW846 8270D
Naphthalene		0.120	0.034		mg/kg	SW846 8270D
Phenanthrene		0.214	0.034		mg/kg	SW846 8270D
Pyrene		1.51	0.034		mg/kg	SW846 8270D
Lead		275	2.2		mg/kg	SW846 6010C
JB31265-2	**AOI7-BH-13-48_2.5-3_031313**					
Benzene [a]		0.845	0.11		mg/kg	SW846 8260B
Toluene [a]		1.08	0.11		mg/kg	SW846 8260B
Ethylbenzene [a]		0.401	0.11		mg/kg	SW846 8260B
Xylene (total) [a]		1.58	0.11		mg/kg	SW846 8260B
Isopropylbenzene [a]		1.96	0.56		mg/kg	SW846 8260B
Anthracene [a]		1.12	0.077		mg/kg	SW846 8270D
Benzo(a)anthracene [a]		1.56	0.077		mg/kg	SW846 8270D
Benzo(a)pyrene [a]		1.50	0.077		mg/kg	SW846 8270D
Benzo(b)fluoranthene [a]		1.44	0.077		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [a]		0.986	0.077		mg/kg	SW846 8270D
Chrysene [a]		2.07	0.077		mg/kg	SW846 8270D
Fluorene [a]		1.58	0.077		mg/kg	SW846 8270D
Phenanthrene [a]		2.27	0.077		mg/kg	SW846 8270D
Pyrene [a]		3.34	0.077		mg/kg	SW846 8270D
Lead		348	2.5		mg/kg	SW846 6010C
JB31265-3	**AOI7-BH-13-45_1.5-2_031313**					
Toluene [a]		0.140	0.14		mg/kg	SW846 8260B
Xylene (total) [a]		0.474	0.14		mg/kg	SW846 8260B
Benzo(a)anthracene [b]		0.482	0.21		mg/kg	SW846 8270D
Benzo(a)pyrene [b]		0.395	0.21		mg/kg	SW846 8270D
Benzo(b)fluoranthene [b]		0.425	0.21		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]		0.485	0.21		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB31265
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 03/13/13

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Chrysene [b]		1.26	0.21		mg/kg	SW846 8270D
Phenanthrene [b]		0.246	0.21		mg/kg	SW846 8270D
Pyrene [b]		1.39	0.21		mg/kg	SW846 8270D
Lead		498	2.0		mg/kg	SW846 6010C
JB31265-4	**AOI7-BH-13-45_2-2.5_031313**					
Xylene (total) [a]		0.394	0.13		mg/kg	SW846 8260B
Anthracene [b]		0.256	0.21		mg/kg	SW846 8270D
Benzo(a)anthracene [b]		0.550	0.21		mg/kg	SW846 8270D
Benzo(a)pyrene [b]		0.600	0.21		mg/kg	SW846 8270D
Benzo(b)fluoranthene [b]		0.643	0.21		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]		0.601	0.21		mg/kg	SW846 8270D
Chrysene [b]		1.29	0.21		mg/kg	SW846 8270D
Phenanthrene [b]		0.217	0.21		mg/kg	SW846 8270D
Pyrene [b]		1.95	0.21		mg/kg	SW846 8270D
Lead		753	2.0		mg/kg	SW846 6010C
JB31265-5	**AOI7-BH-13-47_1.5-2_031313**					
Toluene [a]		0.252	0.12		mg/kg	SW846 8260B
Xylene (total) [a]		0.255	0.12		mg/kg	SW846 8260B
Anthracene		0.459	0.042		mg/kg	SW846 8270D
Benzo(a)anthracene		1.23	0.042		mg/kg	SW846 8270D
Benzo(a)pyrene		1.25	0.042		mg/kg	SW846 8270D
Benzo(b)fluoranthene		1.14	0.042		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.818	0.042		mg/kg	SW846 8270D
Chrysene		1.40	0.042		mg/kg	SW846 8270D
Fluorene		0.211	0.042		mg/kg	SW846 8270D
Naphthalene		0.190	0.042		mg/kg	SW846 8270D
Phenanthrene		1.07	0.042		mg/kg	SW846 8270D
Pyrene		1.46	0.042		mg/kg	SW846 8270D
Lead		866	2.0		mg/kg	SW846 6010C
JB31265-6	**AOI7-BH-13-47_2.5-3_031313**					
Toluene [a]		0.475	0.16		mg/kg	SW846 8260B
Xylene (total) [a]		0.364	0.16		mg/kg	SW846 8260B
Isopropylbenzene [a]		0.870	0.79		mg/kg	SW846 8260B
Anthracene [b]		2.03	0.24		mg/kg	SW846 8270D
Benzo(a)anthracene [b]		3.13	0.24		mg/kg	SW846 8270D
Benzo(a)pyrene [b]		2.50	0.24		mg/kg	SW846 8270D
Benzo(b)fluoranthene [b]		2.40	0.24		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]		1.37	0.24		mg/kg	SW846 8270D
Chrysene [b]		4.13	0.24		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB31265
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 03/13/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Fluorene [b]		3.36	0.24		mg/kg	SW846 8270D
Phenanthrene [b]		7.92	0.24		mg/kg	SW846 8270D
Pyrene [b]		5.58	0.24		mg/kg	SW846 8270D
Lead		567	2.0		mg/kg	SW846 6010C
JB31265-7	**AOI7-BH-13-46_1.5-2_031313**					
Anthracene		0.0831	0.037		mg/kg	SW846 8270D
Benzo(a)anthracene		0.335	0.037		mg/kg	SW846 8270D
Benzo(a)pyrene		0.347	0.037		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.535	0.037		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.309	0.037		mg/kg	SW846 8270D
Chrysene		0.546	0.037		mg/kg	SW846 8270D
Phenanthrene		0.266	0.037		mg/kg	SW846 8270D
Pyrene		0.585	0.037		mg/kg	SW846 8270D
Lead		237	2.2		mg/kg	SW846 6010C

(a) Dilution required due to matrix interference.
(b) Dilution required due to sample high viscous matrix.

New Jersey

ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-48_1.5-2_031313		
Lab Sample ID:	JB31265-1	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	91.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E201321.D	1	03/26/13	OTR	n/a	n/a	VE8851
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.6 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	2.66	0.088	mg/kg	
108-88-3	Toluene	3.45	0.088	mg/kg	
100-41-4	Ethylbenzene	0.643	0.088	mg/kg	
1330-20-7	Xylene (total)	4.53	0.088	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.088	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.088	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.088	mg/kg	
98-82-8	Isopropylbenzene	ND	0.44	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.499	0.44	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.44	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	83%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-122%
2037-26-5	Toluene-D8	91%		81-127%
460-00-4	4-Bromofluorobenzene	111%		66-132%

(a) Dilution required due to matrix interference.

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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-48_1.5-2_031313		
Lab Sample ID:	JB31265-1	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	91.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z78886.D	1	03/28/13	KH	03/26/13	OP64470	EZ4029
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	0.332	0.034	mg/kg	
56-55-3	Benzo(a)anthracene	0.797	0.034	mg/kg	
50-32-8	Benzo(a)pyrene	0.934	0.034	mg/kg	
205-99-2	Benzo(b)fluoranthene	1.10	0.034	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.590	0.034	mg/kg	
218-01-9	Chrysene	1.00	0.034	mg/kg	
86-73-7	Fluorene	0.428	0.034	mg/kg	
91-20-3	Naphthalene	0.120	0.034	mg/kg	
85-01-8	Phenanthrene	0.214	0.034	mg/kg	
129-00-0	Pyrene	1.51	0.034	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		21-116%
4165-62-2	Phenol-d5	48%		19-117%
118-79-6	2,4,6-Tribromophenol	81%		24-136%
4165-60-0	Nitrobenzene-d5	58%		21-122%
321-60-8	2-Fluorobiphenyl	63%		30-117%
1718-51-0	Terphenyl-d14	71%		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:	AOI7-BH-13-48_1.5-2_031313		
Lab Sample ID:	JB31265-1	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	91.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	275	2.2	mg/kg	1	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-48_2.5-3_031313		
Lab Sample ID:	JB31265-2	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	81.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E201320.D	1	03/26/13	OTR	n/a	n/a	VE8851
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.1 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.845	0.11	mg/kg	
108-88-3	Toluene	1.08	0.11	mg/kg	
100-41-4	Ethylbenzene	0.401	0.11	mg/kg	
1330-20-7	Xylene (total)	1.58	0.11	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.11	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.11	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.11	mg/kg	
98-82-8	Isopropylbenzene	1.96	0.56	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.56	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.56	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
17060-07-0	1,2-Dichloroethane-D4	80%		70-122%
2037-26-5	Toluene-D8	104%		81-127%
460-00-4	4-Bromofluorobenzene	118%		66-132%

(a) Dilution required due to matrix interference.

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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-48_2.5-3_031313		
Lab Sample ID:	JB31265-2	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	81.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P21619.D	2	03/28/13	AD	03/26/13	OP64470	E2P949
Run #2							

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	1.12	0.077	mg/kg	
56-55-3	Benzo(a)anthracene	1.56	0.077	mg/kg	
50-32-8	Benzo(a)pyrene	1.50	0.077	mg/kg	
205-99-2	Benzo(b)fluoranthene	1.44	0.077	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.986	0.077	mg/kg	
218-01-9	Chrysene	2.07	0.077	mg/kg	
86-73-7	Fluorene	1.58	0.077	mg/kg	
91-20-3	Naphthalene	ND	0.077	mg/kg	
85-01-8	Phenanthrene	2.27	0.077	mg/kg	
129-00-0	Pyrene	3.34	0.077	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	72%		21-122%
321-60-8	2-Fluorobiphenyl	75%		30-117%
1718-51-0	Terphenyl-d14	75%		31-129%

(a) Dilution required due to matrix interference.

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:	AOI7-BH-13-48_2.5-3_031313		
Lab Sample ID:	JB31265-2	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	81.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	348	2.5	mg/kg	1	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-45_1.5-2_031313		
Lab Sample ID:	JB31265-3	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	78.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E201322.D	1	03/26/13	OTR	n/a	n/a	VE8851
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.14	mg/kg	
108-88-3	Toluene	0.140	0.14	mg/kg	
100-41-4	Ethylbenzene	ND	0.14	mg/kg	
1330-20-7	Xylene (total)	0.474	0.14	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.14	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.14	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.14	mg/kg	
98-82-8	Isopropylbenzene	ND	0.69	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.69	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.69	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
17060-07-0	1,2-Dichloroethane-D4	83%		70-122%
2037-26-5	Toluene-D8	94%		81-127%
460-00-4	4-Bromofluorobenzene	87%		66-132%

(a) Dilution required due to matrix interference.

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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-45_1.5-2_031313		
Lab Sample ID:	JB31265-3	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	78.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P21587.D	5	03/27/13	ALS	03/26/13	OP64470	E2P948
Run #2							

	Initial Weight	Final Volume
Run #1	31.1 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.21	mg/kg	
56-55-3	Benzo(a)anthracene	0.482	0.21	mg/kg	
50-32-8	Benzo(a)pyrene	0.395	0.21	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.425	0.21	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.485	0.21	mg/kg	
218-01-9	Chrysene	1.26	0.21	mg/kg	
86-73-7	Fluorene	ND	0.21	mg/kg	
91-20-3	Naphthalene	ND	0.21	mg/kg	
85-01-8	Phenanthrene	0.246	0.21	mg/kg	
129-00-0	Pyrene	1.39	0.21	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	35%		21-122%
321-60-8	2-Fluorobiphenyl	39%		30-117%
1718-51-0	Terphenyl-d14	40%		31-129%

(a) Dilution required due to sample high viscous matrix.

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:	AOI7-BH-13-45_1.5-2_031313		
Lab Sample ID:	JB31265-3	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	78.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	498	2.0	mg/kg	1	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-45_2-2.5_031313		
Lab Sample ID:	JB31265-4	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	79.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E201323.D	1	03/26/13	OTR	n/a	n/a	VE8851
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.4 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.13	mg/kg	
108-88-3	Toluene	ND	0.13	mg/kg	
100-41-4	Ethylbenzene	ND	0.13	mg/kg	
1330-20-7	Xylene (total)	0.394	0.13	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.13	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.13	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.13	mg/kg	
98-82-8	Isopropylbenzene	ND	0.64	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.64	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.64	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	85%		70-130%
17060-07-0	1,2-Dichloroethane-D4	82%		70-122%
2037-26-5	Toluene-D8	94%		81-127%
460-00-4	4-Bromofluorobenzene	86%		66-132%

(a) Dilution required due to matrix interference.

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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-45_2-2.5_031313		
Lab Sample ID:	JB31265-4	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	79.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P21588.D	5	03/27/13	ALS	03/26/13	OP64470	E2P948
Run #2							

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

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.256	0.21	mg/kg	
56-55-3	Benzo(a)anthracene	0.550	0.21	mg/kg	
50-32-8	Benzo(a)pyrene	0.600	0.21	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.643	0.21	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.601	0.21	mg/kg	
218-01-9	Chrysene	1.29	0.21	mg/kg	
86-73-7	Fluorene	ND	0.21	mg/kg	
91-20-3	Naphthalene	ND	0.21	mg/kg	
85-01-8	Phenanthrene	0.217	0.21	mg/kg	
129-00-0	Pyrene	1.95	0.21	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	31%		21-122%
321-60-8	2-Fluorobiphenyl	38%		30-117%
1718-51-0	Terphenyl-d14	37%		31-129%

(a) Dilution required due to sample high viscous matrix.

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:	AOI7-BH-13-45_2-2.5_031313		
Lab Sample ID:	JB31265-4	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	79.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	753	2.0	mg/kg	1	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-47_1.5-2_031313		
Lab Sample ID:	JB31265-5	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	79.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E201350.D	1	03/26/13	OTR	n/a	n/a	VE8852
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.1 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.12	mg/kg	
108-88-3	Toluene	0.252	0.12	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	mg/kg	
1330-20-7	Xylene (total)	0.255	0.12	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.12	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.12	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.12	mg/kg	
98-82-8	Isopropylbenzene	ND	0.58	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.58	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.58	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	84%		70-130%
17060-07-0	1,2-Dichloroethane-D4	85%		70-122%
2037-26-5	Toluene-D8	93%		81-127%
460-00-4	4-Bromofluorobenzene	88%		66-132%

(a) Dilution required due to matrix interference.

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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-47_1.5-2_031313		
Lab Sample ID:	JB31265-5	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	79.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P21585.D	1	03/27/13	ALS	03/26/13	OP64470	E2P948
Run #2							

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

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.459	0.042	mg/kg	
56-55-3	Benzo(a)anthracene	1.23	0.042	mg/kg	
50-32-8	Benzo(a)pyrene	1.25	0.042	mg/kg	
205-99-2	Benzo(b)fluoranthene	1.14	0.042	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.818	0.042	mg/kg	
218-01-9	Chrysene	1.40	0.042	mg/kg	
86-73-7	Fluorene	0.211	0.042	mg/kg	
91-20-3	Naphthalene	0.190	0.042	mg/kg	
85-01-8	Phenanthrene	1.07	0.042	mg/kg	
129-00-0	Pyrene	1.46	0.042	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	49%		21-122%
321-60-8	2-Fluorobiphenyl	64%		30-117%
1718-51-0	Terphenyl-d14	64%		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:	AOI7-BH-13-47_1.5-2_031313		
Lab Sample ID:	JB31265-5	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	79.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	866	2.0	mg/kg	1	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-47_2.5-3_031313		
Lab Sample ID:	JB31265-6	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	65.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E201325.D	1	03/26/13	OTR	n/a	n/a	VE8851
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.8 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.16	mg/kg	
108-88-3	Toluene	0.475	0.16	mg/kg	
100-41-4	Ethylbenzene	ND	0.16	mg/kg	
1330-20-7	Xylene (total)	0.364	0.16	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.16	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.16	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.16	mg/kg	
98-82-8	Isopropylbenzene	0.870	0.79	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.79	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.79	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	82%		70-130%
17060-07-0	1,2-Dichloroethane-D4	80%		70-122%
2037-26-5	Toluene-D8	98%		81-127%
460-00-4	4-Bromofluorobenzene	90%		66-132%

(a) Dilution required due to matrix interference.

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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-47_2.5-3_031313		
Lab Sample ID:	JB31265-6	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	65.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P21589.D	5	03/27/13	ALS	03/26/13	OP64470	E2P948
Run #2							

	Initial Weight	Final Volume
Run #1	31.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	2.03	0.24	mg/kg	
56-55-3	Benzo(a)anthracene	3.13	0.24	mg/kg	
50-32-8	Benzo(a)pyrene	2.50	0.24	mg/kg	
205-99-2	Benzo(b)fluoranthene	2.40	0.24	mg/kg	
191-24-2	Benzo(g,h,i)perylene	1.37	0.24	mg/kg	
218-01-9	Chrysene	4.13	0.24	mg/kg	
86-73-7	Fluorene	3.36	0.24	mg/kg	
91-20-3	Naphthalene	ND	0.24	mg/kg	
85-01-8	Phenanthrene	7.92	0.24	mg/kg	
129-00-0	Pyrene	5.58	0.24	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	40%		21-122%
321-60-8	2-Fluorobiphenyl	60%		30-117%
1718-51-0	Terphenyl-d14	57%		31-129%

(a) Dilution required due to sample high viscous matrix.

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:	AOI7-BH-13-47_2.5-3_031313		
Lab Sample ID:	JB31265-6	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	65.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	567	2.0	mg/kg	1	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-46_1.5-2_031313		
Lab Sample ID:	JB31265-7	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V133449.D	1	03/25/13	TDN	n/a	n/a	VV5767
Run #2							

	Initial Weight
Run #1	6.8 g
Run #2	

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	ND	0.00086	mg/kg	
100-41-4	Ethylbenzene	ND	0.00086	mg/kg	
1330-20-7	Xylene (total)	ND	0.00086	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00086	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	
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	102%		70-130%
17060-07-0	1,2-Dichloroethane-D4	94%		70-122%
2037-26-5	Toluene-D8	106%		81-127%
460-00-4	4-Bromofluorobenzene	86%		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 Laboratories

Report of Analysis

Client Sample ID:	AOI7-BH-13-46_1.5-2_031313		
Lab Sample ID:	JB31265-7	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	85.8
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P21586.D	1	03/27/13	ALS	03/26/13	OP64470	E2P948
Run #2							

	Initial Weight	Final Volume
Run #1	31.6 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.0831	0.037	mg/kg	
56-55-3	Benzo(a)anthracene	0.335	0.037	mg/kg	
50-32-8	Benzo(a)pyrene	0.347	0.037	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.535	0.037	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.309	0.037	mg/kg	
218-01-9	Chrysene	0.546	0.037	mg/kg	
86-73-7	Fluorene	ND	0.037	mg/kg	
91-20-3	Naphthalene	ND	0.037	mg/kg	
85-01-8	Phenanthrene	0.266	0.037	mg/kg	
129-00-0	Pyrene	0.585	0.037	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	22%		21-122%
321-60-8	2-Fluorobiphenyl	48%		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:	AOI7-BH-13-46_1.5-2_031313		
Lab Sample ID:	JB31265-7	**Date Sampled:**	03/13/13
Matrix:	SO - Soil	**Date Received:**	03/13/13
		Percent Solids:	85.8
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	03/22/13	03/24/13	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30777
(2) Prep QC Batch: MP70634

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

SLL

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

PAGE 1 OF 1

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 #: JB31265

Client / Reporting Information

Company Name: AQUATERRA TECHNOLOGIES, INC
Street Address: 122 So Church St
City / State / Zip: West Chester PA 19382
Project Contact: Tiffani Doerr
E-mail:
Phone #:
Fax #:
Sampler(s) Name(s): Eric Dieck
Phone #:

Project Information

Project Name: Phila Refinery A01-7
Street:
City / State:
Project #: 2574601
Client Purchase Order #: ~~2574601~~
Project Manager: Jim Oppenheim

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	LDIOC: LEAD	8260B: BTEX, MTBE, cumene, EDB, EDC, Tmes	8270C: Anthracene, benzo(a) anthracene, benzo(ghi) perylene, benzo(k) fluoranthene, chrysene, fluorene, naphthalene, phenanthrene, pyrene							LAB USE ONLY
1	A017-BH-13-48_1.5-2_031313		3-13-13	9:00	ED	SO	5					2	2	1		X	X	X						-1	E49
2	A017-BH-13-48_2.5-3_031313		3-13-13	9:40	ED	SO	5					2	2	1		X	X	X						-2	M40T3
3	A017-BH-13-45_1.5-2_031313		3-13-13	12:30	ED	SO	5					2	2	1		X	X	X						-3	1406
4	A017-BH-13-45_2-2.5_031313		3-13-13	12:45	ED	SO	5					2	2	1		X	X	X						-4	6307
5	A017-BH-13-47_1.5-2_031313		3-13-13	14:15	ED	SO	5					2	2	1		X	X	X						-5	
6	A017-BH-13-47_2.5-3_031313		3-13-13	14:30	ED	SO	5					2	2	1		X	X	X						-6	
7	A017-BH-13-46_1.5-2_031313		3-13-13	16:00	ED	SO	5					2	2	1		X	X	X						-7	

Turnaround Time (Business days)

- Approved By (Accutest PM): / Date:
- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☐ other _____

Emergency & Rush T/A data available VIA Lablink

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 REDT3

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

Comments / Special Instructions

D.I. slurry voc vials frozen storage
Date: 3/13/13 Time: 22:30 Initials: JJJ

Rec'd at Exton Service Center

~~Field Kits Received~~

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	16:30 3-13-13	1	2	3/13/13	2
Relinquished by Sampler: 3	Date Time:	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. 2.4°C

2A

SZB

5.1 5

JB31265: Chain of Custody
Page 1 of 3

SAMPLE #			
1	6788	7980	7951
2	6794	7944	7945
3	8692	9675	9674
4	6805	7933	7932
5	6807	7928	7929
6	6775	7915	7914
7	8693	7940	7941
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
50			

JB31265: Chain of Custody

Page 2 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB31265 **Client:** **Project:**

Date / Time Received: 3/13/2013 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.4/2.4); 0

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

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

Quality Control Preservation	Y	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	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

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

Sample Integrity - Instructions	Y	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

JB31265: Chain of Custody
Page 3 of 3

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB31265

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

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB31265-1 Collected: 13-MAR-13 09:00 By: ED Received: 13-MAR-13 By: SC AOI7-BH-13-48_1.5-2_031313						
JB31265-1	SM2540 G-97	21-MAR-13 12:30	PD			%SOL
JB31265-1	SW846 6010C	24-MAR-13 02:49	ND	22-MAR-13	RP	PB
JB31265-1	SW846 8260B	26-MAR-13 03:22	OTR			V8260SL
JB31265-1	SW846 8270D	28-MAR-13 00:26	KH	26-MAR-13	TM	B8270SL
JB31265-2 Collected: 13-MAR-13 09:40 By: ED Received: 13-MAR-13 By: SC AOI7-BH-13-48_2.5-3_031313						
JB31265-2	SM2540 G-97	21-MAR-13 12:30	PD			%SOL
JB31265-2	SW846 6010C	24-MAR-13 02:54	ND	22-MAR-13	RP	PB
JB31265-2	SW846 8260B	26-MAR-13 02:52	OTR			V8260SL
JB31265-2	SW846 8270D	28-MAR-13 03:54	AD	26-MAR-13	TM	B8270SL
JB31265-3 Collected: 13-MAR-13 12:30 By: ED Received: 13-MAR-13 By: SC AOI7-BH-13-45_1.5-2_031313						
JB31265-3	SM2540 G-97	21-MAR-13 12:30	PD			%SOL
JB31265-3	SW846 6010C	24-MAR-13 03:00	ND	22-MAR-13	RP	PB
JB31265-3	SW846 8260B	26-MAR-13 03:53	OTR			V8260SL
JB31265-3	SW846 8270D	27-MAR-13 15:30	ALS	26-MAR-13	TM	B8270SL
JB31265-4 Collected: 13-MAR-13 12:45 By: ED Received: 13-MAR-13 By: SC AOI7-BH-13-45_2-2.5_031313						
JB31265-4	SM2540 G-97	21-MAR-13 12:30	PD			%SOL
JB31265-4	SW846 6010C	24-MAR-13 03:06	ND	22-MAR-13	RP	PB
JB31265-4	SW846 8260B	26-MAR-13 04:23	OTR			V8260SL
JB31265-4	SW846 8270D	27-MAR-13 15:52	ALS	26-MAR-13	TM	B8270SL
JB31265-5 Collected: 13-MAR-13 14:15 By: ED Received: 13-MAR-13 By: SC AOI7-BH-13-47_1.5-2_031313						
JB31265-5	SM2540 G-97	21-MAR-13 12:30	PD			%SOL
JB31265-5	SW846 6010C	24-MAR-13 03:23	ND	22-MAR-13	RP	PB
JB31265-5	SW846 8260B	26-MAR-13 20:31	OTR			V8260SL
JB31265-5	SW846 8270D	27-MAR-13 14:45	ALS	26-MAR-13	TM	B8270SL

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB31265

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

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB31265-6	Collected: 13-MAR-13 14:30 By: ED		Received: 13-MAR-13 By: SC			
AOI7-BH-13-47_2.5-3_031313						
JB31265-6	SM2540 G-97	21-MAR-13 12:30	PD			%SOL
JB31265-6	SW846 6010C	24-MAR-13 03:29	ND	22-MAR-13	RP	PB
JB31265-6	SW846 8260B	26-MAR-13 05:24	OTR			V8260SL
JB31265-6	SW846 8270D	27-MAR-13 16:15	ALS	26-MAR-13	TM	B8270SL
JB31265-7	Collected: 13-MAR-13 16:00 By: ED		Received: 13-MAR-13 By: SC			
AOI7-BH-13-46_1.5-2_031313						
JB31265-7	SM2540 G-97	21-MAR-13 14:20	PD			%SOL
JB31265-7	SW846 6010C	24-MAR-13 03:35	ND	22-MAR-13	RP	PB
JB31265-7	SW846 8260B	25-MAR-13 18:25	TDN			V8260SL
JB31265-7	SW846 8270D	27-MAR-13 15:07	ALS	26-MAR-13	TM	B8270SL

Accutest Internal Chain of Custody

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/13/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB31265-1.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-1.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-1.1	Secured Storage	Tin Marlar	03/26/13 07:38	Retrieve from Storage
JB31265-1.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-1.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-1.1
JB31265-1.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-1.1
JB31265-1.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage
JB31265-1.1.2	Tin Marlar	Organics Prep	03/26/13 07:43	Extract from JB31265-1.1
JB31265-1.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-1.1
JB31265-1.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-1.1.2	Extract Storage	Katelynn Henrich	03/27/13 15:58	Retrieve from Storage
JB31265-1.1.2	Katelynn Henrich	GCMSZ	03/27/13 15:58	Load on Instrument
JB31265-1.1.2	GCMSZ	Katelynn Henrich	03/28/13 11:05	Unload from Instrument
JB31265-1.1.2	Katelynn Henrich	Extract Freezer	03/28/13 11:05	Return to Storage
JB31265-1.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-1.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-1.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-1.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage
JB31265-1.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-1.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-1.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-2.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-2.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-2.1	Secured Storage	Tin Marlar	03/26/13 07:38	Retrieve from Storage
JB31265-2.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-2.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-2.1
JB31265-2.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-2.1
JB31265-2.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage
JB31265-2.1.2	Tin Marlar	Organics Prep	03/26/13 07:43	Extract from JB31265-2.1
JB31265-2.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-2.1
JB31265-2.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-2.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-2.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-2.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-2.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/13/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB31265-2.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-2.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-2.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-3.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-3.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-3.1	Secured Storage	Tin Marlar	03/26/13 07:38	Retrieve from Storage
JB31265-3.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-3.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-3.1
JB31265-3.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-3.1
JB31265-3.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage
JB31265-3.1.2	Tin Marlar	Organics Prep	03/26/13 07:43	Extract from JB31265-3.1
JB31265-3.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-3.1
JB31265-3.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-3.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-3.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-3.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-3.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage
JB31265-3.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-3.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-3.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-4.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-4.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-4.1	Secured Storage	Tin Marlar	03/26/13 07:38	Retrieve from Storage
JB31265-4.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-4.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-4.1
JB31265-4.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-4.1
JB31265-4.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage
JB31265-4.1.2	Tin Marlar	Organics Prep	03/26/13 07:43	Extract from JB31265-4.1
JB31265-4.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-4.1
JB31265-4.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-4.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-4.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-4.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-4.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/13/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB31265-4.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-4.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-4.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-5.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-5.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-5.1	Secured Storage	Tin Marlar	03/26/13 07:38	Retrieve from Storage
JB31265-5.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-5.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-5.1
JB31265-5.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-5.1
JB31265-5.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage
JB31265-5.1.2	Tin Marlar	Organics Prep	03/26/13 07:43	Extract from JB31265-5.1
JB31265-5.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-5.1
JB31265-5.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-5.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-5.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-5.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-5.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage
JB31265-5.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-5.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-5.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-5.3	Secured Storage	Oksana Treglazova	03/26/13 16:05	Retrieve from Storage
JB31265-5.3	Oksana Treglazova	Secured Storage	03/26/13 16:05	Return to Storage
JB31265-6.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-6.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-6.1	Secured Storage	Dave Hunkele	03/26/13 08:24	Retrieve from Storage
JB31265-6.1	Dave Hunkele	Secured Staging Area	03/26/13 08:24	Return to Storage
JB31265-6.1	Secured Storage	Dave Hunkele	03/26/13 08:25	Retrieve from Storage
Bottle was returned to secure storage, but inadvertently not scanned.				
JB31265-6.1	Dave Hunkele	Secured Storage	03/26/13 08:26	Return to Storage
JB31265-6.1	Secured Storage	Dave Hunkele	03/26/13 08:26	Retrieve from Storage
JB31265-6.1	Dave Hunkele	Secured Staging Area	03/26/13 08:26	Return to Storage
JB31265-6.1	Secured Staging Area	Tin Marlar	03/26/13 08:29	Retrieve from Storage
JB31265-6.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-6.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-6.1
JB31265-6.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-6.1
JB31265-6.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/13/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB31265-6.1.2	Tin Marlar	Organics Prep	03/26/13 08:30	Extract from JB31265-6.1
JB31265-6.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-6.1
JB31265-6.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-6.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-6.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-6.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-6.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage
JB31265-6.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-6.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-6.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-7.1	Secured Storage	Nida Saleem	03/22/13 08:41	Retrieve from Storage
JB31265-7.1	Nida Saleem	Secured Storage	03/22/13 11:55	Return to Storage
JB31265-7.1	Secured Storage	Tin Marlar	03/26/13 07:38	Retrieve from Storage
JB31265-7.1	Tin Marlar	Secured Storage	03/26/13 15:13	Return to Storage
JB31265-7.1.1	Nida Saleem	Metals Digestion	03/22/13 11:34	Digestate from JB31265-7.1
JB31265-7.1.1	Metals Digestion	Rinku Patel	03/22/13 11:34	Digestate from JB31265-7.1
JB31265-7.1.1	Rinku Patel	Metals Digestate Storage	03/22/13 11:34	Return to Storage
JB31265-7.1.2	Tin Marlar	Organics Prep	03/26/13 07:43	Extract from JB31265-7.1
JB31265-7.1.2	Organics Prep	Tin Marlar	03/26/13 13:10	Extract from JB31265-7.1
JB31265-7.1.2	Tin Marlar	Extract Storage	03/26/13 13:10	Return to Storage
JB31265-7.2	Secured Storage	Brian Racin	03/21/13 12:00	Retrieve from Storage
JB31265-7.2	Brian Racin	Pratik Doshi	03/21/13 12:02	Custody Transfer
JB31265-7.2	Pratik Doshi	Secured Storage	03/21/13 14:47	Return to Storage
JB31265-7.2	Secured Storage	Thien Nguyen	03/25/13 14:43	Retrieve from Storage
JB31265-7.2	Thien Nguyen	Secured Storage	03/25/13 15:09	Return to Storage
JB31265-7.2	Secured Storage	Oksana Treglazova	03/26/13 10:45	Retrieve from Storage
JB31265-7.2	Oksana Treglazova	Secured Storage	03/26/13 16:05	Return to Storage
JB31265-7.3	Secured Storage	Oksana Treglazova	03/25/13 15:31	Retrieve from Storage
JB31265-7.3	Oksana Treglazova	GCMSA	03/25/13 15:31	Load on Instrument
JB31265-7.3	GCMSA	Oksana Treglazova	03/25/13 15:32	Unload from Instrument
JB31265-7.3	Oksana Treglazova	Secured Storage	03/25/13 15:32	Return to Storage
JB31265-7.4	Secured Storage	Oksana Treglazova	03/26/13 15:07	Retrieve from Storage
JB31265-7.4	Oksana Treglazova		03/26/13 15:14	Depleted
JB31265-7.5	Secured Storage	Oksana Treglazova	03/26/13 15:07	Retrieve from Storage
JB31265-7.5	Oksana Treglazova		03/26/13 15:14	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: JB31265
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
VV5767-MB1	V133440.D	1	03/25/13	TDN	n/a	n/a	VV5767

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

JB31265-7

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	
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	98%	70-122%
2037-26-5	Toluene-D8	106%	81-127%
460-00-4	4-Bromofluorobenzene	85%	66-132%

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

Method Blank Summary

Job Number: JB31265
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
VE8851-MB	E201315.D	1	03/26/13	OTR	n/a	n/a	VE8851

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

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-6

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	
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	84%	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	93%	66-132%

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

Method Blank Summary

Job Number: JB31265
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
VE8852-MB	E201334.D	1	03/26/13	OTR	n/a	n/a	VE8852

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

JB31265-5

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	
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	85%	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	93%	66-132%

Blank Spike Summary

Job Number: JB31265
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
VV5767-BS	V133441.D	1	03/25/13	TDN	n/a	n/a	VV5767

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

JB31265-7

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.1	100	76-117
106-93-4	1,2-Dibromoethane	50	42.8	86	77-122
107-06-2	1,2-Dichloroethane	50	49.6	99	68-134
100-41-4	Ethylbenzene	50	49.6	99	74-119
98-82-8	Isopropylbenzene	50	49.1	98	71-119
1634-04-4	Methyl Tert Butyl Ether	100	93.2	93	72-124
108-88-3	Toluene	50	48.0	96	77-121
95-63-6	1,2,4-Trimethylbenzene	50	48.8	98	72-118
108-67-8	1,3,5-Trimethylbenzene	50	50.4	101	69-118
1330-20-7	Xylene (total)	150	148	99	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	70-122%
2037-26-5	Toluene-D8	104%	81-127%
460-00-4	4-Bromofluorobenzene	92%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB31265
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
VE8851-BS	E201316.D	1	03/26/13	OTR	n/a	n/a	VE8851

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

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-6

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2170	87	76-117
106-93-4	1,2-Dibromoethane	2500	2400	96	77-122
107-06-2	1,2-Dichloroethane	2500	2230	89	68-134
100-41-4	Ethylbenzene	2500	2180	87	74-119
98-82-8	Isopropylbenzene	2500	2210	88	71-119
1634-04-4	Methyl Tert Butyl Ether	5000	4240	85	72-124
108-88-3	Toluene	2500	2340	94	77-121
95-63-6	1,2,4-Trimethylbenzene	2500	2180	87	72-118
108-67-8	1,3,5-Trimethylbenzene	2500	2110	84	69-118
1330-20-7	Xylene (total)	7500	6820	91	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	89%	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	91%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB31265
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
VE8852-BS	E201335.D	1	03/26/13	OTR	n/a	n/a	VE8852

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

JB31265-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2240	90	76-117
106-93-4	1,2-Dibromoethane	2500	2390	96	77-122
107-06-2	1,2-Dichloroethane	2500	2240	90	68-134
100-41-4	Ethylbenzene	2500	2230	89	74-119
98-82-8	Isopropylbenzene	2500	2300	92	71-119
1634-04-4	Methyl Tert Butyl Ether	5000	4140	83	72-124
108-88-3	Toluene	2500	2400	96	77-121
95-63-6	1,2,4-Trimethylbenzene	2500	2270	91	72-118
108-67-8	1,3,5-Trimethylbenzene	2500	2210	88	69-118
1330-20-7	Xylene (total)	7500	6980	93	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	88%	70-130%
17060-07-0	1,2-Dichloroethane-D4	87%	70-122%
2037-26-5	Toluene-D8	94%	81-127%
460-00-4	4-Bromofluorobenzene	90%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB31265
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
JB31814-14MS	V133453.D	1	03/25/13	TDN	n/a	n/a	VV5767
JB31814-14MSD	V133454.D	1	03/25/13	TDN	n/a	n/a	VV5767
JB31814-14	V133445.D	1	03/25/13	TDN	n/a	n/a	VV5767

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

JB31265-7

CAS No.	Compound	JB31814-14 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		48.2	48.5	101	46.8	97	4	44-130/21
106-93-4	1,2-Dibromoethane	ND		48.2	35.4	73	34.0	71	4	41-139/21
107-06-2	1,2-Dichloroethane	ND		48.2	41.2	85	40.5	84	2	43-139/19
100-41-4	Ethylbenzene	ND		48.2	50.1	104	48.0	100	4	29-137/25
98-82-8	Isopropylbenzene	ND		48.2	51.1	106	47.7	99	7	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		48.2	38.1	79	36.5	76	4	51-128/20
108-88-3	Toluene	ND		48.2	45.9	95	44.7	93	3	40-135/22
95-63-6	1,2,4-Trimethylbenzene	ND		48.2	49.3	102	45.3	94	8	17-142/28
108-67-8	1,3,5-Trimethylbenzene	ND		48.2	52.1	108	48.4	100	7	20-140/27
1330-20-7	Xylene (total)	ND		145	148	102	141	97	5	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB31814-14	Limits
1868-53-7	Dibromofluoromethane	90%	91%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	79%	79%	91%	70-122%
2037-26-5	Toluene-D8	106%	105%	106%	81-127%
460-00-4	4-Bromofluorobenzene	94%	93%	84%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB31265
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
JB31265-2MS	E201317.D	1	03/26/13	OTR	n/a	n/a	VE8851
JB31265-2MSD	E201318.D	1	03/26/13	OTR	n/a	n/a	VE8851
JB31265-2 [a]	E201320.D	1	03/26/13	OTR	n/a	n/a	VE8851

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

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-6

CAS No.	Compound	JB31265-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	845		5560	5910	91	5860	90	1	44-130/21
106-93-4	1,2-Dibromoethane	ND		5560	5010	90	5120	92	2	41-139/21
107-06-2	1,2-Dichloroethane	ND		5560	5200	94	4980	90	4	43-139/19
100-41-4	Ethylbenzene	401		5560	5920	99	5920	99	0	29-137/25
98-82-8	Isopropylbenzene	1960		5560	6460	81	6450	81	0	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		5560	4950	89	5020	90	1	51-128/20
108-88-3	Toluene	1080		5560	6560	99	6470	97	1	40-135/22
95-63-6	1,2,4-Trimethylbenzene	191		5560	5040	87	5040	87	0	17-142/28
108-67-8	1,3,5-Trimethylbenzene	57.0		5560	4640	82	4580	81	1	20-140/27
1330-20-7	Xylene (total)	1580		16700	17800	97	17900	98	1	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB31265-2	Limits
1868-53-7	Dibromofluoromethane	88%	89%	85%	70-130%
17060-07-0	1,2-Dichloroethane-D4	84%	83%	80%	70-122%
2037-26-5	Toluene-D8	108%	108%	104%	81-127%
460-00-4	4-Bromofluorobenzene	103%	103%	118%	66-132%

(a) Dilution required due to matrix interference.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB31265
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
JB32254-4MS	E201347.D	1	03/26/13	OTR	n/a	n/a	VE8852
JB32254-4MSD	E201348.D	1	03/26/13	OTR	n/a	n/a	VE8852
JB32254-4	E201349.D	1	03/26/13	OTR	n/a	n/a	VE8852

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

JB31265-5

CAS No.	Compound	JB32254-4 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		2910	2250	77	2300	79	2	44-130/21
106-93-4	1,2-Dibromoethane	ND		2910	2800	96	2850	98	2	41-139/21
107-06-2	1,2-Dichloroethane	ND		2910	2530	87	2550	88	1	43-139/19
100-41-4	Ethylbenzene	297		2910	2420	73	2490	75	3	29-137/25
98-82-8	Isopropylbenzene	136	J	2910	2190	71	2220	72	1	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		2910	2480	85	2500	86	1	51-128/20
108-88-3	Toluene	66.4		2910	2470	83	2530	85	2	40-135/22
95-63-6	1,2,4-Trimethylbenzene	ND		2910	2350	81	2380	82	1	17-142/28
108-67-8	1,3,5-Trimethylbenzene	ND		2910	2180	75	2220	76	2	20-140/27
1330-20-7	Xylene (total)	278		8740	7150	79	7310	80	2	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB32254-4	Limits
1868-53-7	Dibromofluoromethane	87%	87%	83%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	84%	84%	70-122%
2037-26-5	Toluene-D8	94%	94%	94%	81-127%
460-00-4	4-Bromofluorobenzene	88%	87%	87%	66-132%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VE8801-BFB
Lab File ID: E200194.D
Instrument ID: GCMSE
Injection Date: 02/22/13
Injection Time: 08:23

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6576	16.7		Pass
75	30.0 - 60.0% of mass 95	17805	45.3		Pass
95	Base peak, 100% relative abundance	39293	100.0		Pass
96	5.0 - 9.0% of mass 95	2733	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	38072	96.9		Pass
175	5.0 - 9.0% of mass 174	2908	7.40	(7.64) [a]	Pass
176	95.0 - 101.0% of mass 174	36725	93.5	(96.5) [a]	Pass
177	5.0 - 9.0% of mass 176	2537	6.46	(6.91) [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
VE8801-IC8801	E200198.D	02/22/13	10:38	02:15	Initial cal 5
VE8801-IC8801	E200199.D	02/22/13	12:19	03:56	Initial cal 10
VE8801-IC8801	E200200.D	02/22/13	12:49	04:26	Initial cal 20
VE8801-ICC8801	E200201.D	02/22/13	13:19	04:56	Initial cal 50
VE8801-IC8801	E200202.D	02/22/13	13:50	05:27	Initial cal 100
VE8801-IC8801	E200203.D	02/22/13	14:20	05:57	Initial cal 200
VE8801-IC8801	E200206.D	02/22/13	15:50	07:27	Initial cal 1
VE8801-IC8801	E200207.D	02/22/13	16:19	07:56	Initial cal 0.5
VE8801-IC8801	E200208.D	02/22/13	16:49	08:26	Initial cal 2
VE8801-ICV8801	E200209.D	02/22/13	17:19	08:56	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VE8851-BFB
Lab File ID: E201312.D
Instrument ID: GCMSE
Injection Date: 03/25/13
Injection Time: 22:50

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8575	15.5		Pass
75	30.0 - 60.0% of mass 95	24402	44.1		Pass
95	Base peak, 100% relative abundance	55368	100.0		Pass
96	5.0 - 9.0% of mass 95	3674	6.64		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	54208	97.9		Pass
175	5.0 - 9.0% of mass 174	4392	7.93	(8.10) [a]	Pass
176	95.0 - 101.0% of mass 174	54728	98.8	(101.0) [a]	Pass
177	5.0 - 9.0% of mass 176	3618	6.53	(6.61) [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
VE8851-CC8801	E201313.D	03/25/13	23:21	00:31	Continuing cal 50
VE8851-MB	E201315.D	03/26/13	00:21	01:31	Method Blank
VE8851-BS	E201316.D	03/26/13	00:51	02:01	Blank Spike
JB31265-2MS	E201317.D	03/26/13	01:21	02:31	Matrix Spike
JB31265-2MSD	E201318.D	03/26/13	01:51	03:01	Matrix Spike Duplicate
JB31265-2	E201320.D	03/26/13	02:52	04:02	AOI7-BH-13-48_2.5-3_031313
JB31265-1	E201321.D	03/26/13	03:22	04:32	AOI7-BH-13-48_1.5-2_031313
JB31265-3	E201322.D	03/26/13	03:53	05:03	AOI7-BH-13-45_1.5-2_031313
JB31265-4	E201323.D	03/26/13	04:23	05:33	AOI7-BH-13-45_2-2.5_031313
JB31265-6	E201325.D	03/26/13	05:24	06:34	AOI7-BH-13-47_2.5-3_031313
ZZZZZZ	E201329.D	03/26/13	07:25	08:35	(unrelated sample)
ZZZZZZ	E201330.D	03/26/13	07:55	09:05	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VE8852-BFB
Lab File ID: E201331.D
Instrument ID: GCMSE
Injection Date: 03/26/13
Injection Time: 09:35

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8702	15.6		Pass
75	30.0 - 60.0% of mass 95	24677	44.1		Pass
95	Base peak, 100% relative abundance	55912	100.0		Pass
96	5.0 - 9.0% of mass 95	3618	6.47		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	56370	100.8		Pass
175	5.0 - 9.0% of mass 174	4510	8.07	(8.00) [a]	Pass
176	95.0 - 101.0% of mass 174	55408	99.1	(98.3) [a]	Pass
177	5.0 - 9.0% of mass 176	3802	6.80	(6.86) [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
VE8852-CC8801	E201332.D	03/26/13	10:17	00:42	Continuing cal 20
VE8852-MB	E201334.D	03/26/13	11:24	01:49	Method Blank
VE8852-BS	E201335.D	03/26/13	11:57	02:22	Blank Spike
ZZZZZZ	E201336.D	03/26/13	12:37	03:02	(unrelated sample)
ZZZZZZ	E201337.D	03/26/13	13:57	04:22	(unrelated sample)
ZZZZZZ	E201338.D	03/26/13	14:28	04:53	(unrelated sample)
ZZZZZZ	E201339.D	03/26/13	14:58	05:23	(unrelated sample)
ZZZZZZ	E201340.D	03/26/13	15:29	05:54	(unrelated sample)
ZZZZZZ	E201341.D	03/26/13	15:59	06:24	(unrelated sample)
ZZZZZZ	E201342.D	03/26/13	16:29	06:54	(unrelated sample)
ZZZZZZ	E201343.D	03/26/13	17:00	07:25	(unrelated sample)
ZZZZZZ	E201344.D	03/26/13	17:30	07:55	(unrelated sample)
ZZZZZZ	E201345.D	03/26/13	18:00	08:25	(unrelated sample)
ZZZZZZ	E201346.D	03/26/13	18:31	08:56	(unrelated sample)
JB32254-4MS	E201347.D	03/26/13	19:01	09:26	Matrix Spike
JB32254-4MSD	E201348.D	03/26/13	19:31	09:56	Matrix Spike Duplicate
JB32254-4	E201349.D	03/26/13	20:01	10:26	(used for QC only; not part of job JB31265)
JB31265-5	E201350.D	03/26/13	20:31	10:56	AOI7-BH-13-47_1.5-2_031313
ZZZZZZ	E201351.D	03/26/13	21:01	11:26	(unrelated sample)
ZZZZZZ	E201352.D	03/26/13	21:31	11:56	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5737-BFB
Lab File ID: V132756.D
Instrument ID: GCMSV
Injection Date: 02/27/13
Injection Time: 16:11

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10152	19.0		Pass
75	30.0 - 60.0% of mass 95	26642	49.8		Pass
95	Base peak, 100% relative abundance	53474	100.0		Pass
96	5.0 - 9.0% of mass 95	3530	6.60		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	44021	82.3		Pass
175	5.0 - 9.0% of mass 174	3904	7.30	(8.87) [a]	Pass
176	95.0 - 101.0% of mass 174	43152	80.7	(98.0) [a]	Pass
177	5.0 - 9.0% of mass 176	3104	5.80	(7.19) [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
VV5737-IC5737	V132757.D	02/27/13	19:24	03:13	Initial cal 0.5
VV5737-IC5737	V132758.D	02/27/13	19:54	03:43	Initial cal 1
VV5737-IC5737	V132759.D	02/27/13	20:25	04:14	Initial cal 2
VV5737-IC5737	V132760.D	02/27/13	20:56	04:45	Initial cal 5
VV5737-IC5737	V132761.D	02/27/13	21:27	05:16	Initial cal 10
VV5737-IC5737	V132762.D	02/27/13	21:58	05:47	Initial cal 20
VV5737-ICC5737	V132763.D	02/27/13	22:28	06:17	Initial cal 50
VV5737-IC5737	V132764.D	02/27/13	22:59	06:48	Initial cal 75
VV5737-IC5737	V132765.D	02/27/13	23:30	07:19	Initial cal 100
VV5737-IC5737	V132766.D	02/28/13	00:02	07:51	Initial cal 200

Instrument Performance Check (BFB)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5767-BFB
Lab File ID: V133435.D
Instrument ID: GCMSV
Injection Date: 03/25/13
Injection Time: 09:04

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8065	20.7		Pass
75	30.0 - 60.0% of mass 95	19270	49.4		Pass
95	Base peak, 100% relative abundance	39026	100.0		Pass
96	5.0 - 9.0% of mass 95	2432	6.23		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	36232	92.8		Pass
175	5.0 - 9.0% of mass 174	2204	5.65	(6.08) [a]	Pass
176	95.0 - 101.0% of mass 174	35133	90.0	(97.0) [a]	Pass
177	5.0 - 9.0% of mass 176	2416	6.19	(6.88) [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
VV5767-CC5737	V133436.D	03/25/13	09:42	00:38	Continuing cal 20
VV5766-MB2	V133438.D	03/25/13	11:28	02:24	Method Blank
JB31733-7DUP	V133439.D	03/25/13	12:31	03:27	Duplicate
VV5767-MB1	V133440.D	03/25/13	13:02	03:58	Method Blank
VV5767-BS	V133441.D	03/25/13	14:17	05:13	Blank Spike
ZZZZZZ	V133443.D	03/25/13	15:19	06:15	(unrelated sample)
ZZZZZZ	V133444.D	03/25/13	15:50	06:46	(unrelated sample)
JB31814-14	V133445.D	03/25/13	16:21	07:17	(used for QC only; not part of job JB31265)
ZZZZZZ	V133446.D	03/25/13	16:52	07:48	(unrelated sample)
ZZZZZZ	V133447.D	03/25/13	17:23	08:19	(unrelated sample)
ZZZZZZ	V133448.D	03/25/13	17:54	08:50	(unrelated sample)
JB31265-7	V133449.D	03/25/13	18:25	09:21	AOI7-BH-13-46_1.5-2_031313
ZZZZZZ	V133450.D	03/25/13	18:55	09:51	(unrelated sample)
ZZZZZZ	V133451.D	03/25/13	19:26	10:22	(unrelated sample)
ZZZZZZ	V133452.D	03/25/13	19:57	10:53	(unrelated sample)
JB31814-14MS	V133453.D	03/25/13	20:29	11:25	Matrix Spike
JB31814-14MSD	V133454.D	03/25/13	21:00	11:56	Matrix Spike Duplicate

Volatile Internal Standard Area Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VE8851-CC8801	**Injection Date:**	03/25/13
Lab File ID:	E201313.D	**Injection Time:**	23:21
Instrument ID:	GCMSE	**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	85314	7.69	181728	9.90	240781	10.83	221015	14.15	131648	16.72
Upper Limit [a]	170628	8.19	363456	10.40	481562	11.33	442030	14.65	263296	17.22
Lower Limit [b]	42657	7.19	90864	9.40	120391	10.33	110508	13.65	65824	16.22

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VE8851-MB	106255	7.70	191109	9.91	244507	10.82	225646	14.15	134009	16.72
VE8851-BS	90251	7.70	177652	9.90	234746	10.82	221209	14.15	129713	16.72
JB31265-2MS	82525	7.74	174834	9.90	228451	10.82	202726	14.15	128180	16.72
JB31265-2MSD	81720	7.71	185785	9.91	246456	10.82	215561	14.15	137138	16.72
JB31265-2 [c]	99202	7.71	197536	9.91	250023	10.82	214766	14.15	124939	16.72
JB31265-1 [c]	88271	7.73	194753	9.90	247183	10.82	209882	14.15	124499	16.72
JB31265-3 [c]	87981	7.69	195817	9.90	245643	10.82	221456	14.15	139619	16.72
JB31265-4 [c]	92171	7.68	198663	9.90	246170	10.82	218218	14.15	136814	16.72
JB31265-6 [c]	77165	7.67	200182	9.90	249021	10.82	215022	14.15	139233	16.72
ZZZZZZ	76257	7.68	189548	9.90	246410	10.83	205888	14.15	124976	16.72
ZZZZZZ	86453	7.69	195410	9.90	244188	10.82	215433	14.15	118117	16.72

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) Dilution required due to matrix interference.

Volatile Internal Standard Area Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VE8852-CC8801	**Injection Date:**	03/26/13
Lab File ID:	E201332.D	**Injection Time:**	10:17
Instrument ID:	GCMSE	**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	100300	7.68	187483	9.90	245858	10.82	224568	14.15	130759	16.72
Upper Limit [a]	200600	8.18	374966	10.40	491716	11.32	449136	14.65	261518	17.22
Lower Limit [b]	50150	7.18	93742	9.40	122929	10.32	112284	13.65	65380	16.22

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VE8852-MB	101425	7.72	194181	9.91	247287	10.83	230491	14.15	133473	16.72
VE8852-BS	90615	7.68	177850	9.91	235844	10.83	225726	14.15	129456	16.72
ZZZZZZ	78319	7.68	185177	9.91	235960	10.82	212645	14.15	131135	16.72
ZZZZZZ	106555	7.70	189301	9.91	232246	10.82	204799	14.15	127180	16.72
ZZZZZZ	82885	7.69	184593	9.90	216876	10.83	176970	14.15	117875	16.72
ZZZZZZ	108232	7.69	188445	9.90	238219	10.82	223437	14.15	134111	16.72
ZZZZZZ	101327	7.69	193527	9.91	244399	10.82	231292	14.15	141960	16.72
ZZZZZZ	73823	7.69	190475	9.90	246676	10.82	228054	14.15	137966	16.72
ZZZZZZ	77169	7.69	198397	9.91	250706	10.83	229833	14.15	139310	16.72
ZZZZZZ	87875	7.70	187438	9.90	240863	10.83	207888	14.15	122857	16.72
ZZZZZZ	108309	7.70	199917	9.91	249050	10.82	216755	14.15	131215	16.72
ZZZZZZ	112453	7.72	193569	9.90	238017	10.82	200889	14.15	126328	16.72
ZZZZZZ	81310	7.70	189382	9.90	240018	10.82	207860	14.15	132958	16.72
JB32254-4MS	69587	7.69	182298	9.90	242058	10.83	229782	14.15	135641	16.72
JB32254-4MSD	70598	7.68	176136	9.90	232611	10.82	219392	14.15	130315	16.72
JB32254-4	77370	7.68	194305	9.90	251626	10.83	233280	14.15	137161	16.72
JB31265-5 [c]	76200	7.68	187095	9.90	237559	10.82	217735	14.15	135634	16.72
ZZZZZZ	95988	7.68	190971	9.90	239908	10.83	211622	14.15	122955	16.72
ZZZZZZ	75255	7.68	175486	9.91	226005	10.82	191251	14.15	121975	16.72

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) Dilution required due to matrix interference.

Volatile Internal Standard Area Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5767-CC5737	**Injection Date:**	03/25/13
Lab File ID:	V133436.D	**Injection Time:**	09:42
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	41804	7.56	204468	9.77	273011	10.71	211540	14.12	105370	16.72
Upper Limit [a]	83608	8.06	408936	10.27	546022	11.21	423080	14.62	210740	17.22
Lower Limit [b]	20902	7.06	102234	9.27	136506	10.21	105770	13.62	52685	16.22

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5766-MB2	30487	7.56	207253	9.77	274650	10.71	207710	14.12	88305	16.72
JB31733-7DUP	36860	7.57	203713	9.77	274647	10.72	214719	14.12	96465	16.72
VV5767-MB1	34170	7.57	195576	9.78	261987	10.72	208925	14.12	90950	16.72
VV5767-BS	44497	7.56	208915	9.77	282348	10.71	220125	14.12	112675	16.72
ZZZZZZ	45273	7.56	223084	9.77	302963	10.71	234792	14.12	111981	16.72
ZZZZZZ	40476	7.57	214524	9.77	282798	10.72	222638	14.12	104916	16.72
JB31814-14	39969	7.56	227354	9.78	305738	10.72	239159	14.12	106901	16.72
ZZZZZZ	45434	7.57	236137	9.77	315474	10.71	244644	14.12	110220	16.72
ZZZZZZ	41642	7.56	224261	9.78	301351	10.72	236685	14.12	107292	16.72
ZZZZZZ	42130	7.56	234253	9.77	317651	10.72	242475	14.12	113832	16.72
JB31265-7	42350	7.56	233906	9.77	315283	10.72	242139	14.12	108893	16.72
ZZZZZZ	33855	7.56	232569	9.77	315259	10.72	229070	14.12	90118	16.72
ZZZZZZ	49741	7.56	231398	9.77	315195	10.72	258511	14.12	137169	16.72
ZZZZZZ	50238	7.56	273879	9.78	367543	10.72	287320	14.12	142540	16.72
JB31814-14MS	36478	7.56	245106	9.77	322759	10.71	235795	14.12	115667	16.72
JB31814-14MSD	37665	7.56	260094	9.77	339426	10.72	247026	14.12	119928	16.72
ZZZZZZ	45109	7.56	261175	9.77	344218	10.72	261439	14.12	114308	16.72
ZZZZZZ	50888	7.56	262096	9.78	352766	10.72	275788	14.12	131778	16.72
ZZZZZZ	45518	7.56	238611	9.78	318698	10.72	242453	14.12	102916	16.72
ZZZZZZ	44000	7.56	250116	9.77	334923	10.71	263457	14.12	118414	16.72
ZZZZZZ	42298	7.57	243947	9.77	328390	10.71	257020	14.12	113324	16.72
ZZZZZZ	40646	7.56	226323	9.77	312885	10.72	213700	14.12	73766	16.72

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: JB31265
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
JB31265-1	E201321.D	83.0	83.0	91.0	111.0
JB31265-2	E201320.D	85.0	80.0	104.0	118.0
JB31265-3	E201322.D	85.0	83.0	94.0	87.0
JB31265-4	E201323.D	85.0	82.0	94.0	86.0
JB31265-5	E201350.D	84.0	85.0	93.0	88.0
JB31265-6	E201325.D	82.0	80.0	98.0	90.0
JB31265-7	V133449.D	102.0	94.0	106.0	86.0
JB31265-2MS	E201317.D	88.0	84.0	108.0	103.0
JB31265-2MSD	E201318.D	89.0	83.0	108.0	103.0
JB31814-14MS	V133453.D	90.0	79.0	106.0	94.0
JB31814-14MSD	V133454.D	91.0	79.0	105.0	93.0
JB32254-4MS	E201347.D	87.0	88.0	94.0	88.0
JB32254-4MSD	E201348.D	87.0	84.0	94.0	87.0
VE8851-BS	E201316.D	89.0	85.0	95.0	91.0
VE8851-MB	E201315.D	84.0	85.0	95.0	93.0
VE8852-BS	E201335.D	88.0	87.0	94.0	90.0
VE8852-MB	E201334.D	85.0	85.0	95.0	93.0
VV5767-BS	V133441.D	101.0	96.0	104.0	92.0
VV5767-MB1	V133440.D	103.0	98.0	106.0	85.0

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: JB31265 **Sample:** VE8801-ICC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200201.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSE

```
Method       : C:\MSDCHEM\1\METHODS\ME8801.M (RTE Integrator)
Title        : SW846  8260B,ZB624 60m x 0.25mm x 1.4um
Last Update  : Fri Feb 22 18:41:55 2013
Response via : Initial Calibration

Calibration Files
5   =E200198.D   2   =E200208.D   20  =E200200.D   50  =E200201.D
100 =E200202.D   1   =E200206.D   200 =E200203.D   0.5 =E200207.D
10  =E200199.D       =

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

1)     Tert Butyl Alcohol-d9 ----------------ISTD---------------------
2)  1,4-dioxane
          0.060       0.094 0.103 0.102       0.099       0.072   0.088   20.14
           ----- Linear regression -----  Coefficient =  0.9994
             Response Ratio = -0.00503 + 0.10041 *A

3)  tertiary butyl alcohol
          1.046 1.174 1.252 1.237 1.204       1.100       1.210   1.175    6.42
4)  ethanol
                                                                  0.000#  -1.00

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
          0.463 0.430 0.589 0.607 0.583       0.561       0.618   0.550   13.38
12)  dichlorodifluoromethane
          0.589 0.626 0.753 0.802 0.764 0.784 0.748       0.796   0.733   10.98
13)  freon 114
                                                                  0.000#  -1.00
14)  freon 142b
                                                                  0.000#  -1.00
15)  chloromethane
          0.703 0.724 0.843 0.871 0.825 0.889 0.799       0.892   0.818    8.81
16)  vinyl chloride
          0.697 0.746 0.861 0.879 0.816 0.897 0.789       0.869   0.819    8.65
17)  1,3-Butadiene
                                                                  0.000#  -1.00
18)  acetaldehyde
                                                                  0.000    1.00
19)  bromomethane
          0.460 0.465 0.499 0.498 0.459 0.626 0.433 0.493 0.529   0.496   11.42
20)  chloroethane
          0.339 0.328 0.400 0.409 0.376 0.384 0.351       0.404   0.374    8.35
21)  vinyl bromide
                                                                  0.000#  -1.00
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VE8801-ICC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200201.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
22)  trichlorofluoromethane
           0.703 0.688 0.857 0.883 0.817 0.884 0.793       0.883   0.813    9.82
23)  pentane
           0.866 1.016 1.076 1.089 1.015 1.103 0.989       1.205   1.045    9.49
24)  ethyl ether
           0.315 0.282 0.346 0.328 0.326 0.309 0.315 0.280 0.343   0.316    7.38
25)  freon 141b
                                                                   0.000#  -1.00
26)  freon 123a
                                                                   0.000#  -1.00
27)  freon 123
                                                                   0.000#  -1.00
28)  2-chloropropane
           0.844 0.861 1.046 1.021 0.984 0.807 0.961       1.036   0.945    9.98
29)  acrolein
           0.121 0.114 0.130 0.128       0.116             0.127   0.123    5.44
30)  1,1-dichloroethene
           0.445 0.435 0.539 0.525 0.502 0.345 0.491       0.530   0.476   13.76
31)  isopropyl alcohol
                                                                   0.000#  -1.00
32)  acetone
           0.028       0.053 0.050 0.050       0.048       0.044   0.045   20.12
            ----- Linear regression -----  Coefficient =  0.9986
              Response Ratio = 0.00076 + 0.04797 *A

33)  allyl chloride
           0.778 0.976 0.953 0.957 0.920 0.873 0.882       0.967   0.913    7.33
34)  acetonitrile
           0.028       0.034 0.029 0.026       0.022       0.032   0.029   15.33
            ----- Linear regression -----  Coefficient =  0.9906
              Response Ratio = 0.04112 + 0.02186 *A

35)  iodomethane
           0.893 0.862 1.058 1.053 1.022 0.785 1.002       1.039   0.964   10.71
36)  iso-butyl alcohol
           0.003       0.005 0.005 0.004       0.004       0.005   0.004#  16.56
            ----- Linear regression -----  Coefficient =  0.9995
              Response Ratio = 0.00065 + 0.00447 *A

37)  carbon disulfide
           1.506 1.535 1.822 1.823 1.711 1.441 1.503 1.279 1.804   1.603   12.17
38)  methylene chloride
           0.534 0.662 0.601 0.585 0.573 0.807 0.558       0.604   0.615   13.96
39)  1-chloropropane
           0.832 0.918 0.989 0.953 0.915 0.837 0.875 0.989 0.982   0.921    6.77
40)  methyl acetate
           0.369 0.365 0.477 0.448 0.439 0.388 0.426       0.455   0.421   10.01
41)  methyl tert butyl ether
           1.508 1.458 1.687 1.626 1.590 1.441 1.538 1.168 1.708   1.525   10.71
42)  trans-1,2-dichloroethene
           0.481 0.454 0.547 0.536 0.513 0.405 0.493 0.341 0.545   0.480   14.53
43)  di-isopropyl ether
           1.607 1.718 1.848 1.803 1.727 1.780 1.636 1.939 1.821   1.764    5.91
44)  ethyl tert-butyl ether
           1.595 1.708 1.821 1.806 1.772 1.784 1.719 1.843 1.775   1.758    4.28
45)  2-butanone
           0.034       0.063 0.068 0.070       0.064       0.056   0.059   22.16
            ----- Linear regression -----  Coefficient =  0.9972
              Response Ratio = 0.00040 + 0.06503 *A
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VE8801-ICC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200201.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
46)  1,1-dichloroethane
           0.868 0.862 1.010 0.982 0.937 0.793 0.892 0.617 1.004   0.885   14.01
47)  chloroprene
           0.607 0.556 0.741 0.735 0.708 0.607 0.677       0.724   0.669   10.50
48)  acrylonitrile
           0.199 0.190 0.226 0.216 0.215 0.159 0.208       0.225   0.205   10.78
49)  vinyl acetate
           0.051       0.090 0.090 0.090       0.089       0.078   0.081   19.20
            ----- Linear regression -----  Coefficient =  0.9998
              Response Ratio = -0.00136 + 0.08979 *A

50)  ethyl acetate
           0.057       0.079 0.076 0.079       0.077       0.079   0.075   11.81
51)  2,2-dichloropropane
           0.667 0.702 0.765 0.758 0.707 0.626 0.675       0.793   0.712    7.94
52)  cis-1,2-dichloroethene
           0.545 0.519 0.605 0.579 0.562 0.470 0.540       0.602   0.553    8.11
53)  methyl acrylate
           0.436       0.517 0.497 0.505       0.490       0.513   0.493    6.02
54)  propionitrile
           0.076 0.072 0.088 0.082 0.082 0.060 0.079       0.086   0.078   11.27
55)  bromochloromethane
           0.261 0.239 0.303 0.300 0.298       0.293       0.300   0.285    8.67
56)  tetrahydrofuran
           0.189 0.179 0.211 0.200 0.201       0.195       0.212   0.198    5.81
57)  chloroform
           0.822 0.804 0.946 0.915 0.880 0.791 0.858 0.630 0.941   0.843   11.65
58)  t-butyl formate
           0.423 0.422 0.504 0.510 0.499 0.443 0.498       0.488   0.474    7.87
59)  Iso-octane
           1.216 1.276 1.518 1.541 1.446 1.412 1.407       1.485   1.412    8.09
60)  dibromofluoromethane (s)
           0.485 0.423 0.486 0.504 0.496 0.370 0.489       0.500   0.469   10.11
61)  1,2-dichloroethane-d4 (s)
           0.520 0.475 0.551 0.543 0.535 0.409 0.507       0.585   0.516   10.44
62)  freon 113
           0.311 0.273 0.408 0.413 0.387       0.375       0.386   0.365   14.42
63)  methacrylonitrile
           0.303 0.284 0.351 0.343 0.345       0.345       0.348   0.331    8.04
64)  1,1,1-trichloroethane
           0.673 0.681 0.831 0.819 0.791 0.605 0.774       0.815   0.749   11.24
65)  tert-amyl methyl ether
           1.521 1.627 1.707 1.666 1.617 1.835 1.555 1.850 1.671   1.672    6.72

66) I   1,4-difluorobenzene   ----------------ISTD---------------------
67)  Di-isobutylene
                                                                   0.000#  -1.00
68)  tert amyl alcohol
           0.014 0.012 0.017 0.016 0.014       0.013       0.016   0.015   12.94
69)  epichlorohydrin
           0.036 0.036 0.042 0.041 0.041       0.040       0.040   0.039    6.10
70)  n-butyl alcohol
           0.010 0.009 0.013 0.012 0.011 0.013 0.011       0.011   0.011   12.38
71)  tert-amyl ethyl ether
           0.540 0.493 0.624 0.604 0.575 0.580 0.568 0.381 0.582   0.550   13.35
72)  carbon tetrachloride
           0.439 0.435 0.534 0.519 0.493 0.400 0.480 0.337 0.519   0.462   14.05
73)  1,1-dichloropropene
           0.422 0.450 0.529 0.504 0.484 0.404 0.470       0.517   0.473    9.49
74)  hexane
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VE8801-ICC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200201.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
            0.320 0.301 0.400 0.402 0.384       0.371       0.398   0.368   11.12
 75)  benzene
            1.345 1.407 1.558 1.465 1.404 1.361 1.346 1.182 1.539   1.401    8.12
 76)  heptane
            0.186 0.169 0.216 0.220 0.209 0.182 0.204       0.226   0.202   10.08
 77)  isopropyl acetate
            0.676 0.698 0.755 0.719 0.713 0.804 0.687       0.745   0.725    5.77
 78)  1,2-dichloroethane
            0.452 0.434 0.500 0.469 0.460 0.379 0.441       0.486   0.453    8.19
 79)  ethyl acrylate
                                                                    0.000#  -1.00
 80)  trichloroethene
            0.322 0.326 0.402 0.387 0.373 0.283 0.361       0.386   0.355   11.51
 81)  2-nitropropane
                                                                    0.000#  -1.00
 82)  2-chloroethyl vinyl ether
            0.218 0.224 0.258 0.252 0.248 0.245 0.234       0.244   0.240    5.71
 83)  methylcyclohexane
            0.493 0.499 0.603 0.589 0.552 0.542 0.533 0.475 0.594   0.542    8.66
 84)  methyl methacrylate
            0.333 0.301 0.390 0.381 0.375 0.280 0.359       0.381   0.350   11.73
 85)  1,2-dichloropropane
            0.353 0.370 0.419 0.390 0.379 0.314 0.364       0.405   0.374    8.69
 86)  dibromomethane
            0.208 0.209 0.244 0.233 0.235 0.150 0.230       0.235   0.218   13.84
 87)  bromodichloromethane
            0.444 0.433 0.518 0.498 0.495 0.429 0.487       0.499   0.476    7.24
 88)  cis-1,3-dichloropropene
            0.557 0.538 0.665 0.654 0.645 0.493 0.626       0.638   0.602   10.59
 89)  toluene-d8 (s)
            1.285 1.236 1.398 1.363 1.310 1.118 1.240 1.081 1.363   1.266    8.66
 90)  4-methyl-2-pentanone
            0.153 0.152 0.169 0.163 0.162       0.156       0.164   0.160    3.97
 91)  toluene
            0.825 0.827 0.970 0.930 0.900 0.763 0.872 0.599 0.964   0.850   13.72
 92)  3-methyl-1-butanol
            0.017 0.018 0.020 0.019 0.019 0.025 0.018       0.019   0.019   13.17
 93)  trans-1,3-dichloropropene
            0.493 0.475 0.587 0.574 0.568 0.405 0.552       0.557   0.526   11.94
 94)  ethyl methacrylate
            0.427 0.392 0.516 0.516 0.510 0.364 0.490       0.493   0.464   13.07
 95)  1,1,2-trichloroethane
            0.270 0.251 0.303 0.292 0.293 0.219 0.284       0.295   0.276   10.24
 96)  2-hexanone
            0.118       0.146 0.149 0.151       0.151       0.138   0.142    9.11

 97) I   chlorobenzene-d5      ----------------ISTD---------------------
 98)  cyclohexanone
            0.014       0.015 0.015 0.014       0.013       0.014   0.014    6.52
 99)  tetrachloroethene
            0.436 0.491 0.508 0.478 0.456 0.393 0.427       0.508   0.462    9.03
100)  1,3-dichloropropane
            0.615 0.603 0.663 0.629 0.621 0.568 0.580 0.454 0.664   0.600   10.62
101)  butyl acetate
            0.235 0.233 0.280 0.269 0.271 0.262 0.257       0.266   0.259    6.50
102)  3,3-dimethyl-1-butanol
            0.042 0.045 0.049 0.045 0.042       0.039       0.044   0.044    7.15
103)  dibromochloromethane
            0.420 0.395 0.476 0.459 0.463 0.373 0.442       0.461   0.436    8.37
104)  1,2-dibromoethane
```

```
            0.381 0.380 0.421 0.396 0.400 0.311 0.382       0.417   0.386    8.89
105)  n-butyl ether
                                                                    0.000#  -1.00
106)  chlorobenzene
            1.071 1.089 1.204 1.154 1.124 1.041 1.067 0.810 1.205   1.085   10.95
107)  1,1,1,2-tetrachloroethane
            0.404 0.397 0.455 0.436 0.418 0.352 0.401 0.287 0.451   0.400   13.19
108)  ethylbenzene
            1.715 1.743 1.967 1.833 1.757 1.589 1.640 1.420 1.961   1.736   10.08
109)  m,p-xylene
            0.679 0.670 0.775 0.731 0.706 0.626 0.670 0.518 0.765   0.682   11.48
110)  o-xylene
            0.687 0.701 0.800 0.751 0.728 0.578 0.701 0.556 0.786   0.699   12.04
111)  butyl acrylate
                                                                    0.000#  -1.00
112)  styrene
            1.121 1.085 1.318 1.238 1.213 0.873 1.159       1.269   1.160   11.99
113)  bromoform
            0.317 0.300 0.366 0.352 0.358 0.258 0.355       0.346   0.332   11.17

114) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
115)  isopropylbenzene
            3.085 3.213 3.641 3.447 3.258 2.964 3.138 2.705 3.496   3.216    8.94
116)  4-bromofluorobenzene (s)
            0.970 0.866 1.016 0.993 0.964 0.796 0.942 0.724 0.978   0.917   10.88
117)  bromobenzene
            0.922 0.880 1.021 0.947 0.916 0.824 0.889 0.643 0.987   0.892   12.33
118)  1,1,2,2-tetrachloroethane
            0.925 0.896 0.986 0.938 0.904 0.850 0.887 0.791 0.957   0.904    6.44
119)  trans-1,4-dichloro-2-butene
            0.185       0.235 0.239 0.242       0.241       0.217   0.227    9.96
120)  1,2,3-trichloropropane
            0.241 0.201 0.263 0.245 0.237       0.238       0.249   0.239    7.91
121)  n-propylbenzene
            3.480 3.631 4.001 3.741 3.557 3.437 3.413 3.031 3.943   3.582    8.25
122)  p-ethyltoluene
            3.128 2.699 3.456 3.296 3.097 3.592 3.055 2.507 3.236   3.119   10.98
123)  2-chlorotoluene
            0.794 0.809 0.875 0.828 0.792 0.758 0.779 0.658 0.841   0.793    7.75
124)  4-chlorotoluene
            2.259 2.344 2.561 2.418 2.310 2.204 2.272 2.127 2.473   2.330    5.83
125)  1,3,5-trimethylbenzene
            2.754 2.773 2.945 2.757 2.608 2.861 2.497 2.527 2.946   2.741    6.08
126)  tert-butylbenzene
            2.262 2.265 2.640 2.542 2.405 2.319 2.333 1.826 2.561   2.350   10.20
127)  pentachloroethane
            0.585 0.550 0.657 0.623 0.599 0.536 0.593 0.491 0.624   0.584    8.76
128)  1,2,4-trimethylbenzene
            2.679 2.592 3.022 2.840 2.712 2.636 2.604 2.423 2.884   2.710    6.64
129)  sec-butylbenzene
            3.134 3.267 3.727 3.578 3.393 3.231 3.234 2.887 3.617   3.341    7.93
130)  1,3-dichlorobenzene
            1.578 1.584 1.799 1.728 1.680 1.584 1.621 1.477 1.739   1.643    6.13
131)  p-isopropyltoluene
            2.645 2.630 3.161 3.033 2.859 2.586 2.720 2.303 3.029   2.774    9.76
132)  1,4-dichlorobenzene
            1.613 1.647 1.816 1.770 1.722 1.545 1.658 1.452 1.768   1.666    7.06
133)  benzyl chloride
            1.350 1.449 1.627 1.743 1.715 1.893 1.662 1.903 1.499   1.649   11.54
134)  p-diethylbenzene
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VE8801-ICC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200201.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
            1.577 1.297 1.820 1.831 1.697 1.598 1.620 1.191 1.695   1.592   13.68
135)  1,2-dichlorobenzene
            1.579 1.470 1.774 1.714 1.643 1.481 1.579 1.342 1.697   1.587    8.66
136)  n-butylbenzene
            1.201 1.182 1.529 1.475 1.417 1.066 1.343       1.441   1.332   12.33
137)  1,2,4,5-tetramethylbenzene
            2.505 2.016 3.029 2.967 2.567 2.774 2.331       2.753   2.618   12.86
138)  1,2-dibromo-3-chloropropane
            0.135       0.161 0.160 0.146       0.140       0.149   0.148    7.14
139)  1,3,5-trichlorobenzene
            1.015 0.961 1.377 1.350 1.193 1.005 1.078       1.264   1.155   14.13
140)  1,2,4-trichlorobenzene
            0.721       1.032 1.056 0.966       0.895       0.925   0.933   12.90
141)  hexachlorobutadiene
            0.490 0.540 0.617 0.584 0.490 0.580 0.425 0.444 0.579   0.528   12.88
142)  naphthalene
            1.555       2.068 2.084 1.881       1.806       1.826   1.870   10.43
143)  MMT
                                                                    0.000#  -1.00
144)  1,2,3-trichlorobenzene
            0.598       0.833 0.829 0.742       0.690       0.753   0.741   11.96
145)  hexachloroethane
            0.484 0.477 0.615 0.596 0.572 0.430 0.545       0.561   0.535   12.07
146)  Cyclohexane
            0.961 1.008 1.195 1.104 1.038 0.915 1.008       1.186   1.052    9.64
147)  ethyleinimine
                                                                    0.000#  -1.00
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          ME8801.M          Mon Feb 25 09:59:04 2013
```

6.7.1

6

Initial Calibration Verification

Job Number: JB31265 **Sample:** VE8801-ICV8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200209.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e-core initial\E200209.D   Vial: 16
Acq On    : 22 Feb 2013   5:19 pm                       Operator: OksanaT
Sample    : icv8801-50                                  Inst    : MSE
Misc      : MS43512,VE8801,5,,100,5,1                   Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\ME8801.M (RTE Integrator)
Title        : SW846  8260B,ZB624 60m x 0.25mm x 1.4um
Last Update  : Fri Feb 22 18:41:55 2013
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		Tert Butyl Alcohol-d9	1.000	1.000	0.0	102	0.01	7.68
		----------	True	Calc.	% Drift	----------		
2	M	1,4-dioxane	1250.000	1187.360	5.0	93	0.00	11.54
		----------	AvgRF	CCRF	% Dev	----------		
3	M	tertiary butyl alcohol	1.175	1.191	-1.4	98	0.00	7.80
4		ethanol		----------NA----------				
5	I	pentafluorobenzene	1.000	1.000	0.0	104	0.00	9.91
6		freon 23		----------NA----------				
7		freon 115		----------NA----------				
8		freon 143a		----------NA----------				
9		freon 152a		----------NA----------				
10	M	chlorotrifluoroethene		----------NA----------				
11	M	chlorodifluoromethane	0.550	0.568	-3.3	97	0.00	4.32
12	M	dichlorodifluoromethane	0.733	0.739	-0.8	96	0.00	4.32
13		freon 114		----------NA----------				
14		freon 142b		----------NA----------				
15	M	chloromethane	0.818	0.915	-11.9	109	0.00	4.66
16	M	vinyl chloride	0.819	0.827	-1.0	98	0.00	4.96
17		1,3-Butadiene		----------NA----------				
18	M	acetaldehyde		----------NA----------				
19	M	bromomethane	0.496	0.500	-0.8	104	0.00	5.59
20	M	chloroethane	0.374	0.421	-12.6	107	0.00	5.77
21	M	vinyl bromide		----------NA----------				
22	M	trichlorofluoromethane	0.813	0.823	-1.2	97	0.00	6.28
23	M	pentane	1.045	1.046	-0.1	100	0.00	6.34
24	M	ethyl ether	0.316	0.323	-2.2	102	0.00	6.65
25		freon 141b		----------NA----------				
26		freon 123a		----------NA----------				
27		freon 123		----------NA----------				
28	m	2-chloropropane	0.945	0.994	-5.2	101	0.00	6.84
29	M	acrolein	0.123	0.124	-0.8	101	0.00	6.85
30	M	1,1-dichloroethene	0.476	0.494	-3.8	98	0.00	7.09
31	M	isopropyl alcohol		----------NA----------				
		----------	True	Calc.	% Drift	----------		
32	M	acetone	50.000	51.965	-3.9	105	0.00	7.07
		----------	AvgRF	CCRF	% Dev	----------		
33	M	allyl chloride	0.913	0.871	4.6	95	0.00	7.58

Initial Calibration Verification

Job Number: JB31265 **Sample:** VE8801-ICV8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200209.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

		----------	True	Calc.	% Drift	----------		
34	M	acetonitrile	500.000	549.696	-9.9	99	0.00	7.46
		----------	AvgRF	CCRF	% Dev	----------		
35	M	iodomethane	0.964	0.978	-1.5	96	0.00	7.35
		----------	True	Calc.	% Drift	----------		
36	M	iso-butyl alcohol	500.000	495.545	0.9	100	0.00	10.22
		----------	AvgRF	CCRF	% Dev	----------		
37	M	carbon disulfide	1.603	1.533	4.4	87	0.00	7.50
38	M	methylene chloride	0.615	0.558	9.3	99	0.00	7.75
39	m	1-chloropropane	0.921	0.922	-0.1	100	0.00	7.81
40	M	methyl acetate	0.421	0.388	7.8	90	0.00	7.54
41	M	methyl tert butyl ether	1.525	1.507	1.2	96	0.00	8.10
42	M	trans-1,2-dichloroethene	0.480	0.501	-4.4	97	0.00	8.14
43	M	di-isopropyl ether	1.764	1.708	3.2	98	0.00	8.69
44	M	ethyl tert-butyl ether	1.758	1.640	6.7	94	0.00	9.15
		----------	True	Calc.	% Drift	----------		
45	M	2-butanone	50.000	46.842	6.3	94	0.00	9.33
		----------	AvgRF	CCRF	% Dev	----------		
46	M	1,1-dichloroethane	0.885	0.968	-9.4	102	0.00	8.68
47	M	chloroprene	0.669	0.648	3.1	91	0.00	8.81
48	M	acrylonitrile	0.205	0.223	-8.8	107	0.00	8.01
		----------	True	Calc.	% Drift	----------		
49	M	vinyl acetate	50.000	51.515	-3.0	105	0.00	8.65
		----------	AvgRF	CCRF	% Dev	----------		
50	M	ethyl acetate	0.075	0.076	-1.3	104	0.00	9.37
51	M	2,2-dichloropropane	0.712	0.676	5.1	93	0.00	9.43
52	M	cis-1,2-dichloroethene	0.553	0.562	-1.6	101	0.00	9.41
53	m	methyl acrylate	0.493	0.493	0.0	103	0.00	9.45
54	M	propionitrile	0.078	0.083	-6.4	105	0.00	9.40
55	M	bromochloromethane	0.285	0.291	-2.1	101	0.00	9.71
56	M	tetrahydrofuran	0.198	0.206	-4.0	107	0.00	9.77
57	M	chloroform	0.843	0.884	-4.9	100	0.00	9.76
58	m	t-butyl formate	0.474	0.486	-2.5	99	0.00	9.80
59	M	Iso-octane	1.412	1.195	15.4	81	0.00	10.53
60	S	dibromofluoromethane (s)	0.469	0.490	-4.5	101	0.00	9.95
61	S	1,2-dichloroethane-d4 (s)	0.516	0.522	-1.2	100	0.00	10.36
62	M	freon 113	0.365	0.324	11.2	81	0.00	7.06
63	M	methacrylonitrile	0.331	0.340	-2.7	103	0.00	9.60
64	M	1,1,1-trichloroethane	0.749	0.785	-4.8	99	0.00	10.05
65	M	tert-amyl methyl ether	1.672	1.525	8.8	95	0.00	10.52
66	I	1,4-difluorobenzene	1.000	1.000	0.0	103	0.00	10.83
67	M	Di-isobutylene		----------NA----------				
68	M	tert amyl alcohol	0.015	0.016	-3.3	103	0.00	10.30
69	M	epichlorohydrin	0.039	0.039	0.0	98	0.00	12.06
70	M	n-butyl alcohol	0.011	0.012	-9.1	101	0.00	10.90
71	M	tert-amyl ethyl ether	0.550	0.568	-3.3	97	0.00	11.36
72	M	carbon tetrachloride	0.462	0.499	-8.0	99	0.00	10.27
73	M	1,1-dichloropropene	0.473	0.489	-3.4	100	0.00	10.22
74	M	hexane	0.368	0.298	19.0	77	0.00	8.48
75	M	benzene	1.401	1.433	-2.3	101	0.00	10.48
76	M	heptane	0.202	0.172	14.9	81	0.00	10.68

Initial Calibration Verification

Job Number: JB31265 **Sample:** VE8801-ICV8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200209.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	M	isopropyl acetate	0.725	0.689	5.0	99	0.00	10.36
78	M	1,2-dichloroethane	0.453	0.458	-1.1	101	0.00	10.45
79		ethyl acrylate		----------NA----------				
80	M	trichloroethene	0.355	0.377	-6.2	101	0.00	11.19
81	M	2-nitropropane		----------NA----------				
82	M	2-chloroethyl vinyl ether	0.240	0.243	-1.3	99	0.00	11.95
83	M	methylcyclohexane	0.542	0.470	13.3	82	0.00	11.45
84	M	methyl methacrylate	0.350	0.360	-2.9	97	0.00	11.43
85	M	1,2-dichloropropane	0.374	0.386	-3.2	102	0.00	11.43
86	M	dibromomethane	0.218	0.233	-6.9	103	0.00	11.59
87	M	bromodichloromethane	0.476	0.497	-4.4	103	0.00	11.72
88	M	cis-1,3-dichloropropene	0.602	0.605	-0.5	96	0.00	12.20
89	S	toluene-d8 (s)	1.266	1.325	-4.7	100	0.00	12.53
90	M	4-methyl-2-pentanone	0.160	0.164	-2.5	104	0.00	12.27
91	M	toluene	0.850	0.903	-6.2	100	0.00	12.60
92	M	3-methyl-1-butanol	0.019	0.018	5.3	100	0.00	12.28
93	M	trans-1,3-dichloropropene	0.526	0.551	-4.8	99	0.00	12.77
94	M	ethyl methacrylate	0.464	0.482	-3.9	96	0.00	12.78
95	M	1,1,2-trichloroethane	0.276	0.292	-5.8	104	0.00	13.00
96	M	2-hexanone	0.142	0.144	-1.4	100	0.00	13.18
97	I	chlorobenzene-d5	1.000	1.000	0.0	101	0.00	14.15
98	M	cyclohexanone	0.014	0.014	0.0	94	0.00	15.35
99	M	tetrachloroethene	0.462	0.466	-0.9	99	0.00	13.25
100	M	1,3-dichloropropane	0.600	0.627	-4.5	101	0.00	13.20
101	M	butyl acetate	0.259	0.266	-2.7	100	0.00	13.27
102	m	3,3-dimethyl-1-butanol	0.044	0.053	-20.5#	120	0.00	13.36
103	M	dibromochloromethane	0.436	0.448	-2.8	99	0.00	13.50
104	M	1,2-dibromoethane	0.386	0.397	-2.8	101	0.00	13.67
105	M	n-butyl ether		----------NA----------				
106	M	chlorobenzene	1.085	1.144	-5.4	100	0.00	14.19
107	M	1,1,1,2-tetrachloroethane	0.400	0.425	-6.2	98	0.00	14.25
108	M	ethylbenzene	1.736	1.830	-5.4	101	0.00	14.25
109	M	m,p-xylene	0.682	0.725	-6.3	100	0.00	14.37
110	M	o-xylene	0.699	0.748	-7.0	101	0.00	14.83
111	M	butyl acrylate		----------NA----------				
112	M	styrene	1.160	1.221	-5.3	100	0.00	14.83
113	M	bromoform	0.332	0.348	-4.8	100	0.00	15.11
114	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	104	0.00	16.72
115	M	isopropylbenzene	3.216	3.343	-3.9	101	0.00	15.20
116	S	4-bromofluorobenzene (s)	0.917	0.955	-4.1	100	0.00	15.42
117	M	bromobenzene	0.892	0.915	-2.6	100	0.00	15.65
118	M	1,1,2,2-tetrachloroethane	0.904	0.886	2.0	98	0.00	15.50
119	M	trans-1,4-dichloro-2-bute	0.227	0.214	5.7	93	0.00	15.54
120	M	1,2,3-trichloropropane	0.239	0.236	1.3	100	0.00	15.59
121	M	n-propylbenzene	3.582	3.715	-3.7	103	0.00	15.66
122	M	p-ethyltoluene		----------NA----------				
123	M	2-chlorotoluene	0.793	0.785	1.0	99	0.00	15.83
124	M	4-chlorotoluene	2.330	2.328	0.1	100	0.00	15.93
125	M	1,3,5-trimethylbenzene	2.741	2.631	4.0	99	0.00	15.83
126	M	tert-butylbenzene	2.350	2.474	-5.3	101	0.00	16.22
127	M	pentachloroethane	0.584	0.607	-3.9	101	0.00	16.30
128	M	1,2,4-trimethylbenzene	2.710	2.804	-3.5	103	0.00	16.26
129	M	sec-butylbenzene	3.341	3.448	-3.2	100	0.00	16.45
130	M	1,3-dichlorobenzene	1.643	1.664	-1.3	100	0.00	16.66
131	M	p-isopropyltoluene	2.774	3.009	-8.5	103	0.00	16.58
132	M	1,4-dichlorobenzene	1.666	1.675	-0.5	98	0.00	16.75
133		benzyl chloride	1.649	1.482	10.1	88	0.00	16.86
134	M	p-diethylbenzene		----------NA----------				

Initial Calibration Verification

Job Number: JB31265 **Sample:** VE8801-ICV8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E200209.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

135	M	1,2-dichlorobenzene	1.587	1.652	-4.1	100	0.00	17.19
136	M	n-butylbenzene	1.332	1.444	-8.4	102	0.00	17.04
137	M	1,2,4,5-tetramethylbenzen		----------NA----------				
138	M	1,2-dibromo-3-chloropropa	0.148	0.155	-4.7	101	0.00	18.00
139	m	1,3,5-trichlorobenzene	1.155	1.252	-8.4	96	0.00	18.25
140	M	1,2,4-trichlorobenzene	0.933	1.047	-12.2	103	0.00	18.96
141	M	hexachlorobutadiene	0.528	0.549	-4.0	98	0.00	19.10
142	M	naphthalene	1.870	1.992	-6.5	99	0.00	19.27
143		MMT		----------NA----------				
144	M	1,2,3-trichlorobenzene	0.741	0.784	-5.8	98	0.00	19.54
145	M	hexachloroethane	0.535	0.585	-9.3	102	0.00	17.50
146	M	Cyclohexane	1.052	1.065	-1.2	100	0.00	10.16
147		ethyleinimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
E200201.D ME8801.M Mon Feb 25 09:59:18 2013

6.7.2

6

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8851-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201313.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E201313.D                    Vial: 29
Acq On    : 25 Mar 2013  11:21 pm                     Operator: OksanaT
Sample    : cc8801-50                                 Inst    : MSE
Misc      : MS45025,VE8851,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\ME8801.M (RTE Integrator)
Title        : SW846  8260B,ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Feb 25 11:43:47 2013
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		Tert Butyl Alcohol-d9	1.000	1.000	0.0	129	0.02	7.69
		----------	True	Calc.	% Drift	----------		
2	M	1,4-dioxane	1250.000	1360.502	-8.8	134	0.00	11.54
		----------	AvgRF	CCRF	% Dev	----------		
3	M	tertiary butyl alcohol	1.175	1.183	-0.7	123	0.00	7.80
4		ethanol		----------NA----------				
5	I	pentafluorobenzene	1.000	1.000	0.0	147	0.00	9.90
6		freon 23		----------NA----------				
7		freon 115		----------NA----------				
8		freon 143a		----------NA----------				
9		freon 152a		----------NA----------				
10	M	chlorotrifluoroethene		----------NA----------				
11	M	chlorodifluoromethane	0.550	0.404	26.5#	98	0.00	4.32
12	M	dichlorodifluoromethane	0.733	0.627	14.5	115	0.00	4.31
13		freon 114		----------NA----------				
14		freon 142b		----------NA----------				
15	M	chloromethane	0.818	0.628	23.2#	106	0.00	4.66
16	M	vinyl chloride	0.819	0.739	9.8	124	0.00	4.95
17		1,3-Butadiene		----------NA----------				
18	M	acetaldehyde		----------NA----------				
19	M	bromomethane	0.496	0.441	11.1	130	0.00	5.60
20	M	chloroethane	0.374	0.331	11.5	119	0.00	5.77
21	M	vinyl bromide		----------NA----------				
22	M	trichlorofluoromethane	0.813	0.776	4.6	129	0.00	6.27
23	M	pentane		----------NA----------				
24	M	ethyl ether	0.316	0.283	10.4	127	0.00	6.65
25		freon 141b		----------NA----------				
26		freon 123a		----------NA----------				
27		freon 123		----------NA----------				
28	m	2-chloropropane	0.945	0.731	22.6#	105	0.00	6.83
29	M	acrolein	0.123	0.104	15.4	119	0.00	6.85
30	M	1,1-dichloroethene	0.476	0.423	11.1	119	0.00	7.08
31	M	isopropyl alcohol		----------NA----------				
		----------	True	Calc.	% Drift	----------		
32	M	acetone	50.000	43.947	12.1	126	0.00	7.05
		----------	AvgRF	CCRF	% Dev	----------		
33	M	allyl chloride	0.913	0.697	23.7#	107	0.00	7.57

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8851-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201313.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			True	Calc.	% Drift			
34	M	acetonitrile	500.000	355.672	28.9#	98	0.01	7.47
			AvgRF	CCRF	% Dev			
35	M	iodomethane	0.964	0.912	5.4	127	0.00	7.35
			True	Calc.	% Drift			
36	M	iso-butyl alcohol	500.000	431.201	13.8	123	0.00	10.22
			AvgRF	CCRF	% Dev			
37	M	carbon disulfide	1.603	1.364	14.9	110	0.00	7.50
38	M	methylene chloride	0.615	0.499	18.9	125	0.00	7.75
39	m	1-chloropropane	0.921	0.723	21.5#	111	0.00	7.81
40	M	methyl acetate	0.421	0.374	11.2	122	0.01	7.55
41	M	methyl tert butyl ether	1.525	1.420	6.9	128	0.00	8.10
42	M	trans-1,2-dichloroethene	0.480	0.454	5.4	124	0.00	8.14
43	M	di-isopropyl ether	1.764	1.440	18.4	117	0.00	8.69
44	M	ethyl tert-butyl ether	1.758	1.550	11.8	126	0.00	9.15
			True	Calc.	% Drift			
45	M	2-butanone	50.000	44.396	11.2	126	0.00	9.33
			AvgRF	CCRF	% Dev			
46	M	1,1-dichloroethane	0.885	0.782	11.6	117	0.00	8.68
47	M	chloroprene	0.669	0.632	5.5	126	0.00	8.81
48	M	acrylonitrile	0.205	0.187	8.8	127	0.00	8.02
			True	Calc.	% Drift			
49	M	vinyl acetate	50.000	43.908	12.2	127	0.00	8.65
			AvgRF	CCRF	% Dev			
50	M	ethyl acetate	0.075	0.069	8.0	133	0.00	9.37
51	M	2,2-dichloropropane	0.712	0.571	19.8	111	0.00	9.43
52	M	cis-1,2-dichloroethene	0.553	0.506	8.5	129	0.00	9.40
53	m	methyl acrylate	0.493	0.426	13.6	126	0.00	9.45
54	M	propionitrile	0.078	0.070	10.3	125	0.00	9.39
55	M	bromochloromethane	0.285	0.275	3.5	135	0.00	9.71
56	M	tetrahydrofuran	0.198	0.173	12.6	127	0.00	9.77
57	M	chloroform	0.843	0.775	8.1	124	0.00	9.76
58	m	t-butyl formate	0.474	0.466	1.7	134	0.00	9.80
59	M	Iso-octane	1.412	1.263	10.6	120	0.00	10.52
60	S	dibromofluoromethane (s)	0.469	0.414	11.7	121	0.00	9.95
61	S	1,2-dichloroethane-d4 (s)	0.516	0.462	10.5	125	0.00	10.36
62	M	freon 113	0.365	0.358	1.9	127	0.00	7.07
63	M	methacrylonitrile	0.331	0.296	10.6	126	0.00	9.60
64	M	1,1,1-trichloroethane	0.749	0.694	7.3	125	0.00	10.05
65	M	tert-amyl methyl ether	1.672	1.389	16.9	123	0.00	10.52
66	I	1,4-difluorobenzene	1.000	1.000	0.0	138	0.00	10.83
67	M	Di-isobutylene		----------NA----------				
68	M	tert amyl alcohol		----------NA----------				
69	M	epichlorohydrin	0.039	0.039	0.0	132	0.00	12.06
70	M	n-butyl alcohol	0.011	0.011	0.0	126	0.00	10.90
71	M	tert-amyl ethyl ether		----------NA----------				
72	M	carbon tetrachloride	0.462	0.476	-3.0	126	0.00	10.27
73	M	1,1-dichloropropene	0.473	0.436	7.8	119	0.00	10.22
74	M	hexane	0.368	0.378	-2.7	130	0.00	8.48
75	M	benzene	1.401	1.274	9.1	120	0.00	10.47
76	M	heptane	0.202	0.200	1.0	126	0.00	10.67

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8851-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201313.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	M	isopropyl acetate	0.725	0.634	12.6	121	0.00	10.36
78	M	1,2-dichloroethane	0.453	0.421	7.1	124	0.00	10.45
79		ethyl acrylate		----------NA----------				
80	M	trichloroethene	0.355	0.349	1.7	124	0.00	11.19
81	M	2-nitropropane		----------NA----------				
82	M	2-chloroethyl vinyl ether	0.240	0.222	7.5	121	0.00	11.95
83	M	methylcyclohexane	0.542	0.538	0.7	126	0.00	11.45
84	M	methyl methacrylate	0.350	0.360	-2.9	130	0.00	11.43
85	M	1,2-dichloropropane	0.374	0.349	6.7	123	0.00	11.43
86	M	dibromomethane	0.218	0.223	-2.3	132	0.00	11.59
87	M	bromodichloromethane	0.476	0.467	1.9	129	0.00	11.71
88	M	cis-1,3-dichloropropene	0.602	0.566	6.0	119	0.00	12.20
89	S	toluene-d8 (s)	1.266	1.160	8.4	117	0.00	12.53
90	M	4-methyl-2-pentanone	0.160	0.153	4.4	130	0.00	12.27
91	M	toluene	0.850	0.819	3.6	121	0.00	12.60
92	M	3-methyl-1-butanol	0.019	0.019	0.0	135	0.00	12.27
93	M	trans-1,3-dichloropropene	0.526	0.506	3.8	121	0.00	12.77
94	M	ethyl methacrylate	0.464	0.465	-0.2	124	0.00	12.77
95	M	1,1,2-trichloroethane	0.276	0.273	1.1	129	0.00	13.00
96	M	2-hexanone	0.142	0.142	0.0	131	0.00	13.18
97	I	chlorobenzene-d5	1.000	1.000	0.0	135	0.00	14.15
98	M	cyclohexanone	0.014	0.014	0.0	126	0.00	15.35
99	M	tetrachloroethene	0.462	0.453	1.9	127	0.00	13.25
100	M	1,3-dichloropropane	0.600	0.577	3.8	123	0.00	13.20
101	M	butyl acetate	0.259	0.255	1.5	128	0.00	13.27
102	m	3,3-dimethyl-1-butanol	0.044	0.045	-2.3	134	0.00	13.36
103	M	dibromochloromethane	0.436	0.456	-4.6	134	0.00	13.49
104	M	1,2-dibromoethane	0.386	0.399	-3.4	136	0.00	13.67
105	M	n-butyl ether		----------NA----------				
106	M	chlorobenzene	1.085	1.018	6.2	119	0.00	14.18
107	M	1,1,1,2-tetrachloroethane	0.400	0.399	0.3	123	0.00	14.24
108	M	ethylbenzene	1.736	1.613	7.1	118	0.00	14.25
109	M	m,p-xylene	0.682	0.658	3.5	121	0.00	14.37
110	M	o-xylene	0.699	0.687	1.7	123	0.00	14.83
111	M	butyl acrylate		----------NA----------				
112	M	styrene	1.160	1.143	1.5	124	0.00	14.83
113	M	bromoform	0.332	0.364	-9.6	139	0.00	15.11
114	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	144	0.00	16.72
115	M	isopropylbenzene	3.216	2.970	7.6	124	0.00	15.20
116	S	4-bromofluorobenzene (s)	0.917	0.816	11.0	118	0.00	15.42
117	M	bromobenzene	0.892	0.854	4.3	130	0.00	15.65
118	M	1,1,2,2-tetrachloroethane	0.904	0.853	5.6	131	0.00	15.50
119	M	trans-1,4-dichloro-2-bute	0.227	0.203	10.6	122	0.00	15.54
120	M	1,2,3-trichloropropane	0.239	0.231	3.3	136	0.00	15.58
121	M	n-propylbenzene	3.582	3.139	12.4	121	0.00	15.66
122	M	p-ethyltoluene		----------NA----------				
123	M	2-chlorotoluene	0.793	0.714	10.0	124	0.00	15.83
124	M	4-chlorotoluene	2.330	2.098	10.0	125	0.00	15.93
125	M	1,3,5-trimethylbenzene	2.741	2.414	11.9	126	0.00	15.82
126	M	tert-butylbenzene	2.350	2.227	5.2	126	0.00	16.21
127	M	pentachloroethane	0.584	0.573	1.9	132	0.00	16.30
128	M	1,2,4-trimethylbenzene	2.710	2.456	9.4	124	0.00	16.26
129	M	sec-butylbenzene	3.341	3.109	6.9	125	0.00	16.45
130	M	1,3-dichlorobenzene	1.643	1.542	6.1	128	0.00	16.66
131	M	p-isopropyltoluene	2.774	2.640	4.8	125	0.00	16.58
132	M	1,4-dichlorobenzene	1.666	1.537	7.7	125	0.00	16.75
133		benzyl chloride	1.649	1.518	7.9	125	0.00	16.86
134	M	p-diethylbenzene		----------NA----------				

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8851-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201313.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

135	M	1,2-dichlorobenzene	1.587	1.556	2.0	131	0.00	17.18
136	M	n-butylbenzene	1.332	1.301	2.3	127	0.00	17.04
137	M	1,2,4,5-tetramethylbenzen		----------NA----------				
138	M	1,2-dibromo-3-chloropropa	0.148	0.163	-10.1	147	0.00	18.00
139	m	1,3,5-trichlorobenzene	1.155	1.225	-6.1	131	0.00	18.25
140	M	1,2,4-trichlorobenzene	0.933	0.975	-4.5	133	0.00	18.96
141	M	hexachlorobutadiene	0.528	0.557	-5.5	137	0.00	19.10
142	M	naphthalene	1.870	2.090	-11.8	144	0.00	19.27
143		MMT		----------NA----------				
144	M	1,2,3-trichlorobenzene	0.741	0.797	-7.6	138	0.00	19.54
145	M	hexachloroethane	0.535	0.546	-2.1	132	0.00	17.49
146	M	Cyclohexane	1.052	0.878	16.5	114	0.00	10.16
147		ethyleinimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
E200201.D ME8801.M Tue Mar 26 11:21:31 2013 RPT1

6.7.3

6

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8852-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201332.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E201332.D                    Vial: 2
Acq On    : 26 Mar 2013  10:17 am                     Operator: OksanaT
Sample    : cc8801-20                                 Inst    : MSE
Misc      : MS44804,VE8852,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\ME8801.M (RTE Integrator)
Title        : SW846  8260B,ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Feb 25 11:43:47 2013
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		Tert Butyl Alcohol-d9	1.000	1.000	0.0	142	0.01	7.68
		----------	True	Calc.	% Drift	----------		
2	M	1,4-dioxane	500.000	429.637	14.1	122	0.00	11.54
		----------	AvgRF	CCRF	% Dev	----------		
3	M	tertiary butyl alcohol	1.175	1.170	0.4	133	0.00	7.80
4		ethanol		----------NA----------				
5	I	pentafluorobenzene	1.000	1.000	0.0	145	0.00	9.90
6		freon 23		----------NA----------				
7		freon 115		----------NA----------				
8		freon 143a		----------NA----------				
9		freon 152a		----------NA----------				
10	M	chlorotrifluoroethene		----------NA----------				
11	M	chlorodifluoromethane	0.550	0.436	20.7#	107	0.00	4.32
12	M	dichlorodifluoromethane	0.733	0.702	4.2	135	0.00	4.31
13		freon 114		----------NA----------				
14		freon 142b		----------NA----------				
15	M	chloromethane	0.818	0.655	19.9	112	0.00	4.65
16	M	vinyl chloride	0.819	0.802	2.1	135	-0.01	4.94
17		1,3-Butadiene		----------NA----------				
18	M	acetaldehyde		----------NA----------				
19	M	bromomethane	0.496	0.450	9.3	131	0.00	5.59
20	M	chloroethane	0.374	0.335	10.4	121	0.00	5.77
21	M	vinyl bromide		----------NA----------				
22	M	trichlorofluoromethane	0.813	0.814	-0.1	138	-0.02	6.25
23	M	pentane		----------NA----------				
24	M	ethyl ether	0.316	0.296	6.3	124	0.00	6.65
25		freon 141b		----------NA----------				
26		freon 123a		----------NA----------				
27		freon 123		----------NA----------				
28	m	2-chloropropane	0.945	0.786	16.8	109	0.00	6.84
29	M	acrolein	0.123	0.108	12.2	120	0.00	6.85
30	M	1,1-dichloroethene	0.476	0.457	4.0	123	0.00	7.09
31	M	isopropyl alcohol		----------NA----------				
		----------	True	Calc.	% Drift	----------		
32	M	acetone	20.000	18.502	7.5	126	0.00	7.07
		----------	AvgRF	CCRF	% Dev	----------		
33	M	allyl chloride	0.913	0.727	20.4#	110	0.00	7.57

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8852-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201332.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			True	Calc.	% Drift			
34	M	acetonitrile	200.000	146.138	26.9#	111	0.03	7.49

			AvgRF	CCRF	% Dev			
35	M	iodomethane	0.964	0.952	1.2	130	0.00	7.35

			True	Calc.	% Drift			
36	M	iso-butyl alcohol	200.000	174.292	12.9	116	0.00	10.22

			AvgRF	CCRF	% Dev			
37	M	carbon disulfide	1.603	1.448	9.7	115	0.00	7.50
38	M	methylene chloride	0.615	0.522	15.1	126	0.00	7.75
39	m	1-chloropropane	0.921	0.769	16.5	113	0.00	7.81
40	M	methyl acetate	0.421	0.391	7.1	119	0.00	7.54
41	M	methyl tert butyl ether	1.525	1.488	2.4	128	0.00	8.10
42	M	trans-1,2-dichloroethene	0.480	0.481	-0.2	127	0.00	8.14
43	M	di-isopropyl ether	1.764	1.472	16.6	115	0.00	8.69
44	M	ethyl tert-butyl ether	1.758	1.540	12.4	123	0.00	9.15

			True	Calc.	% Drift			
45	M	2-butanone	20.000	19.044	4.8	144	0.00	9.34

			AvgRF	CCRF	% Dev			
46	M	1,1-dichloroethane	0.885	0.840	5.1	121	0.00	8.68
47	M	chloroprene	0.669	0.629	6.0	123	0.00	8.81
48	M	acrylonitrile	0.205	0.194	5.4	124	0.00	8.02

			True	Calc.	% Drift			
49	M	vinyl acetate	20.000	17.634	11.8	122	0.00	8.66

			AvgRF	CCRF	% Dev			
50	M	ethyl acetate	0.075	0.066	12.0	122	0.00	9.37
51	M	2,2-dichloropropane	0.712	0.675	5.2	128	0.00	9.43
52	M	cis-1,2-dichloroethene	0.553	0.526	4.9	126	0.00	9.40
53	m	methyl acrylate	0.493	0.439	11.0	123	0.00	9.46
54	M	propionitrile	0.078	0.075	3.8	124	0.00	9.40
55	M	bromochloromethane	0.285	0.284	0.4	136	0.00	9.70
56	M	tetrahydrofuran	0.198	0.177	10.6	122	0.00	9.77
57	M	chloroform	0.843	0.826	2.0	126	0.00	9.76
58	m	t-butyl formate	0.474	0.465	1.9	134	0.00	9.80
59	M	Iso-octane	1.412	1.439	-1.9	137	0.00	10.52
60	S	dibromofluoromethane (s)	0.469	0.408	13.0	121	0.00	9.95
61	S	1,2-dichloroethane-d4 (s)	0.516	0.444	14.0	117	0.00	10.37
62	M	freon 113	0.365	0.385	-5.5	137	0.00	7.06
63	M	methacrylonitrile	0.331	0.298	10.0	123	0.00	9.60
64	M	1,1,1-trichloroethane	0.749	0.709	5.3	124	0.00	10.05
65	M	tert-amyl methyl ether	1.672	1.394	16.6	118	0.00	10.51
66	I	1,4-difluorobenzene	1.000	1.000	0.0	137	0.00	10.82
67	M	Di-isobutylene		----------NA----------				
68	M	tert amyl alcohol		----------NA----------				
69	M	epichlorohydrin	0.039	0.041	-5.1	136	0.00	12.07
70	M	n-butyl alcohol	0.011	0.012	-9.1	130	0.00	10.90
71	M	tert-amyl ethyl ether		----------NA----------				
72	M	carbon tetrachloride	0.462	0.505	-9.3	130	0.00	10.27
73	M	1,1-dichloropropene	0.473	0.466	1.5	121	0.00	10.22
74	M	hexane	0.368	0.413	-12.2	141	0.00	8.48
75	M	benzene	1.401	1.381	1.4	121	0.00	10.48
76	M	heptane	0.202	0.225	-11.4	143	0.00	10.67

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8852-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201332.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	M	isopropyl acetate	0.725	0.632	12.8	115	0.00	10.36
78	M	1,2-dichloroethane	0.453	0.436	3.8	120	0.00	10.45
79		ethyl acrylate		----------NA----------				
80	M	trichloroethene	0.355	0.366	-3.1	125	0.00	11.19
81	M	2-nitropropane		----------NA----------				
82	M	2-chloroethyl vinyl ether	0.240	0.231	3.7	123	0.00	11.95
83	M	methylcyclohexane	0.542	0.582	-7.4	132	0.00	11.45
84	M	methyl methacrylate	0.350	0.373	-6.6	131	0.00	11.43
85	M	1,2-dichloropropane	0.374	0.371	0.8	122	0.00	11.43
86	M	dibromomethane	0.218	0.229	-5.0	129	0.00	11.59
87	M	bromodichloromethane	0.476	0.483	-1.5	128	0.00	11.71
88	M	cis-1,3-dichloropropene	0.602	0.622	-3.3	128	0.00	12.20
89	S	toluene-d8 (s)	1.266	1.215	4.0	119	0.00	12.52
90	M	4-methyl-2-pentanone	0.160	0.163	-1.9	132	0.00	12.27
91	M	toluene	0.850	0.884	-4.0	125	0.00	12.60
92	M	3-methyl-1-butanol	0.019	0.021	-10.5	141	0.00	12.28
93	M	trans-1,3-dichloropropene	0.526	0.557	-5.9	130	0.00	12.77
94	M	ethyl methacrylate	0.464	0.489	-5.4	130	0.00	12.78
95	M	1,1,2-trichloroethane	0.276	0.285	-3.3	129	0.00	13.00
96	M	2-hexanone	0.142	0.145	-2.1	136	0.00	13.18
97	I	chlorobenzene-d5	1.000	1.000	0.0	137	0.00	14.15
98	M	cyclohexanone	0.014	0.020	-42.9#	182	0.00	15.35
99	M	tetrachloroethene	0.462	0.512	-10.8	138	0.00	13.25
100	M	1,3-dichloropropane	0.600	0.620	-3.3	128	0.00	13.20
101	M	butyl acetate	0.259	0.263	-1.5	129	0.00	13.27
102	m	3,3-dimethyl-1-butanol	0.044	0.052	-18.2	148	0.00	13.36
103	M	dibromochloromethane	0.436	0.477	-9.4	138	0.00	13.49
104	M	1,2-dibromoethane	0.386	0.417	-8.0	136	0.00	13.67
105	M	n-butyl ether		----------NA----------				
106	M	chlorobenzene	1.085	1.070	1.4	122	0.00	14.18
107	M	1,1,1,2-tetrachloroethane	0.400	0.419	-4.7	127	0.00	14.24
108	M	ethylbenzene	1.736	1.756	-1.2	123	0.00	14.25
109	M	m,p-xylene	0.682	0.714	-4.7	126	0.00	14.37
110	M	o-xylene	0.699	0.745	-6.6	128	0.00	14.83
111	M	butyl acrylate		----------NA----------				
112	M	styrene	1.160	1.208	-4.1	126	0.00	14.83
113	M	bromoform	0.332	0.364	-9.6	137	0.00	15.11
114	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	142	0.00	16.72
115	M	isopropylbenzene	3.216	3.276	-1.9	128	0.00	15.20
116	S	4-bromofluorobenzene (s)	0.917	0.830	9.5	116	0.00	15.42
117	M	bromobenzene	0.892	0.893	-0.1	125	0.00	15.65
118	M	1,1,2,2-tetrachloroethane	0.904	0.884	2.2	128	0.00	15.50
119	M	trans-1,4-dichloro-2-bute	0.227	0.209	7.9	126	0.00	15.54
120	M	1,2,3-trichloropropane	0.239	0.246	-2.9	133	0.00	15.58
121	M	n-propylbenzene	3.582	3.444	3.9	123	0.00	15.66
122	M	p-ethyltoluene		----------NA----------				
123	M	2-chlorotoluene	0.793	0.769	3.0	125	0.00	15.83
124	M	4-chlorotoluene	2.330	2.229	4.3	124	0.00	15.93
125	M	1,3,5-trimethylbenzene	2.741	2.688	1.9	130	0.00	15.82
126	M	tert-butylbenzene	2.350	2.432	-3.5	131	0.00	16.21
127	M	pentachloroethane	0.584	0.605	-3.6	131	0.00	16.30
128	M	1,2,4-trimethylbenzene	2.710	2.670	1.5	126	0.00	16.26
129	M	sec-butylbenzene	3.341	3.382	-1.2	129	0.00	16.45
130	M	1,3-dichlorobenzene	1.643	1.579	3.9	125	0.00	16.66
131	M	p-isopropyltoluene	2.774	2.896	-4.4	130	0.00	16.58
132	M	1,4-dichlorobenzene	1.666	1.556	6.6	122	0.00	16.75
133		benzyl chloride	1.649	1.691	-2.5	148	0.00	16.86
134	M	p-diethylbenzene		----------NA----------				

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VE8852-CC8801
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** E201332.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

135	M	1,2-dichlorobenzene	1.587	1.582	0.3	127	0.00	17.18
136	M	n-butylbenzene	1.332	1.356	-1.8	126	0.00	17.04
137	M	1,2,4,5-tetramethylbenzen		----------NA----------				
138	M	1,2-dibromo-3-chloropropa	0.148	0.166	-12.2	147	0.00	18.00
139	m	1,3,5-trichlorobenzene	1.155	1.281	-10.9	132	0.00	18.25
140	M	1,2,4-trichlorobenzene	0.933	0.970	-4.0	134	0.00	18.96
141	M	hexachlorobutadiene	0.528	0.642	-21.6#	148	0.00	19.10
142	M	naphthalene	1.870	1.969	-5.3	136	0.00	19.27
143		MMT		----------NA----------				
144	M	1,2,3-trichlorobenzene	0.741	0.782	-5.5	134	0.00	19.54
145	M	hexachloroethane	0.535	0.588	-9.9	136	0.00	17.50
146	M	Cyclohexane	1.052	0.987	6.2	118	0.00	10.16
147		ethyleinimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
E200200.D ME8801.M Tue Mar 26 16:54:54 2013 RPT1

6.7.4

6

Initial Calibration Summary

Job Number: JB31265 **Sample:** VV5737-ICC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132763.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSV

```
Method       : C:\MSDCHEM\1\METHODS\MVS5737.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Mar 04 17:41:55 2013
Response via : Initial Calibration

Calibration Files
1   =v132758.D   10  =v132761.D   100 =v132765.D   50  =v132763.D
20  =v132762.D   200 =v132766.D   5   =v132760.D   0.5 =v132757.D
2   =v132759.D   75  =v132764.D       =                =

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

1) I   Tert Butyl Alcohol-d9 ----------------ISTD---------------------
2)  tertiary butyl alcohol
           1.213 1.205 1.053 1.170 1.186 1.236       1.210 1.087  1.170    5.58
3)  1,4-dioxane
           0.086 0.094 0.082 0.090 0.094 0.089             0.084  0.088    5.44

4) I   pentafluorobenzene    ----------------ISTD---------------------
5)  Propylene
     0.554 0.727 0.709 0.789 0.699 0.821 0.584       0.719        0.700   13.04
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
     0.611 0.556 0.527 0.492 0.551 0.512 0.618 0.599 0.462 0.511  0.544    9.65
15)  dichlorodifluoromethane
     0.761 0.581 0.607 0.521 0.623 0.574 0.626       0.558 0.565  0.602   11.38
16)  chloromethane
     0.886 0.698 0.654 0.572 0.678 0.609 0.729       0.659 0.604  0.676   13.67
17)  vinyl chloride
     0.830 0.691 0.650 0.571 0.704 0.603 0.710 0.740 0.626 0.602  0.673   11.59
18)  bromomethane
     0.490 0.369 0.337 0.292 0.374 0.297 0.375       0.354 0.311  0.355   16.87
           ----- Linear regression -----  Coefficient =  0.9958
             Response Ratio = 0.01425 + 0.29975 *A

19)  chloroethane
     0.362 0.312 0.298 0.263 0.314 0.277 0.307 0.284 0.273 0.270  0.296    9.98
20)  trichlorofluoromethane
     0.775 0.707 0.657 0.592 0.691 0.630 0.708 0.662 0.580 0.609  0.661    9.18
21)  Vinyl Bromide
     0.360 0.356       0.307 0.323       0.593       0.364 0.302  0.372   27.02
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VV5737-ICC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132763.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
            ----- Linear regression -----  Coefficient =  0.9940
              Response Ratio = -0.01647 + 0.35889 *A

22)  ethyl ether
      0.231 0.182 0.163 0.156 0.178 0.170 0.166       0.181 0.172  0.178   12.31
23)  Acetaldehyde
            0.020 0.018 0.017 0.021 0.017 0.021             0.018  0.019    9.77
24)  Pentane
      0.737 0.722       0.584 0.633       1.242       0.729 0.566  0.745   30.93
         ----- Quadratic regression -----                 Coefficient =  0.9942
              Response Ratio = 0.02895 + 0.55561 *A + 0.04460 *A^2

25)  Freon 123A
                                                                     0.000   -1.00
26)  Freon 141B
                                                                     0.000   -1.00
27)  Freon 123
                                                                     0.000   -1.00
28)  2-chloropropane
            0.829 0.739 0.694 0.809 0.729 0.797       0.740 0.736  0.759    6.13
29)  acrolein
      0.042 0.039       0.037 0.044       0.056       0.046 0.042  0.044   14.26
30)  freon 113
      0.311 0.311 0.301 0.287 0.316 0.296 0.350       0.263 0.298  0.304    7.77
31)  1,1-dichloroethene
            0.421 0.366 0.343 0.391 0.358 0.422       0.366 0.362  0.379    7.78
32)  acetone
            0.074 0.051 0.052 0.070 0.051 0.093             0.057  0.064   24.90
            ----- Linear regression -----  Coefficient =  0.9980
              Response Ratio = 0.00516 + 0.04997 *A

33)  iso-butyl alcohol
      0.008 0.012 0.011 0.010 0.012 0.011 0.011       0.009 0.011  0.011   11.45
34)  allyl chloride
      0.268 0.219 0.235 0.218 0.246 0.243 0.205 0.227 0.180 0.224  0.226   10.65
35)  acetonitrile
      0.110 0.093 0.085 0.081 0.096 0.084 0.087 0.113 0.079 0.087  0.091   12.65
36)  iodomethane
      0.734 0.707 0.660 0.619 0.708 0.672 0.629 0.683 0.532 0.664  0.661    8.68
37)  carbon disulfide
      1.662 1.452 1.312 1.232 1.429 1.295 1.328 1.604 1.145 1.300  1.376   11.76
38)  methylene chloride
            0.408 0.350 0.339 0.386 0.358 0.364       0.390 0.362  0.370    6.21
39)  1-chloropropane
            0.809 0.705 0.665 0.773 0.690 0.720       0.641 0.705  0.714    7.68
40)  methyl acetate
            0.163 0.153 0.139 0.169 0.149 0.187       0.188 0.157  0.163   10.59
41)  methyl tert butyl ether
      0.936 0.834 0.791 0.739 0.882 0.817 0.775 0.920 0.737 0.841  0.827    8.43
42)  trans-1,2-dichloroethene
            0.447 0.391 0.369 0.431 0.383 0.419       0.391 0.387  0.402    6.67
43)  di-isopropyl ether
      1.142 1.205 1.169 1.103 1.253 1.116 1.235 1.282 1.073 1.187  1.176    5.84
44)  2-butanone
            0.022 0.023 0.021 0.026 0.024 0.019             0.026  0.023   11.13
45)  1,1-dichloroethane
      0.799 0.779 0.694 0.661 0.767 0.679 0.691       0.566 0.705  0.705   10.08
46)  chloroprene
      0.654 0.636 0.626 0.589 0.652 0.587 0.660 0.581 0.538 0.614  0.614    6.43
47)  acrylonitrile
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VV5737-ICC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132763.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
      0.068 0.071 0.064 0.061 0.076 0.065 0.064 0.061 0.057 0.071  0.066    8.83
48)  vinyl acetate
             0.030 0.035 0.033 0.036 0.035                    0.037  0.034    7.06
49)  ethyl tert-butyl ether
      1.017 1.028 1.060 0.985 1.120 1.033 1.102 1.008 0.936 1.075  1.036    5.31
50)  ethyl acetate
             0.029 0.028 0.029 0.038 0.026 0.030             0.029  0.030   13.06
51)  2,2-dichloropropane
             0.639 0.581 0.545 0.631 0.564 0.585       0.493 0.577  0.577    8.05
52)  cis-1,2-dichloroethene
             0.430 0.383 0.368 0.424 0.384 0.385       0.366 0.391  0.391    6.01
53)  propionitrile
      0.024 0.025 0.024 0.023 0.028 0.024 0.021       0.018 0.026  0.024   11.36
54)  methyl acrylate
             0.024 0.028 0.027 0.031 0.030 0.015             0.031  0.027   21.73
             ----- Linear regression -----  Coefficient =  0.9985
               Response Ratio = -0.00108 + 0.02998 *A

55)  methacrylonitrile
             0.076 0.076 0.071 0.085 0.078 0.060             0.082  0.075   11.04
56)  bromochloromethane
      0.146 0.160 0.149 0.144 0.173 0.154 0.146 0.143 0.114 0.156  0.149   10.23
57)  tetrahydrofuran
             0.074 0.067 0.061 0.077 0.066 0.078       0.082 0.073  0.072    9.75
58)  chloroform
             0.699 0.618 0.586 0.686 0.609 0.583       0.514 0.632  0.616    9.62
59)  tert-Butyl Formate
      0.207 0.197 0.216 0.196 0.215 0.216 0.209 0.176 0.167 0.223  0.202    9.10
60)  dibromofluoromethane (s)
             0.321 0.329 0.301 0.324 0.312 0.347       0.336 0.326  0.324    4.39
61)  1,2-dichloroethane-d4 (s)
             0.324 0.313 0.289 0.323 0.294 0.312       0.367 0.315  0.317    7.50
62)  1,1,1-trichloroethane
      0.703 0.626 0.583 0.544 0.631 0.579 0.586 0.685 0.485 0.581  0.600   10.69
63)  Cyclohexane
      0.681 0.620 0.548 0.524 0.590 0.547 0.551 0.574 0.448 0.545  0.563   10.86
64)  Tert Amyl Alcohol
             0.015 0.010 0.008 0.012 0.011 0.016             0.011  0.012   22.45
             ----- Linear regression -----  Coefficient =  0.9929
               Response Ratio = -0.00016 + 0.01073 *A


65) I   1,4-difluorobenzene   ----------------ISTD---------------------
66)  methylcyclohexane
      0.490 0.504 0.495 0.475 0.523 0.487 0.540 0.469 0.431 0.485  0.490    6.07
67)  epichlorohydrin
             0.011 0.012 0.011 0.013 0.012 0.012       0.010 0.013  0.012    8.26
68)  n-butyl alcohol
      0.005 0.003 0.004 0.004 0.004 0.004 0.004 0.005 0.004 0.004  0.004   10.62
69)  carbon tetrachloride
      0.394 0.397 0.379 0.362 0.404 0.380 0.358 0.407 0.294 0.372  0.375    8.80
70)  1,1-dichloropropene
      0.414 0.417 0.391 0.371 0.421 0.387 0.362 0.409 0.307 0.391  0.387    8.87
71)  hexane
      0.465 0.410 0.403 0.383 0.428 0.392 0.459       0.393 0.390  0.414    7.34
72)  2,2,4-Trimethylpentane
             1.154 1.129 1.092 1.185 1.112 1.245       1.196 1.098  1.151    4.66
73)  benzene
      1.349 1.151 1.063 1.021 1.181 1.043 1.034 1.310 0.922 1.066  1.114   12.01
74)  tert-amyl methyl ether
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VV5737-ICC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132763.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
      0.621 0.622 0.634 0.602 0.682 0.631 0.675       0.635 0.654  0.640    4.06
 75)  heptane
      0.243 0.244 0.231 0.221 0.256 0.227 0.255       0.202 0.227  0.234    7.39
 76)  isopropyl acetate
             0.043 0.041 0.039 0.048 0.041 0.030             0.041  0.040   13.28
 77)  1,2-dichloroethane
      0.320 0.289 0.265 0.257 0.300 0.272 0.261 0.336 0.227 0.274  0.280   11.40
 78)  trichloroethene
      0.330 0.298 0.282 0.267 0.305 0.283 0.257 0.305 0.235 0.280  0.284    9.55
 79)  Ethyl Acrylate
      0.193 0.180       0.171 0.193       0.311       0.208 0.186  0.206   23.19
             ----- Linear regression -----  Coefficient =  0.9963
               Response Ratio = -0.00067 + 0.19395 *A

 80)  tert-Amyl Ethyl Ether
             0.404 0.380 0.322 0.343 0.385 0.330             0.379  0.363    8.63
 81)  2-chloroethyl vinyl ether
             0.005 0.006 0.005 0.006       0.005             0.007  0.006   11.06
 82)  methyl methacrylate
             0.039 0.040 0.036 0.043 0.041 0.031             0.042  0.039   10.69
 83)  1,2-dichloropropane
      0.325 0.271 0.249 0.242 0.285 0.250 0.239       0.211 0.262  0.259   12.45
 84)  dibromomethane
      0.125 0.113 0.111 0.104 0.127 0.114 0.107 0.130 0.094 0.118  0.114    9.87
 85)  bromodichloromethane
      0.347 0.333 0.318 0.303 0.345 0.331 0.295 0.259 0.250 0.327  0.311   10.91
 86)  2-nitropropane
             0.042 0.037 0.034 0.041 0.039 0.042       0.048 0.041  0.040    9.84
 87)  cis-1,3-dichloropropene
      0.421 0.394 0.386 0.359 0.412 0.392 0.354 0.396 0.295 0.395  0.380    9.53
 88)  toluene-d8 (s)
             0.984 0.998 0.935 0.988 0.936 1.014       1.035 0.986  0.985    3.51
 89)  4-methyl-2-pentanone
             0.056 0.056 0.053 0.062 0.059 0.056       0.043 0.061  0.056   10.95
 90)  toluene
      0.820 0.717 0.671 0.640 0.732 0.676 0.650 0.713 0.539 0.669  0.683   10.61
 91)  isoamyl alcohol
      0.007 0.005 0.006 0.006 0.006 0.006 0.005       0.006 0.007  0.006   10.12
 92)  trans-1,3-dichloropropene
      0.314 0.320 0.305 0.290 0.339 0.310 0.269 0.302 0.251 0.319  0.302    8.57
 93)  ethyl methacrylate
      0.197 0.211 0.215 0.197 0.220 0.222 0.170       0.168 0.233  0.204   11.16
 94)  1,1,2-trichloroethane
      0.146 0.143 0.136 0.129 0.149 0.139 0.120 0.133 0.121 0.143  0.136    7.33
 95)  2-hexanone
      0.035 0.038 0.045 0.041 0.046       0.040       0.034 0.050  0.041   13.57

 96) I   chlorobenzene-d5      ----------------ISTD--------------------
 97)  tetrachloroethene
      0.393 0.434 0.416 0.380 0.426 0.408 0.379 0.402 0.272 0.390  0.390   11.62
 98)  1,3-dichloropropane
      0.389 0.369 0.352 0.330 0.386 0.354 0.316 0.376 0.278 0.366  0.352    9.87
 99)  butyl acetate
             0.044 0.047 0.041 0.059 0.047 0.068             0.049  0.051   18.67
             ----- Linear regression -----  Coefficient =  0.9969
               Response Ratio = 0.00072 + 0.04703 *A

100)  3,3-Dimethyl-1-Butanol
      0.011 0.010 0.012 0.011 0.012 0.013 0.011       0.010 0.013  0.012   10.31
101)  dibromochloromethane
```

```
       0.260 0.267 0.273 0.248 0.286 0.281 0.224 0.277 0.205 0.272  0.259   10.11
102)  1,2-dibromoethane
       0.251 0.207 0.201 0.180 0.218 0.208 0.176 0.199 0.160 0.206  0.200   12.51
103)  chlorobenzene
       1.054 0.962 0.902 0.843 0.959 0.898 0.824 0.921 0.702 0.887  0.895   10.50
104)  1,1,1,2-tetrachloroethane
       0.326 0.332 0.314 0.297 0.334 0.322 0.288 0.342 0.280 0.314  0.315    6.56
105)  ethylbenzene
       1.934 1.754 1.638 1.545 1.750 1.612 1.543 1.705 1.309 1.597  1.639   10.11
106)  m,p-xylene
       0.691 0.661 0.637 0.585 0.675 0.623 0.586 0.635 0.496 0.613  0.620    9.03
107)  o-xylene
       0.664 0.635 0.612 0.574 0.647 0.614 0.536 0.584 0.476 0.595  0.594    9.39
108)  styrene
       1.019 1.005 0.977 0.902 1.023 0.987 0.859 0.858 0.735 0.958  0.932    9.93
109)  Butyl Acrylate
       0.430 0.399       0.396 0.404       0.714       0.471 0.427  0.463   24.59
             ----- Linear regression -----  Coefficient =  0.9962
               Response Ratio = 0.00227 + 0.43404 *A

110)  bromoform
       0.161 0.163 0.163 0.147 0.173 0.170 0.137       0.124 0.166  0.156   10.61
111)  cyclohexanone
       0.017 0.016 0.021 0.012 0.016 0.013 0.014 0.016 0.016 0.017  0.016   15.74
          ----- Quadratic regression -----                 Coefficient =  0.9647
               Response Ratio = -0.01216 + 0.02221 *A + -0.00021 *A^2

112)  4-bromofluorobenzene (s)
             0.421 0.449 0.410 0.428 0.427 0.491             0.426  0.436    6.19

113) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
114)  isopropylbenzene
       3.731 3.461 3.200 3.079 3.448 3.085 3.088 3.359 2.537 3.127  3.211    9.96
115)  1,1,2,2-tetrachloroethane
       0.520 0.533 0.468 0.449 0.535 0.470 0.463 0.539 0.467 0.497  0.494    7.06
116)  trans-1,4-dichloro-2-butene
             0.147 0.126 0.120 0.158 0.127 0.122       0.130 0.132  0.133   10.02
117)  1,2,3-trichloropropane
       0.128 0.127 0.114 0.110 0.136 0.113 0.125       0.112 0.119  0.120    7.51
118)  bromobenzene
       0.806 0.755 0.695 0.657 0.766 0.698 0.657 0.738 0.540 0.692  0.700   10.58
119)  n-propylbenzene
       4.343 4.065 3.732 3.579 4.054 3.540 3.708 4.093 2.817 3.610  3.754   11.32
120)  4-Ethyltoluene
       2.906 4.012 3.394 2.908 3.102 3.157 3.258 3.836 2.535 3.168  3.228   13.56
121)  2-chlorotoluene
       0.866 0.786 0.734 0.675 0.797 0.721 0.719 0.767 0.599 0.710  0.737    9.88
122)  4-chlorotoluene
       2.609 2.403 2.166 2.022 2.384 2.163 2.194 2.548 1.857 2.121  2.247   10.49
123)  1,3,5-trimethylbenzene
       2.772 2.854 2.607 2.442 2.821 2.521 2.548 2.589 2.062 2.518  2.573    8.84
124)  tert-butylbenzene
       2.652 2.578 2.383 2.313 2.551 2.336 2.273 2.751 1.759 2.320  2.392   11.54
125)  pentachloroethane
       0.435 0.482 0.455 0.435 0.498 0.470 0.446 0.440 0.381 0.462  0.450    7.08
126)  1,2,4-trimethylbenzene
       3.006 2.851 2.635 2.490 2.892 2.585 2.467 2.722 2.050 2.579  2.628   10.26
127)  sec-butylbenzene
       4.107 3.907 3.617 3.429 3.853 3.464 3.403 3.684 2.716 3.498  3.568   10.61
128)  p-isopropyltoluene
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** VV5737-ICC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132763.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
       3.178 3.133 2.959 2.782 3.153 2.861 2.773 2.820 2.167 2.842  2.867   10.18
129)  1,3-dichlorobenzene
       1.604 1.492 1.404 1.302 1.524 1.406 1.359 1.751 1.137 1.365  1.434   11.81
130)  1,4-dichlorobenzene
       1.751 1.490 1.378 1.279 1.475 1.379 1.331 1.777 1.226 1.347  1.443   12.93
131)  1,2,3-trimethylbenzene
                                                                   0.000   -1.00
132)  1,2-dichlorobenzene
       1.348 1.309 1.245 1.159 1.371 1.240 1.167 1.433 1.057 1.225  1.255    8.97
133)  Benzyl Chloride
       1.017 0.855 0.887 0.827 0.943 0.859 0.884       0.797 0.901  0.886    7.34
134)  Vinyl Toluene
                                                                   0.000   -1.00
135)  1,4-Diethylbenzene
       1.457 2.010 1.829 1.521 1.592 1.679 1.628 1.901 1.298 1.690  1.660   12.81
136)  n-butylbenzene
       1.843 1.692 1.626 1.502 1.712 1.553 1.491 1.494 1.174 1.522  1.561   11.45
137)  hexachloroethane
       0.573 0.550 0.546 0.496 0.554 0.537 0.499 0.492 0.379 0.526  0.515   10.67
138)  1,2,4,5-tetramethylbenzene
       2.037 3.024 2.801 2.390 2.447 2.598 2.336 2.740 1.995 2.649  2.502   13.09
139)  1,2-dibromo-3-chloropropane
             0.093 0.094 0.084 0.102 0.096 0.078       0.066 0.102  0.089   14.10
140)  1,3,5-trichlorobenzene
       1.265 1.098 1.124 1.020 1.185 1.086 0.991 1.216 0.836 1.070  1.089   11.29
141)  1,2,4-trichlorobenzene
       0.882 0.785 0.874 0.762 0.873 0.861 0.711       0.608 0.828  0.798   11.60
142)  hexachlorobutadiene
       0.626 0.679 0.673 0.624 0.678 0.654 0.607       0.440 0.641  0.625   11.85
143)  naphthalene
       1.261 1.111 1.324 1.156 1.269 1.352 0.964 1.157 0.897 1.331  1.182   13.23
144)  1,2,3-trichlorobenzene
       0.686 0.657 0.733 0.660 0.739 0.742 0.585 0.723 0.509 0.725  0.676   11.37
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          MVS5737.M         Mon Mar 04 17:47:07 2013   VOA-05
```

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5737-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132772.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-...vv5737-5738\v132772.D Vial: 4
Acq On    : 28 Feb 2013   2:02 pm                    Operator: thienn
Sample    : icv5737-50                               Inst    : MSV
Misc      : MS43796,VV5737,5.0,,,,1                  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MVS5737.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Mar 04 17:41:55 2013
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	120	-0.01	7.56
2		tertiary butyl alcohol	1.170	1.163	0.6	133	-0.01	7.67
3		1,4-dioxane	0.088	0.084	4.5	124	0.00	11.47
4	I	pentafluorobenzene	1.000	1.000	0.0	101	0.00	9.77
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	0.544	0.676	-24.3#	139	-0.02	4.29
15		dichlorodifluoromethane	0.602	0.724	-20.3#	141	-0.01	4.28
16		chloromethane	0.676	0.730	-8.0	129	0.00	4.62
17		vinyl chloride	0.673	0.715	-6.2	127	0.00	4.85
		----------	True	Calc.	% Drift	----------		
18		bromomethane	50.000	58.772	-17.5	127	0.00	5.51
		----------	AvgRF	CCRF	% Dev	----------		
19		chloroethane	0.296	0.327	-10.5	126	0.00	5.66
20		trichlorofluoromethane	0.661	0.746	-12.9	127	0.00	6.07
		----------	True	Calc.	% Drift	----------		
21		Vinyl Bromide	50.000	55.001	-10.0	124	0.00	5.99
		----------	AvgRF	CCRF	% Dev	----------		
22		ethyl ether	0.178	0.175	1.7	114	0.00	6.48
23		Acetaldehyde	0.019	0.022	-15.8	128	0.00	5.07
		----------	True	Calc.	% Drift	----------		
24		Pentane	50.000	55.759	-11.5	122	0.00	6.16
		----------	AvgRF	CCRF	% Dev	----------		
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
28		2-chloropropane	0.759	0.819	-7.9	119	0.00	6.69
29		acrolein	0.044	0.044	0.0	122	0.00	6.76

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5737-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132772.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

30		freon 113	0.304	0.311	-2.3	109	0.01	6.86
31		1,1-dichloroethene	0.379	0.414	-9.2	122	0.00	6.91
		----------	True	Calc.	% Drift	----------		
32		acetone	50.000	49.948	0.1	108	0.00	6.98
		----------	AvgRF	CCRF	% Dev	----------		
33		iso-butyl alcohol	0.011	0.011	0.0	114	0.00	10.35
34		allyl chloride	0.226	0.254	-12.4	118	0.00	7.43
35		acetonitrile	0.091	0.092	-1.1	115	0.00	7.43
36		iodomethane	0.661	0.739	-11.8	121	0.00	7.20
37		carbon disulfide	1.376	1.472	-7.0	121	0.00	7.33
38		methylene chloride	0.370	0.387	-4.6	115	-0.01	7.62
39		1-chloropropane	0.714	0.770	-7.8	117	0.00	7.65
40		methyl acetate	0.163	0.156	4.3	113	0.00	7.41
41		methyl tert butyl ether	0.827	0.894	-8.1	123	-0.01	7.91
42		trans-1,2-dichloroethene	0.402	0.429	-6.7	118	-0.01	7.98
43		di-isopropyl ether	1.176	1.238	-5.3	114	0.00	8.48
44		2-butanone	0.023	0.023	0.0	113	0.00	9.25
45		1,1-dichloroethane	0.705	0.757	-7.4	116	0.00	8.55
46		chloroprene	0.614	0.633	-3.1	109	0.00	8.65
47		acrylonitrile	0.066	0.072	-9.1	121	0.00	7.96
48		vinyl acetate	0.034	0.041	-20.6#	124	0.00	8.51
49		ethyl tert-butyl ether	1.036	1.097	-5.9	113	-0.01	8.95
50		ethyl acetate	0.030	0.030	0.0	103	0.00	9.25
51		2,2-dichloropropane	0.577	0.630	-9.2	117	0.00	9.28
52		cis-1,2-dichloroethene	0.391	0.405	-3.6	111	0.00	9.28
53		propionitrile	0.024	0.027	-12.5	120	0.00	9.36
		----------	True	Calc.	% Drift	----------		
54		methyl acrylate	50.000	53.969	-7.9	117	0.00	9.34
		----------	AvgRF	CCRF	% Dev	----------		
55		methacrylonitrile	0.075	0.083	-10.7	118	0.00	9.55
56		bromochloromethane	0.149	0.165	-10.7	116	-0.01	9.60
57		tetrahydrofuran	0.072	0.078	-8.3	130	0.00	9.65
58		chloroform	0.616	0.653	-6.0	113	0.00	9.65
59		tert-Butyl Formate	0.202	0.232	-14.9	120	-0.01	9.67
60	S	dibromofluoromethane (s)	0.324	0.331	-2.2	112	0.00	9.85
61	S	1,2-dichloroethane-d4 (s)	0.317	0.316	0.3	110	-0.01	10.28
62		1,1,1-trichloroethane	0.600	0.615	-2.5	114	0.00	9.90
63		Cyclohexane	0.563	0.597	-6.0	115	0.00	9.97
		----------	True	Calc.	% Drift	----------		
64		Tert Amyl Alcohol	500.000	539.873	-108	142	-0.01	10.20
		----------	AvgRF	CCRF	% Dev	----------		
65	I	1,4-difluorobenzene	1.000	1.000	0.0	102	0.00	10.71
66		methylcyclohexane	0.490	0.498	-1.6	107	-0.01	11.28
67		epichlorohydrin	0.012	0.013	-8.3	117	0.00	12.05
68		n-butyl alcohol	0.004	0.005	-25.0#	130	-0.01	10.84
69		carbon tetrachloride	0.375	0.408	-8.8	115	-0.01	10.10
70		1,1-dichloropropene	0.387	0.416	-7.5	114	0.00	10.08
71		hexane	0.414	0.382	7.7	101	0.00	8.25
72		2,2,4-Trimethylpentane	1.151	1.070	7.0	100	0.00	10.31
73		benzene	1.114	1.124	-0.9	112	0.00	10.35
74		tert-amyl methyl ether	0.640	0.685	-7.0	116	0.00	10.36
75		heptane	0.234	0.222	5.1	102	0.00	10.48
76		isopropyl acetate	0.040	0.041	-2.5	106	0.00	10.37

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5737-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132772.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77		1,2-dichloroethane	0.280	0.280	0.0	111	0.00	10.37
78		trichloroethene	0.284	0.301	-6.0	114	-0.01	11.07
		----------	True	Calc.	% Drift	----------		
79		Ethyl Acrylate	50.000	48.837	2.3	112	0.00	11.06
		----------	AvgRF	CCRF	% Dev	----------		
80		tert-Amyl Ethyl Ether	0.363	0.384	-5.6	121	0.00	11.21
81		2-chloroethyl vinyl ether	0.006	0.003	50.0#	66	0.00	11.90
82		methyl methacrylate	0.039	0.044	-12.8	124	0.00	11.33
83		1,2-dichloropropane	0.259	0.265	-2.3	111	0.00	11.35
84		dibromomethane	0.114	0.120	-5.3	118	0.00	11.53
85		bromodichloromethane	0.311	0.331	-6.4	111	0.00	11.65
86		2-nitropropane	0.040	0.037	7.5	110	0.00	11.89
87		cis-1,3-dichloropropene	0.380	0.382	-0.5	108	0.00	12.13
88	S	toluene-d8 (s)	0.985	1.022	-3.8	111	0.00	12.44
89		4-methyl-2-pentanone	0.056	0.060	-7.1	116	0.00	12.23
90		toluene	0.683	0.695	-1.8	110	0.00	12.52
91		isoamyl alcohol	0.006	0.007	-16.7	125	0.00	12.25
92		trans-1,3-dichloropropene	0.302	0.321	-6.3	112	0.00	12.74
93		ethyl methacrylate	0.204	0.210	-2.9	109	0.00	12.71
94		1,1,2-trichloroethane	0.136	0.143	-5.1	113	0.00	12.98
95		2-hexanone	0.041	0.047	-14.6	117	0.00	13.16
96	I	chlorobenzene-d5	1.000	1.000	0.0	99	0.00	14.12
97		tetrachloroethene	0.390	0.428	-9.7	111	0.00	13.16
98		1,3-dichloropropane	0.352	0.366	-4.0	109	-0.01	13.18
		----------	True	Calc.	% Drift	----------		
99		butyl acetate	50.000	54.239	-8.5	125	0.00	13.23
		----------	AvgRF	CCRF	% Dev	----------		
100		3,3-Dimethyl-1-Butanol	0.012	0.013	-8.3	124	0.00	13.35
101		dibromochloromethane	0.259	0.279	-7.7	111	0.00	13.48
102		1,2-dibromoethane	0.200	0.209	-4.5	115	0.00	13.65
103		chlorobenzene	0.895	0.947	-5.8	111	0.00	14.15
104		1,1,1,2-tetrachloroethane	0.315	0.329	-4.4	109	0.00	14.22
105		ethylbenzene	1.639	1.715	-4.6	110	0.00	14.20
106		m,p-xylene	0.620	0.669	-7.9	113	0.00	14.32
107		o-xylene	0.594	0.646	-8.8	111	0.00	14.79
108		styrene	0.932	1.005	-7.8	110	0.00	14.81
		----------	True	Calc.	% Drift	----------		
109		Butyl Acrylate	50.000	50.453	-0.9	110	0.00	14.58
		----------	AvgRF	CCRF	% Dev	----------		
110		bromoform	0.156	0.169	-8.3	113	0.00	15.13
		----------	True	Calc.	% Drift	----------		
111		cyclohexanone	500.000	311.889	37.6#	99	0.00	15.39
		----------	AvgRF	CCRF	% Dev	----------		
112	S	4-bromofluorobenzene (s)	0.436	0.463	-6.2	111	0.00	15.41
113	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	99	0.00	16.72
114		isopropylbenzene	3.211	3.412	-6.3	110	0.00	15.17
115		1,1,2,2-tetrachloroethane	0.494	0.505	-2.2	111	0.00	15.54
116		trans-1,4-dichloro-2-bute	0.133	0.125	6.0	104	0.00	15.58
117		1,2,3-trichloropropane	0.120	0.124	-3.3	112	0.00	15.62
118		bromobenzene	0.700	0.756	-8.0	114	0.00	15.64

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5737-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132772.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

119	n-propylbenzene	3.754	4.064	-8.3	112	0.00	15.63
120	4-Ethyltoluene	3.228	3.490	-8.1	119	0.00	15.74
121	2-chlorotoluene	0.737	0.776	-5.3	114	0.00	15.81
122	4-chlorotoluene	2.247	2.300	-2.4	113	0.00	15.92
123	1,3,5-trimethylbenzene	2.573	2.810	-9.2	114	0.00	15.80
124	tert-butylbenzene	2.392	2.456	-2.7	105	0.00	16.19
125	pentachloroethane	0.450	0.489	-8.7	111	0.00	16.30
126	1,2,4-trimethylbenzene	2.628	2.828	-7.6	112	0.00	16.24
127	sec-butylbenzene	3.568	3.726	-4.4	108	0.00	16.43
128	p-isopropyltoluene	2.867	3.192	-11.3	114	0.00	16.56
129	1,3-dichlorobenzene	1.434	1.504	-4.9	114	0.00	16.66
130	1,4-dichlorobenzene	1.443	1.469	-1.8	114	0.00	16.75
131	1,2,3-trimethylbenzene		----------NA----------				
132	1,2-dichlorobenzene	1.255	1.309	-4.3	112	0.00	17.20
133	Benzyl Chloride	0.886	1.063	-20.0	127	0.00	16.88
134	Vinyl Toluene		----------NA----------				
135	1,4-Diethylbenzene	1.660	1.846	-11.2	120	0.00	16.98
136	n-butylbenzene	1.561	1.665	-6.7	110	0.00	17.02
137	hexachloroethane	0.515	0.558	-8.3	111	0.00	17.47
138	1,2,4,5-tetramethylbenzen	2.502	2.778	-11.0	115	0.00	17.86
139	1,2-dibromo-3-chloropropa	0.089	0.099	-11.2	117	0.00	18.06
140	1,3,5-trichlorobenzene	1.089	1.138	-4.5	110	0.00	18.24
141	1,2,4-trichlorobenzene	0.798	0.921	-15.4	120	0.00	18.98
142	hexachlorobutadiene	0.625	0.652	-4.3	103	0.00	19.10
143	naphthalene	1.182	1.299	-9.9	111	0.00	19.32
144	1,2,3-trichlorobenzene	0.676	0.753	-11.4	113	0.00	19.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
v132763.D MVS5737.M Mon Mar 04 17:46:12 2013 VOA-05

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5740-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132830.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-...vv5740-5742\v132830.D Vial: 1
Acq On    :  2 Mar 2013   3:06 pm                    Operator: thienn
Sample    : icv5737-50                                Inst    : MSV
Misc      : MS44017,VV5740,5,,,,1                     Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MVS5737.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Mon Mar 04 09:26:40 2013
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	93	0.00	7.56
2		tertiary butyl alcohol		----------NA----------				
3		1,4-dioxane		----------NA----------				
4	I	pentafluorobenzene	1.000	1.000	0.0	106	0.00	9.77
5		Propylene	0.700	0.739	-5.6	99	0.01	4.14
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		----------NA----------				
15		dichlorodifluoromethane		----------NA----------				
16		chloromethane		----------NA----------				
17		vinyl chloride		----------NA----------				
18		bromomethane		----------NA----------				
19		chloroethane		----------NA----------				
20		trichlorofluoromethane		----------NA----------				
		----------	True	Calc.	% Drift	----------		
21		Vinyl Bromide		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
22		ethyl ether		----------NA----------				
23		Acetaldehyde		----------NA----------				
		----------	True	Calc.	% Drift	----------		
24		Pentane		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
28		2-chloropropane		----------NA----------				
29		acrolein		----------NA----------				
30		freon 113		----------NA----------				
31		1,1-dichloroethene		----------NA----------				
		----------	True	Calc.	% Drift	----------		

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5740-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132830.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

32		acetone		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
33		iso-butyl alcohol		----------NA----------				
34		allyl chloride		----------NA----------				
35		acetonitrile		----------NA----------				
36		iodomethane		----------NA----------				
37		carbon disulfide		----------NA----------				
38		methylene chloride		----------NA----------				
39		1-chloropropane		----------NA----------				
40		methyl acetate		----------NA----------				
41		methyl tert butyl ether		----------NA----------				
42		trans-1,2-dichloroethene		----------NA----------				
43		di-isopropyl ether		----------NA----------				
44		2-butanone		----------NA----------				
45		1,1-dichloroethane		----------NA----------				
46		chloroprene		----------NA----------				
47		acrylonitrile		----------NA----------				
48		vinyl acetate		----------NA----------				
49		ethyl tert-butyl ether		----------NA----------				
50		ethyl acetate		----------NA----------				
51		2,2-dichloropropane		----------NA----------				
52		cis-1,2-dichloroethene		----------NA----------				
53		propionitrile		----------NA----------				
		----------	True	Calc.	% Drift	----------		
54		methyl acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
55		methacrylonitrile		----------NA----------				
56		bromochloromethane		----------NA----------				
57		tetrahydrofuran		----------NA----------				
58		chloroform		----------NA----------				
59		tert-Butyl Formate		----------NA----------				
60	S	dibromofluoromethane (s)	0.324	0.358	-10.5	126	0.00	9.85
61	S	1,2-dichloroethane-d4 (s)	0.317	0.316	0.3	116	0.00	10.28
62		1,1,1-trichloroethane		----------NA----------				
63		Cyclohexane		----------NA----------				
		----------	True	Calc.	% Drift	----------		
64		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
65	I	1,4-difluorobenzene	1.000	1.000	0.0	103	0.00	10.71
66		methylcyclohexane		----------NA----------				
67		epichlorohydrin		----------NA----------				
68		n-butyl alcohol		----------NA----------				
69		carbon tetrachloride		----------NA----------				
70		1,1-dichloropropene		----------NA----------				
71		hexane		----------NA----------				
72		2,2,4-Trimethylpentane		----------NA----------				
73		benzene		----------NA----------				
74		tert-amyl methyl ether		----------NA----------				
75		heptane		----------NA----------				
76		isopropyl acetate		----------NA----------				
77		1,2-dichloroethane		----------NA----------				
78		trichloroethene		----------NA----------				
		----------	True	Calc.	% Drift	----------		

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5740-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132830.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
79		Ethyl Acrylate		----------NA----------				
			AvgRF	CCRF	% Dev			
80		tert-Amyl Ethyl Ether		----------NA----------				
81		2-chloroethyl vinyl ether		----------NA----------				
82		methyl methacrylate		----------NA----------				
83		1,2-dichloropropane		----------NA----------				
84		dibromomethane		----------NA----------				
85		bromodichloromethane		----------NA----------				
86		2-nitropropane		----------NA----------				
87		cis-1,3-dichloropropene		----------NA----------				
88	S	toluene-d8 (s)	0.985	1.122	-13.9	123	0.00	12.44
89		4-methyl-2-pentanone		----------NA----------				
90		toluene		----------NA----------				
91		isoamyl alcohol		----------NA----------				
92		trans-1,3-dichloropropene		----------NA----------				
93		ethyl methacrylate		----------NA----------				
94		1,1,2-trichloroethane		----------NA----------				
95		2-hexanone		----------NA----------				
96	I	chlorobenzene-d5	1.000	1.000	0.0	106	0.00	14.12
97		tetrachloroethene		----------NA----------				
98		1,3-dichloropropane		----------NA----------				
			True	Calc.	% Drift			
99		butyl acetate		----------NA----------				
			AvgRF	CCRF	% Dev			
100		3,3-Dimethyl-1-Butanol		----------NA----------				
101		dibromochloromethane		----------NA----------				
102		1,2-dibromoethane		----------NA----------				
103		chlorobenzene		----------NA----------				
104		1,1,1,2-tetrachloroethane		----------NA----------				
105		ethylbenzene		----------NA----------				
106		m,p-xylene		----------NA----------				
107		o-xylene		----------NA----------				
108		styrene		----------NA----------				
			True	Calc.	% Drift			
109		Butyl Acrylate		----------NA----------				
			AvgRF	CCRF	% Dev			
110		bromoform		----------NA----------				
			True	Calc.	% Drift			
111		cyclohexanone		----------NA----------				
			AvgRF	CCRF	% Dev			
112	S	4-bromofluorobenzene (s)	0.436	0.454	-4.1	117	0.00	15.42
113	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	108	0.00	16.72
114		isopropylbenzene		----------NA----------				
115		1,1,2,2-tetrachloroethane		----------NA----------				
116		trans-1,4-dichloro-2-bute		----------NA----------				
117		1,2,3-trichloropropane		----------NA----------				
118		bromobenzene		----------NA----------				
119		n-propylbenzene		----------NA----------				
120		4-Ethyltoluene		----------NA----------				
121		2-chlorotoluene		----------NA----------				
122		4-chlorotoluene		----------NA----------				

Initial Calibration Verification

Job Number: JB31265 **Sample:** VV5740-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132830.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

123	1,3,5-trimethylbenzene	----------NA----------	
124	tert-butylbenzene	----------NA----------	
125	pentachloroethane	----------NA----------	
126	1,2,4-trimethylbenzene	----------NA----------	
127	sec-butylbenzene	----------NA----------	
128	p-isopropyltoluene	----------NA----------	
129	1,3-dichlorobenzene	----------NA----------	
130	1,4-dichlorobenzene	----------NA----------	
131	1,2,3-trimethylbenzene	----------NA----------	
132	1,2-dichlorobenzene	----------NA----------	
133	Benzyl Chloride	----------NA----------	
134	Vinyl Toluene	----------NA----------	
135	1,4-Diethylbenzene	----------NA----------	
136	n-butylbenzene	----------NA----------	
137	hexachloroethane	----------NA----------	
138	1,2,4,5-tetramethylbenzen	----------NA----------	
139	1,2-dibromo-3-chloropropa	----------NA----------	
140	1,3,5-trichlorobenzene	----------NA----------	
141	1,2,4-trichlorobenzene	----------NA----------	
142	hexachlorobutadiene	----------NA----------	
143	naphthalene	----------NA----------	
144	1,2,3-trichlorobenzene	----------NA----------	

(#) = Out of Range SPCC's out = 0 CCC's out = 0
v132763.D MVS5737.M Mon Mar 04 16:03:55 2013 VOA-05

6.7.7

6

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VV5767-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133436.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDChem\1\DATA\v133436.D                    Vial: 3
Acq On    : 25 Mar 2013   9:42 am                     Operator: thienn
Sample    : cc5737-20                                 Inst    : MSV
Misc      : MS45133,VV5767,5,,,,1                     Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MVS5737.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Sat Mar 23 14:41:22 2013
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	67	0.00	7.56
2	tertiary butyl alcohol	1.170	1.091	6.8	63	0.00	7.68
3	1,4-dioxane	0.088	0.078	11.4	58	0.00	11.48
4 I	pentafluorobenzene	1.000	1.000	0.0	76	0.00	9.77
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	0.544	0.641	-17.8	88	-0.02	4.29
15	dichlorodifluoromethane	0.602	0.624	-3.7	76	0.00	4.29
16	chloromethane	0.676	0.657	2.8	74	0.00	4.61
17	vinyl chloride	0.673	0.755	-12.2	81	0.00	4.85
	----------	True	Calc.	% Drift	----------		
18	bromomethane	20.000	18.070	9.6	62	0.00	5.51
	----------	AvgRF	CCRF	% Dev	----------		
19	chloroethane	0.296	0.317	-7.1	77	0.00	5.66
20	trichlorofluoromethane	0.661	0.682	-3.2	75	0.00	6.08
	----------	True	Calc.	% Drift	----------		
21	Vinyl Bromide		----------NA----------				
	----------	AvgRF	CCRF	% Dev	----------		
22	ethyl ether	0.178	0.175	1.7	75	0.00	6.48
23	Acetaldehyde	0.019	0.015	21.1#	55	0.00	5.08
	----------	True	Calc.	% Drift	----------		
24	Pentane		----------NA----------				
	----------	AvgRF	CCRF	% Dev	----------		
25	Freon 123A		----------NA----------				
26	Freon 141B		----------NA----------				
27	Freon 123		----------NA----------				
28	2-chloropropane	0.759	0.976	-28.6#	91	0.00	6.69
29	acrolein	0.044	0.044	0.0	75	0.00	6.76

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VV5767-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133436.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

30		freon 113	0.304	0.322	-5.9	77	0.00	6.85
31		1,1-dichloroethene	0.379	0.418	-10.3	81	0.00	6.90
		----------	True	Calc.	% Drift	----------		
32		acetone	20.000	25.071	-25.4#	82	0.00	6.97
		----------	AvgRF	CCRF	% Dev	----------		
33		iso-butyl alcohol	0.011	0.012	-9.1	74	-0.01	10.35
34		allyl chloride	0.226	0.253	-11.9	78	0.00	7.43
35		acetonitrile	0.091	0.104	-14.3	82	0.00	7.42
36		iodomethane	0.661	0.659	0.3	71	0.00	7.20
37		carbon disulfide	1.376	1.547	-12.4	82	0.00	7.33
38		methylene chloride	0.370	0.431	-16.5	84	0.00	7.63
39		1-chloropropane	0.714	0.922	-29.1#	90	0.00	7.64
40		methyl acetate	0.163	0.177	-8.6	79	0.00	7.41
41		methyl tert butyl ether	0.827	0.756	8.6	65	0.00	7.92
42		trans-1,2-dichloroethene	0.402	0.425	-5.7	75	-0.01	7.98
43		di-isopropyl ether	1.176	1.313	-11.6	79	0.00	8.49
44		2-butanone	0.023	0.023	0.0	67	0.00	9.25
45		1,1-dichloroethane	0.705	0.810	-14.9	80	0.00	8.55
46		chloroprene	0.614	0.671	-9.3	78	0.00	8.65
47		acrylonitrile	0.066	0.069	-4.5	69	0.00	7.96
48		vinyl acetate	0.034	0.032	5.9	68	0.00	8.51
49		ethyl tert-butyl ether	1.036	1.049	-1.3	71	0.00	8.95
50		ethyl acetate	0.030	0.030	0.0	59	0.00	9.25
51		2,2-dichloropropane	0.577	0.634	-9.9	76	-0.01	9.27
52		cis-1,2-dichloroethene	0.391	0.379	3.1	68	0.00	9.28
53		propionitrile	0.024	0.025	-4.2	68	0.00	9.37
		----------	True	Calc.	% Drift	----------		
54		methyl acrylate	20.000	17.456	12.7	57	0.00	9.34
		----------	AvgRF	CCRF	% Dev	----------		
55		methacrylonitrile	0.075	0.070	6.7	62	0.00	9.54
56		bromochloromethane	0.149	0.141	5.4	62	-0.02	9.59
57		tetrahydrofuran	0.072	0.077	-6.9	76	-0.01	9.64
58		chloroform	0.616	0.660	-7.1	73	0.00	9.64
59		tert-Butyl Formate	0.202	0.186	7.9	66	-0.01	9.67
60	S	dibromofluoromethane (s)	0.324	0.328	-1.2	77	0.00	9.85
61	S	1,2-dichloroethane-d4 (s)	0.317	0.311	1.9	73	0.00	10.28
62		1,1,1-trichloroethane	0.600	0.625	-4.2	75	-0.01	9.90
63		Cyclohexane	0.563	0.601	-6.7	77	0.00	9.96
		----------	True	Calc.	% Drift	----------		
64		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
65	I	1,4-difluorobenzene	1.000	1.000	0.0	75	0.00	10.71
66		methylcyclohexane	0.490	0.488	0.4	70	0.00	11.29
67		epichlorohydrin	0.012	0.011	8.3	62	0.00	12.04
68		n-butyl alcohol	0.004	0.004	0.0	60	0.00	10.84
69		carbon tetrachloride	0.375	0.399	-6.4	74	-0.01	10.10
70		1,1-dichloropropene	0.387	0.430	-11.1	76	-0.01	10.07
71		hexane	0.414	0.427	-3.1	75	-0.01	8.24
72		2,2,4-Trimethylpentane	1.151	1.281	-11.3	81	0.00	10.31
73		benzene	1.114	1.194	-7.2	76	0.00	10.35
74		tert-amyl methyl ether	0.640	0.627	2.0	69	0.00	10.36
75		heptane	0.234	0.265	-13.2	77	0.00	10.48
76		isopropyl acetate	0.040	0.047	-17.5	74	0.00	10.38

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VV5767-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133436.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77		1,2-dichloroethane	0.280	0.283	-1.1	70	0.00	10.37
78		trichloroethene	0.284	0.291	-2.5	71	-0.01	11.07
		----------	True	Calc.	% Drift	----------		
79		Ethyl Acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
80		tert-Amyl Ethyl Ether		----------NA----------				
81		2-chloroethyl vinyl ether	0.006	0.048	-700.0#	655#	0.00	11.89
82		methyl methacrylate	0.039	0.034	12.8	60	0.00	11.34
83		1,2-dichloropropane	0.259	0.279	-7.7	73	-0.01	11.35
84		dibromomethane	0.114	0.110	3.5	65	0.00	11.53
85		bromodichloromethane	0.311	0.323	-3.9	70	0.00	11.65
86		2-nitropropane	0.040	0.050	-25.0#	91	0.00	11.89
87		cis-1,3-dichloropropene	0.380	0.365	3.9	66	0.00	12.13
88	S	toluene-d8 (s)	0.985	1.048	-6.4	79	0.00	12.44
89		4-methyl-2-pentanone	0.056	0.052	7.1	62	0.00	12.23
90		toluene	0.683	0.693	-1.5	71	0.00	12.52
91		isoamyl alcohol	0.006	0.005	16.7	57	0.00	12.25
92		trans-1,3-dichloropropene	0.302	0.290	4.0	64	0.00	12.74
93		ethyl methacrylate	0.204	0.178	12.7	60	0.00	12.71
94		1,1,2-trichloroethane	0.136	0.136	0.0	68	0.00	12.98
95		2-hexanone	0.041	0.036	12.2	58	0.00	13.16
96	I	chlorobenzene-d5	1.000	1.000	0.0	73	0.00	14.12
97		tetrachloroethene	0.390	0.397	-1.8	68	0.00	13.16
98		1,3-dichloropropane	0.352	0.345	2.0	65	-0.01	13.18
		----------	True	Calc.	% Drift	----------		
99		butyl acetate	20.000	16.136	19.3	49	0.00	13.23
		----------	AvgRF	CCRF	% Dev	----------		
100		3,3-Dimethyl-1-Butanol	0.012	0.009	25.0#	54	0.00	13.35
101		dibromochloromethane	0.259	0.235	9.3	60	0.00	13.48
102		1,2-dibromoethane	0.200	0.181	9.5	60	0.00	13.65
103		chlorobenzene	0.895	0.873	2.5	66	0.00	14.15
104		1,1,1,2-tetrachloroethane	0.315	0.302	4.1	66	-0.01	14.21
105		ethylbenzene	1.639	1.661	-1.3	69	0.00	14.20
106		m,p-xylene	0.620	0.637	-2.7	69	0.00	14.32
107		o-xylene	0.594	0.556	6.4	63	0.00	14.79
108		styrene	0.932	0.880	5.6	63	0.00	14.80
		----------	True	Calc.	% Drift	----------		
109		Butyl Acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
110		bromoform	0.156	0.144	7.7	61	0.00	15.12
		----------	True	Calc.	% Drift	----------		
111		cyclohexanone	200.000	80.683	59.7#	26	0.00	15.40
		----------	AvgRF	CCRF	% Dev	----------		
112	S	4-bromofluorobenzene (s)	0.436	0.397	8.9	68	0.00	15.41
113	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	71	0.00	16.72
114		isopropylbenzene	3.211	3.129	2.6	64	0.00	15.17
115		1,1,2,2-tetrachloroethane	0.494	0.479	3.0	63	0.00	15.53
116		trans-1,4-dichloro-2-bute	0.133	0.122	8.3	54	0.00	15.58
117		1,2,3-trichloropropane	0.120	0.110	8.3	57	-0.01	15.62
118		bromobenzene	0.700	0.700	0.0	65	0.00	15.64

Continuing Calibration Summary

Job Number: JB31265 **Sample:** VV5767-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133436.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

119	n-propylbenzene	3.754	3.977	-5.9	69	0.00	15.63
120	4-Ethyltoluene		----------NA----------				
121	2-chlorotoluene	0.737	0.732	0.7	65	0.00	15.81
122	4-chlorotoluene	2.247	2.179	3.0	65	0.00	15.92
123	1,3,5-trimethylbenzene	2.573	2.501	2.8	63	0.00	15.80
124	tert-butylbenzene	2.392	2.178	8.9	60	0.00	16.19
125	pentachloroethane	0.450	0.449	0.2	64	0.00	16.30
126	1,2,4-trimethylbenzene	2.628	2.534	3.6	62	0.00	16.24
127	sec-butylbenzene	3.568	3.416	4.3	63	0.00	16.42
128	p-isopropyltoluene	2.867	2.700	5.8	60	0.00	16.56
129	1,3-dichlorobenzene	1.434	1.326	7.5	61	0.00	16.66
130	1,4-dichlorobenzene	1.443	1.312	9.1	63	0.00	16.75
131	1,2,3-trimethylbenzene		----------NA----------				
132	1,2-dichlorobenzene	1.255	1.133	9.7	58	0.00	17.19
133	Benzyl Chloride	0.886	0.785	11.4	59	0.00	16.88
134	Vinyl Toluene		----------NA----------				
135	1,4-Diethylbenzene		----------NA----------				
136	n-butylbenzene	1.561	1.420	9.0	59	0.00	17.02
137	hexachloroethane	0.515	0.524	-1.7	67	0.00	17.47
138	1,2,4,5-tetramethylbenzen		----------NA----------				
139	1,2-dibromo-3-chloropropa	0.089	0.072	19.1	50#	0.00	18.05
140	1,3,5-trichlorobenzene	1.089	1.010	7.3	60	0.00	18.24
141	1,2,4-trichlorobenzene	0.798	0.676	15.3	55	0.00	18.98
142	hexachlorobutadiene	0.625	0.585	6.4	61	0.00	19.09
143	naphthalene	1.182	0.796	32.7#	44#	0.00	19.32
144	1,2,3-trichlorobenzene	0.676	0.558	17.5	53	0.00	19.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
v132762.D MVS5737.M Mon Mar 25 16:18:23 2013 MSV

6.7.8

6

New Jersey

ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201321.D
Acq On : 26 Mar 2013 3:22 am
Operator : OksanaT
Sample : jb31265-1
Misc : MS44935,VE8851,6.6,,100,10,1
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Mar 26 11:29:18 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.734	65	88271	500.00	ug/L	0.06
5) pentafluorobenzene	9.904	168	194753	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.820	114	247183	50.00	ug/L	0.00
97) chlorobenzene-d5	14.151	117	209882	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.719	152	124499	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.946	113	76010	41.60	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 83.20%			
61) 1,2-dichloroethane-d4 (s)	10.365	65	83864	41.74	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 83.48%			
89) toluene-d8 (s)	12.525	98	284293	45.43	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 90.86%			
116) 4-bromofluorobenzene (s)	15.422	95	126158	55.28	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 110.56%			

Target Compounds

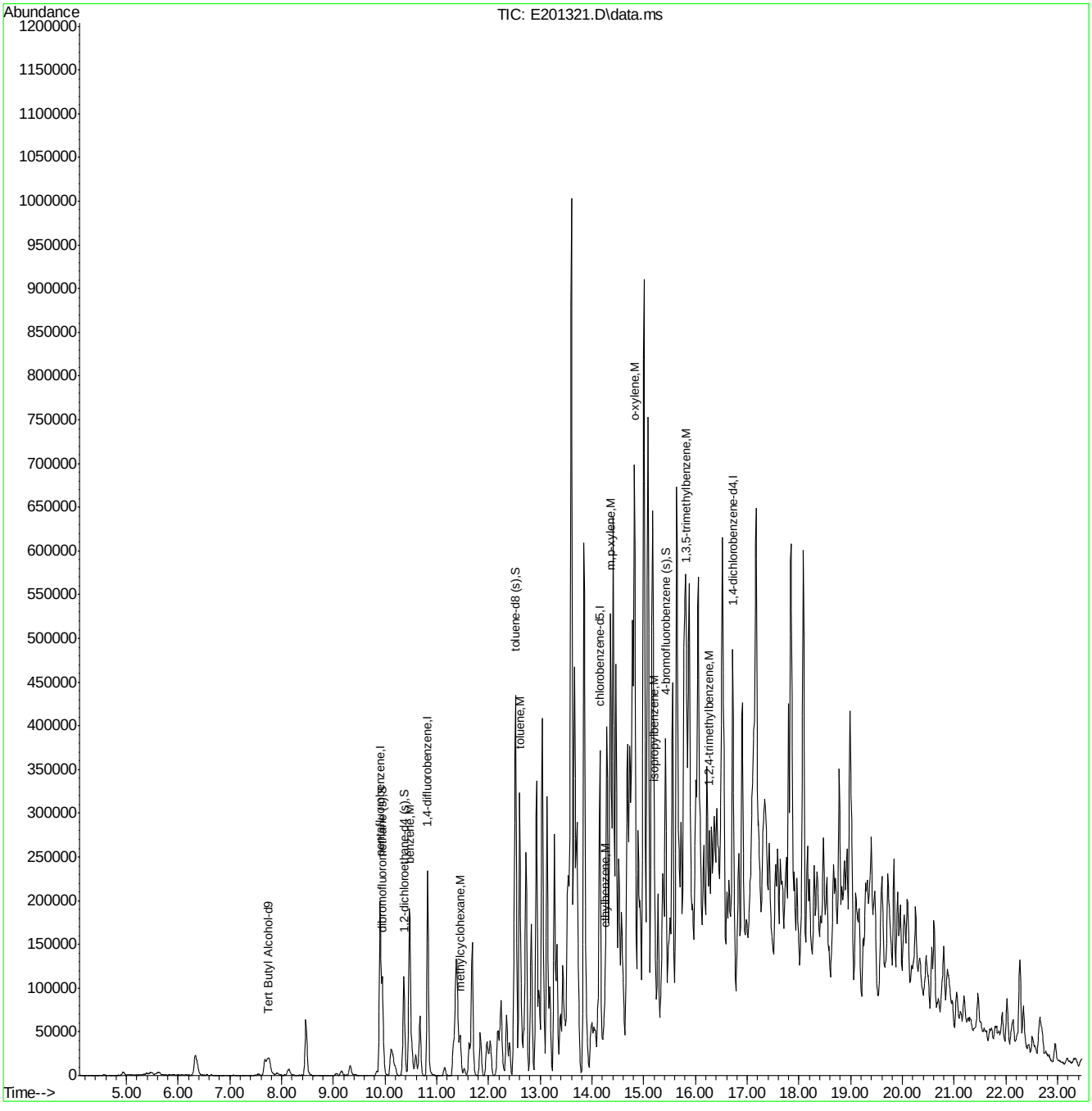
						Qvalue
75) benzene	10.475	78	209403	30.24	ug/L	99
83) methylcyclohexane	11.453	83	24675	9.21	ug/L	98
91) toluene	12.598	92	164549	39.16	ug/L	98
108) ethylbenzene	14.251	91	53187	7.30	ug/L	99
109) m,p-xylene	14.366	106	139080	48.57	ug/L	98
110) o-xylene	14.826	106	8299	2.83	ug/L	97
115) isopropylbenzene	15.208	105	8595	1.07	ug/L	98
125) 1,3,5-trimethylbenzene	15.825	105	8917	1.31	ug/L	94
128) 1,2,4-trimethylbenzene	16.264	105	38244	5.67	ug/L	92

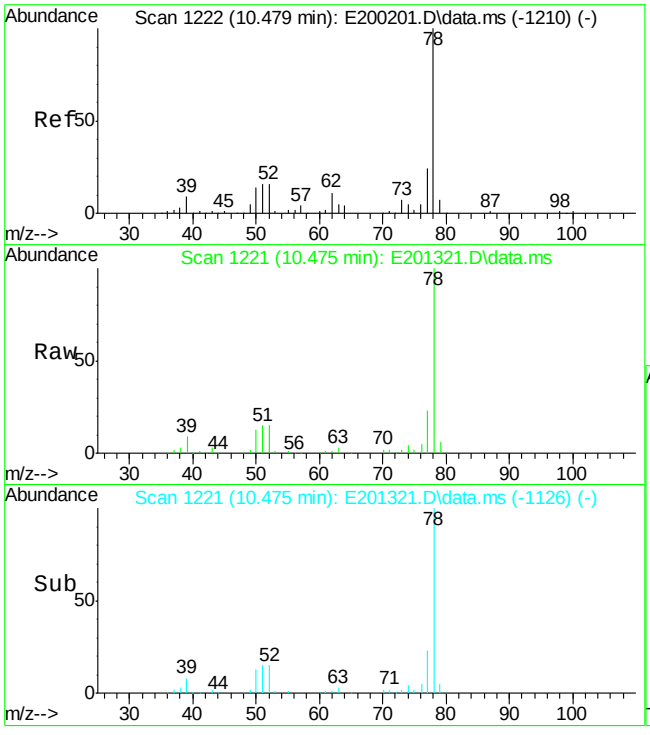
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201321.D
Acq On : 26 Mar 2013 3:22 am
Operator : OksanaT
Sample : jb31265-1
Misc : MS44935,VE8851,6.6,,100,10,1
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Mar 26 11:29:18 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

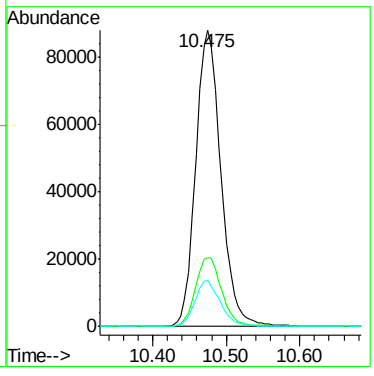


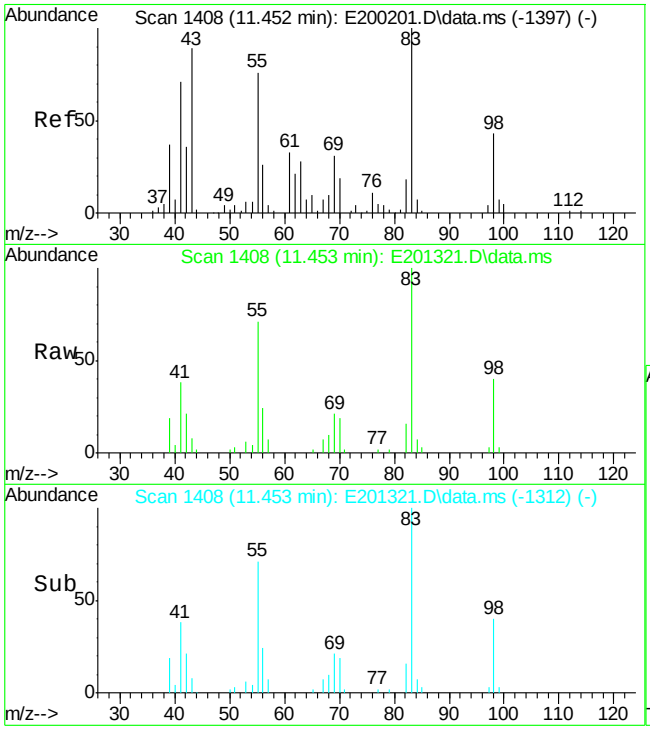


#75
benzene
Concen: 30.24 ug/L
RT: 10.475 min Scan# 1221
Delta R.T. -0.004 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion: 78 Resp: 209403

Ion	Ratio	Lower	Upper
78	100		
77	23.0	0.0	53.8
52	15.5	0.0	45.9

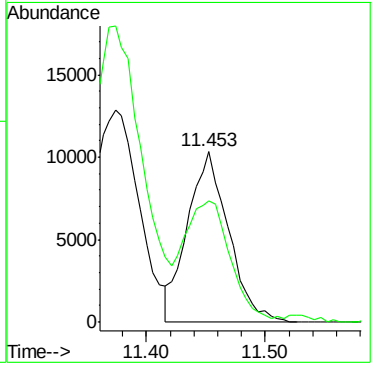


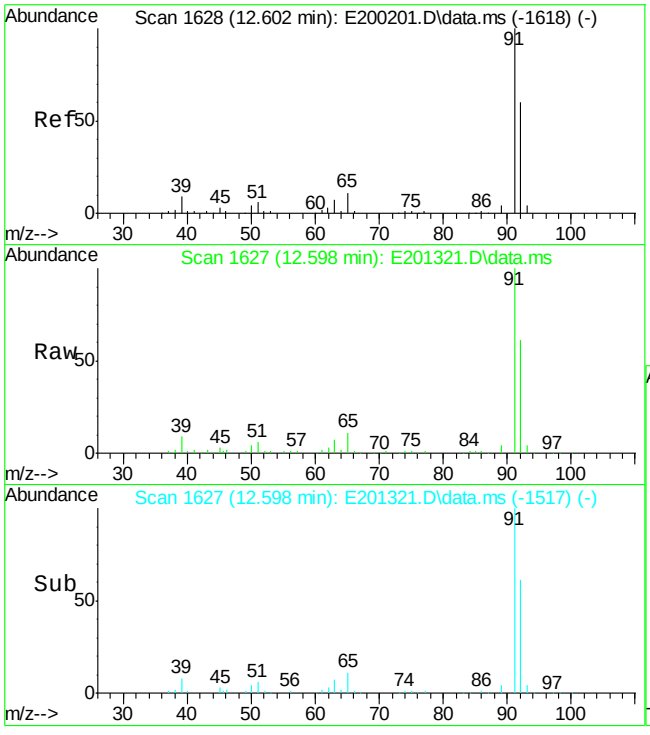


#83
methylcyclohexane
Concen: 9.21 ug/L
RT: 11.453 min Scan# 1408
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion: 83 Resp: 24675

Ion	Ratio	Lower	Upper
83	100		
55	80.0	57.5	106.9

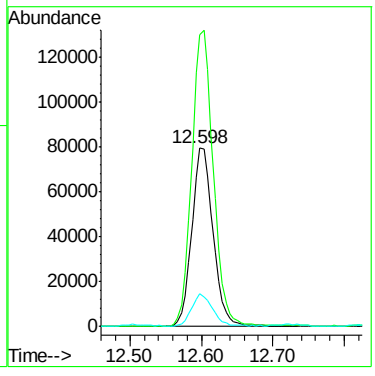


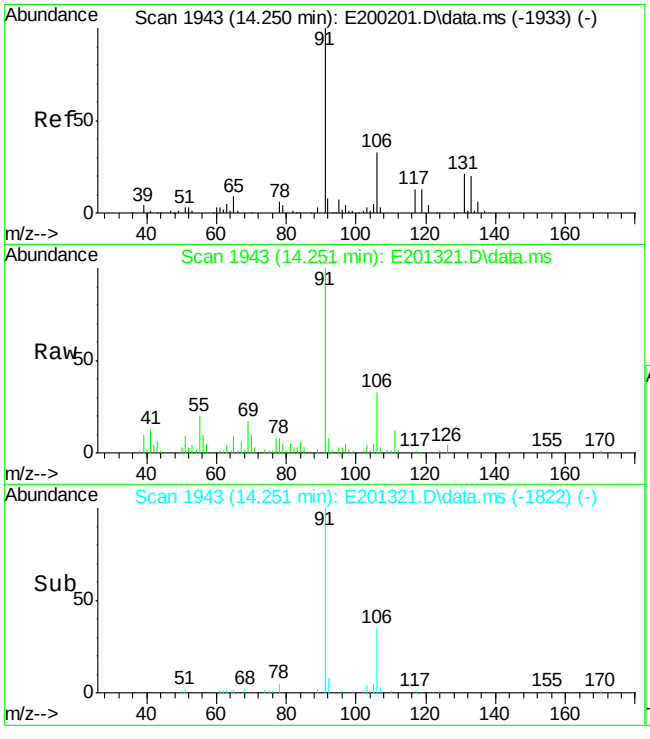


#91
toluene
Concen: 39.16 ug/L
RT: 12.598 min Scan# 1627
Delta R.T. -0.004 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion: 92 Resp: 164549

Ion	Ratio	Lower	Upper
92	100		
91	163.3	136.3	196.3
65	18.0	0.0	48.8

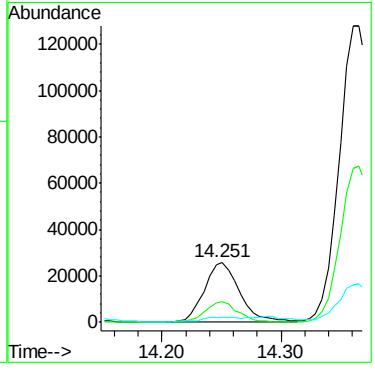


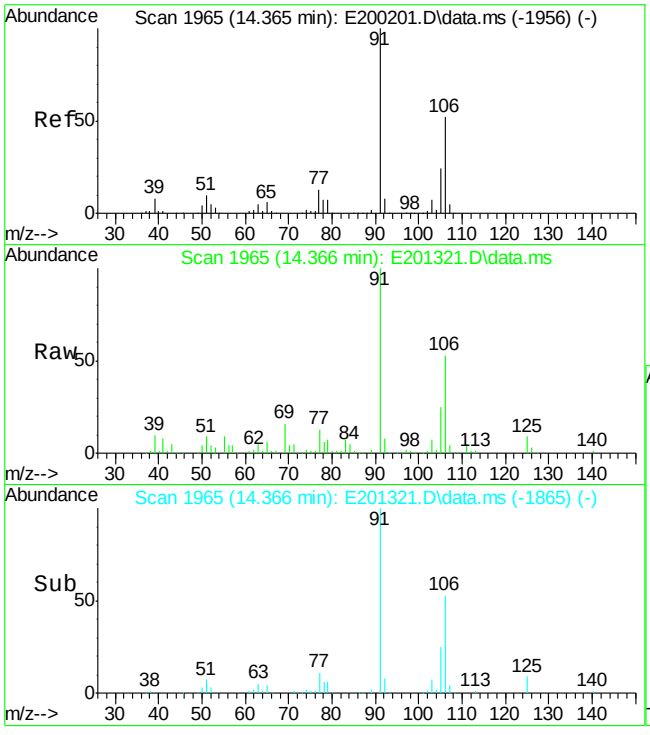


#108
ethylbenzene
Concen: 7.30 ug/L
RT: 14.251 min Scan# 1943
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion: 91 Resp: 53187

Ion	Ratio	Lower	Upper
91	100		
106	33.4	2.9	62.9
77	7.5	0.0	38.7

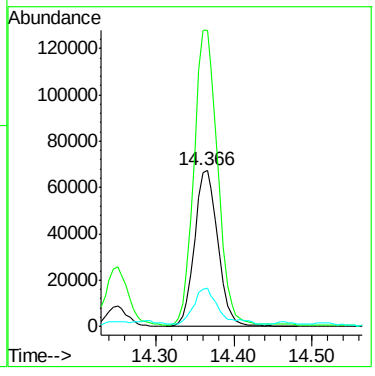


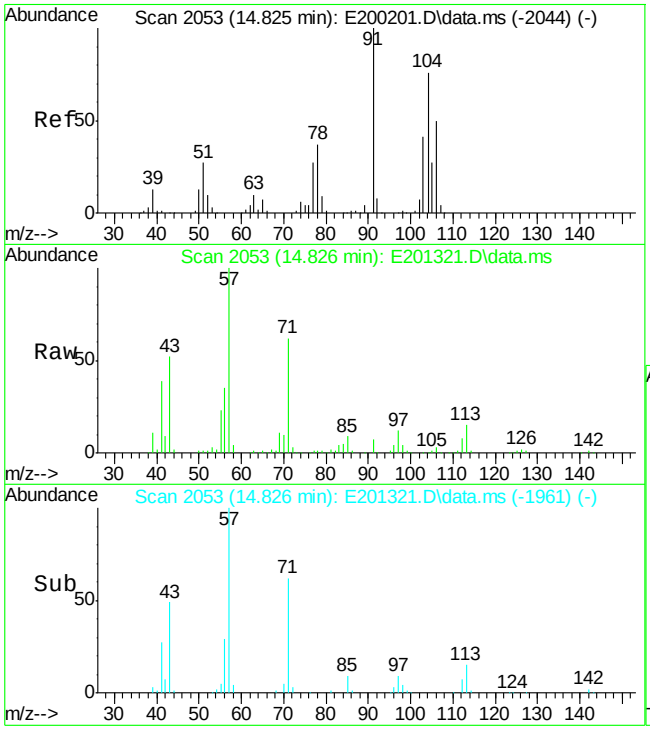


#109
m,p-xylene
Concen: 48.57 ug/L
RT: 14.366 min Scan# 1965
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion:106 Resp: 139080

Ion	Ratio	Lower	Upper
106	100		
91	188.9	161.1	221.1
77	23.2	0.0	54.5

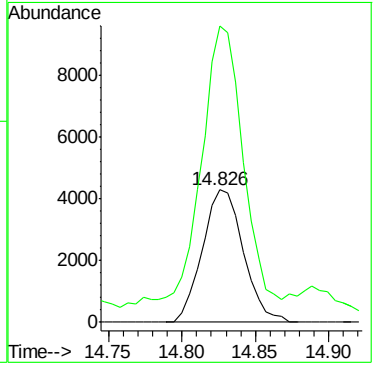


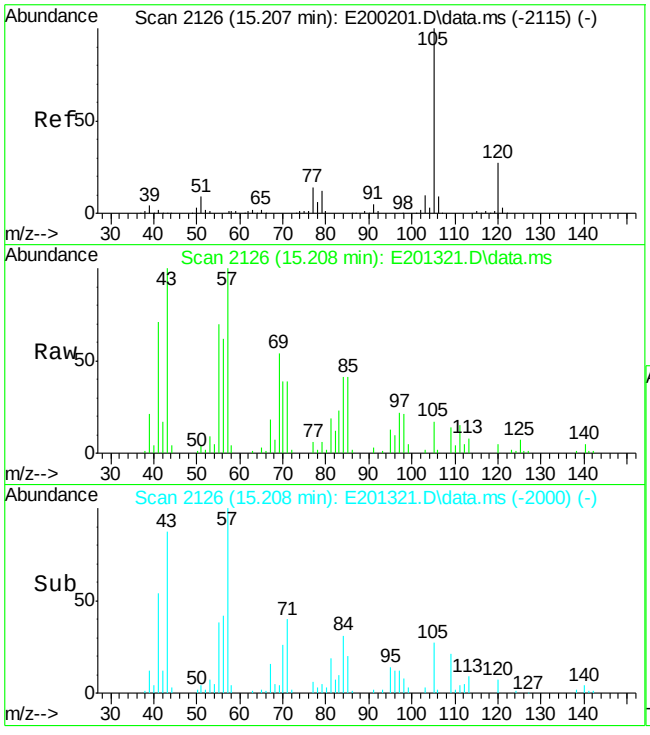


#110
o-xylene
Concen: 2.83 ug/L
RT: 14.826 min Scan# 2053
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion:106 Resp: 8299

Ion	Ratio	Lower	Upper
106	100		
91	205.4	170.7	230.7

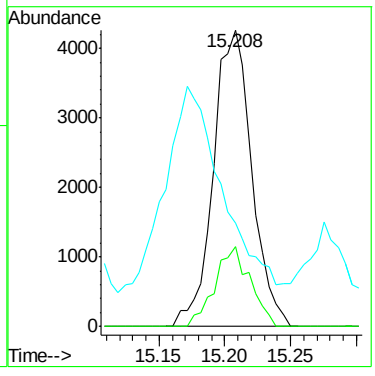


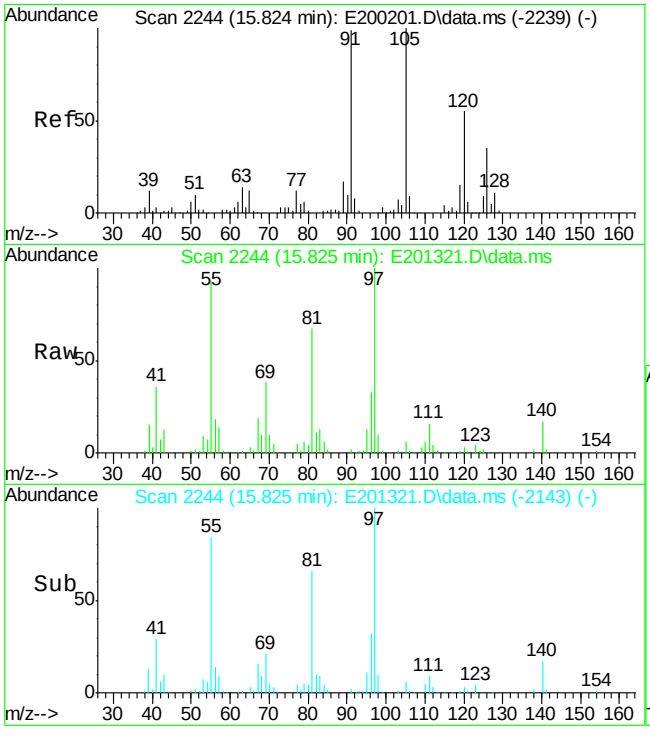


#115
isopropylbenzene
Concen: 1.07 ug/L
RT: 15.208 min Scan# 2126
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion:105 Resp: 8595

Ion	Ratio	Lower	Upper
105	100		
120	26.8	0.0	57.0
77	16.8	0.0	44.4

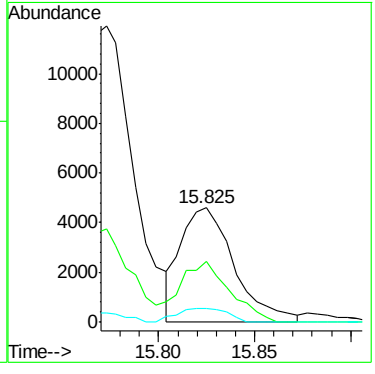




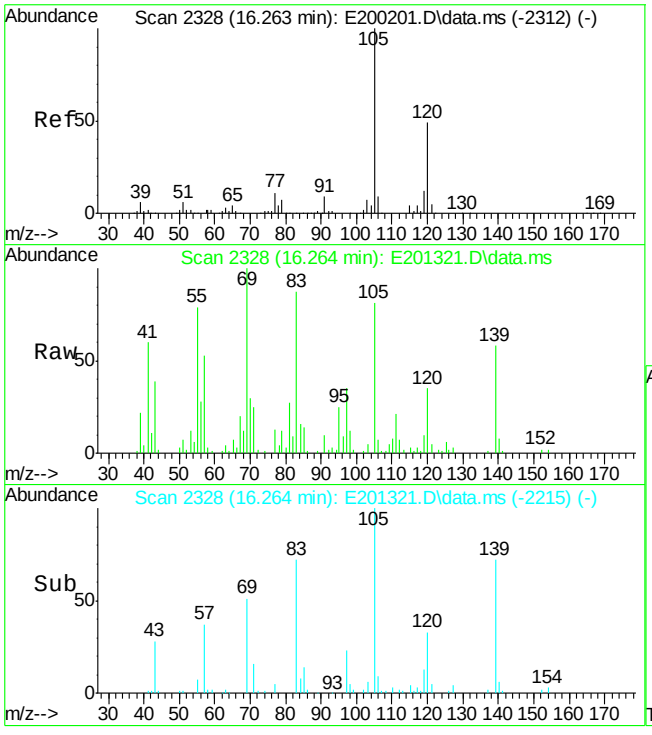
#125
1,3,5-trimethylbenzene
Concen: 1.31 ug/L
RT: 15.825 min Scan# 2244
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion:105 Resp: 8917

Ion	Ratio	Lower	Upper
105	100		
120	56.6	21.5	81.5
119	13.0	0.0	43.2



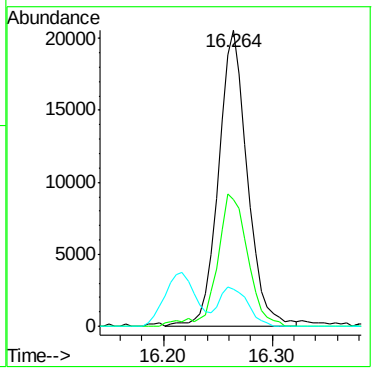
7.1.1



#128
1,2,4-trimethylbenzene
Concen: 5.67 ug/L
RT: 16.264 min Scan# 2328
Delta R.T. 0.001 min
Lab File: E201321.D
Acq: 26 Mar 2013 3:22 am

Tgt Ion:105 Resp: 38244

Ion	Ratio	Lower	Upper
105	100		
120	43.0	19.4	79.4
119	12.6	0.0	43.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201320.D
Acq On : 26 Mar 2013 2:52 am
Operator : OksanaT
Sample : jb31265-2
Misc : MS44935,VE8851,6.1,,100,10,1
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Mar 26 11:27:37 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.712	65	99202	500.00	ug/L	0.04
5) pentafluorobenzene	9.909	168	197536	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.824	114	250023	50.00	ug/L	0.00
97) chlorobenzene-d5	14.150	117	214766	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.723	152	124939	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.950	113	79124	42.69	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 85.38%			
61) 1,2-dichloroethane-d4 (s)	10.364	65	81725	40.10	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 80.20%			
89) toluene-d8 (s)	12.524	98	329229	52.01	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 104.02%			
116) 4-bromofluorobenzene (s)	15.421	95	135119	59.00	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 118.00%#			

Target Compounds

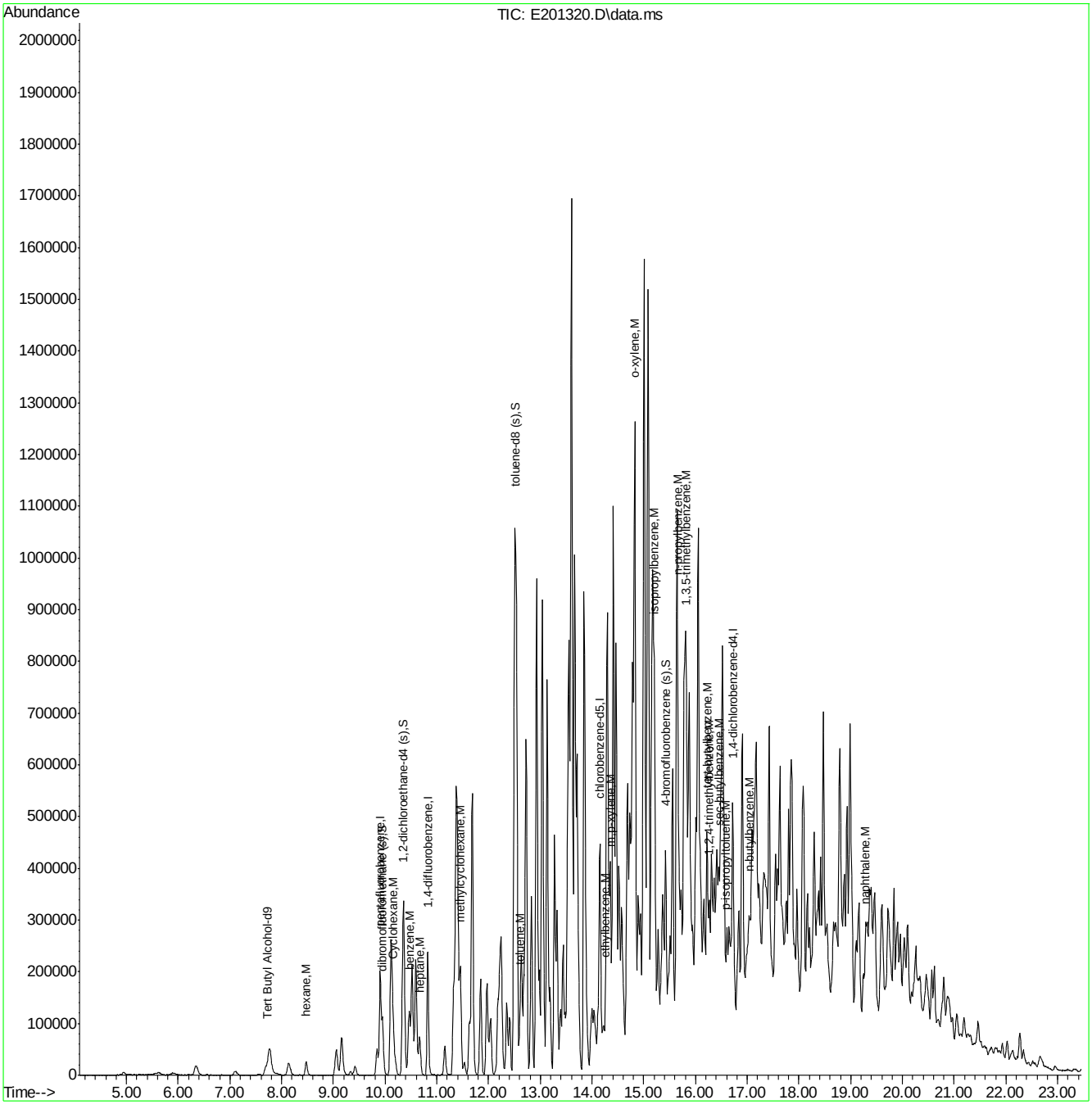
						Qvalue
74) hexane	8.475	57	20112	10.93	ug/L	93
75) benzene	10.479	78	53255	7.60	ug/L	97
76) heptane	10.672	57	10359	10.27	ug/L #	1
83) methylcyclohexane	11.451	83	115260	42.51	ug/L	92
91) toluene	12.602	92	41208	9.70	ug/L	98
108) ethylbenzene	14.250	91	26889	3.61	ug/L	97
109) m,p-xylene	14.365	106	37513	12.80	ug/L	95
110) o-xylene	14.825	106	4172	1.39	ug/L	88
115) isopropylbenzene	15.207	105	141567	17.61	ug/L	99
121) n-propylbenzene	15.656	91	113541	12.69	ug/L	100
125) 1,3,5-trimethylbenzene	15.824	105	3513	0.51	ug/L	93
126) tert-butylbenzene	16.216	119	14667	2.50	ug/L	97
128) 1,2,4-trimethylbenzene	16.263	105	11612	1.71	ug/L	97
129) sec-butylbenzene	16.457	105	95472	11.44	ug/L	95
131) p-isopropyltoluene	16.582	119	5027	0.73	ug/L	89
136) n-butylbenzene	17.037	92	20870	6.27	ug/L	92
142) naphthalene	19.270	128	24755	5.30	ug/L	94
146) Cyclohexane	10.154	84	38026	14.47	ug/L #	3

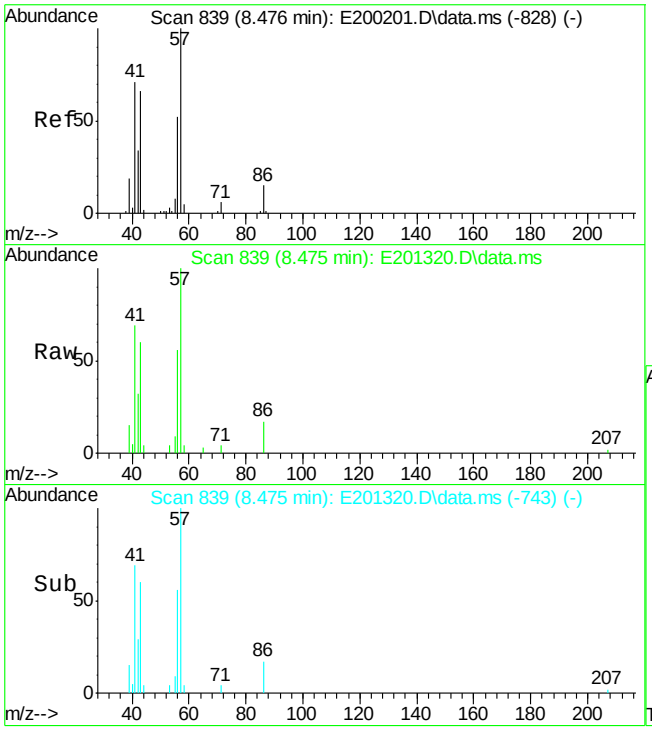
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201320.D
Acq On : 26 Mar 2013 2:52 am
Operator : OksanaT
Sample : jb31265-2
Misc : MS44935,VE8851,6.1,,100,10,1
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Mar 26 11:27:37 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

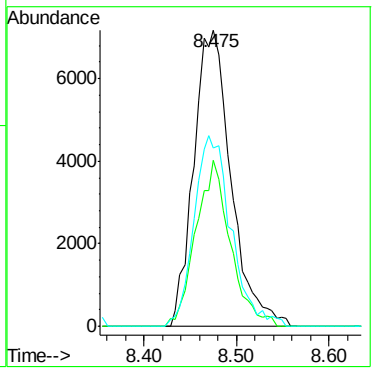


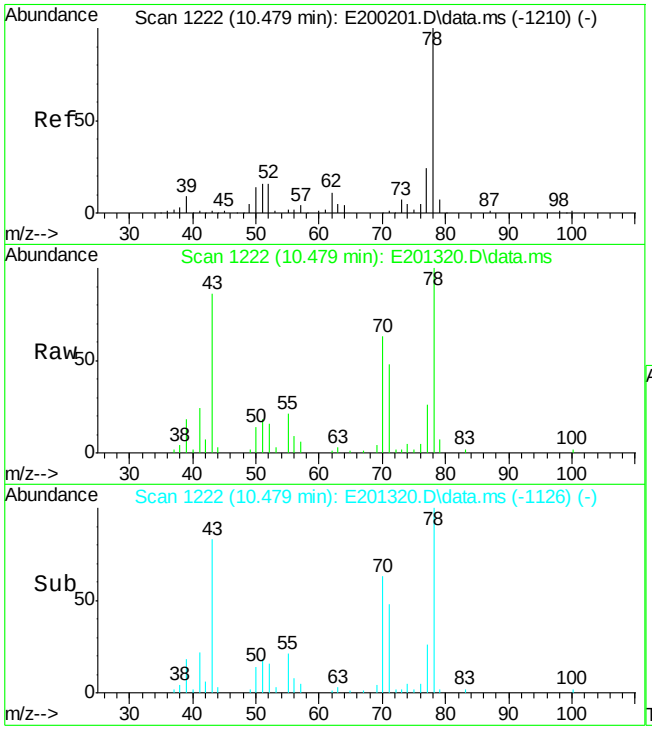


#74
hexane
Concen: 10.93 ug/L
RT: 8.475 min Scan# 839
Delta R.T. 0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 57 Resp: 20112

Ion	Ratio	Lower	Upper
57	100		
56	56.2	22.2	82.2
43	60.2	36.2	96.2

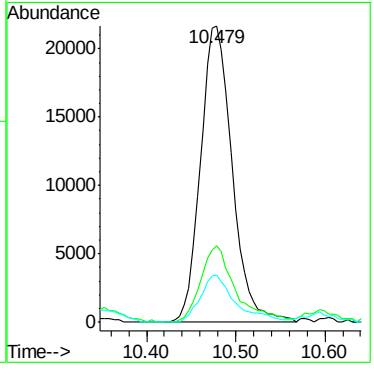


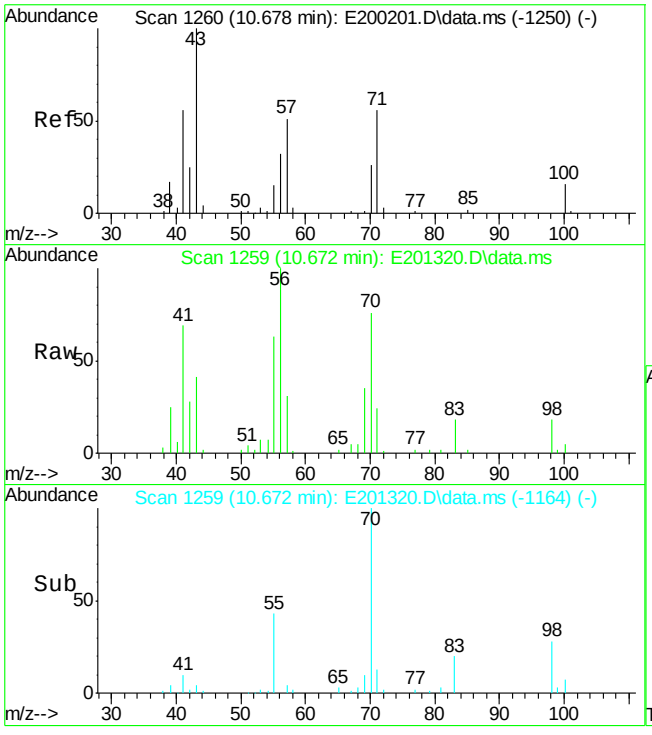


#75
benzene
Concen: 7.60 ug/L
RT: 10.479 min Scan# 1222
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 78 Resp: 53255

Ion	Ratio	Lower	Upper
78	100		
77	25.9	0.0	53.8
52	16.1	0.0	45.9

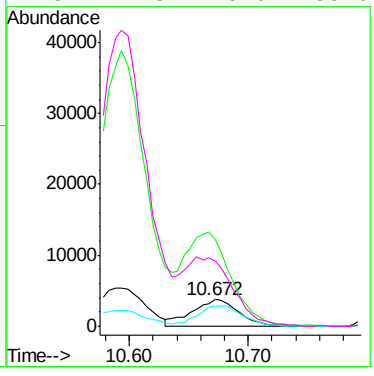


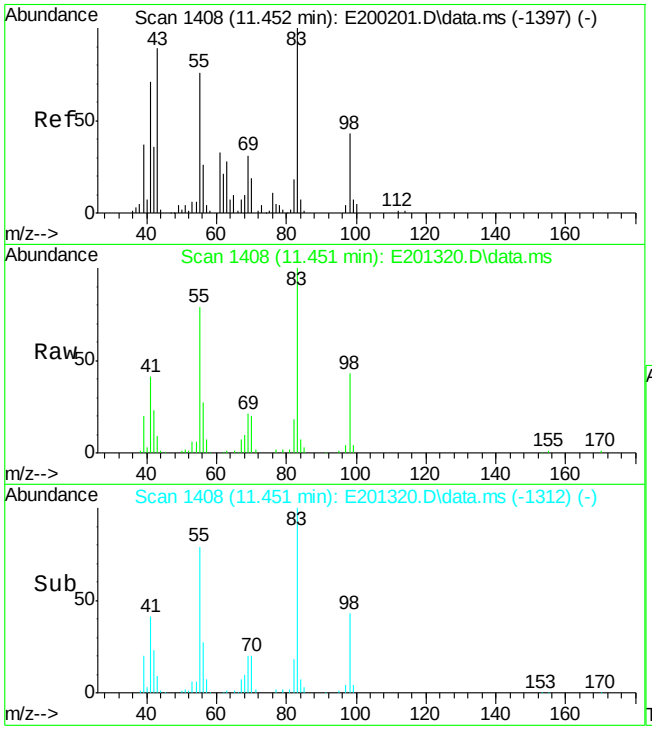


#76
heptane
Concen: 10.27 ug/L
RT: 10.672 min Scan# 1259
Delta R.T. -0.006 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 57 Resp: 10359

Ion	Ratio	Lower	Upper
57	100		
56	318.1	31.6	91.6#
71	77.2	78.1	138.1#
70	241.3	20.9	80.9#

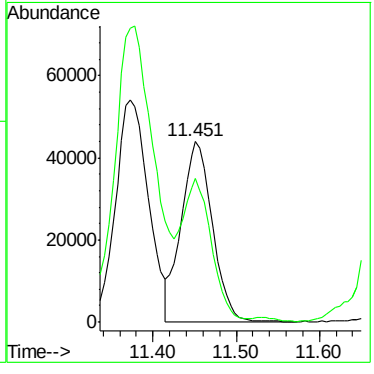


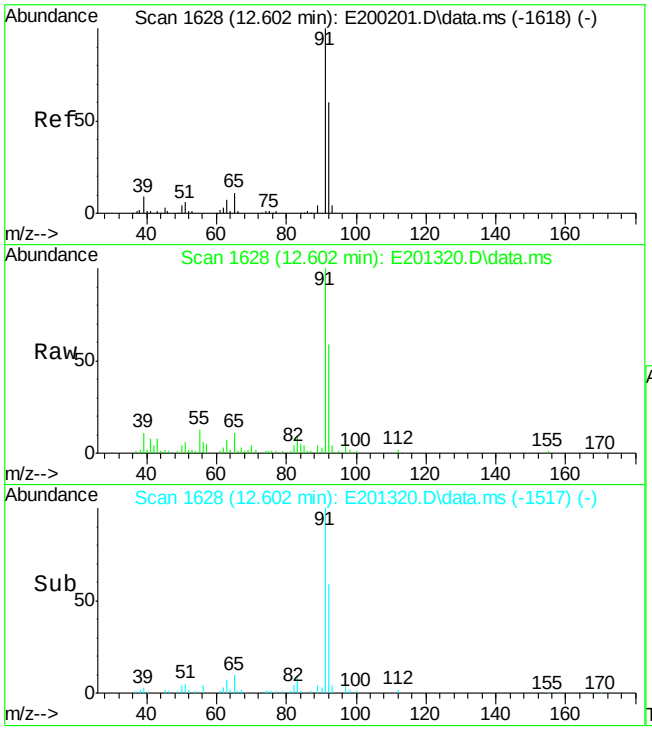


#83
methylcyclohexane
Concen: 42.51 ug/L
RT: 11.451 min Scan# 1408
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 83 Resp: 115260

Ion	Ratio	Lower	Upper
83	100		
55	74.7	57.5	106.9

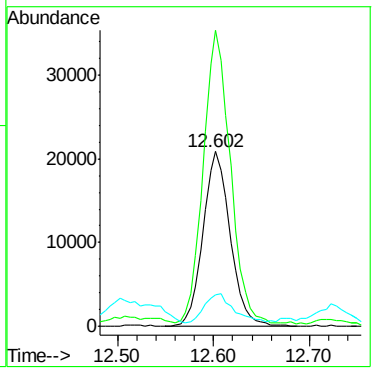


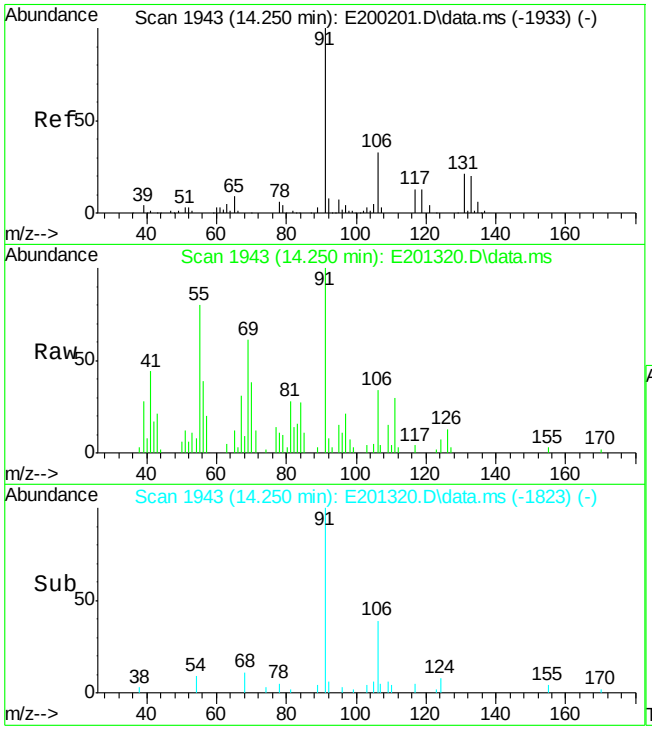


#91
toluene
Concen: 9.70 ug/L
RT: 12.602 min Scan# 1628
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 92 Resp: 41208

Ion	Ratio	Lower	Upper
92	100		
91	168.0	136.3	196.3
65	14.4	0.0	48.8

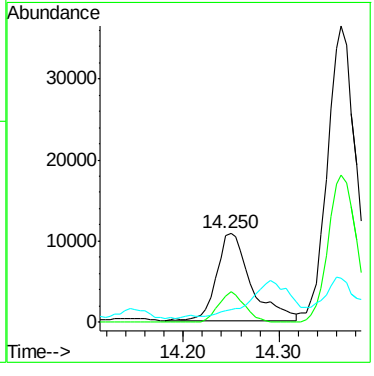




#108
ethylbenzene
Concen: 3.61 ug/L
RT: 14.250 min Scan# 1943
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

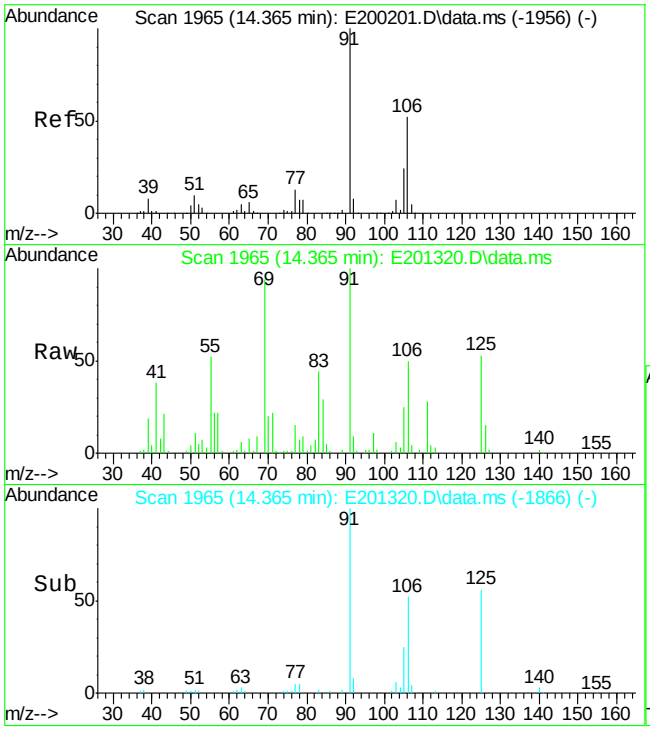
Tgt Ion: 91 Resp: 26889

Ion	Ratio	Lower	Upper
91	100		
106	34.4	2.9	62.9
77	9.6	0.0	38.7



7.1.2

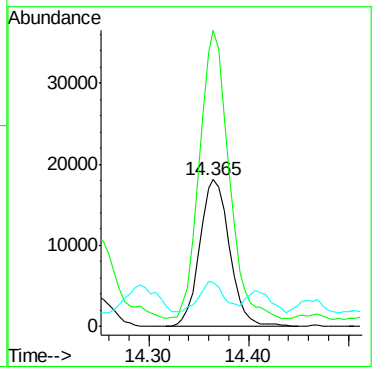
7

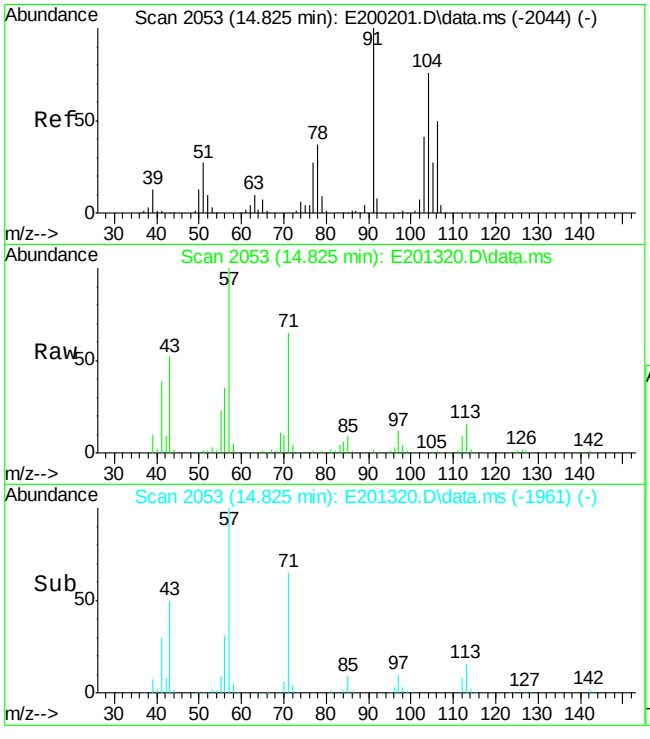


#109
m,p-xylene
Concen: 12.80 ug/L
RT: 14.365 min Scan# 1965
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:106 Resp: 37513

Ion	Ratio	Lower	Upper
106	100		
91	196.0	161.1	221.1
77	16.2	0.0	54.5

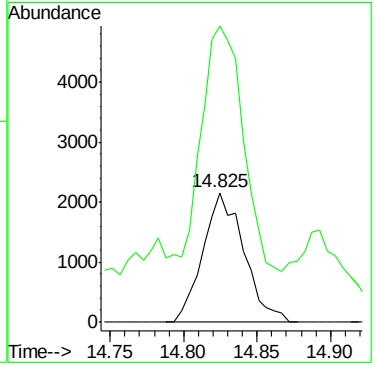


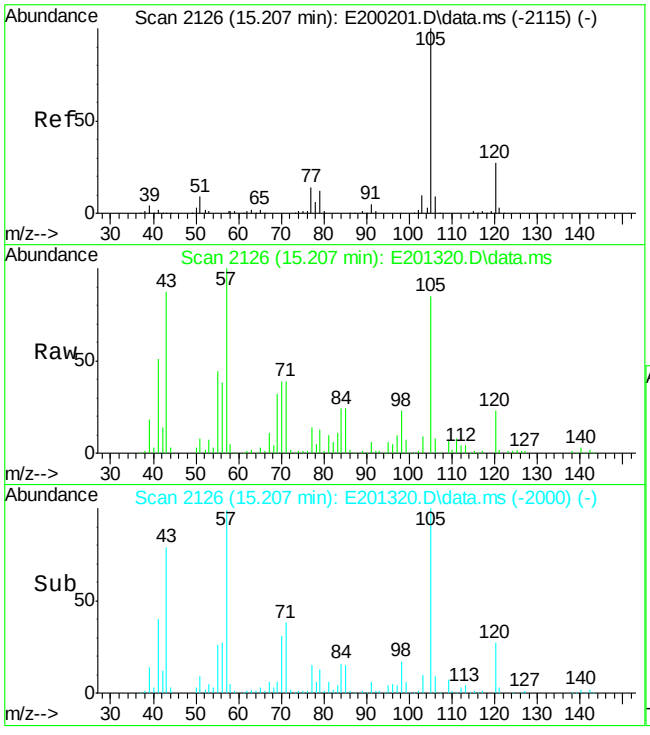


#110
o-xylene
Concen: 1.39 ug/L
RT: 14.825 min Scan# 2053
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:106 Resp: 4172

Ion	Ratio	Lower	Upper
106	100		
91	182.0	170.7	230.7

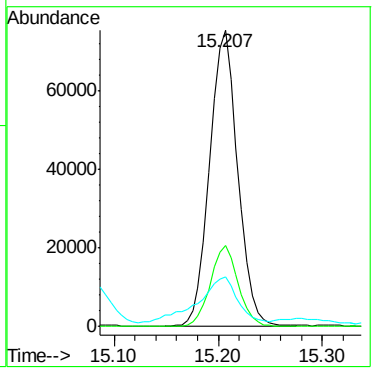


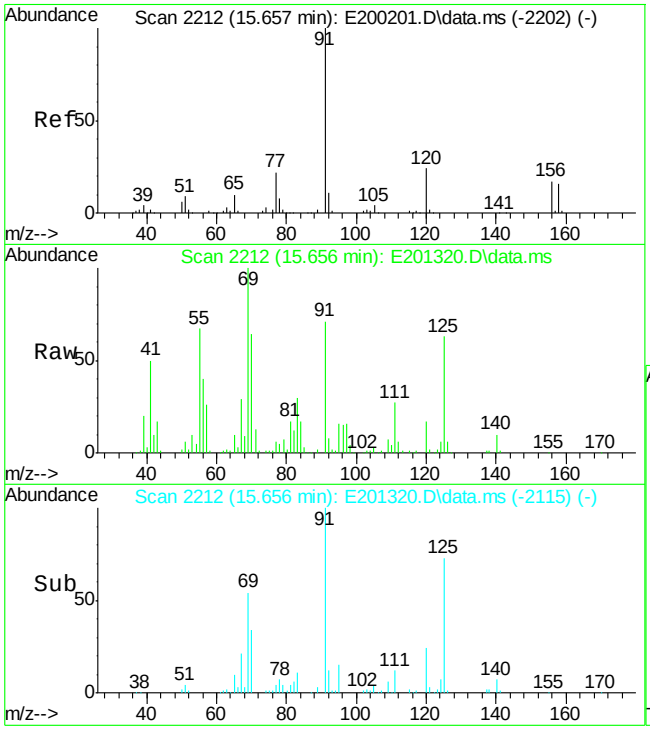


#115
isopropylbenzene
Concen: 17.61 ug/L
RT: 15.207 min Scan# 2126
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:105 Resp: 141567

Ion	Ratio	Lower	Upper
105	100		
120	27.3	0.0	57.0
77	14.1	0.0	44.4

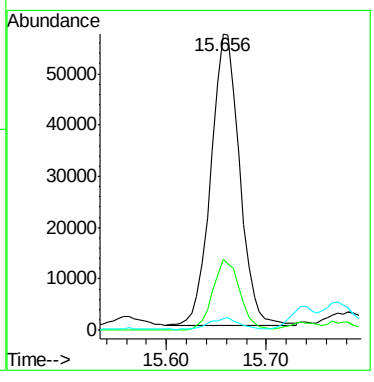


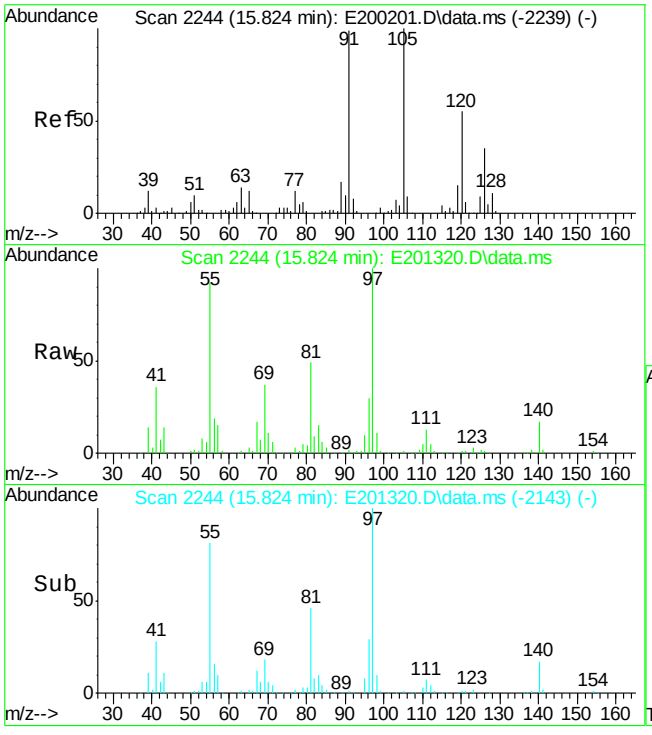


#121
n-propylbenzene
Concen: 12.69 ug/L
RT: 15.656 min Scan# 2212
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 91 Resp: 113541

Ion	Ratio	Lower	Upper
91	100		
120	24.1	0.0	54.3
105	3.7	0.0	34.0

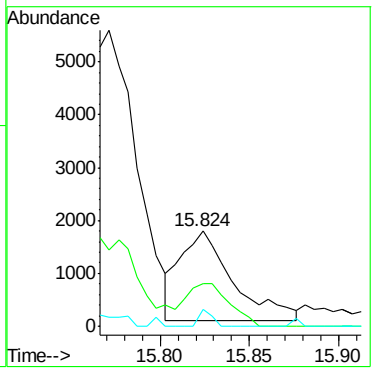


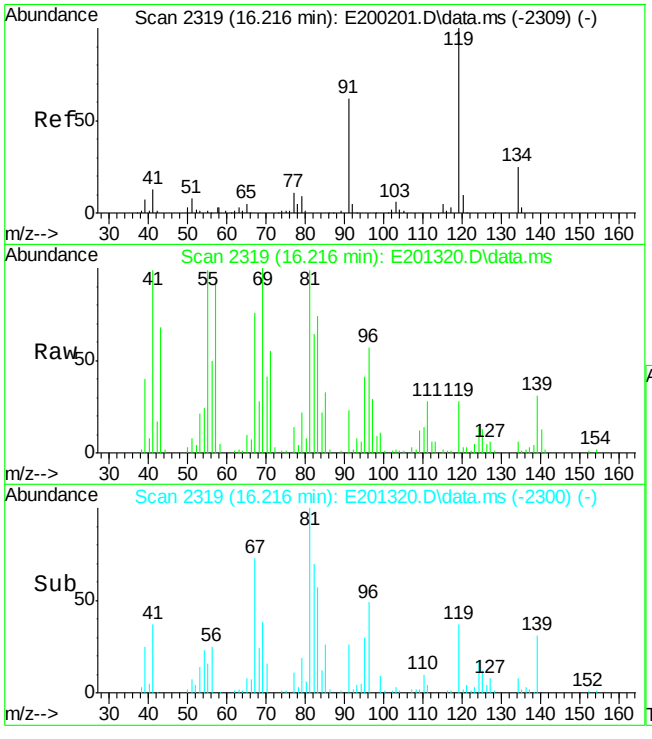


#125
1,3,5-trimethylbenzene
Concen: 0.51 ug/L
RT: 15.824 min Scan# 2244
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:105 Resp: 3513

Ion	Ratio	Lower	Upper
105	100		
120	53.8	21.5	81.5
119	21.6	0.0	43.2

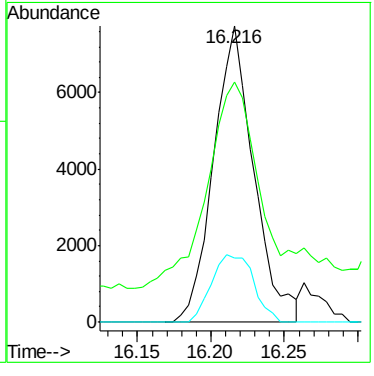




#126
tert-butylbenzene
Concen: 2.50 ug/L
RT: 16.216 min Scan# 2319
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

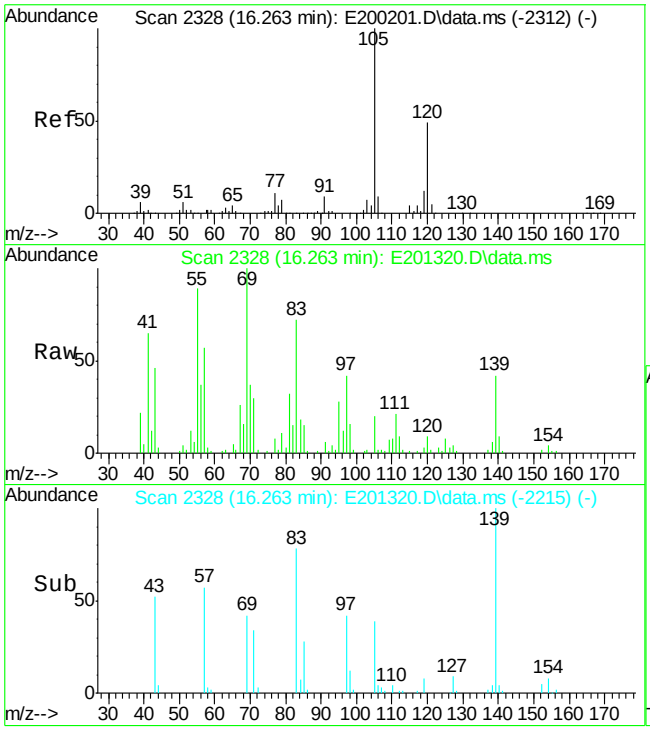
Tgt Ion:119 Resp: 14667

Ion	Ratio	Lower	Upper
119	100		
91	63.3	31.9	91.9
134	21.8	0.0	54.6



7.1.2

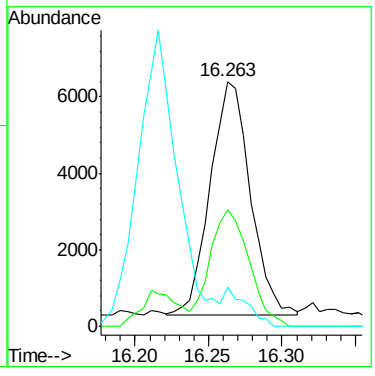
7

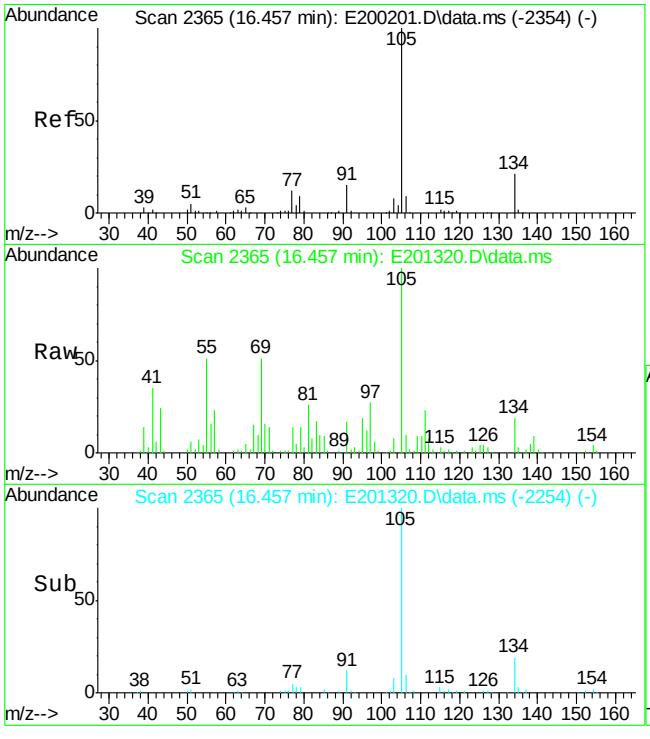


#128
1,2,4-trimethylbenzene
Concen: 1.71 ug/L
RT: 16.263 min Scan# 2328
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:105 Resp: 11612

Ion	Ratio	Lower	Upper
105	100		
120	50.2	19.4	79.4
119	17.0	0.0	43.7

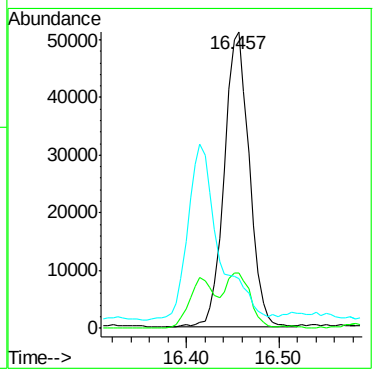


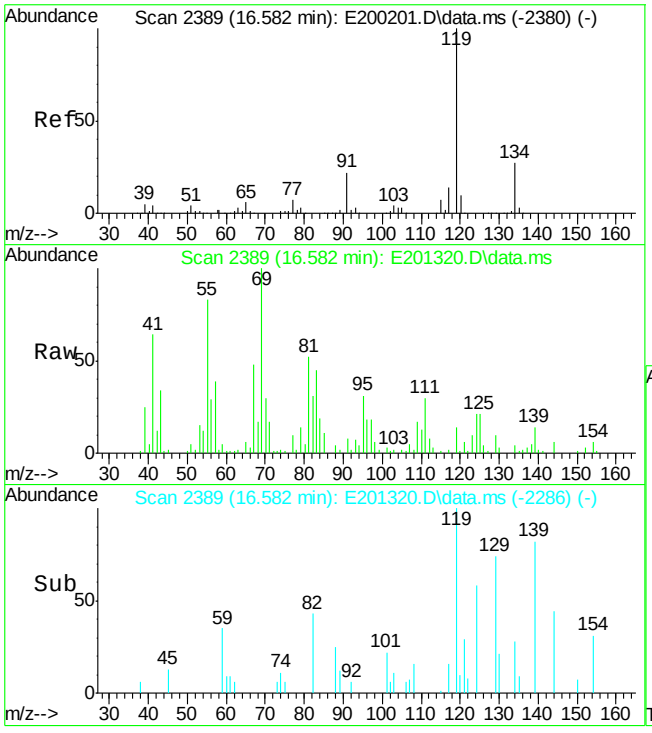


#129
sec-butylbenzene
Concen: 11.44 ug/L
RT: 16.457 min Scan# 2365
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:105 Resp: 95472

Ion	Ratio	Lower	Upper
105	100		
134	18.7	0.0	50.8
91	13.0	0.0	45.6

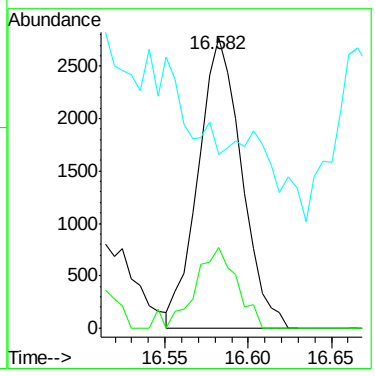


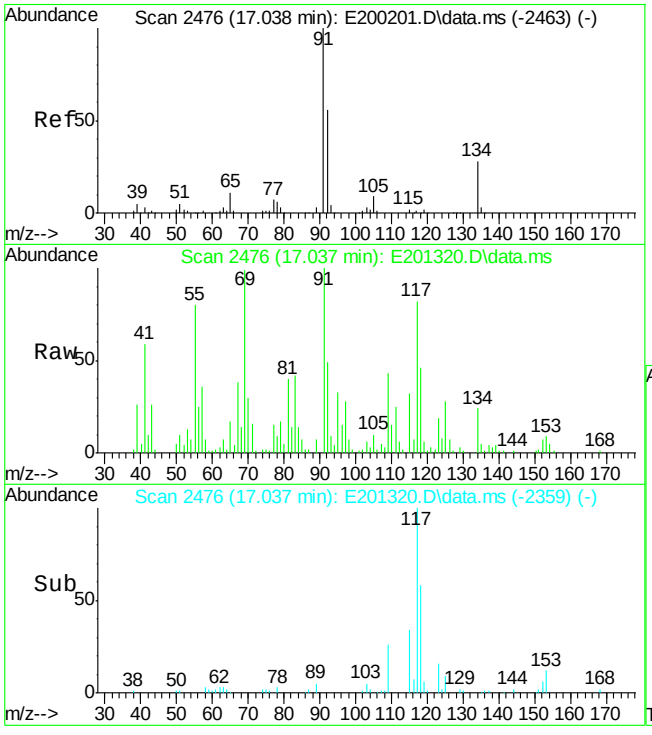


#131
p-isopropyltoluene
Concen: 0.73 ug/L
RT: 16.582 min Scan# 2389
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:119 Resp: 5027

Ion	Ratio	Lower	Upper
119	100		
134	27.8	0.0	57.1
91	11.3	0.0	52.0

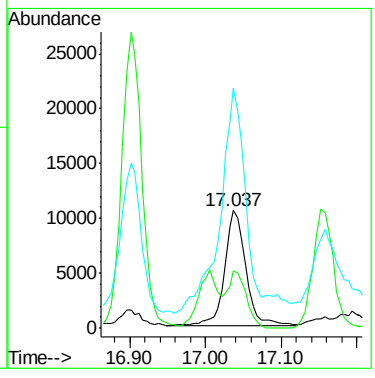




#136
n-butylbenzene
Concen: 6.27 ug/L
RT: 17.037 min Scan# 2476
Delta R.T. 0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

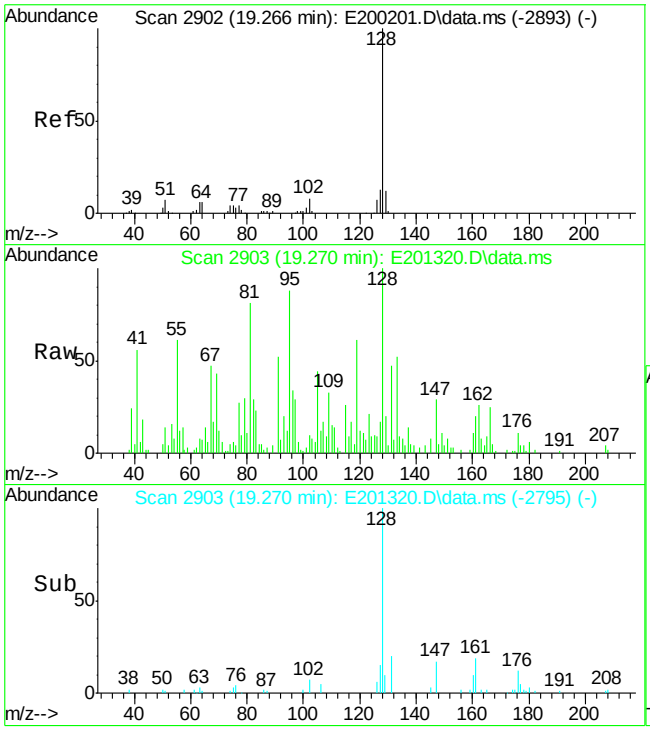
Tgt Ion: 92 Resp: 20870

Ion	Ratio	Lower	Upper
92	100		
134	47.6	21.0	81.0
91	192.9	150.4	210.4



7.1.2

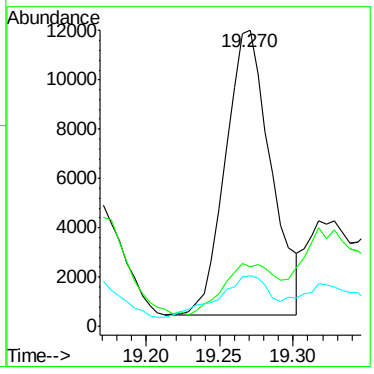
7

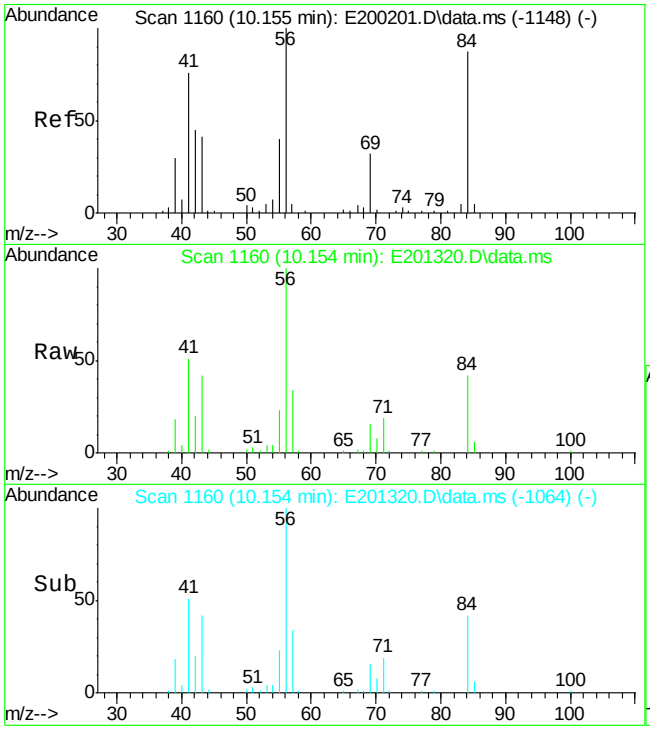


#142
naphthalene
Concen: 5.30 ug/L
RT: 19.270 min Scan# 2903
Delta R.T. 0.005 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion:128 Resp: 24755

Ion	Ratio	Lower	Upper
128	100		
129	14.9	0.0	41.5
127	14.6	0.0	43.2

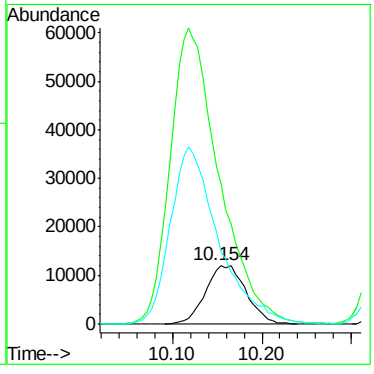




#146
Cyclohexane
Concen: 14.47 ug/L
RT: 10.154 min Scan# 1160
Delta R.T. -0.000 min
Lab File: E201320.D
Acq: 26 Mar 2013 2:52 am

Tgt Ion: 84 Resp: 38026

Ion	Ratio	Lower	Upper
84	100		
56	0.0	0.0	30.0
41	0.0	64.3	124.3#



7.1.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201322.D
Acq On : 26 Mar 2013 3:53 am
Operator : OksanaT
Sample : jb31265-3
Misc : MS44935,VE8851,5.1,,100,10,1
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Mar 26 11:31:12 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.691	65	87981	500.00	ug/L	0.02
5) pentafluorobenzene	9.904	168	195817	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.824	114	245643	50.00	ug/L	0.00
97) chlorobenzene-d5	14.151	117	221456	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.724	152	139619	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.946	113	77793	42.34	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 84.68%			
61) 1,2-dichloroethane-d4 (s)	10.364	65	84283	41.72	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 83.44%			
89) toluene-d8 (s)	12.524	98	290921	46.78	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 93.56%			
116) 4-bromofluorobenzene (s)	15.421	95	110798	43.29	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 86.58%			

Target Compounds

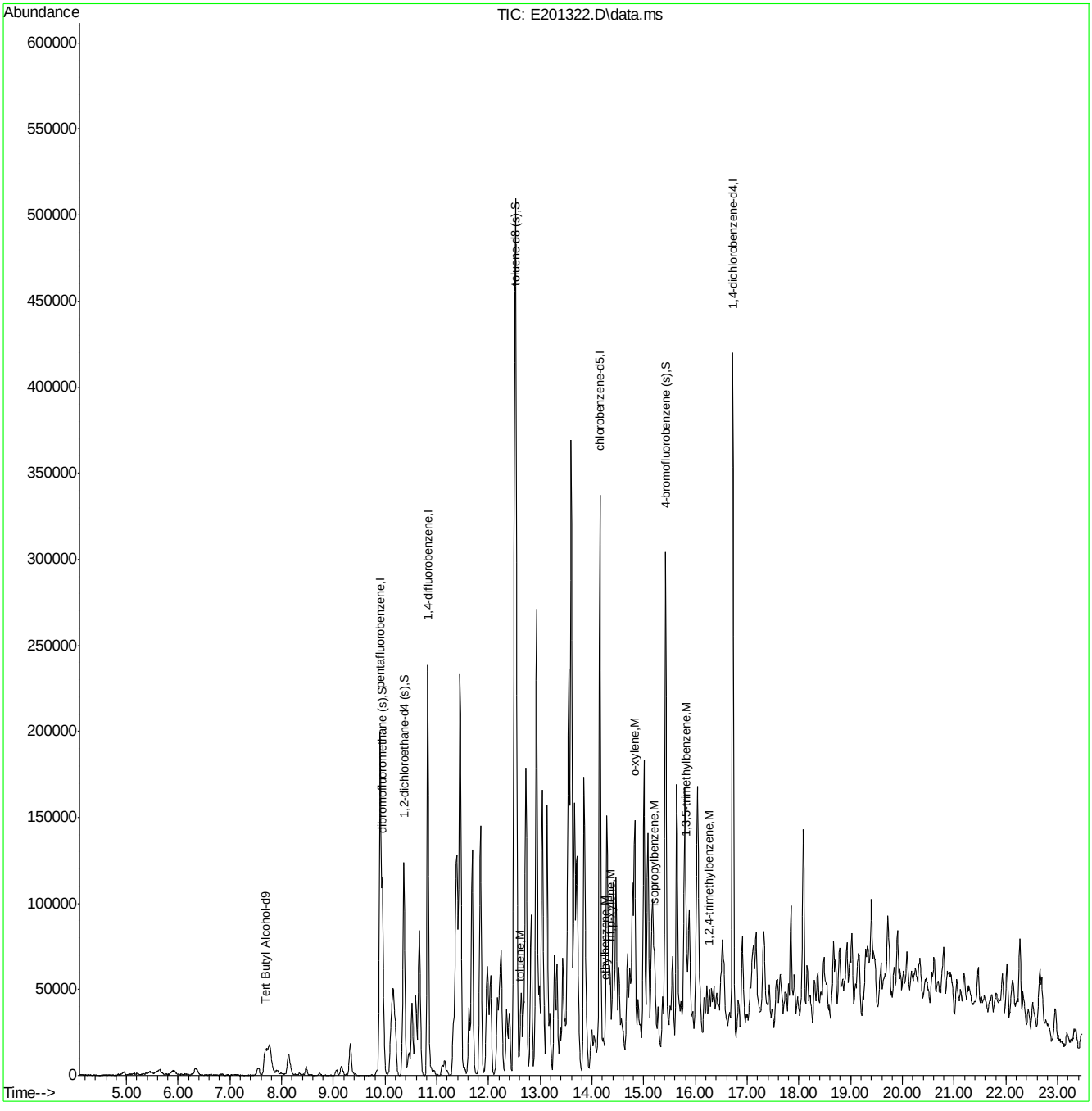
						Qvalue
91) toluene	12.608	92	4198	1.01	ug/L	98
108) ethylbenzene	14.250	91	5055	0.66	ug/L	87
109) m,p-xylene	14.365	106	6411	2.12	ug/L	96
110) o-xylene	14.825	106	3991	1.29	ug/L	81
115) isopropylbenzene	15.207	105	7600	0.85	ug/L	90
125) 1,3,5-trimethylbenzene	15.819	105	3428	0.45	ug/L	80
128) 1,2,4-trimethylbenzene	16.269	105	7395	0.98	ug/L	94

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

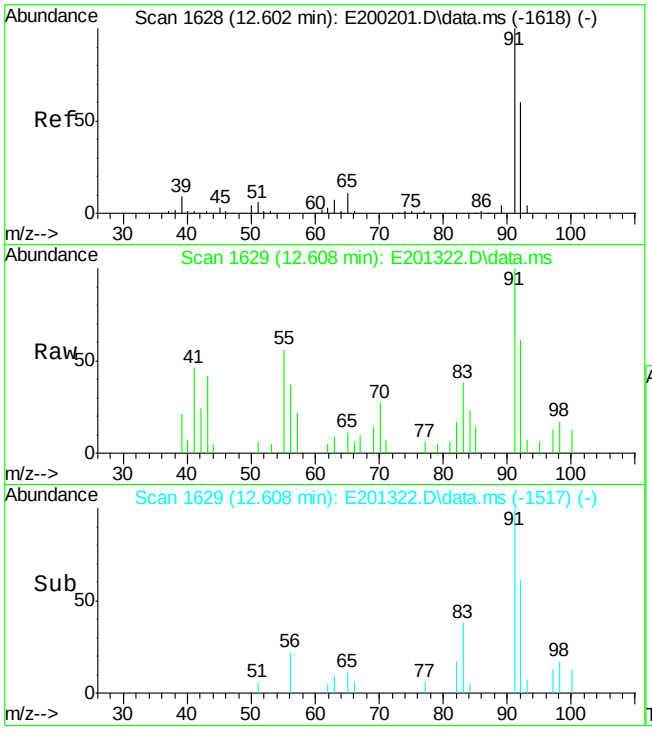
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201322.D
Acq On : 26 Mar 2013 3:53 am
Operator : OksanaT
Sample : jb31265-3
Misc : MS44935,VE8851,5.1,,100,10,1
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Mar 26 11:31:12 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration



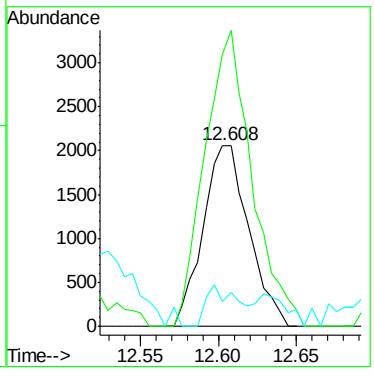
ME8801.M Tue Mar 26 11:31:20 2013 RPT1 Page: 2

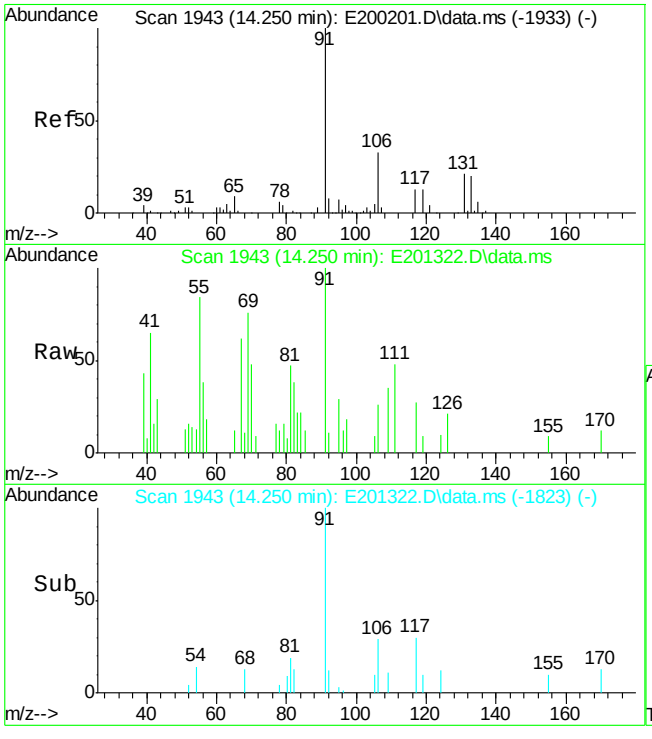


#91
toluene
Concen: 1.01 ug/L
RT: 12.608 min Scan# 1629
Delta R.T. 0.005 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

Tgt Ion: 92 Resp: 4198

Ion	Ratio	Lower	Upper
92	100		
91	163.4	136.3	196.3
65	18.7	0.0	48.8

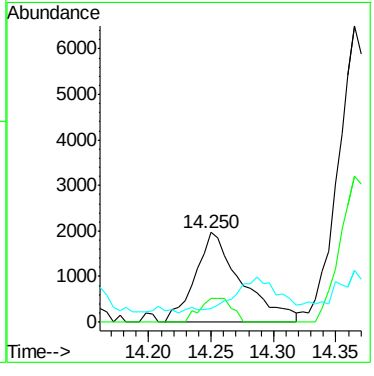




#108
ethylbenzene
Concen: 0.66 ug/L
RT: 14.250 min Scan# 1943
Delta R.T. 0.000 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

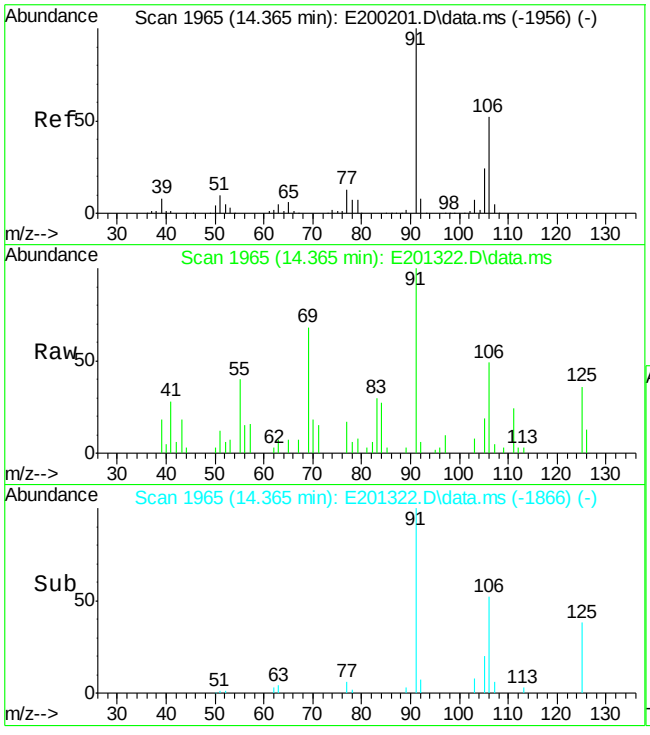
Tgt Ion: 91 Resp: 5055

Ion	Ratio	Lower	Upper
91	100		
106	26.2	2.9	62.9
77	3.2	0.0	38.7



7.1.3

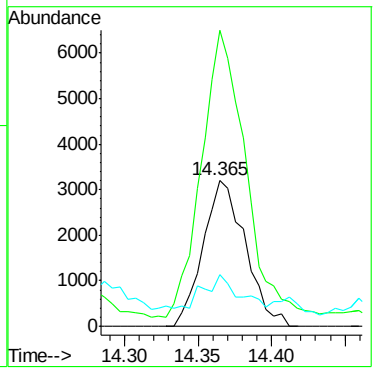
7

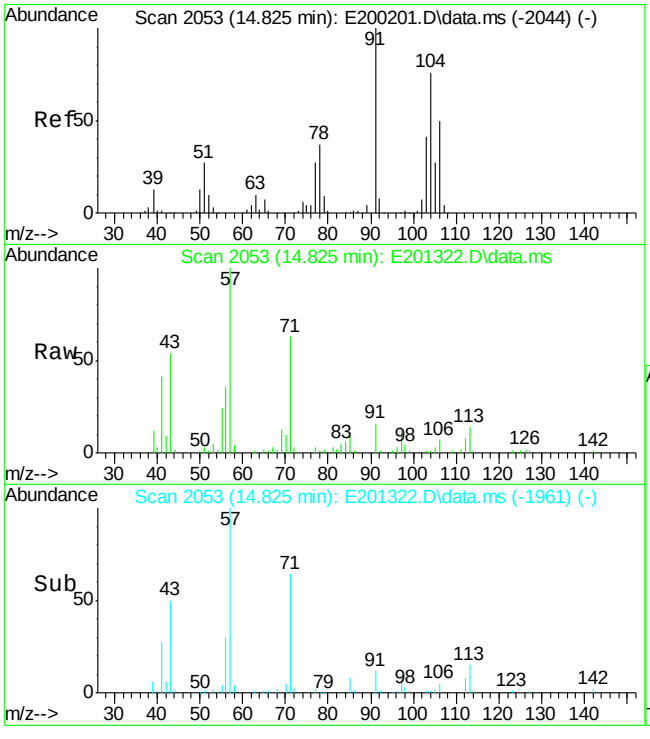


#109
m,p-xylene
Concen: 2.12 ug/L
RT: 14.365 min Scan# 1965
Delta R.T. 0.000 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

Tgt Ion:106 Resp: 6411

Ion	Ratio	Lower	Upper
106	100		
91	196.8	161.1	221.1
77	21.2	0.0	54.5

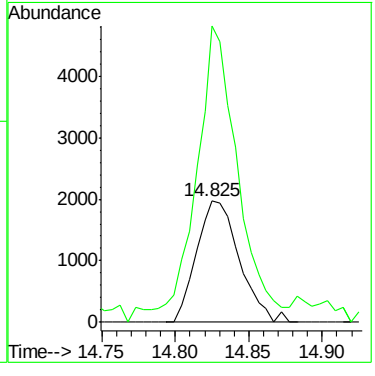


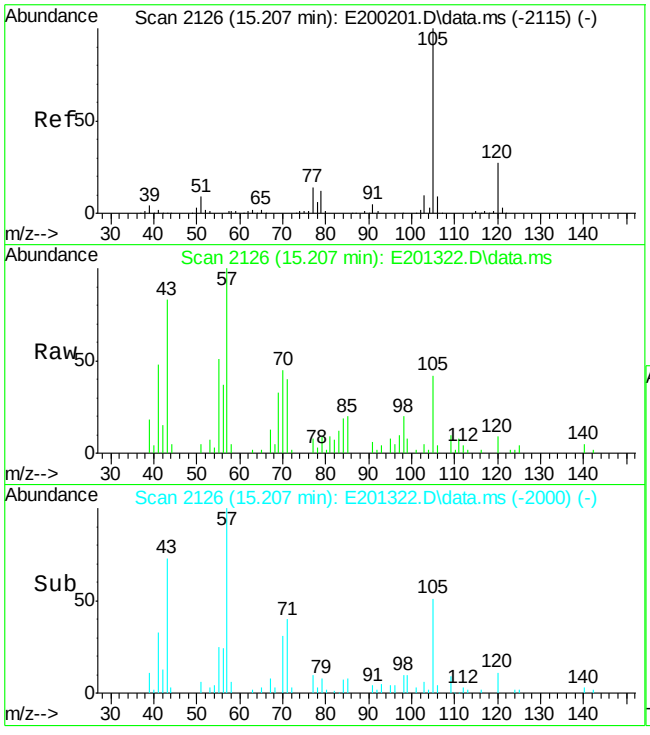


#110
o-xylene
Concen: 1.29 ug/L
RT: 14.825 min Scan# 2053
Delta R.T. 0.000 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

Tgt Ion:106 Resp: 3991

Ion	Ratio	Lower	Upper
106	100		
91	230.1	170.7	230.7

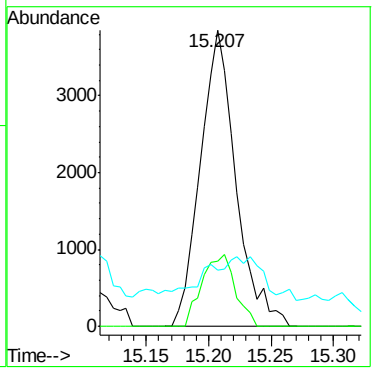


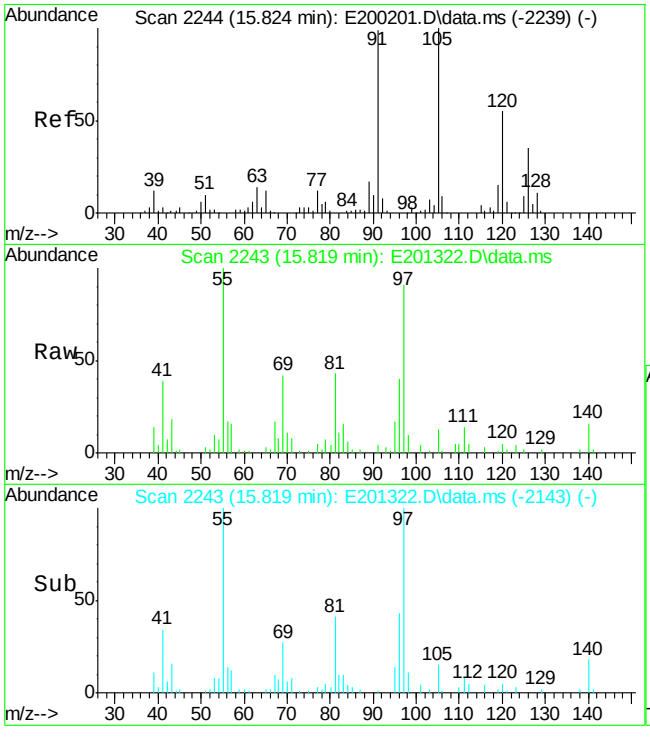


#115
isopropylbenzene
Concen: 0.85 ug/L
RT: 15.207 min Scan# 2126
Delta R.T. 0.000 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

Tgt Ion:105 Resp: 7600

Ion	Ratio	Lower	Upper
105	100		
120	22.0	0.0	57.0
77	10.3	0.0	44.4

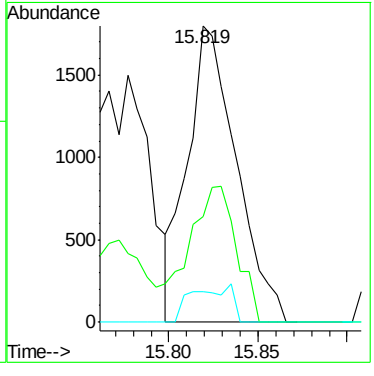


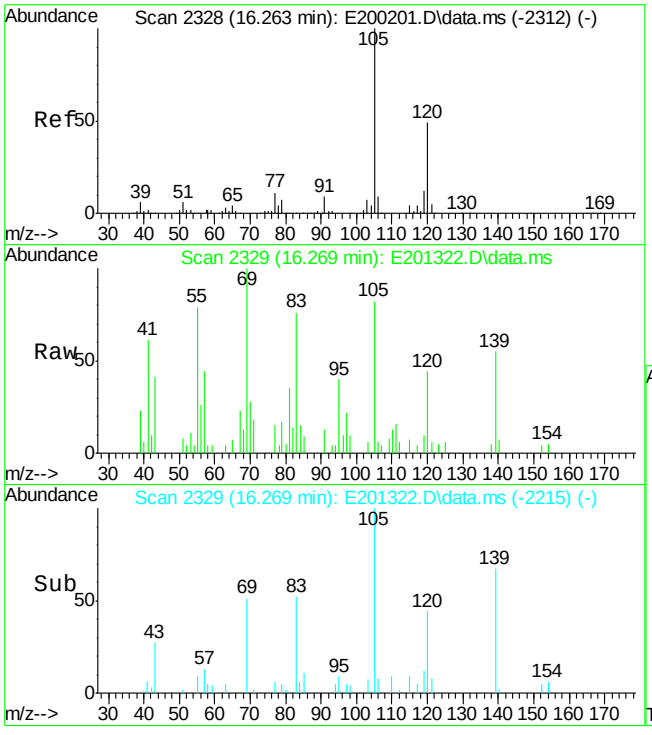


#125
1,3,5-trimethylbenzene
Concen: 0.45 ug/L
RT: 15.819 min Scan# 2243
Delta R.T. -0.005 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

Tgt Ion:105 Resp: 3428

Ion	Ratio	Lower	Upper
105	100		
120	35.5	21.5	81.5
119	10.3	0.0	43.2

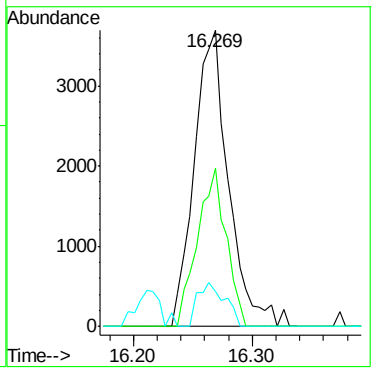




#128
1,2,4-trimethylbenzene
Concen: 0.98 ug/L
RT: 16.269 min Scan# 2329
Delta R.T. 0.005 min
Lab File: E201322.D
Acq: 26 Mar 2013 3:53 am

Tgt Ion:105 Resp: 7395

Ion	Ratio	Lower	Upper
105	100		
120	53.6	19.4	79.4
119	11.9	0.0	43.7



7.1.3

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201323.D
Acq On : 26 Mar 2013 4:23 am
Operator : OksanaT
Sample : jb31265-4
Misc : MS44935,VE8851,5.4,,100,10,1
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Mar 26 11:32:39 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.676	65	92171	500.00	ug/L	0.00
5) pentafluorobenzene	9.904	168	198663	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.819	114	246170	50.00	ug/L	0.00
97) chlorobenzene-d5	14.151	117	218218	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.719	152	136814	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.951	113	79644	42.73	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 85.46%			
61) 1,2-dichloroethane-d4 (s)	10.364	65	84131	41.05	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 82.10%			
89) toluene-d8 (s)	12.524	98	291649	46.79	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 93.58%			
116) 4-bromofluorobenzene (s)	15.422	95	108007	43.07	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 86.14%			

Target Compounds

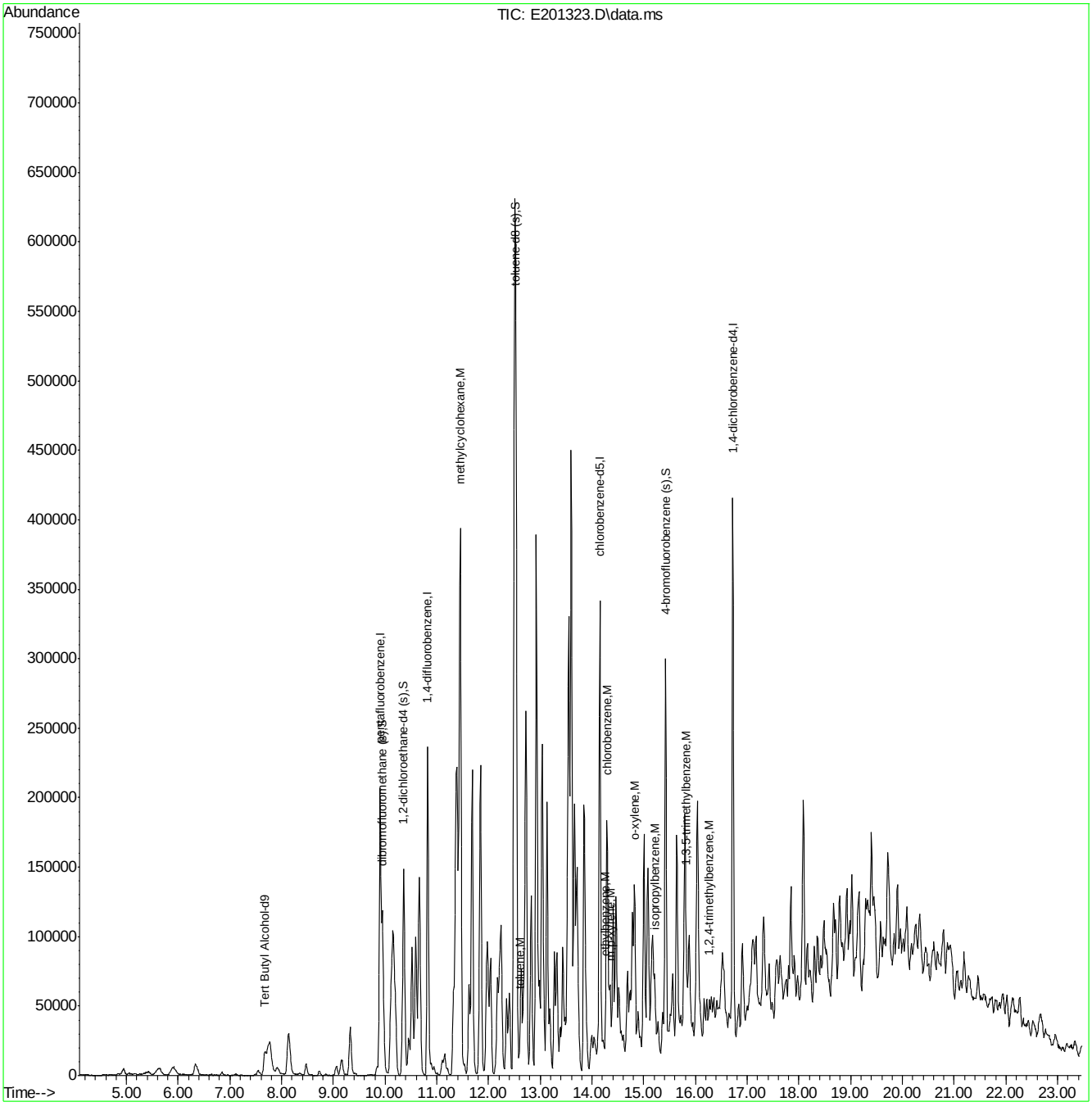
						Qvalue
83) methylcyclohexane	11.452	83	223905	83.88	ug/L	96
91) toluene	12.603	92	3856	0.92	ug/L	80
106) chlorobenzene	14.281	112	2482	0.52	ug/L #	69
108) ethylbenzene	14.255	91	3708	0.49	ug/L	85
109) m,p-xylene	14.365	106	5506	1.85	ug/L	82
110) o-xylene	14.825	106	3719	1.22	ug/L	98
115) isopropylbenzene	15.207	105	12580	1.43	ug/L	96
125) 1,3,5-trimethylbenzene	15.819	105	3040	0.41	ug/L	77
128) 1,2,4-trimethylbenzene	16.264	105	7694	1.04	ug/L	93

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

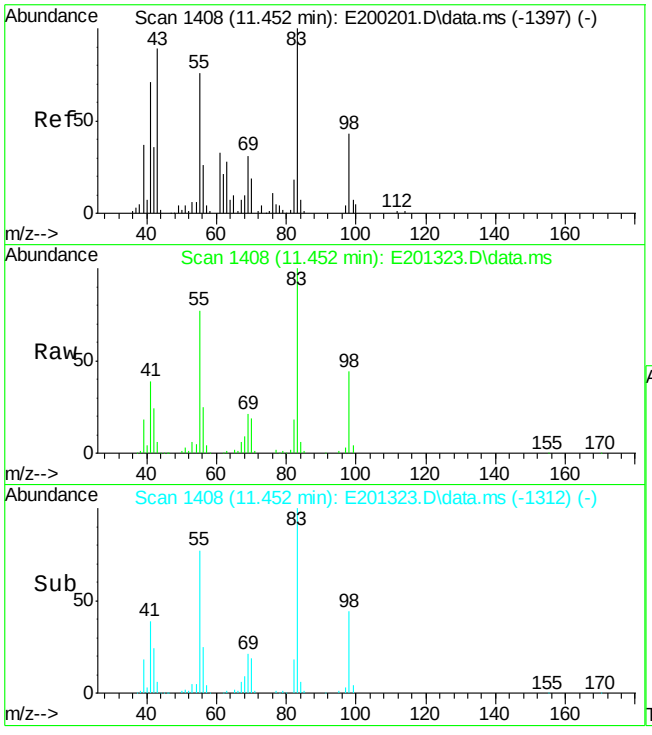
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201323.D
Acq On : 26 Mar 2013 4:23 am
Operator : OksanaT
Sample : jb31265-4
Misc : MS44935,VE8851,5.4,,100,10,1
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Mar 26 11:32:39 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration



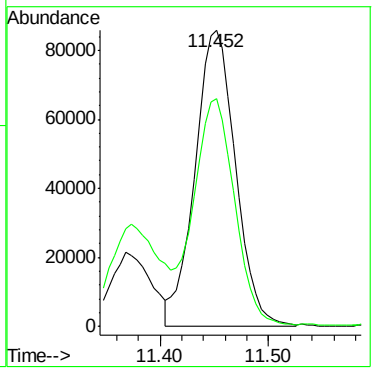
ME8801.M Tue Mar 26 11:32:45 2013 RPT1 Page: 2

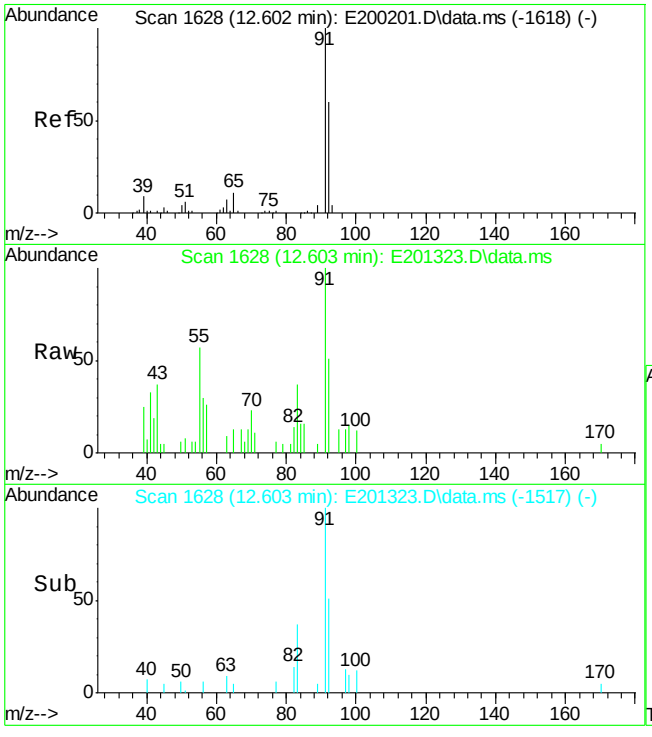


#83
methylcyclohexane
Concen: 83.88 ug/L
RT: 11.452 min Scan# 1408
Delta R.T. 0.000 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion: 83 Resp: 223905

Ion	Ratio	Lower	Upper
83	100		
55	78.3	57.5	106.9

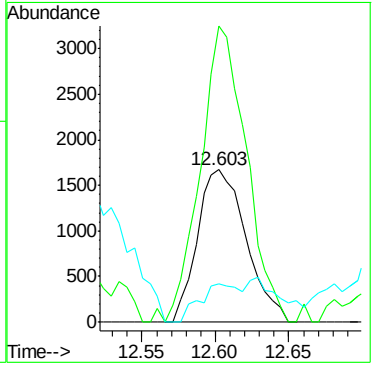




#91
toluene
Concen: 0.92 ug/L
RT: 12.603 min Scan# 1628
Delta R.T. 0.000 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

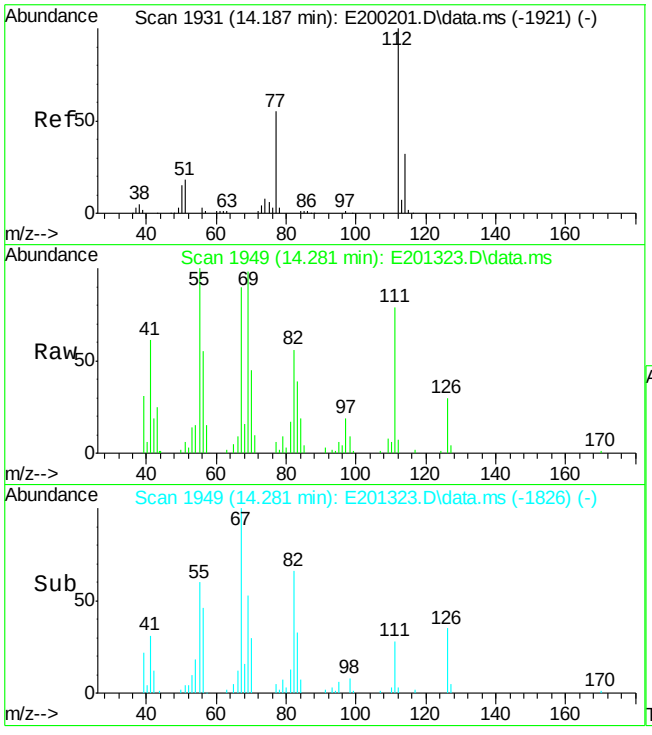
Tgt Ion: 92 Resp: 3856

Ion	Ratio	Lower	Upper
92	100		
91	194.5	136.3	196.3
65	25.3	0.0	48.8



7.1.4

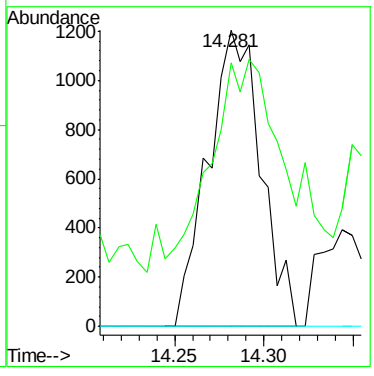
7

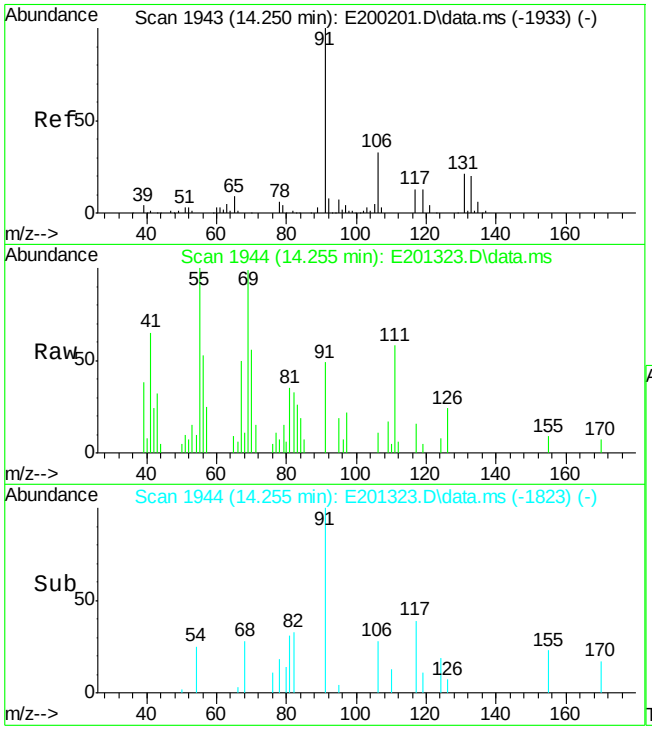


#106
chlorobenzene
Concen: 0.52 ug/L
RT: 14.281 min Scan# 1949
Delta R.T. 0.094 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion:112 Resp: 2482

Ion	Ratio	Lower	Upper
112	100		
77	66.2	25.0	85.0
114	0.0	2.1	62.1#

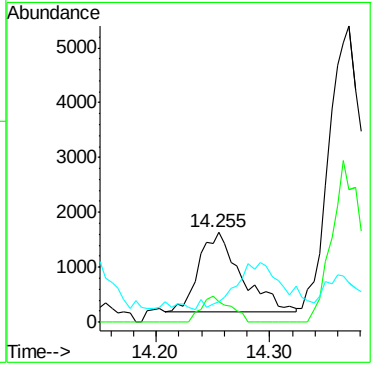


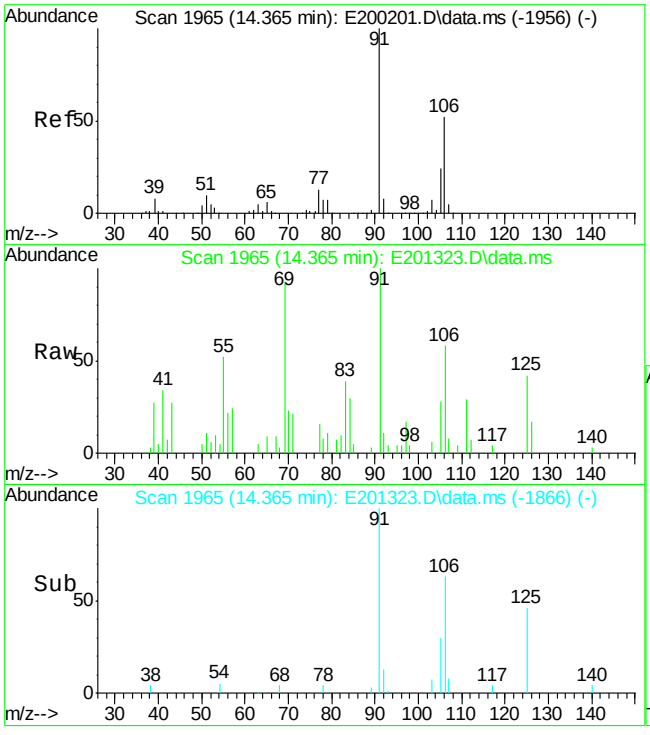


#108
ethylbenzene
Concen: 0.49 ug/L
RT: 14.255 min Scan# 1944
Delta R.T. 0.005 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion: 91 Resp: 3708

Ion	Ratio	Lower	Upper
91	100		
106	25.8	2.9	62.9
77	0.1	0.0	38.7

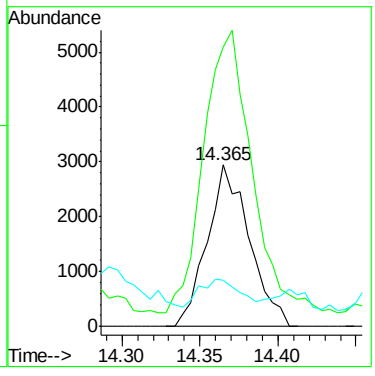


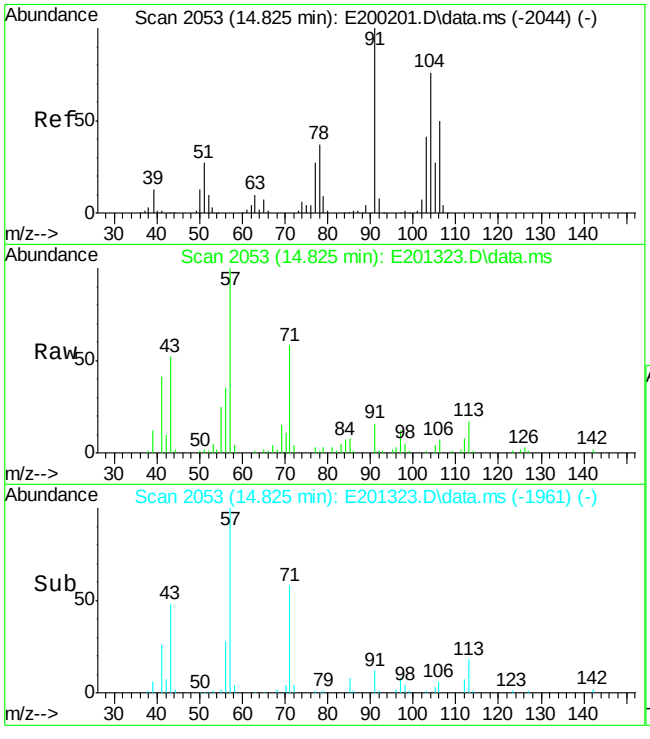


#109
m,p-xylene
Concen: 1.85 ug/L
RT: 14.365 min Scan# 1965
Delta R.T. 0.000 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion:106 Resp: 5506

Ion	Ratio	Lower	Upper
106	100		
91	165.1	161.1	221.1
77	13.1	0.0	54.5

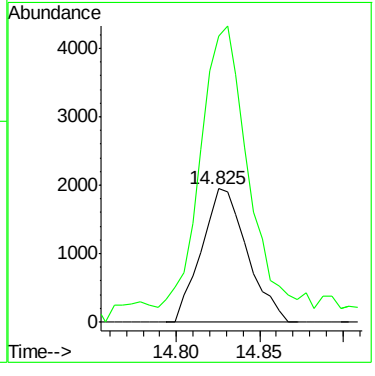


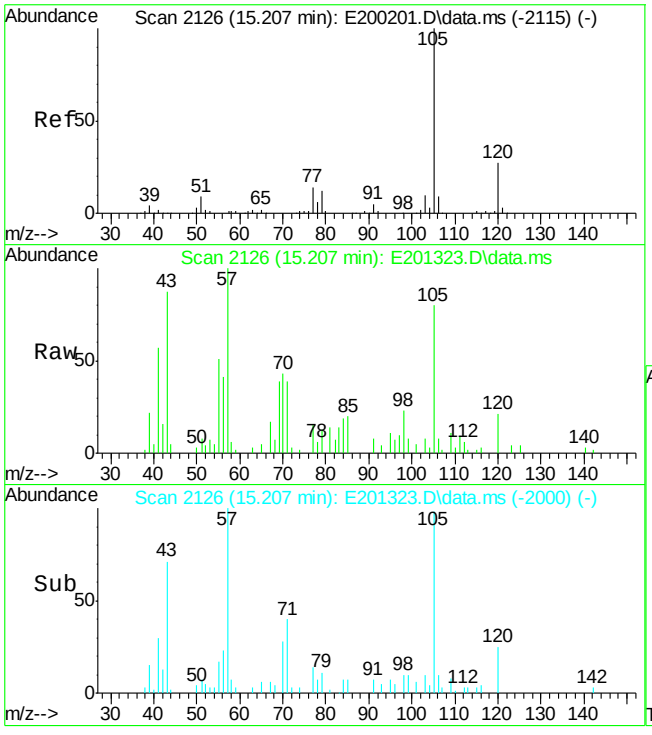


#110
o-xylene
Concen: 1.22 ug/L
RT: 14.825 min Scan# 2053
Delta R.T. 0.000 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion:106 Resp: 3719

Ion	Ratio	Lower	Upper
106	100		
91	197.7	170.7	230.7

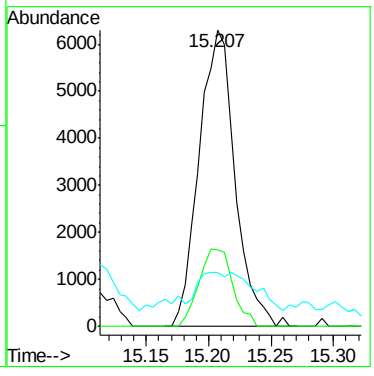


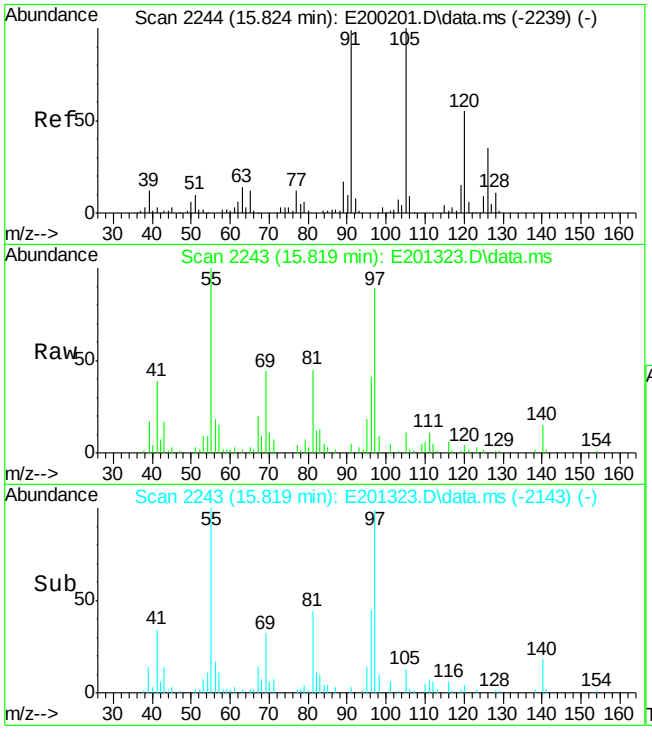


#115
isopropylbenzene
Concen: 1.43 ug/L
RT: 15.207 min Scan# 2126
Delta R.T. 0.000 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion:105 Resp: 12580

Ion	Ratio	Lower	Upper
105	100		
120	25.8	0.0	57.0
77	11.6	0.0	44.4

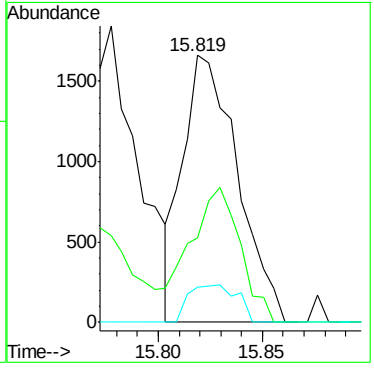




#125
1,3,5-trimethylbenzene
Concen: 0.41 ug/L
RT: 15.819 min Scan# 2243
Delta R.T. -0.005 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

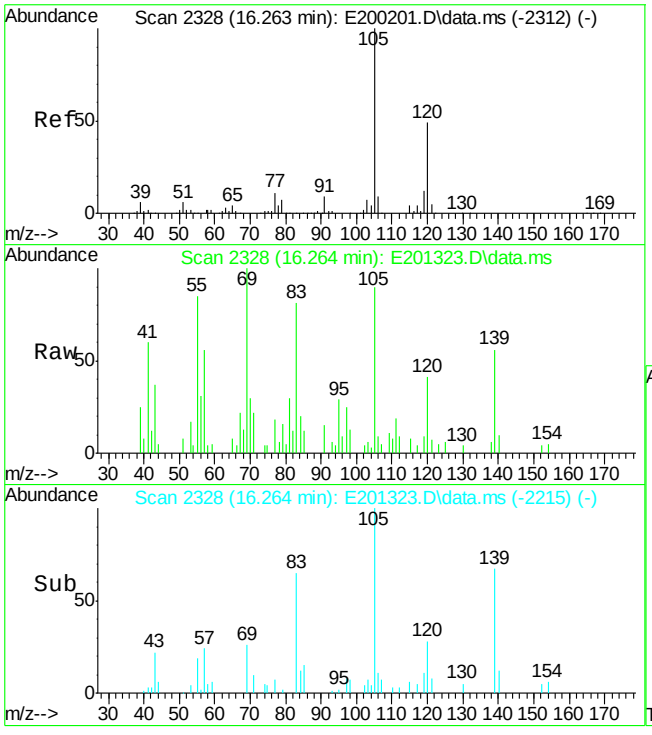
Tgt Ion:105 Resp: 3040

Ion	Ratio	Lower	Upper
105	100		
120	31.5	21.5	81.5
119	13.2	0.0	43.2



7.1.4

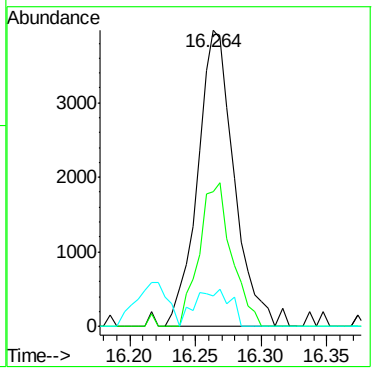
7



#128
1,2,4-trimethylbenzene
Concen: 1.04 ug/L
RT: 16.264 min Scan# 2328
Delta R.T. 0.000 min
Lab File: E201323.D
Acq: 26 Mar 2013 4:23 am

Tgt Ion:105 Resp: 7694

Ion	Ratio	Lower	Upper
105	100		
120	45.3	19.4	79.4
119	10.3	0.0	43.7



7.1.4

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201350.D
Acq On : 26 Mar 2013 8:31 pm
Operator : OksanaT
Sample : jb31265-5
Misc : MS44935,VE8852,6.1,,100,10,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Mar 27 17:22:07 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.680	65	76200	500.00	ug/L	0.01
5) pentafluorobenzene	9.903	168	187095	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.824	114	237559	50.00	ug/L	0.00
97) chlorobenzene-d5	14.150	117	217735	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.723	152	135634	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.950	113	73404	41.81	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 83.62%			
61) 1,2-dichloroethane-d4 (s)	10.363	65	81782	42.37	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 84.74%			
89) toluene-d8 (s)	12.523	98	278929	46.37	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 92.74%			
116) 4-bromofluorobenzene (s)	15.421	95	109266	43.95	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 87.90%			

Target Compounds

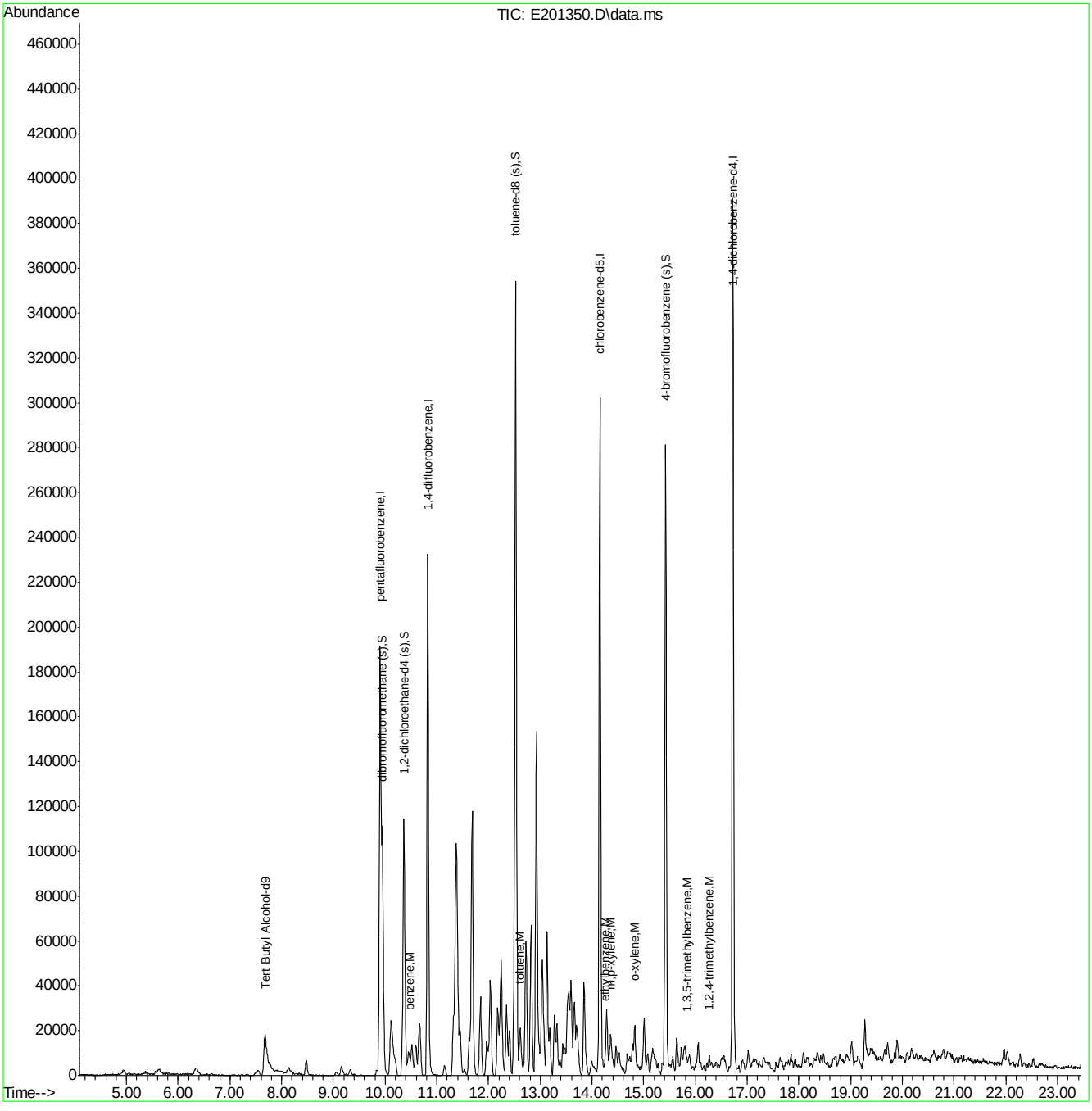
						Qvalue
75) benzene	10.473	78	1449	0.22	ug/L	56
91) toluene	12.602	92	8762	2.17	ug/L	92
108) ethylbenzene	14.255	91	4003	0.53	ug/L	88
109) m,p-xylene	14.370	106	5261	1.77	ug/L	86
110) o-xylene	14.830	106	1294	0.43	ug/L	96
125) 1,3,5-trimethylbenzene	15.829	105	1778	0.24	ug/L	90
128) 1,2,4-trimethylbenzene	16.268	105	4886	0.66	ug/L	89

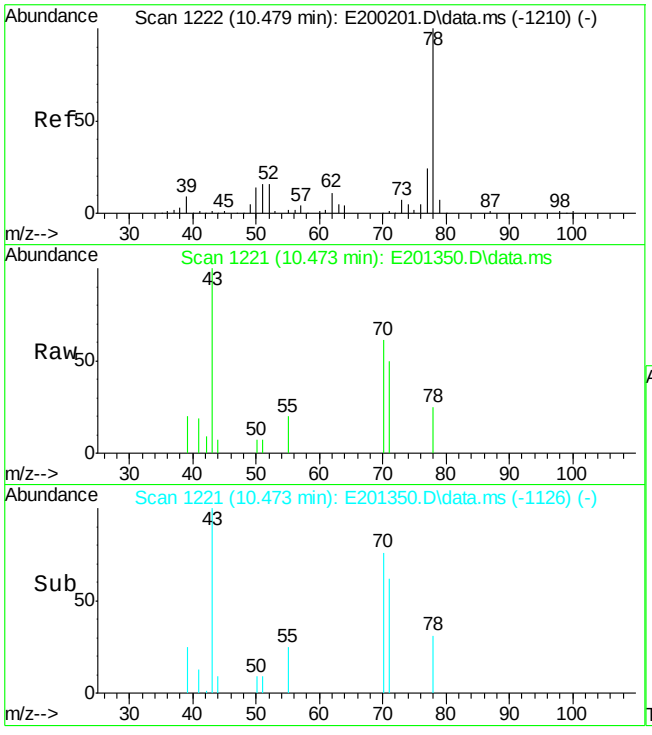
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201350.D
Acq On : 26 Mar 2013 8:31 pm
Operator : OksanaT
Sample : jb31265-5
Misc : MS44935,VE8852,6.1,,100,10,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Mar 27 17:22:07 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

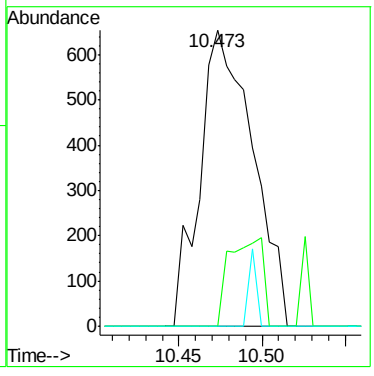


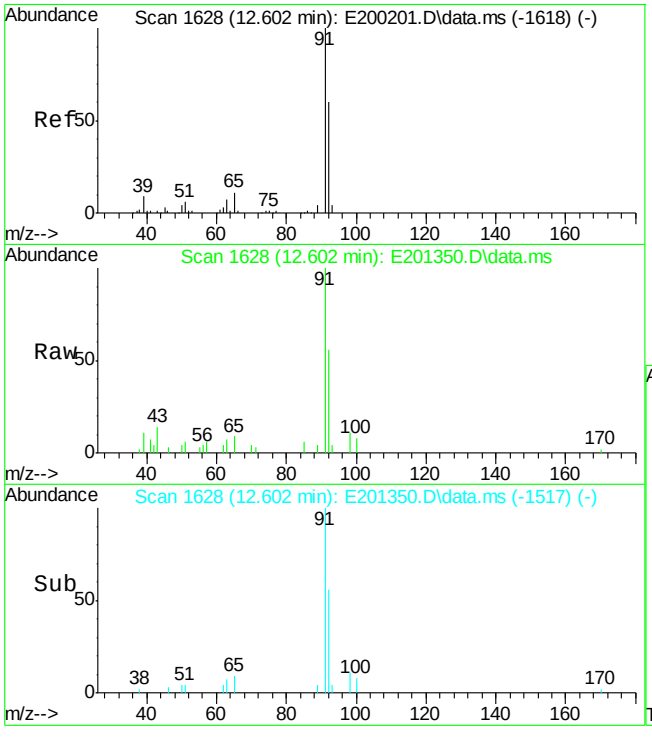


#75
benzene
Concen: 0.22 ug/L
RT: 10.473 min Scan# 1221
Delta R.T. -0.006 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

Tgt Ion: 78 Resp: 1449

Ion	Ratio	Lower	Upper
78	100		
77	0.0	0.0	53.8
52	0.0	0.0	45.9

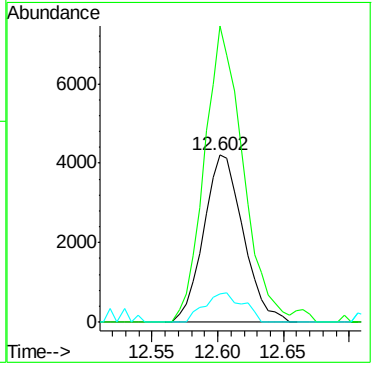


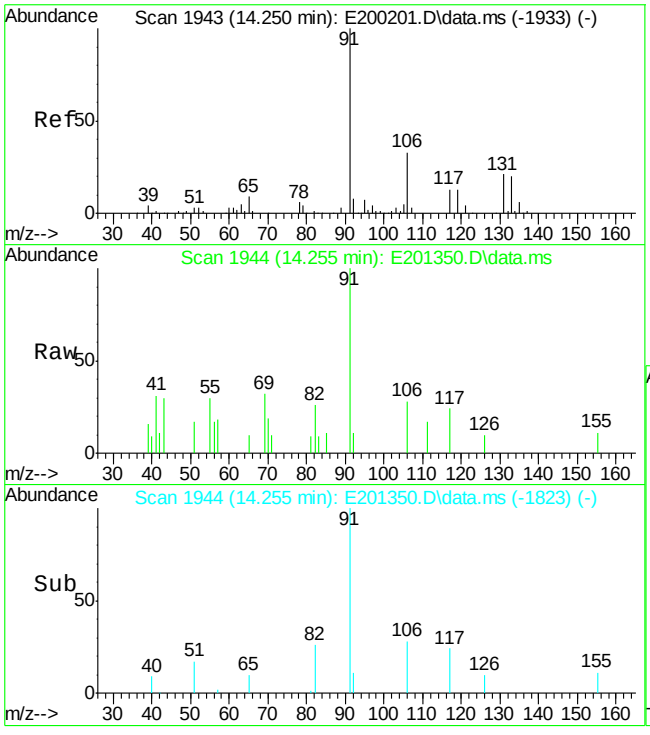


#91
toluene
Concen: 2.17 ug/L
RT: 12.602 min Scan# 1628
Delta R.T. -0.000 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

Tgt Ion: 92 Resp: 8762

Ion	Ratio	Lower	Upper
92	100		
91	177.4	136.3	196.3
65	16.8	0.0	48.8

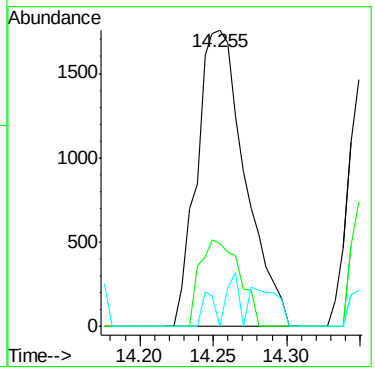


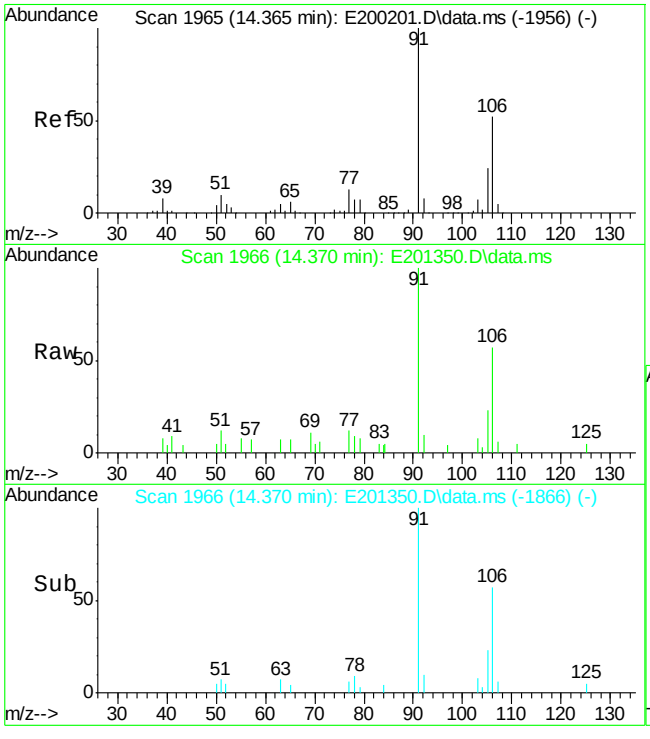


#108
ethylbenzene
Concen: 0.53 ug/L
RT: 14.255 min Scan# 1944
Delta R.T. 0.005 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

Tgt Ion: 91 Resp: 4003

Ion	Ratio	Lower	Upper
91	100		
106	28.2	2.9	62.9
77	0.0	0.0	38.7

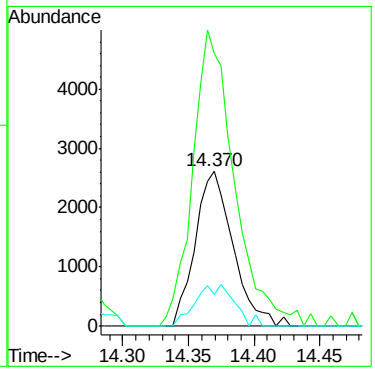




#109
m,p-xylene
Concen: 1.77 ug/L
RT: 14.370 min Scan# 1966
Delta R.T. 0.005 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

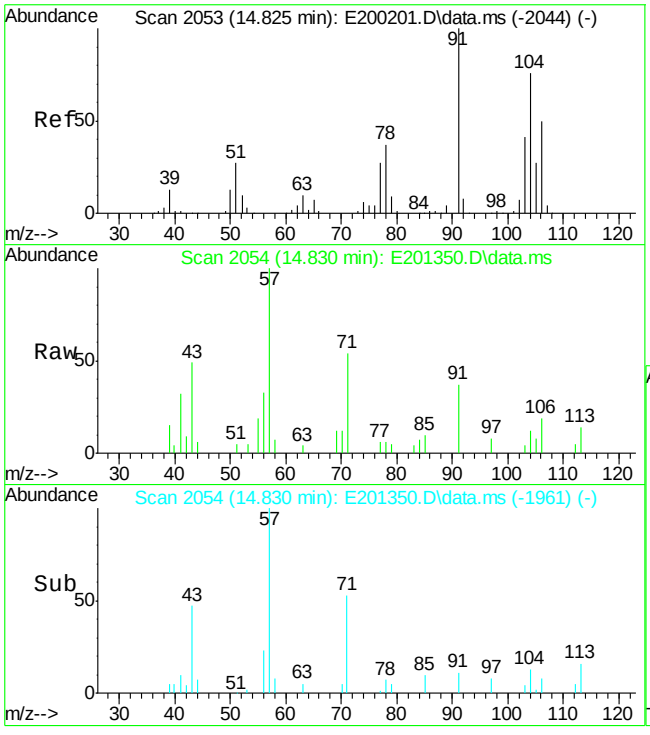
Tgt Ion:106 Resp: 5261

Ion	Ratio	Lower	Upper
106	100		
91	169.9	161.1	221.1
77	20.3	0.0	54.5



7.1.5

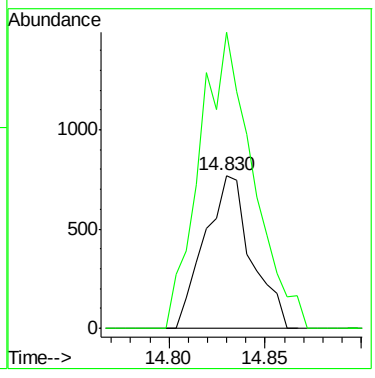
7

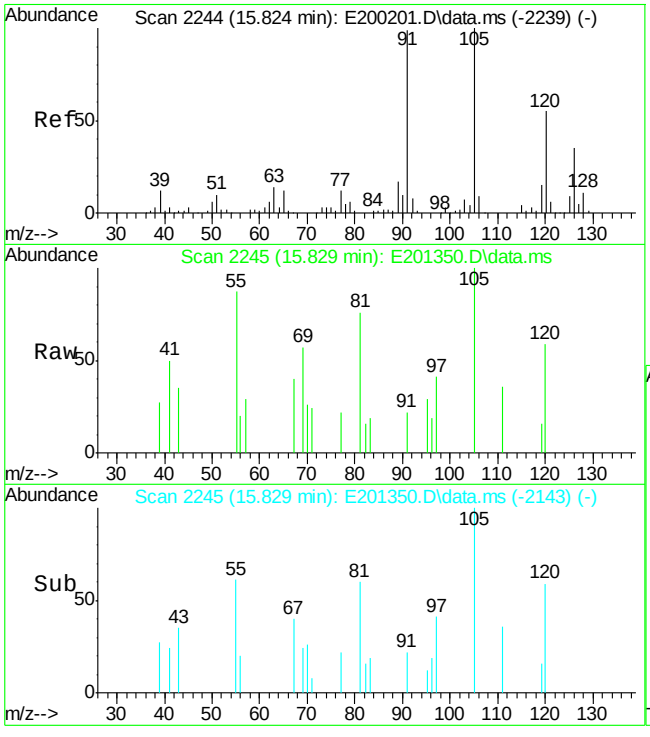


#110
o-xylene
Concen: 0.43 ug/L
RT: 14.830 min Scan# 2054
Delta R.T. 0.005 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

Tgt Ion:106 Resp: 1294

Ion	Ratio	Lower	Upper
106	100		
91	194.0	170.7	230.7

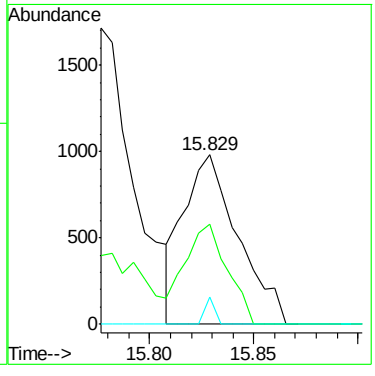




#125
1,3,5-trimethylbenzene
Concen: 0.24 ug/L
RT: 15.829 min Scan# 2245
Delta R.T. 0.005 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

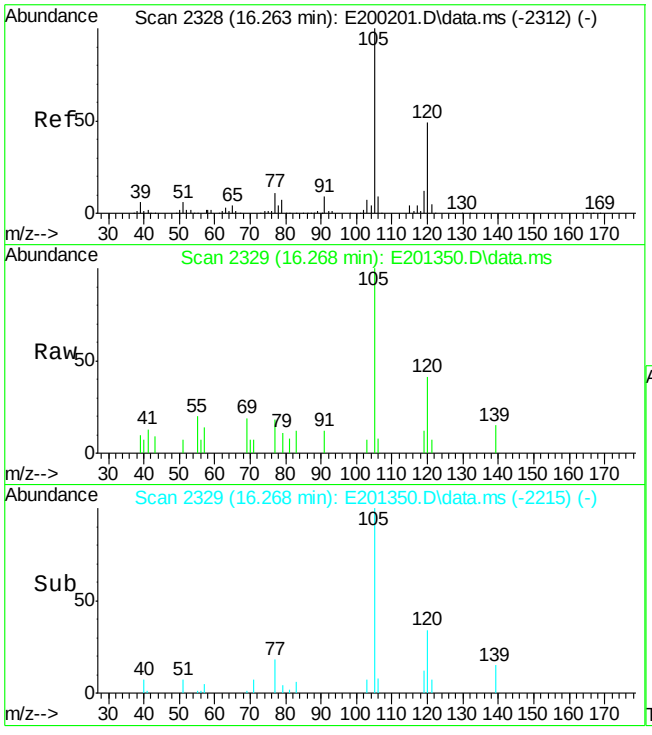
Tgt Ion:105 Resp: 1778

Ion	Ratio	Lower	Upper
105	100		
120	59.1	21.5	81.5
119	16.2	0.0	43.2



7.1.5

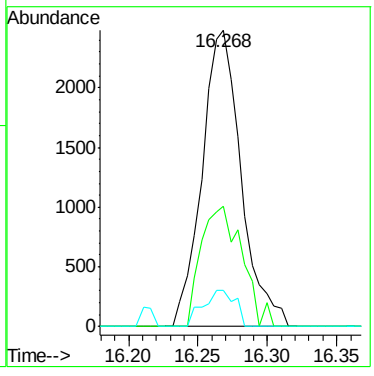
7



#128
1,2,4-trimethylbenzene
Concen: 0.66 ug/L
RT: 16.268 min Scan# 2329
Delta R.T. 0.005 min
Lab File: E201350.D
Acq: 26 Mar 2013 8:31 pm

Tgt Ion:105 Resp: 4886

Ion	Ratio	Lower	Upper
105	100		
120	40.7	19.4	79.4
119	12.0	0.0	43.7



7.1.5

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201325.D
Acq On : 26 Mar 2013 5:24 am
Operator : OksanaT
Sample : jb31265-6
Misc : MS44935,VE8851,5.8,,100,10,1
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Mar 26 11:34:09 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.671	65	77165	500.00	ug/L	0.00
5) pentafluorobenzene	9.904	168	200182	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.824	114	249021	50.00	ug/L	0.00
97) chlorobenzene-d5	14.151	117	215022	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.724	152	139233	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.946	113	77027	41.01	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 82.02%			
61) 1,2-dichloroethane-d4 (s)	10.364	65	82863	40.12	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 80.24%			
89) toluene-d8 (s)	12.524	98	308951	49.00	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 98.00%			
116) 4-bromofluorobenzene (s)	15.422	95	115330	45.19	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 90.38%			

Target Compounds

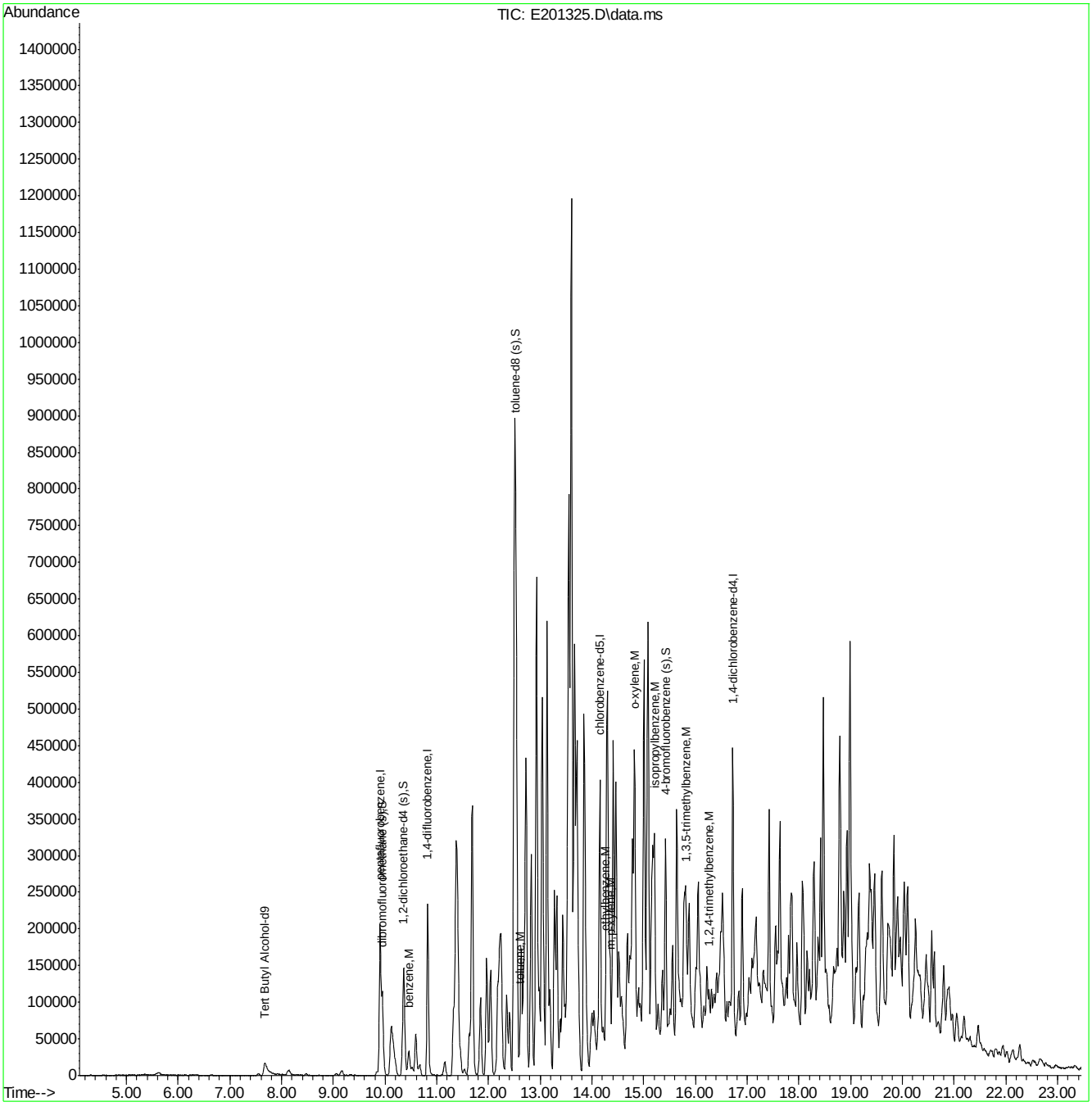
						Qvalue
75) benzene	10.469	78	2119	0.30	ug/L	80
91) toluene	12.603	92	12691	3.00	ug/L	96
108) ethylbenzene	14.255	91	5179	0.69	ug/L	90
109) m,p-xylene	14.365	106	4380	1.49	ug/L	79
110) o-xylene	14.831	106	2414	0.80	ug/L	88
115) isopropylbenzene	15.207	105	49111	5.48	ug/L	98
125) 1,3,5-trimethylbenzene	15.824	105	2490	0.33	ug/L	93
128) 1,2,4-trimethylbenzene	16.269	105	8796	1.17	ug/L	90

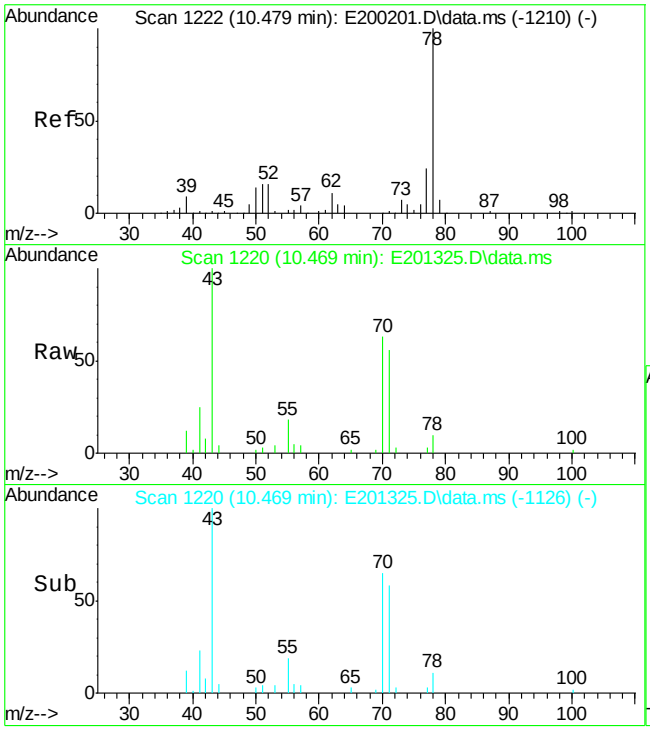
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201325.D
Acq On : 26 Mar 2013 5:24 am
Operator : OksanaT
Sample : jb31265-6
Misc : MS44935,VE8851,5.8,,100,10,1
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Mar 26 11:34:09 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

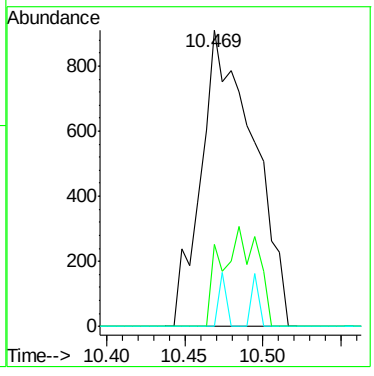


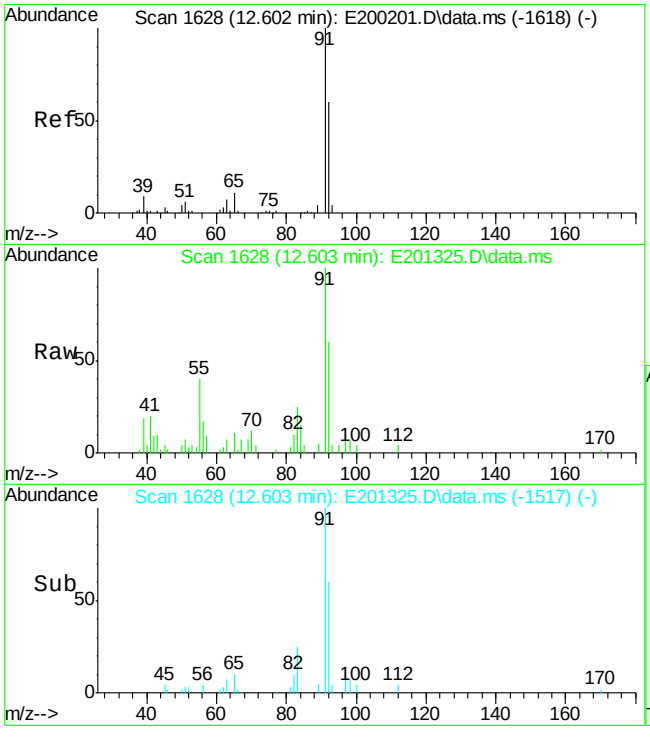


#75
benzene
Concen: 0.30 ug/L
RT: 10.469 min Scan# 1220
Delta R.T. -0.010 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion: 78 Resp: 2119

Ion	Ratio	Lower	Upper
78	100		
77	27.6	0.0	53.8
52	0.0	0.0	45.9

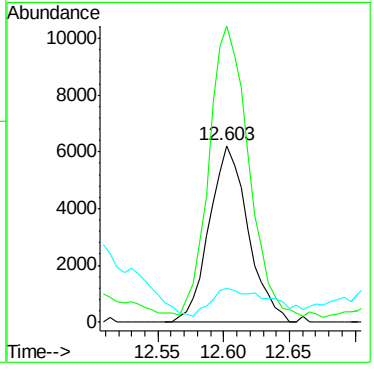


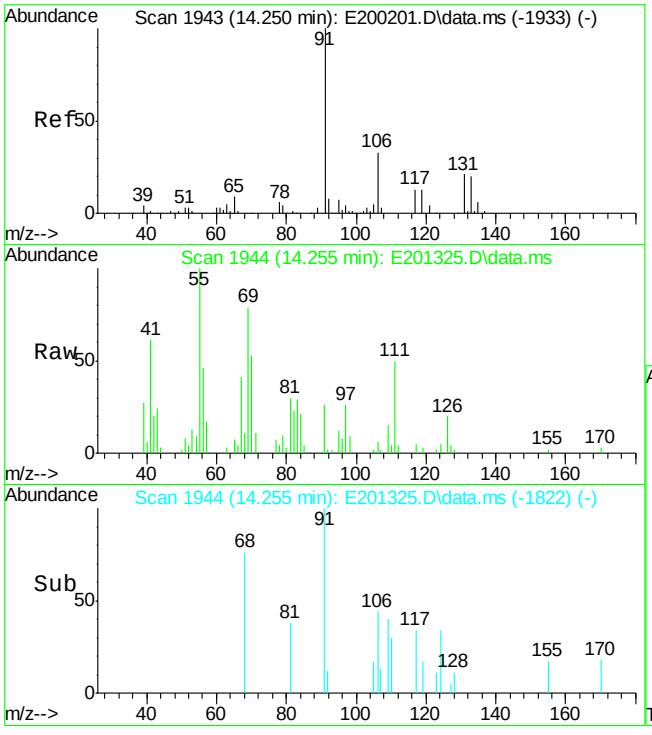


#91
toluene
Concen: 3.00 ug/L
RT: 12.603 min Scan# 1628
Delta R.T. 0.000 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion: 92 Resp: 12691

Ion	Ratio	Lower	Upper
92	100		
91	162.7	136.3	196.3
65	9.9	0.0	48.8

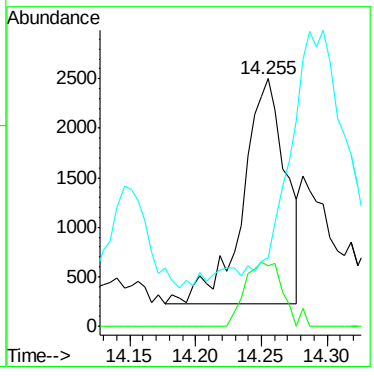


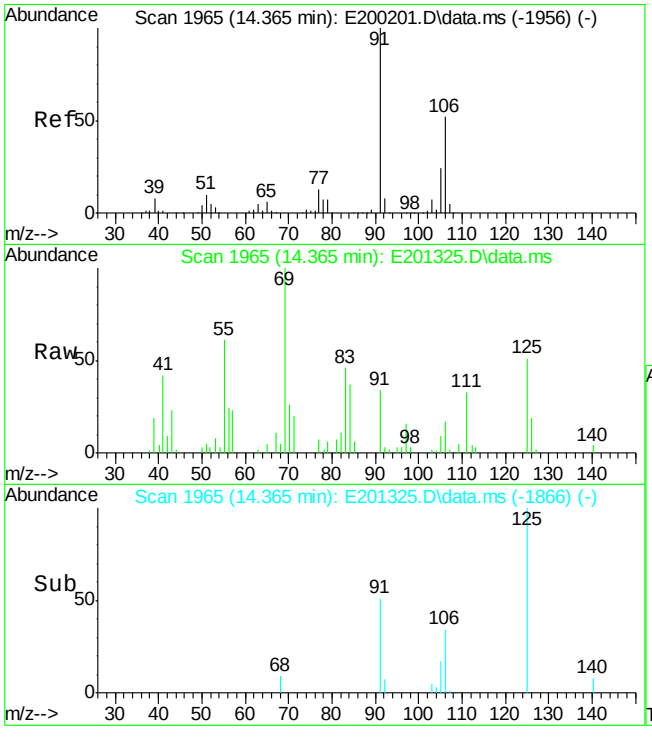


#108
ethylbenzene
Concen: 0.69 ug/L
RT: 14.255 min Scan# 1944
Delta R.T. 0.006 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion: 91 Resp: 5179

Ion	Ratio	Lower	Upper
91	100		
106	27.1	2.9	62.9
77	4.7	0.0	38.7

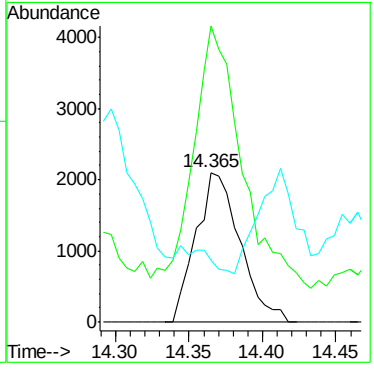


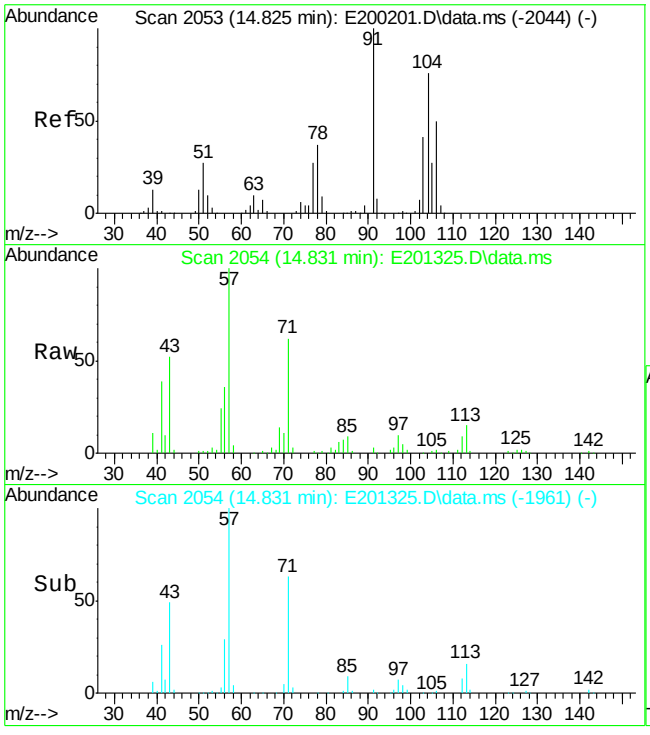


#109
m,p-xylene
Concen: 1.49 ug/L
RT: 14.365 min Scan# 1965
Delta R.T. 0.000 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion:106 Resp: 4380

Ion	Ratio	Lower	Upper
106	100		
91	165.2	161.1	221.1
77	0.0	0.0	54.5

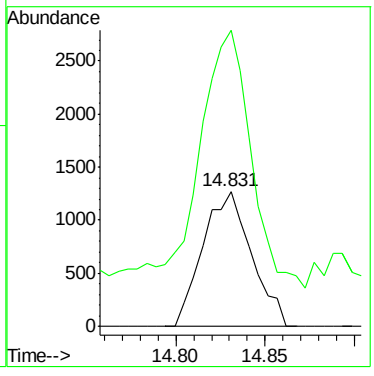


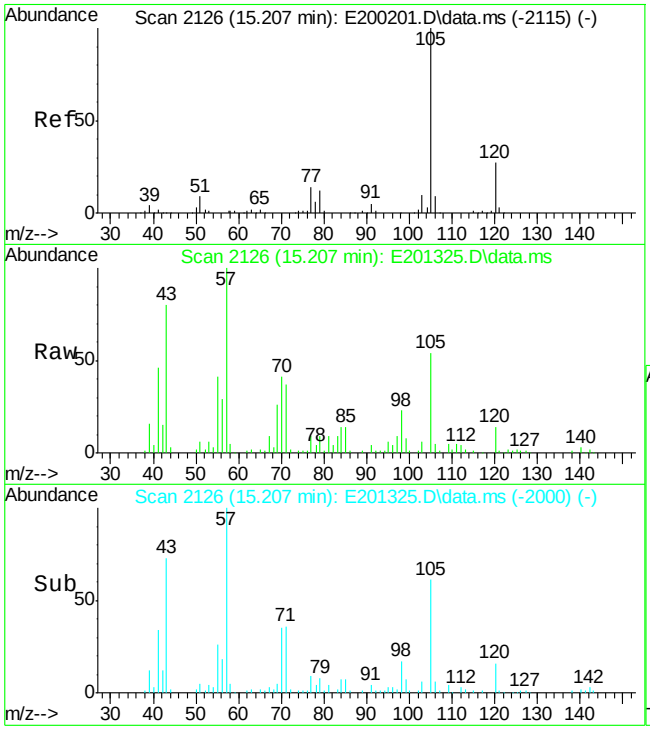


#110
o-xylene
Concen: 0.80 ug/L
RT: 14.831 min Scan# 2054
Delta R.T. 0.006 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion:106 Resp: 2414

Ion	Ratio	Lower	Upper
106	100		
91	182.5	170.7	230.7

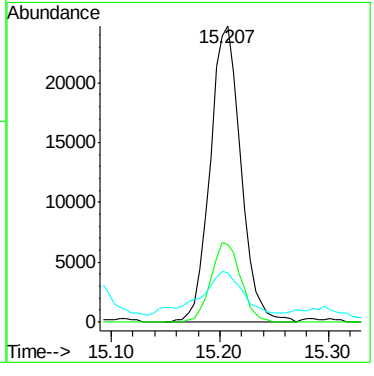


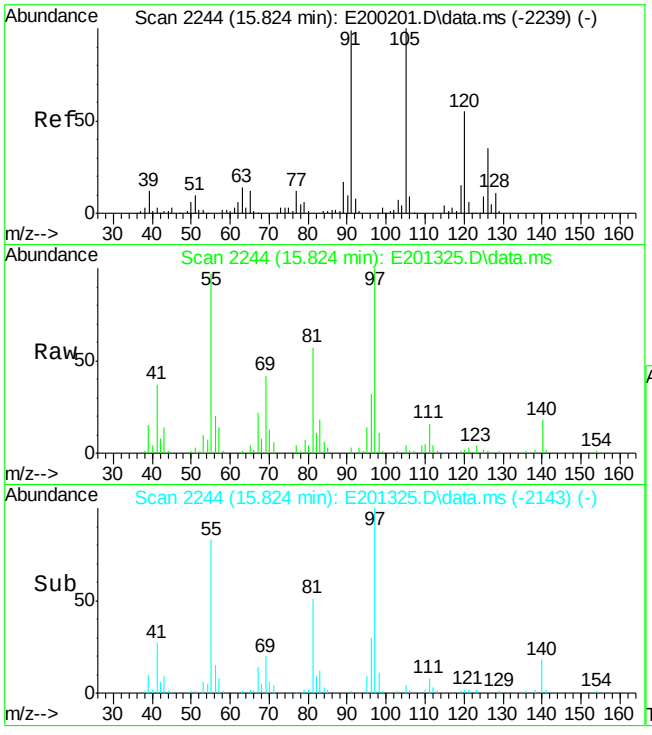


#115
isopropylbenzene
Concen: 5.48 ug/L
RT: 15.207 min Scan# 2126
Delta R.T. 0.000 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion:105 Resp: 49111

Ion	Ratio	Lower	Upper
105	100		
120	26.3	0.0	57.0
77	12.6	0.0	44.4

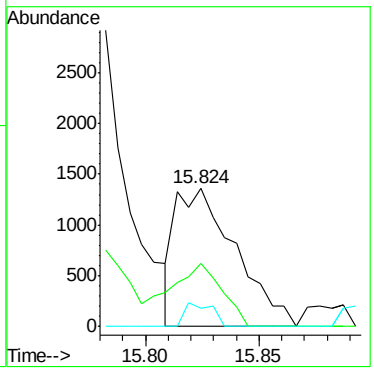


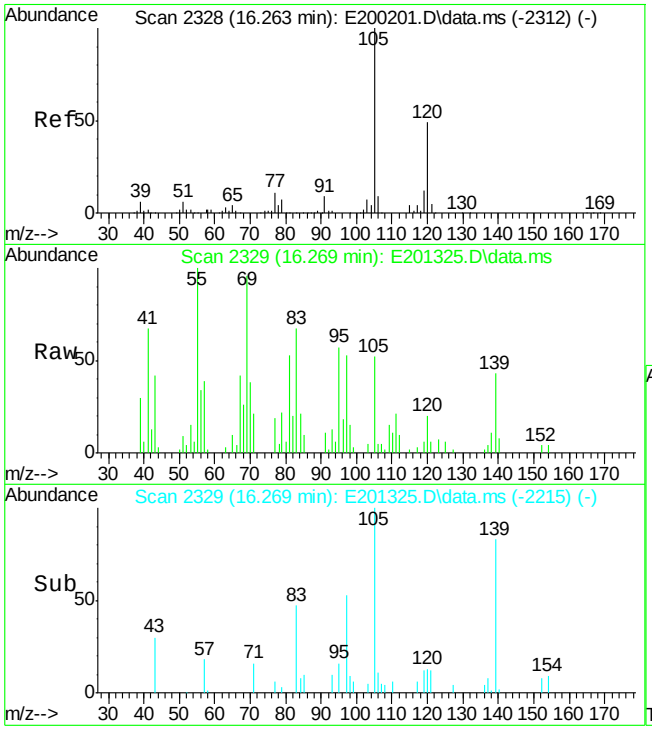


#125
1,3,5-trimethylbenzene
Concen: 0.33 ug/L
RT: 15.824 min Scan# 2244
Delta R.T. 0.000 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion:105 Resp: 2490

Ion	Ratio	Lower	Upper
105	100		
120	45.3	21.5	81.5
119	13.1	0.0	43.2

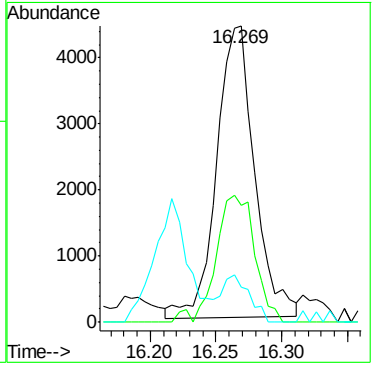




#128
1,2,4-trimethylbenzene
Concen: 1.17 ug/L
RT: 16.269 min Scan# 2329
Delta R.T. 0.006 min
Lab File: E201325.D
Acq: 26 Mar 2013 5:24 am

Tgt Ion:105 Resp: 8796

Ion	Ratio	Lower	Upper
105	100		
120	41.3	19.4	79.4
119	12.2	0.0	43.7



Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : v133449.D
Acq On : 25 Mar 2013 6:25 pm
Operator : thienn
Sample : jb31265-7
Misc : MS44935,VV5767,6.8,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Mar 27 14:39:27 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Sat Mar 23 14:41:22 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.56	65	42350	500.00	ug/L	0.00
4) pentafluorobenzene	9.77	168	233906	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.72	114	315283	50.00	ug/L	0.00
96) chlorobenzene-d5	14.12	117	242139	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.72	152	108893	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.85	113	77602	51.14	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 102.28%			
61) 1,2-dichloroethane-d4 (s)	10.28	65	69520	46.84	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 93.68%			
88) toluene-d8 (s)	12.44	98	329352	53.05	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 106.10%			
112) 4-bromofluorobenzene (s)	15.41	95	91186	43.19	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 86.38%			

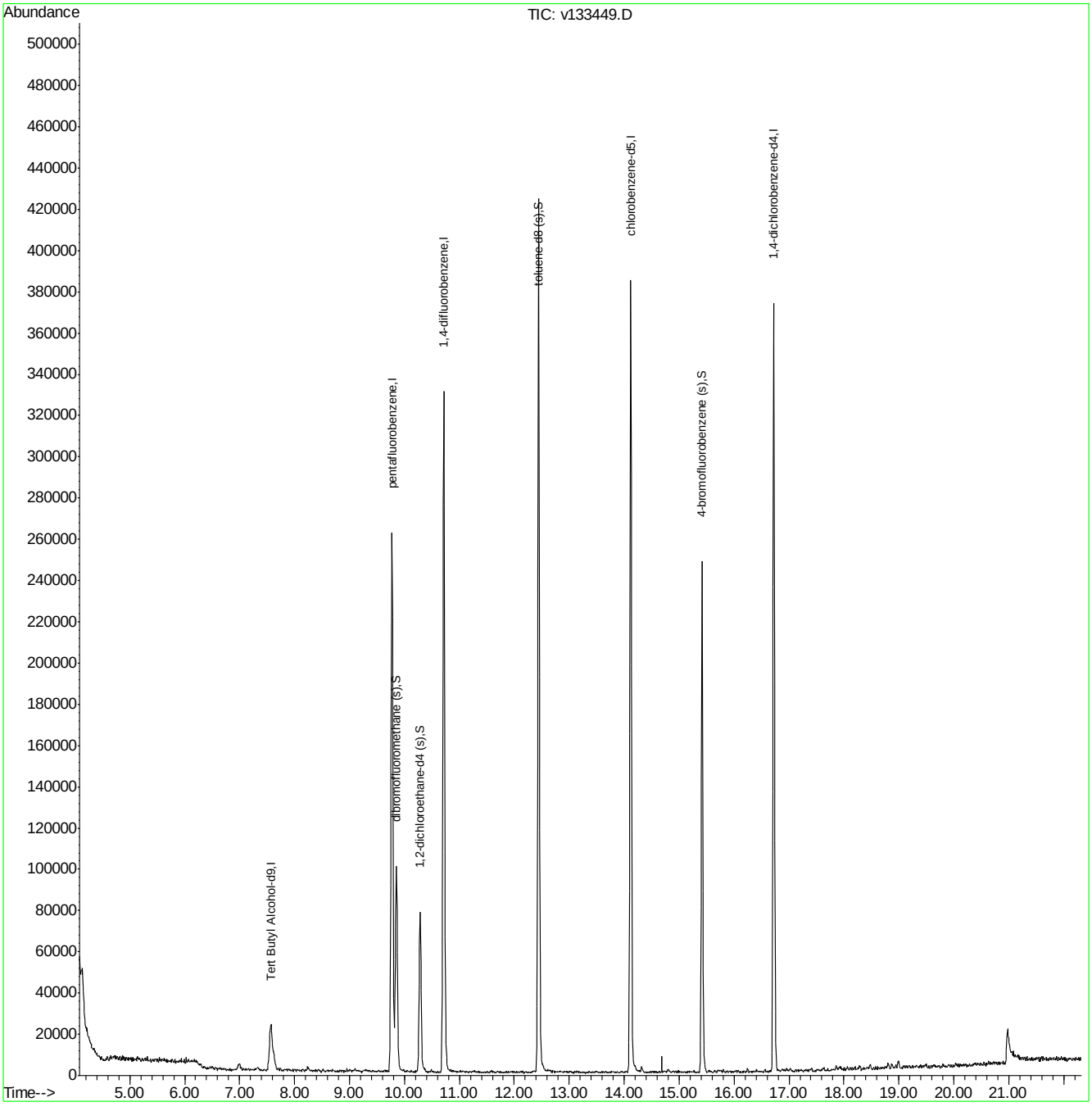
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : v133449.D
Acq On : 25 Mar 2013 6:25 pm
Operator : thienn
Sample : jb31265-7
Misc : MS44935,VV5767,6.8,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Mar 27 14:39:27 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Sat Mar 23 14:41:22 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201315.D
Acq On : 26 Mar 2013 12:21 am
Operator : OksanaT
Sample : mb
Misc : MS45025,VE8851,5,,100,5,1
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Mar 26 11:22:29 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.703	65	106255	500.00	ug/L	0.03
5) pentafluorobenzene	9.910	168	191109	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.825	114	244507	50.00	ug/L	0.00
97) chlorobenzene-d5	14.151	117	225646	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.725	152	134009	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.946	113	75663	42.19	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 84.38%			
61) 1,2-dichloroethane-d4 (s)	10.365	65	83916	42.56	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 85.12%			
89) toluene-d8 (s)	12.525	98	293189	47.36	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 94.72%			
116) 4-bromofluorobenzene (s)	15.422	95	113758	46.31	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 92.62%			

Target Compounds Qvalue

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

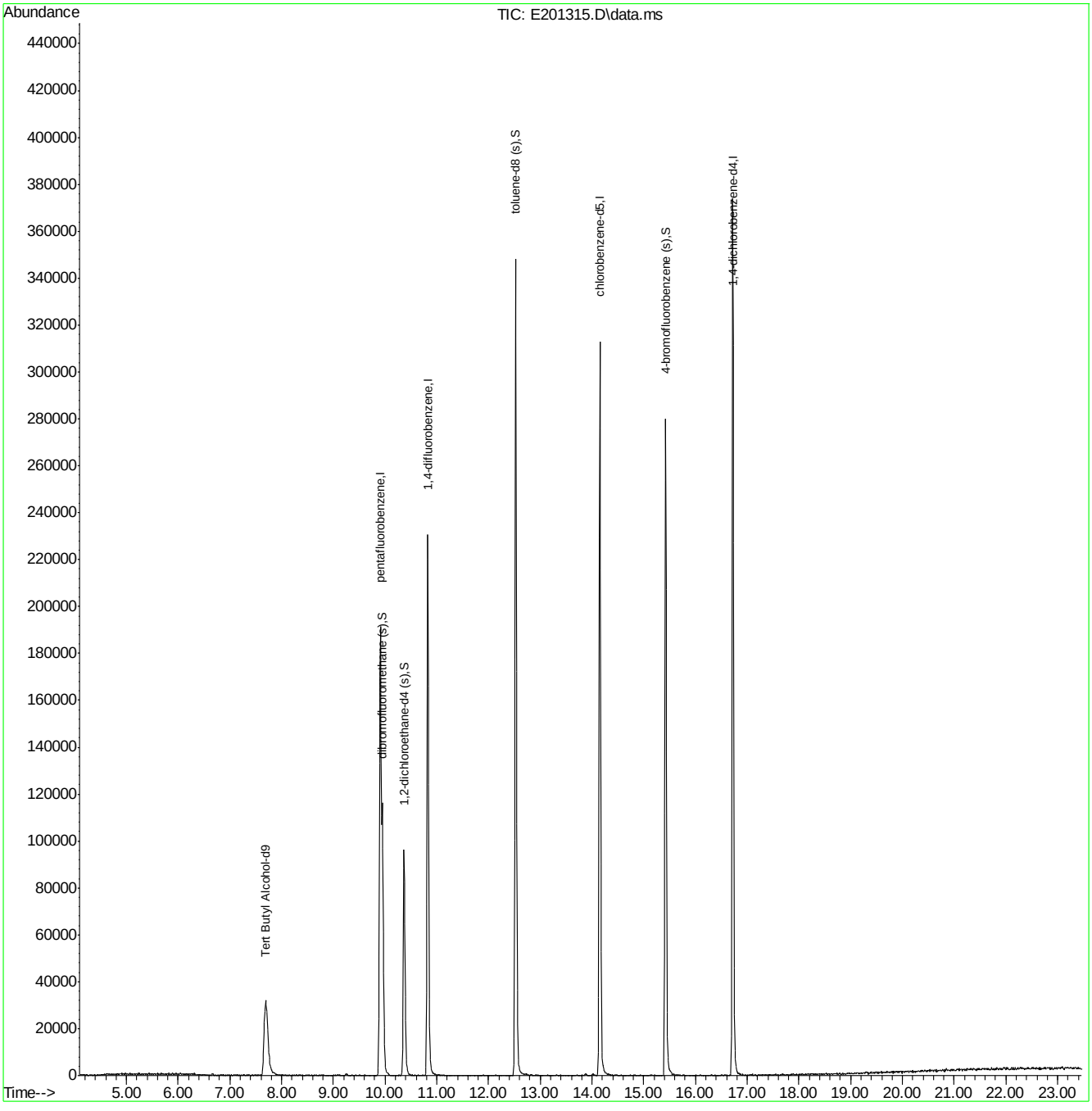
7.2.1

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201315.D
Acq On : 26 Mar 2013 12:21 am
Operator : OksanaT
Sample : mb
Misc : MS45025,VE8851,5,,100,5,1
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Mar 26 11:22:29 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201334.D
Acq On : 26 Mar 2013 11:24 am
Operator : OksanaT
Sample : mb
Misc : MS44804,VE8852,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 26 16:56:29 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.724	65	101425	500.00	ug/L	0.05
5) pentafluorobenzene	9.910	168	194181	50.00	ug/L	0.00
66) 1,4-difluorobenzene	10.825	114	247287	50.00	ug/L	0.00
97) chlorobenzene-d5	14.151	117	230491	50.00	ug/L	0.00
114) 1,4-dichlorobenzene-d4	16.725	152	133473	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.952	113	77166	42.35	ug/L	0.00
Spiked Amount 50.000	Range 81 - 121		Recovery = 84.70%			
61) 1,2-dichloroethane-d4 (s)	10.370	65	85366	42.61	ug/L	0.00
Spiked Amount 50.000	Range 74 - 127		Recovery = 85.22%			
89) toluene-d8 (s)	12.525	98	298595	47.69	ug/L	0.00
Spiked Amount 50.000	Range 80 - 122		Recovery = 95.38%			
116) 4-bromofluorobenzene (s)	15.422	95	114164	46.66	ug/L	0.00
Spiked Amount 50.000	Range 78 - 116		Recovery = 93.32%			

Target Compounds Qvalue

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

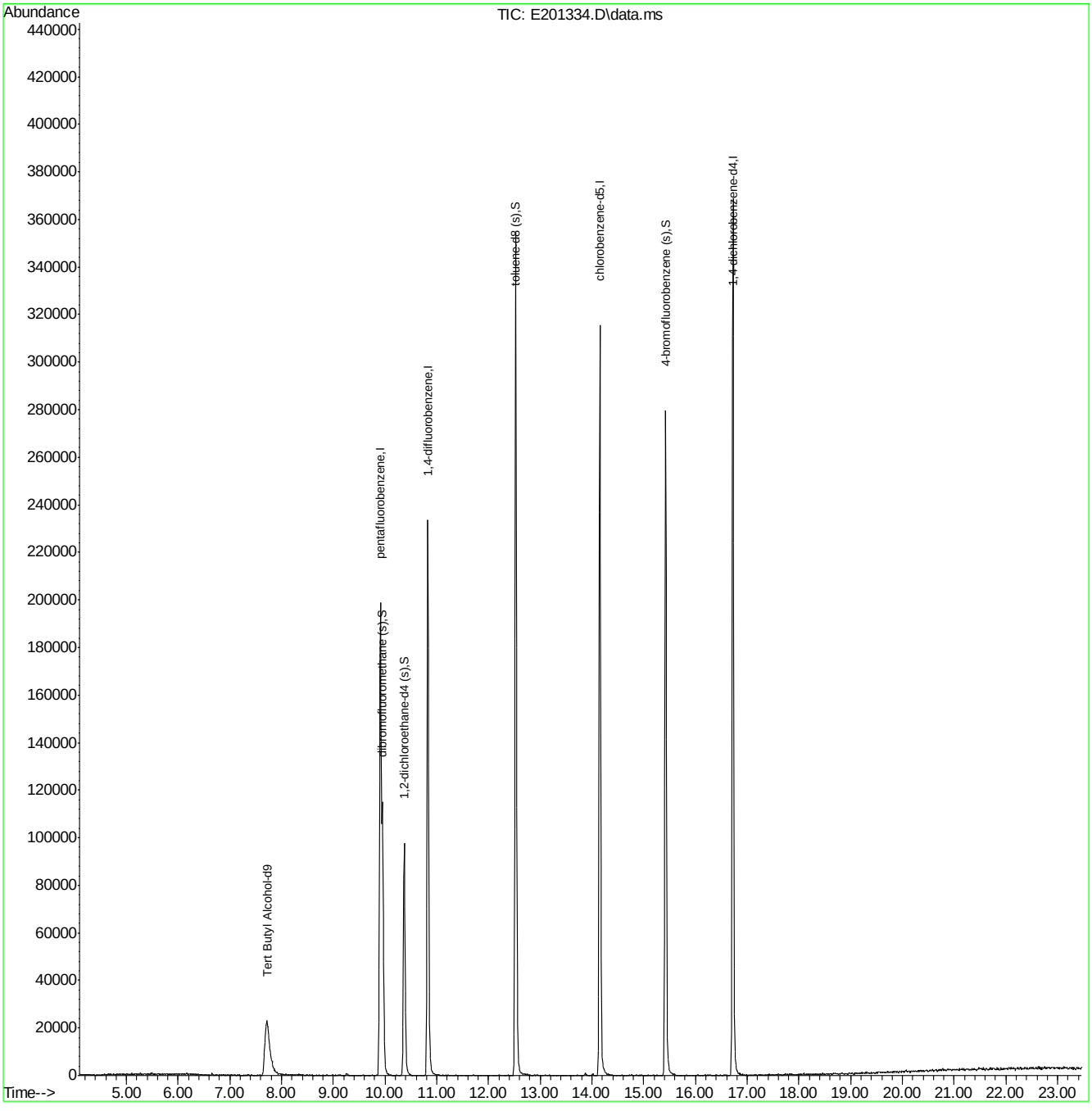
7.2.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : E201334.D
Acq On : 26 Mar 2013 11:24 am
Operator : OksanaT
Sample : mb
Misc : MS44804,VE8852,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 26 16:56:29 2013
Quant Method : C:\MSDCHEM\1\METHODS\ME8801.M
Quant Title : SW846 8260B,ZB624 60m x 0.25mm x 1.4um
QLast Update : Mon Feb 25 11:43:47 2013
Response via : Initial Calibration



ME8801.M Tue Mar 26 16:56:36 2013 RPT1 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : v133440.D
Acq On : 25 Mar 2013 1:02 pm
Operator : thienn
Sample : mb1
Misc : MS45767,VV5767,5,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 25 16:20:14 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Sat Mar 23 14:41:22 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.57	65	34170	500.00	ug/L	0.00
4) pentafluorobenzene	9.78	168	195576	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.72	114	261987	50.00	ug/L	0.00
96) chlorobenzene-d5	14.12	117	208925	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.72	152	90950	50.00	ug/L	0.00

System Monitoring Compounds

60) dibromofluoromethane (s)	9.85	113	65107	51.31	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 102.62%			
61) 1,2-dichloroethane-d4 (s)	10.29	65	60664	48.88	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 97.76%			
88) toluene-d8 (s)	12.44	98	273029	52.93	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 105.86%			
112) 4-bromofluorobenzene (s)	15.41	95	77321	42.45	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 84.90%			

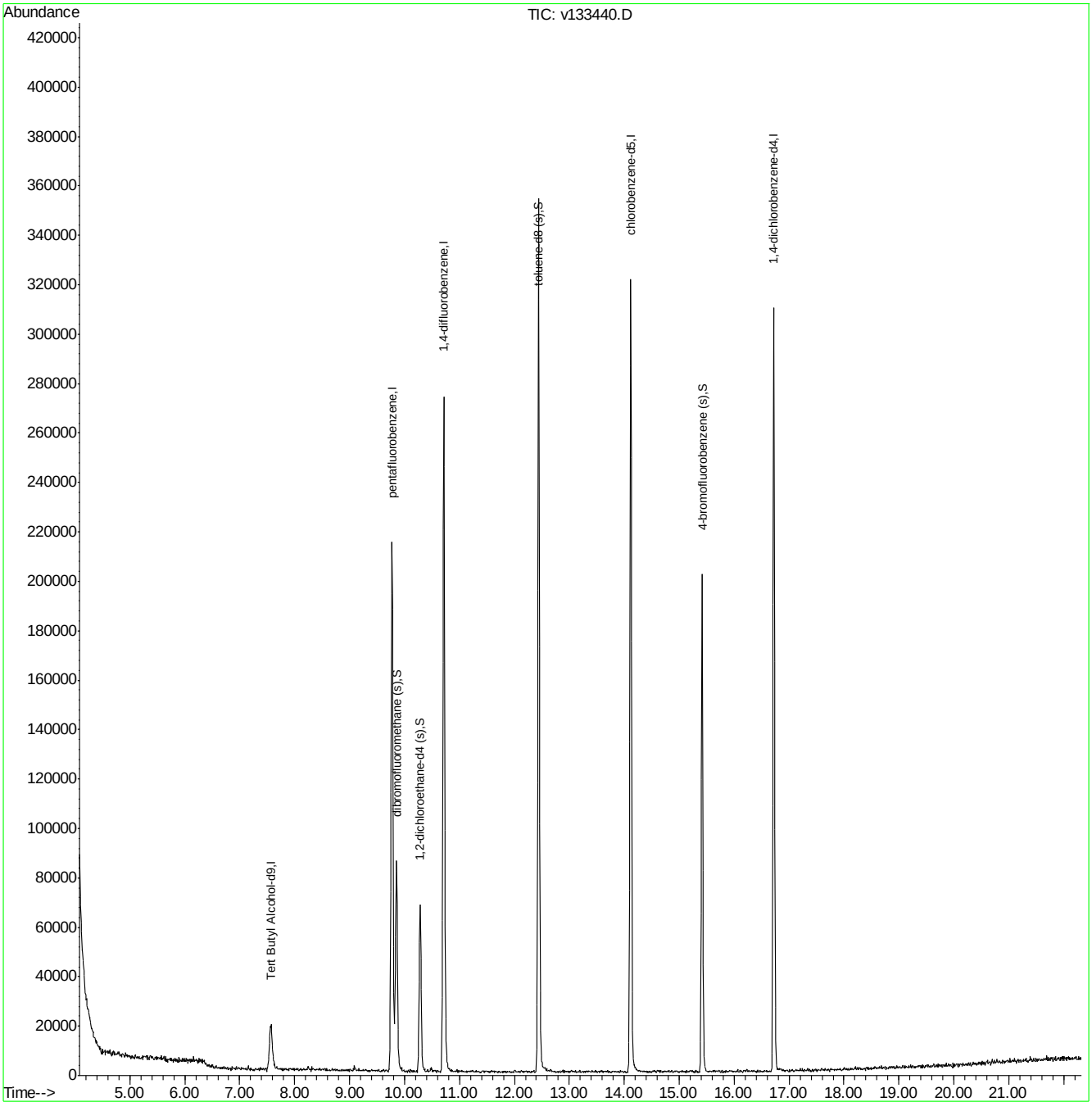
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\MSDChem\1\DATA\
Data File : v133440.D
Acq On : 25 Mar 2013 1:02 pm
Operator : thienn
Sample : mb1
Misc : MS45767,VV5767,5,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 25 16:20:14 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Sat Mar 23 14:41:22 2013
Response via : Initial Calibration



MVS5737.M Mon Mar 25 16:24:32 2013 MSV

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: JB31265
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
OP64470-MB1	2P21571.D	1	03/27/13	ALS	03/26/13	OP64470	E2P948

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

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	
91-20-3	Naphthalene	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
367-12-4	2-Fluorophenol	55%	21-116%
4165-62-2	Phenol-d5	57%	19-117%
118-79-6	2,4,6-Tribromophenol	82%	24-136%
4165-60-0	Nitrobenzene-d5	58%	21-122%
321-60-8	2-Fluorobiphenyl	67%	30-117%
1718-51-0	Terphenyl-d14	87%	31-129%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.18	210	ug/kg	J
119-61-9	Benzophenone	8.25	130	ug/kg	JN
	unknown	9.95	410	ug/kg	J
	unknown	12.67	150	ug/kg	J
	unknown	12.93	53000	ug/kg	J
	unknown	14.49	980	ug/kg	J
	Total TIC, Semi-Volatile		54670	ug/kg	J

Method Blank Summary

Job Number: JB31265
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
OP64470-MB1	Z78870.D	1	03/27/13	KH	03/26/13	OP64470	EZ4029

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

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	
91-20-3	Naphthalene	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
367-12-4	2-Fluorophenol	60%	21-116%
4165-62-2	Phenol-d5	60%	19-117%
118-79-6	2,4,6-Tribromophenol	91%	24-136%
4165-60-0	Nitrobenzene-d5	62%	21-122%
321-60-8	2-Fluorobiphenyl	65%	30-117%
1718-51-0	Terphenyl-d14	83%	31-129%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.09	260	ug/kg	J
	system artifact/aldol-condensation	2.42	7800	ug/kg	J
	system artifact	3.03	180	ug/kg	J
	system artifact	3.60	240	ug/kg	J
119-61-9	Benzophenone	10.40	130	ug/kg	JN
	unknown	12.10	480	ug/kg	J
57-10-3	n-Hexadecanoic acid	12.69	120	ug/kg	JN
	unknown	15.28	130	ug/kg	J
	unknown	15.69	61000	ug/kg	J
	unknown	18.38	990	ug/kg	J
	Total TIC, Semi-Volatile		62850	ug/kg	J

Blank Spike Summary

Job Number: JB31265
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
OP64470-BS1	Z78871.D	1	03/27/13	KH	03/26/13	OP64470	EZ4029

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	1430	1400	98	59-121
56-55-3	Benzo(a)anthracene	1430	1390	97	54-119
50-32-8	Benzo(a)pyrene	1430	1480	104	59-122
205-99-2	Benzo(b)fluoranthene	1430	1500	105	45-133
191-24-2	Benzo(g,h,i)perylene	1430	1480	104	57-122
218-01-9	Chrysene	1430	1370	96	55-120
86-73-7	Fluorene	1430	1240	87	57-117
91-20-3	Naphthalene	1430	1030	72	49-111
85-01-8	Phenanthrene	1430	1310	92	58-118
129-00-0	Pyrene	1430	1340	94	54-122

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	73%	21-116%
4165-62-2	Phenol-d5	79%	19-117%
118-79-6	2,4,6-Tribromophenol	111%	24-136%
4165-60-0	Nitrobenzene-d5	73%	21-122%
321-60-8	2-Fluorobiphenyl	79%	30-117%
1718-51-0	Terphenyl-d14	105%	31-129%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB31265
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
OP64470-MS	Z78887.D	1	03/28/13	KH	03/26/13	OP64470	EZ4029
OP64470-MSD	Z78888.D	1	03/28/13	KH	03/26/13	OP64470	EZ4029
JB31265-1	Z78886.D	1	03/28/13	KH	03/26/13	OP64470	EZ4029

The QC reported here applies to the following samples: **Method:** SW846 8270D

JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

CAS No.	Compound	JB31265-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	332		1680	1690	81	2000	94	17	33-130/30
56-55-3	Benzo(a)anthracene	797		1680	2140	80	2490	95	15	29-127/33
50-32-8	Benzo(a)pyrene	934		1680	2430	89	2710	100	11	28-134/34
205-99-2	Benzo(b)fluoranthene	1100		1680	2410	78	2870	99	17	19-143/38
191-24-2	Benzo(g,h,i)perylene	590		1680	2240	98	2530	109	12	27-135/34
218-01-9	Chrysene	1000		1680	2240	74	2640	92	16	29-129/32
86-73-7	Fluorene	428		1680	1750	79	2030	90	15	32-125/32
91-20-3	Naphthalene	120		1680	897	46	981	48	9	25-117/32
85-01-8	Phenanthrene	214		1680	1520	78	1750	86	14	28-132/34
129-00-0	Pyrene	1510		1680	3030	90	3330	102	9	27-132/33

CAS No.	Surrogate Recoveries	MS	MSD	JB31265-1	Limits
367-12-4	2-Fluorophenol	45%	44%	42%	21-116%
4165-62-2	Phenol-d5	51%	51%	48%	19-117%
118-79-6	2,4,6-Tribromophenol	88%	96%	81%	24-136%
4165-60-0	Nitrobenzene-d5	51%	51%	58%	21-122%
321-60-8	2-Fluorobiphenyl	61%	63%	63%	30-117%
1718-51-0	Terphenyl-d14	83%	83%	71%	31-129%

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2P889-DFTPP
Lab File ID: 2P20060.D
Instrument ID: GCMS2P
Injection Date: 02/14/13
Injection Time: 16:49

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	247028	35.5		Pass
68	Less than 2.0% of mass 69	4681	0.67	(1.56) [a]	Pass
69	Mass 69 relative abundance	299285	43.1		Pass
70	Less than 2.0% of mass 69	1593	0.23	(0.53) [a]	Pass
127	40.0 - 60.0% of mass 198	384853	55.4		Pass
197	Less than 1.0% of mass 198	4870	0.70		Pass
198	Base peak, 100% relative abundance	694891	100.0		Pass
199	5.0 - 9.0% of mass 198	46558	6.70		Pass
275	10.0 - 30.0% of mass 198	167576	24.1		Pass
365	1.0 - 100.0% of mass 198	20924	3.01		Pass
441	Present, but less than mass 443	91109	13.1	(78.9) [b]	Pass
442	40.0 - 100.0% of mass 198	615680	88.6		Pass
443	17.0 - 23.0% of mass 442	115464	16.6	(18.8) [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
E2P889-IC889	2P20061.D	02/14/13	16:58	00:09	Initial cal 100
E2P889-IC889	2P20062.D	02/14/13	17:21	00:32	Initial cal 80
E2P889-ICC889	2P20063.D	02/14/13	17:44	00:55	Initial cal 50
E2P889-IC889	2P20064.D	02/14/13	18:07	01:18	Initial cal 25
E2P889-IC889	2P20065.D	02/14/13	18:29	01:40	Initial cal 10
E2P889-IC889	2P20066.D	02/14/13	18:52	02:03	Initial cal 5
E2P889-IC889	2P20067.D	02/14/13	19:15	02:26	Initial cal 2
E2P889-IC889	2P20068.D	02/14/13	19:37	02:48	Initial cal 1
E2P889-ICV889	2P20069A.D	02/14/13	20:00	03:11	Initial cal verification 50
E2P889-ICV888	2P20069.D	02/14/13	20:00	03:11	Initial cal verification 50
E2P889-ICV889	2P20070A.D	02/14/13	20:23	03:34	Initial cal verification 50
E2P889-ICV888	2P20070.D	02/14/13	20:23	03:34	Initial cal verification 50
E2P889-ICV888	2P20071.D	02/14/13	20:45	03:56	Initial cal verification 50
E2P889-ICV888	2P20072.D	02/14/13	21:08	04:19	Initial cal verification 50
E2P889-ICV889	2P20073A.D	02/14/13	21:31	04:42	Initial cal verification 50
E2P889-ICV888	2P20073.D	02/14/13	21:31	04:42	Initial cal verification 50
E2P889-ICV888	2P20074.D	02/14/13	21:53	05:04	Initial cal verification 50
E2P889-ICV889	2P20075A.D	02/14/13	22:16	05:27	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2P896-DFTPP
Lab File ID: 2P20223.D
Instrument ID: GCMS2P
Injection Date: 02/20/13
Injection Time: 09:14

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	412889	34.8		Pass
68	Less than 2.0% of mass 69	7218	0.61	(1.49) [a]	Pass
69	Mass 69 relative abundance	483367	40.8		Pass
70	Less than 2.0% of mass 69	1932	0.16	(0.40) [a]	Pass
127	40.0 - 60.0% of mass 198	617112	52.0		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	1186113	100.0		Pass
199	5.0 - 9.0% of mass 198	79203	6.68		Pass
275	10.0 - 30.0% of mass 198	257408	21.7		Pass
365	1.0 - 100.0% of mass 198	31587	2.66		Pass
441	Present, but less than mass 443	128379	10.8	(77.1) [b]	Pass
442	40.0 - 100.0% of mass 198	868651	73.2		Pass
443	17.0 - 23.0% of mass 442	166589	14.0	(19.2) [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
E2P896-IC896	2P20224.D	02/20/13	09:22	00:08	Initial cal 100
E2P896-IC896	2P20225.D	02/20/13	09:45	00:31	Initial cal 1
E2P896-IC896	2P20226.D	02/20/13	10:08	00:54	Initial cal 80
E2P896-IC896	2P20227.D	02/20/13	10:30	01:16	Initial cal 2
E2P896-ICC896	2P20228.D	02/20/13	10:54	01:40	Initial cal 50
E2P896-IC896	2P20229.D	02/20/13	11:17	02:03	Initial cal 5
E2P896-IC896	2P20230.D	02/20/13	11:39	02:25	Initial cal 25
E2P896-IC896	2P20231.D	02/20/13	12:02	02:48	Initial cal 10
E2P896-ICV896	2P20232.D	02/20/13	12:26	03:12	Initial cal verification 50
E2P896-ICV896	2P20233.D	02/20/13	12:49	03:35	Initial cal verification 50
E2P896-ICV896	2P20234.D	02/20/13	13:12	03:58	Initial cal verification 50
E2P896-ICV896	2P20235.D	02/20/13	13:35	04:21	Initial cal verification 50
E2P896-ICV896	2P20237.D	02/20/13	14:21	05:07	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2P948-DFTPP
Lab File ID: 2P21568.D
Instrument ID: GCMS2P
Injection Date: 03/27/13
Injection Time: 08:33

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	844912	37.0		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	1042853	45.7		Pass
70	Less than 2.0% of mass 69	5051	0.22	(0.48) [a]	Pass
127	40.0 - 60.0% of mass 198	1077045	47.2		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	2283789	100.0		Pass
199	5.0 - 9.0% of mass 198	151709	6.64		Pass
275	10.0 - 30.0% of mass 198	545004	23.9		Pass
365	1.0 - 100.0% of mass 198	55121	2.41		Pass
441	Present, but less than mass 443	283435	12.4	(90.2) [b]	Pass
442	40.0 - 100.0% of mass 198	1666560	73.0		Pass
443	17.0 - 23.0% of mass 442	314304	13.8	(18.9) [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
E2P948-CC896	2P21569.D	03/27/13	08:42	00:09	Continuing cal 25
E2P948-CC889	2P21570.D	03/27/13	09:05	00:32	Continuing cal 50
OP64470-MB1	2P21571.D	03/27/13	09:28	00:55	Method Blank
ZZZZZZ	2P21572.D	03/27/13	09:51	01:18	(unrelated sample)
ZZZZZZ	2P21573.D	03/27/13	10:13	01:40	(unrelated sample)
ZZZZZZ	2P21574.D	03/27/13	10:36	02:03	(unrelated sample)
ZZZZZZ	2P21575.D	03/27/13	10:59	02:26	(unrelated sample)
ZZZZZZ	2P21576.D	03/27/13	11:21	02:48	(unrelated sample)
ZZZZZZ	2P21577.D	03/27/13	11:44	03:11	(unrelated sample)
ZZZZZZ	2P21578.D	03/27/13	12:06	03:33	(unrelated sample)
ZZZZZZ	2P21579.D	03/27/13	12:29	03:56	(unrelated sample)
ZZZZZZ	2P21580.D	03/27/13	12:52	04:19	(unrelated sample)
ZZZZZZ	2P21582.D	03/27/13	13:37	05:04	(unrelated sample)
JB31265-5	2P21585.D	03/27/13	14:45	06:12	AOI7-BH-13-47_1.5-2_031313
JB31265-7	2P21586.D	03/27/13	15:07	06:34	AOI7-BH-13-46_1.5-2_031313
JB31265-3	2P21587.D	03/27/13	15:30	06:57	AOI7-BH-13-45_1.5-2_031313
JB31265-4	2P21588.D	03/27/13	15:52	07:19	AOI7-BH-13-45_2-2.5_031313
JB31265-6	2P21589.D	03/27/13	16:15	07:42	AOI7-BH-13-47_2.5-3_031313
ZZZZZZ	2P21591.D	03/27/13	17:00	08:27	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2P949-DFTPP
Lab File ID: 2P21592.D
Instrument ID: GCMS2P
Injection Date: 03/27/13
Injection Time: 17:53

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	466525	38.1		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	562688	46.0		Pass
70	Less than 2.0% of mass 69	2262	0.18	(0.40) [a]	Pass
127	40.0 - 60.0% of mass 198	591569	48.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	1224047	100.0		Pass
199	5.0 - 9.0% of mass 198	83923	6.86		Pass
275	10.0 - 30.0% of mass 198	290984	23.8		Pass
365	1.0 - 100.0% of mass 198	31416	2.57		Pass
441	Present, but less than mass 443	158965	13.0	(88.2) [b]	Pass
442	40.0 - 100.0% of mass 198	903104	73.8		Pass
443	17.0 - 23.0% of mass 442	180131	14.7	(19.9) [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
E2P949-CC896	2P21593.D	03/27/13	18:04	00:11	Continuing cal 50
E2P949-CC889	2P21594.D	03/27/13	18:26	00:33	Continuing cal 50
OP64421A-MB1	2P21595.D	03/27/13	18:49	00:56	Method Blank
OP64421A-BS1	2P21596.D	03/27/13	19:12	01:19	Blank Spike
OP63954A-MB1	2P21597.D	03/27/13	19:34	01:41	Method Blank
OP63954A-BS1	2P21598.D	03/27/13	19:57	02:04	Blank Spike
OP64273A-MB1	2P21599.D	03/27/13	20:20	02:27	Method Blank
OP64273A-BS1	2P21600.D	03/27/13	20:42	02:49	Blank Spike
JB31050-1Q	2P21601.D	03/27/13	21:05	03:12	(used for QC only; not part of job JB31265)
ZZZZZZ	2P21602.D	03/27/13	21:27	03:34	(unrelated sample)
ZZZZZZ	2P21603.D	03/27/13	21:50	03:57	(unrelated sample)
ZZZZZZ	2P21604.D	03/27/13	22:13	04:20	(unrelated sample)
OP64421A-MS	2P21605.D	03/27/13	22:35	04:42	Matrix Spike
OP64421A-MSD	2P21606.D	03/27/13	22:58	05:05	Matrix Spike Duplicate
ZZZZZZ	2P21609.D	03/28/13	00:06	06:13	(unrelated sample)
JB29909-1Q	2P21610.D	03/28/13	00:29	06:36	(used for QC only; not part of job JB31265)
OP63954A-MS	2P21611.D	03/28/13	00:52	06:59	Matrix Spike
OP63954A-MSD	2P21612.D	03/28/13	01:14	07:21	Matrix Spike Duplicate
JB29801-6Q	2P21613.D	03/28/13	01:37	07:44	(used for QC only; not part of job JB31265)

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2P949-DFTPP
Lab File ID: 2P21592.D
Instrument ID: GCMS2P
Injection Date: 03/27/13
Injection Time: 17:53

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	2P21614.D	03/28/13	02:00	08:07	(unrelated sample)
OP64273A-MS	2P21615.D	03/28/13	02:23	08:30	Matrix Spike
OP64273A-MSD	2P21616.D	03/28/13	02:45	08:52	Matrix Spike Duplicate
ZZZZZZ	2P21617.D	03/28/13	03:08	09:15	(unrelated sample)
ZZZZZZ	2P21618.D	03/28/13	03:31	09:38	(unrelated sample)
JB31265-2	2P21619.D	03/28/13	03:54	10:01	AOI7-BH-13-48_2.5-3_031313
ZZZZZZ	2P21620.D	03/28/13	04:17	10:24	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EZ4014-DFTPP
Lab File ID: Z78519.D
Instrument ID: GCMSZ
Injection Date: 03/13/13
Injection Time: 15:54

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	14239	35.1		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	15550	38.4		Pass
70	Less than 2.0% of mass 69	67	0.17	(0.43) [a]	Pass
127	40.0 - 60.0% of mass 198	22041	54.4		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	40530	100.0		Pass
199	5.0 - 9.0% of mass 198	2793	6.89		Pass
275	10.0 - 30.0% of mass 198	10199	25.2		Pass
365	1.0 - 100.0% of mass 198	1119	2.76		Pass
441	Present, but less than mass 443	3770	9.30	(80.5) [b]	Pass
442	40.0 - 100.0% of mass 198	24269	59.9		Pass
443	17.0 - 23.0% of mass 442	4682	11.6	(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
EZ4014-ICC4014	Z78520.D	03/13/13	16:08	00:14	Initial cal 50
EZ4014-IC4014	Z78521.D	03/13/13	16:42	00:48	Initial cal 5
EZ4014-IC4014	Z78522.D	03/13/13	17:14	01:20	Initial cal 100
EZ4014-IC4014	Z78523.D	03/13/13	17:46	01:52	Initial cal 1
EZ4014-IC4014	Z78524.D	03/13/13	18:17	02:23	Initial cal 25
EZ4014-IC4014	Z78525.D	03/13/13	18:49	02:55	Initial cal 10
EZ4014-IC4014	Z78526.D	03/13/13	19:20	03:26	Initial cal 80
EZ4014-IC4014	Z78527.D	03/13/13	19:52	03:58	Initial cal 2
EZ4014-IC4014	Z78528.D	03/13/13	20:23	04:29	Initial cal 100
EZ4014-IC4014	Z78529.D	03/13/13	20:54	05:00	Initial cal 80
EZ4014-IC4014	Z78530.D	03/13/13	21:25	05:31	Initial cal 50
EZ4014-IC4014	Z78531.D	03/13/13	21:57	06:03	Initial cal 25
EZ4014-IC4014	Z78532.D	03/13/13	22:29	06:35	Initial cal 10
EZ4014-IC4014	Z78533.D	03/13/13	23:01	07:07	Initial cal 5
EZ4014-IC4014	Z78534.D	03/13/13	23:32	07:38	Initial cal 2
EZ4014-IC4014	Z78535.D	03/14/13	00:04	08:10	Initial cal 1
EZ4014-ICV4014	Z78536.D	03/14/13	00:35	08:41	Initial cal verification 50
EZ4014-ICV4014	Z78537.D	03/14/13	01:07	09:13	Initial cal verification 50
EZ4014-ICV4014	Z78538.D	03/14/13	01:38	09:44	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EZ4014-DFTPP
Lab File ID: Z78519.D
Instrument ID: GCMSZ
Injection Date: 03/13/13
Injection Time: 15:54

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ4014-ICV4014	Z78539.D	03/14/13	02:09	10:15	Initial cal verification 50
EZ4014-ICV4014	Z78541.D	03/14/13	03:12	11:18	Initial cal verification 50
EZ4014-ICV4014	Z78542.D	03/14/13	03:44	11:50	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EZ4029-DFTPP
Lab File ID: Z78867.D
Instrument ID: GCMSZ
Injection Date: 03/27/13
Injection Time: 14:44

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	84461	49.9		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	84675	50.0		Pass
70	Less than 2.0% of mass 69	529	0.31	(0.62) [a]	Pass
127	40.0 - 60.0% of mass 198	93724	55.4		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	169186	100.0		Pass
199	5.0 - 9.0% of mass 198	11421	6.75		Pass
275	10.0 - 30.0% of mass 198	42936	25.4		Pass
365	1.0 - 100.0% of mass 198	5105	3.02		Pass
441	Present, but less than mass 443	14682	8.68	(70.7) [b]	Pass
442	40.0 - 100.0% of mass 198	103850	61.4		Pass
443	17.0 - 23.0% of mass 442	20760	12.3	(20.0) [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
EZ4029-CC4014	Z78868.D	03/27/13	14:58	00:14	Continuing cal 50
EZ4029-CC4014	Z78869.D	03/27/13	15:30	00:46	Continuing cal 50
OP64470-MB1	Z78870.D	03/27/13	16:02	01:18	Method Blank
OP64470-BS1	Z78871.D	03/27/13	16:34	01:50	Blank Spike
ZZZZZZ	Z78875.D	03/27/13	17:05	02:21	(unrelated sample)
ZZZZZZ	Z78876.D	03/27/13	17:37	02:53	(unrelated sample)
ZZZZZZ	Z78872.D	03/27/13	18:09	03:25	(unrelated sample)
ZZZZZZ	Z78873.D	03/27/13	18:40	03:56	(unrelated sample)
ZZZZZZ	Z78874.D	03/27/13	19:11	04:27	(unrelated sample)
ZZZZZZ	Z78877.D	03/27/13	19:43	04:59	(unrelated sample)
JB32057-1	Z78878.D	03/27/13	20:14	05:30	(used for QC only; not part of job JB31265)
OP64652-MS	Z78879.D	03/27/13	20:46	06:02	Matrix Spike
OP64652-MSD	Z78880.D	03/27/13	21:17	06:33	Matrix Spike Duplicate
ZZZZZZ	Z78881.D	03/27/13	21:49	07:05	(unrelated sample)
ZZZZZZ	Z78882.D	03/27/13	22:20	07:36	(unrelated sample)
ZZZZZZ	Z78883.D	03/27/13	22:52	08:08	(unrelated sample)
ZZZZZZ	Z78884.D	03/27/13	23:23	08:39	(unrelated sample)
ZZZZZZ	Z78885.D	03/27/13	23:54	09:10	(unrelated sample)
JB31265-1	Z78886.D	03/28/13	00:26	09:42	AOI7-BH-13-48_1.5-2_031313

Instrument Performance Check (DFTPP)

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EZ4029-DFTPP
Lab File ID: Z78867.D
Instrument ID: GCMSZ
Injection Date: 03/27/13
Injection Time: 14:44

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP64470-MS	Z78887.D	03/28/13	00:58	10:14	Matrix Spike
OP64470-MSD	Z78888.D	03/28/13	01:29	10:45	Matrix Spike Duplicate
ZZZZZZ	Z78889.D	03/28/13	02:01	11:17	(unrelated sample)

Semivolatile Internal Standard Area Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	E2P948-CC896	**Injection Date:**	03/27/13
Lab File ID:	2P21569.D	**Injection Time:**	08:42
Instrument ID:	GCMS2P	**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	68919	2.84	269531	4.44	149853	7.06	248943	9.32	251354	13.22	217332	14.89
Upper Limit [a]	137838	3.34	539062	4.94	299706	7.56	497886	9.82	502708	13.72	434664	15.39
Lower Limit [b]	34460	2.34	134766	3.94	74927	6.56	124472	8.82	125677	12.72	108666	14.39

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
OP64470-MB1	53102	2.84	210671	4.44	117031	7.06	195051	9.32	197668	13.23	177035	14.89
ZZZZZZ	52951	2.84	208169	4.44	118048	7.06	193775	9.33	197566	13.22	172061	14.89
ZZZZZZ	45626	2.85	180333	4.45	100290	7.06	163267	9.32	162637	13.23	165679	14.91
ZZZZZZ	57522	2.85	221985	4.45	121086	7.08	194922	9.35	185758	13.25	173190	14.91
ZZZZZZ	47429	2.85	184809	4.45	101994	7.08	164601	9.35	209053	13.36	196534	15.01
ZZZZZZ	44340	2.86	174694	4.46	98318	7.08	157979	9.35	159954	13.25	142370	14.91
ZZZZZZ	51667	2.85	198470	4.45	110146	7.08	179373	9.35	220268	13.30	203532	14.97
ZZZZZZ	43705	2.86	172512	4.46	96410	7.08	158294	9.35	155708	13.25	139037	14.91
ZZZZZZ	48635	2.85	188532	4.45	103662	7.08	176432	9.36	217221	13.34	207540	15.02
ZZZZZZ	60921	2.86	237026	4.46	131784	7.08	211134	9.36	246682	13.29	242985	14.99
ZZZZZZ	46628	2.85	182507	4.46	101613	7.08	166536	9.35	168400	13.26	155918	14.94
JB31265-5	43904	2.87	172010	4.48	95093	7.11	156160	9.39	181276	13.34	167653	15.02
JB31265-7	40226	2.87	158548	4.48	89278	7.11	142254	9.38	158054	13.29	155313	14.98
JB31265-3 [c]	44512	2.87	173547	4.48	99184	7.11	157947	9.39	188967	13.31	177388	15.00
JB31265-4 [c]	43196	2.87	173942	4.48	98052	7.12	161895	9.39	185730	13.32	179544	15.01
JB31265-6 [c]	43866	2.87	173650	4.48	95990	7.12	165829	9.41	184997	13.33	177119	15.01
ZZZZZZ	43982	2.87	177089	4.48	101719	7.11	164616	9.38	168159	13.28	155291	14.96

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.
(c) Dilution required due to sample high viscous matrix.

Semivolatile Internal Standard Area Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	E2P949-CC896	**Injection Date:**	03/27/13
Lab File ID:	2P21593.D	**Injection Time:**	18:04
Instrument ID:	GCMS2P	**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	67303	2.85	265593	4.46	148876	7.09	245579	9.36	246520	13.26	207542	14.92
Upper Limit [a]	134606	3.35	531186	4.96	297752	7.59	491158	9.86	493040	13.76	415084	15.42
Lower Limit [b]	33652	2.35	132797	3.96	74438	6.59	122790	8.86	123260	12.76	103771	14.42

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
OP64421A-MB1	52436	2.85	209921	4.46	119755	7.08	196351	9.35	201253	13.25	176489	14.92
OP64421A-BS1	68797	2.85	270199	4.45	149990	7.08	242307	9.35	242561	13.25	217143	14.92
OP63954A-MB1	59181	2.85	236754	4.45	135206	7.08	216692	9.35	216799	13.25	192725	14.91
OP63954A-BS1	45789	2.85	182717	4.45	103722	7.08	168978	9.35	172687	13.25	151185	14.91
OP64273A-MB1	59350	2.85	235254	4.45	134031	7.07	223978	9.34	225573	13.24	198099	14.91
OP64273A-BS1	48481	2.85	194513	4.45	108899	7.07	178522	9.34	178113	13.24	158135	14.91
JB31050-1Q	51189	2.85	204771	4.45	114154	7.07	185269	9.34	188868	13.24	166596	14.91
ZZZZZZ	47145	2.85	192285	4.45	107573	7.10	180075	9.37	186035	13.25	163919	14.91
ZZZZZZ	49505	2.85	195781	4.45	108181	7.08	181306	9.35	184789	13.24	165081	14.90
ZZZZZZ	45702	2.85	179267	4.45	100085	7.07	163191	9.34	165394	13.23	149718	14.90
OP64421A-MS	48902	2.85	197682	4.45	108820	7.07	176421	9.34	177613	13.23	155748	14.90
OP64421A-MSD	45675	2.85	184047	4.45	102663	7.07	167047	9.34	168926	13.23	148012	14.90
ZZZZZZ	52890	2.85	212983	4.46	119617	7.10	203716	9.37	206119	13.24	184344	14.90
JB29909-1Q	60564	2.85	238432	4.45	136720	7.07	230611	9.33	227207	13.23	201645	14.90
OP63954A-MS	50184	2.85	196905	4.45	114396	7.07	187652	9.33	192351	13.23	164925	14.90
OP63954A-MSD	57691	2.84	233333	4.45	131343	7.07	214140	9.34	215006	13.23	190109	14.90
JB29801-6Q	50468	2.85	203608	4.45	118041	7.07	195716	9.33	196346	13.23	171114	14.90
ZZZZZZ	57760	2.85	228345	4.45	132254	7.08	224554	9.35	230793	13.23	206265	14.90
OP64273A-MS	64032	2.84	250883	4.44	141473	7.07	233045	9.33	236918	13.23	211327	14.90
OP64273A-MSD	55189	2.84	219339	4.44	124114	7.06	200594	9.33	197723	13.23	173332	14.90
ZZZZZZ	38839	2.85	157931	4.45	92820	7.08	156858	9.35	165127	13.25	144693	14.91
ZZZZZZ	40463	2.85	162317	4.45	95095	7.09	164639	9.41	175831	13.28	149445	14.92
JB31265-2 [c]	43522	2.85	174269	4.45	98904	7.08	168002	9.36	188130	13.28	184916	14.97
ZZZZZZ	48854	2.86	205387	4.48	115885	7.14	201535	9.42	189411	13.27	166586	14.93

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.
(c) Dilution required due to matrix interference.

Semivolatile Internal Standard Area Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	EZ4029-CC4014	**Injection Date:**	03/27/13
Lab File ID:	Z78868.D	**Injection Time:**	14:58
Instrument ID:	GCMSZ	**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	72328	4.59	289485	6.50	185415	9.22	314543	11.49	331394	16.05	303882	18.86
Upper Limit [a]	144656	5.09	578970	7.00	370830	9.72	629086	11.99	662788	16.55	607764	19.36
Lower Limit [b]	36164	4.09	144743	6.00	92708	8.72	157272	10.99	165697	15.55	151941	18.36

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
OP64470-MB1	72646	4.59	280510	6.49	176285	9.22	299434	11.48	341886	16.05	305275	18.85
OP64470-BS1	77528	4.59	304449	6.49	189010	9.22	316901	11.49	323242	16.05	295879	18.86
ZZZZZZ	62565	4.59	250860	6.49	156691	9.22	264088	11.48	276865	16.04	256207	18.85
ZZZZZZ	64044	4.59	255424	6.49	159670	9.22	275985	11.49	297801	16.05	278651	18.86
ZZZZZZ	67118	4.59	253396	6.49	151336	9.22	257908	11.48	268701	16.04	254790	18.85
ZZZZZZ	69375	4.59	278179	6.49	177484	9.22	300363	11.48	309152	16.03	282973	18.84
ZZZZZZ	66043	4.59	269864	6.49	182946	9.23	331021	11.51	343269	16.09	283737	18.92
ZZZZZZ	66842	4.59	283571	6.50	208561	9.26	337981	11.52	297628	16.05	262961	18.86
JB32057-1	66697	4.59	261371	6.49	159610	9.22	268854	11.48	270692	16.04	241294	18.85
OP64652-MS	65011	4.59	250107	6.49	152873	9.22	246140	11.49	258194	16.04	240256	18.85
OP64652-MSD	60403	4.59	239617	6.49	144488	9.22	254775	11.48	270048	16.04	251461	18.85
ZZZZZZ	56403	4.59	221715	6.49	132505	9.21	227640	11.48	241399	16.03	222640	18.85
ZZZZZZ	73248	4.59	288595	6.49	177129	9.22	299385	11.48	320025	16.04	294459	18.86
ZZZZZZ	74245	4.59	296057	6.49	173887	9.22	291942	11.48	302660	16.04	274367	18.85
ZZZZZZ	63412	4.59	250587	6.49	153805	9.22	260330	11.48	270685	16.04	238482	18.86
ZZZZZZ	62268	4.59	244626	6.49	152196	9.22	257989	11.48	266112	16.03	247680	18.85
JB31265-1	72480	4.59	291587	6.49	183456	9.23	312700	11.51	336004	16.09	316995	18.94
OP64470-MS	84520	4.60	339657	6.51	217708	9.25	387186	11.53	383210	16.14	343913	19.01
OP64470-MSD	83598	4.61	331116	6.52	208882	9.26	366496	11.54	392433	16.17	392617	19.04
ZZZZZZ	80926	4.62	308399	6.52	194805	9.25	324393	11.53	272799	16.10	254486	18.94

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: JB31265
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	S4	S5	S6
JB31265-1	Z78886.D	42.0	48.0	81.0	58.0	63.0	71.0
JB31265-2	2P21619.D				72.0	75.0	75.0
JB31265-3	2P21587.D				35.0	39.0	40.0
JB31265-4	2P21588.D				31.0	38.0	37.0
JB31265-5	2P21585.D				49.0	64.0	64.0
JB31265-6	2P21589.D				40.0	60.0	57.0
JB31265-7	2P21586.D				22.0	48.0	77.0
OP64470-BS1	Z78871.D	73.0	79.0	111.0	73.0	79.0	105.0
OP64470-MB1	2P21571.D	55.0	57.0	82.0	58.0	67.0	87.0
OP64470-MB1	Z78870.D	60.0	60.0	91.0	62.0	65.0	83.0
OP64470-MS	Z78887.D	45.0	51.0	88.0	51.0	61.0	83.0
OP64470-MSD	Z78888.D	44.0	51.0	96.0	51.0	63.0	83.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	21-116%
S2 = Phenol-d5	19-117%
S3 = 2,4,6-Tribromophenol	24-136%
S4 = Nitrobenzene-d5	21-122%
S5 = 2-Fluorobiphenyl	30-117%
S6 = Terphenyl-d14	31-129%

Initial Calibration Summary

Job Number: JB31265 **Sample:** E2P889-ICC889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20063.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                         Response Factor Report  MS2P

  Method       : C:\MSDCHEM\1\METHODS\M2P887.M (RTE Integrator)
  Title        : Semi Volatile Extractables by GC/MS
  Last Update  : Fri Feb 15 09:21:19 2013
  Response via : Initial Calibration

  Calibration Files
  2   =2p20067.D   5   =2p20066.D   25  =2p20064.D   80  =2p20062.D
  100 =2p20061.D   50  =2p20063.D   1   =2p20068.D   10  =2p20065.D

   Compound         2     5     25    80    100   50    1     10    Avg %RSD
  ---------------------------------------------------------------------------
102) I   1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 1.172 1.195 1.150 1.096 0.932 0.930 1.090 1.216 1.098  10.18

104)     Acenaphthene-d10a     ----------------ISTD---------------------
105) Atrazine     0.128 0.131 0.162 0.173 0.175 0.155 0.103 0.148 0.147  16.88
106) 1,2,4,5-Tetr 0.492 0.499 0.511 0.516 0.515 0.464 0.490 0.509 0.499   3.51

107)     Phenanthrene-d10a     ----------------ISTD---------------------
108) o-terphenyl  0.546 0.559 0.610 0.633 0.642 0.562 0.494 0.593 0.580   8.51

109) O   Chrysene-d12a         ----------------ISTD---------------------
110) 1-chloroocta 0.286 0.296 0.401 0.417 0.414 0.365       0.354 0.362  14.88
111) Benzidine          0.546 0.617 0.425 0.380 0.496       0.680 0.524  21.73
          ----- Quadratic regression -----                Coefficient =  0.9980
               Response Ratio = 0.01121 + 0.62300 *A + -0.10017 *A^2


112)     Naphthalene-d8a       ----------------ISTD---------------------
113) Hydroquinone       0.211 0.308 0.373 0.377 0.328       0.280 0.313  19.94
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M2P887.M          Fri Feb 15 12:23:19 2013   RPT1
```

8.7.1

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P889-ICV889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20069A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p888\2p20069a.D          Vial: 18
Acq On    : 14 Feb 2013   8:00 pm                   Operator: andrews1
Sample    : icv889-50                               Inst    : MS2P
Misc      : op63249,e2p889,35.0,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2P887.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Fri Feb 15 09:21:19 2013
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	86	0.00	7.58
106	1,2,4,5-Tetrachlorobenzen	0.499	0.475	4.8	88	0.00	6.31

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20063.D M2P887.M Fri Feb 15 12:52:03 2013 RPT1

8.7.2

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P889-ICV889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20070A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p888\2p20070a.D          Vial: 19
Acq On    : 14 Feb 2013   8:23 pm                   Operator: andrews1
Sample    : icv889-50                               Inst    : MS2P
Misc      : op63249,e2p889,35.0,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2P887.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Fri Feb 15 09:21:19 2013
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 I	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	81	0.00	3.27
103	Benzaldehyde	1.098	1.424	-29.7	124	0.00	2.81
104	Acenaphthene-d10a	1.000	1.000	0.0	75	0.00	7.58
105	Atrazine	0.147	0.189	-28.6	92	0.00	9.66

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20063.D M2P887.M Fri Feb 15 12:52:07 2013 RPT1

8.7.3

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P889-ICV889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20073A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
  Data File : C:\msdchem\1\DATA\2p888\2p20073a.D          Vial: 22
  Acq On    : 14 Feb 2013   9:31 pm                   Operator: andrews1
  Sample    : icv889-50                               Inst    : MS2P
  Misc      : op63249,e2p889,35.0,,,1,1               Multiplr: 1.00
  MS Integration Params: lscint.p

  Method       : C:\MSDCHEM\1\METHODS\M2P887.M (RTE Integrator)
  Title        : Semi Volatile Extractables by GC/MS
  Last Update  : Fri Feb 15 09:21:19 2013
  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.
  ---------------------------------------------------------------------------
109 O   Chrysene-d12a               1.000   1.000      0.0   85   0.00   13.66

            ----------------------- True    Calc.   % Drift  ------------
111     Benzidine                  50.000  80.497    -61.0# 118   0.00   12.01
 ---------------------------------------------------------------------------
 ---------------------------------------------------------------------------

    (#) = Out of Range              SPCC's out = 0  CCC's out = 0
     2p20063.D  M2P887.M         Fri Feb 15 12:52:15 2013   RPT1
```

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P889-ICV889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20075A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
  Data File : C:\msdchem\1\DATA\2p888\2p20075a.D          Vial: 24
  Acq On    : 14 Feb 2013  10:16 pm                   Operator: andrews1
  Sample    : icv889-50                               Inst    : MS2P
  Misc      : op63249,e2p889,35.0,,,1,1               Multiplr: 1.00
  MS Integration Params: lscint.p

  Method       : C:\MSDCHEM\1\METHODS\M2P887.M (RTE Integrator)
  Title        : Semi Volatile Extractables by GC/MS
  Last Update  : Fri Feb 15 09:21:19 2013
  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.
  ---------------------------------------------------------------------------
           ----------------------- AvgRF   CCRF     % Dev   -------------
112     Naphthalene-d8a            1.000   1.000      0.0   65   0.00    4.93
113     Hydroquinone               0.313   0.348    -11.2   69  -0.01    5.71
 ---------------------------------------------------------------------------
 ---------------------------------------------------------------------------

    (#) = Out of Range              SPCC's out = 0  CCC's out = 0
     2p20063.D  M2P887.M         Fri Feb 15 12:52:19 2013   RPT1
```

8.7.5

8

Initial Calibration Summary

Job Number: JB31265 **Sample:** E2P896-ICC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20228.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MS2P

Method : C:\msdchem\1\METHODS\M2P896.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Feb 20 13:17:25 2013
Response via : Initial Calibration

Calibration Files
2 =2p20227.D 5 =2p20229.D 25 =2p20230.D 80 =2p20226.D
100 =2p20224.D 50 =2p20228.D 1 =2p20225.D 10 =2p20231.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
1) I 1,4-Dichlorobenzene-d	----------ISTD----------									
2) 1,4-Dioxane	0.684	0.641	0.584	0.540	0.600	0.603	0.688	0.605	0.618	8.15
3) Pyridine	1.725	1.646	1.487	1.490	1.555	1.555	2.151	1.618	1.653	13.10
4) N-Nitrosodim	0.941	0.935	0.893	0.886	0.937	0.923	0.890	0.946	0.919	2.74
5) 2-Fluorophen	1.350	1.456	1.393	1.426	1.467	1.471	1.431	1.461	1.432	2.94
6) Indene	2.388	2.550	2.407	2.428	2.415	2.495	2.581	2.531	2.474	3.00
7) Cumene	3.338	3.440	3.293	3.259	3.308	3.366	3.511	3.448	3.370	2.61
8) Phenol-d5	1.667	1.820	1.758	1.732	1.761	1.788	1.834	1.848	1.776	3.36
9) Phenol	1.975	2.077	1.987	1.976	1.973	2.034	2.130	2.112	2.033	3.22
10) Aniline	2.365	2.426	2.172	2.160	2.148	2.137	2.588	2.413	2.301	7.37
11) bis(2-Chloro	1.453	1.503	1.385	1.389	1.393	1.410	1.649	1.516	1.462	6.24
12) 2-Chlorophen	1.419	1.555	1.461	1.492	1.499	1.536	1.557	1.536	1.507	3.24
13) Decane	1.749	1.788	1.638	1.587	1.611	1.674	1.927	1.746	1.715	6.49
14) 1,3-Dichloro	1.572	1.639	1.576	1.594	1.583	1.632	1.631	1.693	1.615	2.57
15) 1,4-Dichloro	1.619	1.706	1.611	1.617	1.634	1.677	1.732	1.703	1.662	2.87
16) Benzyl alcoh	0.962	0.998	0.985	0.996	0.981	1.035	0.996	1.043	1.000	2.72
17) 1,2-Dichloro	1.523	1.587	1.525	1.518	1.504	1.549	1.680	1.598	1.560	3.76
18) Acetophenone	1.996	2.070	1.978	1.991	1.966	2.031	2.130	2.087	2.031	2.91
19) 2-Methylphen	1.326	1.439	1.363	1.369	1.338	1.388	1.379	1.466	1.383	3.46
20) 2,2'-oxybis(	0.500	0.512	0.486	0.481	0.479	0.500	0.536	0.519	0.502	3.94
21) 3&4-Methylph	1.403	1.533	1.450	1.429	1.401	1.481	1.497	1.557	1.469	3.96
22) n-Nitroso-di	1.025	1.049	1.009	0.995	0.976	1.022	1.148	1.068	1.037	5.16
23) Hexachloroet	0.482	0.536	0.503	0.502	0.490	0.523	0.541	0.524	0.513	4.20
24) I Naphthalene-d8	----------ISTD----------									
25) Nitrobenzene	0.343	0.371	0.356	0.362	0.364	0.371	0.400	0.376	0.368	4.47
26) Nitrobenzene	0.371	0.403	0.367	0.376	0.375	0.381	0.421	0.392	0.386	4.77
27) Quinoline	0.703	0.721	0.682	0.714	0.707	0.717	0.741	0.728	0.714	2.47
28) Isophorone	0.654	0.685	0.640	0.654	0.651	0.664	0.705	0.693	0.668	3.47
29) 2-Nitropheno	0.177	0.195	0.191	0.196	0.195	0.200	0.189	0.198	0.193	3.78
30) 2,4-Dimethyl	0.311	0.360	0.321	0.351	0.351	0.343	0.351	0.358	0.343	5.14
31) Benzoic acid			0.175	0.254	0.276	0.233		0.114	0.210	31.26
----- Linear regression ----- Coefficient = 0.9961										
Response Ratio = -0.06372 + 0.29363 *A										
32) bis(2-Chloro	0.387	0.420	0.391	0.401	0.400	0.408	0.433	0.417	0.407	3.84
33) 2,4-Dichloro	0.263	0.283	0.277	0.293	0.292	0.294	0.278	0.290	0.284	3.80
34) 2,6-Dichloro	0.268	0.284	0.277	0.285	0.282	0.285	0.270	0.290	0.280	2.85
35) 1,3,5-Trichl	0.295	0.323	0.303	0.303	0.298	0.310	0.322	0.323	0.310	3.77
36) 1,2,4-Trichl	0.291	0.313	0.296	0.305	0.300	0.308	0.313	0.315	0.305	2.88
37) 1,2,3-Trichl	0.286	0.302	0.288	0.298	0.294	0.301	0.306	0.300	0.297	2.34
38) Naphthalene	1.032	1.107	1.039	1.055	1.043	1.073	1.111	1.109	1.071	3.16
39) 4-Chloroanil	0.451	0.490	0.460	0.459	0.439	0.469	0.465	0.493	0.466	3.95
40) 2,3-Dichloro	0.336	0.360	0.341	0.360	0.355	0.360	0.355	0.360	0.353	2.68
41) Caprolactam	0.107	0.112	0.115	0.124	0.122	0.123	0.104	0.121	0.116	6.65
42) Hexachlorobu	0.151	0.164	0.155	0.159	0.159	0.160	0.168	0.161	0.160	3.17

Initial Calibration Summary

Job Number: JB31265 **Sample:** E2P896-ICC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20228.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
43) 4-Chloro-3-m 0.293 0.316 0.304 0.322 0.315 0.324 0.317 0.320 0.314   3.34
44) 2-Methylnaph 0.577 0.624 0.600 0.606 0.596 0.616 0.634 0.633 0.611   3.24
45) 1-Methylnaph 0.543 0.591 0.559 0.574 0.568 0.587 0.599 0.583 0.575   3.19
46) Dimethylnaph 0.558 0.595 0.577 0.587 0.576 0.593 0.631 0.599 0.589   3.61

47) I   Acenaphthene-d10      ----------------ISTD---------------------
48) Hexachlorocy 0.198 0.258 0.293 0.324 0.327 0.316 0.188 0.282 0.273  19.93
49) 2,4,6-Trichl 0.293 0.357 0.349 0.370 0.371 0.363 0.332 0.350 0.348   7.39
50) 2,4,5-Trichl 0.330 0.383 0.381 0.414 0.412 0.406 0.349 0.391 0.383   7.86
51) 2-Fluorobiph 1.235 1.332 1.243 1.289 1.265 1.275 1.309 1.286 1.279   2.52
52) 2-Chloronaph 1.121 1.241 1.151 1.185 1.162 1.184 1.220 1.206 1.184   3.28
53) Biphenyl     1.374 1.510 1.415 1.457 1.434 1.453 1.454 1.502 1.450   3.04
54) 2-Nitroanili 0.338 0.386 0.379 0.384 0.373 0.387 0.369 0.395 0.376   4.65
55) Dimethylphth 1.239 1.368 1.273 1.288 1.270 1.284 1.374 1.343 1.305   3.84
56) Acenaphthyle 1.759 1.917 1.804 1.842 1.826 1.848 1.932 1.888 1.852   3.14
57) 2,6-Dinitrot 0.232 0.279 0.283 0.304 0.298 0.300 0.249 0.293 0.280   9.34
58) 3-Nitroanili 0.294 0.357 0.358 0.365 0.352 0.368 0.301 0.359 0.344   8.48
59) Acenaphthene 1.116 1.173 1.122 1.132 1.098 1.131 1.141 1.180 1.137   2.43
60) 2,4-Dinitrop       0.059 0.131 0.169 0.175 0.159       0.086 0.130  36.75
            ----- Linear regression -----  Coefficient =  0.9987
              Response Ratio = -0.04860 + 0.18228 *A

61) 4-Nitropheno       0.135 0.161 0.185 0.186 0.178       0.148 0.166  12.80
62) Dibenzofuran 1.565 1.710 1.573 1.598 1.567 1.611 1.674 1.682 1.623   3.58
63) 2,4-Dinitrot 0.324 0.366 0.402 0.420 0.412 0.419 0.303 0.397 0.380  11.83
64) 2,3,4,6-Tetr 0.171 0.213 0.257 0.285 0.289 0.283 0.190 0.242 0.241  18.93
65) Diethylphtha 1.272 1.366 1.254 1.277 1.261 1.283 1.368 1.350 1.304   3.73
66) Fluorene     1.256 1.354 1.276 1.316 1.290 1.317 1.358 1.343 1.314   2.84
67) 4-Chlorophen 0.565 0.630 0.569 0.581 0.565 0.580 0.594 0.609 0.587   3.93
68) 4-Nitroanili 0.299 0.351 0.357 0.369 0.365 0.376 0.290 0.362 0.346   9.51

69) I   Phenanthrene-d10      ----------------ISTD---------------------
70) 4,6-Dinitro-       0.103 0.142 0.165 0.161 0.159       0.121 0.142  17.76
71) n-Nitrosodip 0.582 0.658 0.635 0.633 0.620 0.635 0.675 0.645 0.635   4.28
72) 1,2-Diphenyl 0.931 0.995 0.935 0.933 0.897 0.944 1.016 1.001 0.957   4.40
73) 2,4,6-Tribro 0.078 0.083 0.091 0.100 0.098 0.099 0.074 0.093 0.089  11.38
74) 4-Bromopheny 0.191 0.209 0.199 0.205 0.206 0.207 0.207 0.205 0.204   2.90
75) Hexachlorobe 0.206 0.219 0.211 0.217 0.214 0.217 0.224 0.218 0.216   2.44
76) Pentachlorop       0.059 0.115 0.137 0.143 0.132       0.086 0.112  29.39
            ----- Linear regression -----  Coefficient =  0.9990
              Response Ratio = -0.03198 + 0.14713 *A

77) Phenanthrene 1.162 1.246 1.163 1.190 1.161 1.187 1.308 1.223 1.205   4.29
78) Anthracene   1.161 1.260 1.164 1.153 1.115 1.173 1.266 1.244 1.192   4.74
79) Carbazole    1.075 1.186 1.135 1.150 1.117 1.151 1.224 1.191 1.154   4.05
80) Di-n-butylph 1.323 1.432 1.424 1.434 1.393 1.439 1.405 1.460 1.414   2.97
81) Fluoranthene 1.161 1.253 1.224 1.235 1.203 1.234 1.317 1.269 1.237   3.73
82) Octadecane   0.318 0.359 0.344 0.334 0.315 0.340 0.342 0.362 0.339   5.01

83) I   Chrysene-d12          ----------------ISTD---------------------
84) Pyrene       1.282 1.416 1.312 1.351 1.334 1.376 1.446 1.387 1.363   3.96
85) Terphenyl-d1 0.801 0.852 0.814 0.859 0.851 0.874 0.844 0.845 0.843   2.81
86) Butylbenzylp 0.593 0.666 0.647 0.680 0.669 0.686 0.691 0.659 0.661   4.74
87) Butyl steara 0.063 0.076 0.077 0.085 0.082 0.084 0.067 0.077 0.076  10.60
88) Benzo[a]anth 1.139 1.192 1.131 1.170 1.150 1.186 1.402 1.171 1.192   7.33
89) 3,3'-Dichlor 0.442 0.459 0.432 0.445 0.424 0.453 0.472 0.455 0.448   3.44
90) Chrysene     1.117 1.174 1.059 1.100 1.055 1.111 1.343 1.124 1.135   8.09
91) bis(2-Ethylh 0.896 0.944 0.900 0.934 0.908 0.937 1.098 0.919 0.942   6.96

92) I   Perylene-d12          ----------------ISTD---------------------
```

8.7.6

8

Initial Calibration Summary

Job Number: JB31265 **Sample:** E2P896-ICC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20228.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

93)	Di-n-octylph	1.604	1.707	1.717	1.774	1.716	1.815	1.915	1.720	1.746	5.22
94)	Benzo[b]fluo	1.267	1.316	1.367	1.432	1.373	1.390	1.463	1.305	1.364	4.84
95)	Benzo[k]fluo	1.187	1.238	1.140	1.104	1.115	1.191	1.294	1.266	1.192	5.89
96)	Benzo[a]pyre	1.113	1.161	1.157	1.203	1.188	1.214	1.263	1.177	1.185	3.76
97)	Indeno[1,2,3	1.275	1.358	1.352	1.396	1.402	1.438	1.413	1.357	1.374	3.66
98)	Dibenz(a,h)a	0.906	0.969	0.976	1.007	1.014	1.032	1.003	0.960	0.983	4.04
99)	Dibenz[a,h]a	1.046	1.149	1.128	1.171	1.171	1.191	1.169	1.137	1.145	3.95
100)	7,12-Dimethy	0.568	0.607	0.582	0.609	0.586	0.604	0.639	0.614	0.601	3.63
101)	Benzo[g,h,i]	1.107	1.160	1.152	1.185	1.178	1.197	1.199	1.160	1.167	2.57

(#) = Out of Range ### Number of calibration levels exceeded format ###

M2P896.M Wed Feb 20 15:12:20 2013 RPT1

8.7.6

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P896-ICV896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20232.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p896\2p20232.D            Vial: 10
Acq On    : 20 Feb 2013  12:26 pm                     Operator: andrews1
Sample    : icv896-50                                 Inst    : MS2P
Misc      : op63249,e2p896,35.0,,,1,1                 Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Feb 20 13:17:25 2013
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	95	-0.03	3.25
9	t	Phenol	2.033	2.003	1.5	94	-0.02	2.96
12	t	2-Chlorophenol	1.507	1.622	-7.6	100	-0.03	3.05
19	t	2-Methylphenol	1.383	1.448	-4.7	99	-0.02	3.65
21	t	3&4-Methylphenol	1.469	1.520	-3.5	97	-0.03	3.84
24	I	Naphthalene-d8	1.000	1.000	0.0	95	-0.03	4.90
29	t	2-Nitrophenol	0.193	0.208	-7.8	98	-0.03	4.42
30	t	2,4-Dimethylphenol	0.343	0.384	-12.0	106	-0.02	4.56
		----------	True	Calc.	% Drift		----------	
31	t	Benzoic acid	50.000	41.625	16.8	79	-0.03	4.80
		----------	AvgRF	CCRF	% Dev		----------	
33	t	2,4-Dichlorophenol	0.284	0.310	-9.2	100	-0.02	4.76
34	t	2,6-Dichlorophenol	0.280	0.303	-8.2	101	-0.03	5.09
43	t	4-Chloro-3-methylphenol	0.314	0.333	-6.1	97	-0.02	5.89
47	I	Acenaphthene-d10	1.000	1.000	0.0	94	-0.03	7.56
49	t	2,4,6-Trichlorophenol	0.348	0.370	-6.3	96	-0.03	6.47
50	t	2,4,5-Trichlorophenol	0.383	0.406	-6.0	94	-0.02	6.52
		----------	True	Calc.	% Drift		----------	
60	t	2,4-Dinitrophenol	100.000	102.898	-2.9	84	-0.02	7.75
		----------	AvgRF	CCRF	% Dev		----------	
61	t	4-Nitrophenol	0.166	0.174	-4.8	92	0.00	7.97
64		2,3,4,6-Tetrachlorophenol	0.241	0.282	-17.0	94	-0.02	8.17
69	I	Phenanthrene-d10	1.000	1.000	0.0	95	-0.03	9.82
70	t	4,6-Dinitro-2-methylpheno	0.142	0.153	-7.7	91	-0.03	8.62
		----------	True	Calc.	% Drift		----------	
76	t	Pentachlorophenol	100.000	97.912	2.1	86	-0.02	9.69

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20228.D M2P896.M Wed Feb 20 14:59:03 2013 RPT1

8.7.7

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P896-ICV896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20233.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p896\2p20233.D            Vial: 11
Acq On    : 20 Feb 2013  12:49 pm                     Operator: andrews1
Sample    : icv896-50                                 Inst    : MS2P
Misc      : op63249,e2p896,35.0,,,1,1                 Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Feb 20 13:17:25 2013
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	122	-0.03	3.25
3	t	Pyridine	1.653	1.277	22.7	100	-0.03	1.23
4	t	N-Nitrosodimethylamine	0.919	0.808	12.1	107	-0.02	1.22
11	t	bis(2-Chloroethyl)ether	1.462	1.428	2.3	124	-0.03	3.02
14	t	1,3-Dichlorobenzene	1.615	1.551	4.0	116	-0.03	3.20
15	t	1,4-Dichlorobenzene	1.662	1.580	4.9	115	-0.03	3.27
16	t	Benzyl alcohol	1.000	1.001	-0.1	118	-0.03	3.46
17	t	1,2-Dichlorobenzene	1.560	1.517	2.8	120	-0.03	3.48
20	t	2,2'-oxybis(1-Chloropropa	0.502	0.495	1.4	121	-0.03	3.67
22	t	n-Nitroso-di-n-propylamin	1.037	0.995	4.1	119	-0.04	3.84
23	t	Hexachloroethane	0.513	0.513	0.0	120	-0.03	3.86
24	I	Naphthalene-d8	1.000	1.000	0.0	125	-0.03	4.90
26	t	Nitrobenzene	0.386	0.367	4.9	120	-0.03	3.99
28	t	Isophorone	0.668	0.643	3.7	121	-0.04	4.31
		----------	AvgRF	CCRF	% Dev	----------		
32	t	bis(2-Chloroethoxy)methan	0.407	0.415	-2.0	127	-0.03	4.68
36	t	1,2,4-Trichlorobenzene	0.305	0.298	2.3	121	-0.03	4.87
38	t	Naphthalene	1.071	1.015	5.2	118	-0.03	4.93
42	t	Hexachlorobutadiene	0.160	0.155	3.1	121	-0.03	5.24
44	t	2-Methylnaphthalene	0.611	0.565	7.5	115	-0.03	5.96
47	I	Acenaphthene-d10	1.000	1.000	0.0	122	-0.03	7.56
48	t	Hexachlorocyclopentadiene	0.273	0.250	8.4	96	-0.03	6.33
52	t	2-Chloronaphthalene	1.184	1.131	4.5	117	-0.03	6.68
54	t	2-Nitroaniline	0.376	0.361	4.0	114	-0.03	6.94
55	t	Dimethylphthalate	1.305	1.229	5.8	117	-0.03	7.34
56	t	Acenaphthylene	1.852	1.588	14.3	105	-0.03	7.31
57	t	2,6-Dinitrotoluene	0.280	0.290	-3.6	118	-0.03	7.41
58	t	3-Nitroaniline	0.344	0.313	9.0	104	-0.03	7.59
59	t	Acenaphthene	1.137	1.071	5.8	116	-0.03	7.61
		----------	AvgRF	CCRF	% Dev	----------		
62	t	Dibenzofuran	1.623	1.506	7.2	114	-0.03	7.86
63	t	2,4-Dinitrotoluene	0.380	0.377	0.8	110	-0.02	8.00
65	t	Diethylphthalate	1.304	1.197	8.2	114	-0.04	8.46
66	t	Fluorene	1.314	1.261	4.0	117	-0.03	8.40
67	t	4-Chlorophenyl-phenylethe	0.587	0.541	7.8	114	-0.03	8.47
68	t	4-Nitroaniline	0.346	0.341	1.4	111	-0.03	8.55
69	I	Phenanthrene-d10	1.000	1.000	0.0	120	-0.03	9.83

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P896-ICV896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20233.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

71	t	n-Nitrosodiphenylamine	0.635	0.581	8.5	110	-0.03	8.67
72	t	1,2-Diphenylhydrazine	0.957	0.920	3.9	117	-0.03	8.70
74	t	4-Bromophenyl-phenylether	0.204	0.199	2.5	116	-0.03	9.21
75	t	Hexachlorobenzene	0.216	0.211	2.3	117	-0.03	9.38
		----------	AvgRF	CCRF	% Dev	----------		
77	t	Phenanthrene	1.205	1.140	5.4	116	-0.03	9.86
78	t	Anthracene	1.192	1.150	3.5	118	-0.03	9.93
79	t	Carbazole	1.154	1.099	4.8	115	-0.02	10.25
80	t	Di-n-butylphthalate	1.414	1.355	4.2	113	-0.03	11.05
81	t	Fluoranthene	1.237	1.169	5.5	114	-0.02	11.70
83	I	Chrysene-d12	1.000	1.000	0.0	122	-0.02	13.66
84	t	Pyrene	1.363	1.303	4.4	116	-0.02	12.01
86	t	Butylbenzylphthalate	0.661	0.631	4.5	113	-0.02	13.13
88	t	Benzo[a]anthracene	1.192	1.108	7.0	114	-0.01	13.64
89	t	3,3'-Dichlorobenzidine	0.448	0.335	25.2	90	-0.02	13.69
90	t	Chrysene	1.135	1.075	5.3	118	-0.02	13.69
91	t	bis(2-Ethylhexyl)phthalat	0.942	0.865	8.2	113	-0.02	13.95
92	I	Perylene-d12	1.000	1.000	0.0	121	0.00	15.31
93	t	Di-n-octylphthalate	1.746	1.713	1.9	114	-0.02	14.68
94	t	Benzo[b]fluoranthene	1.364	1.324	2.9	115	-0.01	14.92
95	t	Benzo[k]fluoranthene	1.192	1.092	8.4	111	-0.02	14.94
96	t	Benzo[a]pyrene	1.185	1.139	3.9	113	-0.01	15.25
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.345	2.1	113	0.00	16.33
99	t	Dibenz[a,h]anthracene	1.145	1.115	2.6	113	-0.01	16.36
101	t	Benzo[g,h,i]perylene	1.167	1.133	2.9	114	0.00	16.55

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20228.D M2P896.M Wed Feb 20 14:59:05 2013 RPT1

8.7.8

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P896-ICV896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20234.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p896\2p20234.D            Vial: 12
Acq On    : 20 Feb 2013   1:12 pm                    Operator: andrews1
Sample    : icv896-50                                Inst    : MS2P
Misc      : op63249,e2p896,35.0,,,1,1                Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Feb 20 13:17:25 2013
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	100	-0.03	3.25
2	t	1,4-Dioxane	0.618	0.597	3.4	99	-0.03	1.07
6	t	Indene	2.474	2.897	-17.1	116	-0.03	3.58
7	t	Cumene	3.370	3.755	-11.4	112	-0.03	2.46
13	t	Decane	1.715	1.735	-1.2	104	-0.03	3.13
18	t	Acetophenone	2.031	2.362	-16.3	116	-0.03	3.78
24	I	Naphthalene-d8	1.000	1.000	0.0	100	-0.03	4.90
27	t	Quinoline	0.714	0.811	-13.6	113	-0.04	5.42
		----------	AvgRF	CCRF	% Dev	----------		
40	t	2,3-Dichloroaniline	0.353	0.391	-10.8	109	-0.03	6.45
41	t	Caprolactam	0.116	0.136	-17.2	111	-0.08	5.53
45	t	1-Methylnaphthalene	0.575	0.671	-16.7	115	-0.03	6.11
46	t	Dimethylnaphthalene	0.589	0.687	-16.6	116	-0.03	6.93
47	I	Acenaphthene-d10	1.000	1.000	0.0	101	-0.03	7.56
53	t	Biphenyl	1.450	1.664	-14.8	115	-0.03	6.71
69	I	Phenanthrene-d10	1.000	1.000	0.0	100	-0.03	9.82
82	t	Octadecane	0.339	0.398	-17.4	117	-0.03	9.94
92	I	Perylene-d12	1.000	1.000	0.0	97	-0.01	15.31
100	t	7,12-Dimethylbenz(a)anthr	0.601	0.608	-1.2	97	-0.02	14.95

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20228.D M2P896.M Wed Feb 20 14:59:07 2013 RPT1

8.7.9

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P896-ICV896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20235.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p896\2p20235.D            Vial: 13
Acq On    : 20 Feb 2013   1:35 pm                    Operator: andrews1
Sample    : icv896-50                                Inst    : MS2P
Misc      : op63249,e2p896,35.0,,,1,1                Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Feb 20 13:17:25 2013
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	94	-0.03	3.25
5	S	2-Fluorophenol	1.432	1.489	-4.0	95	-0.01	2.06
8	S	Phenol-d5	1.776	1.848	-4.1	97	-0.02	2.95
24	I	Naphthalene-d8	1.000	1.000	0.0	92	-0.03	4.90
25	S	Nitrobenzene-d5	0.368	0.393	-6.8	98	-0.04	3.96
47	I	Acenaphthene-d10	1.000	1.000	0.0	90	-0.03	7.56
51	S	2-Fluorobiphenyl	1.279	1.343	-5.0	95	-0.03	6.59
69	I	Phenanthrene-d10	1.000	1.000	0.0	89	-0.03	9.82
73	S	2,4,6-Tribromophenol	0.089	0.090	-1.1	81	-0.03	8.80
83	I	Chrysene-d12	1.000	1.000	0.0	90	-0.02	13.65
85	S	Terphenyl-d14	0.843	0.914	-8.4	94	-0.02	12.35

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 2p20228.D  M2P896.M         Wed Feb 20 14:59:09 2013   RPT1
```

8.7.10

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** E2P896-ICV896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P20237.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p896\2p20237.D            Vial: 15
Acq On    : 20 Feb 2013   2:21 pm                    Operator: andrews1
Sample    : icv896-50                                Inst    : MS2P
Misc      : op63249,e2p896,35.0,,,1,1                Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Feb 20 13:17:25 2013
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	163	-0.03	3.25
10		Aniline	2.301	2.060	10.5	157	-0.03	2.94
24	I	Naphthalene-d8	1.000	1.000	0.0	167	-0.03	4.90
39	t	4-Chloroaniline	0.466	0.430	7.7	153	-0.03	5.09

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20228.D M2P896.M Wed Feb 20 14:59:11 2013 RPT1

8.7.11

8

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P948-CC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21569.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p948\2p21569.D          Vial: 2
Acq On    : 27 Mar 2013   8:42 am                  Operator: andrews1
Sample    : cc896-25                               Inst    : MS2P
Misc      : op64284,e2p948,                        Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Mar 27 14:34:11 2013
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	140	-0.01	2.84
2	t	1,4-Dioxane	0.618	0.578	6.5	138	0.00	0.87
3	t	Pyridine	1.653	1.425	13.8	134	0.00	1.01
4	t	N-Nitrosodimethylamine	0.919	0.848	7.7	133	0.00	1.01
5	S	2-Fluorophenol	1.432	1.284	10.3	129	0.00	1.77
6	t	Indene	2.474	2.296	7.2	133	0.00	3.16
7	t	Cumene	3.370	3.205	4.9	136	0.00	2.10
8	S	Phenol-d5	1.776	1.746	1.7	139	0.00	2.63
9	t	Phenol	2.033	1.815	10.7	128	0.00	2.64
10		Aniline	2.301	1.843	19.9	119	0.00	2.56
11	t	bis(2-Chloroethyl)ether	1.462	1.334	8.8	135	0.00	2.63
12	t	2-Chlorophenol	1.507	1.416	6.0	136	0.00	2.68
13	t	Decane	1.715	1.426	16.9	122	0.00	2.73
14	t	1,3-Dichlorobenzene	1.615	1.533	5.1	136	0.00	2.80
15	t	1,4-Dichlorobenzene	1.662	1.613	2.9	140	-0.01	2.86
16	t	Benzyl alcohol	1.000	0.882	11.8	125	0.00	3.09
17	t	1,2-Dichlorobenzene	1.560	1.488	4.6	136	0.00	3.07
18	t	Acetophenone	2.031	1.823	10.2	129	-0.01	3.37
19	t	2-Methylphenol	1.383	1.265	8.5	130	0.00	3.30
20	t	2,2'-oxybis(1-Chloropropa	0.502	0.446	11.2	128	0.00	3.25
21	t	3&4-Methylphenol	1.469	1.371	6.7	132	0.00	3.50
22	t	n-Nitroso-di-n-propylamin	1.037	0.993	4.2	138	-0.02	3.43
23	t	Hexachloroethane	0.513	0.504	1.8	140	-0.01	3.41
24	I	Naphthalene-d8	1.000	1.000	0.0	135	-0.01	4.44
25	S	Nitrobenzene-d5	0.368	0.351	4.6	133	-0.01	3.55
26	t	Nitrobenzene	0.386	0.376	2.6	138	0.00	3.58
27	t	Quinoline	0.714	0.680	4.8	134	-0.01	4.99
28	t	Isophorone	0.668	0.609	8.8	128	-0.02	3.88
29	t	2-Nitrophenol	0.193	0.193	0.0	136	-0.01	4.00
30	t	2,4-Dimethylphenol	0.343	0.320	6.7	134	0.00	4.17
		----------	True	Calc.	% Drift	----------		
31	t	Benzoic acid	25.000	28.364	-13.5	178	-0.05	4.48
		----------	AvgRF	CCRF	% Dev	----------		
32	t	bis(2-Chloroethoxy)methan	0.407	0.374	8.1	129	-0.01	4.24
33	t	2,4-Dichlorophenol	0.284	0.276	2.8	134	0.00	4.38
34	t	2,6-Dichlorophenol	0.280	0.274	2.1	133	-0.01	4.66
35		1,3,5-Trichlorobenzene	0.310	0.315	-1.6	140	-0.01	3.99
36	t	1,2,4-Trichlorobenzene	0.305	0.313	-2.6	142	-0.01	4.41
37		1,2,3-Trichlorobenzene	0.297	0.292	1.7	136	-0.01	4.74

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P948-CC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21569.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	t	Naphthalene	1.071	1.054	1.6	136	-0.01	4.47
39	t	4-Chloroaniline	0.466	0.434	6.9	127	-0.01	4.66
40	t	2,3-Dichloroaniline	0.353	0.338	4.2	133	-0.01	6.00
41	t	Caprolactam	0.116	0.112	3.4	131	-0.05	5.15
42	t	Hexachlorobutadiene	0.160	0.160	0.0	138	-0.01	4.76
43	t	4-Chloro-3-methylphenol	0.314	0.306	2.5	136	0.00	5.53
44	t	2-Methylnaphthalene	0.611	0.649	-6.2	145	-0.01	5.48
45	t	1-Methylnaphthalene	0.575	0.593	-3.1	143	-0.01	5.63
46	t	Dimethylnaphthalene	0.589	0.580	1.5	135	-0.02	6.44
47	I	Acenaphthene-d10	1.000	1.000	0.0	136	-0.01	7.06
48	t	Hexachlorocyclopentadiene	0.273	0.177	35.2#	82	-0.01	5.83
49	t	2,4,6-Trichlorophenol	0.348	0.337	3.2	132	0.00	6.05
50	t	2,4,5-Trichlorophenol	0.383	0.391	-2.1	140	0.00	6.15
51	S	2-Fluorobiphenyl	1.279	1.254	2.0	137	-0.01	6.11
52	t	2-Chloronaphthalene	1.184	1.107	6.5	131	-0.01	6.20
53	t	Biphenyl	1.450	1.442	0.6	139	-0.02	6.22
54	t	2-Nitroaniline	0.376	0.379	-0.8	136	-0.01	6.51
55	t	Dimethylphthalate	1.305	1.249	4.3	134	-0.02	6.86
56	t	Acenaphthylene	1.852	1.872	-1.1	141	-0.01	6.82
57	t	2,6-Dinitrotoluene	0.280	0.287	-2.5	138	-0.02	6.96
58	t	3-Nitroaniline	0.344	0.340	1.2	129	-0.01	7.17
59	t	Acenaphthene	1.137	1.176	-3.4	143	-0.01	7.11
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	50.000	47.773	4.5	141	0.03	7.42
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.166	0.100	39.8#	84	0.03	7.73
62	t	Dibenzofuran	1.623	1.620	0.2	140	-0.01	7.37
63	t	2,4-Dinitrotoluene	0.380	0.399	-5.0	135	-0.01	7.59
64		2,3,4,6-Tetrachlorophenol	0.241	0.166	31.1#	88	0.00	7.73
65	t	Diethylphthalate	1.304	1.261	3.3	137	-0.02	7.98
66	t	Fluorene	1.314	1.273	3.1	136	-0.01	7.90
67	t	4-Chlorophenyl-phenylethe	0.587	0.608	-3.6	145	-0.01	7.97
68	t	4-Nitroaniline	0.346	0.318	8.1	121	-0.02	8.13
69	I	Phenanthrene-d10	1.000	1.000	0.0	149	-0.01	9.32
70	t	4,6-Dinitro-2-methylpheno	0.142	0.119	16.2	125	0.00	8.24
71	t	n-Nitrosodiphenylamine	0.635	0.585	7.9	137	-0.02	8.19
72	t	1,2-Diphenylhydrazine	0.957	0.869	9.2	138	-0.02	8.20
73	S	2,4,6-Tribromophenol	0.089	0.084	5.6	138	-0.01	8.34
74	t	4-Bromophenyl-phenylether	0.204	0.200	2.0	150	-0.01	8.70
75	t	Hexachlorobenzene	0.216	0.210	2.8	148	-0.01	8.89
		----------	True	Calc.	% Drift	----------		
76	t	Pentachlorophenol	50.000	26.922	46.2#	70	0.00	9.26
		----------	AvgRF	CCRF	% Dev	----------		
77	t	Phenanthrene	1.205	1.136	5.7	145	-0.02	9.36
78	t	Anthracene	1.192	1.155	3.1	148	-0.01	9.43
79	t	Carbazole	1.154	1.021	11.5	134	-0.01	9.78
80	t	Di-n-butylphthalate	1.414	1.308	7.5	137	-0.01	10.54
81	t	Fluoranthene	1.237	1.198	3.2	146	-0.01	11.22
82	t	Octadecane	0.339	0.324	4.4	140	-0.01	9.44
83	I	Chrysene-d12	1.000	1.000	0.0	155	-0.01	13.22
84	t	Pyrene	1.363	1.235	9.4	146	-0.01	11.53
85	S	Terphenyl-d14	0.843	0.789	6.4	150	0.00	11.89
86	t	Butylbenzylphthalate	0.661	0.577	12.7	138	-0.01	12.68

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P948-CC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21569.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

87		Butyl stearate	0.076	0.081	-6.6	162	-0.01	12.82
88	t	Benzo[a]anthracene	1.192	1.097	8.0	150	-0.01	13.20
89	t	3,3'-Dichlorobenzidine	0.448	0.405	9.6	145	-0.01	13.26
90	t	Chrysene	1.135	1.041	8.3	152	-0.01	13.26
91	t	bis(2-Ethylhexyl)phthalat	0.942	0.793	15.8	137	-0.01	13.51
92	I	Perylene-d12	1.000	1.000	0.0	150	-0.01	14.89
93	t	Di-n-octylphthalate	1.746	1.596	8.6	140	-0.02	14.23
94	t	Benzo[b]fluoranthene	1.364	1.259	7.7	138	-0.02	14.50
95	t	Benzo[k]fluoranthene	1.192	1.176	1.3	155	-0.02	14.52
96	t	Benzo[a]pyrene	1.185	1.127	4.9	146	-0.01	14.83
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.267	7.8	141	-0.02	15.92
98	t	Dibenz(a,h)acridine	0.983	0.919	6.5	141	-0.01	15.73
99	t	Dibenz[a,h]anthracene	1.145	1.065	7.0	142	-0.02	15.93
100	t	7,12-Dimethylbenz(a)anthr	0.601	0.566	5.8	146	-0.02	14.50
101	t	Benzo[g,h,i]perylene	1.167	1.044	10.5	136	0.00	16.14

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p20230.D M2P896.M Wed Mar 27 16:23:45 2013 RPT1

8.7.12

8

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P948-CC889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21570.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p948\2p21570.D          Vial: 3
Acq On    : 27 Mar 2013   9:05 am                  Operator: andrews1
Sample    : cc889-50                               Inst    : MS2P
Misc      : op64284,e2p948,                        Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Mar 27 14:34:11 2013
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 I	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	128	-0.01	2.84
103	Benzaldehyde	1.098	0.928	15.5	128	0.04	2.41
104	Acenaphthene-d10a	1.000	1.000	0.0	133	-0.01	7.06
105	Atrazine	0.147	0.201	-36.7#	173	0.02	9.18
106	1,2,4,5-Tetrachlorobenzen	0.499	0.555	-11.2	159	0.00	5.81
107 I	Chrysene-d12a	1.000	1.000	0.0	144	-0.01	13.22
	----------	True	Calc.	% Drift	----------		
108	Benzidine	50.000	50.807	-1.6	149	-0.21	11.53
	----------	AvgRF	CCRF	% Dev	----------		
109	Naphthalene-d8a	1.000	1.000	0.0	126	-0.01	4.44
110	Hydroquinone	0.313	0.344	-9.9	132	0.08	5.40

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p21538.D M2P896.M Wed Mar 27 16:23:33 2013 RPT1

8.7.13

8

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P949-CC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21593.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p949\2p21593.D          Vial: 2
Acq On    : 27 Mar 2013   6:04 pm                   Operator: ashleyd
Sample    : cc896-50                                Inst    : MS2P
Misc      : op64284,e2p949,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2P896.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Mar 27 14:34:11 2013
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	140	0.00	2.85
2	t	1,4-Dioxane	0.618	0.585	5.3	136	0.00	0.87
3	t	Pyridine	1.653	1.580	4.4	142	0.00	1.01
4	t	N-Nitrosodimethylamine	0.919	0.931	-1.3	141	0.00	1.00
5	S	2-Fluorophenol	1.432	1.381	3.6	132	0.00	1.77
6	t	Indene	2.474	2.449	1.0	138	0.00	3.16
7	t	Cumene	3.370	3.359	0.3	140	0.00	2.10
8	S	Phenol-d5	1.776	1.884	-6.1	148	0.02	2.64
9	t	Phenol	2.033	1.933	4.9	133	0.02	2.66
10		Aniline	2.301	1.673	27.3#	110	0.00	2.57
11	t	bis(2-Chloroethyl)ether	1.462	1.382	5.5	137	0.00	2.64
12	t	2-Chlorophenol	1.507	1.508	-0.1	138	0.00	2.69
13	t	Decane	1.715	1.455	15.2	122	0.00	2.74
14	t	1,3-Dichlorobenzene	1.615	1.647	-2.0	141	0.00	2.81
15	t	1,4-Dichlorobenzene	1.662	1.686	-1.4	141	0.00	2.87
16	t	Benzyl alcohol	1.000	0.988	1.2	134	0.00	3.09
17	t	1,2-Dichlorobenzene	1.560	1.572	-0.8	142	0.00	3.07
18	t	Acetophenone	2.031	1.910	6.0	132	0.00	3.38
19	t	2-Methylphenol	1.383	1.335	3.5	135	0.02	3.32
20	t	2,2'-oxybis(1-Chloropropa	0.502	0.455	9.4	128	0.00	3.26
21	t	3&4-Methylphenol	1.469	1.479	-0.7	140	0.02	3.52
22	t	n-Nitroso-di-n-propylamin	1.037	1.010	2.6	139	0.00	3.44
23	t	Hexachloroethane	0.513	0.535	-4.3	143	0.00	3.42
24	I	Naphthalene-d8	1.000	1.000	0.0	135	0.01	4.46
25	S	Nitrobenzene-d5	0.368	0.365	0.8	133	0.00	3.56
26	t	Nitrobenzene	0.386	0.388	-0.5	138	0.00	3.58
27	t	Quinoline	0.714	0.714	0.0	135	0.00	4.99
28	t	Isophorone	0.668	0.631	5.5	129	0.00	3.90
29	t	2-Nitrophenol	0.193	0.208	-7.8	141	0.00	4.01
30	t	2,4-Dimethylphenol	0.343	0.335	2.3	132	0.01	4.18
		----------	True	Calc.	% Drift	----------		
31	t	Benzoic acid	50.000	36.322	27.4#	94	0.00	4.53
		----------	AvgRF	CCRF	% Dev	----------		
32	t	bis(2-Chloroethoxy)methan	0.407	0.392	3.7	130	0.00	4.25
33	t	2,4-Dichlorophenol	0.284	0.300	-5.6	138	0.02	4.39
34	t	2,6-Dichlorophenol	0.280	0.288	-2.9	137	0.01	4.68
35		1,3,5-Trichlorobenzene	0.310	0.331	-6.8	144	0.00	4.00
36	t	1,2,4-Trichlorobenzene	0.305	0.325	-6.6	143	0.00	4.43
37		1,2,3-Trichlorobenzene	0.297	0.315	-6.1	142	0.01	4.76

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P949-CC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21593.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	t	Naphthalene	1.071	1.106	-3.3	140	0.00	4.48
39	t	4-Chloroaniline	0.466	0.437	6.2	126	0.00	4.68
40	t	2,3-Dichloroaniline	0.353	0.361	-2.3	136	0.00	6.01
41	t	Caprolactam	0.116	0.120	-3.4	133	0.02	5.22
42	t	Hexachlorobutadiene	0.160	0.170	-6.3	144	0.00	4.77
43	t	4-Chloro-3-methylphenol	0.314	0.324	-3.2	136	0.02	5.56
44	t	2-Methylnaphthalene	0.611	0.655	-7.2	144	0.01	5.51
45	t	1-Methylnaphthalene	0.575	0.614	-6.8	142	0.01	5.66
46	t	Dimethylnaphthalene	0.589	0.620	-5.3	142	0.01	6.47
47	I	Acenaphthene-d10	1.000	1.000	0.0	136	0.02	7.09
48	t	Hexachlorocyclopentadiene	0.273	0.228	16.5	98	0.00	5.85
49	t	2,4,6-Trichlorophenol	0.348	0.362	-4.0	135	0.02	6.07
50	t	2,4,5-Trichlorophenol	0.383	0.388	-1.3	130	0.02	6.17
51	S	2-Fluorobiphenyl	1.279	1.305	-2.0	139	0.01	6.13
52	t	2-Chloronaphthalene	1.184	1.155	2.4	132	0.02	6.23
53	t	Biphenyl	1.450	1.527	-5.3	142	0.00	6.24
54	t	2-Nitroaniline	0.376	0.380	-1.1	133	0.00	6.52
55	t	Dimethylphthalate	1.305	1.323	-1.4	140	0.00	6.88
56	t	Acenaphthylene	1.852	1.968	-6.3	144	0.02	6.85
57	t	2,6-Dinitrotoluene	0.280	0.312	-11.4	141	0.00	6.98
58	t	3-Nitroaniline	0.344	0.362	-5.2	133	0.00	7.19
59	t	Acenaphthene	1.137	1.231	-8.3	148	0.02	7.14
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	100.000	61.130	38.9#	78	0.03	7.43
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.166	0.051	69.3#	39#	0.06	7.77
62	t	Dibenzofuran	1.623	1.692	-4.3	142	0.01	7.39
63	t	2,4-Dinitrotoluene	0.380	0.432	-13.7	140	0.02	7.62
64		2,3,4,6-Tetrachlorophenol	0.241	0.126	47.7#	60	0.03	7.76
65	t	Diethylphthalate	1.304	1.322	-1.4	140	0.00	7.99
66	t	Fluorene	1.314	1.364	-3.8	140	0.02	7.93
67	t	4-Chlorophenyl-phenylethe	0.587	0.635	-8.2	148	0.01	7.99
68	t	4-Nitroaniline	0.346	0.367	-6.1	132	0.02	8.16
69	I	Phenanthrene-d10	1.000	1.000	0.0	145	0.02	9.36
70	t	4,6-Dinitro-2-methylpheno	0.142	0.133	6.3	122	0.02	8.27
71	t	n-Nitrosodiphenylamine	0.635	0.615	3.1	141	0.01	8.22
72	t	1,2-Diphenylhydrazine	0.957	0.860	10.1	132	0.01	8.23
73	S	2,4,6-Tribromophenol	0.089	0.084	5.6	124	0.02	8.37
74	t	4-Bromophenyl-phenylether	0.204	0.215	-5.4	151	0.02	8.73
75	t	Hexachlorobenzene	0.216	0.224	-3.7	150	0.03	8.92
		----------	True	Calc.	% Drift	----------		
76	t	Pentachlorophenol	100.000	18.720	81.3#	16	0.03	9.29
		----------	AvgRF	CCRF	% Dev	----------		
77	t	Phenanthrene	1.205	1.173	2.7	144	0.02	9.39
78	t	Anthracene	1.192	1.192	0.0	148	0.02	9.46
79	t	Carbazole	1.154	1.087	5.8	137	0.02	9.81
80	t	Di-n-butylphthalate	1.414	1.377	2.6	139	0.01	10.57
81	t	Fluoranthene	1.237	1.264	-2.2	149	0.03	11.26
82	t	Octadecane	0.339	0.337	0.6	144	0.01	9.46
83	I	Chrysene-d12	1.000	1.000	0.0	156	0.03	13.26
84	t	Pyrene	1.363	1.293	5.1	147	0.03	11.57
85	S	Terphenyl-d14	0.843	0.845	-0.2	151	0.02	11.91
86	t	Butylbenzylphthalate	0.661	0.583	11.8	133	0.02	12.71

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P949-CC896
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21593.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

87		Butyl stearate	0.076	0.086	-13.2	160	0.02	12.84
88	t	Benzo[a]anthracene	1.192	1.142	4.2	150	0.03	13.24
89	t	3,3'-Dichlorobenzidine	0.448	0.415	7.4	143	0.02	13.29
90	t	Chrysene	1.135	1.076	5.2	151	0.03	13.29
91	t	bis(2-Ethylhexyl)phthalat	0.942	0.846	10.2	141	0.01	13.53
92	I	Perylene-d12	1.000	1.000	0.0	145	0.03	14.92
93	t	Di-n-octylphthalate	1.746	1.764	-1.0	141	0.02	14.27
94	t	Benzo[b]fluoranthene	1.364	1.339	1.8	140	0.03	14.55
95	t	Benzo[k]fluoranthene	1.192	1.370	-14.9	167	0.03	14.57
96	t	Benzo[a]pyrene	1.185	1.212	-2.3	145	0.03	14.87
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.388	-1.0	140	0.04	15.97
98	t	Dibenz(a,h)acridine	0.983	1.006	-2.3	141	0.03	15.77
99	t	Dibenz[a,h]anthracene	1.145	1.181	-3.1	144	0.03	15.98
100	t	7,12-Dimethylbenz(a)anthr	0.601	0.619	-3.0	149	0.03	14.55
101	t	Benzo[g,h,i]perylene	1.167	1.145	1.9	139	0.04	16.18

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p21538.D M2P896.M Thu Mar 28 13:18:57 2013 RPT1

8.7.14

8

Continuing Calibration Summary

Job Number: JB31265 **Sample:** E2P949-CC889
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2P21594.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\2p949\2p21594.D          Vial: 3
Acq On    : 27 Mar 2013   6:26 pm                   Operator: ashleyd
Sample    : cc889-50                                Inst    : MS2P
Misc      : op64284,e2p949,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M2P896eph.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Sat Mar 23 10:29:41 2013
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	I	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	83	-0.06	2.85
103		Benzaldehyde	1.098	0.901	17.9	80	-0.05	2.42
104		Acenaphthene-d10a	1.000	1.000	0.0	86	-0.06	7.08
105		Atrazine	0.147	0.202	-37.4#	112	-0.06	9.20
106		1,2,4,5-Tetrachlorobenzen	0.499	0.554	-11.0	103	-0.06	5.83
107	I	Phenanthrene-d10a	1.000	1.000	0.0	88	-0.06	9.35
108	S	o-terphenyl	0.580	0.630	-8.6	98	-0.07	10.11
109	I	Chrysene-d12a	1.000	1.000	0.0	93	-0.05	13.25
110	S	1-chlorooctadecane	0.362	0.342	5.5	87	-0.06	11.31
			True	Calc.	% Drift			
111		Benzidine	50.000	40.536	18.9	81	-0.05	11.57
			AvgRF	CCRF	% Dev			
112		Naphthalene-d8a	1.000	1.000	0.0	80	-0.06	4.46
113		Hydroquinone	0.313	0.326	-4.2	79	-0.02	5.43

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2p21342.D M2P896eph.M Thu Mar 28 13:19:27 2013 RPT1

8.7.15

8

Initial Calibration Summary

Job Number: JB31265 **Sample:** EZ4014-ICC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78520.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSZ

Method : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Thu Mar 14 08:57:10 2013
Response via : Initial Calibration

Calibration Files
100 =Z78528.D 80 =Z78529.D 50 =Z78530.D 25 =Z78531.D
10 =Z78532.D 5 =Z78533.D 2 =Z78534.D 1 =Z78535.D

Compound	100	80	50	25	10	5	2	1	Avg	%RSD
1) I 1,4-Dichlorobenzene-d	----------	----------	----------	----------	ISTD	----------	----------	----------		
2) 1,4-Dioxane	0.534	0.544	0.546	0.540	0.579	0.613	0.569		0.561	5.02
3) Pyridine	1.450	1.478	1.452	1.394	1.380	1.359	1.271	1.184	1.371	7.31
4) N-Nitrosodim	0.878	0.882	0.899	0.879	0.886	0.874	0.743	0.716	0.845	8.49
5) 2-Fluorophen	1.339	1.353	1.339	1.296	1.285	1.281	1.150	1.179	1.278	5.88
6) Indene	2.336	2.388	2.378	2.366	2.421	2.374	2.217	2.349	2.354	2.58
7) Cumene	3.211	3.255	3.276	3.232	3.301	3.311	3.026	3.220	3.229	2.78
8) Phenol-d5	1.718	1.739	1.748	1.703	1.741	1.703	1.549	1.565	1.683	4.74
9) Phenol	1.749	1.788	1.811	1.761	1.778	1.776	1.645	1.672	1.748	3.34
10) Aniline	1.717	1.748	1.814	1.839	1.987	2.074	2.066	2.143	1.923	8.52
11) bis(2-Chloro	1.268	1.271	1.292	1.291	1.324	1.333	1.226	1.260	1.283	2.72
12) 2-Chlorophen	1.448	1.466	1.468	1.445	1.487	1.459	1.381	1.412	1.446	2.35
13) Decane	1.193	1.216	1.271	1.256	1.277	1.313	1.206	1.253	1.248	3.26
14) 1,3-Dichloro	1.565	1.586	1.585	1.586	1.617	1.621	1.461	1.586	1.576	3.15
15) 1,4-Dichloro	1.609	1.628	1.625	1.626	1.650	1.638	1.562	1.733	1.634	2.92
16) Benzyl alcoh	0.970	0.966	0.981	0.954	0.957	0.948	0.859		0.948	4.30
17) 1,2-Dichloro	1.504	1.534	1.516	1.508	1.553	1.524	1.446	1.559	1.518	2.33
18) Acetophenone	1.866	1.905	1.949	1.904	1.936	1.916	1.787	1.892	1.894	2.65
19) 2-Methylphen	1.264	1.294	1.304	1.298	1.315	1.294	1.168	1.179	1.265	4.58
20) 2,2'-oxybis(	0.459	0.468	0.479	0.472	0.468	0.484	0.429	0.498	0.470	4.32
21) 3&4-Methylph	1.424	1.449	1.454	1.417	1.399	1.381	1.211		1.391	5.99
22) n-Nitroso-di	1.009	1.023	1.064	1.016	1.030	0.999	0.943	0.937	1.003	4.31
23) Hexachloroet	0.553	0.552	0.562	0.537	0.534	0.538	0.512	0.519	0.538	3.18
24) I Naphthalene-d8	----------	----------	----------	----------	ISTD	----------	----------	----------		
25) Nitrobenzene	0.366	0.366	0.366	0.365	0.373	0.367	0.329	0.364	0.362	3.73
26) Nitrobenzene	0.371	0.375	0.376	0.374	0.381	0.384	0.364	0.369	0.374	1.77
27) Quinoline	0.727	0.737	0.721	0.721	0.740	0.728	0.665	0.702	0.718	3.38
28) Isophorone	0.615	0.621	0.630	0.634	0.649	0.652	0.592	0.600	0.624	3.45
29) 2-Nitropheno	0.203	0.206	0.199	0.199	0.199	0.189	0.172		0.195	5.93
30) 2,4-Dimethyl	0.352	0.348	0.327	0.312	0.297	0.302	0.234	0.224	0.299	16.04
31) Benzoic Acid	0.335	0.335	0.313	0.309	0.300	0.245			0.306	10.78
32) bis(2-Chloro	0.371	0.377	0.373	0.376	0.382	0.385	0.350	0.347	0.370	3.83
33) 2,4-Dichloro	0.303	0.307	0.300	0.300	0.301	0.299	0.267		0.297	4.47
34) 2,6-Dichloro	0.296	0.297	0.289	0.292	0.295	0.296	0.270	0.286	0.290	3.13
35) 1,3,5-Trichl	0.331	0.332	0.327	0.327	0.341	0.348	0.318	0.336	0.333	2.75
36) 1,2,4-Trichl	0.328	0.330	0.323	0.330	0.335	0.338	0.315	0.316	0.327	2.50
37) 1,2,3-Trichl	0.318	0.322	0.318	0.316	0.323	0.322	0.299	0.323	0.318	2.55
38) Naphthalene	1.077	1.084	1.076	1.097	1.131	1.135	1.084	1.149	1.104	2.68
39) 4-Chloroanil	0.439	0.445	0.452	0.460	0.476	0.485	0.453	0.495	0.463	4.32
40) 2,3-Dichloro	0.367	0.366	0.363	0.363	0.366	0.365	0.329	0.354	0.359	3.60
41) Caprolactam	0.151	0.151	0.151	0.146	0.148	0.139	0.118		0.143	8.42
42) Hexachlorobu	0.192	0.192	0.189	0.187	0.189	0.192	0.184	0.173	0.187	3.49
43) 4-Chloro-3-m	0.314	0.316	0.313	0.313	0.307	0.302	0.269	0.271	0.301	6.48
44) 2-Methylnaph	0.668	0.669	0.640	0.646	0.657	0.646	0.600	0.623	0.644	3.63
45) 1-Methylnaph	0.603	0.607	0.608	0.607	0.619	0.618	0.579	0.590	0.604	2.25

Initial Calibration Summary

Job Number: JB31265 **Sample:** EZ4014-ICC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78520.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
46) Dimethylnaph 0.649 0.654 0.641 0.651 0.658 0.642 0.584 0.600 0.635   4.31

47) I   Acenaphthene-d10      ----------------ISTD---------------------
48) Hexachlorocy 0.386 0.376 0.362 0.332 0.322 0.314             0.349   8.59
49) 2,4,6-Trichl 0.390 0.387 0.371 0.369 0.370 0.366 0.339 0.319 0.364   6.51
50) 2,4,5-Trichl 0.430 0.429 0.416 0.418 0.425 0.393 0.360       0.410   6.21
51) 2-Fluorobiph 1.323 1.315 1.285 1.316 1.331 1.318 1.224 1.305 1.302   2.64
52) 2-Chloronaph 1.167 1.165 1.142 1.165 1.173 1.162 1.114 1.158 1.156   1.65
53) Biphenyl     1.498 1.487 1.471 1.493 1.525 1.528 1.423 1.495 1.490   2.20
54) 2-Nitroanili 0.356 0.353 0.352 0.349 0.354 0.344 0.306       0.345   5.14
55) Dimethylphth 1.320 1.325 1.308 1.326 1.340 1.371 1.232 1.336 1.320   3.03
56) Acenaphthyle 1.854 1.849 1.816 1.837 1.846 1.848 1.668 1.686 1.801   4.30
57) 2,6-Dinitrot 0.309 0.306 0.299 0.297 0.297 0.288 0.248       0.292   7.04
58) 3-Nitroanili 0.349 0.348 0.339 0.343 0.345 0.344 0.304       0.339   4.63
59) Acenaphthene 1.181 1.178 1.151 1.173 1.204 1.206 1.128 1.164 1.173   2.22
60) 2,4-Dinitrop 0.209 0.204 0.190 0.175 0.150 0.122             0.175  19.21
61) 4-Nitropheno 0.205 0.204 0.196 0.190 0.181 0.165             0.190   8.06
62) Dibenzofuran 1.637 1.650 1.608 1.639 1.683 1.677 1.572 1.644 1.639   2.19
63) 2,4-Dinitrot 0.428 0.433 0.425 0.423 0.428 0.411 0.351       0.414   6.92
64) 2,3,4,6-Tetr 0.344 0.340 0.324 0.320 0.317 0.295 0.262       0.315   8.98
65) Diethylphtha 1.378 1.366 1.349 1.357 1.412 1.383 1.292 1.385 1.365   2.60
66) Fluorene     1.373 1.366 1.332 1.341 1.357 1.345 1.226 1.285 1.328   3.73
67) 4-Chlorophen 0.663 0.651 0.636 0.641 0.661 0.643 0.597 0.625 0.640   3.33
68) 4-Nitroanili 0.353 0.353 0.347 0.339 0.347 0.330             0.345   2.60

69) I   Phenanthrene-d10      ----------------ISTD---------------------
70) 4,6-Dinitro- 0.167 0.165 0.153 0.149 0.138 0.110             0.147  14.38
71) n-Nitrosodip 0.602 0.601 0.583 0.594 0.609 0.615 0.559 0.602 0.596   2.95
72) 1,2-Diphenyl 0.782 0.786 0.782 0.782 0.804 0.816 0.742 0.758 0.782   2.97
73) 2,4,6-Tribro 0.095 0.092 0.086 0.083 0.080 0.076 0.068       0.083  11.23
74) 4-Bromopheny 0.212 0.210 0.203 0.202 0.206 0.202 0.186 0.194 0.202   4.20
75) Hexachlorobe 0.213 0.209 0.202 0.199 0.199 0.204 0.193 0.202 0.203   3.00
76) Pentachlorop 0.167 0.163 0.151 0.145 0.140 0.126             0.149  10.19
77) Phenanthrene 1.164 1.155 1.127 1.142 1.188 1.197 1.123 1.196 1.161   2.59
78) Anthracene   1.163 1.150 1.119 1.145 1.191 1.170 1.088 1.143 1.146   2.75
79) Carbazole    1.062 1.066 1.038 1.043 1.084 1.072 0.975 1.025 1.046   3.31
80) Di-n-butylph 1.309 1.322 1.282 1.284 1.309 1.240 1.103 1.093 1.243   7.48
81) Fluoranthene 1.258 1.250 1.219 1.208 1.244 1.214 1.095 1.049 1.192   6.49
82) Octadecane   0.427 0.425 0.433 0.435 0.448 0.438 0.383 0.374 0.421   6.42

83) I   Chrysene-d12          ----------------ISTD---------------------
84) Pyrene       1.387 1.386 1.330 1.342 1.342 1.364 1.205 1.251 1.326   4.90
85) Butyl steara 0.298 0.302 0.298 0.290 0.276 0.254 0.194       0.273  14.07
86) Terphenyl-d1 0.897 0.888 0.857 0.847 0.844 0.857 0.785 0.769 0.843   5.35
87) Butylbenzylp 0.624 0.627 0.605 0.590 0.584 0.553 0.470 0.420 0.559  13.49
88) Benzo[a]anth 1.201 1.198 1.164 1.144 1.157 1.160 1.070 1.137 1.154   3.55
89) 3,3'-Dichlor 0.463 0.462 0.445 0.430 0.419 0.394 0.349 0.310 0.409  13.48
90) Chrysene     1.149 1.149 1.121 1.121 1.139 1.170 1.085 1.120 1.132   2.29
91) bis(2-Ethylh 0.852 0.854 0.833 0.803 0.776 0.706 0.576 0.482 0.735  18.83

92) I   Perylene-d12          ----------------ISTD---------------------
93) Di-n-octylph 1.659 1.664 1.579 1.516 1.398 1.213 0.870       1.414  20.34
          ----- Quadratic regression -----                Coefficient =  0.9998
               Response Ratio = -0.04644 + 1.57945 *A + 0.04285 *A^2

94) Benzo[b]fluo       1.336 1.290 1.242 1.228 1.142 0.984 0.869 1.156  14.79
95) Benzo[k]fluo 1.359 1.407 1.319 1.344 1.367 1.416 1.201 1.252 1.333   5.56
96) Benzo[a]pyre 1.244 1.243 1.181 1.148 1.131 1.066 0.894 0.853 1.095  13.60
97) Indeno[1,2,3 1.158 1.143 1.086 1.030 0.975 0.914 0.685 0.669 0.957  19.96
98) Dibenz(a,h)a 0.999 0.992 0.927 0.878 0.826 0.749 0.584       0.851  17.34
```

Initial Calibration Summary

Job Number: JB31265 **Sample:** EZ4014-ICC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78520.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
 99) Dibenz[a,h]a 1.146 1.138 1.074 1.042 0.945 0.922 0.723 0.661 0.957  19.09
100) 7,12-Dimethy 0.683 0.672 0.610 0.561 0.529 0.478 0.407       0.563  17.96
101) Benzo[g,h,i] 1.226 1.225 1.160 1.127 1.088 1.046 0.868 0.773 1.064  15.44

102)     1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 1.006 1.128 1.138 1.146 1.156 1.161 1.182 1.256 1.147   6.04

104)     Phenanthrene-d10a     ----------------ISTD---------------------
105) Atrazine     0.122 0.123 0.121 0.121 0.112 0.107 0.100 0.090 0.112  10.87
106) o-terphenyl  0.647 0.643 0.633 0.639 0.627 0.638 0.676 0.741 0.655   5.73
107) 1-chloroocta 0.292 0.303 0.307 0.306 0.290 0.275 0.255 0.250 0.285   7.88

108)     Chrysene-d12a         ----------------ISTD---------------------
109) Benzidine    0.528 0.579 0.657 0.844 0.822 0.724 0.594 0.556 0.663  18.30
110) 2-bromonapht 0.382 0.398 0.411 0.407 0.402 0.401 0.406 0.463 0.409   5.75

111)     Acenaphthene-d10a     ----------------ISTD---------------------
112) 1,2,4,5-Tetr 0.529 0.533 0.543 0.547 0.544 0.552 0.568 0.608 0.553   4.58

113) I   Naphthalene-d8a       ----------------ISTD---------------------
114) Hydroquinone 0.377 0.381 0.349 0.311 0.286 0.237             0.324  17.42
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           MZ4014EPH.M        Thu Mar 14 14:26:33 2013   RPT1
```

8.7.16

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78536.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78536.D            Vial: 19
Acq On    : 14 Mar 2013  12:35 am                    Operator: katelynh
Sample    : icv4014-50                               Inst    : MSZ
Misc      : OP64141,EZ4014,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	165	0.00	4.70
9	t	Phenol	1.748	1.764	-0.9	160	-0.02	4.41
12	t	2-Chlorophenol	1.446	1.460	-1.0	164	-0.02	4.45
19	t	2-Methylphenol	1.265	1.329	-5.1	168	-0.02	5.26
21	t	3&4-Methylphenol	1.391	1.395	-0.3	158	-0.02	5.49
24	I	Naphthalene-d8	1.000	1.000	0.0	151	0.00	6.60
29	t	2-Nitrophenol	0.195	0.199	-2.1	151	-0.01	6.09
30	t	2,4-Dimethylphenol	0.299	0.362	-21.1	167	-0.01	6.28
33	t	2,4-Dichlorophenol	0.297	0.296	0.3	149	-0.01	6.46
34		2,6-Dichlorophenol	0.290	0.299	-3.1	156	-0.01	6.81
43	t	4-Chloro-3-methylphenol	0.301	0.311	-3.3	150	-0.03	7.66
47	I	Acenaphthene-d10	1.000	1.000	0.0	158	0.00	9.33
49	t	2,4,6-Trichlorophenol	0.364	0.344	5.5	147	-0.02	8.24
50	t	2,4,5-Trichlorophenol	0.410	0.378	7.8	144	-0.03	8.28
60	t	2,4-Dinitrophenol	0.175	0.142	18.8	118	-0.03	9.52
61	t	4-Nitrophenol	0.190	0.159	16.3	128	-0.03	9.74
64		2,3,4,6-Tetrachlorophenol	0.315	0.283	10.2	138	-0.02	9.93
69	I	Phenanthrene-d10	1.000	1.000	0.0	150	-0.01	11.59
70	t	4,6-Dinitro-2-methylpheno	0.147	0.144	2.0	141	-0.04	10.38
76	t	Pentachlorophenol	0.149	0.130	12.6	128	-0.02	11.45

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 Z78530.D   MZ4014.M         Thu Mar 14 10:22:56 2013   RPT1
```

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78537.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78537.D Vial: 20
Acq On : 14 Mar 2013 1:07 am Operator: katelynh
Sample : icv4014-50 Inst : MSZ
Misc : OP64141,EZ4014, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Thu Mar 14 08:57:10 2013
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 : 202%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	154	0.00	4.70
3	t	Pyridine	1.371	1.371	0.0	145	-0.03	1.38
4	t	N-Nitrosodimethylamine	0.845	0.912	-7.9	156	-0.02	1.39
11	t	bis(2-Chloroethyl)ether	1.283	1.439	-12.2	171	-0.02	4.44
14	t	1,3-Dichlorobenzene	1.576	1.666	-5.7	161	-0.01	4.64
15	t	1,4-Dichlorobenzene	1.634	1.703	-4.2	161	0.00	4.72
16	t	Benzyl alcohol	0.948	1.018	-7.4	159	-0.02	5.01
17	t	1,2-Dichlorobenzene	1.518	1.620	-6.7	164	0.00	4.99
20	t	2,2'-oxybis(1-Chloropropa	0.470	0.506	-7.7	162	0.00	5.26
22	t	n-Nitroso-di-n-propylamin	1.003	1.033	-3.0	149	-0.02	5.46
23	t	Hexachloroethane	0.538	0.545	-1.3	149	0.00	5.43
24	I	Naphthalene-d8	1.000	1.000	0.0	150	0.00	6.60
26	t	Nitrobenzene	0.374	0.376	-0.5	150	-0.02	5.60
28	t	Isophorone	0.624	0.672	-7.7	160	-0.02	5.97
32	t	bis(2-Chloroethoxy)methan	0.370	0.426	-15.1	172	-0.02	6.40
36	t	1,2,4-Trichlorobenzene	0.327	0.340	-4.0	158	0.00	6.56
38	t	Naphthalene	1.104	1.146	-3.8	160	-0.01	6.63
42	t	Hexachlorobutadiene	0.187	0.181	3.2	144	0.00	6.98
44	t	2-Methylnaphthalene	0.644	0.632	1.9	149	0.00	7.71
47	I	Acenaphthene-d10	1.000	1.000	0.0	147	0.00	9.33
48	t	Hexachlorocyclopentadiene	0.349	0.276	20.9	112	0.00	8.09
52	t	2-Chloronaphthalene	1.156	1.178	-1.9	151	-0.01	8.44
54	t	2-Nitroaniline	0.345	0.326	5.5	136	-0.02	8.72
55	t	Dimethylphthalate	1.320	1.314	0.5	148	-0.01	9.13
56	t	Acenaphthylene	1.801	1.727	4.1	140	-0.01	9.07
57	t	2,6-Dinitrotoluene	0.292	0.305	-4.5	150	-0.02	9.19
58	t	3-Nitroaniline	0.339	0.297	12.4	128	-0.02	9.37
59	t	Acenaphthene	1.173	1.190	-1.4	152	-0.01	9.37
62	t	Dibenzofuran	1.639	1.628	0.7	149	-0.02	9.63
63	t	2,4-Dinitrotoluene	0.414	0.399	3.6	138	-0.02	9.77
65	t	Diethylphthalate	1.365	1.314	3.7	143	-0.01	10.26
66	t	Fluorene	1.328	1.397	-5.2	154	-0.01	10.16
67	t	4-Chlorophenyl-phenylethe	0.640	0.636	0.6	147	0.00	10.24
68	t	4-Nitroaniline	0.345	0.352	-2.0	149	-0.04	10.34
69	I	Phenanthrene-d10	1.000	1.000	0.0	141	-0.01	11.59
71	t	n-Nitrosodiphenylamine	0.596	0.604	-1.3	146	-0.02	10.45
72	t	1,2-Diphenylhydrazine	0.782	0.857	-9.6	154	-0.01	10.47
74	t	4-Bromophenyl-phenylether	0.202	0.210	-4.0	145	-0.01	10.98
75	t	Hexachlorobenzene	0.203	0.200	1.5	140	0.00	11.14

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78537.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	t	Phenanthrene	1.161	1.216	-4.7	152	-0.01	11.62
78	t	Anthracene	1.146	1.230	-7.3	155	-0.01	11.69
79	t	Carbazole	1.046	1.132	-8.2	153	-0.02	12.01
80	t	Di-n-butylphthalate	1.243	1.347	-8.4	148	0.00	12.82
81	t	Fluoranthene	1.192	1.290	-8.2	149	-0.01	13.48
83	I	Chrysene-d12	1.000	1.000	0.0	142	0.00	16.15
84	t	Pyrene	1.326	1.404	-5.9	150	-0.02	13.83
87	t	Butylbenzylphthalate	0.559	0.612	-9.5	143	-0.01	15.41
88	t	Benzo[a]anthracene	1.154	1.211	-4.9	147	-0.02	16.12
89	t	3,3'-Dichlorobenzidine	0.409	0.340	16.9	108	-0.02	16.24
90	t	Chrysene	1.132	1.203	-6.3	152	-0.02	16.20
91	t	bis(2-Ethylhexyl)phthalat	0.735	0.857	-16.6	146	0.00	16.78
92	I	Perylene-d12	1.000	1.000	0.0	140	-0.01	18.95
		----------	True	Calc.	% Drift	----------		
93	t	Di-n-octylphthalate	50.000	52.025	-4.0	147	-0.02	18.05
		----------	AvgRF	CCRF	% Dev	----------		
94	t	Benzo[b]fluoranthene	1.156	1.307	-13.1	142	-0.03	18.26
95	t	Benzo[k]fluoranthene	1.333	1.366	-2.5	145	-0.03	18.31
96	t	Benzo[a]pyrene	1.095	1.235	-12.8	146	-0.02	18.84
97	t	Indeno[1,2,3-cd]pyrene	0.957	0.993	-3.8	128	-0.03	20.81
99	t	Dibenz[a,h]anthracene	0.957	0.999	-4.4	130	-0.03	20.89
101	t	Benzo[g,h,i]perylene	1.064	1.079	-1.4	130	-0.03	21.21

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Z78530.D MZ4014.M Thu Mar 14 10:27:20 2013 RPT1

8.7.18

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78538.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78538.D            Vial: 21
Acq On    : 14 Mar 2013   1:38 am                    Operator: katelynh
Sample    : icv4014-50                               Inst    : MSZ
Misc      : OP64141,EZ4014,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	166	0.00	4.70
2		1,4-Dioxane	0.561	0.493	12.1	150	-0.03	1.14
6	t	Indene	2.354	2.549	-8.3	178	-0.01	5.11
7	t	Cumene	3.229	3.268	-1.2	166	0.00	3.63
13	t	Decane	1.248	1.201	3.8	157	-0.01	4.61
18	t	Acetophenone	1.894	1.908	-0.7	163	-0.02	5.37
24	I	Naphthalene-d8	1.000	1.000	0.0	154	-0.01	6.60
26	t	Nitrobenzene	0.374	0.392	-4.8	160	-0.25	5.37
27	t	Quinoline	0.718	0.744	-3.6	159	-0.06	7.15
40	t	2,3-Dichloroaniline	0.359	0.357	0.6	151	0.00	8.23
41	t	Caprolactam	0.143	0.151	-5.6	154	-0.12	7.30
45	t	1-Methylnaphthalene	0.604	0.654	-8.3	166	-0.01	7.86
46	t	Dimethylnaphthalene	0.635	0.692	-9.0	166	0.00	8.70
47	I	Acenaphthene-d10	1.000	1.000	0.0	151	0.00	9.33
53	t	Biphenyl	1.490	1.594	-7.0	163	-0.01	8.48
69	I	Phenanthrene-d10	1.000	1.000	0.0	146	-0.01	11.59
82	t	Octadecane	0.421	0.476	-13.1	161	-0.01	11.72
92	I	Perylene-d12	1.000	1.000	0.0	127	-0.02	18.94
100	t	7,12-Dimethylbenz(a)anthr	0.563	0.500	11.2	104	-0.04	18.33

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Z78530.D MZ4014.M Thu Mar 14 10:27:24 2013 RPT1

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78539.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78539.D            Vial: 22
Acq On    : 14 Mar 2013   2:09 am                    Operator: katelynh
Sample    : icv4014-50                               Inst    : MSZ
Misc      : OP64141,EZ4014,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	160	0.00	4.70
5	S	2-Fluorophenol	1.278	1.341	-4.9	161	0.00	3.02
8	S	Phenol-d5	1.683	1.694	-0.7	156	-0.02	4.39
24	I	Naphthalene-d8	1.000	1.000	0.0	154	-0.01	6.60
25	S	Nitrobenzene-d5	0.362	0.356	1.7	150	-0.02	5.57
47	I	Acenaphthene-d10	1.000	1.000	0.0	149	0.00	9.33
51	S	2-Fluorobiphenyl	1.302	1.290	0.9	149	-0.02	8.36
69	I	Phenanthrene-d10	1.000	1.000	0.0	141	-0.02	11.58
73	S	2,4,6-Tribromophenol	0.083	0.067	19.3	110	-0.02	10.57
83	I	Chrysene-d12	1.000	1.000	0.0	138	-0.02	16.14
86	S	Terphenyl-d14	0.843	0.857	-1.7	138	-0.01	14.28

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 Z78530.D   MZ4014.M         Thu Mar 14 10:27:28 2013   RPT1
```

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78541.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78541.D            Vial: 24
Acq On    : 14 Mar 2013   3:12 am                    Operator: katelynh
Sample    : icv4014-50                               Inst    : MSZ
Misc      : OP64141,EZ4014,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
108	Chrysene-d12a	1.000	1.000	0.0	285	0.00	16.15
109	Benzidine	0.663	0.852	-28.5	369	0.00	13.85

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Z78530.D MZ4014.M Thu Mar 14 10:27:30 2013 RPT1

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78542.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78542.D            Vial: 25
Acq On    : 14 Mar 2013   3:44 am                    Operator: katelynh
Sample    : icv4014-50                               Inst    : MSZ
Misc      : OP64141,EZ4014,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
113 I	Naphthalene-d8a	1.000	1.000	0.0	176	0.00	6.60
114	Hydroquinone	0.324	0.372	-14.8	188	-0.02	7.51

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Z78530.D MZ4014.M Thu Mar 14 10:27:32 2013 RPT1

8.7.22

8

Initial Calibration Verification

Job Number: JB31265 **Sample:** EZ4014-ICV4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78544.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4014\Z78544.D          Vial: 2
Acq On    : 14 Mar 2013   9:37 am                  Operator: katelynh
Sample    : icv4014-50                             Inst    : MSZ
Misc      : OP64141,EZ4014,                        Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	174	0.00	4.70
10	t	Aniline	1.923	2.186	-13.7	200	-0.01	4.31
24	I	Naphthalene-d8	1.000	1.000	0.0	166	-0.01	6.60
39	t	4-Chloroaniline	0.463	0.459	0.9	169	-0.02	6.81

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Z78530.D MZ4014.M Thu Mar 14 10:27:34 2013 RPT1

8.7.23

8

Continuing Calibration Summary

Job Number: JB31265 **Sample:** EZ4029-CC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78868.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4029\Z78868.D            Vial: 2
Acq On    : 27 Mar 2013   2:58 pm                    Operator: katelynh
Sample    : cc4014-50                                Inst    : MSZ
Misc      : OP64652,EZ4029,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	69	-0.11	4.59
2		1,4-Dioxane	0.561	0.424	24.4#	54	-0.09	1.08
3	t	Pyridine	1.371	1.313	4.2	63	-0.10	1.31
4	t	N-Nitrosodimethylamine	0.845	0.785	7.1	60	-0.09	1.32
5	S	2-Fluorophenol	1.278	1.311	-2.6	68	-0.07	2.95
6	t	Indene	2.354	2.411	-2.4	70	-0.12	5.00
7	t	Cumene	3.229	3.262	-1.0	69	-0.12	3.51
8	S	Phenol-d5	1.683	1.882	-11.8	75	-0.05	4.36
9	t	Phenol	1.748	1.861	-6.5	71	-0.05	4.38
10	t	Aniline	1.923	1.723	10.4	66	-0.11	4.22
11	t	bis(2-Chloroethyl)ether	1.283	1.294	-0.9	69	-0.12	4.34
12	t	2-Chlorophenol	1.446	1.522	-5.3	72	-0.09	4.38
13	t	Decane	1.248	1.390	-11.4	76	-0.13	4.49
14	t	1,3-Dichlorobenzene	1.576	1.609	-2.1	70	-0.11	4.53
15	t	1,4-Dichlorobenzene	1.634	1.650	-1.0	70	-0.11	4.61
16	t	Benzyl alcohol	0.948	0.932	1.7	66	-0.10	4.92
17	t	1,2-Dichlorobenzene	1.518	1.541	-1.5	70	-0.11	4.88
18	t	Acetophenone	1.894	2.009	-6.1	71	-0.12	5.27
19	t	2-Methylphenol	1.265	1.328	-5.0	70	-0.06	5.22
20	t	2,2'-oxybis(1-Chloropropa	0.470	0.469	0.2	68	-0.11	5.15
21	t	3&4-Methylphenol	1.391	1.481	-6.5	71	-0.06	5.45
22	t	n-Nitroso-di-n-propylamin	1.003	1.093	-9.0	71	-0.12	5.36
23	t	Hexachloroethane	0.538	0.559	-3.9	69	-0.12	5.31
24	I	Naphthalene-d8	1.000	1.000	0.0	68	-0.11	6.50
25	S	Nitrobenzene-d5	0.362	0.392	-8.3	73	-0.11	5.47
26	t	Nitrobenzene	0.374	0.413	-10.4	75	-0.11	5.50
27	t	Quinoline	0.718	0.730	-1.7	69	-0.14	7.08
28	t	Isophorone	0.624	0.677	-8.5	73	-0.11	5.88
29	t	2-Nitrophenol	0.195	0.214	-9.7	73	-0.11	5.99
30	t	2,4-Dimethylphenol	0.299	0.348	-16.4	72	-0.07	6.21
31		Benzoic Acid	0.306	0.253	17.3	55	-0.10	6.57
32	t	bis(2-Chloroethoxy)methan	0.370	0.379	-2.4	69	-0.12	6.30
33	t	2,4-Dichlorophenol	0.297	0.306	-3.0	69	-0.07	6.40
34		2,6-Dichlorophenol	0.290	0.305	-5.2	72	-0.09	6.73
35	t	1,3,5-Trichlorobenzene	0.333	0.336	-0.9	70	-0.11	5.99
36	t	1,2,4-Trichlorobenzene	0.327	0.330	-0.9	69	-0.11	6.46
37	t	1,2,3-Trichlorobenzene	0.318	0.322	-1.3	69	-0.11	6.82
38	t	Naphthalene	1.104	1.122	-1.6	71	-0.11	6.53
39	t	4-Chloroaniline	0.463	0.447	3.5	67	-0.10	6.73
40	t	2,3-Dichloroaniline	0.359	0.369	-2.8	69	-0.10	8.13
41	t	Caprolactam	0.143	0.128	10.5	58	-0.12	7.29

Continuing Calibration Summary

Job Number: JB31265 **Sample:** EZ4029-CC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78868.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.187	0.183	2.1	66	-0.12	6.86
43	t	4-Chloro-3-methylphenol	0.301	0.337	-12.0	73	-0.05	7.64
44	t	2-Methylnaphthalene	0.644	0.669	-3.9	71	-0.11	7.61
45	t	1-Methylnaphthalene	0.604	0.634	-5.0	71	-0.11	7.76
46	t	Dimethylnaphthalene	0.635	0.670	-5.5	71	-0.11	8.59
47	I	Acenaphthene-d10	1.000	1.000	0.0	73	-0.11	9.22
48	t	Hexachlorocyclopentadiene	0.349	0.312	10.6	63	-0.12	7.97
49	t	2,4,6-Trichlorophenol	0.364	0.366	-0.5	72	-0.08	8.17
50	t	2,4,5-Trichlorophenol	0.410	0.408	0.5	71	-0.06	8.25
51	S	2-Fluorobiphenyl	1.302	1.283	1.5	72	-0.12	8.26
52	t	2-Chloronaphthalene	1.156	1.098	5.0	70	-0.10	8.35
53	t	Biphenyl	1.490	1.436	3.6	71	-0.11	8.37
54	t	2-Nitroaniline	0.345	0.359	-4.1	74	-0.10	8.64
55	t	Dimethylphthalate	1.320	1.300	1.5	72	-0.12	9.02
56	t	Acenaphthylene	1.801	1.835	-1.9	73	-0.11	8.98
57	t	2,6-Dinitrotoluene	0.292	0.305	-4.5	74	-0.10	9.10
58	t	3-Nitroaniline	0.339	0.325	4.1	69	-0.09	9.30
59	t	Acenaphthene	1.173	1.148	2.1	72	-0.11	9.27
60	t	2,4-Dinitrophenol	0.175	0.161	8.0	61	-0.07	9.48
61	t	4-Nitrophenol	0.190	0.165	13.2	61	0.00	9.76
62	t	Dibenzofuran	1.639	1.611	1.7	73	-0.11	9.53
63	t	2,4-Dinitrotoluene	0.414	0.412	0.5	70	-0.09	9.71
64		2,3,4,6-Tetrachlorophenol	0.315	0.298	5.4	67	-0.07	9.87
65	t	Diethylphthalate	1.365	1.328	2.7	71	-0.12	10.14
66	t	Fluorene	1.328	1.298	2.3	71	-0.11	10.07
67	t	4-Chlorophenyl-phenylethe	0.640	0.654	-2.2	75	-0.11	10.13
68	t	4-Nitroaniline	0.345	0.314	9.0	66	-0.11	10.27
69	I	Phenanthrene-d10	1.000	1.000	0.0	72	-0.10	11.49
70	t	4,6-Dinitro-2-methylpheno	0.147	0.152	-3.4	72	-0.07	10.35
71	t	n-Nitrosodiphenylamine	0.596	0.592	0.7	73	-0.11	10.36
72	t	1,2-Diphenylhydrazine	0.782	0.830	-6.1	77	-0.11	10.37
73	S	2,4,6-Tribromophenol	0.083	0.095	-14.5	80	-0.10	10.49
74	t	4-Bromophenyl-phenylether	0.202	0.213	-5.4	76	-0.11	10.87
75	t	Hexachlorobenzene	0.203	0.212	-4.4	76	-0.10	11.05
76	t	Pentachlorophenol	0.149	0.123	17.4	59	-0.08	11.39
77	t	Phenanthrene	1.161	1.130	2.7	72	-0.10	11.53
78	t	Anthracene	1.146	1.145	0.1	74	-0.10	11.60
79	t	Carbazole	1.046	1.051	-0.5	73	-0.09	11.93
80	t	Di-n-butylphthalate	1.243	1.316	-5.9	74	-0.12	12.71
81	t	Fluoranthene	1.192	1.261	-5.8	75	-0.10	13.39
82	t	Octadecane	0.421	0.458	-8.8	76	-0.12	11.61
83	I	Chrysene-d12	1.000	1.000	0.0	80	-0.11	16.05
84	t	Pyrene	1.326	1.235	6.9	74	-0.11	13.74
85		Butyl stearate	0.273	0.295	-8.1	79	-0.15	15.52
86	S	Terphenyl-d14	0.843	0.842	0.1	79	-0.12	14.18
87	t	Butylbenzylphthalate	0.559	0.557	0.4	74	-0.14	15.28
88	t	Benzo[a]anthracene	1.154	1.132	1.9	78	-0.11	16.02
89	t	3,3'-Dichlorobenzidine	0.409	0.401	2.0	72	-0.12	16.14
90	t	Chrysene	1.132	1.071	5.4	77	-0.12	16.10
91	t	bis(2-Ethylhexyl)phthalat	0.735	0.801	-9.0	77	-0.15	16.63
92	I	Perylene-d12	1.000	1.000	0.0	82	-0.10	18.86
		----------	True	Calc.	% Drift	----------		
93	t	Di-n-octylphthalate	50.000	47.397	5.2	79	-0.15	17.91
		----------	AvgRF	CCRF	% Dev	----------		

8.7.24

8

Continuing Calibration Summary

Job Number: JB31265 **Sample:** EZ4029-CC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78868.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

94	t	Benzo[b]fluoranthene	1.156	1.311	-13.4	84	-0.12	18.17
95	t	Benzo[k]fluoranthene	1.333	1.221	8.4	76	-0.11	18.23
96	t	Benzo[a]pyrene	1.095	1.156	-5.6	81	-0.11	18.75
97	t	Indeno[1,2,3-cd]pyrene	0.957	1.071	-11.9	81	-0.10	20.75
98	t	Dibenz(a,h)acridine	0.851	0.948	-11.4	84	-0.10	20.42
99	t	Dibenz[a,h]anthracene	0.957	1.017	-6.3	78	-0.11	20.81
100	t	7,12-Dimethylbenz(a)anthr	0.563	0.596	-5.9	80	-0.13	18.24
101	t	Benzo[g,h,i]perylene	1.064	1.108	-4.1	79	-0.10	21.14

(#) = Out of Range SPCC's out = 0 CCC's out = 0
Z78530.D MZ4014.M Wed Mar 27 16:41:18 2013 RPT1

Continuing Calibration Summary

Job Number: JB31265 **Sample:** EZ4029-CC4014
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** Z78869.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EZ4029\Z78869.D            Vial: 3
Acq On    : 27 Mar 2013   3:30 pm                    Operator: katelynh
Sample    : cc4014-50                                Inst    : MSZ
Misc      : OP64652,EZ4029,                          Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Mar 14 08:57:10 2013
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 : 202%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	59	-0.11	4.59
103	Benzaldehyde	1.147	1.001	12.7	52	-0.11	3.98
104	Phenanthrene-d10a	1.000	1.000	0.0	64	-0.10	11.49
105	Atrazine	0.112	0.130	-16.1	69	-0.10	11.33
106	Chrysene-d12a	1.000	1.000	0.0	72	-0.11	16.04
107	Benzidine	0.663	0.338	49.0#	37	-0.11	13.73
108	Acenaphthene-d10a	1.000	1.000	0.0	63	-0.10	9.22
109	1,2,4,5-Tetrachlorobenzen	0.553	0.570	-3.1	66	-0.11	7.93
110 I	Naphthalene-d8a	1.000	1.000	0.0	61	-0.11	6.49
111	Hydroquinone	0.324	0.360	-11.1	63	-0.06	7.47

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 Z78530.D   MZ4014.M         Wed Mar 27 16:41:45 2013   RPT1
```

8.7.25

8

New Jersey

ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/28/13 13:43

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\EZ4029\Z78886.D Vial: 20
Acq On : 28 Mar 2013 12:26 am Operator: katelynh
Sample : jb31265-1 Inst : MSZ
Misc : OP64470,EZ4029,32.4 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 28 08:27:29 2013 Quant Results File: MZ4014.RES

Quant Method : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Thu Mar 28 08:26:08 2013
Response via : Initial Calibration
DataAcq Meth : MZ4014

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.59	152	72480	40.00	ppb	-0.11
24) Naphthalene-d8	6.49	136	291587	40.00	ppb	-0.20
47) Acenaphthene-d10	9.23	164	183456	40.00	ppb	-0.10
69) Phenanthrene-d10	11.51	188	312700	40.00	ppb	-0.09
83) Chrysene-d12	16.09	240	336004	40.00	ppb	-0.06
92) Perylene-d12	18.94	264	316995	40.00	ppb	-0.02
102) 1,4-Dichlorobenzene-d4a	4.59	152	72480	40.00	ppb	-0.11
104) Phenanthrene-d10a	11.51	188	312700	40.00	ppb	-0.08
106) Chrysene-d12a	16.09	240	336004	40.00	ppb	-0.05
108) Acenaphthene-d10a	9.23	164	183456	40.00	ppb	-0.10
110) Naphthalene-d8a	6.49	136	291587	40.00	ppb	-0.06
System Monitoring Compounds						
5) 2-Fluorophenol	2.96	112	49108	21.21	ppb	-0.06
Spiked Amount 50.000			Recovery	=	42.42%	
8) Phenol-d5	4.36	99	73900	24.23	ppb	-0.05
Spiked Amount 50.000			Recovery	=	48.46%	
25) Nitrobenzene-d5	5.47	82	76565	29.01	ppb	-0.11
Spiked Amount 50.000			Recovery	=	58.02%	
51) 2-Fluorobiphenyl	8.26	172	188104	31.50	ppb	-0.12
Spiked Amount 50.000			Recovery	=	63.00%	
73) 2,4,6-Tribromophenol	10.50	330	26121	40.32	ppb	-0.09
Spiked Amount 50.000			Recovery	=	80.64%	
86) Terphenyl-d14	14.20	244	251098	35.46	ppb	-0.09
Spiked Amount 50.000			Recovery	=	70.92%	

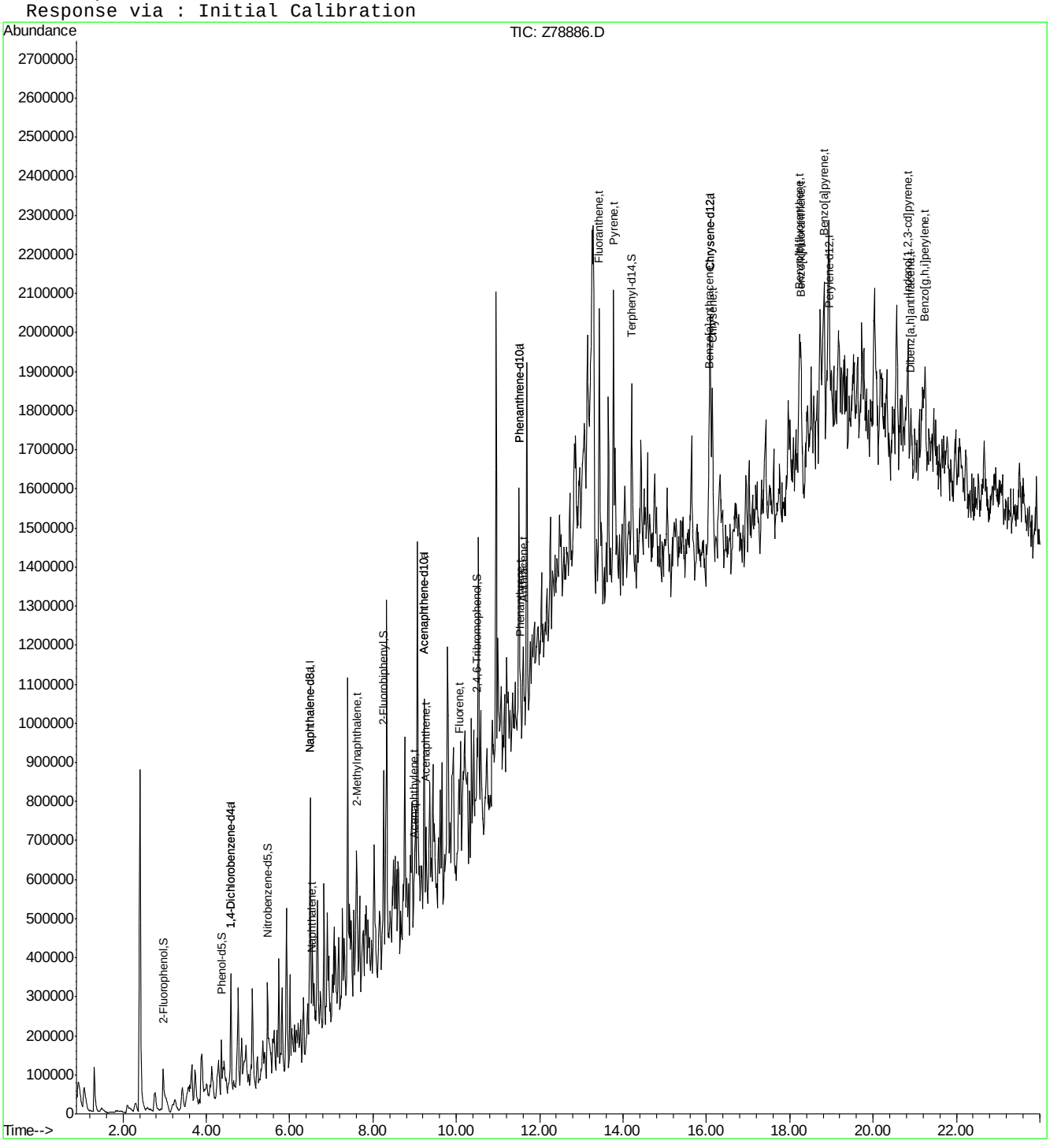
Target Compounds						Qvalue
38) Naphthalene	6.52	128	28452	3.53	ppb	95
44) 2-Methylnaphthalene	7.61	141	40219	8.57	ppb	88
56) Acenaphthylene	8.98	152	49009	5.93	ppb	95
59) Acenaphthene	9.27	153	36391	6.76	ppb	95
66) Fluorene	10.06	166	77024	12.65	ppb	99
77) Phenanthrene	11.53	178	57299	6.31	ppb	98
78) Anthracene	11.61	178	87863	9.81	ppb	98
81) Fluoranthene	13.43	202	367123	39.40	ppb	97
84) Pyrene	13.77	202	496744	44.60	ppb	94
88) Benzo[a]anthracene	16.06	228	228000	23.52	ppb	93
90) Chrysene	16.14	228	280964	29.56	ppb	97
94) Benzo[b]fluoranthene	18.24	252	296688m	32.39	ppb	
95) Benzo[k]fluoranthene	18.27	252	121891m	11.54	ppb	
96) Benzo[a]pyrene	18.82	252	239340	27.58	ppb	96
97) Indeno[1,2,3-cd]pyrene	20.83	276	144374	19.03	ppb	97
99) Dibenz[a,h]anthracene	20.89	278	33443	4.41	ppb	92
101) Benzo[g,h,i]perylene	21.24	276	146793	17.41	ppb	97

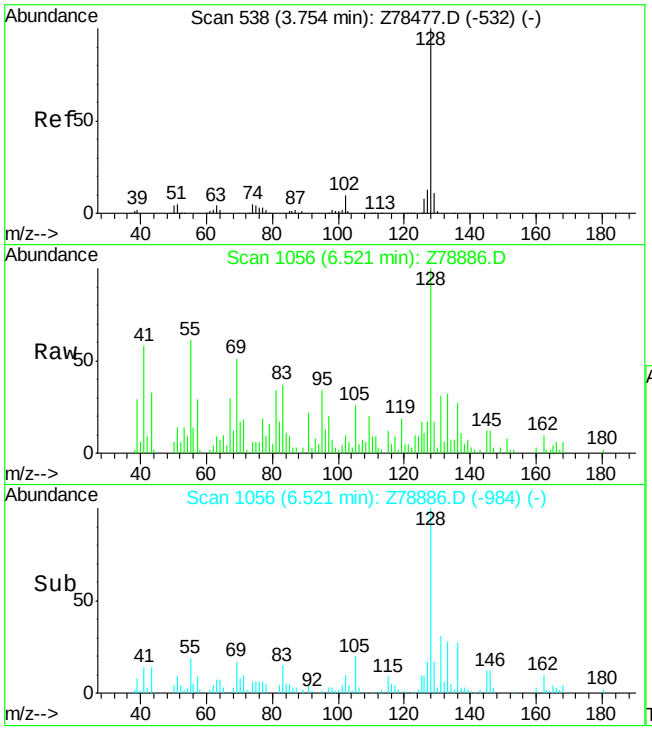
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\EZ4029\Z78886.D Vial: 20
Acq On : 28 Mar 2013 12:26 am Operator: katelynh
Sample : jb31265-1 Inst : MSZ
Misc : OP64470,EZ4029,32.4 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 28 12:11 2013 Quant Results File: MZ4014.RES

Method : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Thu Mar 14 08:57:10 2013
Response via : Initial Calibration

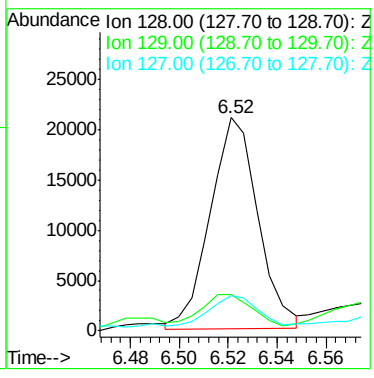


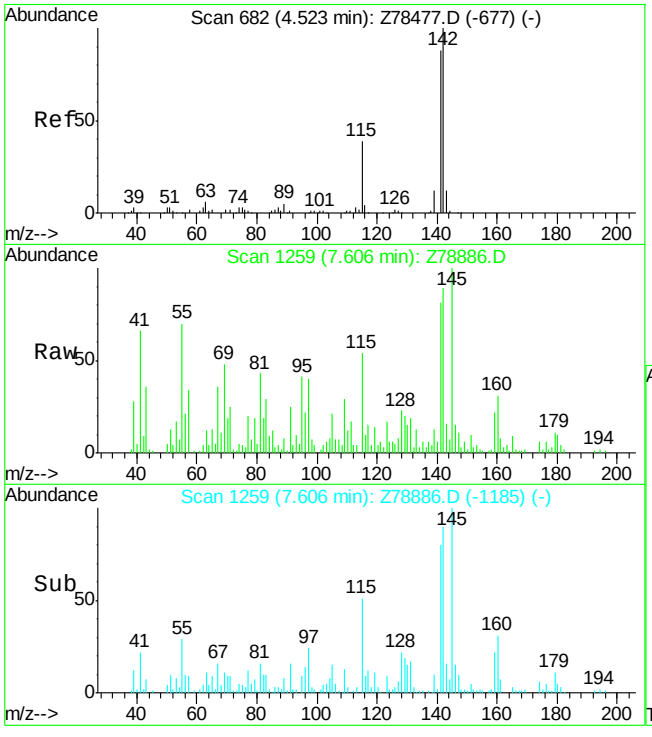


#38
Naphthalene
Concen: 3.53 ppb
RT: 6.52 min Scan# 1056
Delta R.T. -0.12 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:128 Resp: 28452

Ion	Ratio	Lower	Upper
128	100		
129	14.1	0.0	41.3
127	14.6	0.0	43.6

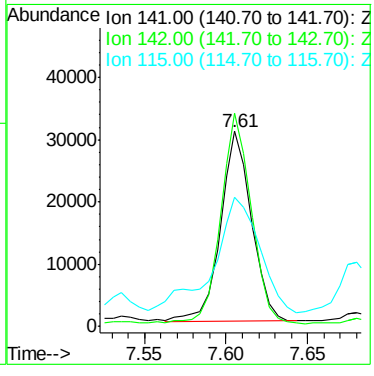


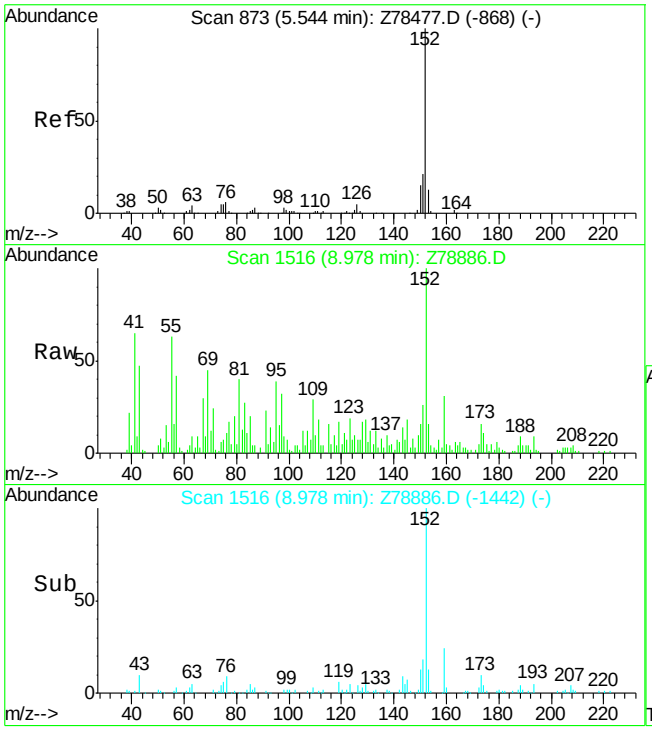


#44
2-Methylnaphthalene
Concen: 8.57 ppb
RT: 7.61 min Scan# 1259
Delta R.T. -0.11 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:141 Resp: 40219

Ion	Ratio	Lower	Upper
141	100		
142	110.7	88.7	148.7
115	57.9	11.8	71.8

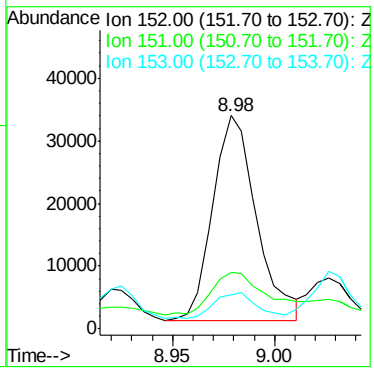


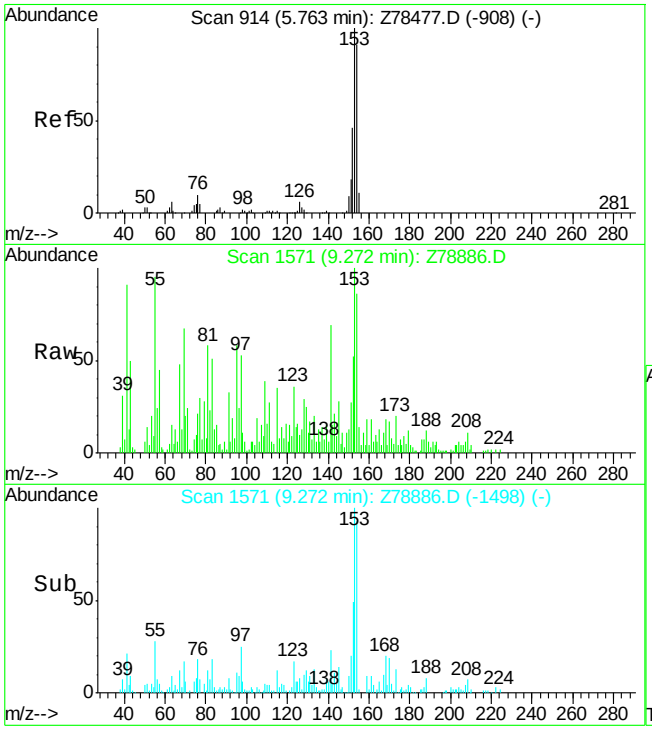


#56
Acenaphthylene
Concen: 5.93 ppb
RT: 8.98 min Scan# 1516
Delta R.T. -0.11 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:152 Resp: 49009

Ion	Ratio	Lower	Upper
152	100		
151	18.3	0.0	50.1
153	10.0	0.0	43.0

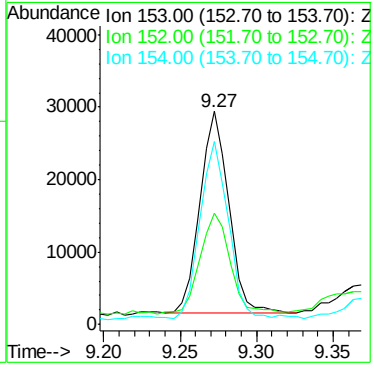


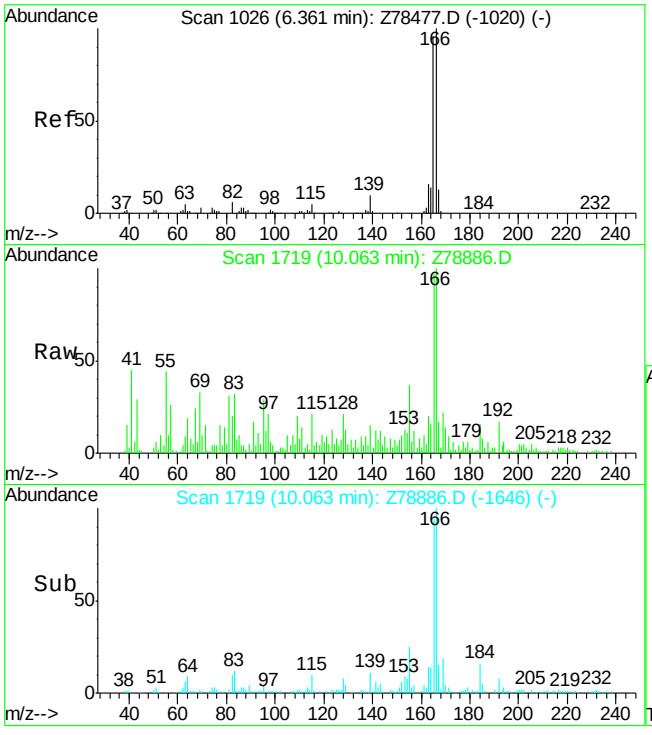


#59
Acenaphthene
Concen: 6.76 ppb
RT: 9.27 min Scan# 1571
Delta R.T. -0.11 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:153 Resp: 36391

Ion	Ratio	Lower	Upper
153	100		
152	48.9	17.3	77.3
154	87.2	63.1	123.1

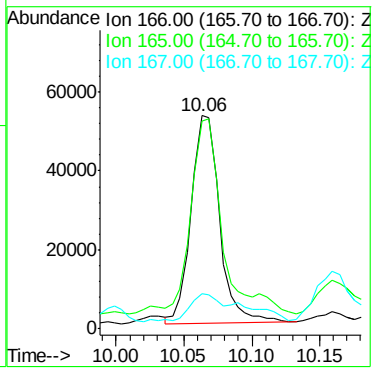


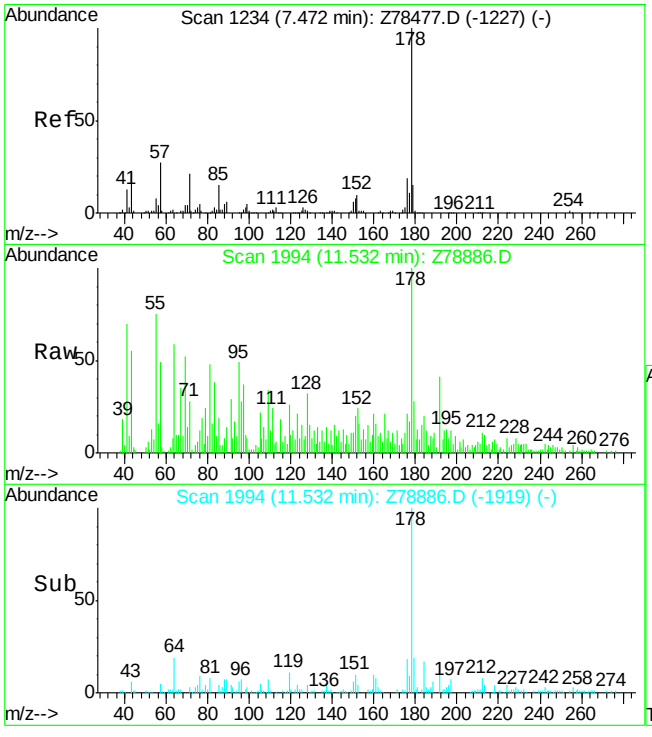


#66
Fluorene
Concen: 12.65 ppb
RT: 10.06 min Scan# 1719
Delta R.T. -0.11 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:166 Resp: 77024

Ion	Ratio	Lower	Upper
166	100		
165	93.0	61.9	121.9
167	13.0	0.0	43.3

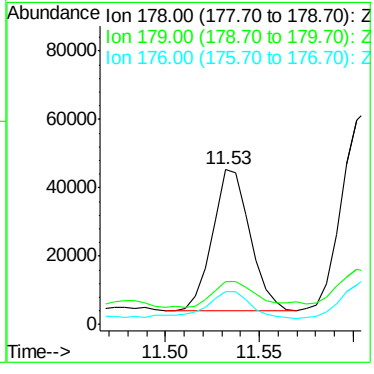


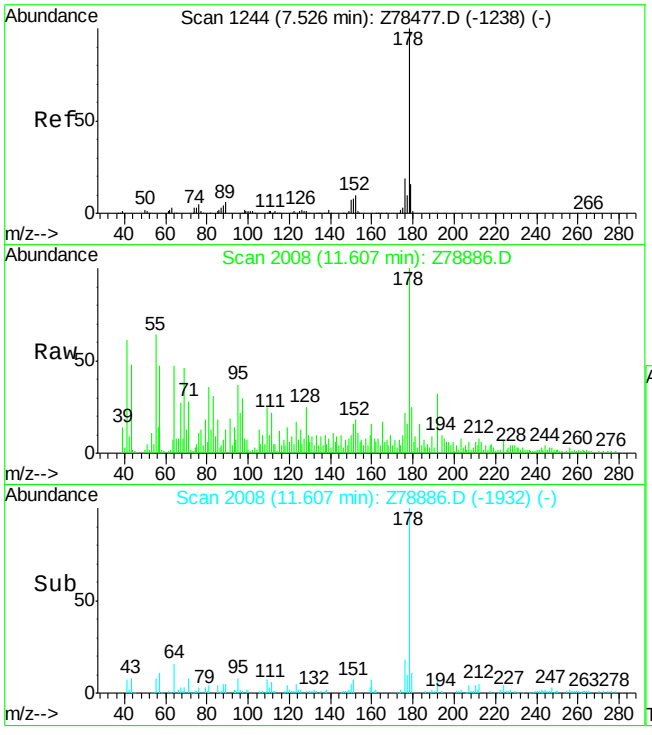


#77
Phenanthrene
Concen: 6.31 ppb
RT: 11.53 min Scan# 1994
Delta R.T. -0.10 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:178 Resp: 57299

Ion	Ratio	Lower	Upper
178	100		
179	16.9	0.0	45.7
176	18.0	0.0	49.0

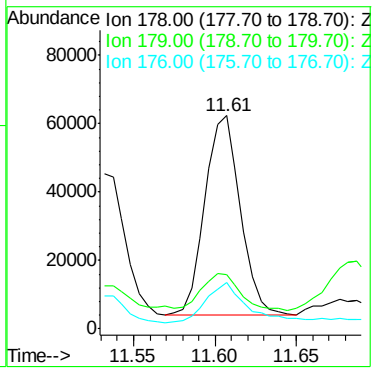


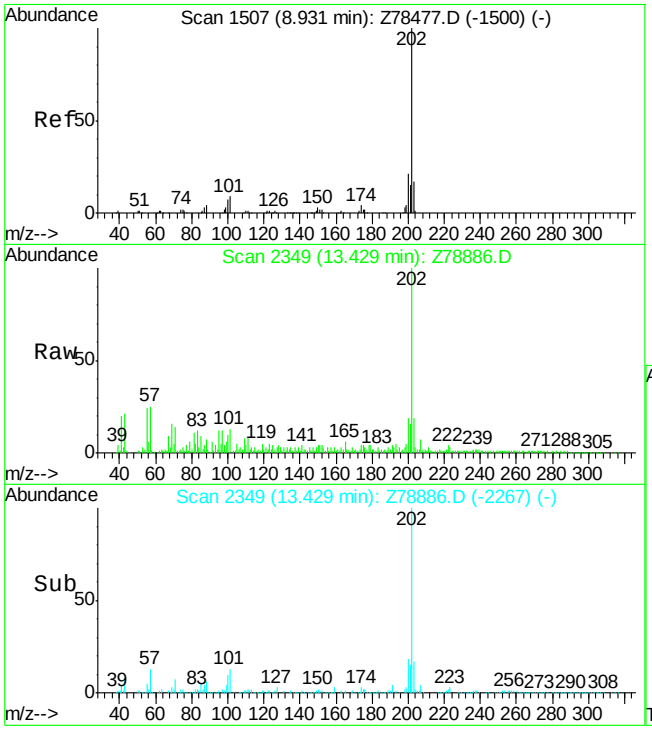


#78
Anthracene
Concen: 9.81 ppb
RT: 11.61 min Scan# 2008
Delta R.T. -0.10 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:178 Resp: 87863

Ion	Ratio	Lower	Upper
178	100		
179	16.3	0.0	45.8
176	19.2	0.0	48.2

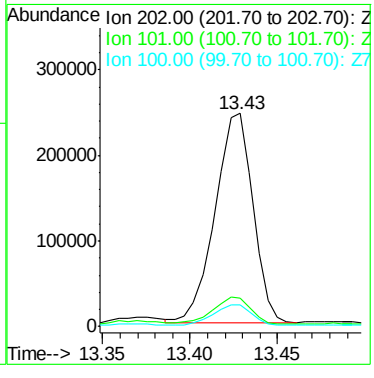




#81
Fluoranthene
Concen: 39.40 ppb
RT: 13.43 min Scan# 2349
Delta R.T. -0.06 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

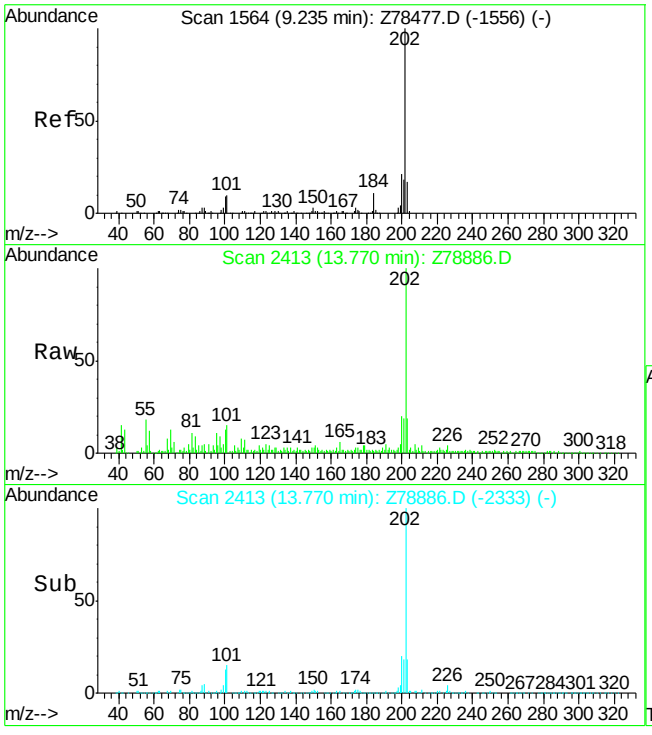
Tgt Ion:202 Resp: 367123

Ion	Ratio	Lower	Upper
202	100		
101	12.4	0.0	40.9
100	9.7	0.0	38.7



9.1.1

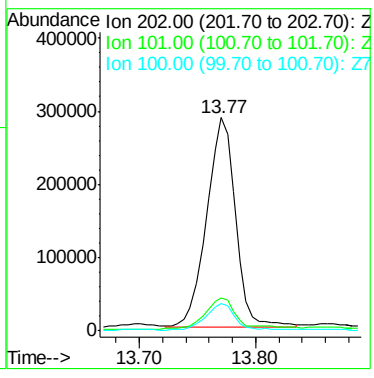
9

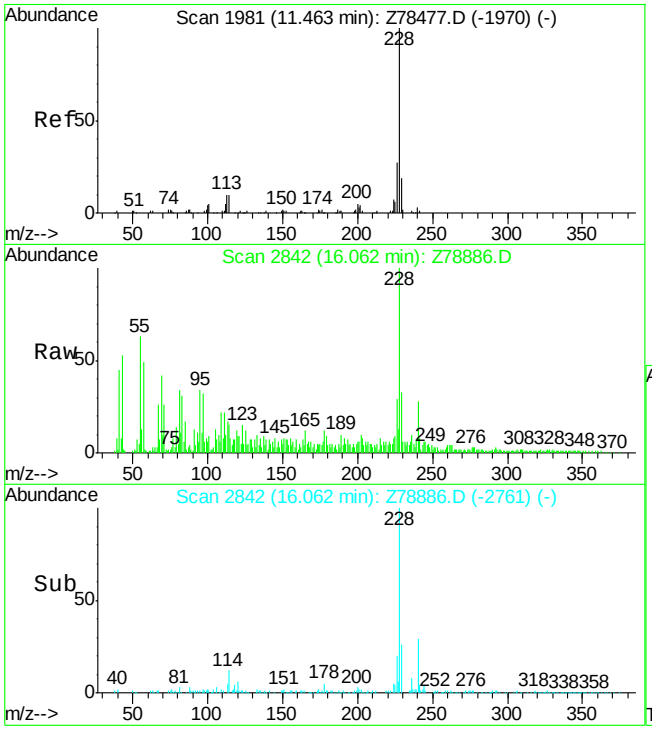


#84
Pyrene
Concen: 44.60 ppb
RT: 13.77 min Scan# 2413
Delta R.T. -0.07 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:202 Resp: 496744

Ion	Ratio	Lower	Upper
202	100		
101	14.2	0.0	42.1
100	12.6	0.0	40.2

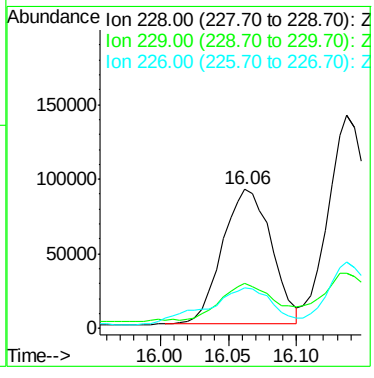




#88
Benzo[a]anthracene
Concen: 23.52 ppb
RT: 16.06 min Scan# 2842
Delta R.T. -0.07 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

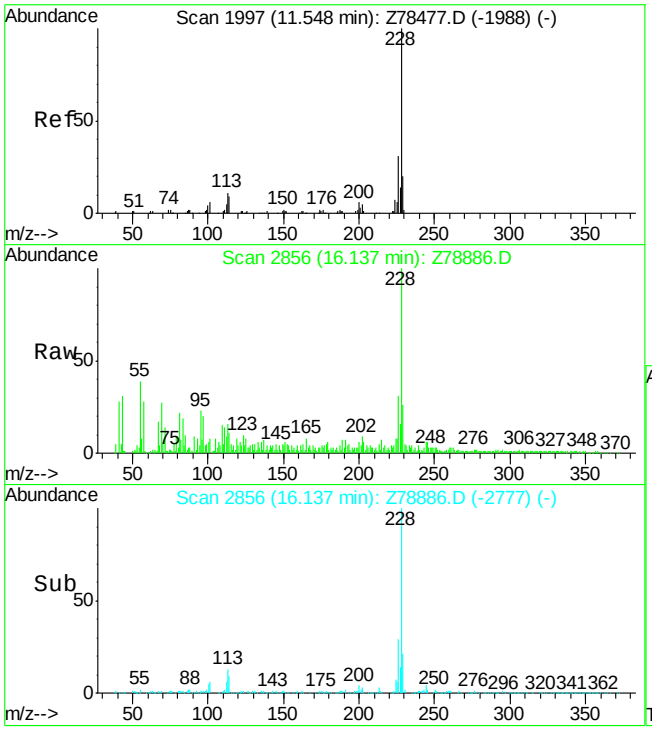
Tgt Ion:228 Resp: 228000

Ion	Ratio	Lower	Upper
228	100		
229	23.8	0.0	49.7
226	23.4	0.0	56.7



9.1.1

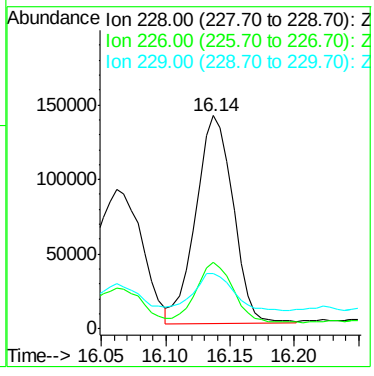
9

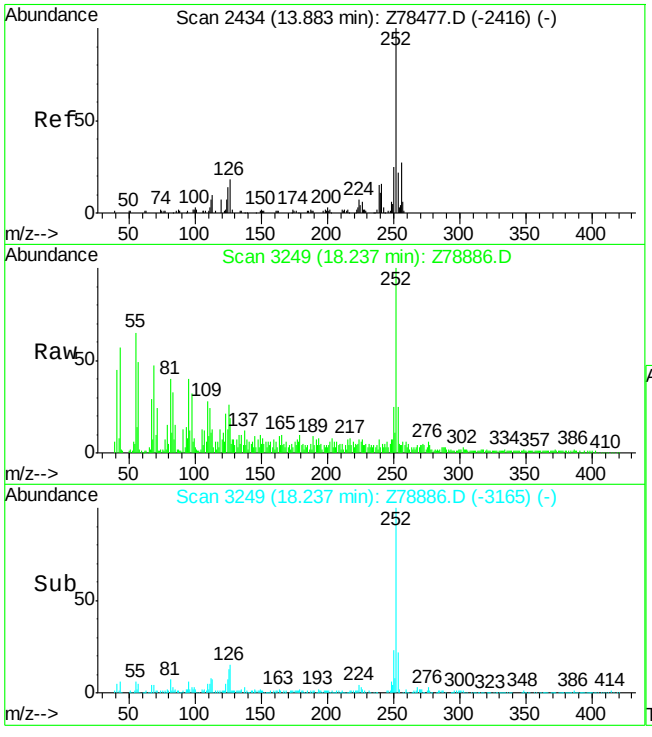


#90
Chrysene
Concen: 29.56 ppb
RT: 16.14 min Scan# 2856
Delta R.T. -0.08 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:228 Resp: 280964

Ion	Ratio	Lower	Upper
228	100		
226	29.0	0.0	59.8
229	17.4	0.0	49.8

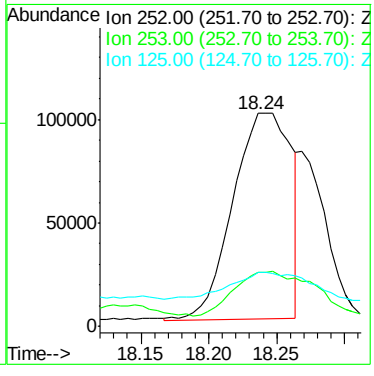


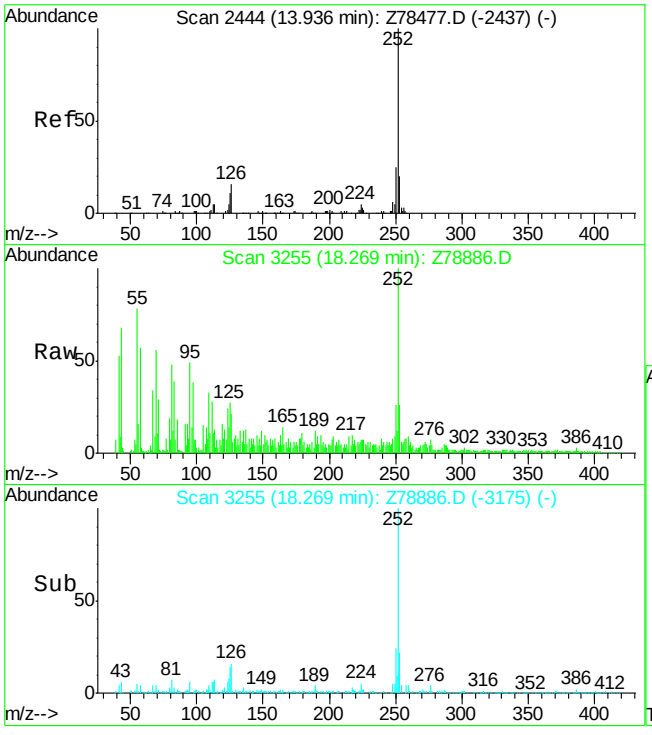


#94
Benzo[b]fluoranthene
Concen: 32.39 ppb m
RT: 18.24 min Scan# 3249
Delta R.T. -0.05 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:252 Resp: 296688

Ion	Ratio	Lower	Upper
252	100		
253	25.4	0.0	51.4
125	25.5	0.0	41.1

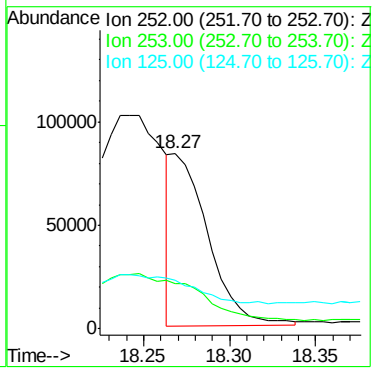


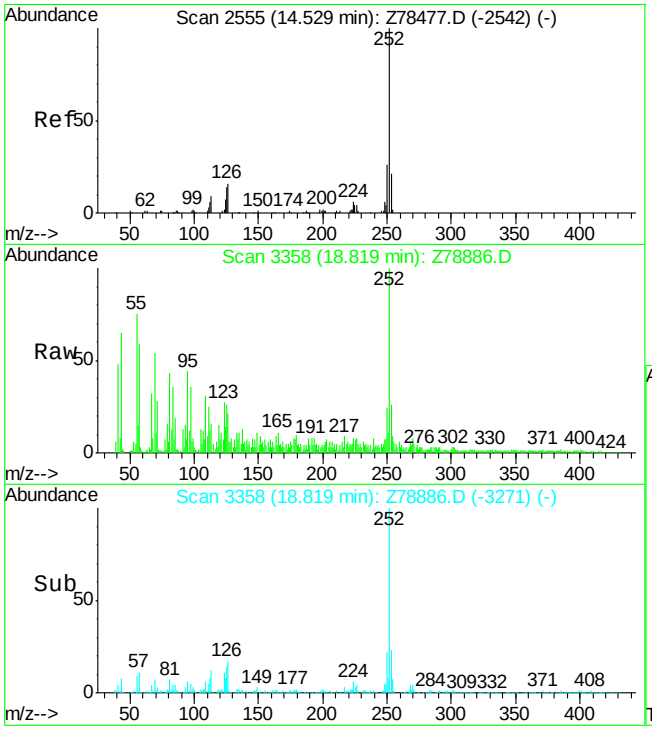


#95
Benzo[k]fluoranthene
Concen: 11.54 ppb m
RT: 18.27 min Scan# 3255
Delta R.T. -0.07 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:252 Resp: 121891

Ion	Ratio	Lower	Upper
252	100		
253	25.7	0.0	53.3
125	27.4	0.0	42.3

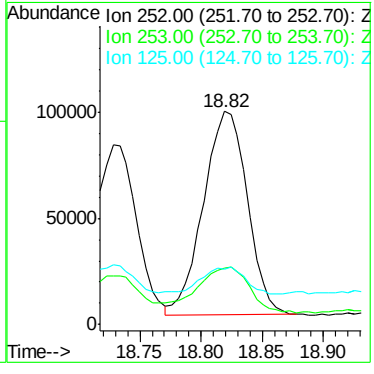




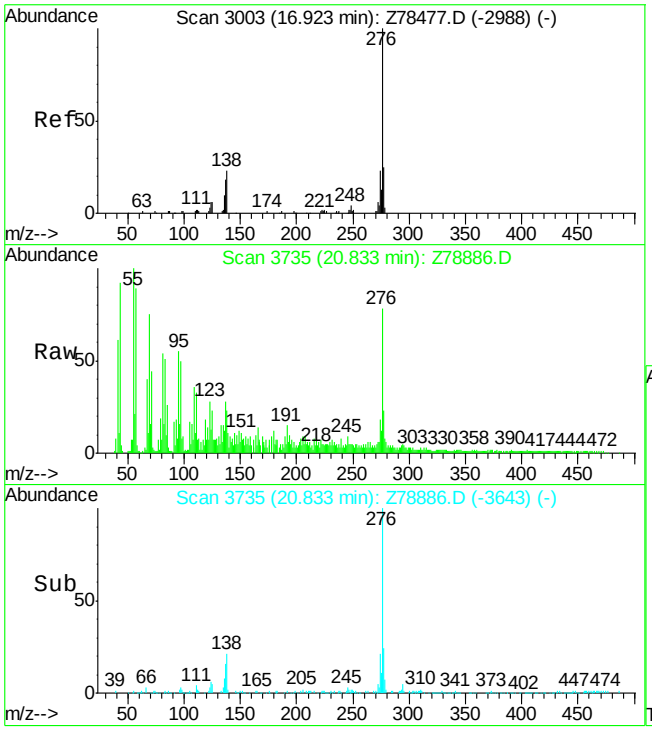
#96
Benzo[a]pyrene
Concen: 27.58 ppb
RT: 18.82 min Scan# 3358
Delta R.T. -0.04 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:252 Resp: 239340

Ion	Ratio	Lower	Upper
252	100		
253	19.8	0.0	52.1
125	11.4	0.0	42.6



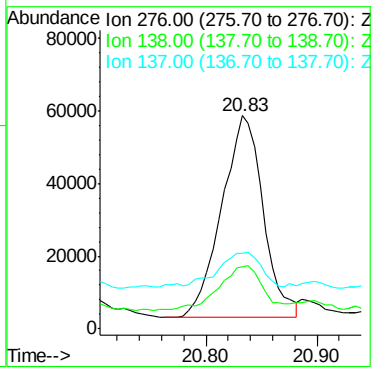
9.1.1
9

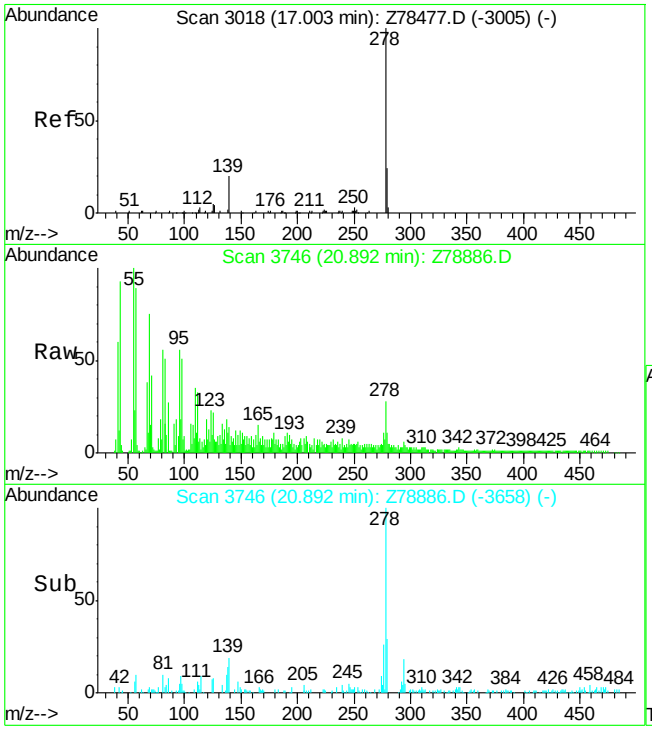


#97
Indeno[1,2,3-cd]pyrene
Concen: 19.03 ppb
RT: 20.83 min Scan# 3735
Delta R.T. -0.01 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:276 Resp: 144374

Ion	Ratio	Lower	Upper
276	100		
138	20.2	0.0	52.6
137	16.6	0.0	46.8

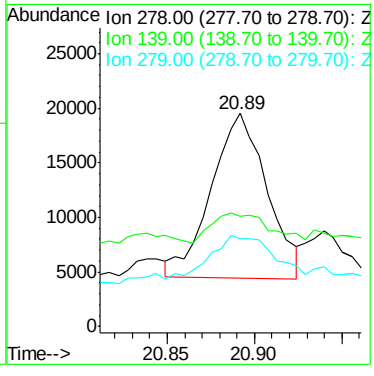




#99
Dibenz[a,h]anthracene
Concen: 4.41 ppb
RT: 20.89 min Scan# 3746
Delta R.T. -0.03 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

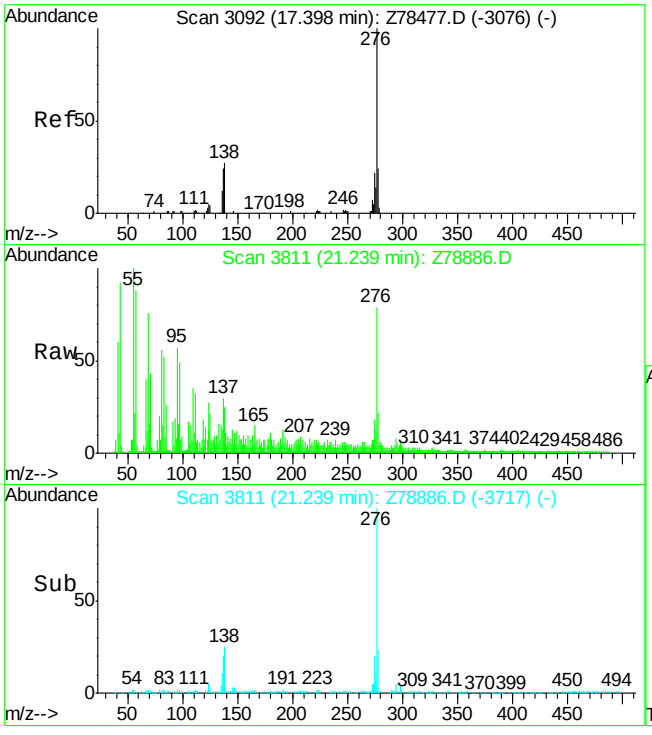
Tgt Ion:278 Resp: 33443

Ion	Ratio	Lower	Upper
278	100		
139	12.8	0.0	50.6
279	24.1	0.0	54.1



9.1.1

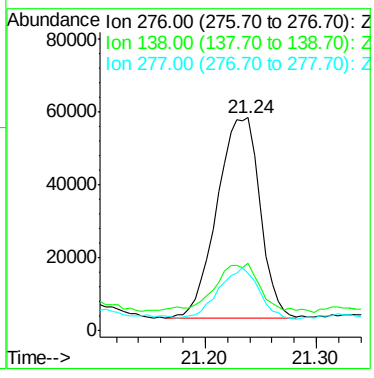
9



#101
Benzo[g,h,i]perylene
Concen: 17.41 ppb
RT: 21.24 min Scan# 3811
Delta R.T. -0.00 min
Lab File: Z78886.D
Acq: 28 Mar 2013 12:26 am

Tgt Ion:276 Resp: 146793

Ion	Ratio	Lower	Upper
276	100		
138	23.3	0.0	55.5
277	22.4	0.0	53.4



9.1.1

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/29/13 17:02

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p949\
Data File : 2p21619.D
Acq On : 28 Mar 2013 3:54 am
Operator : ashleyd
Sample : jb31265-2
Misc : op64470,e2p949,31.8,,,1,2
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Mar 28 15:38:01 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.848	152	43522	40.00	ppb	0.00
24) Naphthalene-d8	4.447	136	174269	40.00	ppb	0.00
47) Acenaphthene-d10	7.079	164	98904	40.00	ppb	0.00
69) Phenanthrene-d10	9.357	188	168002	40.00	ppb	0.02
83) Chrysene-d12	13.278	240	188130	40.00	ppb	0.04
92) Perylene-d12	14.973	264	184916	40.00	ppb	0.07
102) 1,4-Dichlorobenzene-d4a	2.848	152	43522	40.00	ppb	0.00
104) Acenaphthene-d10a	7.079	164	98904	40.00	ppb	0.00
107) Chrysene-d12a	13.278	240	188130	40.00	ppb	0.04
109) Naphthalene-d8a	4.447	136	174269	40.00	ppb	# 0.00
System Monitoring Compounds						
5) 2-Fluorophenol	1.783	112	19941	12.80	ppb	0.01
Spiked Amount 50.000	Range 11 - 58		Recovery = 25.60%			
8) Phenol-d5	2.661	99	28670	14.84	ppb	0.03
Spiked Amount 50.000	Range 10 - 59		Recovery = 29.68%			
25) Nitrobenzene-d5	3.564	82	28672	17.89	ppb	0.00
Spiked Amount 50.000	Range 19 - 61		Recovery = 35.78%			
51) 2-Fluorobiphenyl	6.121	172	59387	18.78	ppb	0.00
Spiked Amount 50.000	Range 21 - 58		Recovery = 37.56%			
73) 2,4,6-Tribromophenol	8.368	330	7341	19.55	ppb	0.02
Spiked Amount 50.000	Range 12 - 68		Recovery = 39.10%			
85) Terphenyl-d14	11.930	244	74606	18.83	ppb	0.04
Spiked Amount 50.000	Range 16 - 65		Recovery = 37.66%			
Target Compounds						Qvalue
44) 2-Methylnaphthalene	5.495	141	10938m	4.11	ppb	
56) Acenaphthylene	6.838	152	18551	4.05	ppb	89
59) Acenaphthene	7.121	153	35642	12.68	ppb	95
66) Fluorene	7.918	166	66990	20.62	ppb	100
77) Phenanthrene	9.389	178	149845	29.61	ppb	96
78) Anthracene	9.464	178	72917	14.56	ppb	91
81) Fluoranthene	11.267	202	196667	37.86	ppb	91
84) Pyrene	11.582	202	278708	43.48	ppb	98
88) Benzo[a]anthracene	13.262	228	113654	20.27	ppb	97
90) Chrysene	13.310	228	144180	27.00	ppb	96
94) Benzo[b]fluoranthene	14.583	252	118378m	18.77	ppb	
95) Benzo[k]fluoranthene	14.588	252	45117m	8.19	ppb	
96) Benzo[a]pyrene	14.914	252	107038	19.54	ppb	92
97) Indeno[1,2,3-cd]pyrene	16.027	276	63637	10.02	ppb	95
99) Dibenz[a,h]anthracene	16.027	278	34430	6.50	ppb	79
101) Benzo[g,h,i]perylene	16.241	276	69299	12.84	ppb	92

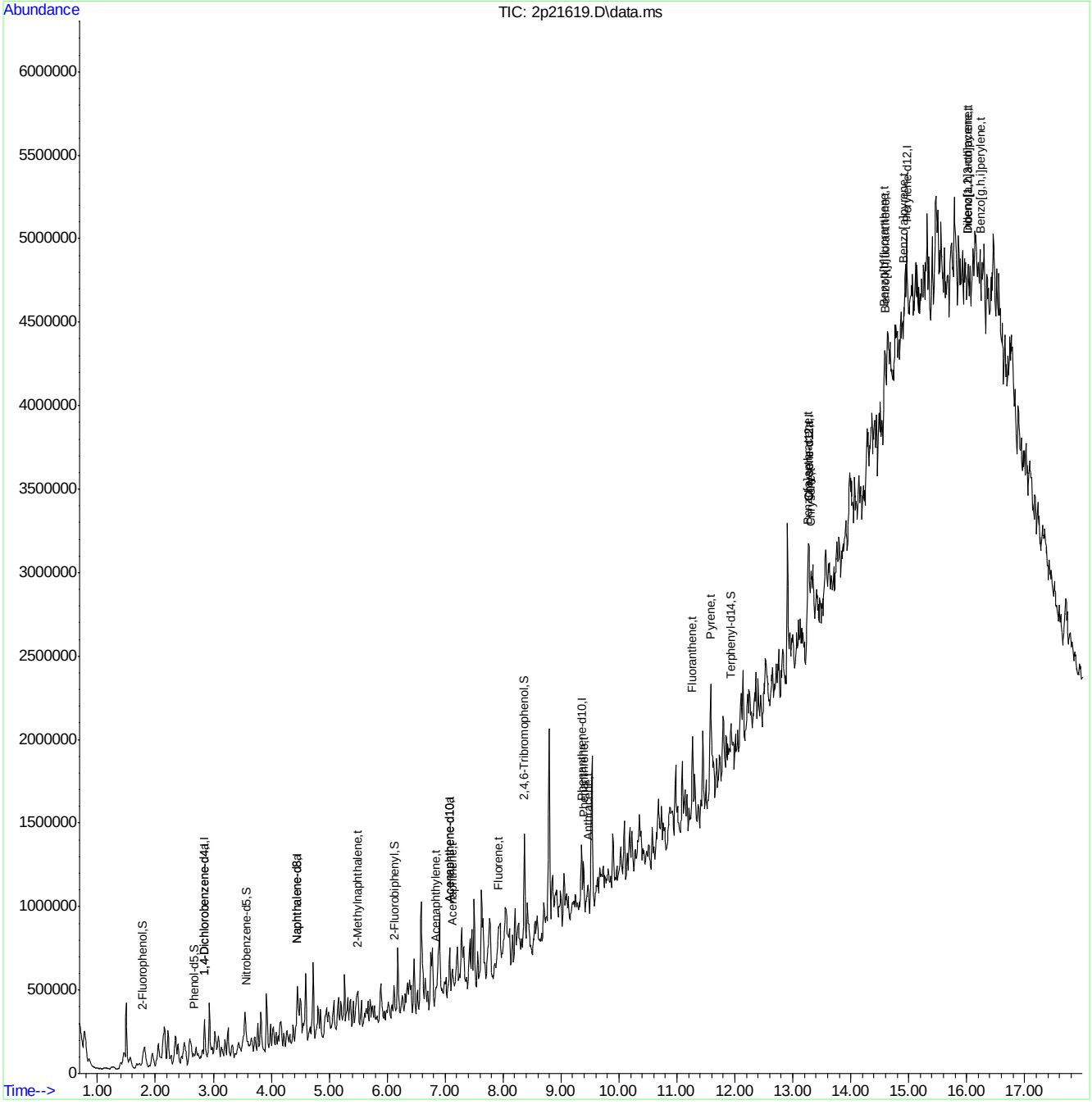
(#) = qualifier out of range (m) = manual integration (+) = signals summed

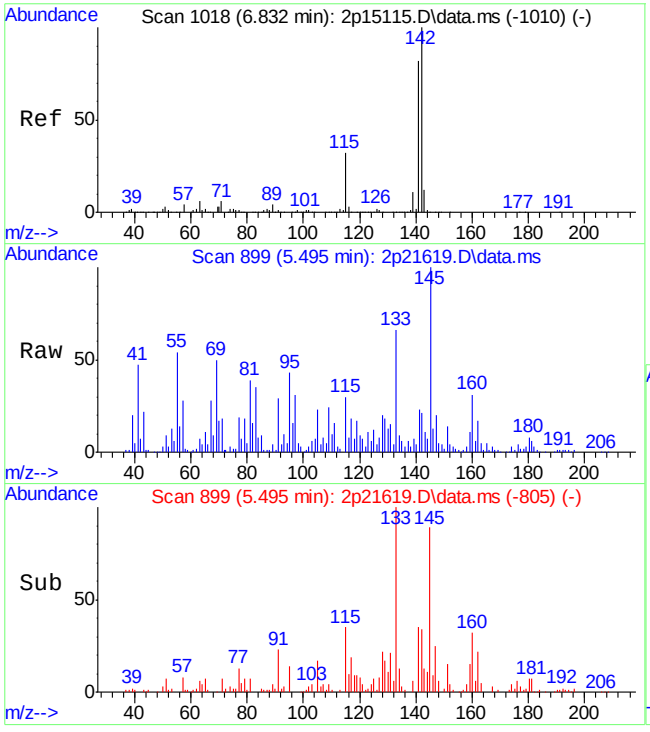
9.1.2
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p949\
Data File : 2p21619.D
Acq On : 28 Mar 2013 3:54 am
Operator : ashleyd
Sample : jb31265-2
Misc : op64470,e2p949,31.8,,,1,2
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Mar 28 15:38:01 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

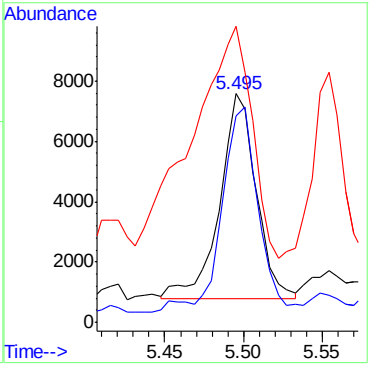


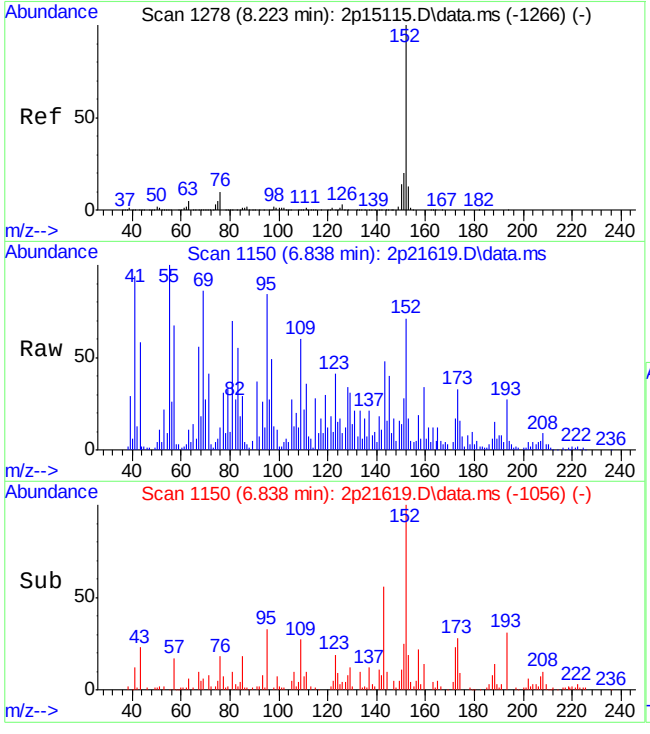


#44
2-Methylnaphthalene
Concen: 4.11 ppb m
RT: 5.495 min Scan# 899
Delta R.T. 0.000 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:141 Resp: 10938

Ion	Ratio	Lower	Upper
141	100		
142	90.1	88.4	148.4
115	129.5	14.8	74.8#

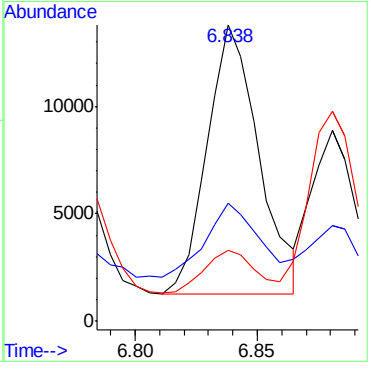


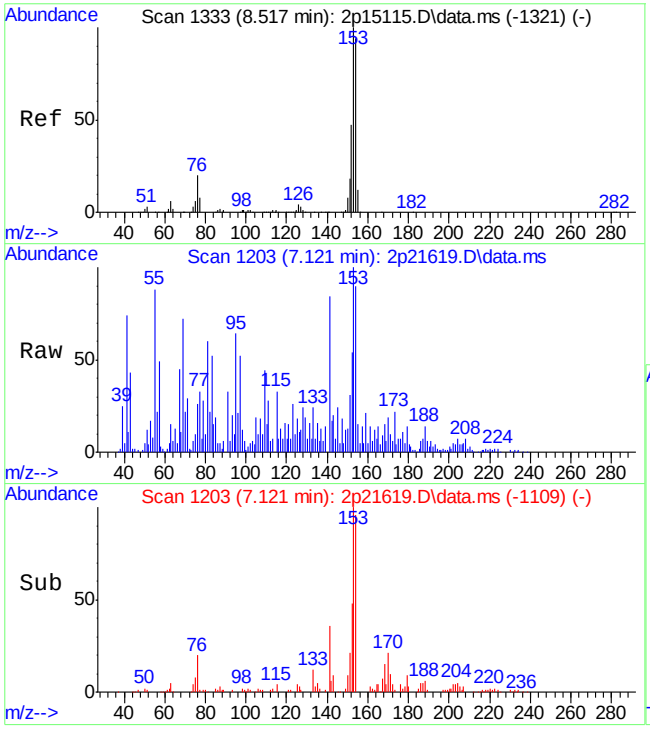


#56
Acenaphthylene
Concen: 4.05 ppb
RT: 6.838 min Scan# 1150
Delta R.T. 0.005 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:152 Resp: 18551

Ion	Ratio	Lower	Upper
152	100		
151	26.2	0.0	49.9
153	10.7	0.0	43.1

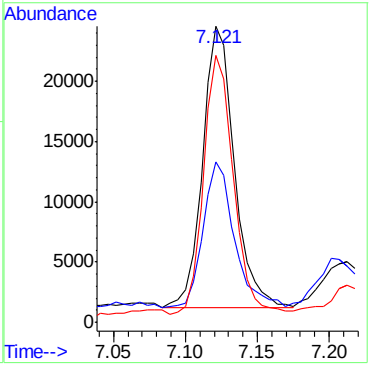


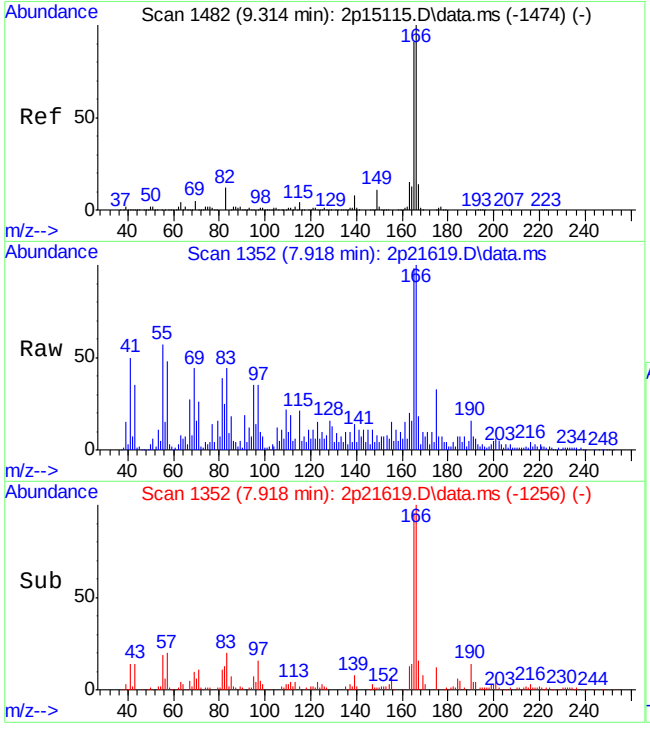


#59
Acenaphthene
Concen: 12.68 ppb
RT: 7.121 min Scan# 1203
Delta R.T. 0.000 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:153 Resp: 35642

Ion	Ratio	Lower	Upper
153	100		
152	51.4	17.8	77.8
154	91.0	65.2	125.2

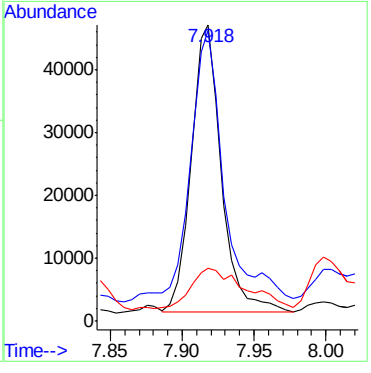


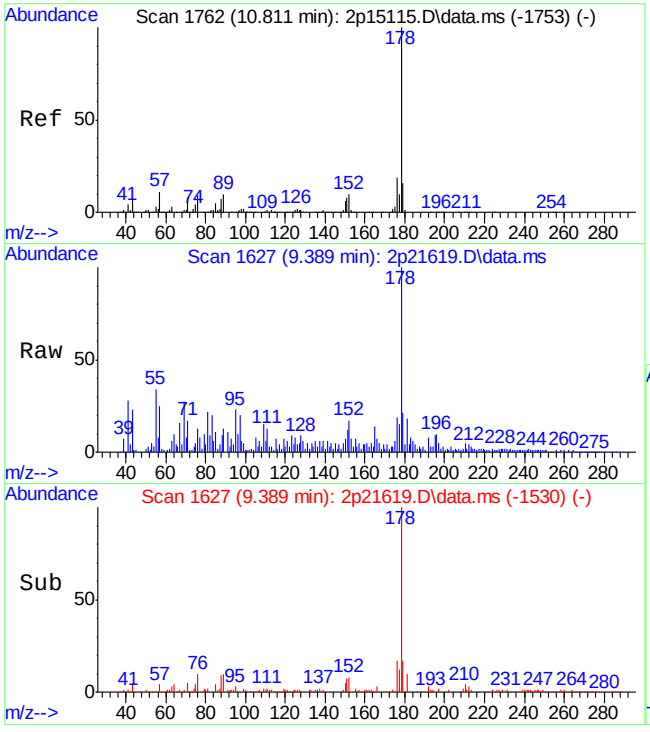


#66
Fluorene
Concen: 20.62 ppb
RT: 7.918 min Scan# 1352
Delta R.T. 0.011 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:166 Resp: 66990

Ion	Ratio	Lower	Upper
166	100		
165	92.7	62.5	122.5
167	13.8	0.0	42.9

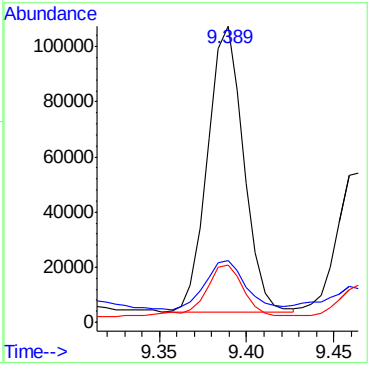


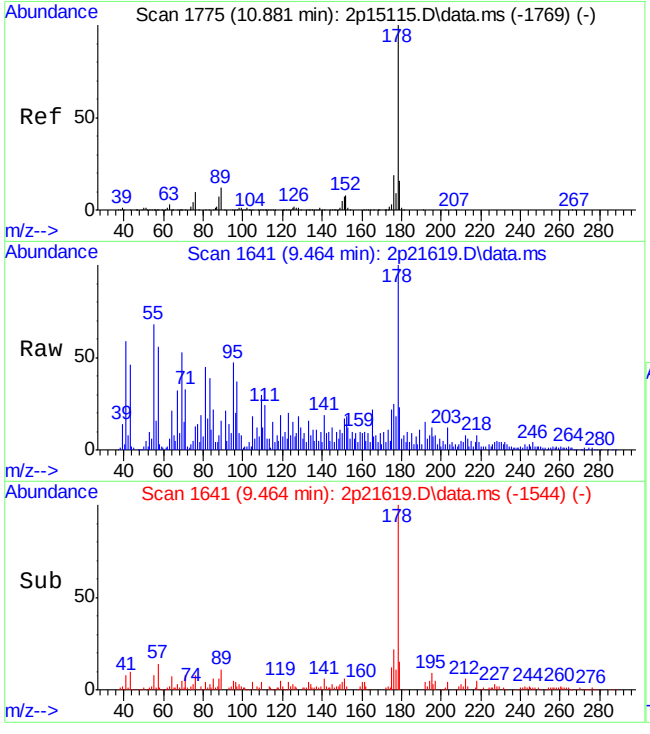


#77
Phenanthrene
Concen: 29.61 ppb
RT: 9.389 min Scan# 1627
Delta R.T. 0.016 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:178 Resp: 149845

Ion	Ratio	Lower	Upper
178	100		
179	16.3	0.0	44.4
176	17.3	0.0	48.6

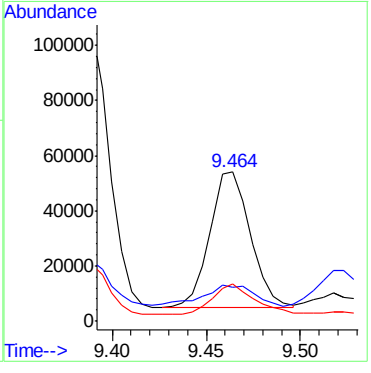




#78
Anthracene
Concen: 14.56 ppb
RT: 9.464 min Scan# 1641
Delta R.T. 0.021 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

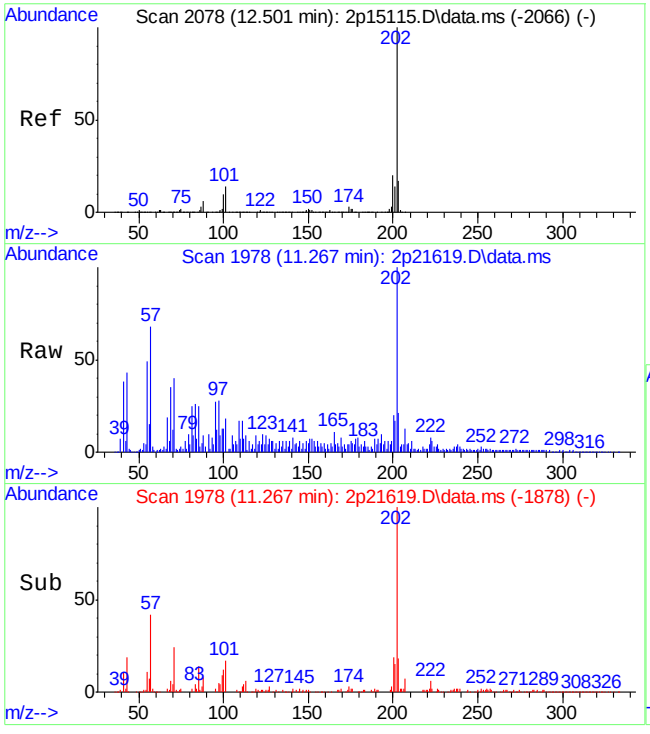
Tgt Ion:178 Resp: 72917

Ion	Ratio	Lower	Upper
178	100		
179	12.8	0.0	44.5
176	22.3	0.0	46.5



9.1.2

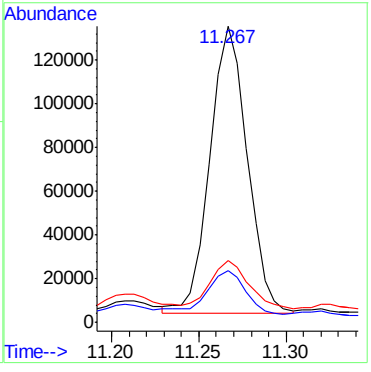
9

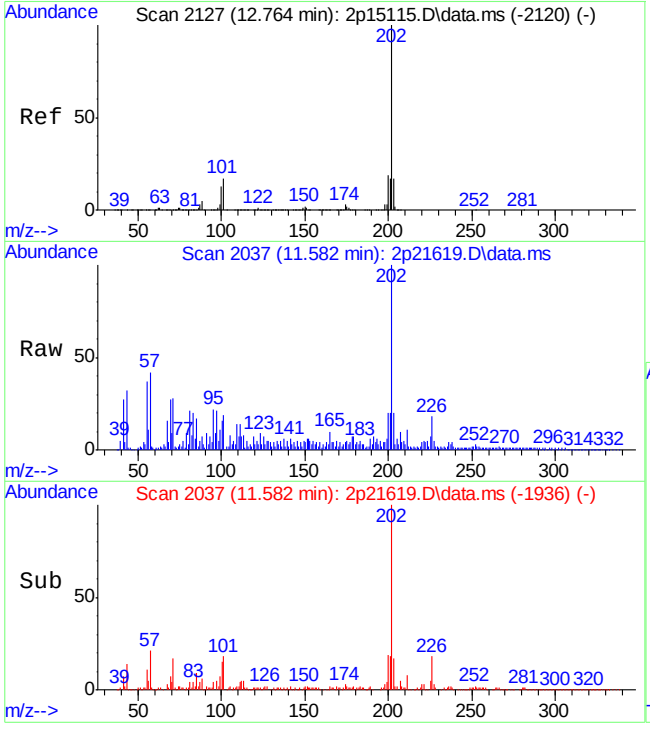


#81
Fluoranthene
Concen: 37.86 ppb
RT: 11.267 min Scan# 1978
Delta R.T. 0.038 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:202 Resp: 196667

Ion	Ratio	Lower	Upper
202	100		
101	17.6	0.0	41.3
203	20.9	0.0	49.1

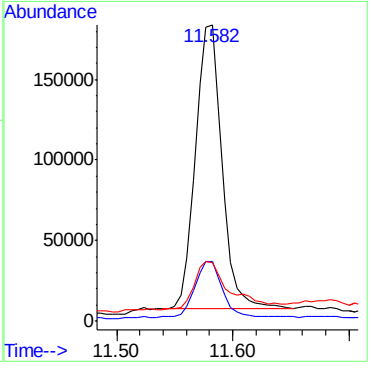


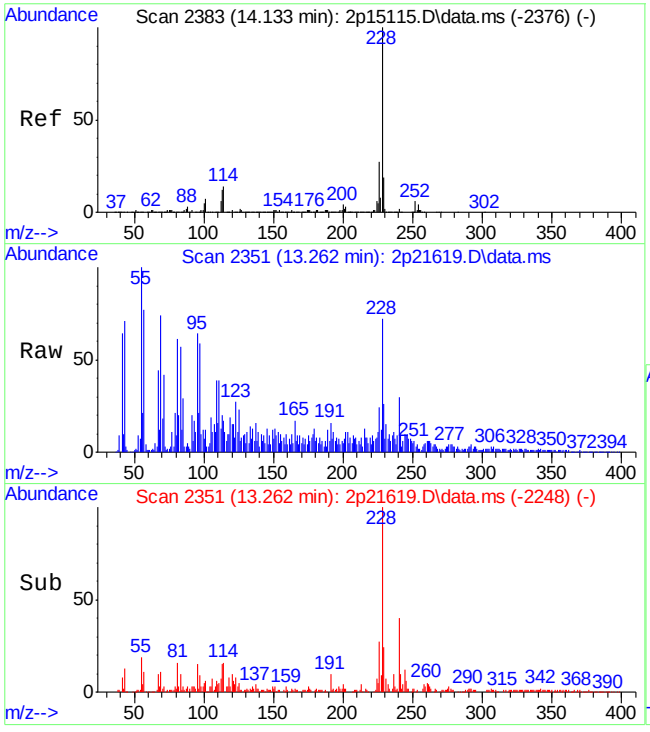


#84
Pyrene
Concen: 43.48 ppb
RT: 11.582 min Scan# 2037
Delta R.T. 0.043 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:202 Resp: 278708

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	49.6
203	15.2	0.0	46.9

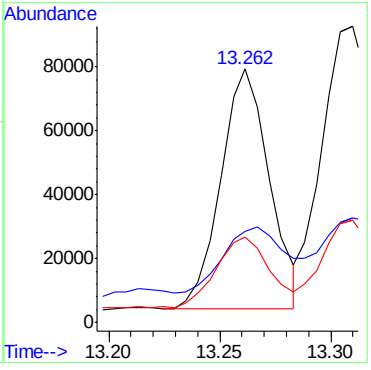


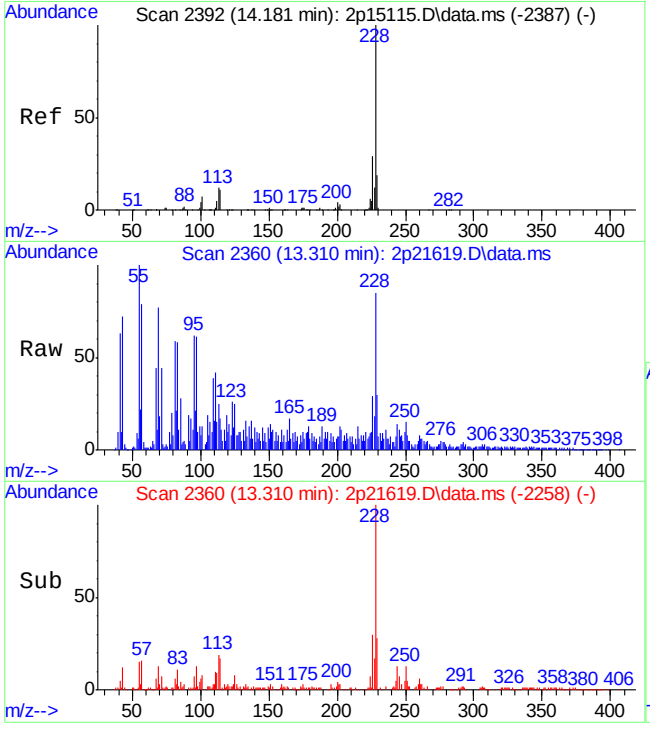


#88
Benzo[a]anthracene
Concen: 20.27 ppb
RT: 13.262 min Scan# 2351
Delta R.T. 0.048 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:228 Resp: 113654

Ion	Ratio	Lower	Upper
228	100		
229	19.9	0.0	50.7
226	28.5	0.0	56.7

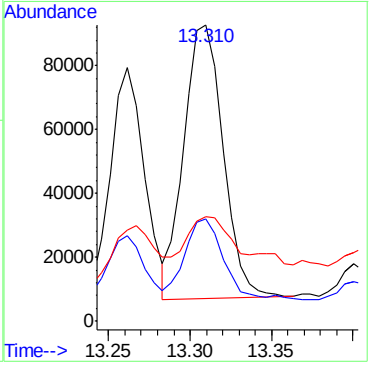




#90
Chrysene
Concen: 27.00 ppb
RT: 13.310 min Scan# 2360
Delta R.T. 0.043 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

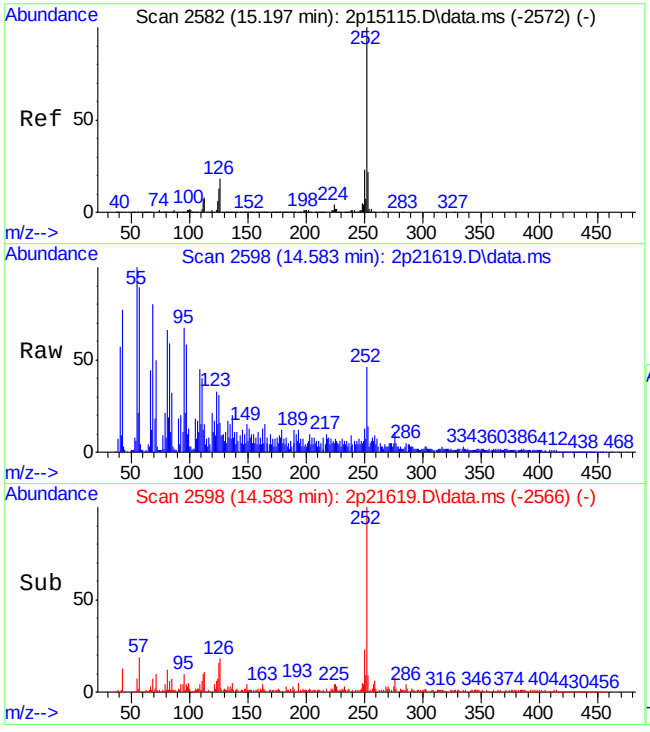
Tgt Ion:228 Resp: 144180

Ion	Ratio	Lower	Upper
228	100		
226	29.8	0.0	58.4
229	17.3	0.0	50.1



9.1.2

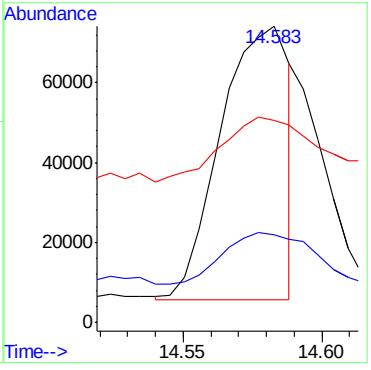
9

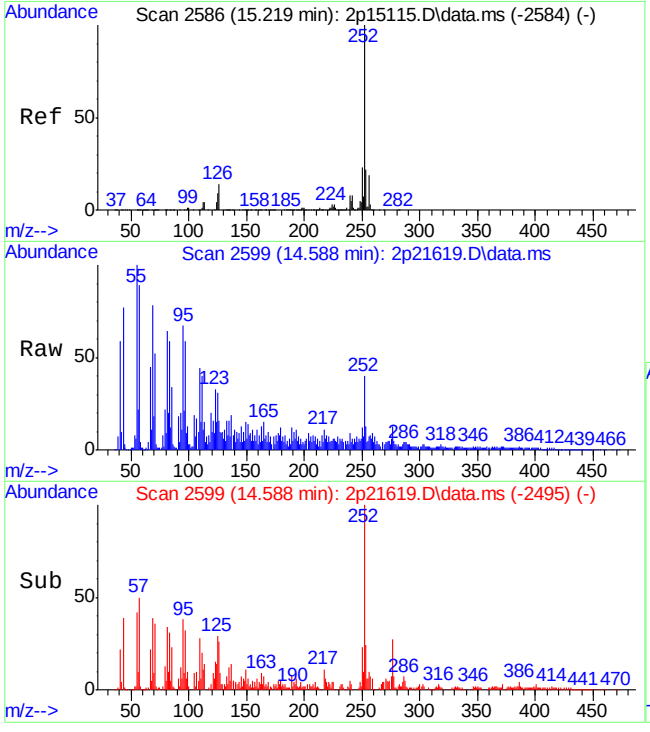


#94
Benzo[b]fluoranthene
Concen: 18.77 ppb m
RT: 14.583 min Scan# 2598
Delta R.T. 0.070 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:252 Resp: 118378

Ion	Ratio	Lower	Upper
252	100		
253	29.5	0.0	51.1
125	68.0	0.0	40.8#

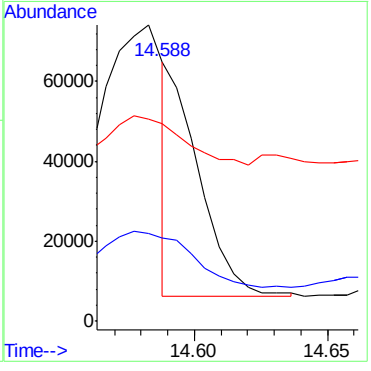


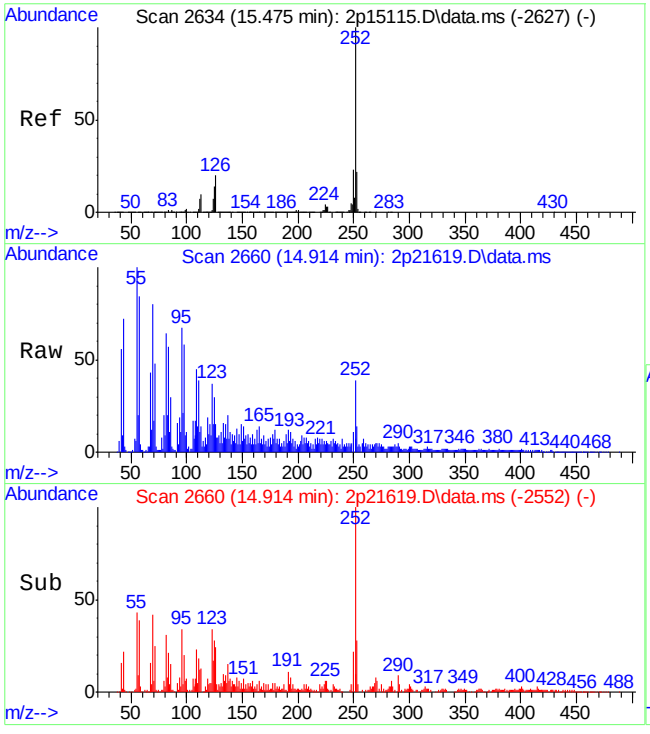


#95
Benzo[k]fluoranthene
Concen: 8.19 ppb m
RT: 14.588 min Scan# 2599
Delta R.T. 0.054 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:252 Resp: 45117

Ion	Ratio	Lower	Upper
252	100		
253	32.2	0.0	56.1
125	76.4	0.0	45.7#

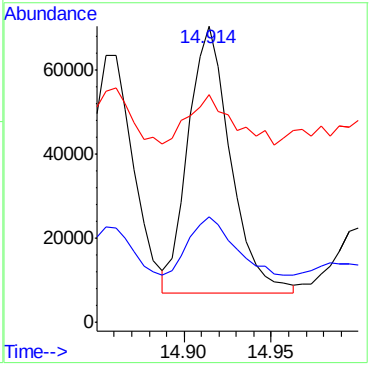


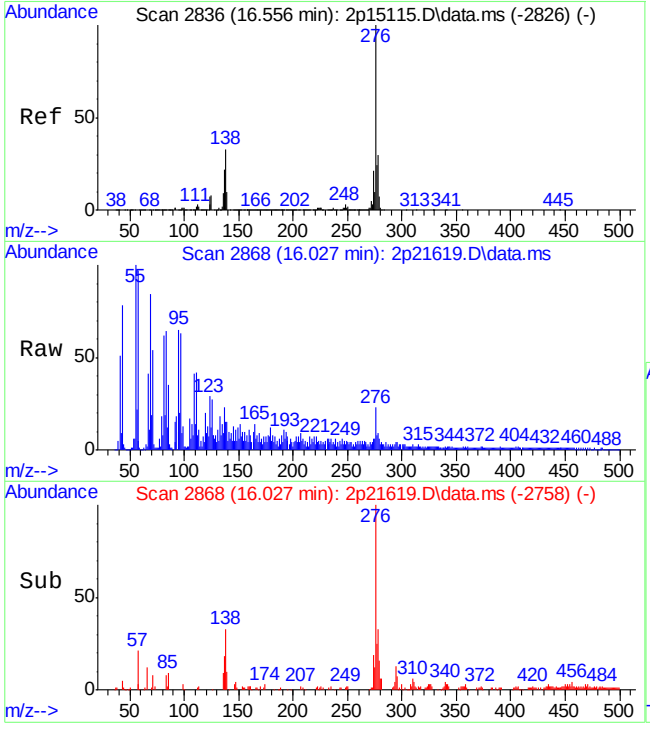


#96
Benzo[a]pyrene
Concen: 19.54 ppb
RT: 14.914 min Scan# 2660
Delta R.T. 0.075 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:252 Resp: 107038

Ion	Ratio	Lower	Upper
252	100		
253	23.2	0.0	51.5
125	16.9	0.0	41.1

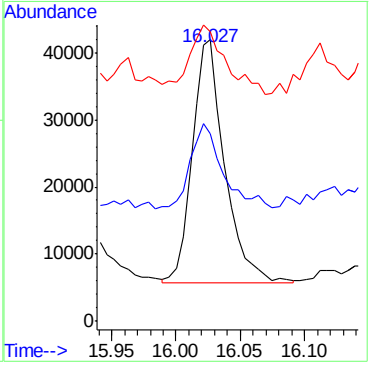




#97
Indeno[1,2,3-cd]pyrene
Concen: 10.02 ppb
RT: 16.027 min Scan# 2868
Delta R.T. 0.091 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

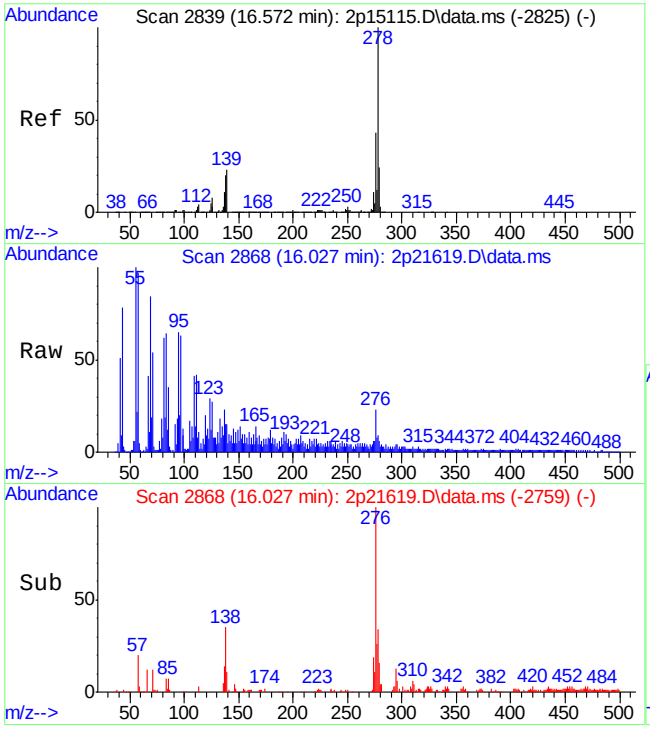
Tgt Ion:276 Resp: 63637

Ion	Ratio	Lower	Upper
276	100		
138	28.9	0.0	54.7
137	20.1	0.0	49.5



9.1.2

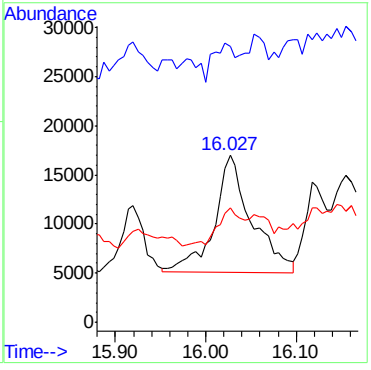
9

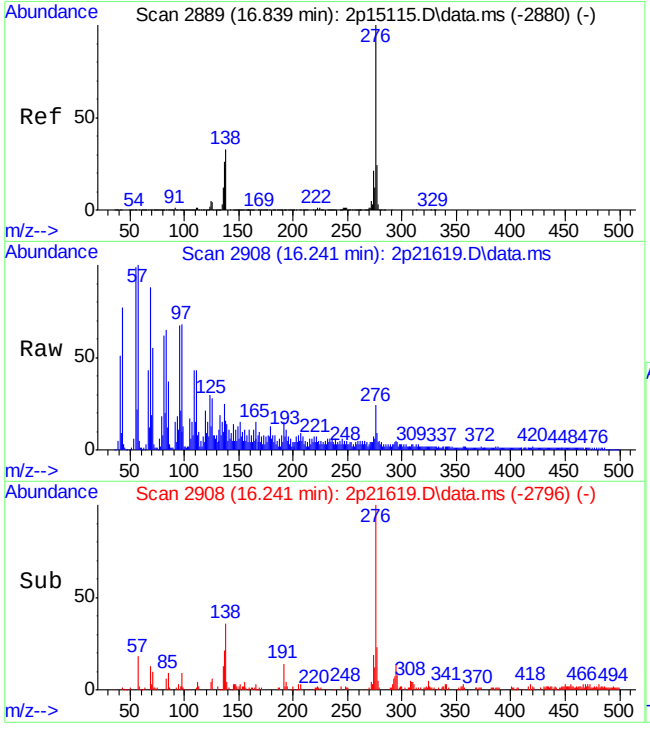


#99
Dibenz[a,h]anthracene
Concen: 6.50 ppb
RT: 16.027 min Scan# 2868
Delta R.T. 0.080 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:278 Resp: 34430

Ion	Ratio	Lower	Upper
278	100		
139	4.0	0.0	49.9
279	20.6	0.0	56.4

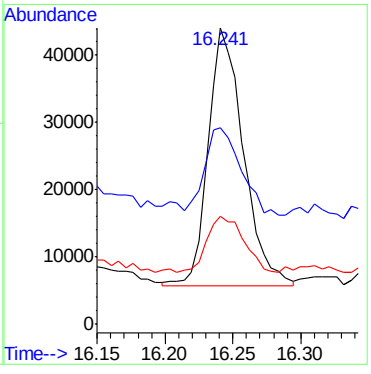




#101
Benzo[g,h,i]perylene
Concen: 12.84 ppb
RT: 16.241 min Scan# 2908
Delta R.T. 0.096 min
Lab File: 2p21619.D
Acq: 28 Mar 2013 3:54 am

Tgt Ion:276 Resp: 69299

Ion	Ratio	Lower	Upper
276	100		
138	31.4	0.0	55.6
277	21.4	0.0	53.3



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/28/13 13:43

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21587.D
Acq On : 27 Mar 2013 3:30 pm
Operator : andrews1
Sample : jb31265-3
Misc : op64470,e2p948,31.1,,,1,5
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Mar 28 12:42:32 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.869	152	44512	40.00	ppb	0.02
24) Naphthalene-d8	4.479	136	173547	40.00	ppb	0.03
47) Acenaphthene-d10	7.110	164	99184	40.00	ppb	0.04
69) Phenanthrene-d10	9.389	188	157947	40.00	ppb	0.05
83) Chrysene-d12	13.310	240	188967	40.00	ppb	0.07
92) Perylene-d12	15.000	264	177388	40.00	ppb	0.10
102) 1,4-Dichlorobenzene-d4a	2.869	152	44512	40.00	ppb	0.02
104) Acenaphthene-d10a	7.110	164	99184	40.00	ppb	0.04
107) Chrysene-d12a	13.310	240	188967	40.00	ppb	0.07
109) Naphthalene-d8a	4.479	136	173547	40.00	ppb	# 0.03
System Monitoring Compounds						
5) 2-Fluorophenol	0.000	112	0d	0.00	ppb	
Spiked Amount 50.000	Range 11 - 58		Recovery	=	0.00%#	
8) Phenol-d5	0.000	99	0d	0.00	ppb	
Spiked Amount 50.000	Range 10 - 59		Recovery	=	0.00%#	
25) Nitrobenzene-d5	3.596	82	5581m	3.50	ppb	0.04
Spiked Amount 50.000	Range 19 - 61		Recovery	=	7.00%#	
51) 2-Fluorobiphenyl	6.148	172	12408	3.91	ppb	0.03
Spiked Amount 50.000	Range 21 - 58		Recovery	=	7.82%#	
73) 2,4,6-Tribromophenol	0.000	330	0d	0.00	ppb	
Spiked Amount 50.000	Range 12 - 68		Recovery	=	0.00%#	
85) Terphenyl-d14	11.956	244	15803	3.97	ppb	0.06
Spiked Amount 50.000	Range 16 - 65		Recovery	=	7.94%#	
Target Compounds						Qvalue
44) 2-Methylnaphthalene	5.527	141	1833	0.69	ppb	95
56) Acenaphthylene	6.870	152	2969	0.65	ppb	79
59) Acenaphthene	7.153	153	1907	0.68	ppb	91
77) Phenanthrene	9.421	178	5712	1.20	ppb	93
78) Anthracene	9.501	178	3339	0.71	ppb	93
81) Fluoranthene	11.298	202	8821	1.81	ppb	46
84) Pyrene	11.609	202	43774	6.80	ppb	96
88) Benzo[a]anthracene	13.293	228	13228m	2.35	ppb	
90) Chrysene	13.336	228	32914m	6.14	ppb	
94) Benzo[b]fluoranthene	14.604	252	12545m	2.07	ppb	
95) Benzo[k]fluoranthene	14.609	252	6569m	1.24	ppb	
96) Benzo[a]pyrene	14.941	252	10115	1.93	ppb	86
97) Indeno[1,2,3-cd]pyrene	16.043	276	9646	1.58	ppb	77
101) Benzo[g,h,i]perylene	16.262	276	12233	2.36	ppb	92

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

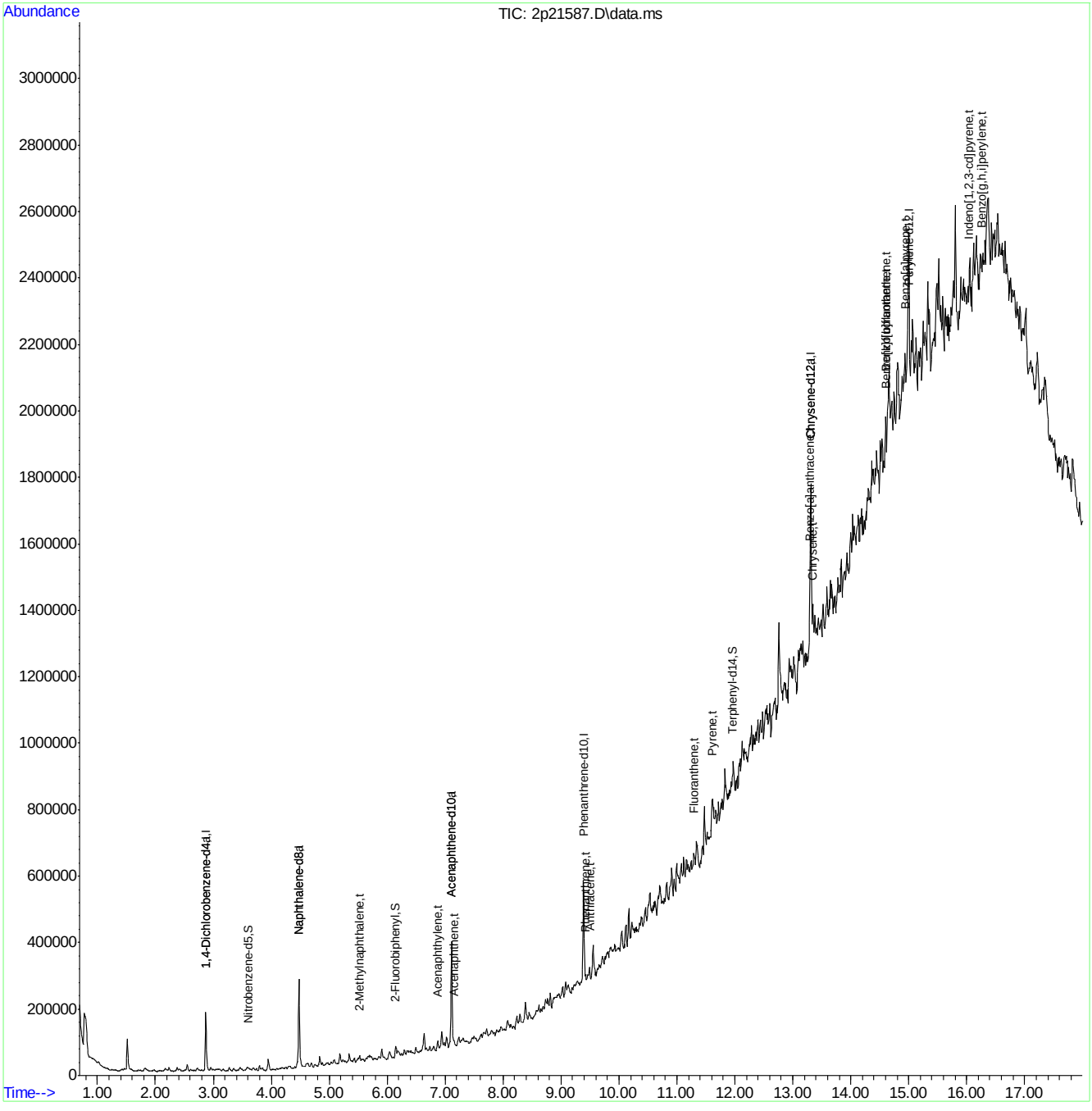
9.1.3

9

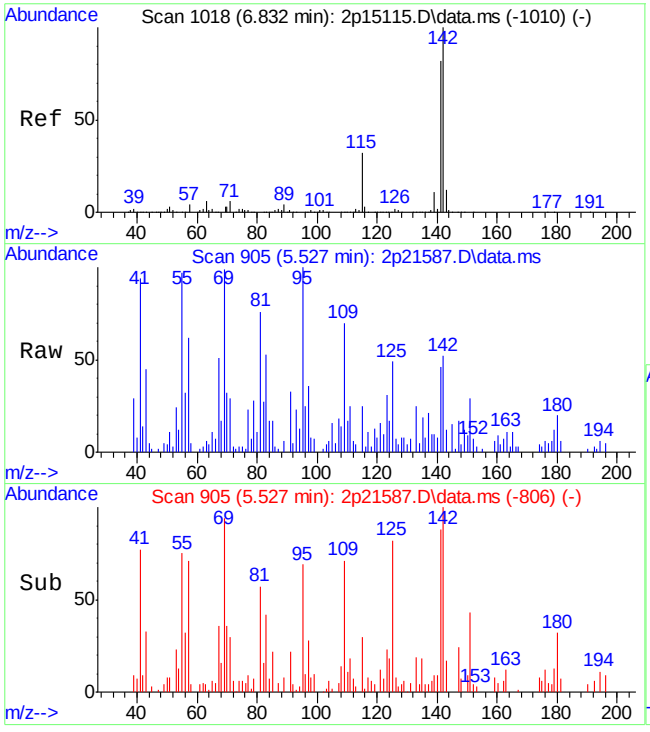
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21587.D
Acq On : 27 Mar 2013 3:30 pm
Operator : andrews1
Sample : jb31265-3
Misc : op64470,e2p948,31.1,,,1,5
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Mar 28 12:42:32 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration



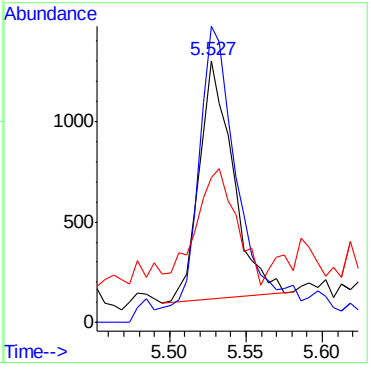
M2P896.M Thu Mar 28 12:42:39 2013 RPT1 Page: 2

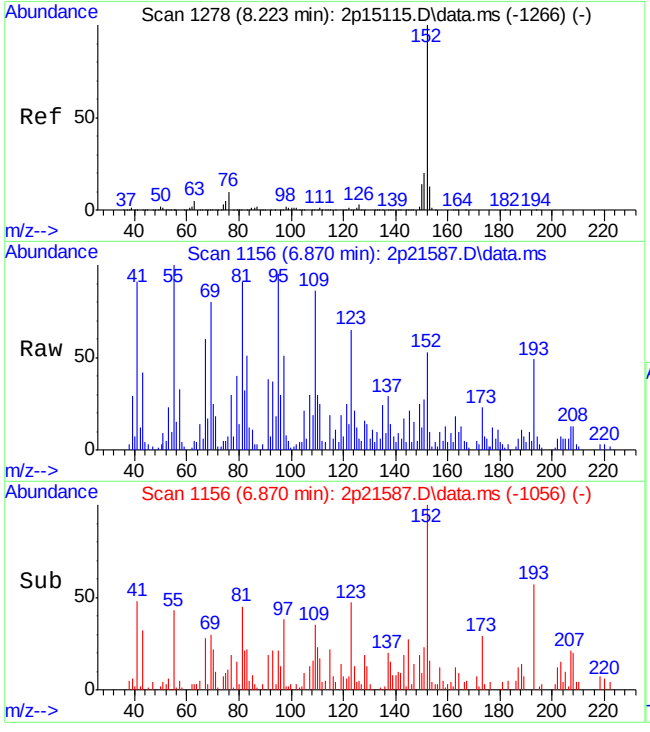


#44
2-Methylnaphthalene
Concen: 0.69 ppb
RT: 5.527 min Scan# 905
Delta R.T. 0.032 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:141 Resp: 1833

Ion	Ratio	Lower	Upper
141	100		
142	113.9	88.4	148.4
115	39.7	14.8	74.8

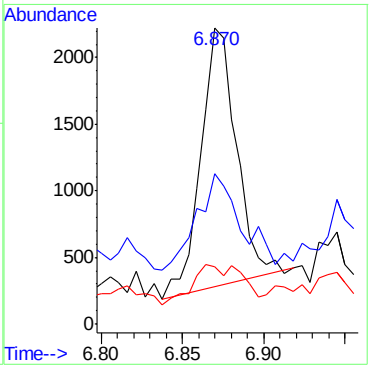


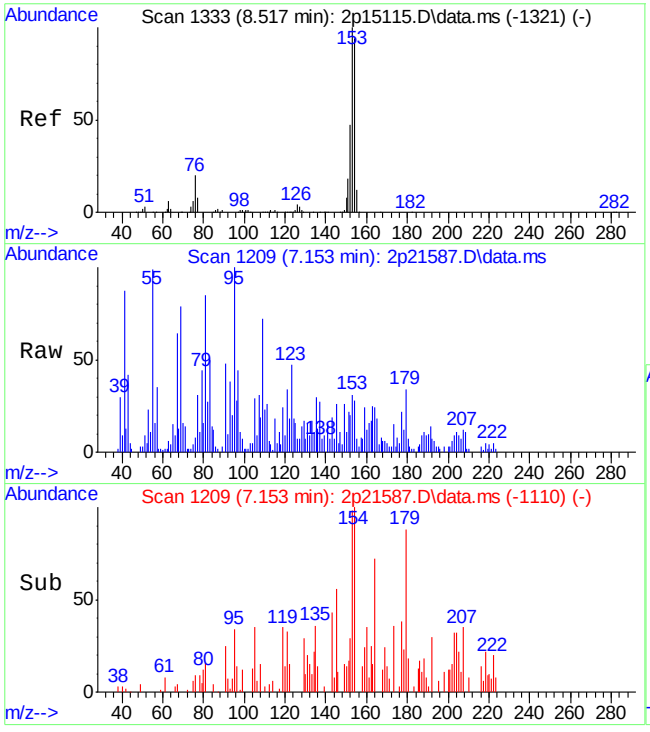


#56
Acenaphthylene
Concen: 0.65 ppb
RT: 6.870 min Scan# 1156
Delta R.T. 0.037 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:152 Resp: 2969

Ion	Ratio	Lower	Upper
152	100		
151	35.7	0.0	49.9
153	12.5	0.0	43.1

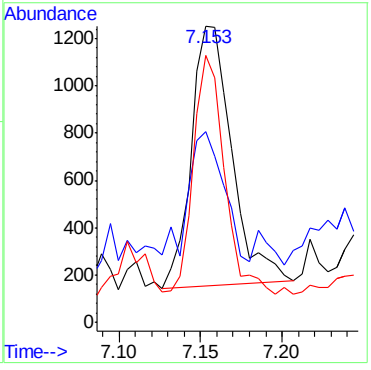


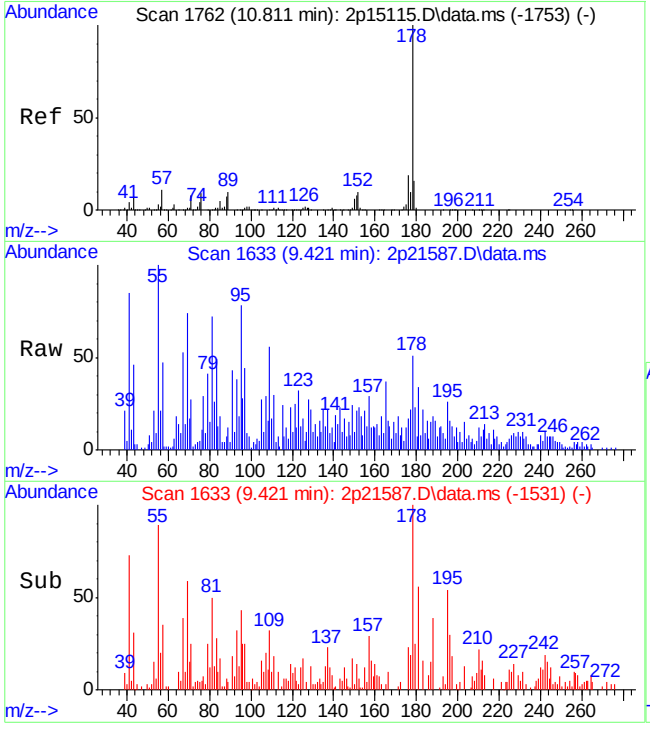


#59
Acenaphthene
Concen: 0.68 ppb
RT: 7.153 min Scan# 1209
Delta R.T. 0.032 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:153 Resp: 1907

Ion	Ratio	Lower	Upper
153	100		
152	46.6	17.8	77.8
154	82.5	65.2	125.2

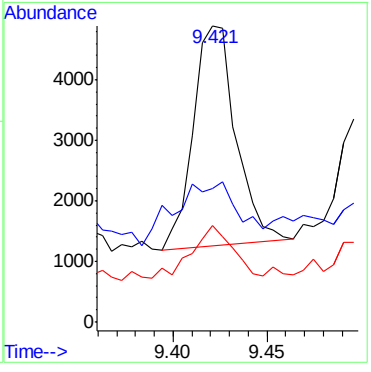




#77
Phenanthrene
Concen: 1.20 ppb
RT: 9.421 min Scan# 1633
Delta R.T. 0.048 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

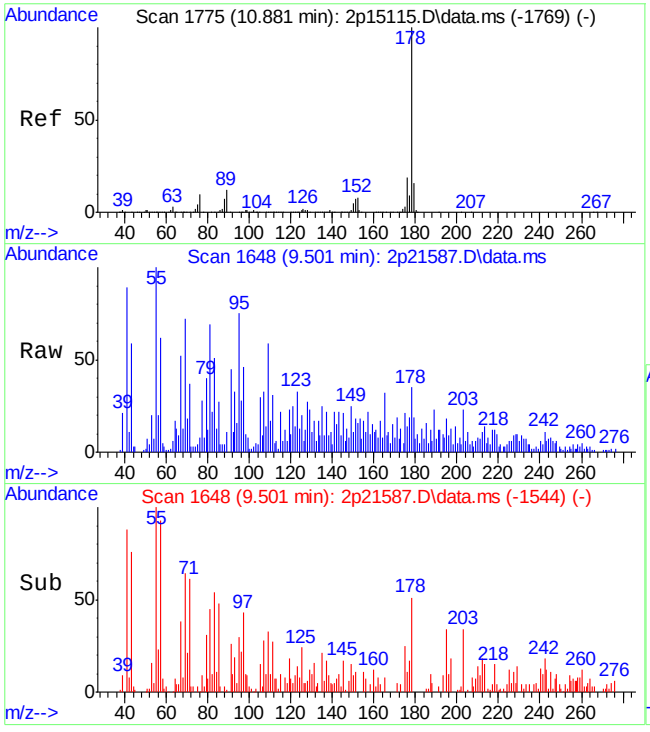
Tgt Ion:178 Resp: 5712

Ion	Ratio	Lower	Upper
178	100		
179	11.2	0.0	44.4
176	21.2	0.0	48.6



9.1.3

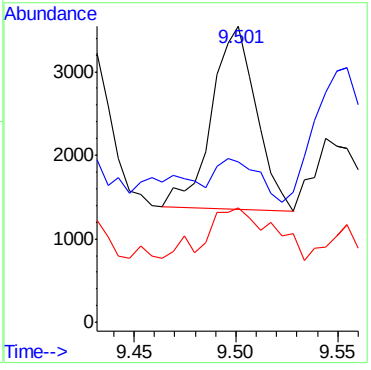
9

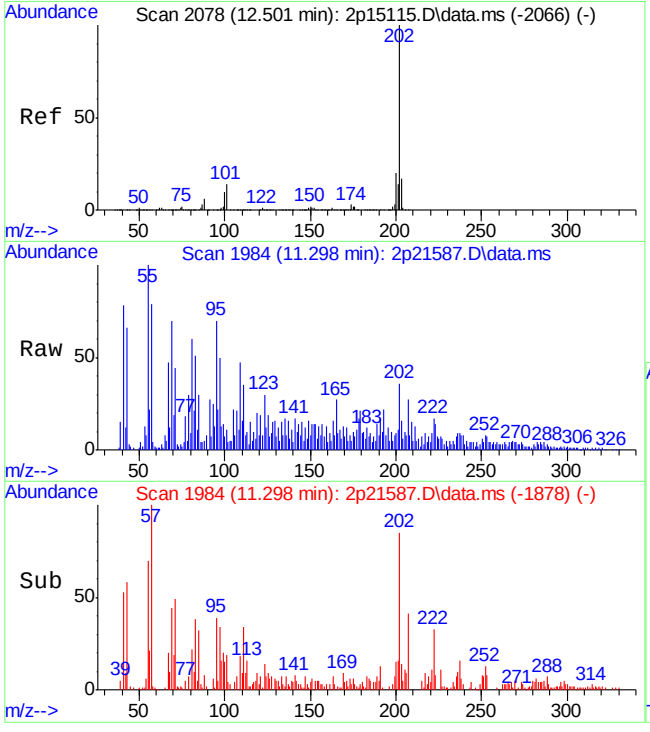


#78
Anthracene
Concen: 0.71 ppb
RT: 9.501 min Scan# 1648
Delta R.T. 0.059 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:178 Resp: 3339

Ion	Ratio	Lower	Upper
178	100		
179	13.5	0.0	44.5
176	21.0	0.0	46.5

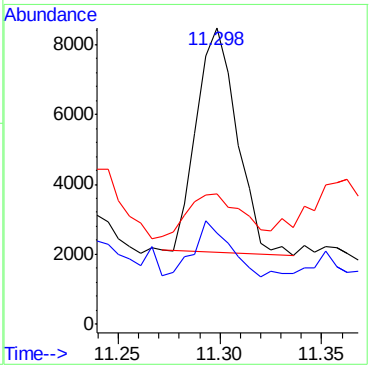


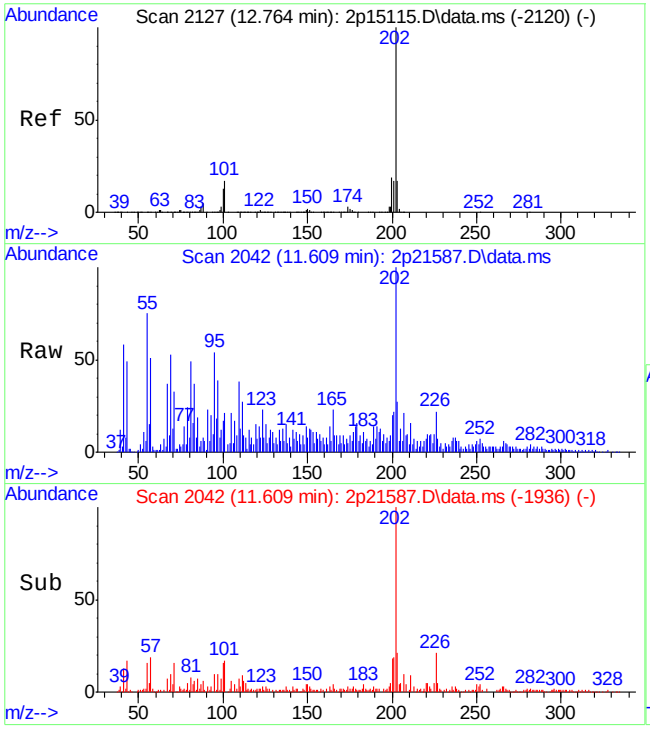


#81
Fluoranthene
Concen: 1.81 ppb
RT: 11.298 min Scan# 1984
Delta R.T. 0.069 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:202 Resp: 8821

Ion	Ratio	Lower	Upper
202	100		
101	30.8	0.0	41.3
203	44.1	0.0	49.1

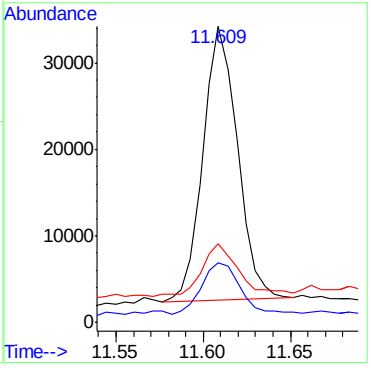


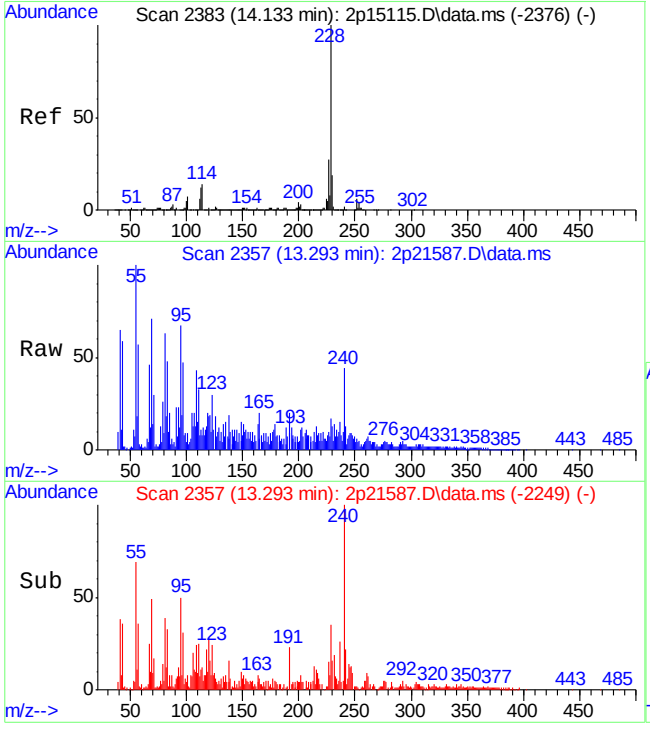


#84
Pyrene
Concen: 6.80 ppb
RT: 11.609 min Scan# 2042
Delta R.T. 0.069 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:202 Resp: 43774

Ion	Ratio	Lower	Upper
202	100		
200	17.6	0.0	49.6
203	18.3	0.0	46.9

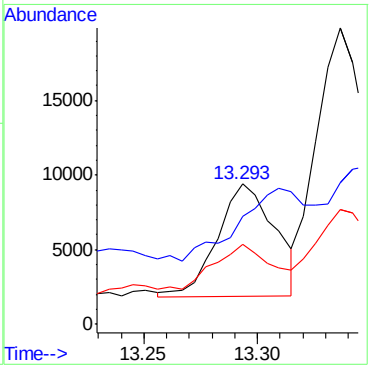




#88
Benzo[a]anthracene
Concen: 2.35 ppb m
RT: 13.293 min Scan# 2357
Delta R.T. 0.080 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

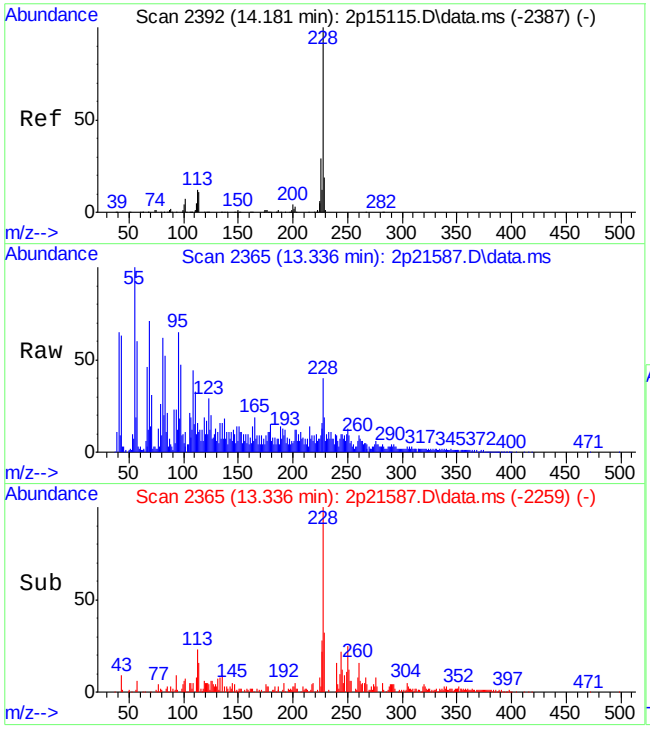
Tgt Ion:228 Resp: 13228

Ion	Ratio	Lower	Upper
228	100		
229	77.0	0.0	50.7#
226	56.9	0.0	56.7#



9.1.3

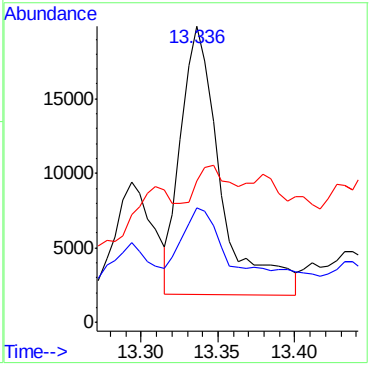
9

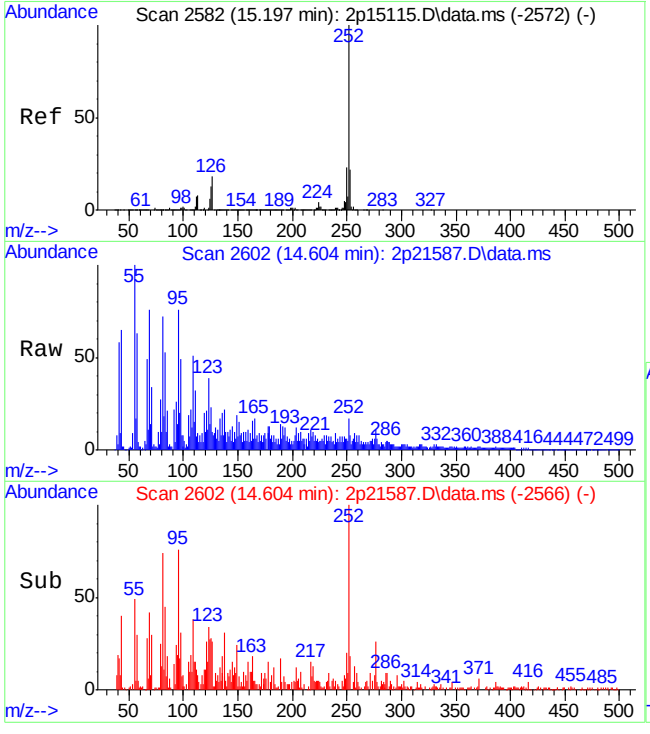


#90
Chrysene
Concen: 6.14 ppb m
RT: 13.336 min Scan# 2365
Delta R.T. 0.069 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:228 Resp: 32914

Ion	Ratio	Lower	Upper
228	100		
226	38.7	0.0	58.4
229	47.8	0.0	50.1

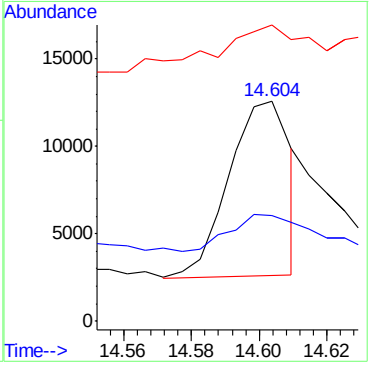




#94
Benzo[b]fluoranthene
Concen: 2.07 ppb m
RT: 14.604 min Scan# 2602
Delta R.T. 0.091 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

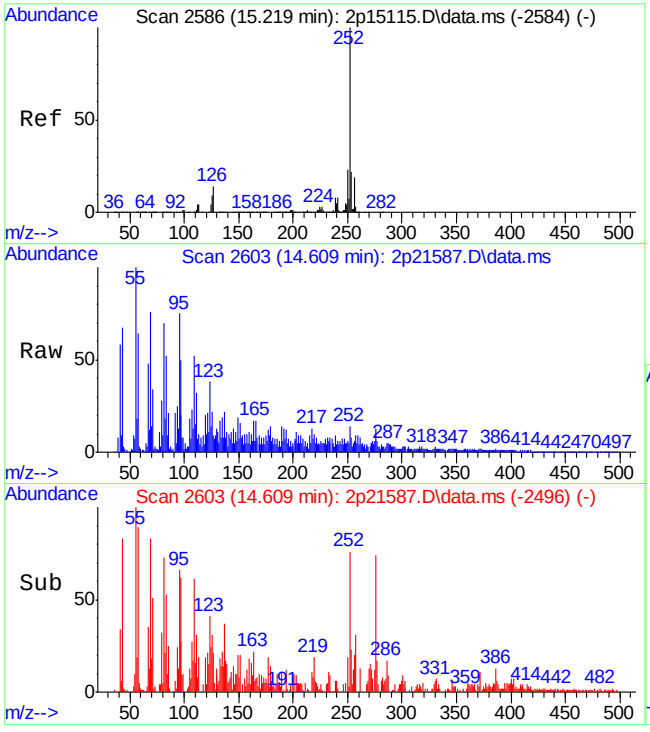
Tgt Ion:252 Resp: 12545

Ion	Ratio	Lower	Upper
252	100		
253	47.7	0.0	51.1
125	134.6	0.0	40.8#



9.1.3

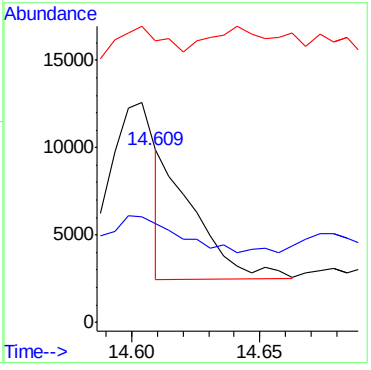
9

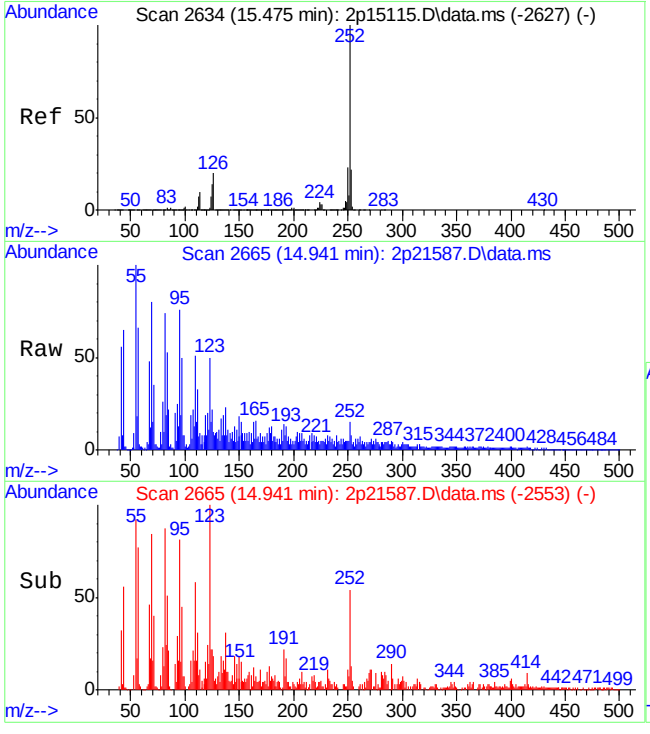


#95
Benzo[k]fluoranthene
Concen: 1.24 ppb m
RT: 14.609 min Scan# 2603
Delta R.T. 0.075 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:252 Resp: 6569

Ion	Ratio	Lower	Upper
252	100		
253	57.1	0.0	56.1#
125	163.2	0.0	45.7#

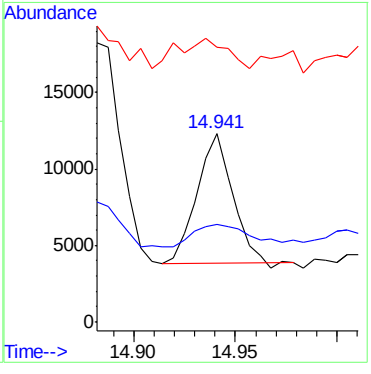


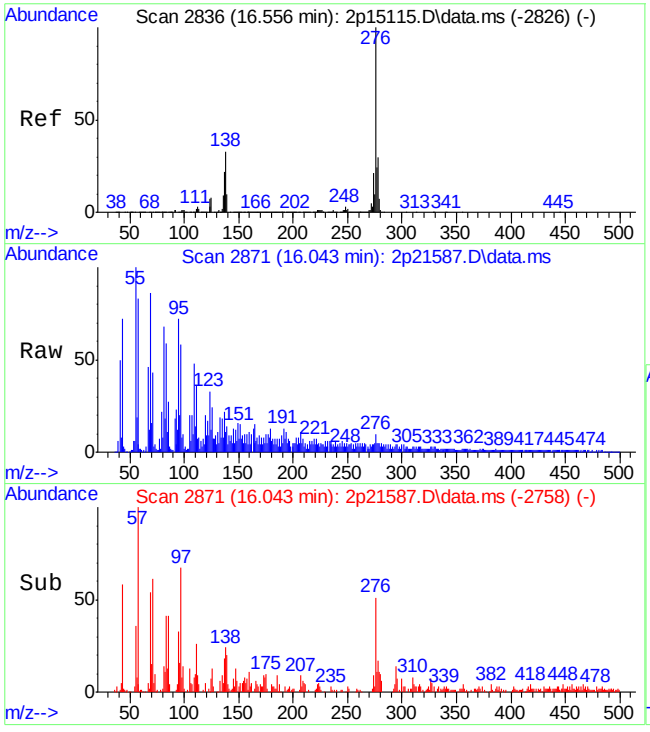


#96
Benzo[a]pyrene
Concen: 1.93 ppb
RT: 14.941 min Scan# 2665
Delta R.T. 0.102 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:252 Resp: 10115

Ion	Ratio	Lower	Upper
252	100		
253	14.6	0.0	51.5
125	6.6	0.0	41.1

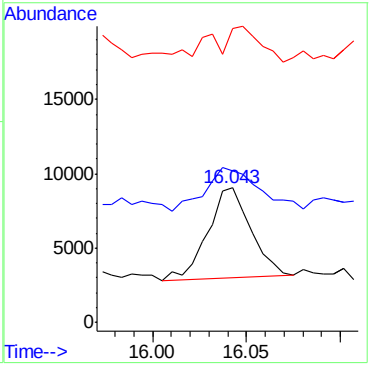


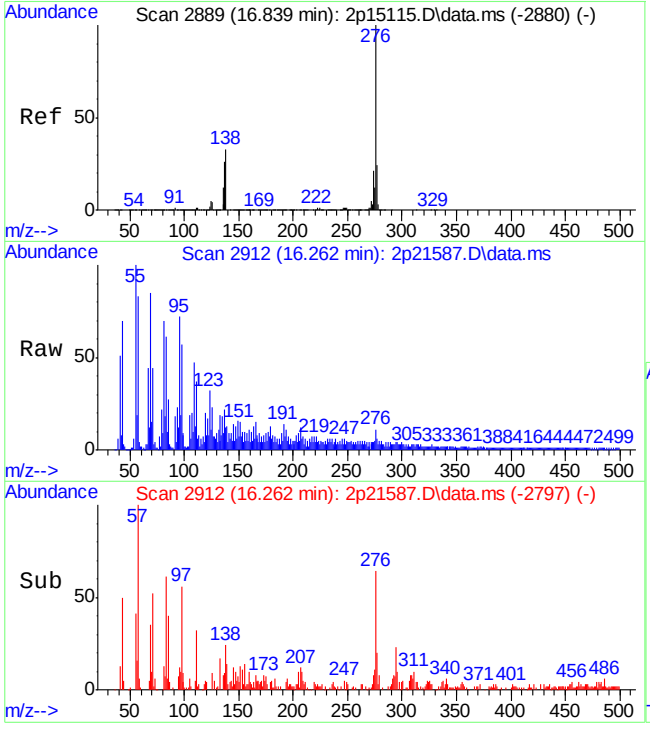


#97
Indeno[1,2,3-cd]pyrene
Concen: 1.58 ppb
RT: 16.043 min Scan# 2871
Delta R.T. 0.107 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:276 Resp: 9646

Ion	Ratio	Lower	Upper
276	100		
138	35.3	0.0	54.7
137	30.8	0.0	49.5

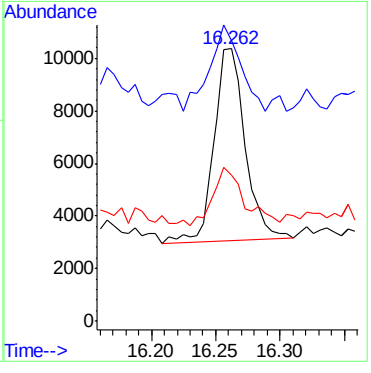




#101
Benzo[g,h,i]perylene
Concen: 2.36 ppb
RT: 16.262 min Scan# 2912
Delta R.T. 0.118 min
Lab File: 2p21587.D
Acq: 27 Mar 2013 3:30 pm

Tgt Ion:276 Resp: 12233

Ion	Ratio	Lower	Upper
276	100		
138	31.1	0.0	55.6
277	21.1	0.0	53.3



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/28/13 13:43

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21588.D
Acq On : 27 Mar 2013 3:52 pm
Operator : andrews1
Sample : jb31265-4
Misc : op64470,e2p948,30.1,,,1,5
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Mar 28 12:43:29 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.874	152	43196	40.00	ppb	0.02
24) Naphthalene-d8	4.479	136	173942	40.00	ppb	0.03
47) Acenaphthene-d10	7.116	164	98052	40.00	ppb	0.04
69) Phenanthrene-d10	9.394	188	161895	40.00	ppb	0.06
83) Chrysene-d12	13.320	240	185730	40.00	ppb	0.09
92) Perylene-d12	15.005	264	179544	40.00	ppb	0.11
102) 1,4-Dichlorobenzene-d4a	2.874	152	43196	40.00	ppb	0.02
104) Acenaphthene-d10a	7.116	164	98052	40.00	ppb	0.04
107) Chrysene-d12a	13.320	240	185730	40.00	ppb	0.09
109) Naphthalene-d8a	4.479	136	173942	40.00	ppb	# 0.03
System Monitoring Compounds						
5) 2-Fluorophenol	1.821	112	3426	2.22	ppb	0.05
Spiked Amount 50.000	Range 11 - 58		Recovery	=	4.44%#	
8) Phenol-d5	2.719	99	5048	2.63	ppb	0.09
Spiked Amount 50.000	Range 10 - 59		Recovery	=	5.26%#	
25) Nitrobenzene-d5	3.602	82	5007m	3.13	ppb	0.04
Spiked Amount 50.000	Range 19 - 61		Recovery	=	6.26%#	
51) 2-Fluorobiphenyl	6.153	172	11982	3.82	ppb	0.03
Spiked Amount 50.000	Range 21 - 58		Recovery	=	7.64%#	
73) 2,4,6-Tribromophenol	8.410	330	1221	3.37	ppb	0.06
Spiked Amount 50.000	Range 12 - 68		Recovery	=	6.74%#	
85) Terphenyl-d14	11.962	244	14391	3.68	ppb	0.07
Spiked Amount 50.000	Range 16 - 65		Recovery	=	7.36%#	
Target Compounds						Qvalue
44) 2-Methylnaphthalene	5.533	141	1379	0.52	ppb	81
56) Acenaphthylene	6.880	152	3775m	0.83	ppb	
59) Acenaphthene	7.159	153	4175	1.50	ppb	84
66) Fluorene	7.950	166	2929	0.91	ppb	80
77) Phenanthrene	9.426	178	5093	1.04	ppb	81
78) Anthracene	9.507	178	5948	1.23	ppb	90
81) Fluoranthene	11.304	202	13200	2.64	ppb	51
84) Pyrene	11.619	202	59356	9.38	ppb	98
88) Benzo[a]anthracene	13.299	228	14648m	2.65	ppb	
90) Chrysene	13.342	228	32598m	6.18	ppb	
94) Benzo[b]fluoranthene	14.609	252	18939m	3.09	ppb	
95) Benzo[k]fluoranthene	14.625	252	4693m	0.88	ppb	
96) Benzo[a]pyrene	14.946	252	15340	2.88	ppb	97
97) Indeno[1,2,3-cd]pyrene	16.053	276	12641	2.05	ppb	74
101) Benzo[g,h,i]perylene	16.273	276	15144	2.89	ppb	96

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

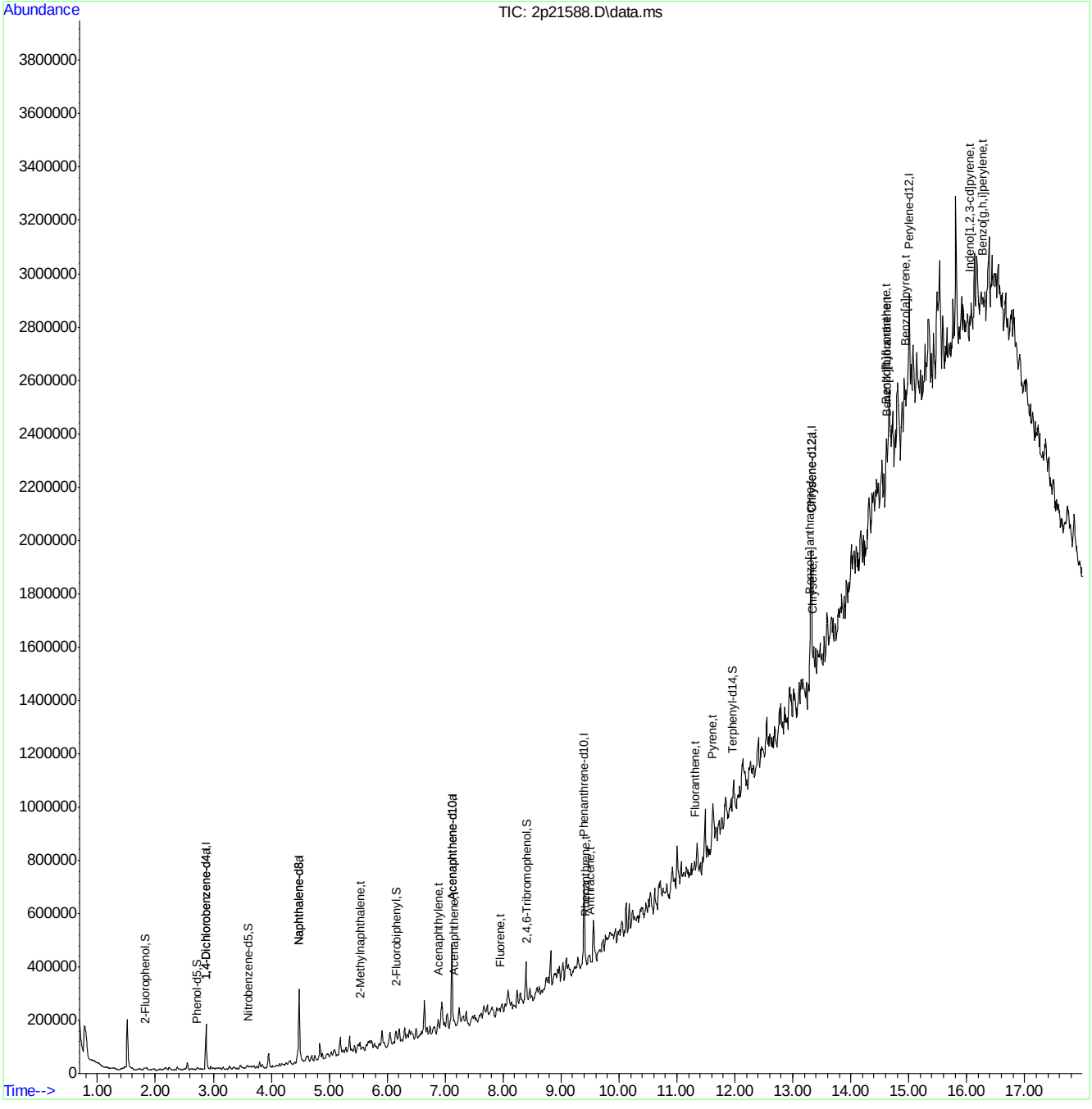
9.1.4

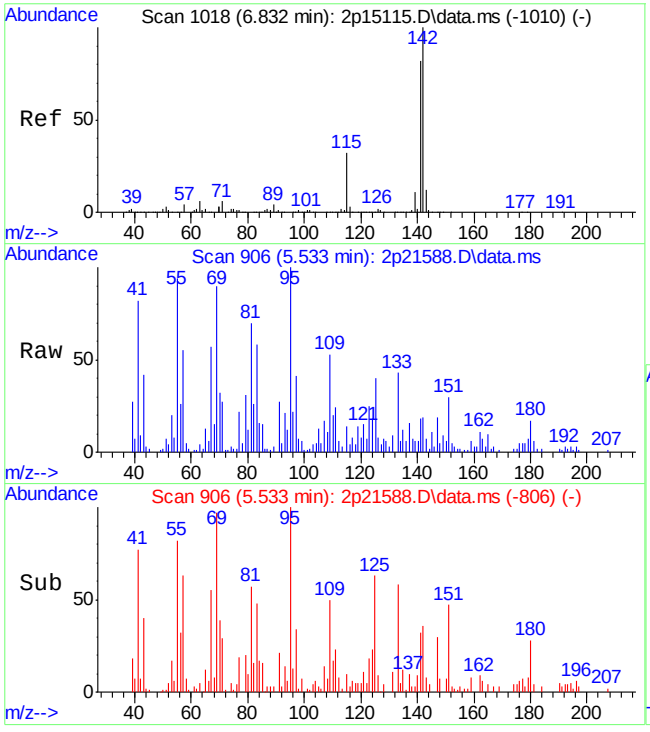
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21588.D
Acq On : 27 Mar 2013 3:52 pm
Operator : andrews1
Sample : jb31265-4
Misc : op64470,e2p948,30.1,,,1,5
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Mar 28 12:43:29 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

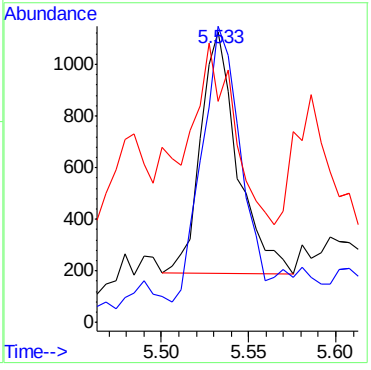


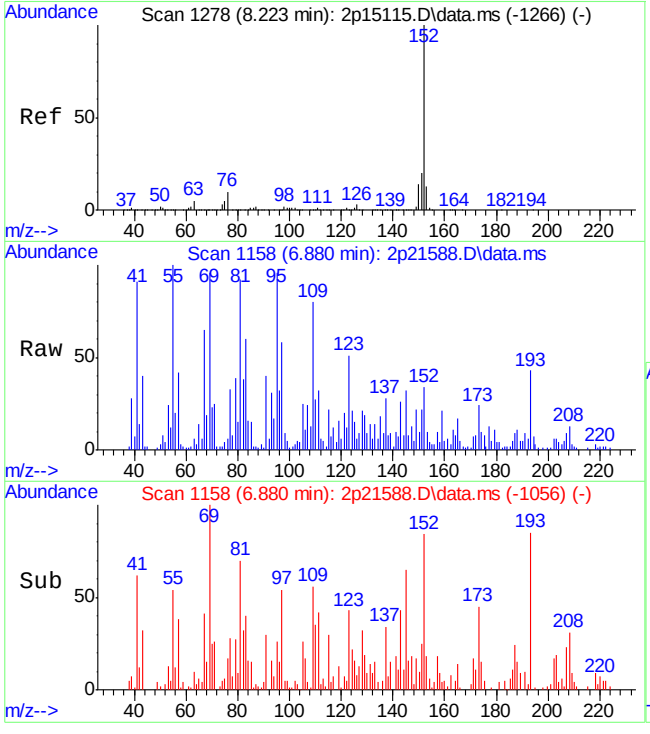


#44
2-Methylnaphthalene
Concen: 0.52 ppb
RT: 5.533 min Scan# 906
Delta R.T. 0.037 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:141 Resp: 1379

Ion	Ratio	Lower	Upper
141	100		
142	108.0	88.4	148.4
115	15.6	14.8	74.8

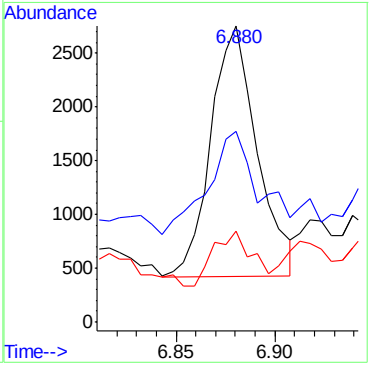


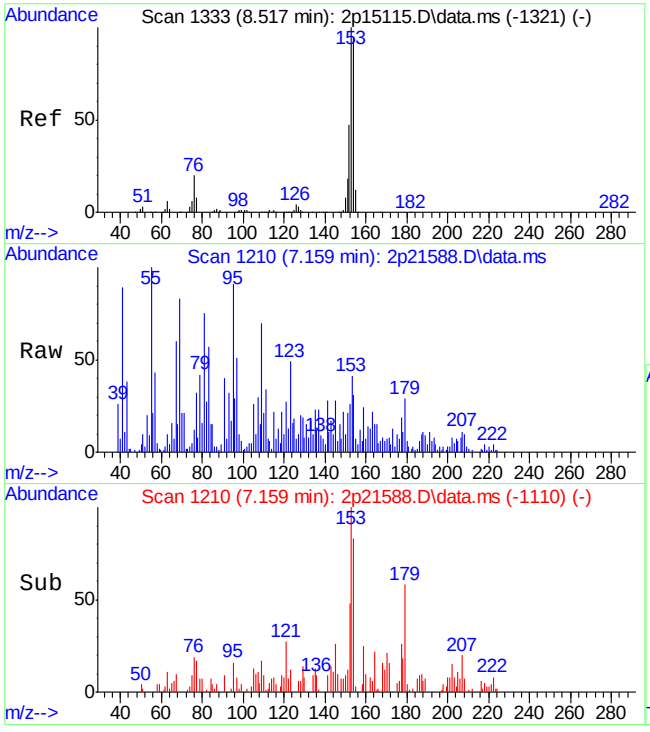


#56
Acenaphthylene
Concen: 0.83 ppb m
RT: 6.880 min Scan# 1158
Delta R.T. 0.048 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:152 Resp: 3775

Ion	Ratio	Lower	Upper
152	100		
151	64.6	0.0	49.9#
153	30.6	0.0	43.1

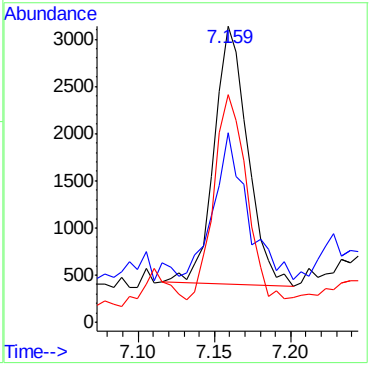


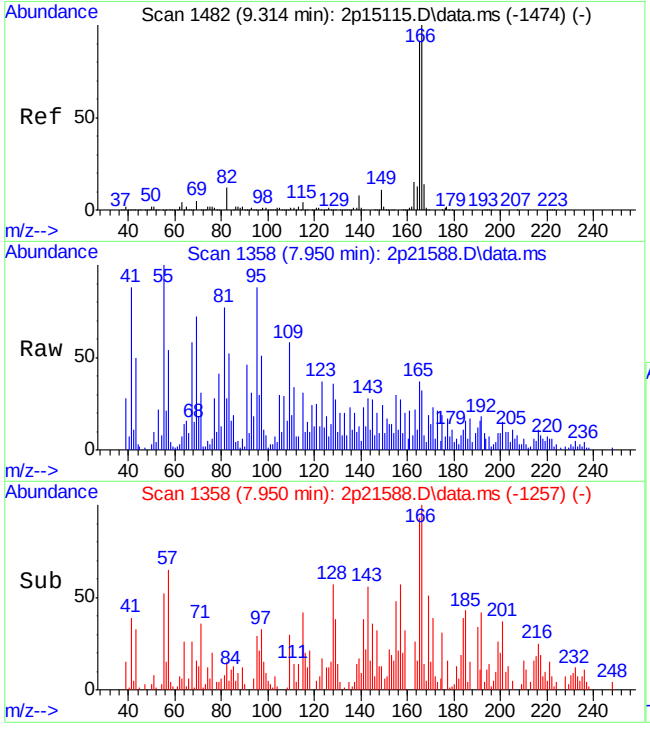


#59
Acenaphthene
Concen: 1.50 ppb
RT: 7.159 min Scan# 1210
Delta R.T. 0.037 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:153 Resp: 4175

Ion	Ratio	Lower	Upper
153	100		
152	53.4	17.8	77.8
154	75.5	65.2	125.2

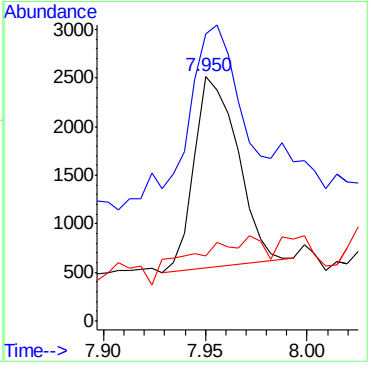




#66
Fluorene
Concen: 0.91 ppb
RT: 7.950 min Scan# 1358
Delta R.T. 0.043 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

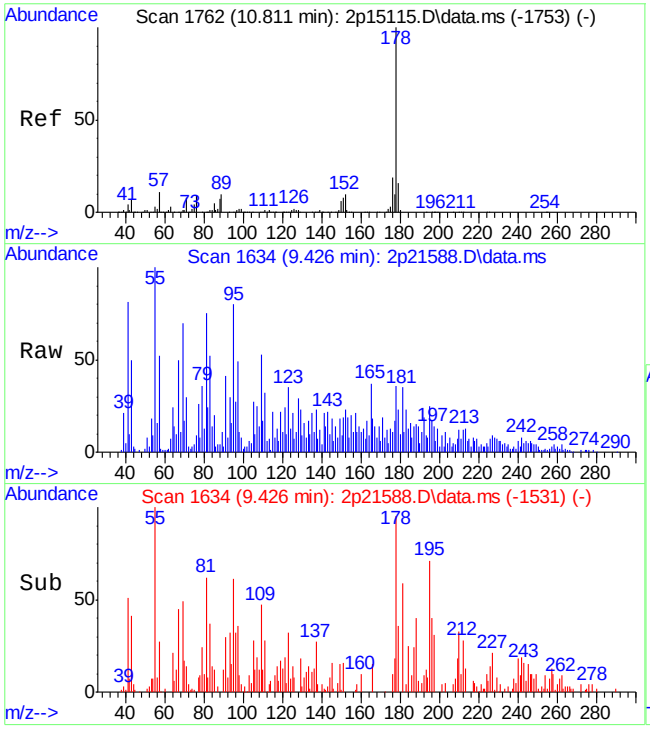
Tgt Ion:166 Resp: 2929

Ion	Ratio	Lower	Upper
166	100		
165	74.9	62.5	122.5
167	0.0	0.0	42.9



9.1.4

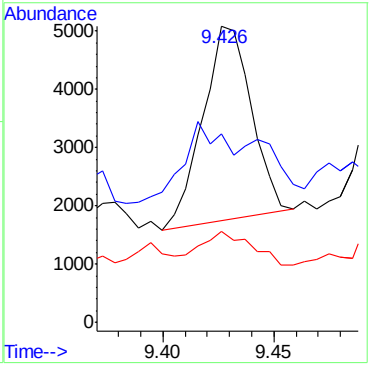
9

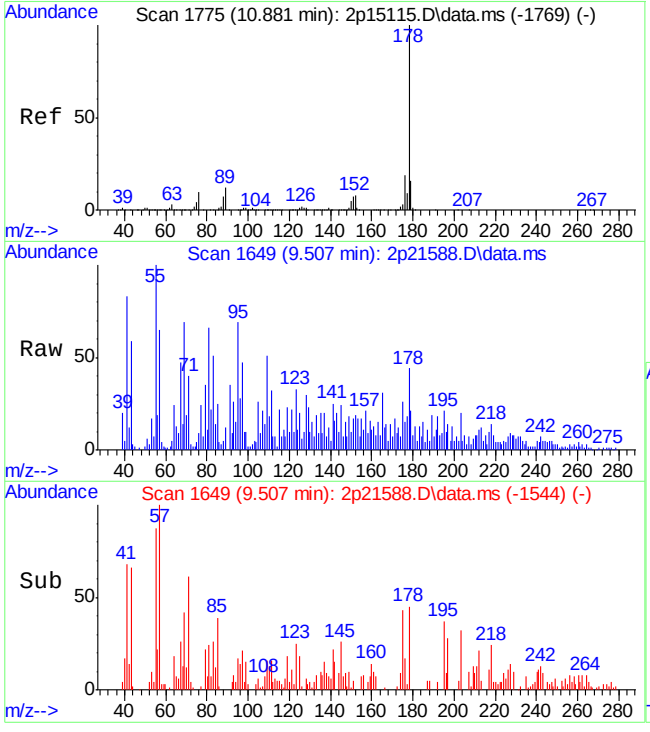


#77
Phenanthrene
Concen: 1.04 ppb
RT: 9.426 min Scan# 1634
Delta R.T. 0.053 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:178 Resp: 5093

Ion	Ratio	Lower	Upper
178	100		
179	28.0	0.0	44.4
176	14.8	0.0	48.6

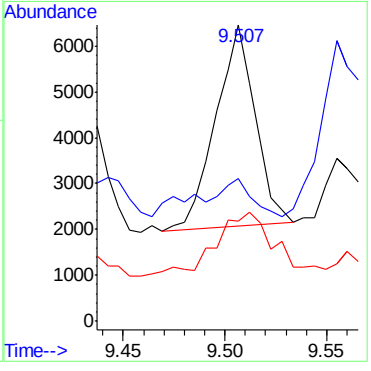




#78
Anthracene
Concen: 1.23 ppb
RT: 9.507 min Scan# 1649
Delta R.T. 0.064 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

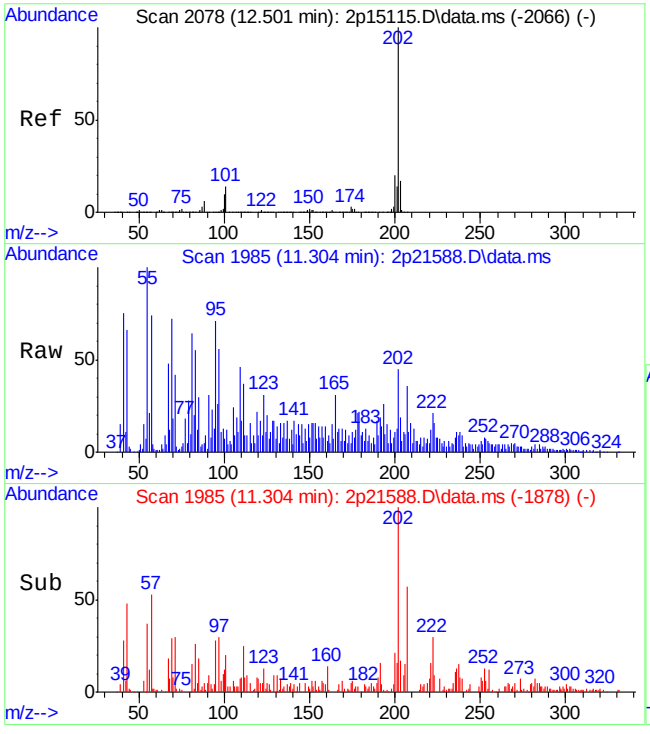
Tgt Ion:178 Resp: 5948

Ion	Ratio	Lower	Upper
178	100		
179	13.3	0.0	44.5
176	23.8	0.0	46.5



9.1.4

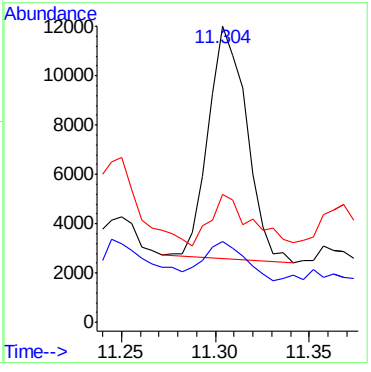
9

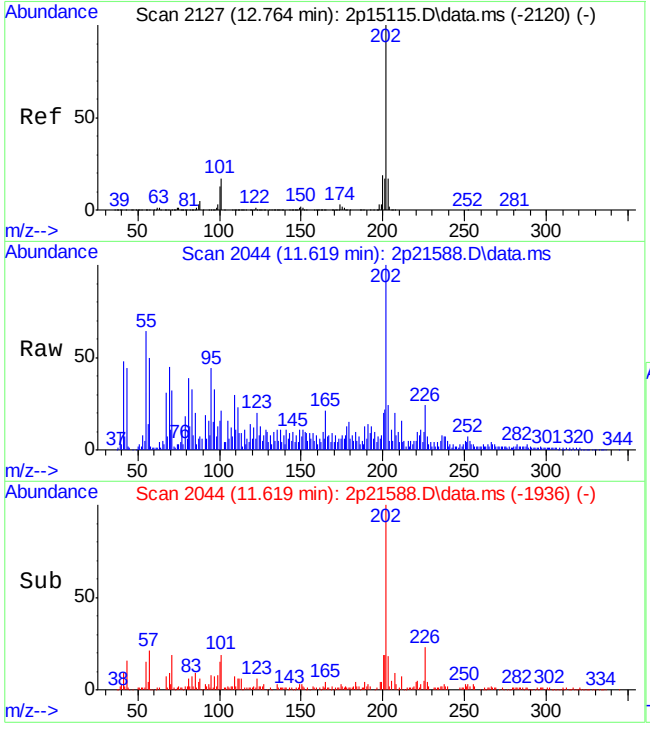


#81
Fluoranthene
Concen: 2.64 ppb
RT: 11.304 min Scan# 1985
Delta R.T. 0.075 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:202 Resp: 13200

Ion	Ratio	Lower	Upper
202	100		
101	27.4	0.0	41.3
203	43.1	0.0	49.1

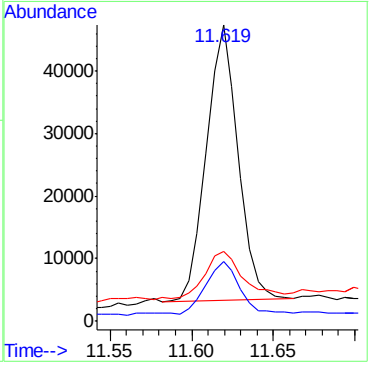




#84
Pyrene
Concen: 9.38 ppb
RT: 11.619 min Scan# 2044
Delta R.T. 0.080 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

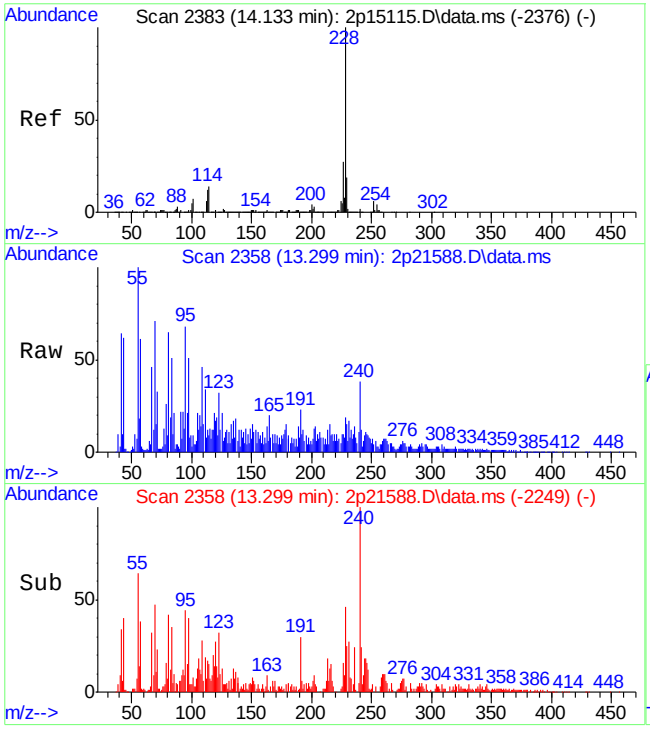
Tgt Ion:202 Resp: 59356

Ion	Ratio	Lower	Upper
202	100		
200	18.9	0.0	49.6
203	16.2	0.0	46.9



9.1.4

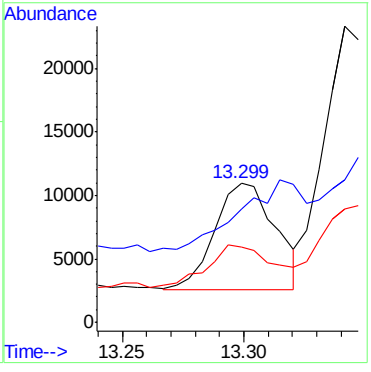
9

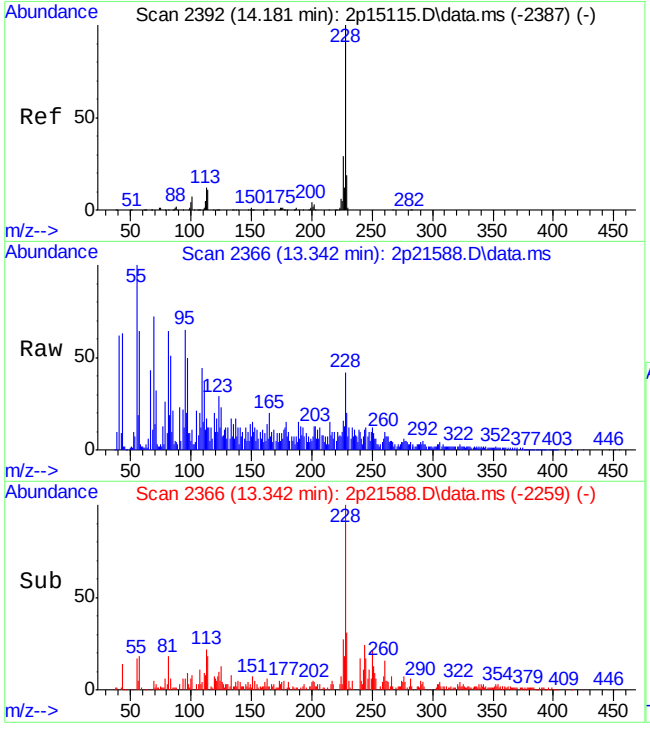


#88
Benzo[a]anthracene
Concen: 2.65 ppb m
RT: 13.299 min Scan# 2358
Delta R.T. 0.086 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:228 Resp: 14648

Ion	Ratio	Lower	Upper
228	100		
229	80.9	0.0	50.7#
226	54.1	0.0	56.7

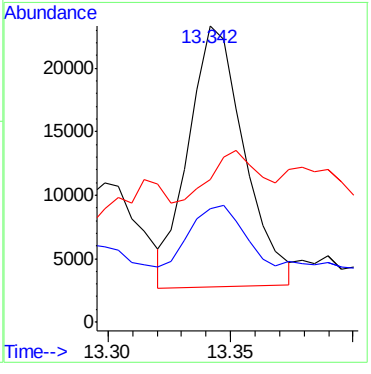


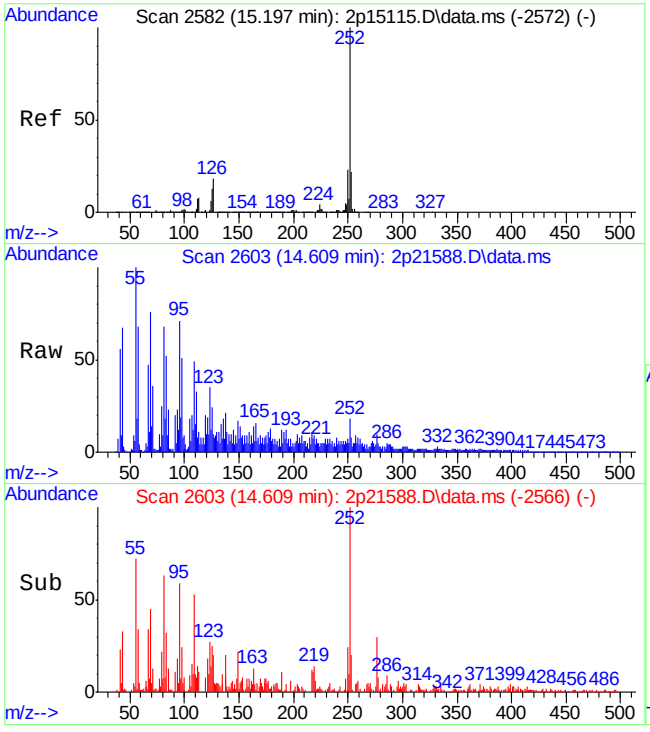


#90
Chrysene
Concen: 6.18 ppb m
RT: 13.342 min Scan# 2366
Delta R.T. 0.075 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:228 Resp: 32598

Ion	Ratio	Lower	Upper
228	100		
226	38.1	0.0	58.4
229	48.0	0.0	50.1

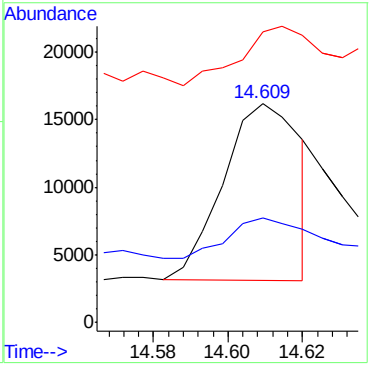


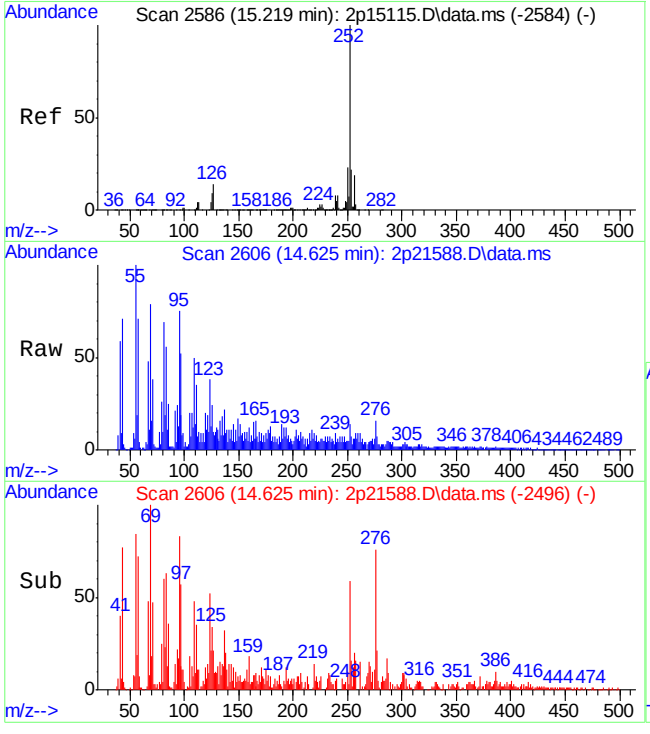


#94
Benzo[b]fluoranthene
Concen: 3.09 ppb m
RT: 14.609 min Scan# 2603
Delta R.T. 0.096 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:252 Resp: 18939

Ion	Ratio	Lower	Upper
252	100		
253	47.5	0.0	51.1
125	132.7	0.0	40.8#

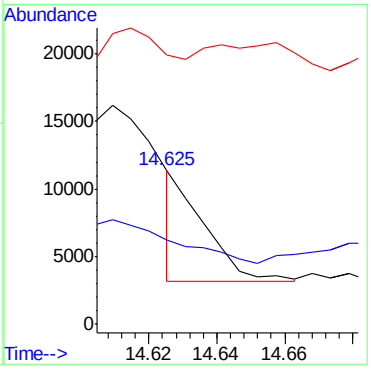


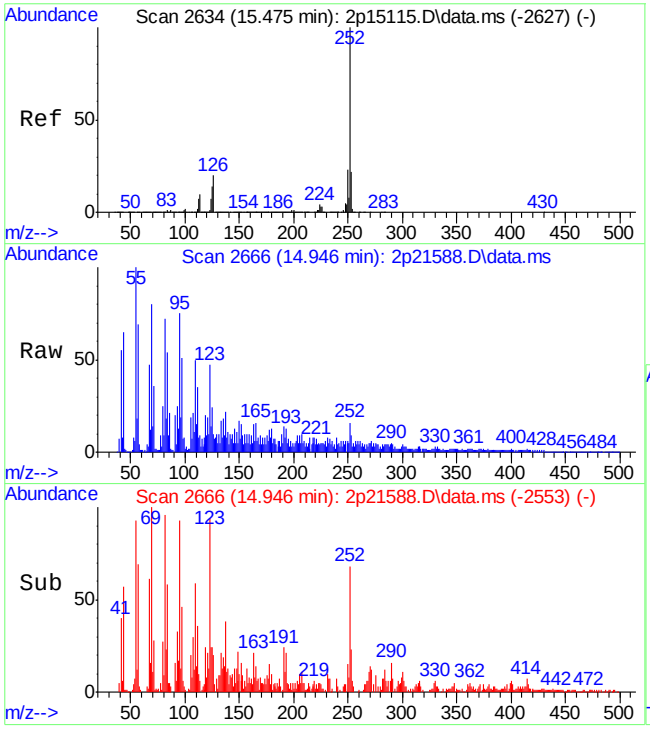


#95
Benzo[k]fluoranthene
Concen: 0.88 ppb m
RT: 14.625 min Scan# 2606
Delta R.T. 0.091 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:252 Resp: 4693

Ion	Ratio	Lower	Upper
252	100		
253	54.6	0.0	56.1
125	174.7	0.0	45.7#

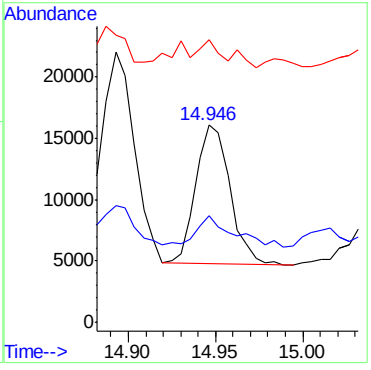


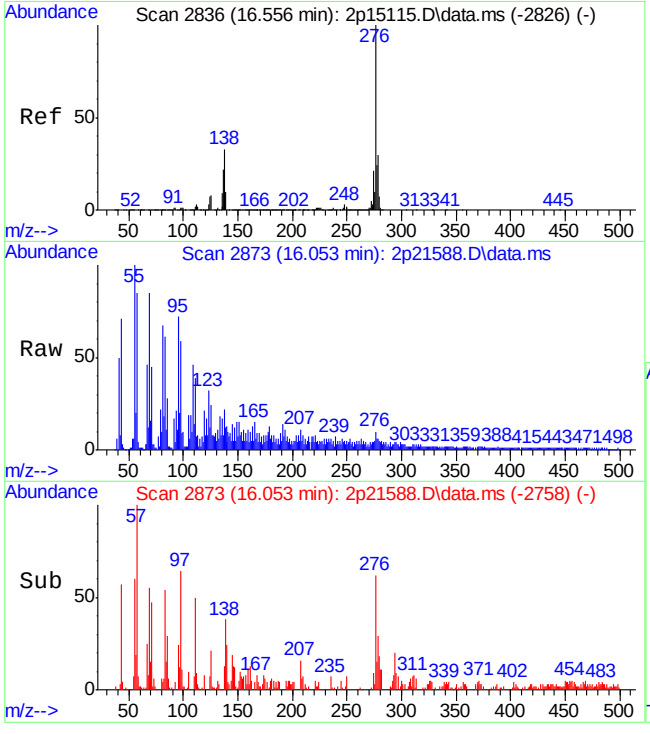


#96
Benzo[a]pyrene
Concen: 2.88 ppb
RT: 14.946 min Scan# 2666
Delta R.T. 0.107 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:252 Resp: 15340

Ion	Ratio	Lower	Upper
252	100		
253	21.6	0.0	51.5
125	13.8	0.0	41.1

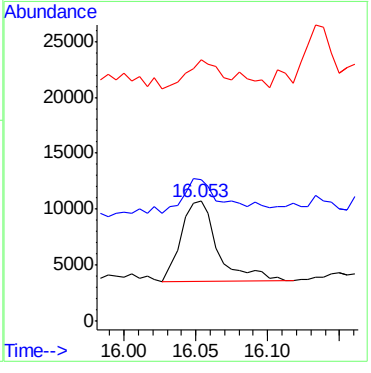


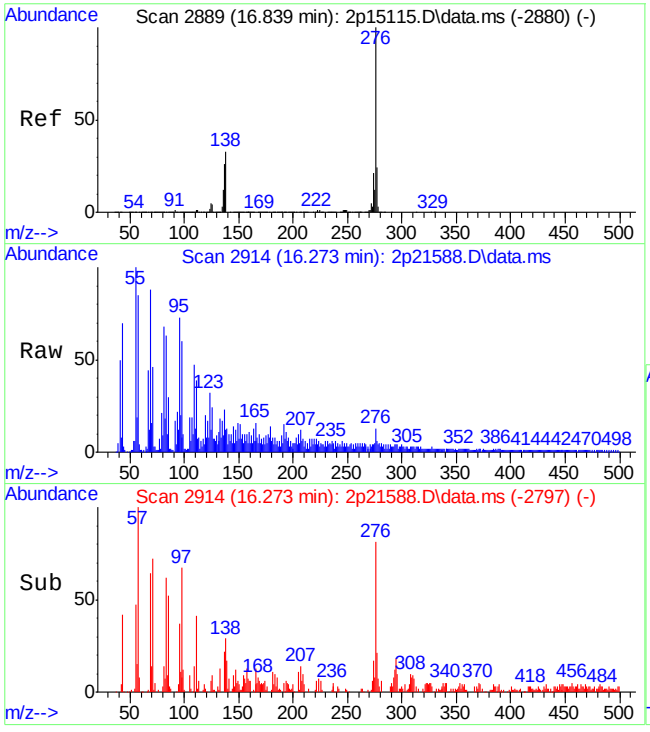


#97
Indeno[1,2,3-cd]pyrene
Concen: 2.05 ppb
RT: 16.053 min Scan# 2873
Delta R.T. 0.118 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:276 Resp: 12641

Ion	Ratio	Lower	Upper
276	100		
138	36.7	0.0	54.7
137	32.7	0.0	49.5

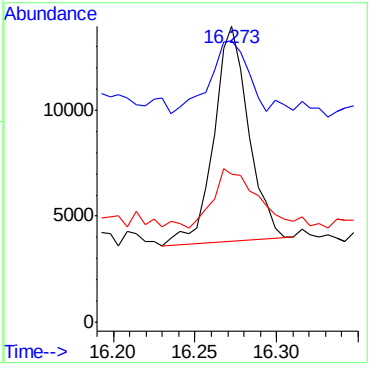




#101
Benzo[g,h,i]perylene
Concen: 2.89 ppb
RT: 16.273 min Scan# 2914
Delta R.T. 0.128 min
Lab File: 2p21588.D
Acq: 27 Mar 2013 3:52 pm

Tgt Ion:276 Resp: 15144

Ion	Ratio	Lower	Upper
276	100		
138	29.8	0.0	55.6
277	23.2	0.0	53.3



9.1.4

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/28/13 11:45

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21585.D
Acq On : 27 Mar 2013 2:45 pm
Operator : andrews1
Sample : jb31265-5
Misc : op64470,e2p948,30.1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Mar 28 12:47:45 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Fri Mar 22 18:09:19 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.869	152	43904	40.00	ppb	0.05
24) Naphthalene-d8	4.479	136	172010	40.00	ppb	0.10
47) Acenaphthene-d10	7.111	164	95093	40.00	ppb	0.03
69) Phenanthrene-d10	9.394	188	156160	40.00	ppb	0.05
83) Chrysene-d12	13.336	240	181276	40.00	ppb	0.13
92) Perylene-d12	15.016	264	167653	40.00	ppb	0.16
102) 1,4-Dichlorobenzene-d4a	2.869	152	43904	40.00	ppb	0.05
104) Acenaphthene-d10a	7.111	164	95093	40.00	ppb	0.03
107) Chrysene-d12a	13.336	240	181276	40.00	ppb	0.13
109) Naphthalene-d8a	4.479	136	172010	40.00	ppb	# 0.04
System Monitoring Compounds						
5) 2-Fluorophenol	1.794	112	39165m	24.92	ppb	0.11
Spiked Amount 50.000	Range 11 - 58		Recovery	=	49.84%	
8) Phenol-d5	2.671	99	50496	25.90	ppb	0.11
Spiked Amount 50.000	Range 10 - 59		Recovery	=	51.80%	
25) Nitrobenzene-d5	3.580	82	38734	24.48	ppb	0.05
Spiked Amount 50.000	Range 19 - 61		Recovery	=	48.96%	
51) 2-Fluorobiphenyl	6.142	172	97432	32.04	ppb	0.02
Spiked Amount 50.000	Range 21 - 58		Recovery	=	64.08%#	
73) 2,4,6-Tribromophenol	8.394	330	11847	33.94	ppb	0.06
Spiked Amount 50.000	Range 12 - 68		Recovery	=	67.88%	
85) Terphenyl-d14	11.983	244	121720	31.87	ppb	0.10
Spiked Amount 50.000	Range 16 - 65		Recovery	=	63.74%	
Target Compounds						Qvalue
38) Naphthalene	4.506	128	20968	4.55	ppb	97
44) 2-Methylnaphthalene	5.527	141	12991m	4.95	ppb	
56) Acenaphthylene	6.870	152	33891	7.70	ppb	97
59) Acenaphthene	7.153	153	11707	4.33	ppb	93
66) Fluorene	7.950	166	15782	5.05	ppb	95
77) Phenanthrene	9.427	178	119972	25.50	ppb	98
78) Anthracene	9.501	178	51054	10.97	ppb	94
81) Fluoranthene	11.325	202	211588	43.82	ppb	93
84) Pyrene	11.636	202	216104	34.99	ppb	99
88) Benzo[a]anthracene	13.320	228	158737m	29.37	ppb	
90) Chrysene	13.368	228	172666m	33.56	ppb	
94) Benzo[b]fluoranthene	14.625	252	156289m	27.34	ppb	
95) Benzo[k]fluoranthene	14.631	252	95265m	19.07	ppb	
96) Benzo[a]pyrene	14.957	252	148535	29.91	ppb	89
97) Indeno[1,2,3-cd]pyrene	16.053	276	103760	18.02	ppb	86
99) Dibenz[a,h]anthracene	16.053	278	40004m	8.33	ppb	
101) Benzo[g,h,i]perylene	16.267	276	95651	19.55	ppb	90

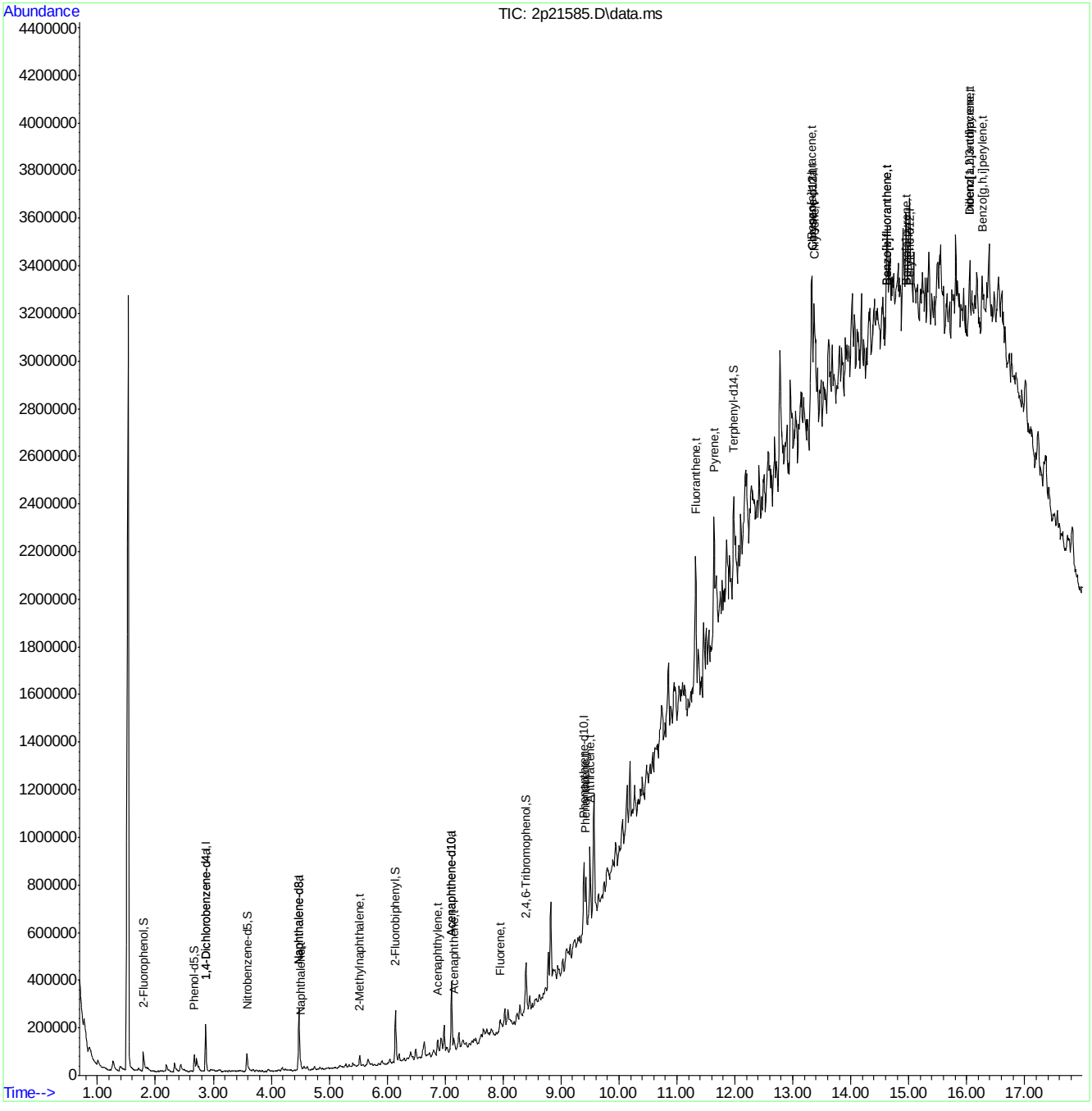
(#) = qualifier out of range (m) = manual integration (+) = signals summed

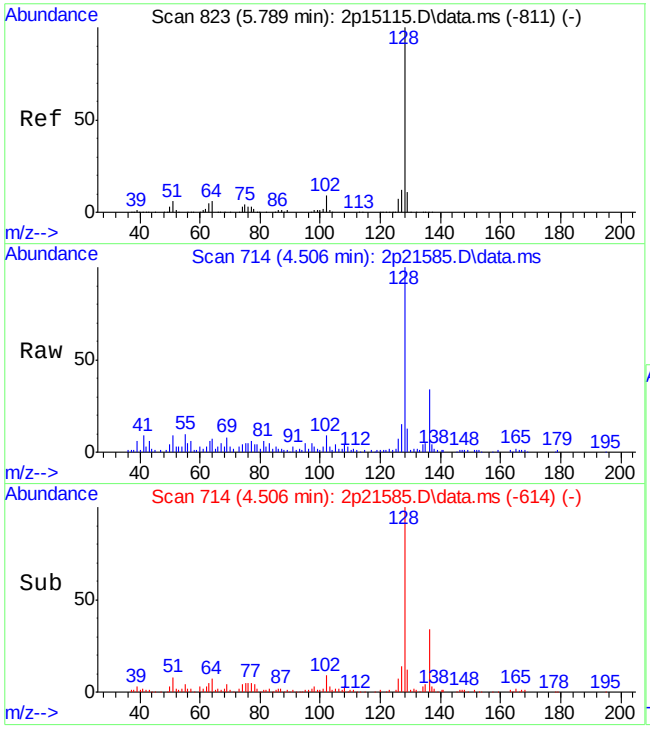
9.1.5
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21585.D
Acq On : 27 Mar 2013 2:45 pm
Operator : andrews1
Sample : jb31265-5
Misc : op64470,e2p948,30.1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Mar 28 12:47:45 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Fri Mar 22 18:09:19 2013
Response via : Initial Calibration

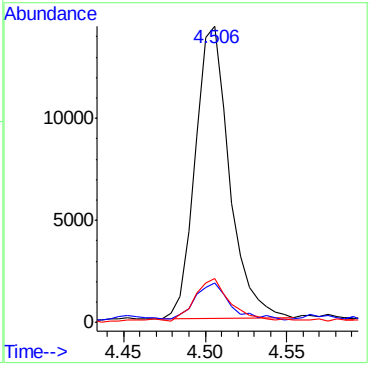


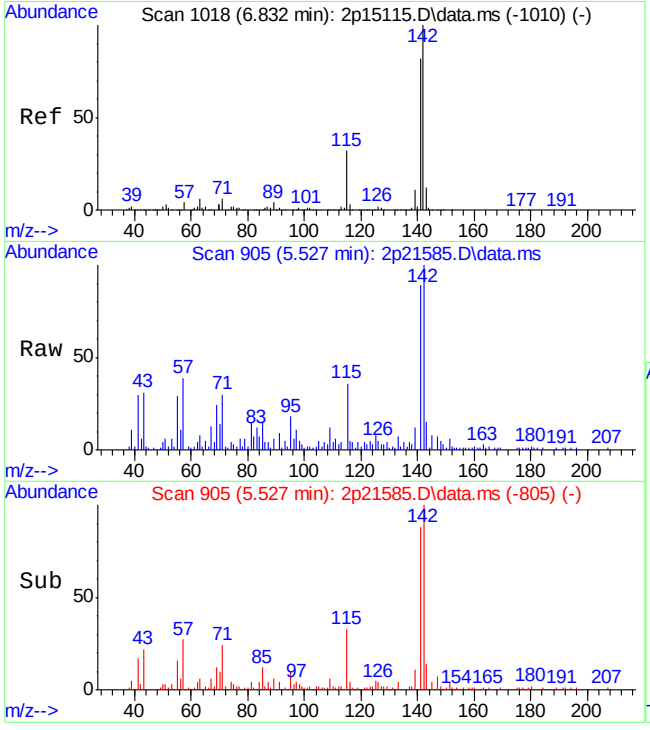


#38
Naphthalene
Concen: 4.55 ppb
RT: 4.506 min Scan# 714
Delta R.T. 0.037 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:128 Resp: 20968

Ion	Ratio	Lower	Upper
128	100		
129	11.9	0.0	41.0
127	14.2	0.0	43.0

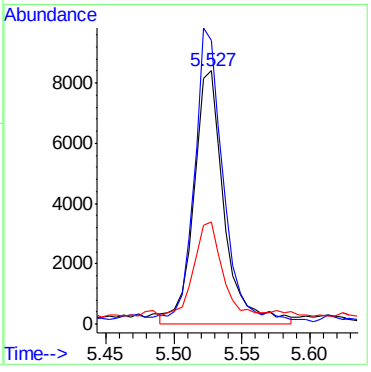


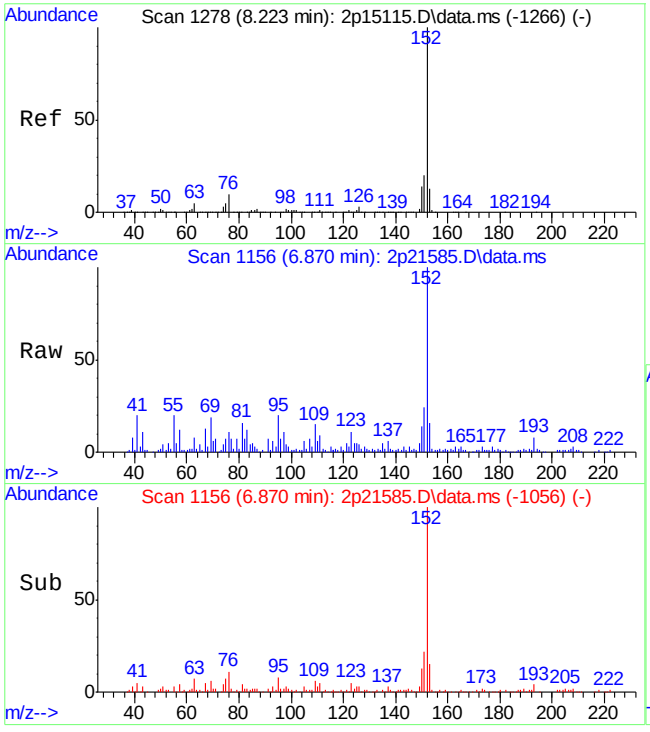


#44
2-Methylnaphthalene
Concen: 4.95 ppb m
RT: 5.527 min Scan# 905
Delta R.T. 0.037 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:141 Resp: 12991

Ion	Ratio	Lower	Upper
141	100		
142	112.1	88.4	148.4
115	40.2	14.8	74.8

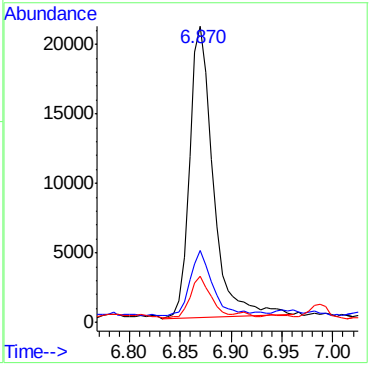


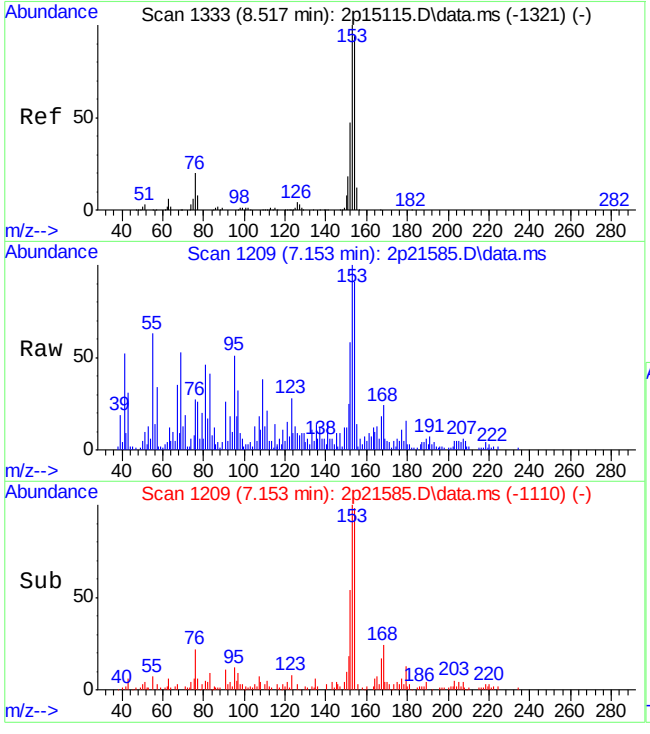


#56
Acenaphthylene
Concen: 7.70 ppb
RT: 6.870 min Scan# 1156
Delta R.T. 0.037 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:152 Resp: 33891

Ion	Ratio	Lower	Upper
152	100		
151	21.5	0.0	49.9
153	13.9	0.0	43.1

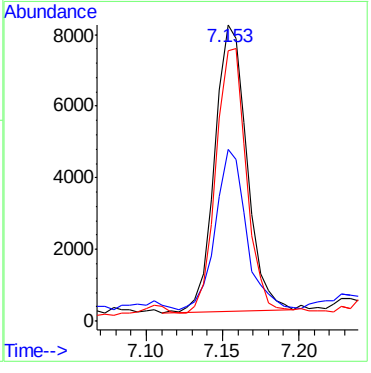




#59
Acenaphthene
Concen: 4.33 ppb
RT: 7.153 min Scan# 1209
Delta R.T. 0.031 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

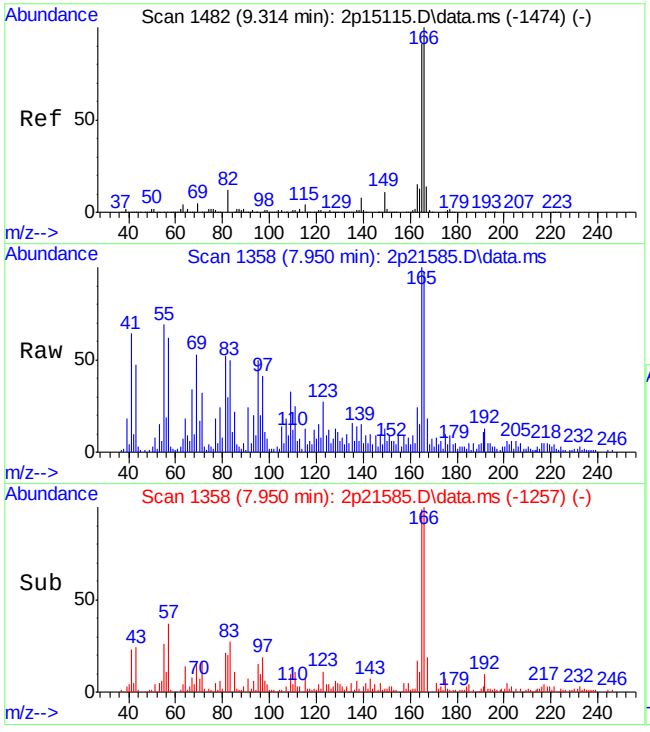
Tgt Ion:153 Resp: 11707

Ion	Ratio	Lower	Upper
153	100		
152	54.9	17.8	77.8
154	89.7	65.2	125.2



9.1.5

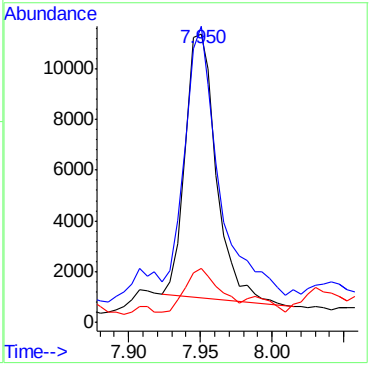
9

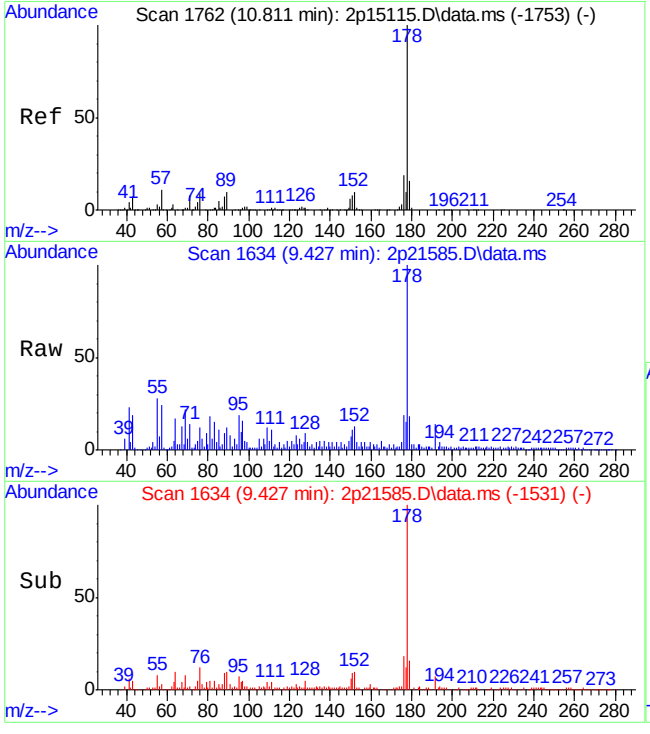


#66
Fluorene
Concen: 5.05 ppb
RT: 7.950 min Scan# 1358
Delta R.T. 0.042 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:166 Resp: 15782

Ion	Ratio	Lower	Upper
166	100		
165	97.5	62.5	122.5
167	15.0	0.0	42.9

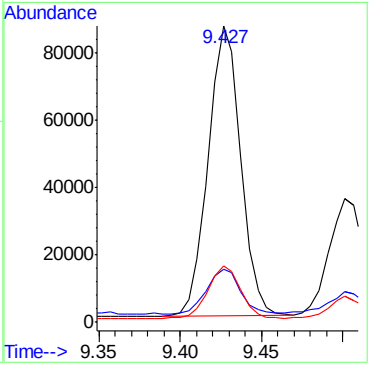


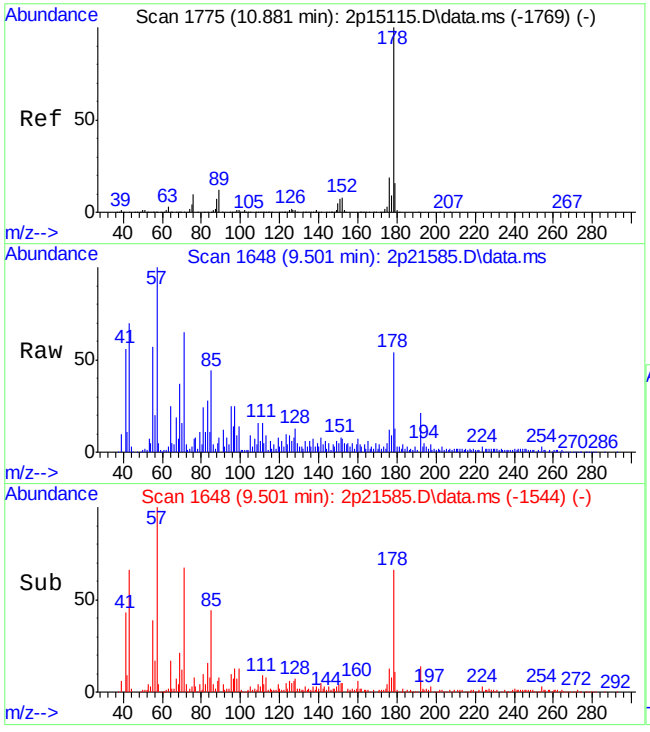


#77
Phenanthrene
Concen: 25.50 ppb
RT: 9.427 min Scan# 1634
Delta R.T. 0.053 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:178 Resp: 119972

Ion	Ratio	Lower	Upper
178	100		
179	15.3	0.0	44.4
176	18.0	0.0	48.6

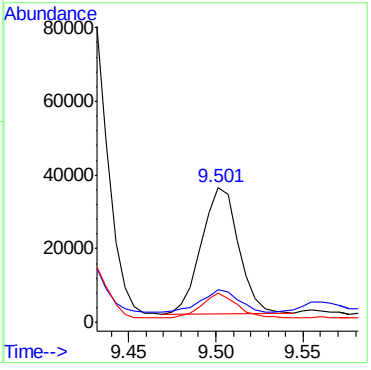


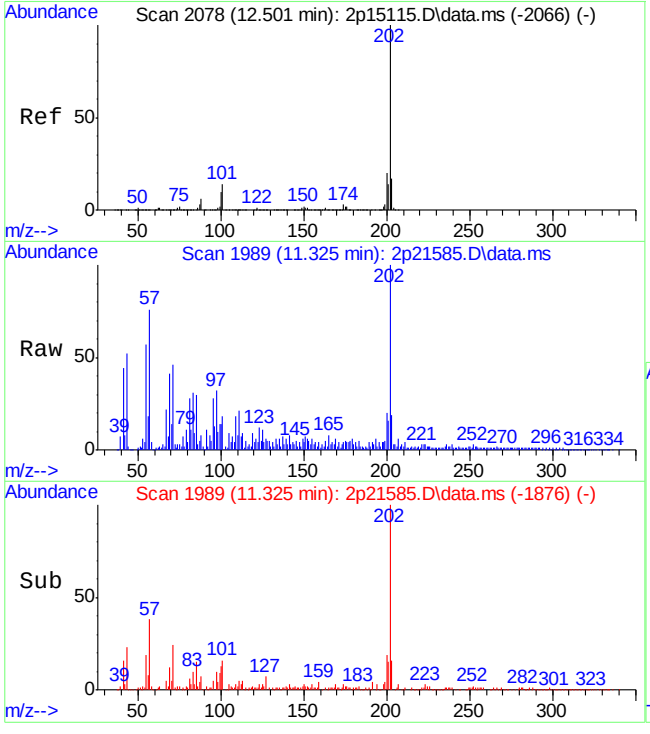


#78
Anthracene
Concen: 10.97 ppb
RT: 9.501 min Scan# 1648
Delta R.T. 0.058 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:178 Resp: 51054

Ion	Ratio	Lower	Upper
178	100		
179	16.7	0.0	44.5
176	19.2	0.0	46.5

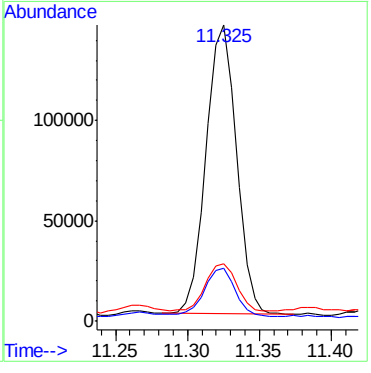


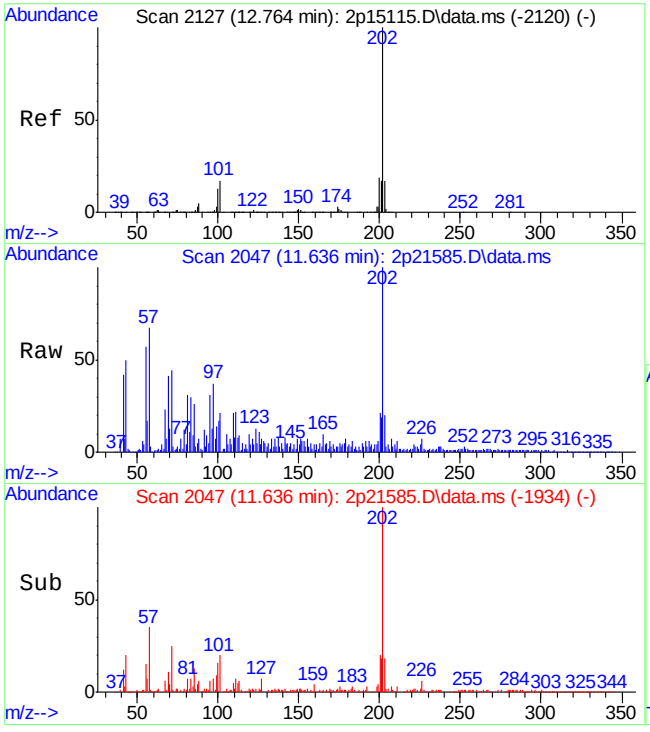


#81
Fluoranthene
Concen: 43.82 ppb
RT: 11.325 min Scan# 1989
Delta R.T. 0.106 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:202 Resp: 211588

Ion	Ratio	Lower	Upper
202	100		
101	18.0	0.0	41.3
203	19.5	0.0	49.1

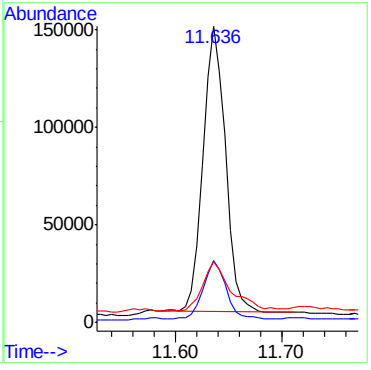


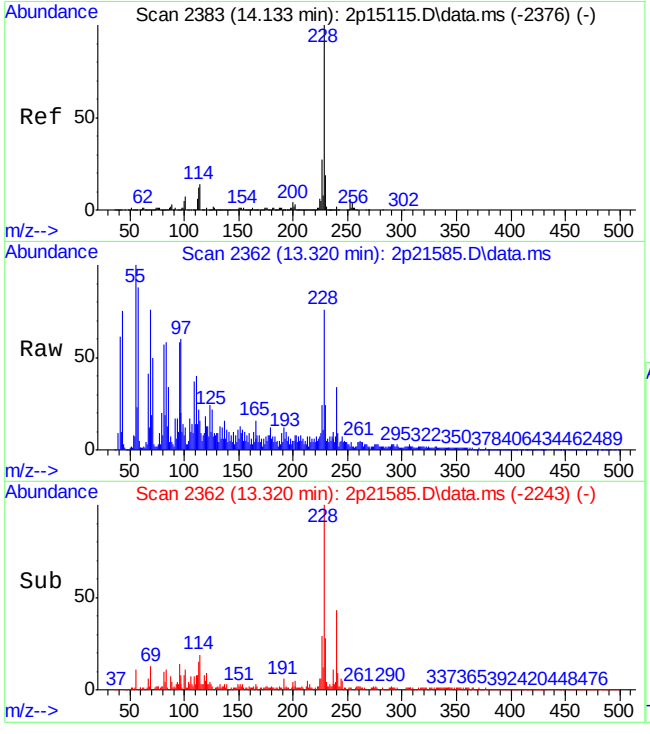


#84
Pyrene
Concen: 34.99 ppb
RT: 11.636 min Scan# 2047
Delta R.T. 0.106 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:202 Resp: 216104

Ion	Ratio	Lower	Upper
202	100		
200	20.1	0.0	49.6
203	16.5	0.0	46.9

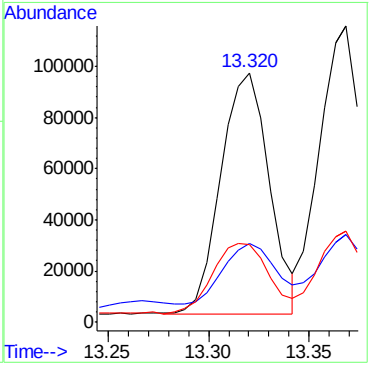


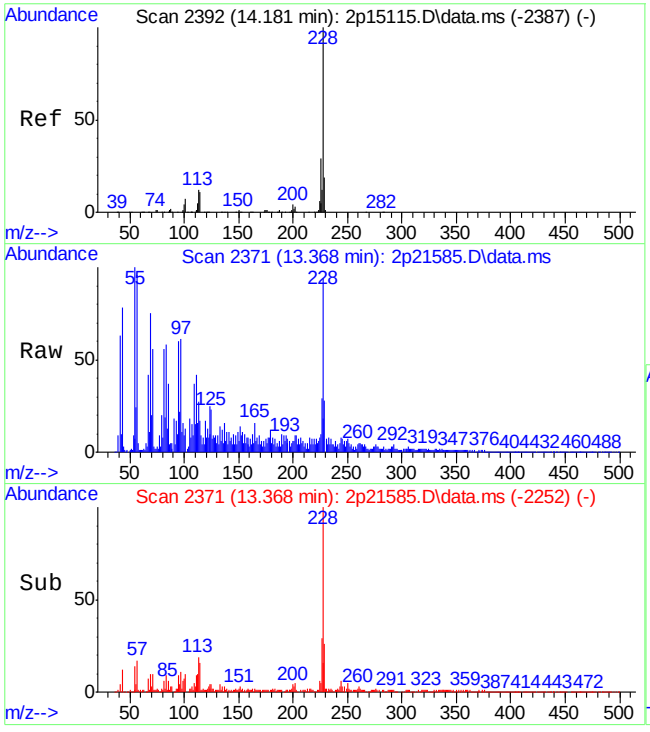


#88
Benzo[a]anthracene
Concen: 29.37 ppb m
RT: 13.320 min Scan# 2362
Delta R.T. 0.138 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:228 Resp: 158737

Ion	Ratio	Lower	Upper
228	100		
229	31.5	0.0	50.7
226	31.2	0.0	56.7

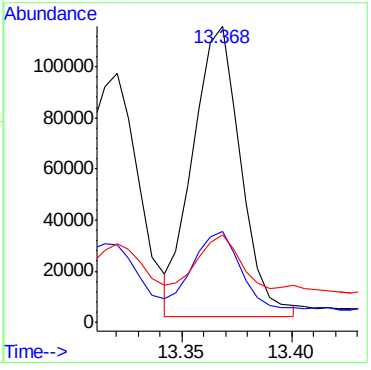


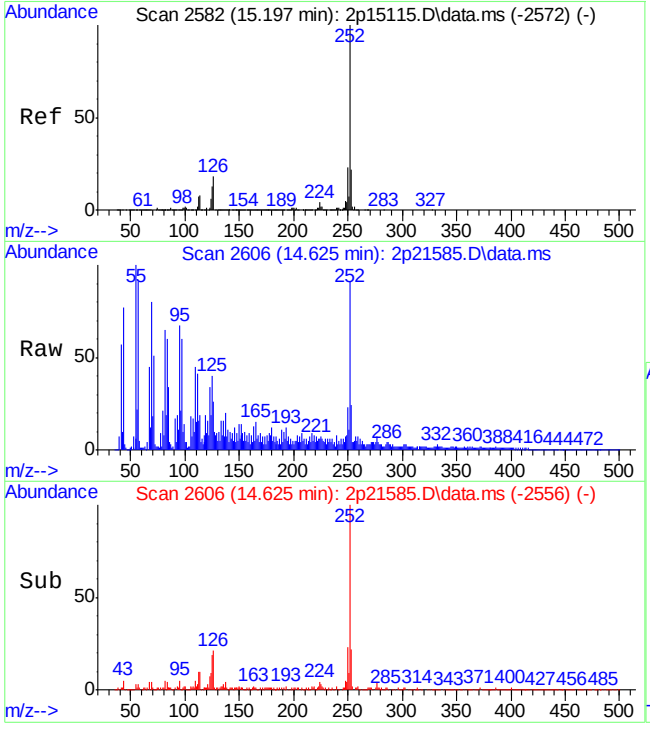


#90
Chrysene
Concen: 33.56 ppb m
RT: 13.368 min Scan# 2371
Delta R.T. 0.138 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:228 Resp: 172666

Ion	Ratio	Lower	Upper
228	100		
226	30.8	0.0	58.4
229	29.5	0.0	50.1

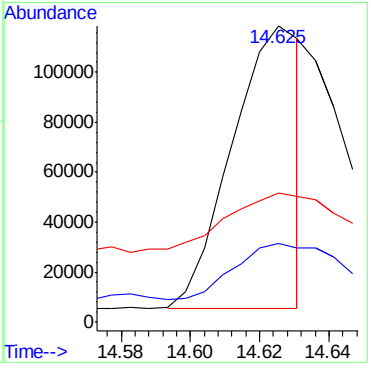


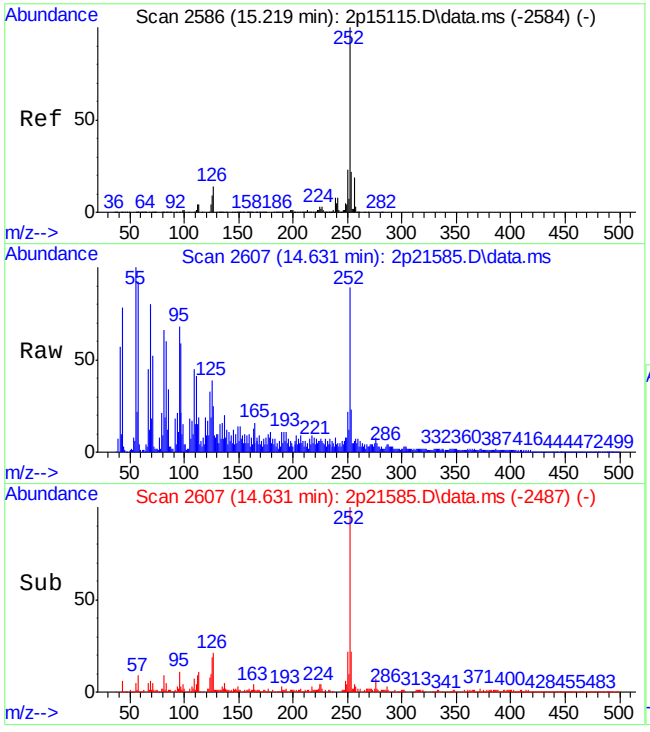


#94
Benzo[b]fluoranthene
Concen: 27.34 ppb m
RT: 14.625 min Scan# 2606
Delta R.T. 0.165 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:252 Resp: 156289

Ion	Ratio	Lower	Upper
252	100		
253	26.7	0.0	51.1
125	43.4	0.0	40.8#

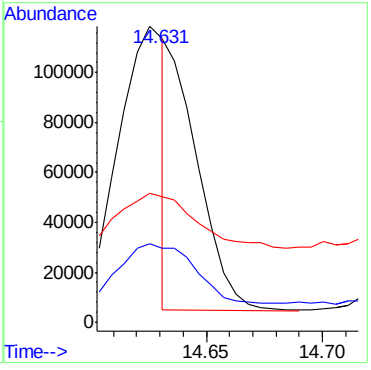


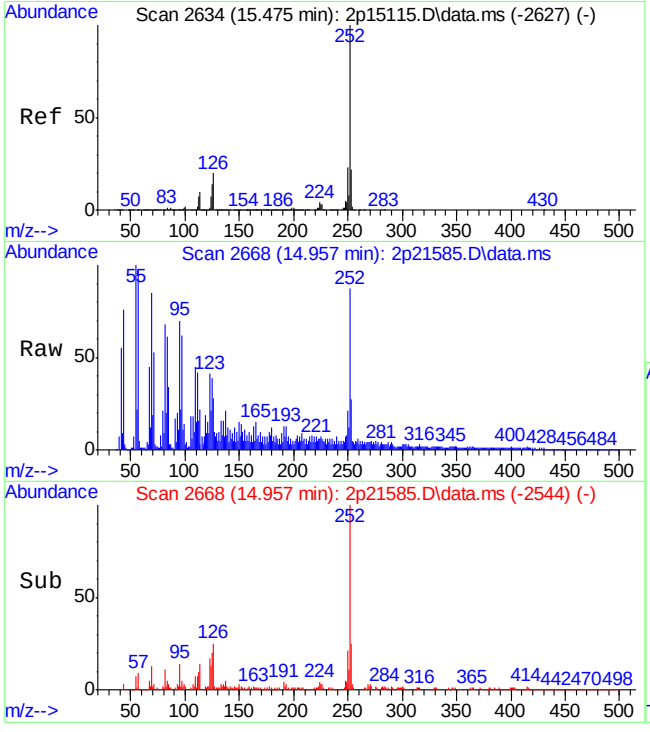


#95
Benzo[k]fluoranthene
Concen: 19.07 ppb m
RT: 14.631 min Scan# 2607
Delta R.T. 0.144 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:252 Resp: 95265

Ion	Ratio	Lower	Upper
252	100		
253	26.0	0.0	56.1
125	44.3	0.0	45.7

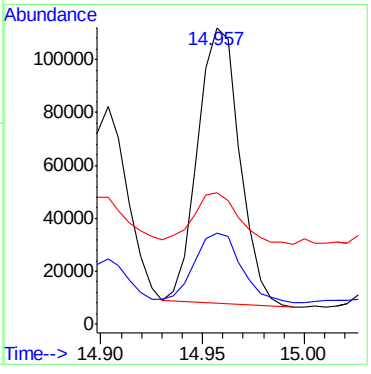


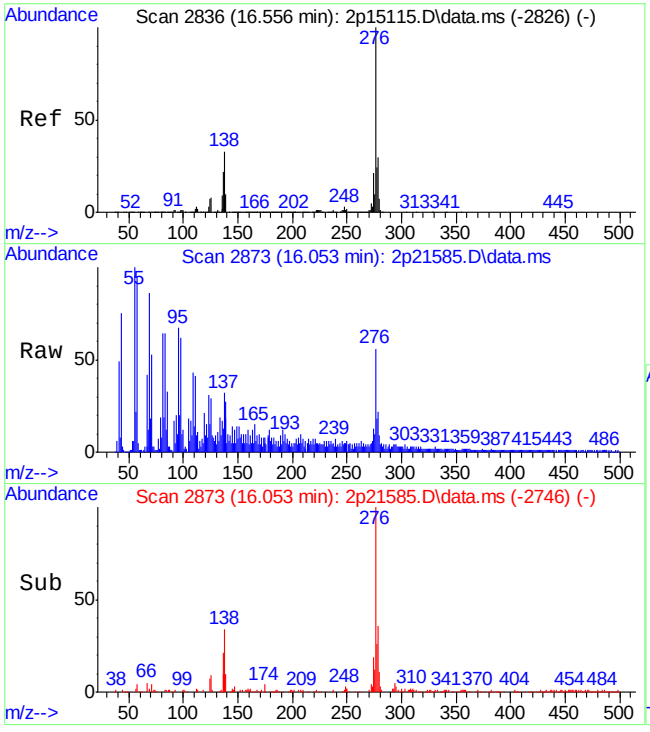


#96
Benzo[a]pyrene
Concen: 29.91 ppb
RT: 14.957 min Scan# 2668
Delta R.T. 0.165 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:252 Resp: 148535

Ion	Ratio	Lower	Upper
252	100		
253	24.7	0.0	51.5
125	18.0	0.0	41.1

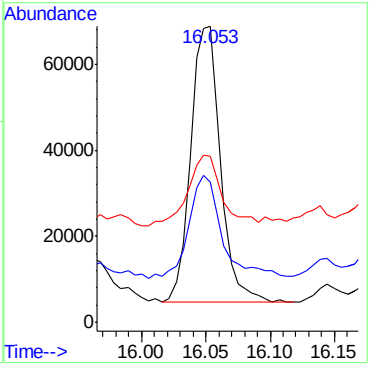


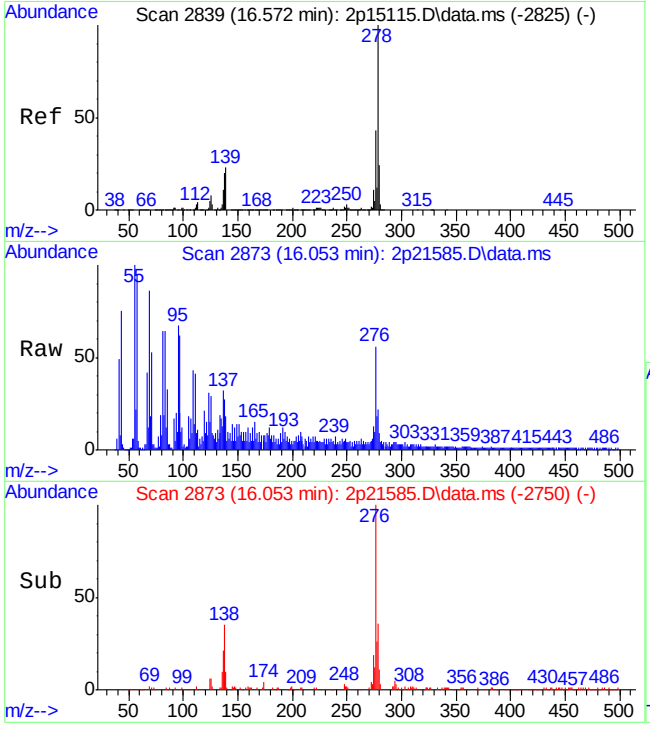


#97
Indeno[1,2,3-cd]pyrene
Concen: 18.02 ppb
RT: 16.053 min Scan# 2873
Delta R.T. 0.181 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:276 Resp: 103760

Ion	Ratio	Lower	Upper
276	100		
138	34.1	0.0	54.7
137	23.0	0.0	49.5

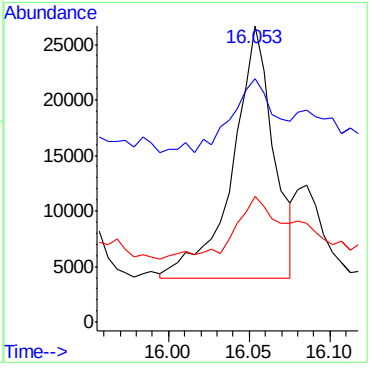


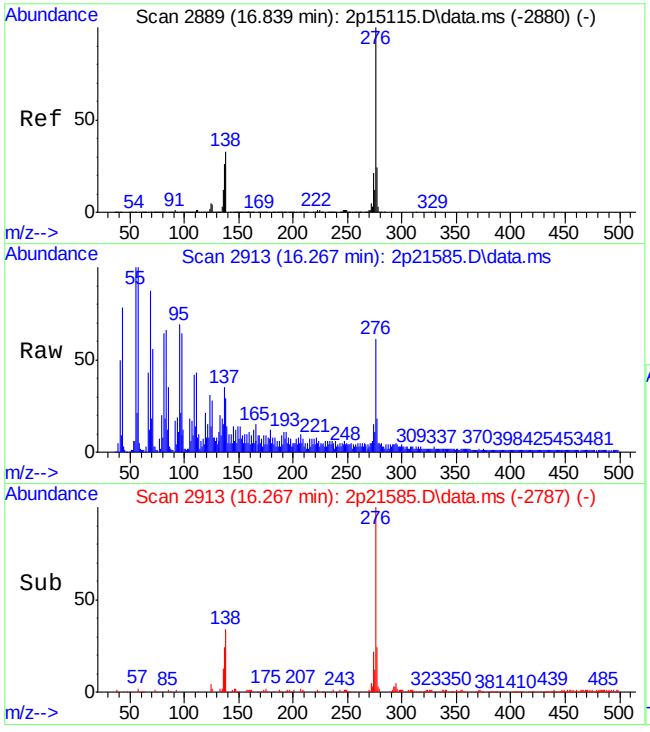


#99
Dibenz[a,h]anthracene
Concen: 8.33 ppb m
RT: 16.053 min Scan# 2873
Delta R.T. 0.160 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:278 Resp: 40004

Ion	Ratio	Lower	Upper
278	100		
139	82.2	0.0	49.9#
279	42.4	0.0	56.4

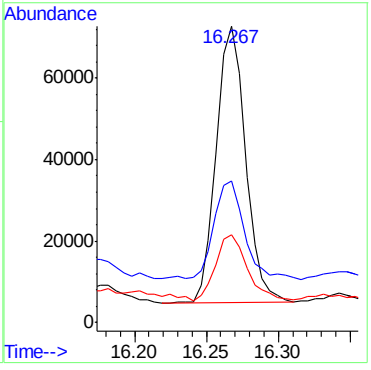




#101
Benzo[g,h,i]perylene
Concen: 19.55 ppb
RT: 16.267 min Scan# 2913
Delta R.T. 0.176 min
Lab File: 2p21585.D
Acq: 27 Mar 2013 2:45 pm

Tgt Ion:276 Resp: 95651

Ion	Ratio	Lower	Upper
276	100		
138	34.8	0.0	55.6
277	23.0	0.0	53.3



9.1.5

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/28/13 13:43

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21589.D
Acq On : 27 Mar 2013 4:15 pm
Operator : andrews1
Sample : jb31265-6
Misc : op64470,e2p948,31.6,,,1,5
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Mar 28 11:19:40 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

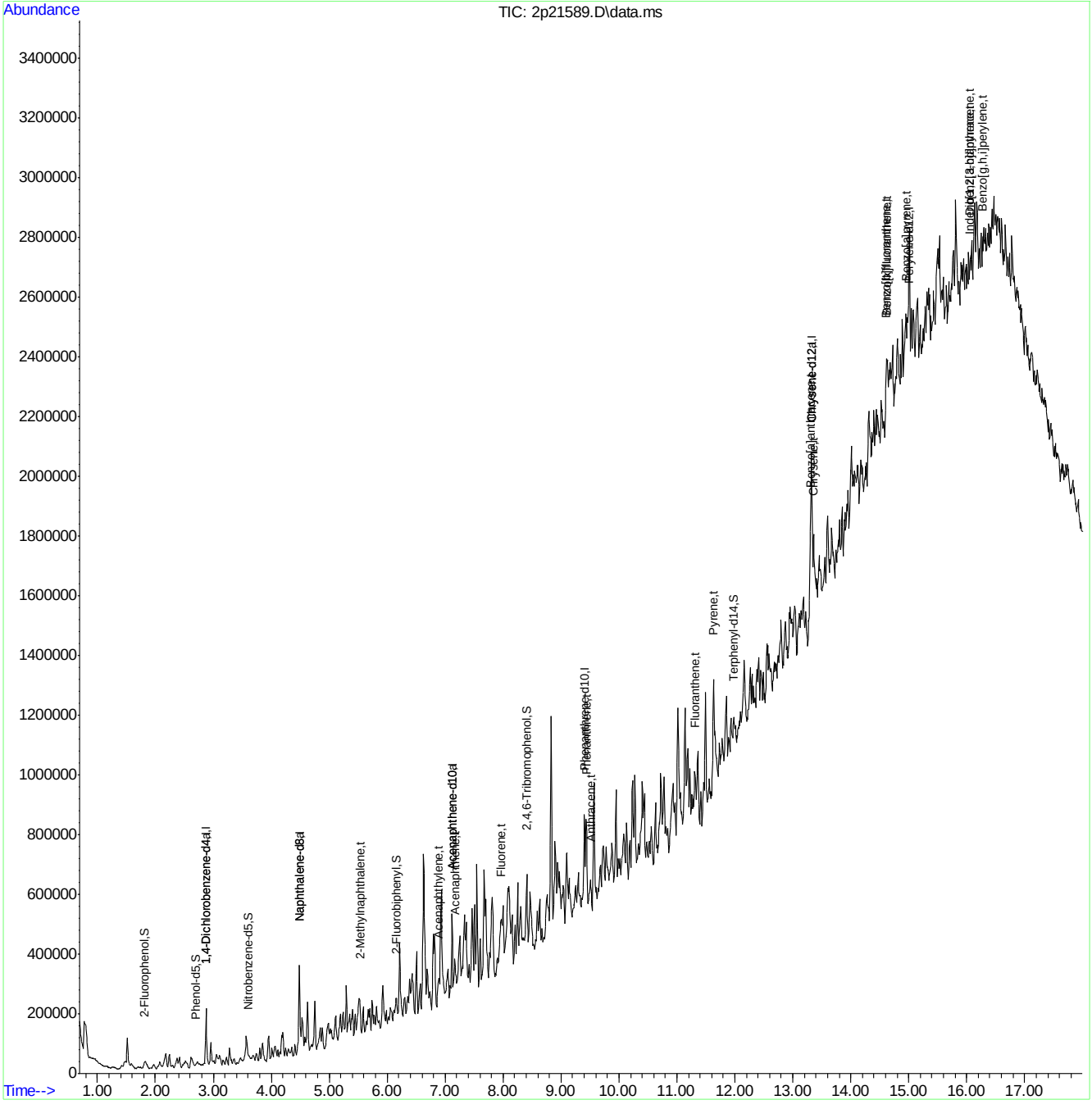
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.874	152	43866	40.00	ppb	0.02
24) Naphthalene-d8	4.484	136	173650	40.00	ppb	0.03
47) Acenaphthene-d10	7.121	164	95990	40.00	ppb	0.05
69) Phenanthrene-d10	9.405	188	165829	40.00	ppb	0.07
83) Chrysene-d12	13.326	240	184997	40.00	ppb	0.09
92) Perylene-d12	15.010	264	177119	40.00	ppb	0.11
102) 1,4-Dichlorobenzene-d4a	2.874	152	43866	40.00	ppb	0.02
104) Acenaphthene-d10a	7.121	164	95990	40.00	ppb	0.05
107) Chrysene-d12a	13.326	240	184997	40.00	ppb	0.09
109) Naphthalene-d8a	4.484	136	173650	40.00	ppb	# 0.03
System Monitoring Compounds						
5) 2-Fluorophenol	1.815	112	4137	2.63	ppb	0.04
Spiked Amount 50.000	Range 11 - 58		Recovery	=	5.26%#	
8) Phenol-d5	2.703	99	6248	3.21	ppb	0.07
Spiked Amount 50.000	Range 10 - 59		Recovery	=	6.42%#	
25) Nitrobenzene-d5	3.602	82	6438	4.03	ppb	0.04
Spiked Amount 50.000	Range 19 - 61		Recovery	=	8.06%#	
51) 2-Fluorobiphenyl	6.153	172	18306	5.96	ppb	0.03
Spiked Amount 50.000	Range 21 - 58		Recovery	=	11.92%#	
73) 2,4,6-Tribromophenol	8.410	330	2129	5.74	ppb	0.06
Spiked Amount 50.000	Range 12 - 68		Recovery	=	11.48%#	
85) Terphenyl-d14	11.972	244	22165	5.69	ppb	0.08
Spiked Amount 50.000	Range 16 - 65		Recovery	=	11.38%#	
Target Compounds						Qvalue
44) 2-Methylnaphthalene	5.533	141	4767m	1.80	ppb	
56) Acenaphthylene	6.881	152	9074	2.04	ppb	93
59) Acenaphthene	7.164	153	21431	7.86	ppb	93
66) Fluorene	7.961	166	43761	13.88	ppb	96
77) Phenanthrene	9.437	178	163336	32.70	ppb	97
78) Anthracene	9.512	178	41448	8.39	ppb	89
81) Fluoranthene	11.315	202	85788	16.73	ppb	87
84) Pyrene	11.630	202	145124	23.02	ppb	97
88) Benzo[a]anthracene	13.304	228	71294	12.93	ppb	96
90) Chrysene	13.352	228	89517	17.05	ppb	98
94) Benzo[b]fluoranthene	14.615	252	59862m	9.91	ppb	
95) Benzo[k]fluoranthene	14.625	252	21388m	4.05	ppb	
96) Benzo[a]pyrene	14.952	252	54110	10.31	ppb	98
97) Indeno[1,2,3-cd]pyrene	16.048	276	28873	4.75	ppb	87
99) Dibenz[a,h]anthracene	16.053	278	15637	3.08	ppb	86
101) Benzo[g,h,i]perylene	16.267	276	29176	5.65	ppb	87

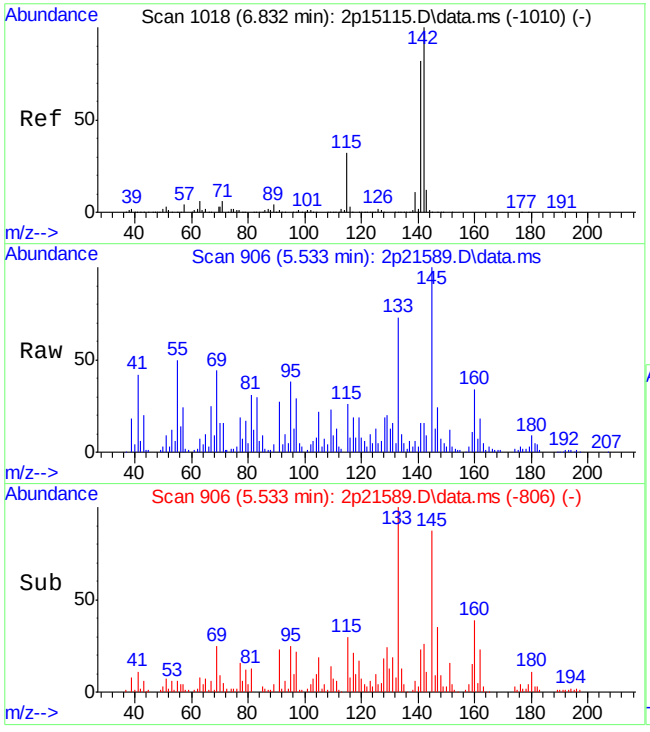
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21589.D
Acq On : 27 Mar 2013 4:15 pm
Operator : andrews1
Sample : jb31265-6
Misc : op64470,e2p948,31.6,,,1,5
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Mar 28 11:19:40 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Wed Mar 27 14:34:12 2013
Response via : Initial Calibration

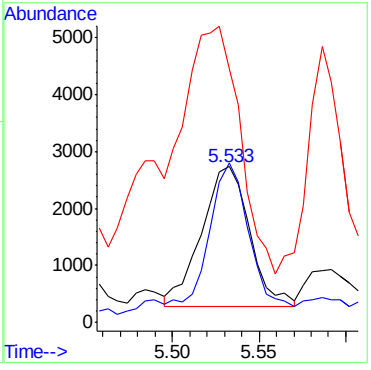


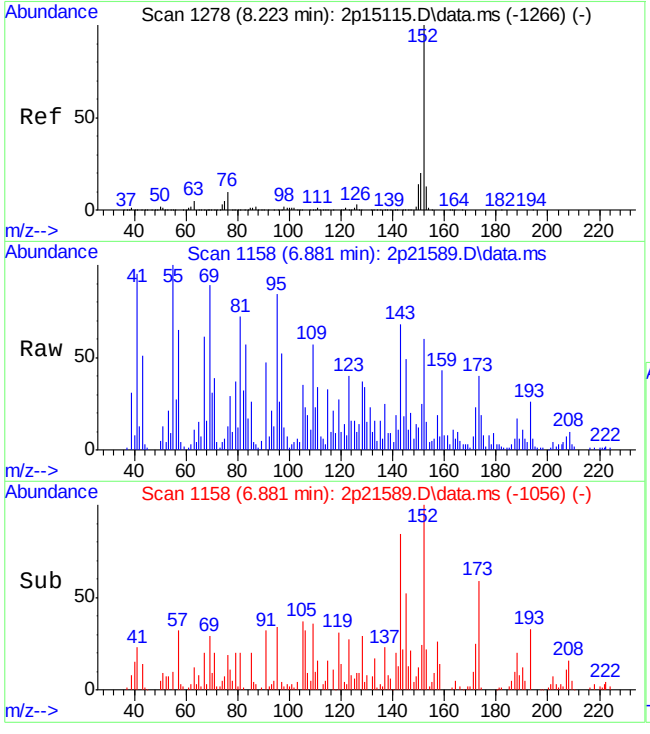


#44
2-Methylnaphthalene
Concen: 1.80 ppb m
RT: 5.533 min Scan# 906
Delta R.T. 0.037 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:141 Resp: 4767

Ion	Ratio	Lower	Upper
141	100		
142	102.1	88.4	148.4
115	162.9	14.8	74.8#

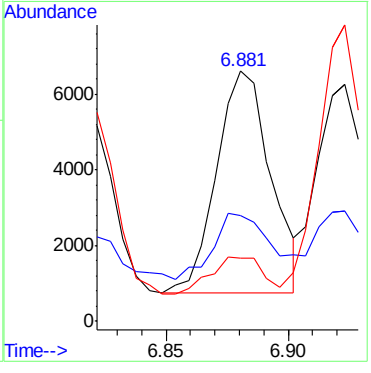


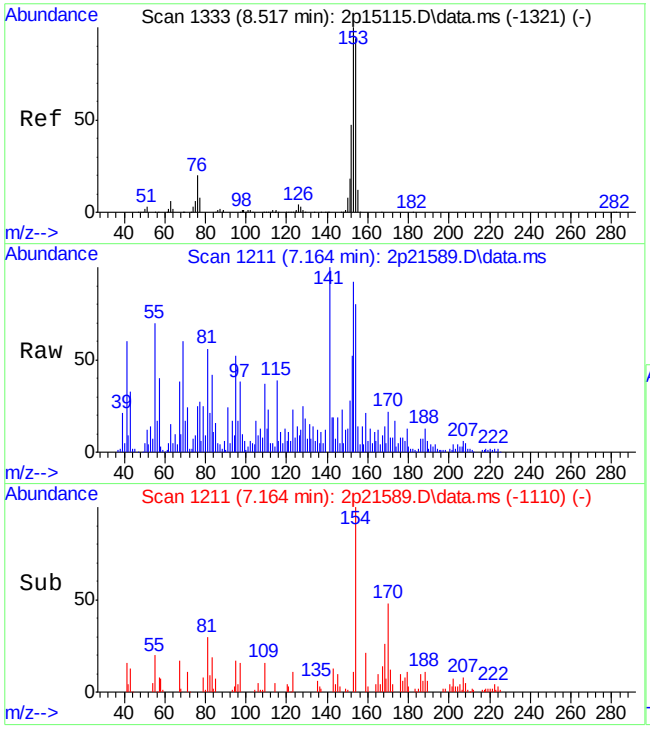


#56
Acenaphthylene
Concen: 2.04 ppb
RT: 6.881 min Scan# 1158
Delta R.T. 0.048 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:152 Resp: 9074

Ion	Ratio	Lower	Upper
152	100		
151	25.1	0.0	49.9
153	13.0	0.0	43.1

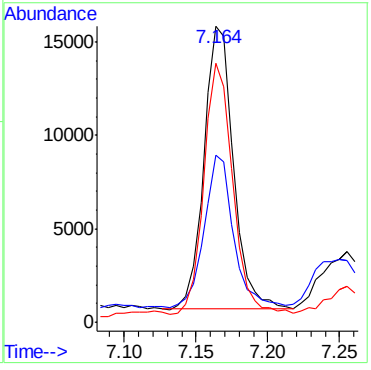


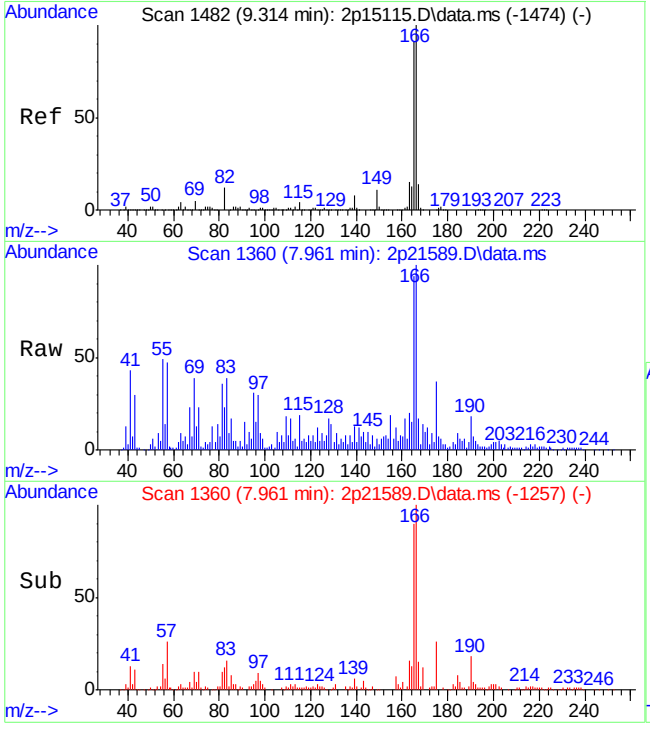


#59
Acenaphthene
Concen: 7.86 ppb
RT: 7.164 min Scan# 1211
Delta R.T. 0.043 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:153 Resp: 21431

Ion	Ratio	Lower	Upper
153	100		
152	53.2	17.8	77.8
154	88.4	65.2	125.2

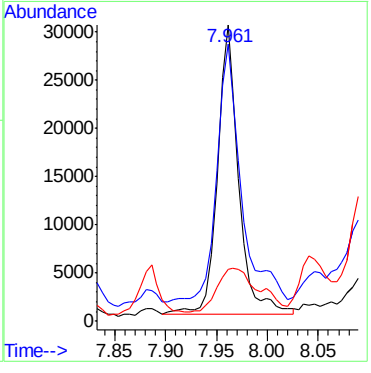


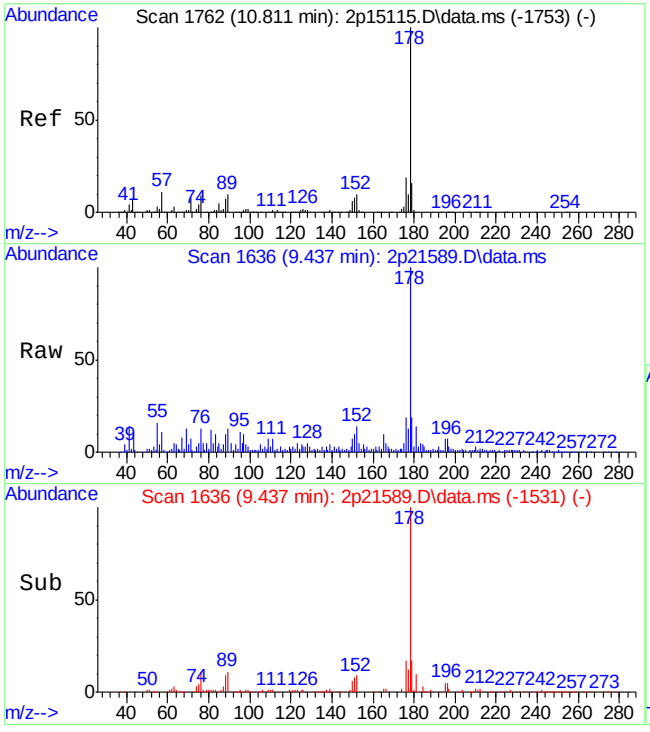


#66
Fluorene
Concen: 13.88 ppb
RT: 7.961 min Scan# 1360
Delta R.T. 0.053 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:166 Resp: 43761

Ion	Ratio	Lower	Upper
166	100		
165	89.4	62.5	122.5
167	10.1	0.0	42.9

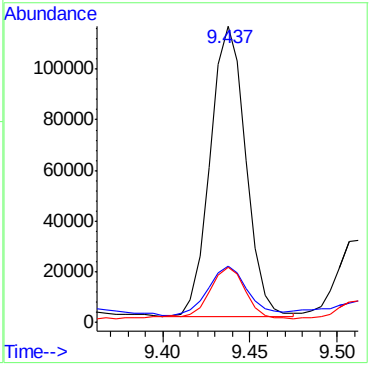


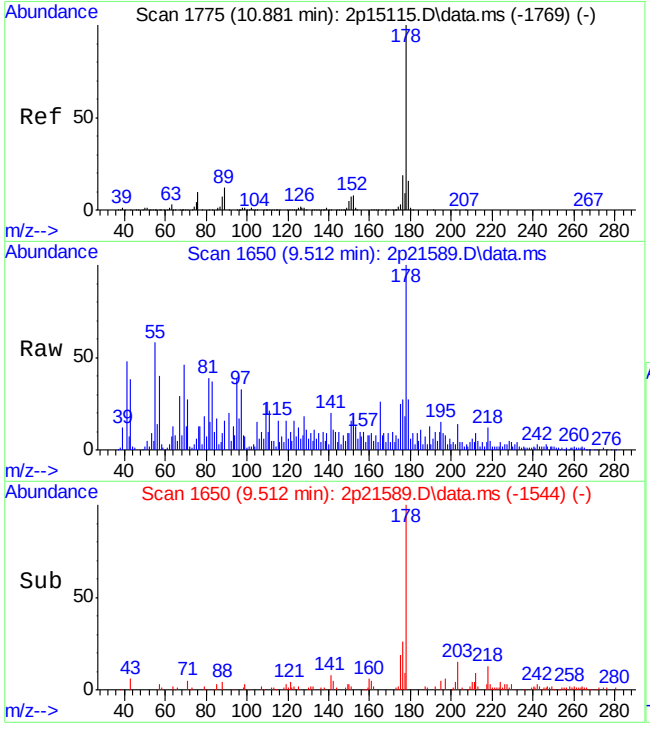


#77
Phenanthrene
Concen: 32.70 ppb
RT: 9.437 min Scan# 1636
Delta R.T. 0.064 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:178 Resp: 163336

Ion	Ratio	Lower	Upper
178	100		
179	16.1	0.0	44.4
176	17.5	0.0	48.6

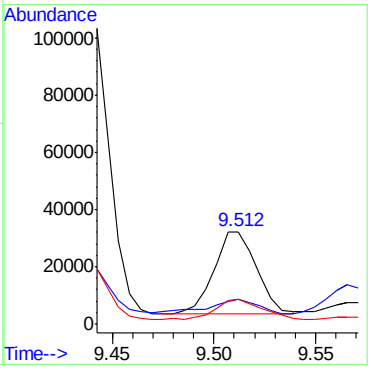




#78
Anthracene
Concen: 8.39 ppb
RT: 9.512 min Scan# 1650
Delta R.T. 0.070 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

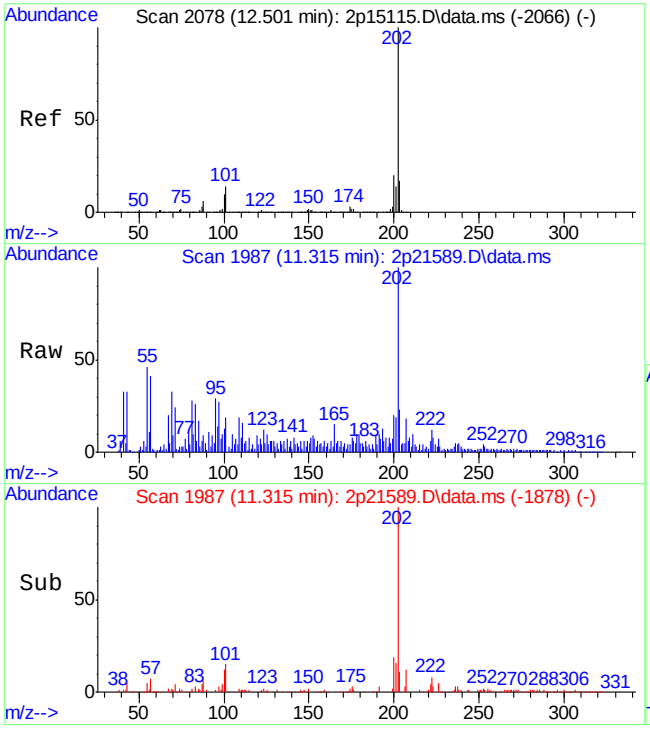
Tgt Ion:178 Resp: 41448

Ion	Ratio	Lower	Upper
178	100		
179	16.1	0.0	44.5
176	23.8	0.0	46.5



9.1.6

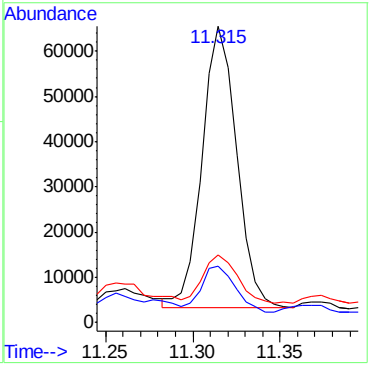
9

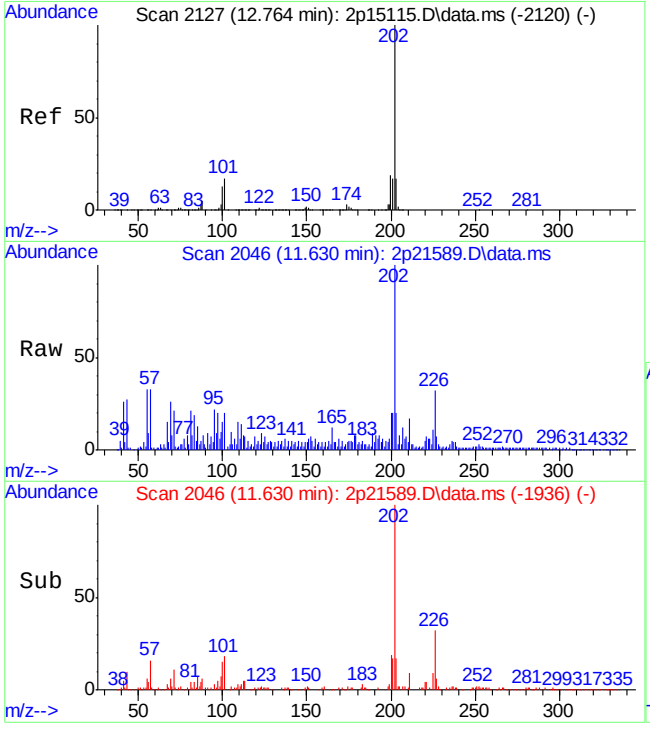


#81
Fluoranthene
Concen: 16.73 ppb
RT: 11.315 min Scan# 1987
Delta R.T. 0.086 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:202 Resp: 85788

Ion	Ratio	Lower	Upper
202	100		
101	19.0	0.0	41.3
203	22.7	0.0	49.1

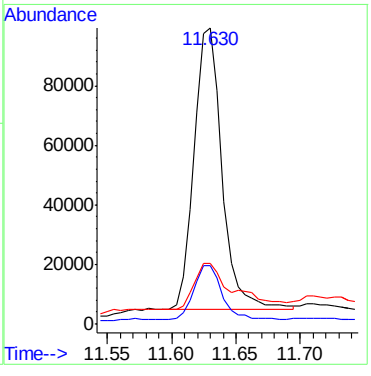


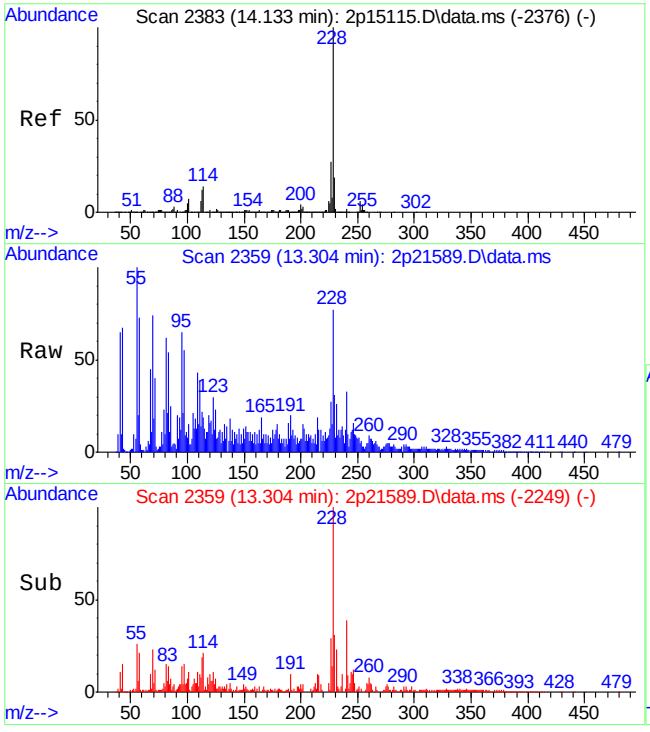


#84
Pyrene
Concen: 23.02 ppb
RT: 11.630 min Scan# 2046
Delta R.T. 0.091 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:202 Resp: 145124

Ion	Ratio	Lower	Upper
202	100		
200	18.9	0.0	49.6
203	14.8	0.0	46.9

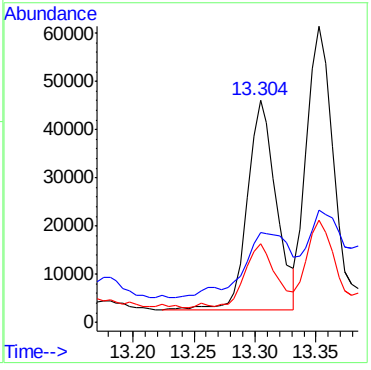


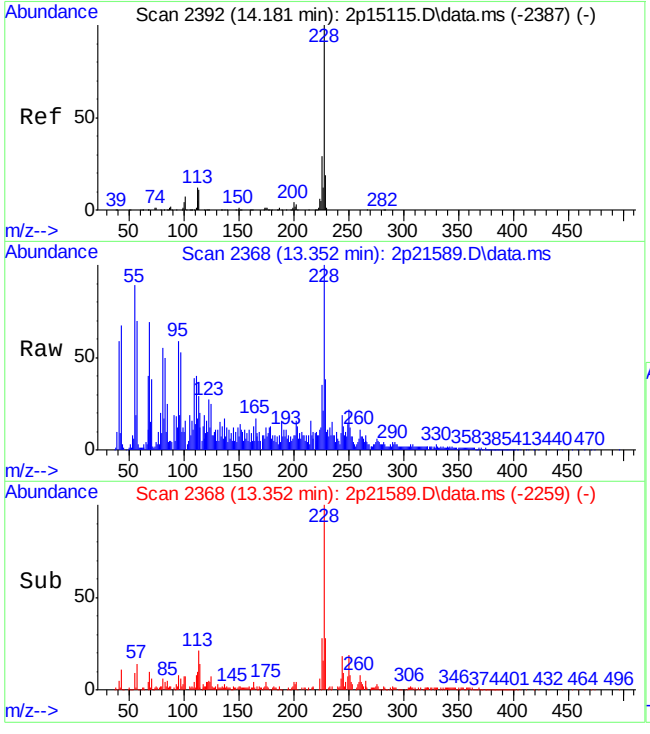


#88
Benzo[a]anthracene
Concen: 12.93 ppb
RT: 13.304 min Scan# 2359
Delta R.T. 0.091 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:228 Resp: 71294

Ion	Ratio	Lower	Upper
228	100		
229	23.2	0.0	50.7
226	28.5	0.0	56.7

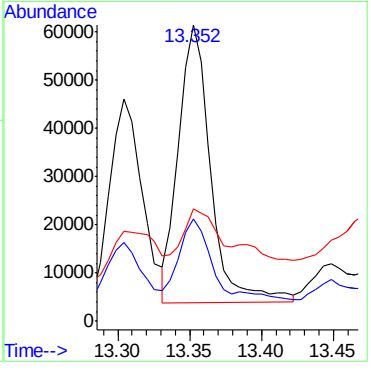




#90
Chrysene
Concen: 17.05 ppb
RT: 13.352 min Scan# 2368
Delta R.T. 0.086 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

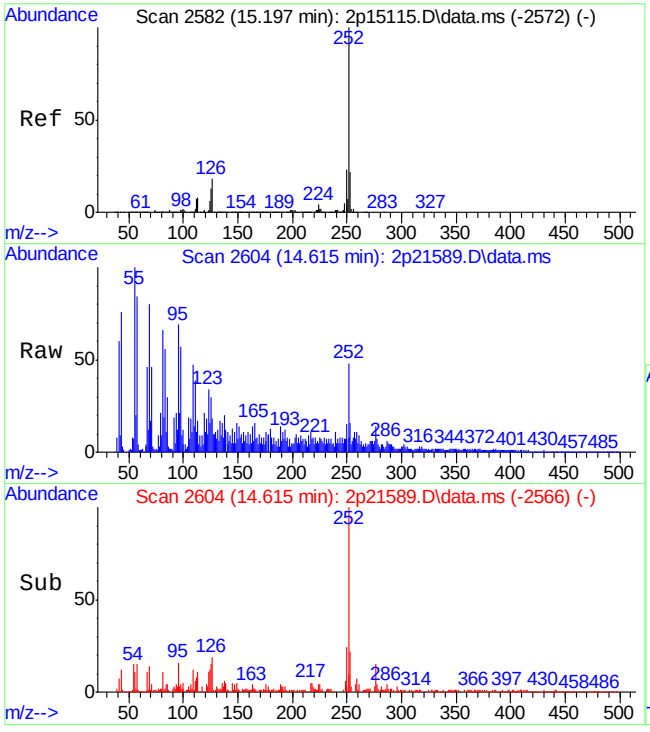
Tgt Ion:228 Resp: 89517

Ion	Ratio	Lower	Upper
228	100		
226	29.9	0.0	58.4
229	19.2	0.0	50.1



9.1.6

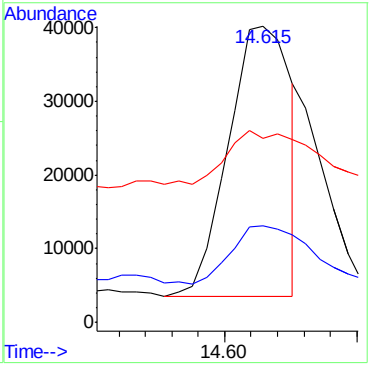
9

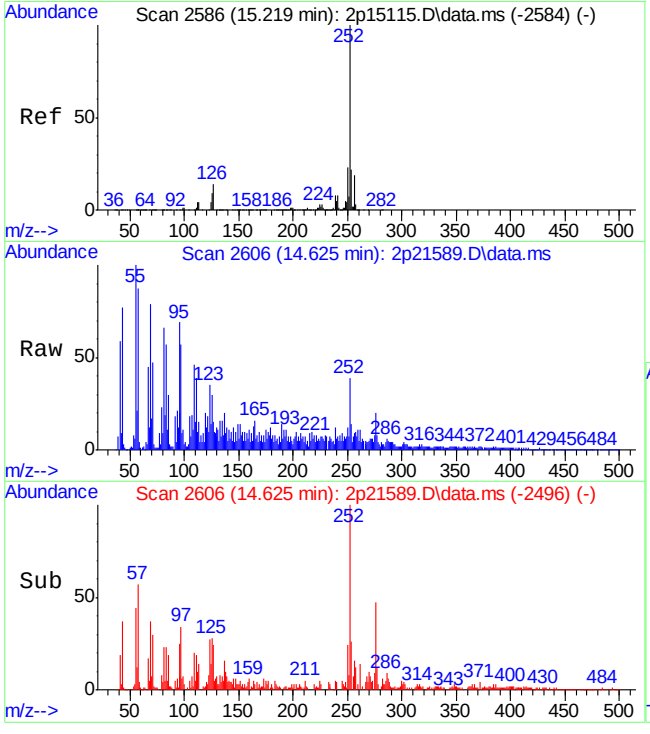


#94
Benzo[b]fluoranthene
Concen: 9.91 ppb m
RT: 14.615 min Scan# 2604
Delta R.T. 0.102 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:252 Resp: 59862

Ion	Ratio	Lower	Upper
252	100		
253	32.5	0.0	51.1
125	62.1	0.0	40.8#

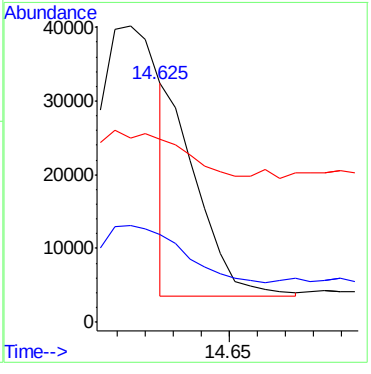


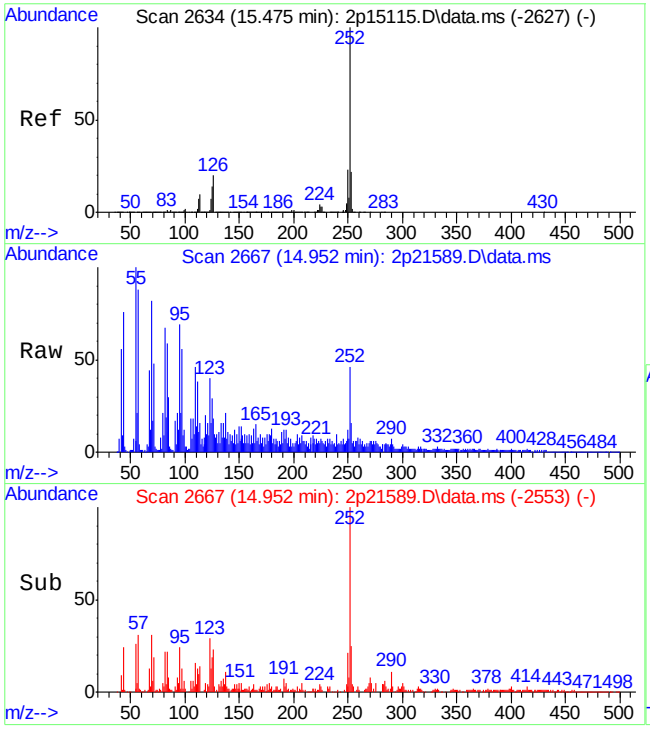


#95
Benzo[k]fluoranthene
Concen: 4.05 ppb m
RT: 14.625 min Scan# 2606
Delta R.T. 0.091 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:252 Resp: 21388

Ion	Ratio	Lower	Upper
252	100		
253	36.5	0.0	56.1
125	76.7	0.0	45.7#

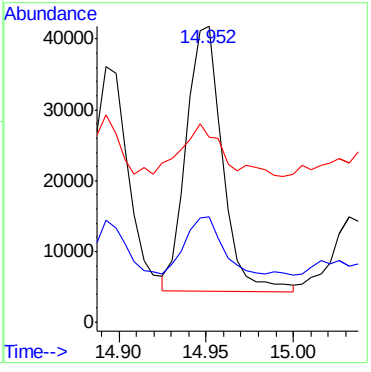


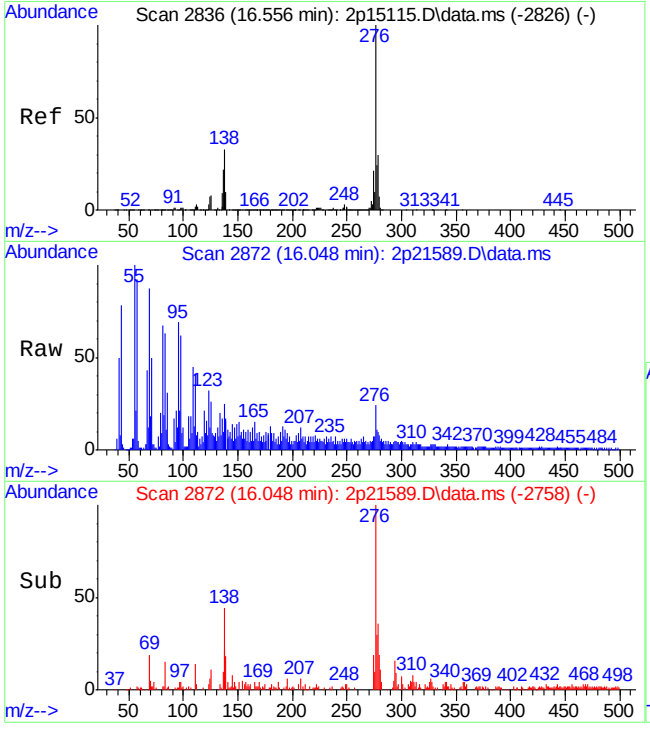


#96
Benzo[a]pyrene
Concen: 10.31 ppb
RT: 14.952 min Scan# 2667
Delta R.T. 0.112 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:252 Resp: 54110

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	51.5
125	12.5	0.0	41.1

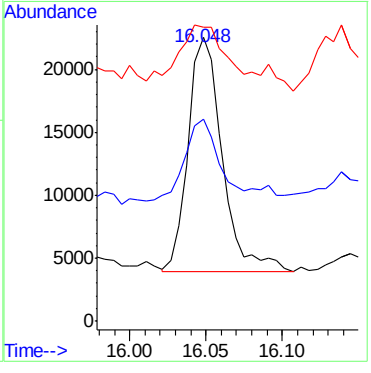


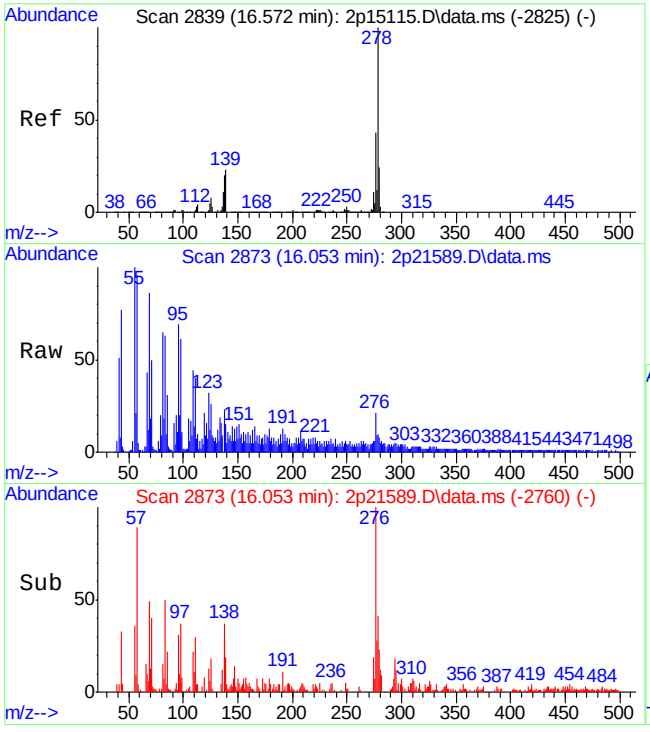


#97
Indeno[1,2,3-cd]pyrene
Concen: 4.75 ppb
RT: 16.048 min Scan# 2872
Delta R.T. 0.112 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:276 Resp: 28873

Ion	Ratio	Lower	Upper
276	100		
138	32.2	0.0	54.7
137	24.3	0.0	49.5

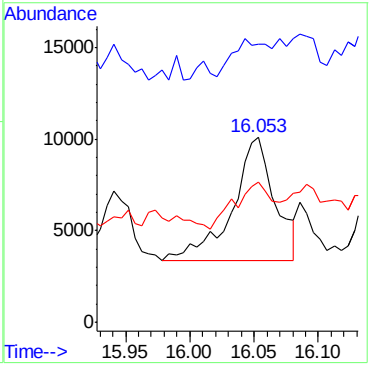


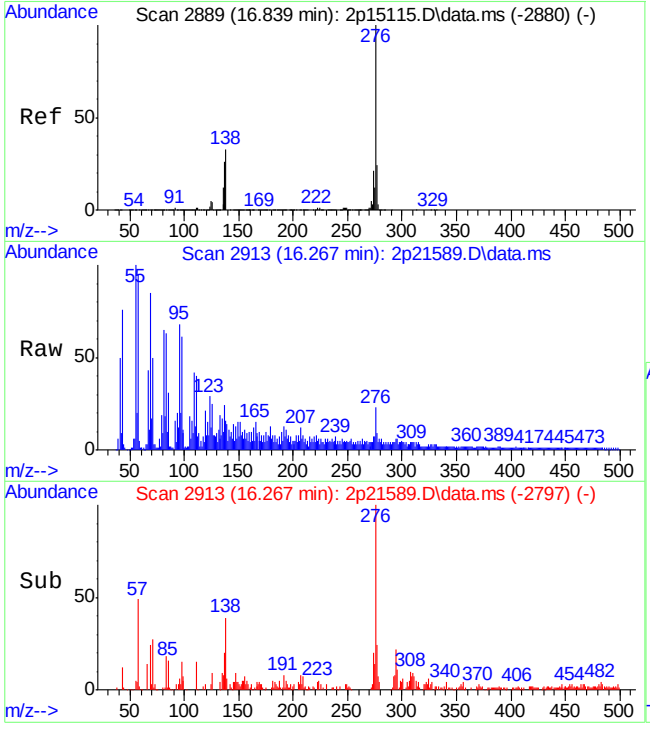


#99
Dibenz[a,h]anthracene
Concen: 3.08 ppb
RT: 16.053 min Scan# 2873
Delta R.T. 0.107 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:278 Resp: 15637

Ion	Ratio	Lower	Upper
278	100		
139	9.2	0.0	49.9
279	23.0	0.0	56.4

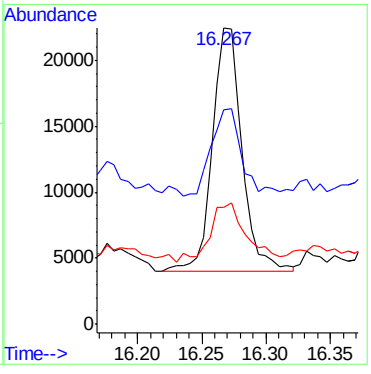




#101
Benzo[g,h,i]perylene
Concen: 5.65 ppb
RT: 16.267 min Scan# 2913
Delta R.T. 0.123 min
Lab File: 2p21589.D
Acq: 27 Mar 2013 4:15 pm

Tgt Ion:276 Resp: 29176

Ion	Ratio	Lower	Upper
276	100		
138	34.1	0.0	55.6
277	19.4	0.0	53.3



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/28/13 11:45

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21586.D
Acq On : 27 Mar 2013 3:07 pm
Operator : andrews1
Sample : jb31265-7
Misc : op64470,e2p948,31.6
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Mar 28 12:49:30 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Fri Mar 22 18:09:19 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.869	152	40226	40.00	ppb	0.05
24) Naphthalene-d8	4.479	136	158548	40.00	ppb	0.10
47) Acenaphthene-d10	7.105	164	89278	40.00	ppb	0.03
69) Phenanthrene-d10	9.384	188	142254	40.00	ppb	0.04
83) Chrysene-d12	13.294	240	158054	40.00	ppb	0.09
92) Perylene-d12	14.978	264	155313	40.00	ppb	0.13
102) 1,4-Dichlorobenzene-d4a	2.869	152	40226	40.00	ppb	0.05
104) Acenaphthene-d10a	7.105	164	89278	40.00	ppb	0.03
107) Chrysene-d12a	13.294	240	158054	40.00	ppb	0.09
109) Naphthalene-d8a	4.479	136	158548	40.00	ppb	# 0.04
System Monitoring Compounds						
5) 2-Fluorophenol	1.799	112	15803	10.97	ppb	0.11
Spiked Amount 50.000	Range 11 - 58		Recovery = 21.94%			
8) Phenol-d5	2.677	99	29044	16.26	ppb	0.11
Spiked Amount 50.000	Range 10 - 59		Recovery = 32.52%			
25) Nitrobenzene-d5	3.586	82	16158	11.08	ppb	0.06
Spiked Amount 50.000	Range 19 - 61		Recovery = 22.16%			
51) 2-Fluorobiphenyl	6.148	172	68017	23.82	ppb	0.03
Spiked Amount 50.000	Range 21 - 58		Recovery = 47.64%			
73) 2,4,6-Tribromophenol	8.394	330	13487	42.42	ppb	0.06
Spiked Amount 50.000	Range 12 - 68		Recovery = 84.84%#			
85) Terphenyl-d14	11.946	244	128132	38.48	ppb	0.06
Spiked Amount 50.000	Range 16 - 65		Recovery = 76.96%#			
Target Compounds						Qvalue
38) Naphthalene	4.506	128	2344	0.55	ppb	95
44) 2-Methylnaphthalene	5.527	141	1774m	0.73	ppb	
56) Acenaphthylene	6.870	152	3766m	0.91	ppb	
59) Acenaphthene	7.153	153	3131	1.23	ppb	85
66) Fluorene	7.950	166	2618	0.89	ppb	94
77) Phenanthrene	9.416	178	30935	7.22	ppb	99
78) Anthracene	9.491	178	9546	2.25	ppb	96
81) Fluoranthene	11.283	202	81799	18.60	ppb	94
84) Pyrene	11.598	202	85479	15.87	ppb	98
88) Benzo[a]anthracene	13.278	228	42735m	9.07	ppb	
90) Chrysene	13.326	228	66381m	14.80	ppb	
94) Benzo[b]fluoranthene	14.583	252	76788m	14.50	ppb	
95) Benzo[k]fluoranthene	14.593	252	31845m	6.88	ppb	
96) Benzo[a]pyrene	14.920	252	43323m	9.42	ppb	
97) Indeno[1,2,3-cd]pyrene	16.021	276	37914	7.11	ppb	85
99) Dibenz[a,h]anthracene	16.032	278	16507	3.71	ppb	94
101) Benzo[g,h,i]perylene	16.246	276	37979	8.38	ppb	90

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

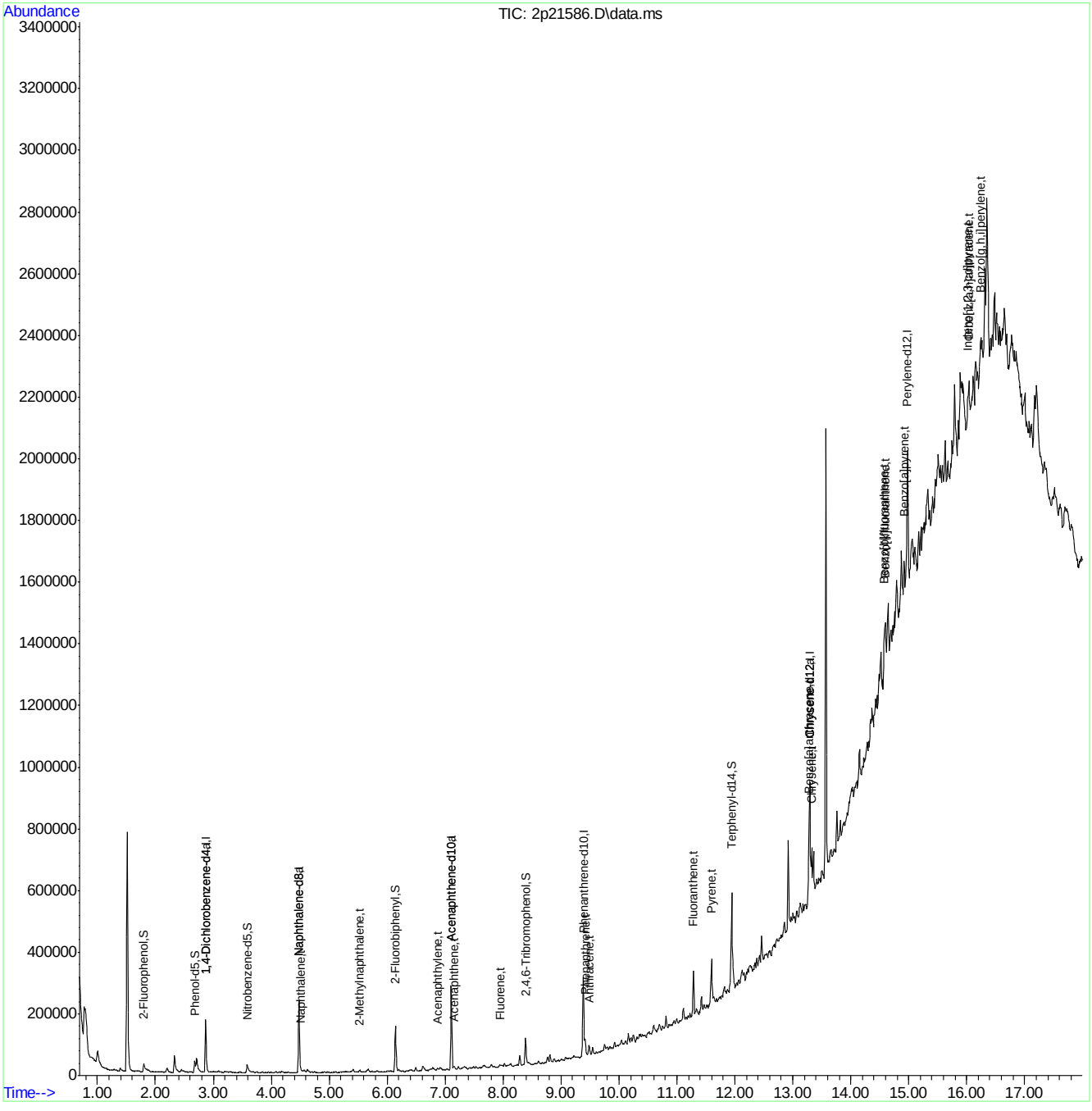
9.1.7

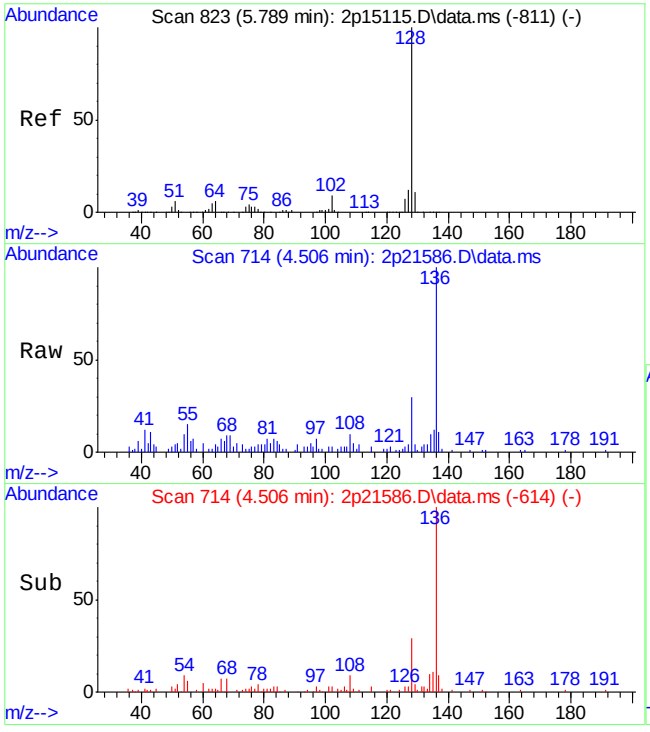
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21586.D
Acq On : 27 Mar 2013 3:07 pm
Operator : andrews1
Sample : jb31265-7
Misc : op64470,e2p948,31.6
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Mar 28 12:49:30 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Fri Mar 22 18:09:19 2013
Response via : Initial Calibration

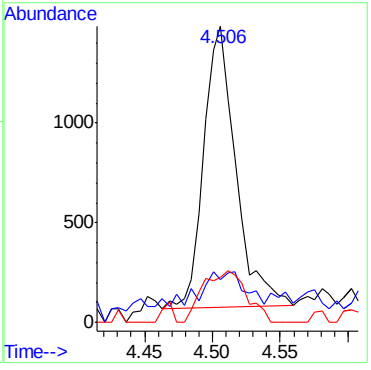


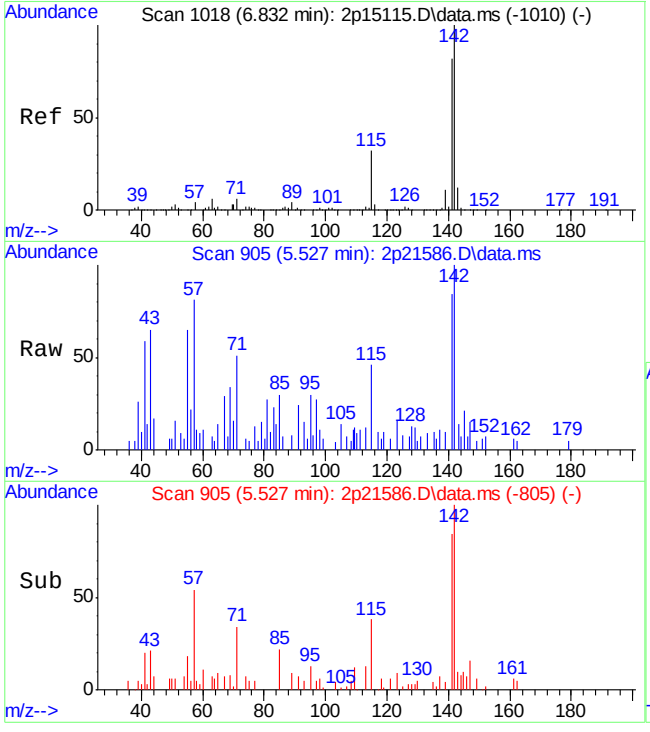


#38
Naphthalene
Concen: 0.55 ppb
RT: 4.506 min Scan# 714
Delta R.T. 0.037 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:128 Resp: 2344

Ion	Ratio	Lower	Upper
128	100		
129	7.5	0.0	41.0
127	13.6	0.0	43.0

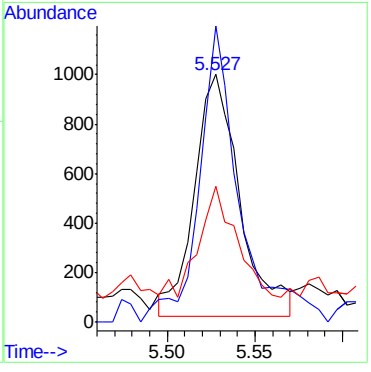


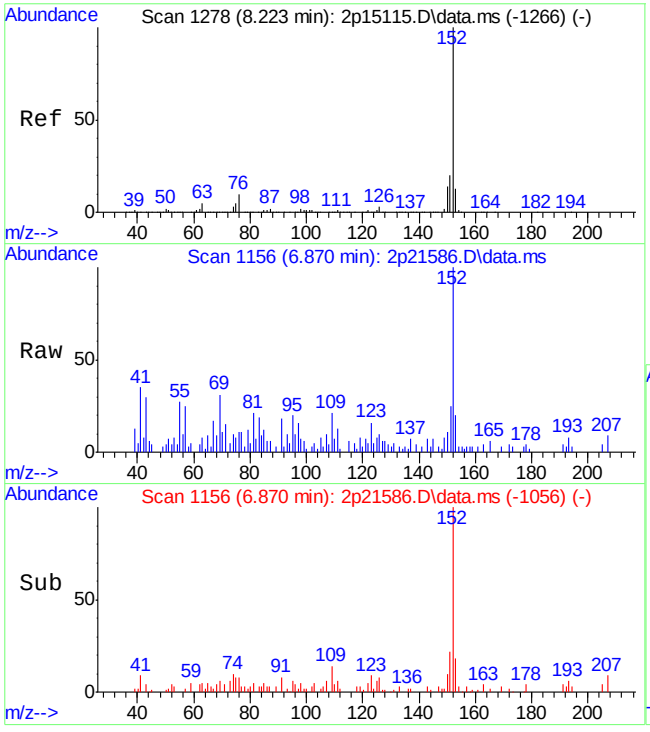


#44
2-Methylnaphthalene
Concen: 0.73 ppb m
RT: 5.527 min Scan# 905
Delta R.T. 0.037 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:141 Resp: 1774

Ion	Ratio	Lower	Upper
141	100		
142	119.6	88.4	148.4
115	54.6	14.8	74.8

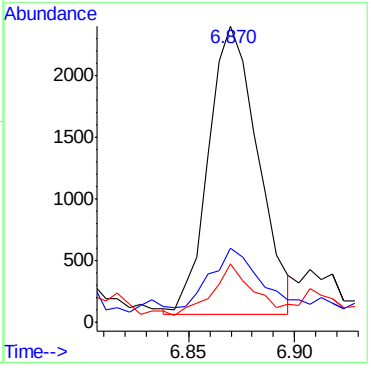


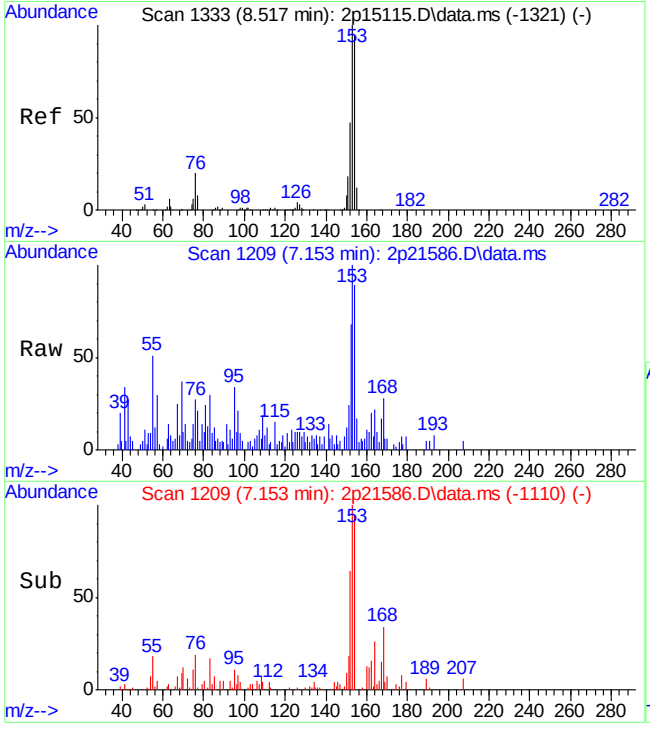


#56
Acenaphthylene
Concen: 0.91 ppb m
RT: 6.870 min Scan# 1156
Delta R.T. 0.037 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:152 Resp: 3766

Ion	Ratio	Lower	Upper
152	100		
151	25.1	0.0	49.9
153	19.6	0.0	43.1

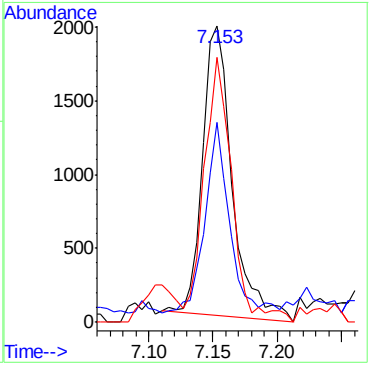




#59
Acenaphthene
Concen: 1.23 ppb
RT: 7.153 min Scan# 1209
Delta R.T. 0.031 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

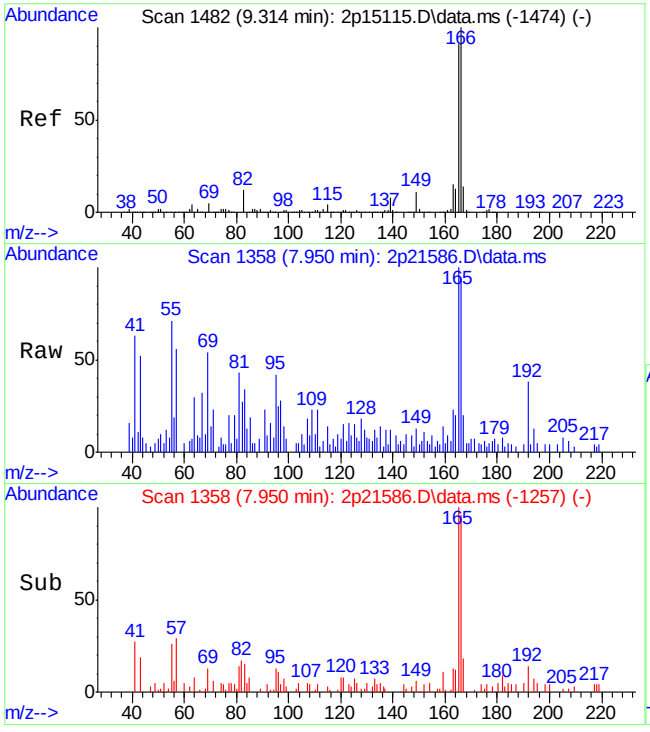
Tgt Ion:153 Resp: 3131

Ion	Ratio	Lower	Upper
153	100		
152	64.4	17.8	77.8
154	84.8	65.2	125.2



9.1.7

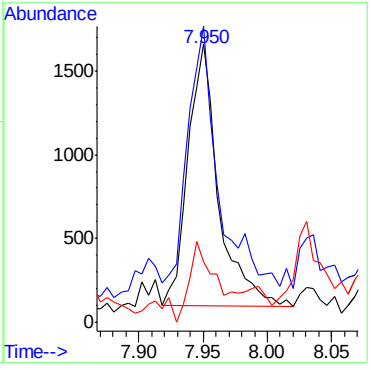
9

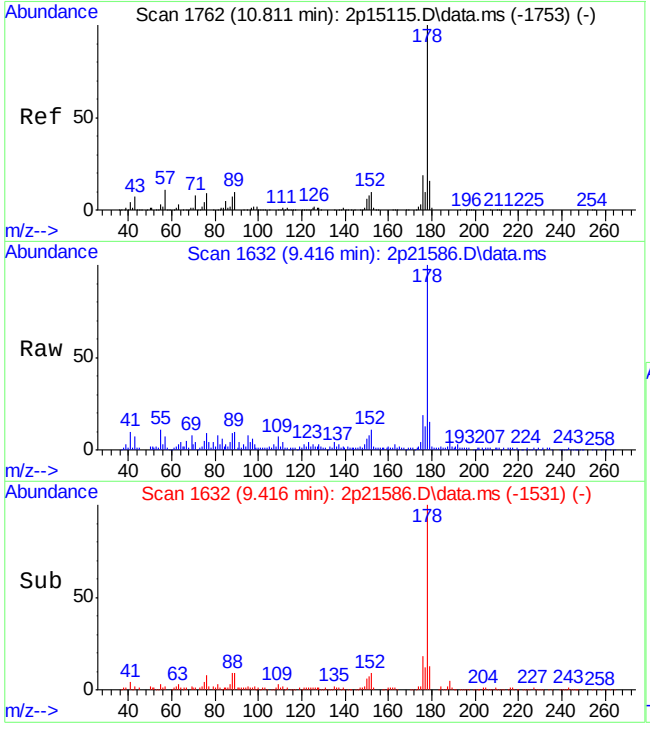


#66
Fluorene
Concen: 0.89 ppb
RT: 7.950 min Scan# 1358
Delta R.T. 0.042 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:166 Resp: 2618

Ion	Ratio	Lower	Upper
166	100		
165	99.2	62.5	122.5
167	12.2	0.0	42.9

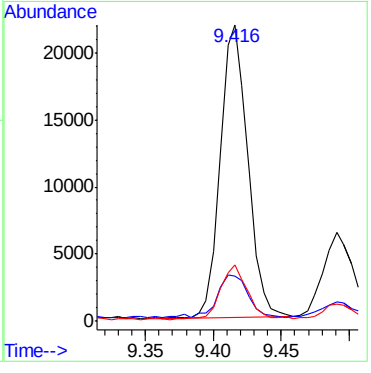




#77
Phenanthrene
Concen: 7.22 ppb
RT: 9.416 min Scan# 1632
Delta R.T. 0.042 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

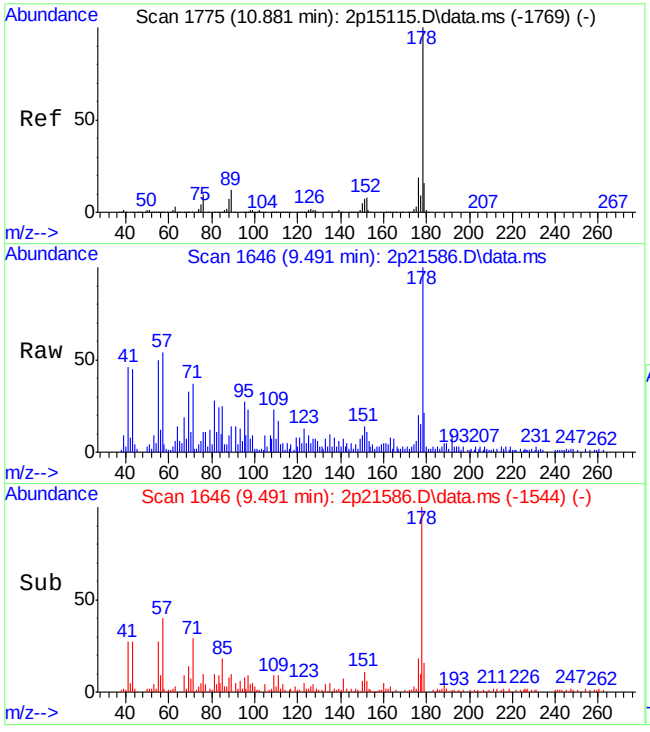
Tgt Ion:178 Resp: 30935

Ion	Ratio	Lower	Upper
178	100		
179	13.8	0.0	44.4
176	18.5	0.0	48.6



9.1.7

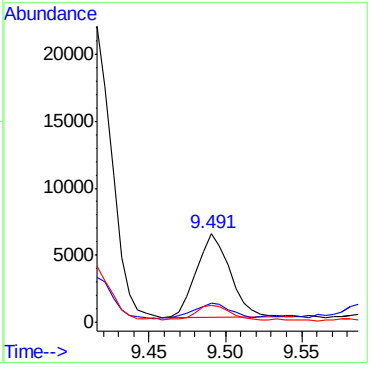
9

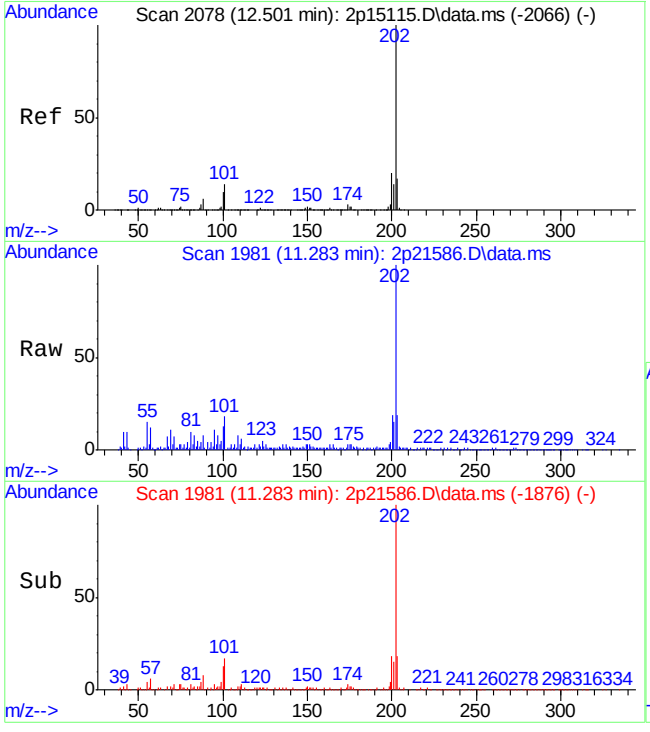


#78
Anthracene
Concen: 2.25 ppb
RT: 9.491 min Scan# 1646
Delta R.T. 0.047 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:178 Resp: 9546

Ion	Ratio	Lower	Upper
178	100		
179	16.0	0.0	44.5
176	18.2	0.0	46.5

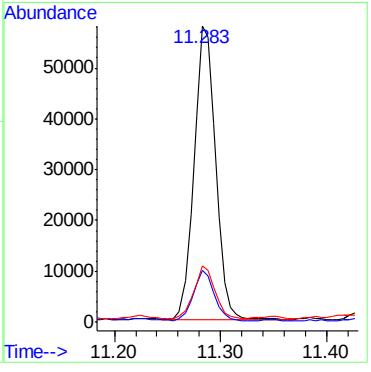




#81
Fluoranthene
Concen: 18.60 ppb
RT: 11.283 min Scan# 1981
Delta R.T. 0.063 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

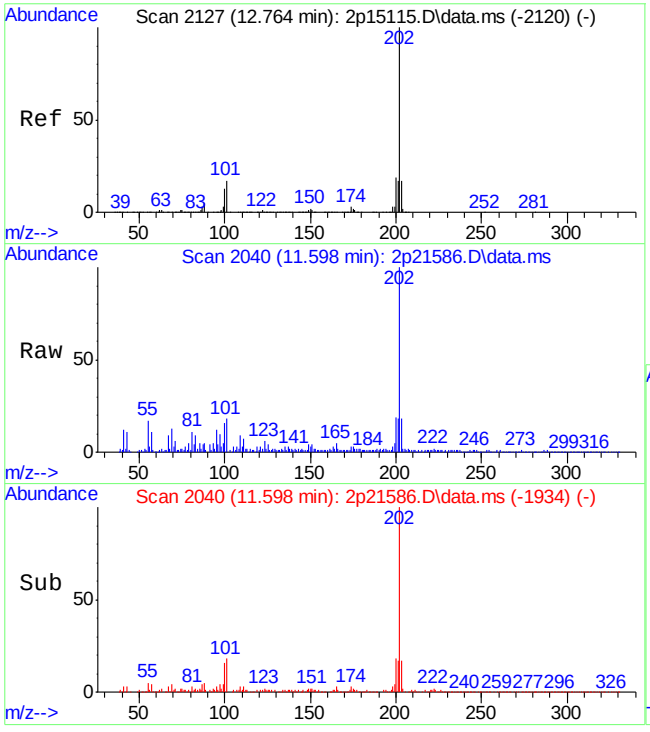
Tgt Ion:202 Resp: 81799

Ion	Ratio	Lower	Upper
202	100		
101	17.5	0.0	41.3
203	18.9	0.0	49.1



9.1.7

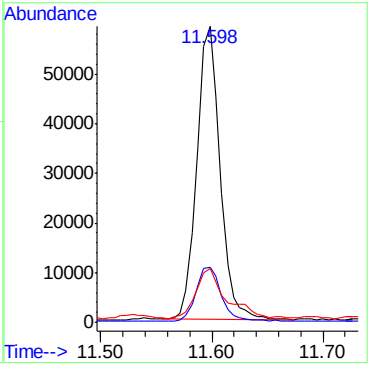
9

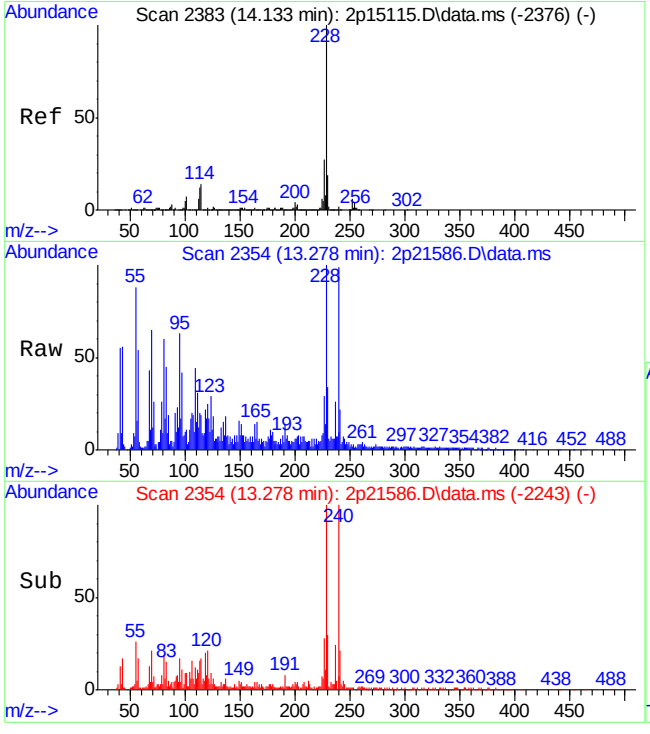


#84
Pyrene
Concen: 15.87 ppb
RT: 11.598 min Scan# 2040
Delta R.T. 0.069 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:202 Resp: 85479

Ion	Ratio	Lower	Upper
202	100		
200	18.3	0.0	49.6
203	16.7	0.0	46.9

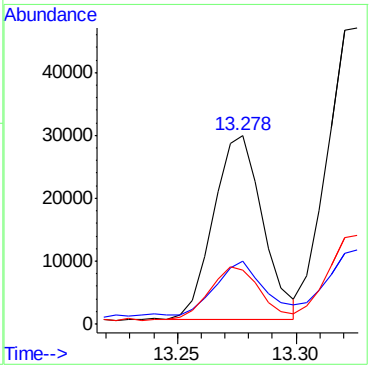


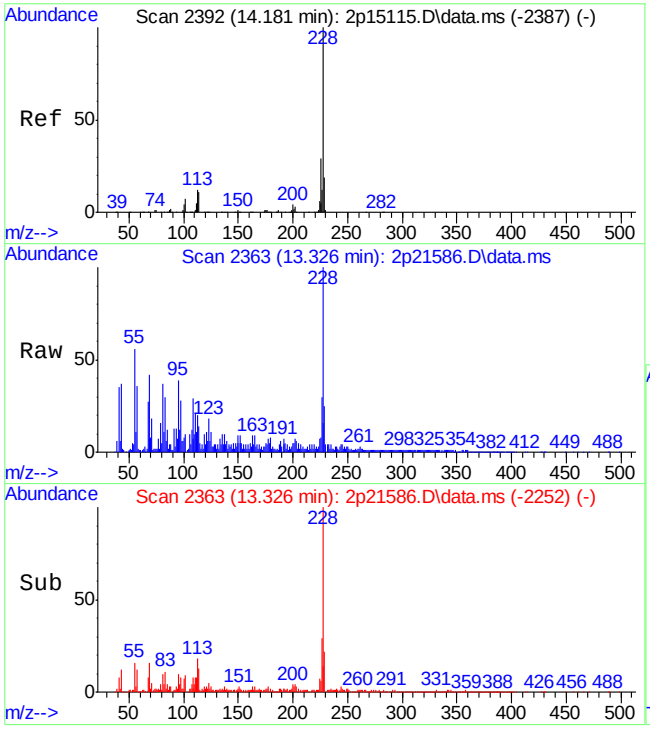


#88
Benzo[a]anthracene
Concen: 9.07 ppb m
RT: 13.278 min Scan# 2354
Delta R.T. 0.096 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:228 Resp: 42735

Ion	Ratio	Lower	Upper
228	100		
229	33.6	0.0	50.7
226	28.7	0.0	56.7

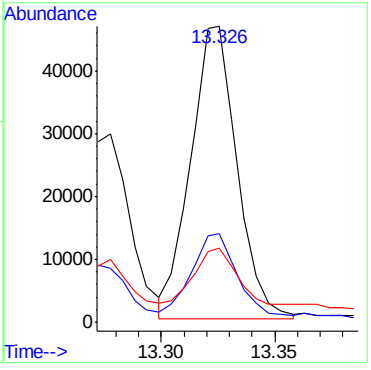


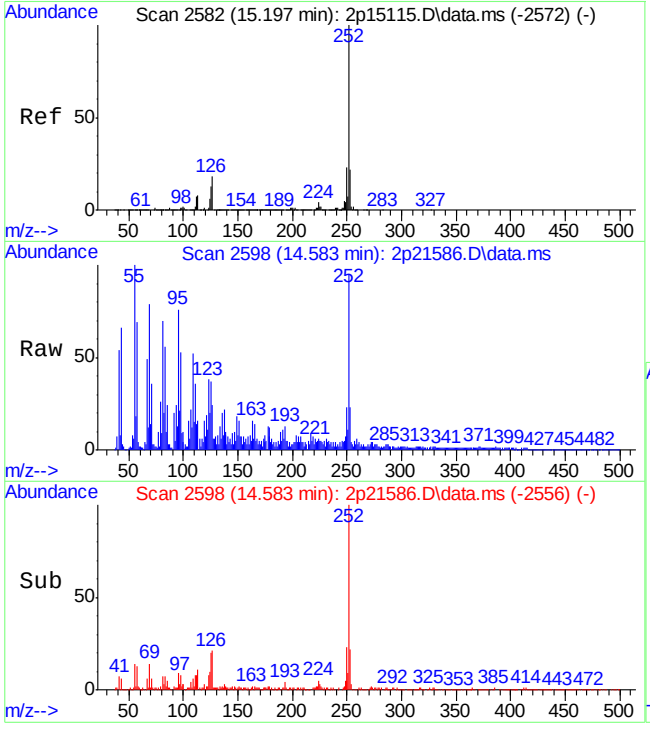


#90
Chrysene
Concen: 14.80 ppb m
RT: 13.326 min Scan# 2363
Delta R.T. 0.096 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:228 Resp: 66381

Ion	Ratio	Lower	Upper
228	100		
226	30.1	0.0	58.4
229	25.0	0.0	50.1

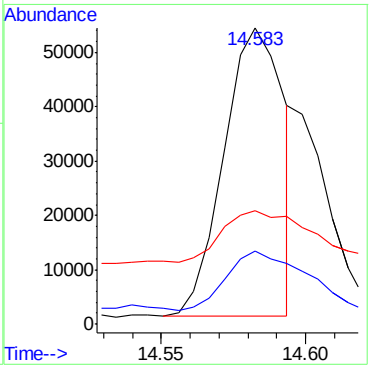


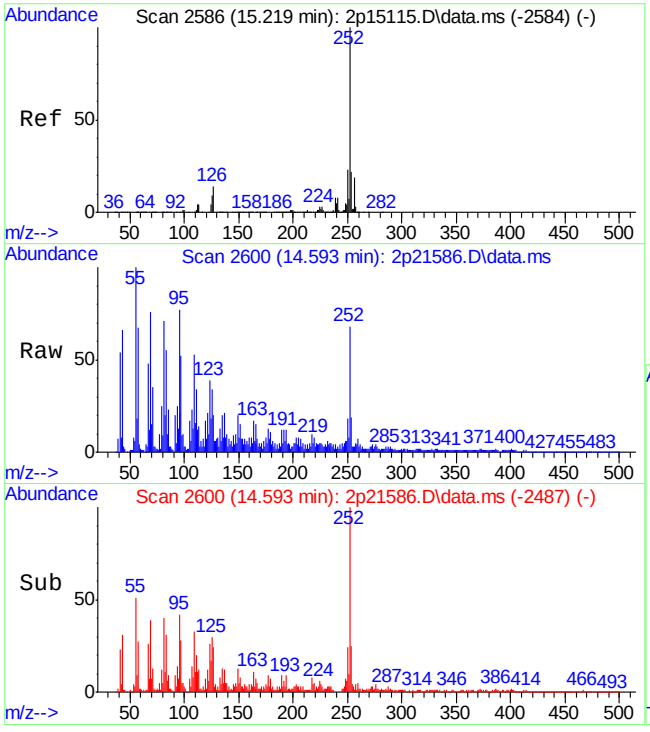


#94
Benzo[b]fluoranthene
Concen: 14.50 ppb m
RT: 14.583 min Scan# 2598
Delta R.T. 0.122 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:252 Resp: 76788

Ion	Ratio	Lower	Upper
252	100		
253	24.6	0.0	51.1
125	38.3	0.0	40.8

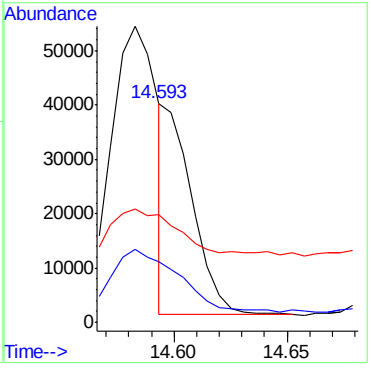


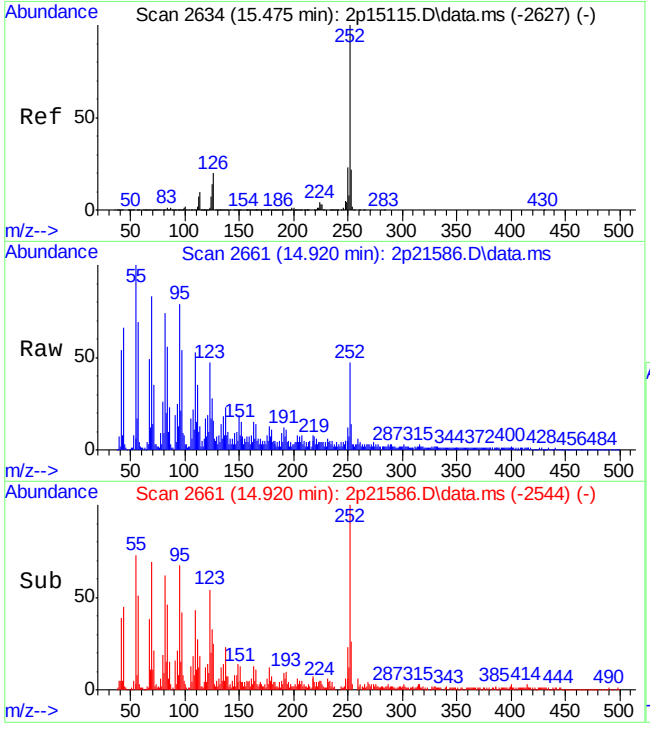


#95
Benzo[k]fluoranthene
Concen: 6.88 ppb m
RT: 14.593 min Scan# 2600
Delta R.T. 0.106 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:252 Resp: 31845

Ion	Ratio	Lower	Upper
252	100		
253	27.5	0.0	56.1
125	49.0	0.0	45.7#

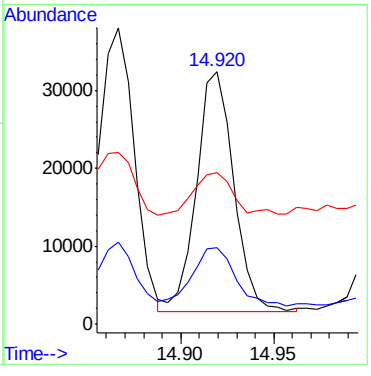




#96
Benzo[a]pyrene
Concen: 9.42 ppb m
RT: 14.920 min Scan# 2661
Delta R.T. 0.128 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

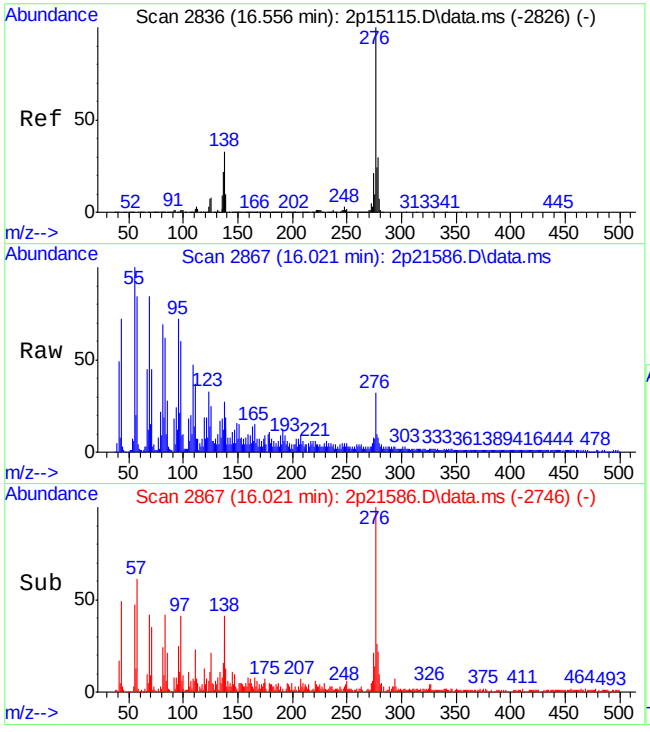
Tgt Ion:252 Resp: 43323

Ion	Ratio	Lower	Upper
252	100		
253	30.1	0.0	51.5
125	59.7	0.0	41.1#



9.1.7

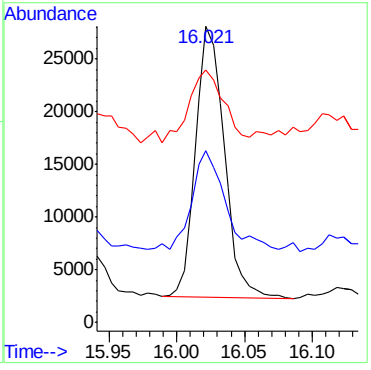
9

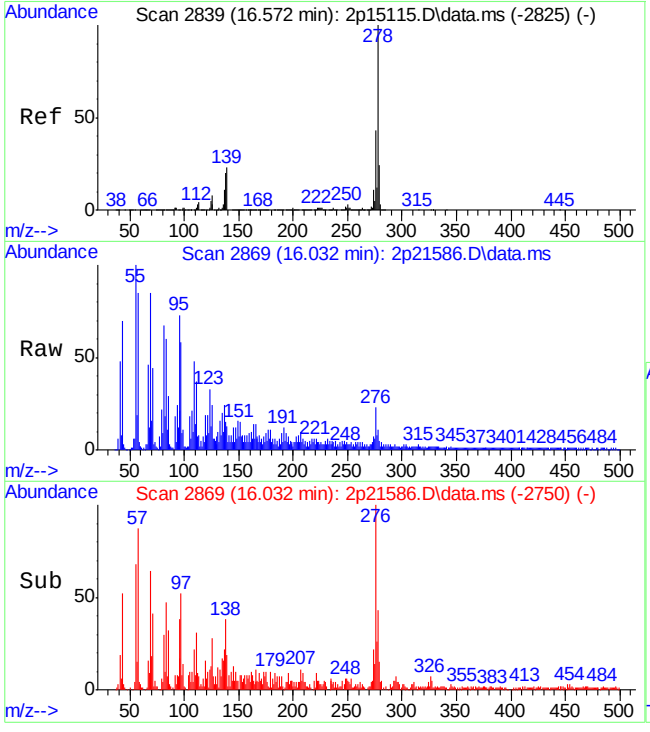


#97
Indeno[1,2,3-cd]pyrene
Concen: 7.11 ppb
RT: 16.021 min Scan# 2867
Delta R.T. 0.149 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:276 Resp: 37914

Ion	Ratio	Lower	Upper
276	100		
138	34.3	0.0	54.7
137	24.1	0.0	49.5

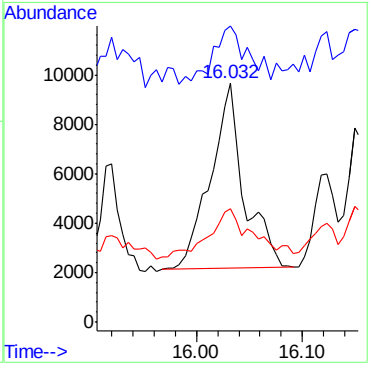


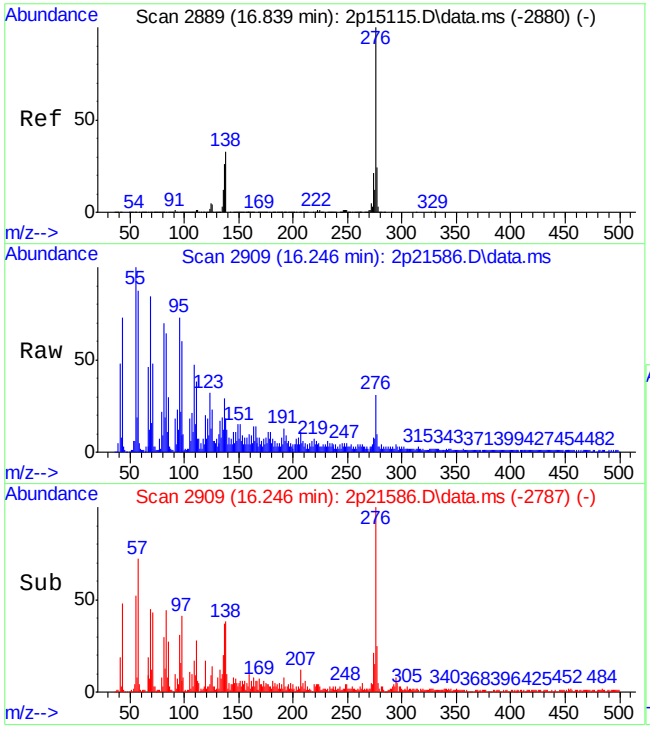


#99
Dibenz[a,h]anthracene
Concen: 3.71 ppb
RT: 16.032 min Scan# 2869
Delta R.T. 0.138 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:278 Resp: 16507

Ion	Ratio	Lower	Upper
278	100		
139	25.2	0.0	49.9
279	25.3	0.0	56.4

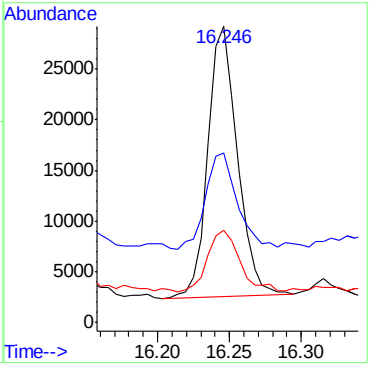




#101
Benzo[g,h,i]perylene
Concen: 8.38 ppb
RT: 16.246 min Scan# 2909
Delta R.T. 0.154 min
Lab File: 2p21586.D
Acq: 27 Mar 2013 3:07 pm

Tgt Ion:276 Resp: 37979

Ion	Ratio	Lower	Upper
276	100		
138	33.5	0.0	55.6
277	21.5	0.0	53.3



9.1.7

9

Quantitation Report (QT/LSC Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21571.D
Acq On : 27 Mar 2013 9:28 am
Operator : andrews1
Sample : op64470-mb1
Misc : op64470,e2p948,35.0
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 28 12:50:53 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Fri Mar 22 18:09:19 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	2.842	152	53102	40.00	ppb	0.03
24) Naphthalene-d8	4.442	136	210671	40.00	ppb	0.07
47) Acenaphthene-d10	7.062	164	117031	40.00	ppb	-0.02
69) Phenanthrene-d10	9.325	188	195051	40.00	ppb	-0.02
83) Chrysene-d12	13.229	240	197668	40.00	ppb	0.03
92) Perylene-d12	14.888	264	177035	40.00	ppb	0.04
102) 1,4-Dichlorobenzene-d4a	2.842	152	53102	40.00	ppb	0.03
104) Acenaphthene-d10a	7.062	164	117031	40.00	ppb	-0.02
107) Chrysene-d12a	13.229	240	197668	40.00	ppb	0.03
109) Naphthalene-d8a	4.442	136	210671	40.00	ppb	# 0.00
System Monitoring Compounds						
5) 2-Fluorophenol	1.773	112	52284	27.51	ppb	0.08
Spiked Amount 50.000	Range 11 - 58		Recovery = 55.02%			
8) Phenol-d5	2.639	99	67541	28.64	ppb	0.07
Spiked Amount 50.000	Range 10 - 59		Recovery = 57.28%			
25) Nitrobenzene-d5	3.559	82	56456	29.13	ppb	0.03
Spiked Amount 50.000	Range 19 - 61		Recovery = 58.26%			
51) 2-Fluorobiphenyl	6.110	172	125002	33.40	ppb	-0.01
Spiked Amount 50.000	Range 21 - 58		Recovery = 66.80%#			
73) 2,4,6-Tribromophenol	8.341	330	17849	40.94	ppb	0.00
Spiked Amount 50.000	Range 12 - 68		Recovery = 81.88%#			
85) Terphenyl-d14	11.887	244	181406	43.56	ppb	0.00
Spiked Amount 50.000	Range 16 - 65		Recovery = 87.12%#			

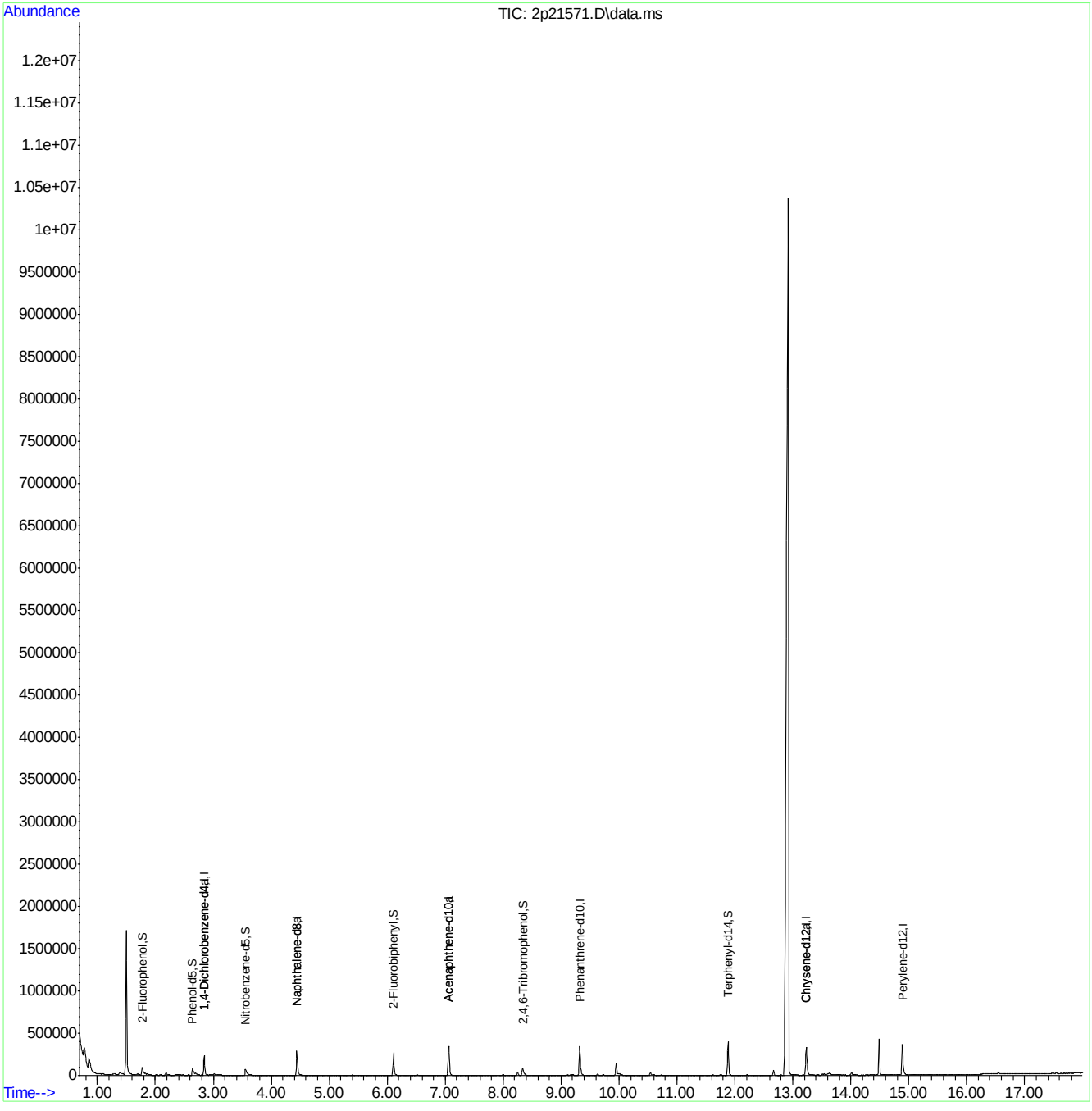
Target Compounds Qvalue

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

Quantitation Report (QT/LSC Reviewed)

Data Path : C:\msdchem\1\DATA\2p948\
Data File : 2p21571.D
Acq On : 27 Mar 2013 9:28 am
Operator : andrews1
Sample : op64470-mb1
Misc : op64470,e2p948,35.0
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 28 12:50:53 2013
Quant Method : C:\MSDCHEM\1\METHODS\M2P896.M
Quant Title : Semi Volatile Extractables by GC/MS
QLast Update : Fri Mar 22 18:09:19 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\EZ4029\Z78870.D Vial: 4
Acq On : 27 Mar 2013 4:02 pm Operator: katelynh
Sample : op64470-mb1 Inst : MSZ
Misc : OP64470,EZ4029,35.0 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 27 16:26:34 2013 Quant Results File: MZ4014.RES

Quant Method : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Thu Mar 14 08:57:10 2013
Response via : Initial Calibration
DataAcq Meth : MZ4014

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.59	152	72646	40.00	ppb	-0.12
24) Naphthalene-d8	6.49	136	280510	40.00	ppb	-0.11
47) Acenaphthene-d10	9.22	164	176285	40.00	ppb	-0.11
69) Phenanthrene-d10	11.48	188	299434	40.00	ppb	-0.11
83) Chrysene-d12	16.05	240	341886	40.00	ppb	-0.11
92) Perylene-d12	18.85	264	305275	40.00	ppb	-0.11
102) 1,4-Dichlorobenzene-d4a	4.59	152	72646	40.00	ppb	-0.11
104) Phenanthrene-d10a	11.48	188	299434	40.00	ppb	-0.10
106) Chrysene-d12a	16.05	240	341886	40.00	ppb	-0.09
108) Acenaphthene-d10a	9.22	164	176285	40.00	ppb	-0.11
110) Naphthalene-d8a	6.49	136	280510	40.00	ppb	-0.11

System Monitoring Compounds

5) 2-Fluorophenol	2.95	112	69181	29.81	ppb	-0.07
Spiked Amount 50.000			Recovery = 59.62%			
8) Phenol-d5	4.36	99	92415	30.23	ppb	-0.05
Spiked Amount 50.000			Recovery = 60.46%			
25) Nitrobenzene-d5	5.47	82	78691	31.00	ppb	-0.12
Spiked Amount 50.000			Recovery = 62.00%			
51) 2-Fluorobiphenyl	8.25	172	185909	32.40	ppb	-0.12
Spiked Amount 50.000			Recovery = 64.80%			
73) 2,4,6-Tribromophenol	10.48	330	28370	45.74	ppb	-0.11
Spiked Amount 50.000			Recovery = 91.48%			
86) Terphenyl-d14	14.17	244	300195	41.67	ppb	-0.12
Spiked Amount 50.000			Recovery = 83.34%			

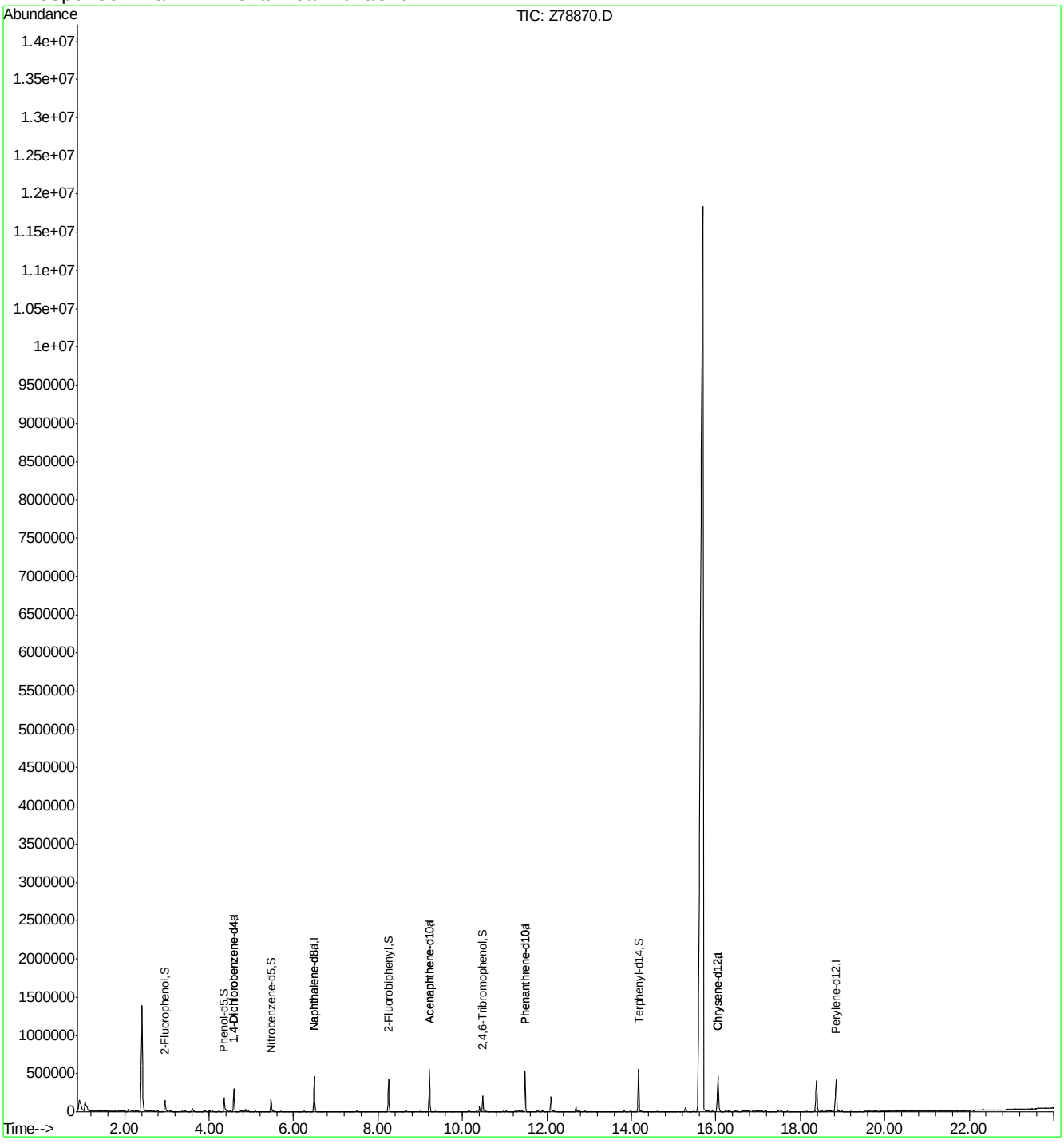
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\EZ4029\Z78870.D Vial: 4
Acq On : 27 Mar 2013 4:02 pm Operator: katelynh
Sample : op64470-mb1 Inst : MSZ
Misc : OP64470,EZ4029,35.0 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 27 16:42 2013 Quant Results File: MZ4014.RES

Method : C:\MSDCHEM\1\METHODS\MZ4014.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Thu Mar 14 08:57:10 2013
Response via : Initial Calibration



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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:01	MA30777-STD1	1		STDA
11:07	MA30777-STD2	1		STDB
11:12	MA30777-STD3	1		STDC
11:18	MA30777-STD4	1		STDD
11:24	MA30777-CCV1	1		
11:30	MA30777-CCB1	1		
11:35	MA30777-CRI1	1		See rerun.
11:41	MA30777-CRID1	1		
11:47	MA30777-CRIA1	1		
11:53	MA30777-CRI2	1		
11:59	MA30777-ICV1	1		
12:05	MA30777-ICB1	1		
12:11	MA30777-CCV2	1		
12:16	MA30777-CCB2	1		
12:22	MA30777-ICSA1	1		
12:28	MA30777-ICSAB1	1		
12:34	ZZZZZZ	1		
12:40	ZZZZZZ	1		
12:46	MA30777-CCV3	1		
12:52	MA30777-CCB3	1		
12:58	MP70652-MB1	1		
13:03	MP70652-LC1	1		
13:09	ZZZZZZ	1		
13:15	ZZZZZZ	1		
13:21	ZZZZZZ	1		
13:27	MP70651-MB1	1		
13:33	MP70651-B1	1		
13:38	ZZZZZZ	1		
13:44	ZZZZZZ	1		
13:50	MA30777-CCV4	1		
13:56	MA30777-CCB4	1		
14:02	ZZZZZZ	1		
14:08	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:13	ZZZZZZ	1		
14:19	ZZZZZZ	1		
14:25	ZZZZZZ	1		
14:31	MP70651-LC1	1		
14:36	JB32189-1	1		(sample used for QC only; not part of login JB31265)
14:42	ZZZZZZ	1		
14:48	ZZZZZZ	1		
14:54	MA30777-CCV5	1		
14:59	MA30777-CCB5	1		
15:05	ZZZZZZ	2		
15:11	ZZZZZZ	5		
15:17	ZZZZZZ	1		
15:23	ZZZZZZ	1		
15:28	ZZZZZZ	1		
15:34	ZZZZZZ	1		
15:40	ZZZZZZ	1		
15:46	MA30777-CCV6	1		
15:51	MA30777-CCB6	1		
15:57	MA30777-CRI3	1		
16:03	MA30777-CRID2	1		TLNJ out.
16:09	MA30777-CRI4	1		
16:15	MA30777-CRIA2	1		
16:21	MA30777-ICSA2	1		
16:27	MA30777-ICSAB2	1		
16:33	MA30777-CCV7	1		
16:38	MA30777-CCB7	1		
16:44	MA30777-CRID3	1		TLNJ out.
16:50	MP70651-S1	1		
16:56	MP70651-S2	1		
17:02	MP70651-SD1	5		
17:08	ZZZZZZ	1		
17:13	MP70608-S1	1		
17:19	MP70608-S2	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:25	JB31123-4	1		(sample used for QC only; not part of login JB31265)
17:31	MP70608-SD1	5		
17:36	MA30777-CCV8	1		
17:42	MA30777-CCB8	1		
17:48	ZZZZZZ	1		
17:54	ZZZZZZ	1		
18:00	ZZZZZZ	1		
18:05	ZZZZZZ	1		
18:11	ZZZZZZ	1		
18:17	ZZZZZZ	1		
18:23	ZZZZZZ	1		
18:28	ZZZZZZ	1		
18:34	ZZZZZZ	1		
18:40	ZZZZZZ	1		
18:46	MA30777-CCV9	1		
18:51	MA30777-CCB9	1		
18:57	ZZZZZZ	1		
19:03	ZZZZZZ	1		
19:09	ZZZZZZ	1		
19:14	ZZZZZZ	1		
19:20	ZZZZZZ	1		
19:26	ZZZZZZ	1		
19:32	MP70650-MB1	1		Batch to re-digestion. BS out.
19:38	MP70650-B1	1		
19:43	MP70650-LC1	1		(wrong spikelot)
19:49	MA30777-CCV10	1		
19:55	MA30777-CCB10	1		
20:01	MP70650-S1	1		
20:07	MP70650-S2	1		
20:12	JB31986-1	1		(sample used for QC only; not part of login JB31265)
20:18	MP70650-SD1	5		
20:24	ZZZZZZ	1		
20:30	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:35	ZZZZZZ	1		
20:41	ZZZZZZ	1		
20:47	ZZZZZZ	1		
20:53	ZZZZZZ	1		
20:59	MA30777-CCV11	1		
21:04	MA30777-CCB11	1		
21:10	ZZZZZZ	1		
21:16	ZZZZZZ	1		
21:22	ZZZZZZ	1		
21:28	ZZZZZZ	1		
21:33	ZZZZZZ	1		
21:39	ZZZZZZ	1		
21:45	ZZZZZZ	1		
21:51	ZZZZZZ	1		
21:57	ZZZZZZ	1		
22:02	MA30777-CCV12	1		
22:08	MA30777-CCB12	1		
22:14	MA30777-CRID4	1		
22:20	MA30777-CRI5	1		
22:26	MA30777-CRID5	1		
22:32	MA30777-CRIA3	1		
22:38	MA30777-ICSA3	1		
22:44	MA30777-ICSAB3	1		
22:49	MA30777-CCV13	1		
22:55	MA30777-CCB13	1		
23:01	ZZZZZZ	1		
23:07	ZZZZZZ	1		
23:13	ZZZZZZ	1		
23:18	MP70647-LC1	1		
23:24	MP70647-MB1	1		
23:30	MP70647-S1	1		
23:36	MP70647-S2	1		
23:41	JB31392-1	1		(sample used for QC only; not part of login JB31265)

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:47	MP70647-SD1	5		
23:53	MA30777-CCV14	1		
23:59	MA30777-CCB14	1		
00:05	ZZZZZZ	1		
00:10	ZZZZZZ	1		
00:16	ZZZZZZ	1		
00:22	ZZZZZZ	1		
00:28	ZZZZZZ	1		
00:34	ZZZZZZ	1		
00:40	ZZZZZZ	1		
00:46	ZZZZZZ	1		
00:51	ZZZZZZ	1		
00:57	ZZZZZZ	1		
01:03	MA30777-CCV15	1		
01:09	MA30777-CCB15	1		
01:15	ZZZZZZ	1		
01:21	ZZZZZZ	1		
01:27	ZZZZZZ	1		
01:32	ZZZZZZ	1		
01:38	ZZZZZZ	1		
01:44	ZZZZZZ	1		
01:50	ZZZZZZ	1		
01:56	ZZZZZZ	1		
02:02	MA30777-CCV16	1		
02:07	MA30777-CCB16	1		
02:13	MP70634-MB1	1		
02:19	MP70634-B1	1		
02:25	MP70634-S1	1		In out (Ca high.)
02:31	MP70634-S2	1		In out (Ca high.)
02:37	JB31267-5	1		(sample used for QC only; not part of login JB31265)
02:43	MP70634-SD1	5		
02:49	JB31265-1	1		
02:54	JB31265-2	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	03:00	JB31265-3	1		
	03:06	JB31265-4	1		
	03:12	MA30777-CCV17	1		
	03:17	MA30777-CCB17	1		
	03:23	JB31265-5	1		
	03:29	JB31265-6	1		
	03:35	JB31265-7	1		
---------->	Last reportable sample/prep for job JB31265				
	03:41	ZZZZZZ	1		
	03:46	ZZZZZZ	1		
	03:52	ZZZZZZ	1		
	03:58	ZZZZZZ	1		
	04:04	ZZZZZZ	1		
	04:10	ZZZZZZ	1		
	04:16	ZZZZZZ	1		
	04:21	ZZZZZZ	1		
	04:27	MA30777-CCV18	1		
	04:33	MA30777-CCB18	1		
	04:39	ZZZZZZ	1		
	04:45	ZZZZZZ	1		
	04:50	ZZZZZZ	1		
	04:56	ZZZZZZ	1		
	05:02	MA30777-CCV19	1		
	05:08	MA30777-CCB19	1		
	05:14	MA30777-CRI6	1		
	05:19	MA30777-CRID6	1		
	05:25	MA30777-CRIA4	1		
	05:31	MA30777-ICSA4	1		
	05:37	MA30777-ICSAB4	1		
	05:43	MA30777-CCV20	1		
	05:49	MA30777-CCB20	1		
---------->	Last reportable CCB for job JB31265				
	05:55	ZZZZZZ	1		
	06:01	ZZZZZZ	1		
	06:07	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:12	ZZZZZZ	1		
06:18	ZZZZZZ	1		
06:24	ZZZZZZ	1		
08:07	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
11:01	MA30777-STD1	1796 R	83956 R	18185 R	2984 R
11:07	MA30777-STD2	1723	79994	18113	2715
11:12	MA30777-STD3	1660	78140	17979	2587
11:18	MA30777-STD4	1661	76813	17896	2555
11:24	MA30777-CCV1	No results reported for the elements associated with this internal standard.			
11:30	MA30777-CCB1	No results reported for the elements associated with this internal standard.			
11:35	MA30777-CRI1	No results reported for the elements associated with this internal standard.			
11:41	MA30777-CRID1	1803	84847	18428	2980
11:47	MA30777-CRIA1	1793	85018	18591	2977
11:53	MA30777-CRI2	1763	83040	18479	2885
11:59	MA30777-ICV1	1711	79963	18152	2656
12:05	MA30777-ICB1	1800	84925	18711	2989
12:11	MA30777-CCV2	1724	80243	18327	2677
12:16	MA30777-CCB2	1800	85287	18722	2990
12:22	MA30777-ICSA1	1559	72118	17457	2340
12:28	MA30777-ICSAB1	1569	72302	17672	2354
12:34	ZZZZZZ	1744	82450	18625	2932
12:40	ZZZZZZ	1826	80030	19068	2633
12:46	MA30777-CCV3	1703	80049	18548	2652
12:52	MA30777-CCB3	1812	85675	18890	3015
12:58	MP70652-MB1	1783	85642	18857	2969
13:03	MP70652-LC1	1735	82277	18466	2808
13:09	ZZZZZZ	1795	85460	18678	2983
13:15	ZZZZZZ	1778	85801	19290	2963
13:21	ZZZZZZ	1808	86640	19054	3009
13:27	MP70651-MB1	1824	88392	19742	3048
13:33	MP70651-B1	1730	82011	18780	2760
13:38	ZZZZZZ	1780	85814	19147	2969
13:44	ZZZZZZ	1651	80356	19359	2787
13:50	MA30777-CCV4	1713	80387	18618	2668
13:56	MA30777-CCB4	1785	85848	19234	2973
14:02	ZZZZZZ	1843	87255	20397	2773
14:08	ZZZZZZ	1810	86347	19893	2728

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
14:13	ZZZZZZ	1880	89270	20921	2750
14:19	ZZZZZZ	1763	83442	19439	2672
14:25	ZZZZZZ	1612	78256	18597	2780
14:31	MP70651-LC1	1765	84000	19393	2720
14:36	JB32189-1	1774	84440	19841	2734
14:42	ZZZZZZ	1767	84755	20164	2733
14:48	ZZZZZZ	1792	85106	19803	2739
14:54	MA30777-CCV5	1702	80454	18701	2651
14:59	MA30777-CCB5	1810	86535	19138	3007
15:05	ZZZZZZ	1708	82880	19134	2826
15:11	ZZZZZZ	1740	83349	18868	2866
15:17	ZZZZZZ	1780	85161	20294	2723
15:23	ZZZZZZ	1821	88150	21185	2707
15:28	ZZZZZZ	1807	85275	20094	2777
15:34	ZZZZZZ	1823	86928	20391	2745
15:40	ZZZZZZ	1765	84846	20434	2738
15:46	MA30777-CCV6	1710	81404	18802	2668
15:51	MA30777-CCB6	1796	87393	19493	3001
15:57	MA30777-CRI3	1790	85614	19223	2941
16:03	MA30777-CRID2	1790	86603	18973	2976
16:09	MA30777-CRI4	1764	85170	19296	2905
16:15	MA30777-CRIA2	1825	87105	19165	3039
16:21	MA30777-ICSA2	1528	72795	18061	2302
16:27	MA30777-ICSAB2	1535	72785	18194	2313
16:33	MA30777-CCV7	1697	80869	19059	2650
16:38	MA30777-CCB7	1807	87481	19511	3018
16:44	MA30777-CRID3	1786	85469	19090	2962
16:50	MP70651-S1	1741	81856	19326	2659
16:56	MP70651-S2	1736	81417	18958	2648
17:02	MP70651-SD1	1796	84880	18892	2882
17:08	ZZZZZZ	1824	86675	18862	3035
17:13	MP70608-S1	1817	84901	19878	2635
17:19	MP70608-S2	1797	84557	19867	2599

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
17:25	JB31123-4	1860	87640	20103	2738
17:31	MP70608-SD1	1811	85950	19164	2886
17:36	MA30777-CCV8	1722	80695	18477	2682
17:42	MA30777-CCB8	1804	86098	18636	2998
17:48	ZZZZZZ	1693	81125	19138	2582
17:54	ZZZZZZ	1631	79285	18558	2620
18:00	ZZZZZZ	1710	82153	19061	2641
18:05	ZZZZZZ	1761	83265	19128	2684
18:11	ZZZZZZ	1773	84059	18661	2836
18:17	ZZZZZZ	1785	84775	19070	2856
18:23	ZZZZZZ	1768	85176	18947	2911
18:28	ZZZZZZ	1801	86416	19443	2843
18:34	ZZZZZZ	1674	79979	18451	2618
18:40	ZZZZZZ	1685	80254	18450	2606
18:46	MA30777-CCV9	1749	81663	18750	2718
18:51	MA30777-CCB9	1813	85968	18279	3003
18:57	ZZZZZZ	1715	82651	19018	2723
19:03	ZZZZZZ	1741	82604	18662	2736
19:09	ZZZZZZ	1836	86298	19494	2758
19:14	ZZZZZZ	1874	87940	20235	2744
19:20	ZZZZZZ	1810	85471	19247	2706
19:26	ZZZZZZ	1823	88017	18962	3043
19:32	MP70650-MB1	No results reported for the elements associated with this internal standard.			
19:38	MP70650-B1	No results reported for the elements associated with this internal standard.			
19:43	MP70650-LC1	No results reported for the elements associated with this internal standard.			
19:49	MA30777-CCV10	1723	81198	18242	2681
19:55	MA30777-CCB10	1817	86685	18463	3019
20:01	MP70650-S1	No results reported for the elements associated with this internal standard.			
20:07	MP70650-S2	No results reported for the elements associated with this internal standard.			
20:12	JB31986-1	No results reported for the elements associated with this internal standard.			
20:18	MP70650-SD1	No results reported for the elements associated with this internal standard.			
20:24	ZZZZZZ	No results reported for the elements associated with this internal standard.			
20:30	ZZZZZZ	No results reported for the elements associated with this internal standard.			

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:35	ZZZZZZ	No results reported for the elements associated with this internal standard.			
20:41	ZZZZZZ	No results reported for the elements associated with this internal standard.			
20:47	ZZZZZZ	No results reported for the elements associated with this internal standard.			
20:53	ZZZZZZ	No results reported for the elements associated with this internal standard.			
20:59	MA30777-CCV11	1737	81515	18386	2701
21:04	MA30777-CCB11	1831	85383	18376	3031
21:10	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:16	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:22	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:28	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:33	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:39	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:45	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:51	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:57	ZZZZZZ	No results reported for the elements associated with this internal standard.			
22:02	MA30777-CCV12	1745	81527	17955	2705
22:08	MA30777-CCB12	1843	86733	18179	3045
22:14	MA30777-CRID4	1819	86085	18375	3001
22:20	MA30777-CRI5	1812	85534	18297	2957
22:26	MA30777-CRID5	1831	86828	18525	3022
22:32	MA30777-CRIA3	1847	87481	18512	3057
22:38	MA30777-ICSA3	1553	72213	17116	2330
22:44	MA30777-ICSAB3	1570	72867	17146	2355
22:49	MA30777-CCV13	1752	81800	17846	2717
22:55	MA30777-CCB13	1848	87640	18267	3057
23:01	ZZZZZZ	No results reported for the elements associated with this internal standard.			
23:07	ZZZZZZ	No results reported for the elements associated with this internal standard.			
23:13	ZZZZZZ	No results reported for the elements associated with this internal standard.			
23:18	MP70647-LC1	1767	83075	17896	2851
23:24	MP70647-MB1	1823	86527	18157	3024
23:30	MP70647-S1	1729	82636	18009	2720
23:36	MP70647-S2	1741	81700	17733	2736
23:41	JB31392-1	1810	85104	18153	2933

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:47	MP70647-SD1	1834	86861	18461	3021
23:53	MA30777-CCV14	1754	82284	18224	2719
23:59	MA30777-CCB14	1842	87777	18418	3054
00:05	ZZZZZZ	1763	83477	18116	2847
00:10	ZZZZZZ	1753	82891	18162	2836
00:16	ZZZZZZ	1787	84683	17757	2903
00:22	ZZZZZZ	1780	84892	18310	2897
00:28	ZZZZZZ	1805	84668	18027	2944
00:34	ZZZZZZ	1732	85269	18379	2739
00:40	ZZZZZZ	1758	83015	17976	2802
00:46	ZZZZZZ	1586	74380	17170	2449
00:51	ZZZZZZ	1644	78040	17867	2570
00:57	ZZZZZZ	1714	81102	17928	2720
01:03	MA30777-CCV15	1743	81863	17988	2709
01:09	MA30777-CCB15	1839	87772	18198	3047
01:15	ZZZZZZ	1670	79506	17820	2637
01:21	ZZZZZZ	1819	85840	18330	2944
01:27	ZZZZZZ	1810	86134	18511	2936
01:32	ZZZZZZ	1811	85922	18370	2929
01:38	ZZZZZZ	1811	86712	18216	3007
01:44	ZZZZZZ	1809	85697	18153	2929
01:50	ZZZZZZ	1830	87296	18530	2963
01:56	ZZZZZZ	1827	85637	17979	2947
02:02	MA30777-CCV16	1754	81590	17753	2716
02:07	MA30777-CCB16	1838	87882	18391	3045
02:13	MP70634-MB1	1887	90423	19107	3145
02:19	MP70634-B1	1766	83338	18191	2804
02:25	MP70634-S1	1381	66612	16127	2066 !a
02:31	MP70634-S2	1420	67940	16262	2101
02:37	JB31267-5	1445	68790	16556	2178
02:43	MP70634-SD1	1604	77268	17537	2492
02:49	JB31265-1	1727	83510	19025	2541
02:54	JB31265-2	1758	84863	19174	2657

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:00	JB31265-3	1807	86988	19642	2797
03:06	JB31265-4	1752	83838	18523	2726
03:12	MA30777-CCV17	1725	81577	18169	2685
03:17	MA30777-CCB17	1835	87461	18039	3042
03:23	JB31265-5	1772	84545	18929	2724
03:29	JB31265-6	1835	89166	20151	2782
03:35	JB31265-7	1728	84213	18711	2816
03:41	ZZZZZZ	1853	87330	18975	2858
03:46	ZZZZZZ	1752	83962	18902	2537
03:52	ZZZZZZ	1848	86734	19120	2805
03:58	ZZZZZZ	1900	90222	19086	2833
04:04	ZZZZZZ	1503	73527	17185	2442
04:10	ZZZZZZ	1828	86346	18365	2799
04:16	ZZZZZZ	1857	87532	18822	2843
04:21	ZZZZZZ	1823	87340	18589	2905
04:27	MA30777-CCV18	1747	81469	18012	2710
04:33	MA30777-CCB18	1836	86548	17599	3040
04:39	ZZZZZZ	1942	91311	19976	2840
04:45	ZZZZZZ	1863	88166	18765	2869
04:50	ZZZZZZ	1948	91374	19936	2806
04:56	ZZZZZZ	1916	90689	19784	2766
05:02	MA30777-CCV19	1751	81845	17299	2716
05:08	MA30777-CCB19	1813	84946	17050	3000
05:14	MA30777-CRI6	1812	85486	17361	2956
05:19	MA30777-CRID6	1824	86253	17393	3009
05:25	MA30777-CRIA4	1846	87148	17504	3048
05:31	MA30777-ICSA4	1589	73454	16201	2379
05:37	MA30777-ICSAB4	1562	72201	16097	2348
05:43	MA30777-CCV20	1763	80968	16920	2733
05:49	MA30777-CCB20	1848	87666	17465	3056
05:55	ZZZZZZ	1859	86851	17307	3064
06:01	ZZZZZZ	1859	88580	17684	3072
06:07	ZZZZZZ	1810	86219	17496	3014

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30777
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:12	ZZZZZZ	1740	87425	18119	3018
06:18	ZZZZZZ	1863	87745	17826	3082
06:24	ZZZZZZ	1851	88261	17818	3073
08:07	ZZZZZZ	1356	60884	28498 !	2400

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.

10.1.1
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:			12:05		12:16		12:52		13:56	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9								
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	0.0	<3.0	0.0	<3.0	-0.30	<3.0	-0.40	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:
Sample ID:

Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:			14:59		15:51		16:38		17:42	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9								
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	0.0	<3.0	-0.30	<3.0	-0.80	<3.0	0.30	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:			18:51		19:55		21:04		22:08	
Sample ID:			CCB9		CCB10		CCB11		CCB12	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9								
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	-0.40	<3.0	-0.40	<3.0	0.30	<3.0	0.40	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:			22:55		23:59		01:09		02:07	
Sample ID:			CCB13		CCB14		CCB15		CCB16	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9								
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	0.20	<3.0	-0.30	<3.0	0.80	<3.0	-0.30	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:			03:17		04:33		05:08		05:49	
Sample ID:			CCB17		CCB18		CCB19		CCB20	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9								
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	0.20	<3.0	-0.20	<3.0	0.0	<3.0	-0.40	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30777 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		11:59			12:11			12:46	
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	2010	100.5	2000	1990	99.5	2000	1990	99.5
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		13:50			14:54			15:46	
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	1980	99.0	2000	1970	98.5	2000	1960	98.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		16:33			17:36			18:46	
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	1960	98.0	2000	1960	98.0	2000	1940	97.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		19:49			20:59			22:02	
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	1960	98.0	2000	1950	97.5	2000	1960	98.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		22:49			23:53			01:03	
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									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1960	98.0	2000	1950	97.5	2000	1940	97.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		02:02			03:12			04:27	
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									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1970	98.5	2000	1950	97.5	2000	1940	97.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 Units: ug/l

Time:		05:02			05:43	
Sample ID:	CCV	CCV19		CCV	CCV20	
Metal	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	1940	97.0	2000	1960	98.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 Units: ug/l

Time:				11:41		11:47		11:53	
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	anr					
Iron	100	500							
Lead	3.0	20	2.5	3.0	120.0	19.9	99.5	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	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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 Units: ug/l

Time:				15:57		16:03		16:09	
Sample ID:	CRI	CRIA	CRID	CRI3		CRID2		CRI4	
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	2.8	93.3	2.5	100.0	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	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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 Units: ug/l

Time:				16:15		16:44		22:14	
Sample ID:	CRI	CRIA	CRID	CRIA2		CRID3		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	18.9	94.5	2.5	100.0	2.4	96.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 Units: ug/l

Time:				22:20		22:26		22:32	
Sample ID:	CRI	CRIA	CRID	CRI5		CRID5		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	3.3	110.0	3.0	120.0	19.6	98.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 Units: ug/l

Time:				05:14		05:19		05:25	
Sample ID:	CRI	CRIA	CRID	CRI6		CRID6		CRIA4	
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	2.4	80.0	2.3	92.0	19.7	98.5
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30777 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30777 Units: ug/l

Time:			12:22		12:28		16:21		16:27	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	521000	104.2	519000	103.8	516000	103.2	522000	104.4
Antimony		1000	-2.7		1010	101.0	0.50		1040	104.0
Arsenic		1000	1.2		1050	105.0	2.4		1070	107.0
Barium		500	-1.1		525	105.0	-1.0		531	106.2
Beryllium		500	0.70		476	95.2	0.60		470	94.0
Bismuth		500	-19		479	95.8	-20		496	99.2
Boron			-0.40		9.5		-0.20		7.9	
Cadmium		1000	3.9		1000	100.0	3.7		1020	102.0
Calcium	400000	400000	401000	100.3	376000	94.0	396000	99.0	362000	90.5
Chromium		500	0.60		471	94.2	0.80		463	92.6
Cobalt		500	0.40		468	93.6	1.0		475	95.0
Copper		500	-0.10		516	103.2	0.10		523	104.6
Iron	200000	200000	202000	101.0	194000	97.0	194000	97.0	187000	93.5
Lead		1000	3.2		921	92.1	5.5		923	92.3
Lithium		500								
Magnesium	500000	500000	518000	103.6	505000	101.0	496000	99.2	485000	97.0
Manganese		500	2.8		478	95.6	2.1		470	94.0
Molybdenum		500	-0.40		486	97.2	-0.80		494	98.8
Nickel		1000	-1.0		918	91.8	-0.90		923	92.3
Palladium		500	-34		501	100.2	-34		507	101.4
Potassium			287		244		245		215	
Selenium		1000	-0.30		990	99.0	0.30		1000	100.0
Silicon			4.2		10.0		5.4		11.4	
Silver		1000	1.8		1030	103.0	-1.0		1030	103.0
Sodium			35.1		19.0		11.0		-2.3	
Sulfur		500	-5.1		478	95.6	-5.2		489	97.8
Strontium			2.3		1.9		2.7		2.8	
Thallium		1000	1.2		963	96.3	3.7		969	96.9
Tin			-4.0		-2.6		-4.5		-2.9	
Titanium			2.6		2.7		2.5		2.5	
Tungsten		500	29.4		526	105.2	17.0		525	105.0
Vanadium		500	1.6		491	98.2	1.5		486	97.2
Zinc		1000	-1.7		932	93.2	-1.9		930	93.0

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30777 Units: ug/l

Time:								
Sample ID:								
Metal								
Zirconium	500	8.6	490	98.0	7.6	490	98.0	

(*) Outside of QC limits
(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30777 Units: ug/l

Time:			22:38		22:44		05:31		05:37	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3		ICSA4		ICSAB4	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	529000	105.8	538000	107.6	529000	105.8	543000	108.6
Antimony		1000	-1.5		1030	103.0	-0.70		1040	104.0
Arsenic		1000	0.20		1050	105.0	-0.30		1060	106.0
Barium		500	-0.90		538	107.6	-0.90		560	112.0
Beryllium		500	0.70		468	93.6	0.60		468	93.6
Bismuth		500	-17		480	96.0	-16		483	96.6
Boron			-1.2		7.7		-1.3		8.3	
Cadmium		1000	4.0		999	99.9	3.7		1000	100.0
Calcium	400000	400000	393000	98.3	364000	91.0	385000	96.3	367000	91.8
Chromium		500	0.0		466	93.2	0.80		472	94.4
Cobalt		500	0.70		467	93.4	0.70		472	94.4
Copper		500	-1.2		509	101.8	-2.2		512	102.4
Iron	200000	200000	194000	97.0	186000	93.0	187000	93.5	182000	91.0
Lead		1000	0.80		929	92.9	3.5		935	93.5
Lithium		500								
Magnesium	500000	500000	495000	99.0	483000	96.6	481000	96.2	476000	95.2
Manganese		500	2.8		476	95.2	2.6		485	97.0
Molybdenum		500	-0.90		486	97.2	-0.70		490	98.0
Nickel		1000	-1.1		931	93.1	-0.70		941	94.1
Palladium		500	-38		493	98.6	-37		497	99.4
Potassium			206		166		213		126	
Selenium		1000	4.0		988	98.8	2.5		999	99.9
Silicon			5.1		8.9		11.1		9.2	
Silver		1000	2.7		1020	102.0	1.7		1040	104.0
Sodium			-3.3		-17		-4.6		-20	
Sulfur		500	-3.8		473	94.6	-6.2		482	96.4
Strontium			2.9		2.5		3.3		2.8	
Thallium		1000	3.0		974	97.4	3.0		978	97.8
Tin			-3.3		-4.2		-3.8		-3.2	
Titanium			2.7		2.5		2.9		2.5	
Tungsten		500	15.1		511	102.2	17.6		518	103.6
Vanadium		500	0.70		485	97.0	0.60		493	98.6
Zinc		1000	-1.4		923	92.3	-1.4		932	93.2

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032313M1.ICP Date Analyzed: 03/23/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30777 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	8.4	482	96.4	8.0	486	97.2

(*) Outside of QC limits
(anr) Analyte not requested

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:45	MA30797-STD1	1		STDA
16:51	MA30797-STD2	1		STDB
16:57	MA30797-STD3	1		STDC
17:02	MA30797-STD4	1		STDD
17:08	ZZZZZZ	1		
17:14	ZZZZZZ	1		
17:20	MA30797-ICV1	1		
17:25	MA30797-ICB1	1		
17:31	MA30797-CCV1	1		
17:37	MA30797-CCB1	1		
17:43	MA30797-CRID1	1		See rerun.
17:49	MA30797-CRI1	1		
17:55	MA30797-CRID2	1		
18:01	MA30797-CRIA1	1		
18:07	MA30797-ICSA1	1		
18:13	MA30797-ICSAB1	1		
18:18	ZZZZZZ	1		
18:24	ZZZZZZ	1		
18:30	MA30797-CCV2	1		
18:36	MA30797-CCB2	1		
18:42	ZZZZZZ	1		
18:48	ZZZZZZ	1		
18:54	MP70683-MB1	1		
19:00	MP70683-B1	1		
19:05	MP70683-LC1	1		
19:11	MP70683-S1	1		
19:17	MP70683-S2	1		
19:22	JB32254-33	1		(sample used for QC only; not part of login JB31265)
19:28	MP70683-SD1	5		
19:34	MA30797-CCV3	1		
19:40	MA30797-CCB3	1		
19:46	ZZZZZZ	1		
19:52	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:58	ZZZZZZ	1		
20:03	ZZZZZZ	1		
20:09	ZZZZZZ	1		
20:15	ZZZZZZ	1		
20:21	ZZZZZZ	1		
20:27	ZZZZZZ	1		
20:33	ZZZZZZ	1		
20:38	MA30797-CCV4	1		
20:44	MA30797-CCB4	1		
20:50	ZZZZZZ	1		
20:56	ZZZZZZ	1		
21:01	ZZZZZZ	1		
21:07	ZZZZZZ	1		
21:13	ZZZZZZ	1		
21:19	ZZZZZZ	1		
21:25	ZZZZZZ	1		
21:30	ZZZZZZ	1		
21:36	ZZZZZZ	1		
21:42	MA30797-CCV5	1		
21:48	MA30797-CCB5	1		
21:54	ZZZZZZ	1		
22:00	ZZZZZZ	3		
22:05	ZZZZZZ	3		
22:11	ZZZZZZ	3		
22:17	ZZZZZZ	1		
22:23	MP70634-S1	2		
22:29	MP70634-S2	2		
----------> Last reportable sample/prep for job JB31265				
22:34	ZZZZZZ	3		
22:40	MP70713-B1	1		
22:46	MA30797-CCV6	1		
22:52	MA30797-CCB6	1		
22:58	MP70713-MB1	1		
23:04	MP70713-LC1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	23:09	MP70713-S1	1		
	23:15	MP70713-S2	1		
	23:21	JB31359-1	1		(sample used for QC only; not part of login JB31265)
	23:27	MP70713-SD1	5		
	23:33	ZZZZZZ	1		
	23:39	ZZZZZZ	1		
	23:44	ZZZZZZ	1		
	23:50	MA30797-CCV7	1		
	23:56	MA30797-CCB7	1		
	00:02	ZZZZZZ	1		
	00:08	ZZZZZZ	1		
	00:13	ZZZZZZ	1		
	00:19	ZZZZZZ	1		
	00:25	ZZZZZZ	1		
	00:31	ZZZZZZ	1		
	00:37	ZZZZZZ	1		
	00:42	ZZZZZZ	1		
	00:48	ZZZZZZ	1		
	00:54	MA30797-CCV8	1		
	01:00	MA30797-CCB8	1		
	01:06	MA30797-CRID3	1		
	01:11	MA30797-CRI2	1		
	01:17	MA30797-CRID4	1		
	01:23	MA30797-CRIA2	1		
	01:29	MA30797-ICSA2	1		
	01:35	MA30797-ICSAB2	1		
	01:41	MA30797-CCV9	1		
	01:47	MA30797-CCB9	1		
---------->	Last reportable CCB for job JB31265				
	01:53	ZZZZZZ	1		
	01:59	ZZZZZZ	1		
	02:04	ZZZZZZ	1		
	02:10	ZZZZZZ	1		
	02:16	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:22	ZZZZZZ	1		
02:28	ZZZZZZ	1		
02:33	ZZZZZZ	1		
02:39	MP70646-LC2	1		
02:45	ZZZZZZ	2		
02:51	MA30797-CCV10	1		
02:56	MA30797-CCB10	1		
03:02	ZZZZZZ	2		
03:08	ZZZZZZ	10		
03:14	ZZZZZZ	1		
03:20	ZZZZZZ	1		
03:26	ZZZZZZ	1		
03:32	ZZZZZZ	1		
03:38	ZZZZZZ	1		
03:44	ZZZZZZ	1		
03:49	ZZZZZZ	1		
03:55	ZZZZZZ	1		
04:01	MA30797-CCV11	1		
04:07	MA30797-CCB11	1		
04:13	ZZZZZZ	1		
04:19	ZZZZZZ	1		
04:25	ZZZZZZ	1		
04:31	ZZZZZZ	1		
04:36	ZZZZZZ	1		
04:42	ZZZZZZ	1		
04:48	ZZZZZZ	1		
04:54	MP70722-MB1	1		
05:00	MP70722-B1	1		
05:06	MA30797-CCV12	1		
05:12	MA30797-CCB12	1		
05:17	MP70722-S1	1		
05:23	MP70722-S2	1		
05:29	JB32243-3	1		(sample used for QC only; not part of login JB31265)

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
05:35	MP70722-SD1	5		
05:41	ZZZZZZ	1		
05:47	ZZZZZZ	1		
05:53	MP70558A-MB1	1		
05:59	MP70558A-LC1	1		
06:04	MP70558A-S1	1		
06:10	MA30797-CCV13	1		
06:16	MA30797-CCB13	1		
06:22	MP70558A-S2	1		
06:28	MP70723-MB1	1		
06:33	MP70723-B1	1		
06:39	MP70723-S1	1		
06:45	MP70723-S2	1		
06:51	JB31532-43AR	1		(sample used for QC only; not part of login JB31265)
06:57	MP70723-SD1	5		
07:02	ZZZZZZ	1		
07:08	ZZZZZZ	1		
07:14	ZZZZZZ	1		
07:20	MA30797-CCV14	1		
07:26	MA30797-CCB14	1		
07:32	ZZZZZZ	1		
07:37	ZZZZZZ	1		
07:43	ZZZZZZ	1		
07:49	ZZZZZZ	1		
07:55	ZZZZZZ	1		
08:07	MP70724-MB1	1		
08:13	MP70724-LC1	1		
08:19	MP70724-B1	1		
08:25	ZZZZZZ	1		
08:31	MA30797-CCV15	1		
08:36	MA30797-CCB15	1		
08:42	JB31649-2	1		(sample used for QC only; not part of login JB31265)
08:48	MP70558A-SD1	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:54	ZZZZZZ	1		
09:00	ZZZZZZ	1		
09:06	MA30797-CCV16	1		
09:12	MA30797-CCB16	1		
09:18	MA30797-CRID5	1		
09:24	MA30797-CRI3	1		
09:29	MA30797-CRID6	1		
09:35	MA30797-ICSA3	1		
09:41	MA30797-ICSAB3	1		
09:46	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:45	MA30797-STD1	1664 R	81200 R	25376 R	2856 R
16:51	MA30797-STD2	1598	78038	24963	2655
16:57	MA30797-STD3	1550	76281	25063	2560
17:02	MA30797-STD4	1527	74378	24136	2494
17:08	ZZZZZZ	No results reported for the elements associated with this internal standard.			
17:14	ZZZZZZ	No results reported for the elements associated with this internal standard.			
17:20	MA30797-ICV1	1585	77096	24511	2607
17:25	MA30797-ICB1	1651	80838	25346	2840
17:31	MA30797-CCV1	1587	77149	24893	2614
17:37	MA30797-CCB1	1677	82143	25423	2881
17:43	MA30797-CRID1	No results reported for the elements associated with this internal standard.			
17:49	MA30797-CRI1	1656	80681	25195	2814
17:55	MA30797-CRID2	1655	81022	25345	2835
18:01	MA30797-CRIA1	1664	81715	25434	2852
18:07	MA30797-ICSA1	1454	70860	23533	2320
18:13	MA30797-ICSAB1	1453	70532	23771	2318
18:18	ZZZZZZ	1642	79797	25037	2851
18:24	ZZZZZZ	1714	78696	26222	2595
18:30	MA30797-CCV2	1604	77643	24939	2615
18:36	MA30797-CCB2	1664	81509	25375	2848
18:42	ZZZZZZ	1658	81598	25732	2833
18:48	ZZZZZZ	1649	81573	25649	2827
18:54	MP70683-MB1	1674	82579	26136	2873
19:00	MP70683-B1	1602	78231	25162	2659
19:05	MP70683-LC1	1644	80130	25942	2655
19:11	MP70683-S1	1607	78837	25956	2583
19:17	MP70683-S2	1612	79058	26150	2584
19:22	JB32254-33	1651	81461	26494	2684
19:28	MP70683-SD1	1660	81094	25821	2776
19:34	MA30797-CCV3	1592	77664	25398	2594
19:40	MA30797-CCB3	1661	81981	25954	2832
19:46	ZZZZZZ	1438	73281	25167	2595
19:52	ZZZZZZ	1448	72839	24400	2552

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
19:58	ZZZZZZ	1650	81198	26555	2690
20:03	ZZZZZZ	1584	78135	26205	2443
20:09	ZZZZZZ	1451	73892	25362	2563
20:15	ZZZZZZ	1655	81250	26337	2699
20:21	ZZZZZZ	1637	80830	26541	2600
20:27	ZZZZZZ	1599	78686	26008	2541
20:33	ZZZZZZ	1649	81002	26481	2639
20:38	MA30797-CCV4	1588	77656	25235	2581
20:44	MA30797-CCB4	1685	82056	25514	2863
20:50	ZZZZZZ	1732	85046	27729	2681
20:56	ZZZZZZ	1658	81220	26934	2645
21:01	ZZZZZZ	1666	81702	26642	2645
21:07	ZZZZZZ	1533	76727	25937	2446
21:13	ZZZZZZ	1561	76889	25562	2427
21:19	ZZZZZZ	1670	82080	26415	2720
21:25	ZZZZZZ	1662	81463	26782	2666
21:30	ZZZZZZ	1501	75229	25207	2495
21:36	ZZZZZZ	1628	80492	26487	2607
21:42	MA30797-CCV5	1600	78105	25224	2596
21:48	MA30797-CCB5	1674	82310	26066	2849
21:54	ZZZZZZ	1667	81879	26616	2687
22:00	ZZZZZZ	1551	77701	25710	2656
22:05	ZZZZZZ	1537	76899	25537	2614
22:11	ZZZZZZ	1555	77675	25510	2638
22:17	ZZZZZZ	1669	82992	26554	2859
22:23	MP70634-S1	1388	69701	23675	2198
22:29	MP70634-S2	1393	70239	24061	2196
22:34	ZZZZZZ	1509	75421	24982	2508
22:40	MP70713-B1	1618	80039	25773	2684
22:46	MA30797-CCV6	1586	77758	25371	2582
22:52	MA30797-CCB6	1674	82672	25826	2853
22:58	MP70713-MB1	1667	82737	26406	2862
23:04	MP70713-LC1	1640	80808	25984	2645

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:09	MP70713-S1	1558	77148	25835	2413
23:15	MP70713-S2	1586	78194	26139	2395
23:21	JB31359-1	1570	77929	25789	2415
23:27	MP70713-SD1	1622	80376	25963	2653
23:33	ZZZZZZ	1692	84661	27785	2560
23:39	ZZZZZZ	1991	99422	32486	2668
23:44	ZZZZZZ	1569	79093	26268	2538
23:50	MA30797-CCV7	1588	77869	25002	2580
23:56	MA30797-CCB7	1656	82075	25984	2837
00:02	ZZZZZZ	1640	81300	26088	2782
00:08	ZZZZZZ	1576	79393	26074	2611
00:13	ZZZZZZ	1617	79765	26200	2779
00:19	ZZZZZZ	1655	82023	26667	2767
00:25	ZZZZZZ	1647	81779	26540	2751
00:31	ZZZZZZ	1713	82499	26142	2768
00:37	ZZZZZZ	1640	81609	26615	2727
00:42	ZZZZZZ	1647	81265	26407	2694
00:48	ZZZZZZ	1636	80930	26349	2655
00:54	MA30797-CCV8	1602	78643	25415	2600
01:00	MA30797-CCB8	1694	83281	26015	2885
01:06	MA30797-CRID3	1687	82950	25866	2856
01:11	MA30797-CRI2	1663	81796	25767	2798
01:17	MA30797-CRID4	1693	83069	25863	2867
01:23	MA30797-CRIA2	1701	83505	25916	2875
01:29	MA30797-ICSA2	1448	71081	23935	2276
01:35	MA30797-ICSAB2	1457	71015	23865	2288
01:41	MA30797-CCV9	1589	76774	25493	2575
01:47	MA30797-CCB9	1694	83220	25744	2862
01:53	ZZZZZZ	1719	84358	27258	2719
01:59	ZZZZZZ	1661	82185	26975	2683
02:04	ZZZZZZ	1754	86562	28169	2685
02:10	ZZZZZZ	1709	84093	27294	2714
02:16	ZZZZZZ	1552	77423	26237	2315

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:22	ZZZZZZ	1685	82999	26763	2739
02:28	ZZZZZZ	1662	82681	26958	2717
02:33	ZZZZZZ	1646	81735	25764	2795
02:39	MP70646-LC2	1619	79513	25294	2686
02:45	ZZZZZZ	1605	79278	25716	2544
02:51	MA30797-CCV10	1608	78325	25362	2584
02:56	MA30797-CCB10	1695	83090	25912	2851
03:02	ZZZZZZ	1445	70155	24383	2273
03:08	ZZZZZZ	1596	77900	25350	2573
03:14	ZZZZZZ	1620	80859	25819	2739
03:20	ZZZZZZ	1659	82636	25801	2818
03:26	ZZZZZZ	1654	82230	25744	2808
03:32	ZZZZZZ	1650	82328	25892	2803
03:38	ZZZZZZ	1657	82474	25919	2815
03:44	ZZZZZZ	1657	82539	25764	2818
03:49	ZZZZZZ	1653	82194	25766	2806
03:55	ZZZZZZ	1682	82610	25840	2849
04:01	MA30797-CCV11	1612	79251	25433	2598
04:07	MA30797-CCB11	1695	83557	26041	2869
04:13	ZZZZZZ	1663	82679	25717	2825
04:19	ZZZZZZ	1659	82627	25709	2822
04:25	ZZZZZZ	1659	82477	25603	2815
04:31	ZZZZZZ	1657	82285	25674	2813
04:36	ZZZZZZ	1664	82743	25847	2828
04:42	ZZZZZZ	1661	82686	25826	2826
04:48	ZZZZZZ	1658	82626	25589	2819
04:54	MP70722-MB1	1654	82612	25773	2817
05:00	MP70722-B1	1657	82316	25823	2804
05:06	MA30797-CCV12	1604	78906	25165	2591
05:12	MA30797-CCB12	1692	83542	25816	2866
05:17	MP70722-S1	1571	76973	25653	2485
05:23	MP70722-S2	1596	77431	25540	2509
05:29	JB32243-3	1572	76601	25177	2494

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
05:35	MP70722-SD1	1660	81269	25667	2716
05:41	ZZZZZZ	1629	80370	25035	2672
05:47	ZZZZZZ	1710	84267	25936	2887
05:53	MP70558A-MB1	1671	82902	25703	2835
05:59	MP70558A-LC1	1659	81180	25053	2749
06:04	MP70558A-S1	1571	76905	24588	2526
06:10	MA30797-CCV13	1647	79710	25104	2640
06:16	MA30797-CCB13	1728	83866	25524	2901
06:22	MP70558A-S2	1562	76189	24436	2510
06:28	MP70723-MB1	1695	83388	25457	2862
06:33	MP70723-B1	1692	83123	25458	2850
06:39	MP70723-S1	1685	82300	25322	2778
06:45	MP70723-S2	1681	82101	25305	2776
06:51	JB31532-43AR	1686	82112	25204	2786
06:57	MP70723-SD1	1708	83698	25559	2866
07:02	ZZZZZZ	1684	82529	25604	2802
07:08	ZZZZZZ	1680	82498	25515	2807
07:14	ZZZZZZ	1686	82386	25606	2794
07:20	MA30797-CCV14	1638	79374	25102	2621
07:26	MA30797-CCB14	1727	84266	25763	2898
07:32	ZZZZZZ	1684	82581	25568	2814
07:37	ZZZZZZ	1674	81993	25561	2796
07:43	ZZZZZZ	1675	81815	25319	2772
07:49	ZZZZZZ	1681	82276	25599	2783
07:55	ZZZZZZ	1672	81612	25364	2788
08:07	MP70724-MB1	1682	82855	25728	2835
08:13	MP70724-LC1	1656	80547	24740	2731
08:19	MP70724-B1	1624	79566	24954	2643
08:25	ZZZZZZ	1695	82878	25520	2841
08:31	MA30797-CCV15	1637	79501	24969	2608
08:36	MA30797-CCB15	1716	83651	25838	2864
08:42	JB31649-2	1594	77831	24832	2571
08:48	MP70558A-SD1	1685	82184	25722	2770

INTERNAL STANDARD SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30797
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
08:54	ZZZZZZ	1579	77094	24768	2539
09:00	ZZZZZZ	1580	77811	25202	2548
09:06	MA30797-CCV16	1644	79045	25188	2610
09:12	MA30797-CCB16	1709	83262	25598	2846
09:18	MA30797-CRID5	1689	82575	25603	2813
09:24	MA30797-CRI3	1683	81921	25407	2778
09:29	MA30797-CRID6	1687	82629	25703	2809
09:35	MA30797-ICSA3	1475	71741	23734	2284
09:41	MA30797-ICSAB3	1473	71760	24019	2282
09:46	ZZZZZZ	1604	81857	25355	2800

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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30797 Units: ug/l

Time:			17:25		17:37		18:36		19:40	
Sample ID:			ICB1		CCB1		CCB2		CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9	anr							
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	0.40	<3.0	0.60	<3.0	0.90	<3.0	0.90	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30797 Units: ug/l

Time:
Sample ID:

Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

10.2.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30797 Units: ug/l

Time:			20:44		21:48		22:52		23:56	
Sample ID:			CCB4		CCB5		CCB6		CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	9.4	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	1	anr							
Barium	200	.2	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.4								
Boron	100	.9	anr							
Cadmium	3.0	.1	anr							
Calcium	5000	7.6	anr							
Chromium	10	.5	anr							
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	5.2	anr							
Lead	3.0	1.5	1.5	<3.0	0.90	<3.0	0.70	<3.0	1.2	<3.0
Lithium	20	1.5								
Magnesium	5000	22	anr							
Manganese	15	.1	anr							
Molybdenum	20	.3								
Nickel	10	.4	anr							
Palladium	50	1.5								
Potassium	10000	29	anr							
Selenium	10	1.9	anr							
Silicon	200	4.4								
Silver	10	.5	anr							
Sodium	10000	25	anr							
Sulfur	50	3								
Strontium	10	.1								
Thallium	2.0	1.3	anr							
Tin	10	.5								
Titanium	10	.5								
Tungsten	50	6.8								
Vanadium	50	.6	anr							
Zinc	20	.3	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30797 Units: ug/l

Time:
Sample ID:

Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30797 Units: ug/l

Time:			01:00		01:47	
Sample ID:			CCB8		CCB9	
Metal	RL	IDL	raw	final	raw	final
Aluminum	200	9.4	anr			
Antimony	6.0	1.2	anr			
Arsenic	3.0	1	anr			
Barium	200	.2	anr			
Beryllium	1.0	.1	anr			
Bismuth	20	1.4				
Boron	100	.9	anr			
Cadmium	3.0	.1	anr			
Calcium	5000	7.6	anr			
Chromium	10	.5	anr			
Cobalt	50	.3	anr			
Copper	10	.6	anr			
Iron	100	5.2	anr			
Lead	3.0	1.5	1.9	<3.0	0.60	<3.0
Lithium	20	1.5				
Magnesium	5000	22	anr			
Manganese	15	.1	anr			
Molybdenum	20	.3				
Nickel	10	.4	anr			
Palladium	50	1.5				
Potassium	10000	29	anr			
Selenium	10	1.9	anr			
Silicon	200	4.4				
Silver	10	.5	anr			
Sodium	10000	25	anr			
Sulfur	50	3				
Strontium	10	.1				
Thallium	2.0	1.3	anr			
Tin	10	.5				
Titanium	10	.5				
Tungsten	50	6.8				
Vanadium	50	.6	anr			
Zinc	20	.3	anr			

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30797 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 Units: ug/l

Time:		17:20			17:31			18:30	
Sample ID:	ICV	ICV1		CCV	CCV1		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	1880	94.0*(a)	2000	2000	100.0	2000	2000	100.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested
(a) Within 90 to 110 percent limits required for SW846 6010. No EPA 200.7 samples reported for this element in the area bracketed by this QC.

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 Units: ug/l

Time:		19:34			20:38			21:42	
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	2000	100.0	2000	2000	100.0	2000	2000	100.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 Units: ug/l

Time:		22:46			23:50			00:54	
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	2010	100.5	2000	1980	99.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 Units: ug/l

Time:		01:41	
Sample ID:	CCV	CCV9	
Metal	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
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30797 Units: ug/l

Time:	
Sample ID:	
Metal	

Zirconium

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30797 Units: ug/l

Time:				17:49		17:55		18:01	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID2		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	2.9	96.7	3.3	132.0*(a	20.9	104.5
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30797 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested
(a) No samples reported for this element at this RL in the area bracketed by this QC.

10.2.4

10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30797 Units: ug/l

Time:				01:06		01:11		01:17	
Sample ID:	CRI	CRIA	CRID	CRID3		CRI2		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	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							
Lead	3.0	20	2.5	3.4	136.0*(a	2.7	90.0	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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30797 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

(*) Outside of QC limits
(anr) Analyte not requested
(a) No samples reported for this element at this RL in the area bracketed by this QC.

10.2.4
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30797 Units: ug/l

Time:				01:23	
Sample ID:	CRI	CRIA	CRID	CRIA2	
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	21.2	106.0
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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30797 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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30797 Units: ug/l

Time:			18:07		18:13		01:29		01:35	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	506000	101.2	516000	103.2	515000	103.0	517000	103.4
Antimony		1000	-0.30		999	99.9	-0.40		1010	101.0
Arsenic		1000	0.30		1020	102.0	0.30		1020	102.0
Barium		500	-1.0		500	100.0	-0.80		506	101.2
Beryllium		500	0.50		461	92.2	0.60		461	92.2
Bismuth		500	-21		466	93.2	-19		464	92.8
Boron			-1.0		7.3		-2.2		5.7	
Cadmium		1000	2.2		986	98.6	2.2		975	97.5
Calcium	400000	400000	398000	99.5	372000	93.0	389000	97.3	368000	92.0
Chromium		500	0.60		457	91.4	1.1		450	90.0
Cobalt		500	1.0		462	92.4	1.0		455	91.0
Copper		500	3.1		503	100.6	3.0		502	100.4
Iron	200000	200000	197000	98.5	192000	96.0	194000	97.0	190000	95.0
Lead		1000	0.20		918	91.8	1.7		928	92.8
Lithium		500	7.2		537	107.4	6.6		531	106.2
Magnesium	500000	500000	521000	104.2	511000	102.2	511000	102.2	506000	101.2
Manganese		500	0.80		461	92.2	1.5		457	91.4
Molybdenum		500	-0.80		474	94.8	-1.1		472	94.4
Nickel		1000	-1.4		900	90.0	-0.70		918	91.8
Palladium		500	-31		496	99.2	-32		492	98.4
Potassium			231		238		266		191	
Selenium		1000	6.4		973	97.3	6.2		976	97.6
Silicon			4.3		6.3		5.2		8.1	
Silver		1000	0.70		1020	102.0	3.5		1020	102.0
Sodium			6.4		13.3		-13		-13	
Sulfur		500	-2.9		474	94.8	-1.7		468	93.6
Strontium			1.9		1.8		2.3		1.9	
Thallium		1000	3.2		962	96.2	1.8		976	97.6
Tin			-3.6		-3.3		-3.2		-2.5	
Titanium			2.1		2.2		2.3		2.2	
Tungsten		500	16.8		480	96.0	12.7		474	94.8
Vanadium		500	0.90		481	96.2	1.1		474	94.8
Zinc		1000	-1.4		923	92.3	-1.7		902	90.2

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD032613M2.ICP Date Analyzed: 03/26/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30797 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	8.0	469	93.8	8.3	463	92.6

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/22/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.94	.74		
Antimony	2.0	.12	.15		
Arsenic	2.0	.1	.13		
Barium	20	.02	.054		
Beryllium	0.20	.01	.02		
Bismuth	2.0	.14	.14		
Boron	10	.09	.14		
Cadmium	0.50	.01	.025		
Calcium	500	.76	2.3		
Chromium	1.0	.05	.11		
Cobalt	5.0	.03	.031		
Copper	2.5	.06	.13		
Iron	50	.52	.79		
Lead	2.0	.15	.11	0.040	<2.0
Lithium	2.0	.15	.25		
Magnesium	500	2.2	3.1		
Manganese	1.5	.01	.048		
Molybdenum	2.0	.03	.074		
Nickel	4.0	.04	.11		
Palladium	5.0	.15	.17		
Potassium	1000	2.9	14		
Selenium	2.0	.19	.24		
Silicon	20	.44	1.9		
Silver	0.50	.05	.063		
Sodium	1000	2.5	13		
Strontium	1.0	.01	.17		
Sulfur	5.0	.3	.65		
Thallium	1.0	.13	.22		
Tin	5.0	.05	1.5		
Titanium	1.0	.05	.62		
Tungsten	5.0	.68	1.1		
Vanadium	5.0	.06	.1		
Zinc	2.0	.03	.19		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal			
Zirconium	2.0	.03	.1

Associated samples MP70634: JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/22/13

Metal	JB31267-5 Original	MS	Spikelot MPIRS1	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	12.0	111	104	94.9	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Palladium					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634 | Methods: SW846 6010C
Matrix Type: SOLID | Units: mg/kg

Prep Date:

Metal

Associated samples MP70634: JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/22/13

Metal	JB31267-5 Original	MSD	Spikelot MPIRS1	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	12.0	106	101	92.9	4.6	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Palladium						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						
Zirconium						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634 | Methods: SW846 6010C
Matrix Type: SOLID | Units: mg/kg

Prep Date:

Metal

Associated samples MP70634: JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

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: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/22/13

Metal	BSP Result	Spikelot MPIRS1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	94.4	100	94.4	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Palladium				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP70634: JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/22/13

Metal	JB31267-5 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	115	134	16.3*(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Palladium				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				
Zirconium				

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB31265
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70634 | Methods: SW846 6010C
Matrix Type: SOLID | Units: ug/l

Prep Date:

Metal

Associated samples MP70634: JB31265-1, JB31265-2, JB31265-3, JB31265-4, JB31265-5, JB31265-6, JB31265-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

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: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB31265-1 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-48_1.5-2_031313

Wet Weight (Total)	26.46	g
Tare Weight	19.03	g
Dry Weight (Total)	25.8	g
Solids, Percent	91.1	%

Sample: JB31265-2 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-48_2.5-3_031313

Wet Weight (Total)	26.26	g
Tare Weight	20.12	g
Dry Weight (Total)	25.15	g
Solids, Percent	81.9	%

Sample: JB31265-3 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-45_1.5-2_031313

Wet Weight (Total)	30.29	g
Tare Weight	22.66	g
Dry Weight (Total)	28.64	g
Solids, Percent	78.4	%

Sample: JB31265-4 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-45_2-2.5_031313

Wet Weight (Total)	26.11	g
Tare Weight	16.31	g
Dry Weight (Total)	24.14	g
Solids, Percent	79.9	%

Sample: JB31265-5 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-47_1.5-2_031313

Wet Weight (Total)	27.41	g
Tare Weight	19.74	g
Dry Weight (Total)	25.83	g
Solids, Percent	79.4	%

Sample: JB31265-6 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-47_2.5-3_031313

Wet Weight (Total)	25.8	g
Tare Weight	19.78	g
Dry Weight (Total)	23.71	g
Solids, Percent	65.3	%

Percent Solids Raw Data Summary

Job Number: JB31265
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB31265-7 **Analyzed:** 21-MAR-13 by PD **Method:** SM2540 G-97
ClientID: AOI7-BH-13-46_1.5-2_031313

Wet Weight (Total)	25.67	g
Tare Weight	20.38	g
Dry Weight (Total)	24.92	g
Solids, Percent	85.8	%