New Jersey
ACCUTEST LABORATORIES

03/20/13

Technical Report for

Aquaterra Technologies, Inc.

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

AOI-4

Accutest Job Number: JB30306

Sampling Date: 03/04/13

Report to:

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Total number of pages in report: 277

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

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

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Sample Summary

Aquaterra Technologies, Inc.

Job No: JB30306

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-4

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JB30306-1	03/04/13	09:00	LM	03/04/13	SO	Soil	S-369_0-2'
JB30306-2	03/04/13	10:15	LM	03/04/13	SO	Soil	S-369_6-8'
JB30306-3	03/04/13	10:30	LM	03/04/13	SO	Soil	S-369_8-10'
JB30306-4	03/04/13	12:00	LM	03/04/13	SO	Soil	S-365_0-2'
JB30306-5	03/04/13	12:30	LM	03/04/13	SO	Soil	S-365_4-6'

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Aquaterra Technologies, Inc.	**Job No**	JB30306
Site:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, P	**Report Date**	3/20/2013 3:42:27 PM

On 03/04/2013, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB30306 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:** VV5750

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB30564-1DUP, JB30564-4MS were used as the QC samples indicated.

Matrix: SO **Batch ID:** VV5757

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB31283-27DUP, JB31283-28MS, JB31283-27DUP were used as the QC samples indicated.
- RPD(s) for Duplicate for Benzene, Xylene (total) are outside control limits for sample JB31283-27DUP. High RPD due to low concentration of hit
- JB31283-28MS for 1,2-Dichloroethane-D4: Outside control limits due to matrix interference.

Extractables by GCMS By Method SW846 8270D

Matrix: SO **Batch ID:** OP64314

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB30827-1MS, JB30827-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix: SO **Batch ID:** MP70421

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB30267-1MS, JB30267-1MSD, JB30267-1SDL were used as the QC samples for metals.

Wet Chemistry By Method SM2540 G-97

Matrix: SO **Batch ID:** GN81493

- 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: JB30306
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 03/04/13

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB30306-1	**S-369_0-2'**					
Lead		10.5	2.4		mg/kg	SW846 6010C
JB30306-2	**S-369_6-8'**					
Lead		9.5	2.4		mg/kg	SW846 6010C
JB30306-3	**S-369_8-10'**					
Lead		22.2	2.3		mg/kg	SW846 6010C
JB30306-4	**S-365_0-2'**					
Benzo(b)fluoranthene		0.0350	0.033		mg/kg	SW846 8270D
Lead		79.1	2.2		mg/kg	SW846 6010C
JB30306-5	**S-365_4-6'**					
Benzene		0.0269	0.00057		mg/kg	SW846 8260B
Toluene		0.0025	0.00057		mg/kg	SW846 8260B
Ethylbenzene		0.0085	0.00057		mg/kg	SW846 8260B
Xylene (total)		0.0098	0.00057		mg/kg	SW846 8260B
Isopropylbenzene		0.0063	0.0028		mg/kg	SW846 8260B
Anthracene		0.356	0.039		mg/kg	SW846 8270D
Benzo(a)anthracene		0.841	0.039		mg/kg	SW846 8270D
Benzo(a)pyrene		0.825	0.039		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.802	0.039		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.545	0.039		mg/kg	SW846 8270D
Chrysene		0.983	0.039		mg/kg	SW846 8270D
Fluorene		0.386	0.039		mg/kg	SW846 8270D
Naphthalene		0.314	0.039		mg/kg	SW846 8270D
Phenanthrene		2.18	0.039		mg/kg	SW846 8270D
Pyrene		1.97	0.039		mg/kg	SW846 8270D
Lead		222	2.3		mg/kg	SW846 6010C

New Jersey

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Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	S-369_0-2'		
Lab Sample ID:	JB30306-1	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8260B	**Percent Solids:**	87.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V133031.D	1	03/09/13	TDN	n/a	n/a	VV5750
Run #2							

	Initial Weight
Run #1	9.3 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00062	mg/kg	
108-88-3	Toluene	ND	0.00062	mg/kg	
100-41-4	Ethylbenzene	ND	0.00062	mg/kg	
1330-20-7	Xylene (total)	ND	0.00062	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00062	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00062	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00062	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0031	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0031	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0031	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		70-130%
17060-07-0	1,2-Dichloroethane-D4	94%		70-122%
2037-26-5	Toluene-D8	105%		81-127%
460-00-4	4-Bromofluorobenzene	96%		66-132%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	S-369_0-2'		
Lab Sample ID:	JB30306-1	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	87.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E48584.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	57%		21-122%
321-60-8	2-Fluorobiphenyl	63%		30-117%
1718-51-0	Terphenyl-d14	76%		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:	S-369_0-2'		
Lab Sample ID:	JB30306-1	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
		Percent Solids:	87.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	10.5	2.4	mg/kg	1	03/14/13	03/16/13	BL	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30715
(2) Prep QC Batch: MP70421

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-369_6-8'		
Lab Sample ID:	JB30306-2	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8260B	**Percent Solids:**	83.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V133215.D	1	03/16/13	TDN	n/a	n/a	VV5757
Run #2							

	Initial Weight
Run #1	12.1 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00050	mg/kg	
108-88-3	Toluene	ND	0.00050	mg/kg	
100-41-4	Ethylbenzene	ND	0.00050	mg/kg	
1330-20-7	Xylene (total)	ND	0.00050	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00050	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00050	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00050	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0025	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0025	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0025	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		70-130%
17060-07-0	1,2-Dichloroethane-D4	87%		70-122%
2037-26-5	Toluene-D8	105%		81-127%
460-00-4	4-Bromofluorobenzene	93%		66-132%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	S-369_6-8'		
Lab Sample ID:	JB30306-2	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E48585.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102
Run #2							

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

BN Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	60%		21-122%
321-60-8	2-Fluorobiphenyl	61%		30-117%
1718-51-0	Terphenyl-d14	82%		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:	S-369_6-8'		
Lab Sample ID:	JB30306-2	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
		Percent Solids:	83.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	9.5	2.4	mg/kg	1	03/14/13	03/16/13	BL	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30715
(2) Prep QC Batch: MP70421

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-369_8-10'		
Lab Sample ID:	JB30306-3	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8260B	**Percent Solids:**	82.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V133032.D	1	03/09/13	TDN	n/a	n/a	VV5750
Run #2							

	Initial Weight
Run #1	9.3 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00065	mg/kg	
108-88-3	Toluene	ND	0.00065	mg/kg	
100-41-4	Ethylbenzene	ND	0.00065	mg/kg	
1330-20-7	Xylene (total)	ND	0.00065	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00065	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00065	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00065	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0033	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0033	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0033	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		70-130%
17060-07-0	1,2-Dichloroethane-D4	89%		70-122%
2037-26-5	Toluene-D8	105%		81-127%
460-00-4	4-Bromofluorobenzene	92%		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:	S-369_8-10'		
Lab Sample ID:	JB30306-3	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	82.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E48586.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102
Run #2							

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

BN Special List

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	51%		21-122%
321-60-8	2-Fluorobiphenyl	50%		30-117%
1718-51-0	Terphenyl-d14	72%		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:	S-369_8-10'		
Lab Sample ID:	JB30306-3	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
		Percent Solids:	82.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	22.2	2.3	mg/kg	1	03/14/13	03/16/13	BL	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30715
(2) Prep QC Batch: MP70421

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	S-365_0-2'		
Lab Sample ID:	JB30306-4	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8260B	**Percent Solids:**	88.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V133216.D	1	03/16/13	TDN	n/a	n/a	VV5757
Run #2							

	Initial Weight
Run #1	10.2 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00055	mg/kg	
108-88-3	Toluene	ND	0.00055	mg/kg	
100-41-4	Ethylbenzene	ND	0.00055	mg/kg	
1330-20-7	Xylene (total)	ND	0.00055	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00055	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00055	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00055	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0028	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0028	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0028	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		70-130%
17060-07-0	1,2-Dichloroethane-D4	82%		70-122%
2037-26-5	Toluene-D8	105%		81-127%
460-00-4	4-Bromofluorobenzene	90%		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:	S-365_0-2'		
Lab Sample ID:	JB30306-4	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	88.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E48587.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102
Run #2							

	Initial Weight	Final Volume
Run #1	33.8 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.033	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.033	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.033	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0350	0.033	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.033	mg/kg	
218-01-9	Chrysene	ND	0.033	mg/kg	
86-73-7	Fluorene	ND	0.033	mg/kg	
91-20-3	Naphthalene	ND	0.033	mg/kg	
85-01-8	Phenanthrene	ND	0.033	mg/kg	
129-00-0	Pyrene	ND	0.033	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%		21-122%
321-60-8	2-Fluorobiphenyl	61%		30-117%
1718-51-0	Terphenyl-d14	75%		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:	S-365_0-2'		
Lab Sample ID:	JB30306-4	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
		Percent Solids:	88.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	79.1	2.2	mg/kg	1	03/14/13	03/16/13	BL	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30715
(2) Prep QC Batch: MP70421

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	S-365_4-6'		
Lab Sample ID:	JB30306-5	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8260B	**Percent Solids:**	84.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V133217.D	1	03/16/13	TDN	n/a	n/a	VV5757
Run #2							

	Initial Weight
Run #1	10.4 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0269	0.00057	mg/kg	
108-88-3	Toluene	0.0025	0.00057	mg/kg	
100-41-4	Ethylbenzene	0.0085	0.00057	mg/kg	
1330-20-7	Xylene (total)	0.0098	0.00057	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00057	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00057	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00057	mg/kg	
98-82-8	Isopropylbenzene	0.0063	0.0028	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0028	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0028	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		70-130%
17060-07-0	1,2-Dichloroethane-D4	101%		70-122%
2037-26-5	Toluene-D8	108%		81-127%
460-00-4	4-Bromofluorobenzene	92%		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:	S-365_4-6'		
Lab Sample ID:	JB30306-5	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	84.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3E48588.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.356	0.039	mg/kg	
56-55-3	Benzo(a)anthracene	0.841	0.039	mg/kg	
50-32-8	Benzo(a)pyrene	0.825	0.039	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.802	0.039	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.545	0.039	mg/kg	
218-01-9	Chrysene	0.983	0.039	mg/kg	
86-73-7	Fluorene	0.386	0.039	mg/kg	
91-20-3	Naphthalene	0.314	0.039	mg/kg	
85-01-8	Phenanthrene	2.18	0.039	mg/kg	
129-00-0	Pyrene	1.97	0.039	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	57%		21-122%
321-60-8	2-Fluorobiphenyl	63%		30-117%
1718-51-0	Terphenyl-d14	73%		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:	S-365_4-6'		
Lab Sample ID:	JB30306-5	**Date Sampled:**	03/04/13
Matrix:	SO - Soil	**Date Received:**	03/04/13
		Percent Solids:	84.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	222	2.3	mg/kg	1	03/14/13	03/16/13	BL	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30715
(2) Prep QC Batch: MP70421

RL = Reporting Limit

New Jersey

ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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

ACCUTEST LABORATORIES

SCC

CHAIN OF CUSTODY

PAGE 1 OF 1 PN

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 #: JB30306

Client / Reporting Information

Company Name: AQUATERRA TECH
Street Address: 122 So Church St
City: West Chester State: PA Zip: 19382
Project Contact: Tiffany Doer E-mail:
Phone #: Fax #:
Sampler(s) Name(s): Luke Makrycki Phone #:

Project Information

Project Name: PH REFINERY AOI-4
Street:
City: Philadelphia State: PA
Project #: AOI-4 Soil Samples
Client Purchase Order #:
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)

LEAD 6010C; DRCK, MTBE, TOLUENE, EDB, EDC, TMB's 8260B; 8270C: Anthracene, benzo(a) anthracene, benzo(a) pyrene, chrysene, dibenzo(a,h) anthracene, fluoranthene, fluorene, phenanthrene, pyrene

Field Kits Received

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	LAB USE ONLY
-1	S-369_0-2'		3-4-13	0900	LM	SO	4					1	2	1		C38
	~~S-369 0-2'~~											1	2	1		14K4
-	S-369_2-4'		3-4-13	0930								1	2	1		4953
-2	S-369_6-8'			1015								1	2	1		
-3	S-369_8-10'			1030								1	2	1		
-4	S-365_0-2'			1200								1	2	1		
-5	S-365_4-6'			1230								1	2	1		

D.I. Slurry voc vials frozen storage
Date: 3/4/13 Time: 1735 Initials: RR

Turnaround Time (Business days)

- [x] 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

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other RED_T2

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

Comments / Special Instructions

S-369_8-10' prep & hold

Rec'd at Eaton Service Co.
3/4/13 1400

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 Luke Makrycki	3/4/13 1400	1	2	3/4/13 1645	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: [x] Cooler Temp: 3.3°C

IR

TMO

JB30306: Chain of Custody
Page 1 of 4

SAMPLE #			
1	8049	7761, 7771	
2	7977	7736, 7746	
3	8008	7779, 7789	
4	7988	7778, 7788	
5	7999	7737, 7747	
6			
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JB30306: Chain of Custody

Page 2 of 4

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB30306 **Client:** AQUATERRA TECH **Project:** PH REFINERY AOI-4

Date / Time Received: 3/4/2013 16:45 **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (3.3/3.3); 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:	IR Gun	
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 DID NOT REC SAMPLE S369_2-4'

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JB30306: Chain of Custody
Page 3 of 4

Sample Receipt Summary - Problem Resolution

Accutest Job Number: JB30306

CSR: Kristin Beebe **Response Date:** 3/5/2013

Response: Tiffani Doerr notified, please proceed with analysis of other samples. Please also run all analyses for sample S-369_8-10' (COC requests prep & hold).

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB30306

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-4

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB30306-1 S-369_0-2'	Collected: 04-MAR-13 09:00 By: LM		Received: 04-MAR-13 By: AS			
JB30306-1	SW846 8260B	09-MAR-13 22:37	TDN			V8260SL
JB30306-1	SM2540 G-97	14-MAR-13 16:00	CV			%SOL
JB30306-1	SW846 8270D	15-MAR-13 18:48	OYA	13-MAR-13	MP	B8270SL
JB30306-1	SW846 6010C	16-MAR-13 06:00	BL	14-MAR-13	WWZ	PB
JB30306-2 S-369_6-8'	Collected: 04-MAR-13 10:15 By: LM		Received: 04-MAR-13 By: AS			
JB30306-2	SM2540 G-97	14-MAR-13 16:00	CV			%SOL
JB30306-2	SW846 8270D	15-MAR-13 19:11	OYA	13-MAR-13	MP	B8270SL
JB30306-2	SW846 6010C	16-MAR-13 06:06	BL	14-MAR-13	WWZ	PB
JB30306-2	SW846 8260B	16-MAR-13 13:33	TDN			V8260SL
JB30306-3 S-369_8-10'	Collected: 04-MAR-13 10:30 By: LM		Received: 04-MAR-13 By: AS			
JB30306-3	SW846 8260B	09-MAR-13 23:08	TDN			V8260SL
JB30306-3	SM2540 G-97	14-MAR-13 16:00	CV			%SOL
JB30306-3	SW846 8270D	15-MAR-13 19:34	OYA	13-MAR-13	MP	B8270SL
JB30306-3	SW846 6010C	16-MAR-13 06:12	BL	14-MAR-13	WWZ	PB
JB30306-4 S-365_0-2'	Collected: 04-MAR-13 12:00 By: LM		Received: 04-MAR-13 By: AS			
JB30306-4	SM2540 G-97	14-MAR-13 16:00	CV			%SOL
JB30306-4	SW846 8270D	15-MAR-13 19:57	OYA	13-MAR-13	MP	B8270SL
JB30306-4	SW846 6010C	16-MAR-13 06:17	BL	14-MAR-13	WWZ	PB
JB30306-4	SW846 8260B	16-MAR-13 14:04	TDN			V8260SL
JB30306-5 S-365_4-6'	Collected: 04-MAR-13 12:30 By: LM		Received: 04-MAR-13 By: AS			
JB30306-5	SM2540 G-97	14-MAR-13 16:00	CV			%SOL
JB30306-5	SW846 8270D	15-MAR-13 20:21	OYA	13-MAR-13	MP	B8270SL
JB30306-5	SW846 6010C	16-MAR-13 06:23	BL	14-MAR-13	WWZ	PB
JB30306-5	SW846 8260B	16-MAR-13 14:35	TDN			V8260SL

Accutest Internal Chain of Custody

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB30306-1.1	Secured Storage	Adam Scott	03/13/13 15:22	Retrieve from Storage
JB30306-1.1	Adam Scott	Secured Staging Area	03/13/13 15:23	Return to Storage
JB30306-1.1	Secured Staging Area	Gina Montenegro	03/13/13 15:39	Retrieve from Storage
JB30306-1.1	Gina Montenegro	Secured Storage	03/13/13 20:44	Return to Storage
JB30306-1.1	Secured Storage	Michael Bunza	03/13/13 21:58	Retrieve from Storage
JB30306-1.1	Michael Bunza	Secured Storage	03/13/13 23:17	Return to Storage
JB30306-1.1	Secured Storage	Nick Popow	03/14/13 10:04	Retrieve from Storage
JB30306-1.1	Nick Popow	Secured Staging Area	03/14/13 10:04	Return to Storage
JB30306-1.1	Secured Staging Area	Rinku Patel	03/14/13 10:18	Retrieve from Storage
JB30306-1.1	Rinku Patel	Secured Storage	03/14/13 11:16	Return to Storage
JB30306-1.1	Secured Storage	Alfredo Crespo	03/14/13 15:33	Retrieve from Storage
JB30306-1.1	Alfredo Crespo	Caitie Van Sciver	03/14/13 15:37	Custody Transfer
JB30306-1.1	Caitie Van Sciver	Secured Storage	03/14/13 16:01	Return to Storage
JB30306-1.1.1	Gina Montenegro	Max Ponce	03/13/13 16:18	Aliquot from JB30306-1.1
JB30306-1.1.1	Max Ponce		03/13/13 23:34	Depleted
JB30306-1.1.2	Max Ponce	Organics Prep	03/13/13 16:20	Extract from JB30306-1.1.1
JB30306-1.1.2	Organics Prep	Max Ponce	03/13/13 23:35	Extract from JB30306-1.1.1
JB30306-1.1.2	Max Ponce	Extract Storage	03/13/13 23:36	Return to Storage
JB30306-1.1.2	Extract Storage	Olga Azarihn	03/15/13 13:32	Retrieve from Storage
JB30306-1.1.2	Olga Azarihn	GCMS3E	03/15/13 13:32	Load on Instrument
JB30306-1.1.2	GCMS3E	Katelynn Henrich	03/16/13 11:17	Unload from Instrument
JB30306-1.1.2	Katelynn Henrich	Extract Freezer	03/16/13 11:17	Return to Storage
JB30306-1.1.3	Rinku Patel	Metals Digestion	03/14/13 10:47	Digestate from JB30306-1.1
JB30306-1.1.3	Metals Digestion	Rinku Patel	03/14/13 10:48	Digestate from JB30306-1.1
JB30306-1.1.3	Rinku Patel	Metals Digestate Storage	03/14/13 10:48	Return to Storage
JB30306-1.3	Secured Storage	Thien Nguyen	03/09/13 14:46	Retrieve from Storage
JB30306-1.3	Thien Nguyen	VOA Prep Storage	03/09/13 14:46	Return to Storage
JB30306-1.3	VOA Prep Storage	Thien Nguyen	03/09/13 15:45	Retrieve from Storage
JB30306-1.3	Thien Nguyen	GCMSV	03/09/13 15:45	Load on Instrument
JB30306-1.3	GCMSV	Thien Nguyen	03/13/13 13:11	Unload from Instrument
JB30306-1.3	Thien Nguyen	Secured Storage	03/13/13 13:11	Return to Storage
JB30306-1.4	VOA Prep Storage	Thien Nguyen	03/11/13 12:40	Retrieve from Storage
JB30306-1.4	Thien Nguyen	Secured Storage	03/11/13 12:40	Return to Storage
JB30306-2.1	Secured Storage	Adam Scott	03/13/13 15:22	Retrieve from Storage
JB30306-2.1	Adam Scott	Secured Staging Area	03/13/13 15:23	Return to Storage
JB30306-2.1	Secured Staging Area	Gina Montenegro	03/13/13 15:39	Retrieve from Storage
JB30306-2.1	Gina Montenegro	Secured Storage	03/13/13 20:44	Return to Storage
JB30306-2.1	Secured Storage	Michael Bunza	03/13/13 21:58	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB30306-2.1	Michael Bunza	Secured Storage	03/13/13 23:17	Return to Storage
JB30306-2.1	Secured Storage	Nick Popow	03/14/13 10:04	Retrieve from Storage
JB30306-2.1	Nick Popow	Secured Staging Area	03/14/13 10:04	Return to Storage
JB30306-2.1	Secured Staging Area	Rinku Patel	03/14/13 10:18	Retrieve from Storage
JB30306-2.1	Rinku Patel	Secured Storage	03/14/13 11:16	Return to Storage
JB30306-2.1	Secured Storage	Alfredo Crespo	03/14/13 15:33	Retrieve from Storage
JB30306-2.1	Alfredo Crespo	Caitie Van Sciver	03/14/13 15:37	Custody Transfer
JB30306-2.1	Caitie Van Sciver	Secured Storage	03/14/13 16:01	Return to Storage
JB30306-2.1.1	Gina Montenegro	Max Ponce	03/13/13 16:18	Aliquot from JB30306-2.1
JB30306-2.1.1	Max Ponce		03/13/13 23:34	Depleted
JB30306-2.1.2	Max Ponce	Organics Prep	03/13/13 16:20	Extract from JB30306-2.1.1
JB30306-2.1.2	Organics Prep	Max Ponce	03/13/13 23:35	Extract from JB30306-2.1.1
JB30306-2.1.2	Max Ponce	Extract Storage	03/13/13 23:36	Return to Storage
JB30306-2.1.2	Extract Storage	Olga Azarihn	03/15/13 13:32	Retrieve from Storage
JB30306-2.1.2	Olga Azarihn	GCMS3E	03/15/13 13:32	Load on Instrument
JB30306-2.1.2	GCMS3E	Katelynn Henrich	03/16/13 11:17	Unload from Instrument
JB30306-2.1.2	Katelynn Henrich	Extract Freezer	03/16/13 11:17	Return to Storage
JB30306-2.1.3	Rinku Patel	Metals Digestion	03/14/13 10:47	Digestate from JB30306-2.1
JB30306-2.1.3	Metals Digestion	Rinku Patel	03/14/13 10:48	Digestate from JB30306-2.1
JB30306-2.1.3	Rinku Patel	Metals Digestate Storage	03/14/13 10:48	Return to Storage
JB30306-2.3	Secured Storage	Thien Nguyen	03/08/13 12:04	Retrieve from Storage
JB30306-2.3	Thien Nguyen		03/08/13 12:04	Broken
JB30306-2.4	Secured Storage	Thien Nguyen	03/09/13 14:46	Retrieve from Storage
JB30306-2.4	Thien Nguyen	VOA Prep Storage	03/09/13 14:46	Return to Storage
JB30306-2.4	VOA Prep Storage	Thien Nguyen	03/16/13 13:12	Retrieve from Storage
JB30306-2.4	Thien Nguyen	GCMSV	03/16/13 13:12	Load on Instrument
JB30306-3.1	Secured Storage	Adam Scott	03/13/13 15:22	Retrieve from Storage
JB30306-3.1	Adam Scott	Secured Staging Area	03/13/13 15:23	Return to Storage
JB30306-3.1	Secured Staging Area	Gina Montenegro	03/13/13 15:39	Retrieve from Storage
JB30306-3.1	Gina Montenegro	Secured Storage	03/13/13 20:44	Return to Storage
JB30306-3.1	Secured Storage	Michael Bunza	03/13/13 21:58	Retrieve from Storage
JB30306-3.1	Michael Bunza	Secured Storage	03/13/13 23:17	Return to Storage
JB30306-3.1	Secured Storage	Nick Popow	03/14/13 10:04	Retrieve from Storage
JB30306-3.1	Nick Popow	Secured Staging Area	03/14/13 10:04	Return to Storage
JB30306-3.1	Secured Staging Area	Rinku Patel	03/14/13 10:18	Retrieve from Storage
JB30306-3.1	Rinku Patel	Secured Storage	03/14/13 11:16	Return to Storage
JB30306-3.1	Secured Storage	Alfredo Crespo	03/14/13 15:33	Retrieve from Storage
JB30306-3.1	Alfredo Crespo	Caitie Van Sciver	03/14/13 15:37	Custody Transfer

Accutest Internal Chain of Custody

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB30306-3.1	Caitie Van Sciver	Secured Storage	03/14/13 16:01	Return to Storage
JB30306-3.1.1	Gina Montenegro	Max Ponce	03/13/13 16:18	Aliquot from JB30306-3.1
JB30306-3.1.1	Max Ponce		03/13/13 23:34	Depleted
JB30306-3.1.2	Max Ponce	Organics Prep	03/13/13 16:20	Extract from JB30306-3.1.1
JB30306-3.1.2	Organics Prep	Max Ponce	03/13/13 23:35	Extract from JB30306-3.1.1
JB30306-3.1.2	Max Ponce	Extract Storage	03/13/13 23:36	Return to Storage
JB30306-3.1.2	Extract Storage	Olga Azarihn	03/15/13 13:32	Retrieve from Storage
JB30306-3.1.2	Olga Azarihn	GCMS3E	03/15/13 13:32	Load on Instrument
JB30306-3.1.2	GCMS3E	Katelynn Henrich	03/16/13 11:17	Unload from Instrument
JB30306-3.1.2	Katelynn Henrich	Extract Freezer	03/16/13 11:17	Return to Storage
JB30306-3.1.3	Rinku Patel	Metals Digestion	03/14/13 10:47	Digestate from JB30306-3.1
JB30306-3.1.3	Metals Digestion	Rinku Patel	03/14/13 10:48	Digestate from JB30306-3.1
JB30306-3.1.3	Rinku Patel	Metals Digestate Storage	03/14/13 10:48	Return to Storage
JB30306-3.3	Secured Storage	Thien Nguyen	03/09/13 14:46	Retrieve from Storage
JB30306-3.3	Thien Nguyen	VOA Prep Storage	03/09/13 14:46	Return to Storage
JB30306-3.3	VOA Prep Storage	Thien Nguyen	03/09/13 15:45	Retrieve from Storage
JB30306-3.3	Thien Nguyen	GCMSV	03/09/13 15:45	Load on Instrument
JB30306-3.3	GCMSV	Thien Nguyen	03/13/13 13:11	Unload from Instrument
JB30306-3.3	Thien Nguyen	Secured Storage	03/13/13 13:11	Return to Storage
JB30306-3.4	VOA Prep Storage	Thien Nguyen	03/11/13 12:40	Retrieve from Storage
JB30306-3.4	Thien Nguyen	Secured Storage	03/11/13 12:40	Return to Storage
JB30306-4.1	Secured Storage	Adam Scott	03/13/13 15:22	Retrieve from Storage
JB30306-4.1	Adam Scott	Secured Staging Area	03/13/13 15:23	Return to Storage
JB30306-4.1	Secured Staging Area	Gina Montenegro	03/13/13 15:39	Retrieve from Storage
JB30306-4.1	Gina Montenegro	Secured Storage	03/13/13 20:44	Return to Storage
JB30306-4.1	Secured Storage	Michael Bunza	03/13/13 21:58	Retrieve from Storage
JB30306-4.1	Michael Bunza	Secured Storage	03/13/13 23:17	Return to Storage
JB30306-4.1	Secured Storage	Nick Popow	03/14/13 10:04	Retrieve from Storage
JB30306-4.1	Nick Popow	Secured Staging Area	03/14/13 10:04	Return to Storage
JB30306-4.1	Secured Staging Area	Rinku Patel	03/14/13 10:18	Retrieve from Storage
JB30306-4.1	Rinku Patel	Secured Storage	03/14/13 11:16	Return to Storage
JB30306-4.1	Secured Storage	Alfredo Crespo	03/14/13 15:33	Retrieve from Storage
JB30306-4.1	Alfredo Crespo	Caitie Van Sciver	03/14/13 15:37	Custody Transfer
JB30306-4.1	Caitie Van Sciver	Secured Storage	03/14/13 16:01	Return to Storage
JB30306-4.1.1	Gina Montenegro	Max Ponce	03/13/13 16:18	Aliquot from JB30306-4.1
JB30306-4.1.1	Max Ponce		03/13/13 23:34	Depleted

Accutest Internal Chain of Custody

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB30306-4.1.2	Max Ponce	Organics Prep	03/13/13 16:20	Extract from JB30306-4.1.1
JB30306-4.1.2	Organics Prep	Max Ponce	03/13/13 23:35	Extract from JB30306-4.1.1
JB30306-4.1.2	Max Ponce	Extract Storage	03/13/13 23:36	Return to Storage
JB30306-4.1.2	Extract Storage	Olga Azarihn	03/15/13 13:32	Retrieve from Storage
JB30306-4.1.2	Olga Azarihn	GCMS3E	03/15/13 13:32	Load on Instrument
JB30306-4.1.2	GCMS3E	Katelynn Henrich	03/16/13 11:17	Unload from Instrument
JB30306-4.1.2	Katelynn Henrich	Extract Freezer	03/16/13 11:17	Return to Storage
JB30306-4.1.3	Rinku Patel	Metals Digestion	03/14/13 10:47	Digestate from JB30306-4.1
JB30306-4.1.3	Metals Digestion	Rinku Patel	03/14/13 10:48	Digestate from JB30306-4.1
JB30306-4.1.3	Rinku Patel	Metals Digestate Storage	03/14/13 10:48	Return to Storage
JB30306-4.3	Secured Storage	Thien Nguyen	03/09/13 14:46	Retrieve from Storage
JB30306-4.3	Thien Nguyen	VOA Prep Storage	03/09/13 14:46	Return to Storage
JB30306-4.3	VOA Prep Storage	Thien Nguyen	03/16/13 13:12	Retrieve from Storage
JB30306-4.3	Thien Nguyen	GCMSV	03/16/13 13:12	Load on Instrument
JB30306-4.4	Secured Storage	Thien Nguyen	03/09/13 11:39	Retrieve from Storage
JB30306-4.4	Thien Nguyen		03/09/13 11:39	Broken
JB30306-5.1	Secured Storage	Adam Scott	03/13/13 15:22	Retrieve from Storage
JB30306-5.1	Adam Scott	Secured Staging Area	03/13/13 15:23	Return to Storage
JB30306-5.1	Secured Staging Area	Gina Montenegro	03/13/13 15:39	Retrieve from Storage
JB30306-5.1	Gina Montenegro	Secured Storage	03/13/13 20:44	Return to Storage
JB30306-5.1	Secured Storage	Michael Bunza	03/13/13 21:58	Retrieve from Storage
JB30306-5.1	Michael Bunza	Secured Storage	03/13/13 23:17	Return to Storage
JB30306-5.1	Secured Storage	Nick Popow	03/14/13 10:04	Retrieve from Storage
JB30306-5.1	Nick Popow	Secured Staging Area	03/14/13 10:04	Return to Storage
JB30306-5.1	Secured Staging Area	Rinku Patel	03/14/13 10:18	Retrieve from Storage
JB30306-5.1	Rinku Patel	Secured Storage	03/14/13 11:16	Return to Storage
JB30306-5.1	Secured Storage	Alfredo Crespo	03/14/13 15:33	Retrieve from Storage
JB30306-5.1	Alfredo Crespo	Caitie Van Sciver	03/14/13 15:37	Custody Transfer
JB30306-5.1	Caitie Van Sciver	Secured Storage	03/14/13 16:01	Return to Storage
JB30306-5.1.1	Gina Montenegro	Max Ponce	03/13/13 16:18	Aliquot from JB30306-5.1
JB30306-5.1.1	Max Ponce		03/13/13 23:34	Depleted
JB30306-5.1.2	Max Ponce	Organics Prep	03/13/13 16:20	Extract from JB30306-5.1.1
JB30306-5.1.2	Organics Prep	Max Ponce	03/13/13 23:35	Extract from JB30306-5.1.1
JB30306-5.1.2	Max Ponce	Extract Storage	03/13/13 23:36	Return to Storage
JB30306-5.1.2	Extract Storage	Olga Azarihn	03/15/13 13:32	Retrieve from Storage
JB30306-5.1.2	Olga Azarihn	GCMS3E	03/15/13 13:32	Load on Instrument
JB30306-5.1.2	GCMS3E	Katelynn Henrich	03/16/13 11:17	Unload from Instrument
JB30306-5.1.2	Katelynn Henrich	Extract Freezer	03/16/13 11:17	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 03/04/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB30306-5.1.3	Rinku Patel	Metals Digestion	03/14/13 10:47	Digestate from JB30306-5.1
JB30306-5.1.3	Metals Digestion	Rinku Patel	03/14/13 10:48	Digestate from JB30306-5.1
JB30306-5.1.3	Rinku Patel	Metals Digestate Storage	03/14/13 10:48	Return to Storage
JB30306-5.3	Secured Storage	Thien Nguyen	03/09/13 14:46	Retrieve from Storage
JB30306-5.3	Thien Nguyen	VOA Prep Storage	03/09/13 14:46	Return to Storage
JB30306-5.4	Secured Storage	Thien Nguyen	03/09/13 14:46	Retrieve from Storage
JB30306-5.4	Thien Nguyen	VOA Prep Storage	03/09/13 14:46	Return to Storage
JB30306-5.4	VOA Prep Storage	Thien Nguyen	03/16/13 13:12	Retrieve from Storage
JB30306-5.4	Thien Nguyen	GCMSV	03/16/13 13:12	Load on Instrument

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: JB30306
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
VV5750-MB1	V133017.D	1	03/09/13	TDN	n/a	n/a	VV5750

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

JB30306-1, JB30306-3

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	100%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	70-122%
2037-26-5	Toluene-D8	106%	81-127%
460-00-4	4-Bromofluorobenzene	91%	66-132%

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

Method Blank Summary

Job Number: JB30306
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
VV5757-MB2	V133214.D	1	03/16/13	TDN	n/a	n/a	VV5757

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

JB30306-2, JB30306-4, JB30306-5

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	84%	70-122%
2037-26-5	Toluene-D8	104%	81-127%
460-00-4	4-Bromofluorobenzene	90%	66-132%

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

Method Blank Summary

Job Number: JB30306
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
VV5757-MB	V133196.D	1	03/16/13	TDN	n/a	n/a	VV5757

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

VV5757-BS

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	106%	70-130%
17060-07-0	1,2-Dichloroethane-D4	87%	70-122%
2037-26-5	Toluene-D8	106%	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	

Blank Spike Summary

Job Number: JB30306
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
VV5750-BS	V133018.D	1	03/09/13	TDN	n/a	n/a	VV5750

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

JB30306-1, JB30306-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	51.4	103	76-117
106-93-4	1,2-Dibromoethane	50	46.4	93	77-122
107-06-2	1,2-Dichloroethane	50	49.0	98	68-134
100-41-4	Ethylbenzene	50	48.9	98	74-119
98-82-8	Isopropylbenzene	50	46.3	93	71-119
1634-04-4	Methyl Tert Butyl Ether	100	103	103	72-124
108-88-3	Toluene	50	50.6	101	77-121
95-63-6	1,2,4-Trimethylbenzene	50	47.6	95	72-118
108-67-8	1,3,5-Trimethylbenzene	50	48.0	96	69-118
1330-20-7	Xylene (total)	150	149	99	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	70-122%
2037-26-5	Toluene-D8	107%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB30306
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
VV5757-BS	V133197.D	1	03/16/13	TDN	n/a	n/a	VV5757

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

JB30306-2, JB30306-4, JB30306-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.5	99	76-117
106-93-4	1,2-Dibromoethane	50	41.0	82	77-122
107-06-2	1,2-Dichloroethane	50	44.3	89	68-134
100-41-4	Ethylbenzene	50	45.7	91	74-119
98-82-8	Isopropylbenzene	50	43.9	88	71-119
1634-04-4	Methyl Tert Butyl Ether	100	88.2	88	72-124
108-88-3	Toluene	50	51.7	103	77-121
95-63-6	1,2,4-Trimethylbenzene	50	44.4	89	72-118
108-67-8	1,3,5-Trimethylbenzene	50	44.7	89	69-118
1330-20-7	Xylene (total)	150	141	94	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
17060-07-0	1,2-Dichloroethane-D4	83%	70-122%
2037-26-5	Toluene-D8	106%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB30306
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
JB30564-4MS	V133033.D	1	03/09/13	TDN	n/a	n/a	VV5750
JB30564-4	V133024.D	1	03/09/13	TDN	n/a	n/a	VV5750

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

JB30306-1, JB30306-3

CAS No.	Compound	JB30564-4 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		61.6	57.9	94	44-130
106-93-4	1,2-Dibromoethane	ND		61.6	47.3	77	41-139
107-06-2	1,2-Dichloroethane	ND		61.6	50.7	82	43-139
100-41-4	Ethylbenzene	ND		61.6	53.8	87	29-137
98-82-8	Isopropylbenzene	ND		61.6	52.8	86	27-138
1634-04-4	Methyl Tert Butyl Ether	ND		61.6	52.4	85	51-128
108-88-3	Toluene	ND		61.6	56.8	92	40-135
95-63-6	1,2,4-Trimethylbenzene	ND		61.6	52.4	85	17-142
108-67-8	1,3,5-Trimethylbenzene	0.82	J	61.6	56.0	90	20-140
1330-20-7	Xylene (total)	ND		185	163	88	28-139

CAS No.	Surrogate Recoveries	MS	JB30564-4	Limits
1868-53-7	Dibromofluoromethane	94%	104%	70-130%
17060-07-0	1,2-Dichloroethane-D4	79%	91%	70-122%
2037-26-5	Toluene-D8	106%	106%	81-127%
460-00-4	4-Bromofluorobenzene	95%	93%	66-132%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB30306
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
JB31283-28MS	V133225.D	1	03/16/13	TDN	n/a	n/a	VV5757
JB31283-28	V133201.D	1	03/16/13	TDN	n/a	n/a	VV5757

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

JB30306-2, JB30306-4, JB30306-5

CAS No.	Compound	JB31283-28 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		67.5	67.1	99	44-130
106-93-4	1,2-Dibromoethane	ND		67.5	50.6	75	41-139
107-06-2	1,2-Dichloroethane	ND		67.5	54.3	80	43-139
100-41-4	Ethylbenzene	ND		67.5	63.4	94	29-137
98-82-8	Isopropylbenzene	ND		67.5	61.2	91	27-138
1634-04-4	Methyl Tert Butyl Ether	ND		67.5	51.9	77	51-128
108-88-3	Toluene	ND		67.5	67.4	100	40-135
95-63-6	1,2,4-Trimethylbenzene	ND		67.5	59.4	88	17-142
108-67-8	1,3,5-Trimethylbenzene	ND		67.5	61.7	91	20-140
1330-20-7	Xylene (total)	ND		203	191	94	28-139

CAS No.	Surrogate Recoveries	MS	JB31283-28	Limits
1868-53-7	Dibromofluoromethane	92%	103%	70-130%
17060-07-0	1,2-Dichloroethane-D4	69%* [a]	82%	70-122%
2037-26-5	Toluene-D8	104%	105%	81-127%
460-00-4	4-Bromofluorobenzene	96%	89%	66-132%

(a) Outside control limits due to matrix interference.

* = Outside of Control Limits.

Duplicate Summary

Job Number: JB30306
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
JB30564-1DUP	V133025.D	1	03/09/13	TDN	n/a	n/a	VV5750
JB30564-1	V133023.D	1	03/09/13	TDN	n/a	n/a	VV5750

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

JB30306-1, JB30306-3

CAS No.	Compound	JB30564-1 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	15
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	29
98-82-8	Isopropylbenzene	ND		ND		nc	23
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	23
108-88-3	Toluene	ND		ND		nc	21
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	12
1330-20-7	Xylene (total)	ND		ND		nc	26

CAS No.	Surrogate Recoveries	DUP	JB30564-1	Limits
1868-53-7	Dibromofluoromethane	106%	106%	70-130%
17060-07-0	1,2-Dichloroethane-D4	95%	97%	70-122%
2037-26-5	Toluene-D8	107%	106%	81-127%
460-00-4	4-Bromofluorobenzene	91%	92%	66-132%

* = Outside of Control Limits.

Duplicate Summary

Job Number: JB30306
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
JB31283-27DUP	V133218.D	1	03/16/13	TDN	n/a	n/a	VV5757
JB31283-27	V133200.D	1	03/16/13	TDN	n/a	n/a	VV5757

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

JB30306-2, JB30306-4, JB30306-5

CAS No.	Compound	JB31283-27 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	0.18	J	ND		200* [a]	15
106-93-4	1,2-Dibromoethane	ND		ND		nc	10
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		ND		nc	29
98-82-8	Isopropylbenzene	ND		ND		nc	23
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	23
108-88-3	Toluene	ND		ND		nc	21
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	12
1330-20-7	Xylene (total)	0.78	J	0.32	J	84* [a]	26

CAS No.	Surrogate Recoveries	DUP	JB31283-27	Limits
1868-53-7	Dibromofluoromethane	109%	105%	70-130%
17060-07-0	1,2-Dichloroethane-D4	88%	86%	70-122%
2037-26-5	Toluene-D8	105%	104%	81-127%
460-00-4	4-Bromofluorobenzene	93%	91%	66-132%

(a) High RPD due to low concentration of hit

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB30306
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: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5750-BFB
Lab File ID: V133014.D
Instrument ID: GCMSV
Injection Date: 03/09/13
Injection Time: 12:10

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	12519	20.8		Pass
75	30.0 - 60.0% of mass 95	29696	49.4		Pass
95	Base peak, 100% relative abundance	60057	100.0		Pass
96	5.0 - 9.0% of mass 95	4196	6.99		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	51296	85.4		Pass
175	5.0 - 9.0% of mass 174	3583	5.97	(6.98) [a]	Pass
176	95.0 - 101.0% of mass 174	50136	83.5	(97.7) [a]	Pass
177	5.0 - 9.0% of mass 176	3251	5.41	(6.48) [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
VV5750-CC5737	V133015.D	03/09/13	12:46	00:36	Continuing cal 50
VV5750-MB1	V133017.D	03/09/13	14:40	02:30	Method Blank
VV5750-BS	V133018.D	03/09/13	15:11	03:01	Blank Spike
ZZZZZZ	V133020.D	03/09/13	16:57	04:47	(unrelated sample)
ZZZZZZ	V133021.D	03/09/13	17:27	05:17	(unrelated sample)
ZZZZZZ	V133022.D	03/09/13	17:58	05:48	(unrelated sample)
JB30564-1	V133023.D	03/09/13	18:29	06:19	(used for QC only; not part of job JB30306)
JB30564-4	V133024.D	03/09/13	19:00	06:50	(used for QC only; not part of job JB30306)
JB30564-1DUP	V133025.D	03/09/13	19:31	07:21	Duplicate
ZZZZZZ	V133026.D	03/09/13	20:02	07:52	(unrelated sample)
ZZZZZZ	V133027.D	03/09/13	20:33	08:23	(unrelated sample)
ZZZZZZ	V133028.D	03/09/13	21:04	08:54	(unrelated sample)
ZZZZZZ	V133029.D	03/09/13	21:35	09:25	(unrelated sample)
JB30306-1	V133031.D	03/09/13	22:37	10:27	S-369_0-2'
JB30306-3	V133032.D	03/09/13	23:08	10:58	S-369_8-10'
JB30564-4MS	V133033.D	03/09/13	23:39	11:29	Matrix Spike

Instrument Performance Check (BFB)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5757-BFB
Lab File ID: V133193.D
Instrument ID: GCMSV
Injection Date: 03/15/13
Injection Time: 20:59

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	13712	17.7		Pass
75	30.0 - 60.0% of mass 95	36072	46.5		Pass
95	Base peak, 100% relative abundance	77594	100.0		Pass
96	5.0 - 9.0% of mass 95	4763	6.14		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	69584	89.7		Pass
175	5.0 - 9.0% of mass 174	5588	7.20	(8.03) [a]	Pass
176	95.0 - 101.0% of mass 174	68250	88.0	(98.1) [a]	Pass
177	5.0 - 9.0% of mass 176	4461	5.75	(6.54) [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
VV5757-CC5737	V133194.D	03/15/13	21:30	00:31	Continuing cal 50
VV5757-MB	V133196.D	03/16/13	00:05	03:06	Method Blank
VV5757-BS	V133197.D	03/16/13	00:35	03:36	Blank Spike
ZZZZZZ	V133199.D	03/16/13	02:08	05:09	(unrelated sample)
JB31283-27	V133200.D	03/16/13	02:39	05:40	(used for QC only; not part of job JB30306)
JB31283-28	V133201.D	03/16/13	03:10	06:11	(used for QC only; not part of job JB30306)
ZZZZZZ	V133202.D	03/16/13	03:41	06:42	(unrelated sample)
ZZZZZZ	V133203.D	03/16/13	04:12	07:13	(unrelated sample)
ZZZZZZ	V133204.D	03/16/13	04:43	07:44	(unrelated sample)
ZZZZZZ	V133205.D	03/16/13	05:14	08:15	(unrelated sample)
ZZZZZZ	V133206.D	03/16/13	05:45	08:46	(unrelated sample)
ZZZZZZ	V133207.D	03/16/13	06:16	09:17	(unrelated sample)
ZZZZZZ	V133208.D	03/16/13	06:47	09:48	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5757-BFB2 **Injection Date:** 03/16/13
Lab File ID: V133210.D **Injection Time:** 07:49
Instrument ID: GCMSV

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	14220	18.6		Pass
75	30.0 - 60.0% of mass 95	36962	48.4		Pass
95	Base peak, 100% relative abundance	76312	100.0		Pass
96	5.0 - 9.0% of mass 95	5362	7.03		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	73026	95.7		Pass
175	5.0 - 9.0% of mass 174	6093	7.98	(8.34) [a]	Pass
176	95.0 - 101.0% of mass 174	69458	91.0	(95.1) [a]	Pass
177	5.0 - 9.0% of mass 176	4459	5.84	(6.42) [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
VV5757-CC5737	V133212.D	03/16/13	11:14	03:25	Continuing cal 20
VV5757-MB2	V133214.D	03/16/13	12:57	05:08	Method Blank
JB30306-2	V133215.D	03/16/13	13:33	05:44	S-369_6-8'
JB30306-4	V133216.D	03/16/13	14:04	06:15	S-365_0-2'
JB30306-5	V133217.D	03/16/13	14:35	06:46	S-365_4-6'
JB31283-27DUP	V133218.D	03/16/13	15:17	07:28	Duplicate
ZZZZZZ	V133219.D	03/16/13	15:48	07:59	(unrelated sample)
ZZZZZZ	V133220.D	03/16/13	16:19	08:30	(unrelated sample)
ZZZZZZ	V133221.D	03/16/13	16:50	09:01	(unrelated sample)
ZZZZZZ	V133222.D	03/16/13	17:21	09:32	(unrelated sample)
ZZZZZZ	V133223.D	03/16/13	17:52	10:03	(unrelated sample)
ZZZZZZ	V133224.D	03/16/13	18:23	10:34	(unrelated sample)
JB31283-28MS	V133225.D	03/16/13	18:54	11:05	Matrix Spike

Volatile Internal Standard Area Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5750-CC5737	**Injection Date:**	03/09/13
Lab File ID:	V133015.D	**Injection Time:**	12:46
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	84473	7.55	322840	9.77	451253	10.72	376294	14.12	202706	16.72
Upper Limit [a]	168946	8.05	645680	10.27	902506	11.22	752588	14.62	405412	17.22
Lower Limit [b]	42237	7.05	161420	9.27	225627	10.22	188147	13.62	101353	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
VV5750-MB1	55709	7.56	312402	9.78	431715	10.72	350931	14.12	163547	16.73
VV5750-BS	75138	7.57	304349	9.78	429875	10.72	360043	14.12	193408	16.72
ZZZZZZ	49609	7.56	293431	9.78	408484	10.72	328190	14.12	148492	16.73
ZZZZZZ	61317	7.57	331195	9.78	457749	10.72	371010	14.12	168317	16.73
ZZZZZZ	67262	7.56	324066	9.77	449172	10.72	370442	14.12	172019	16.73
JB30564-1	71929	7.57	312840	9.77	441042	10.72	361451	14.12	165583	16.73
JB30564-4	59250	7.57	315496	9.77	439509	10.72	356761	14.12	175513	16.73
JB30564-1DUP	74429	7.57	339282	9.78	468914	10.72	389155	14.12	186164	16.73
ZZZZZZ	68647	7.57	337111	9.77	467703	10.72	385060	14.12	188016	16.72
ZZZZZZ	60175	7.57	327270	9.78	458091	10.72	370657	14.12	180697	16.73
ZZZZZZ	63857	7.57	336518	9.78	461162	10.72	375770	14.12	173277	16.73
ZZZZZZ	61386	7.56	321795	9.78	449749	10.72	371463	14.12	189419	16.73
JB30306-1	73968	7.57	387684	9.78	546786	10.72	447428	14.12	216171	16.72
JB30306-3	78357	7.56	402004	9.78	556719	10.72	456473	14.12	215366	16.72
JB30564-4MS	57617	7.57	365976	9.78	492609	10.72	390795	14.12	193707	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 Internal Standard Area Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5757-CC5737	**Injection Date:**	03/15/13
Lab File ID:	V133194.D	**Injection Time:**	21:30
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	72171	7.56	326723	9.78	460482	10.72	405642	14.12	219829	16.72
Upper Limit [a]	144342	8.06	653446	10.28	920964	11.22	811284	14.62	439658	17.22
Lower Limit [b]	36086	7.06	163362	9.28	230241	10.22	202821	13.62	109915	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
VV5757-MB	56544	7.57	316402	9.78	446411	10.72	394906	14.12	188506	16.72
VV5757-BS	66901	7.56	358349	9.77	504263	10.72	435261	14.12	232970	16.73
ZZZZZZ	67952	7.56	355057	9.78	506448	10.72	442578	14.12	207941	16.72
JB31283-27	72651	7.57	364229	9.78	520280	10.72	450935	14.12	207518	16.73
JB31283-28	63131	7.56	359624	9.78	507628	10.72	443819	14.12	205555	16.73
ZZZZZZ	72273	7.56	341428	9.78	492422	10.72	432066	14.12	201620	16.73
ZZZZZZ	73777	7.57	371058	9.78	531270	10.72	469051	14.12	218195	16.73
ZZZZZZ	76570	7.56	346819	9.77	503880	10.72	434718	14.12	190683	16.72
ZZZZZZ	65298	7.57	342355	9.78	486550	10.72	434814	14.12	201729	16.73
ZZZZZZ	64588	7.56	352319	9.77	503027	10.72	441963	14.12	206986	16.73
ZZZZZZ	71410	7.56	376619	9.78	534814	10.72	471574	14.12	218980	16.72
ZZZZZZ	75758	7.56	357007	9.78	521679	10.72	456628	14.12	234181	16.73

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

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

Volatile Internal Standard Area Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5757-CC5737	**Injection Date:**	03/16/13
Lab File ID:	V133212.D	**Injection Time:**	11:14
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	72264	7.56	326642	9.77	465618	10.72	415183	14.12	220301	16.72
Upper Limit [a]	144528	8.06	653284	10.27	931236	11.22	830366	14.62	440602	17.22
Lower Limit [b]	36132	7.06	163321	9.27	232809	10.22	207592	13.62	110151	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
VV5757-MB2	54954	7.57	341963	9.77	483236	10.72	421543	14.12	196455	16.73
JB30306-2	66427	7.56	339969	9.77	482317	10.72	424039	14.12	204942	16.73
JB30306-4	55398	7.56	364249	9.77	516234	10.72	450467	14.12	208178	16.73
JB30306-5	77299	7.56	390609	9.78	558688	10.72	500192	14.12	243210	16.72
JB31283-27DUP	77632	7.56	359586	9.77	512672	10.72	450985	14.12	219890	16.73
ZZZZZZ	75749	7.57	357547	9.77	511595	10.72	457443	14.12	216015	16.72
ZZZZZZ	65503	7.56	328504	9.78	472542	10.72	421055	14.12	192921	16.73
ZZZZZZ	73022	7.56	343905	9.78	494761	10.72	434613	14.12	199788	16.72
ZZZZZZ	59459	7.56	255400	9.77	376749	10.72	340023	14.12	160716	16.73
ZZZZZZ	77819	7.57	337007	9.77	487212	10.72	432437	14.12	206338	16.73
ZZZZZZ	69856	7.56	368149	9.77	520664	10.72	450577	14.12	227003	16.72
JB31283-28MS	46994	7.56	363711	9.77	496369	10.72	415246	14.12	216269	16.73

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: JB30306
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
JB30306-1	V133031.D	103.0	94.0	105.0	96.0
JB30306-2	V133215.D	108.0	87.0	105.0	93.0
JB30306-3	V133032.D	101.0	89.0	105.0	92.0
JB30306-4	V133216.D	103.0	82.0	105.0	90.0
JB30306-5	V133217.D	103.0	101.0	108.0	92.0
JB30564-1DUP	V133025.D	106.0	95.0	107.0	91.0
JB30564-4MS	V133033.D	94.0	79.0	106.0	95.0
JB31283-27DUP	V133218.D	109.0	88.0	105.0	93.0
JB31283-28MS	V133225.D	92.0	69.0* [a]	104.0	96.0
VV5750-BS	V133018.D	108.0	99.0	107.0	98.0
VV5750-MB1	V133017.D	100.0	88.0	106.0	91.0
VV5757-BS	V133197.D	100.0	83.0	106.0	98.0
VV5757-MB2	V133214.D	103.0	84.0	104.0	90.0
VV5757-MB	V133196.D	106.0	87.0	106.0	93.0

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%

(a) Outside control limits due to matrix interference.

Initial Calibration Summary

Job Number: JB30306 **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
```

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            ----- 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
```

```
      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

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```
      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
```

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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: JB30306 **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: JB30306 **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: JB30306 **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: JB30306 **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

6.8.2

6

Initial Calibration Verification

Job Number: JB30306 **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: JB30306 **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: JB30306 **Sample:** VV5740-ICV5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V132830.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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: JB30306 **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

6.8.3

6

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5750-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133015.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-...vv5748-5751\v133015.D Vial: 2
Acq On    :  9 Mar 2013  12:46 pm                    Operator: thienn
Sample    : cc5737-50                                Inst    : MSV
Misc      : MS44339,VV5750,5,,,,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 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	138	-0.02	7.55
2		tertiary butyl alcohol	1.170	1.062	9.2	139	0.00	7.68
3		1,4-dioxane	0.088	0.075	14.8	128	0.00	11.47
4	I	pentafluorobenzene	1.000	1.000	0.0	108	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	0.576	-5.9	126	-0.01	4.29
15		dichlorodifluoromethane	0.602	0.613	-1.8	126	0.00	4.29
16		chloromethane	0.676	0.733	-8.4	138	0.00	4.61
17		vinyl chloride	0.673	0.702	-4.3	132	0.00	4.86
		----------	True	Calc.	% Drift	----------		
18		bromomethane	50.000	59.692	-19.4	137	0.00	5.51
		----------	AvgRF	CCRF	% Dev	----------		
19		chloroethane	0.296	0.338	-14.2	138	0.00	5.66
20		trichlorofluoromethane	0.661	0.667	-0.9	121	0.00	6.07
		----------	True	Calc.	% Drift	----------		
21		Vinyl Bromide		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
22		ethyl ether	0.178	0.191	-7.3	132	0.00	6.48
23		Acetaldehyde	0.019	0.026	-36.8#	162	0.00	5.07
		----------	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	0.848	-11.7	131	0.00	6.69
29		acrolein	0.044	0.044	0.0	129	0.00	6.76

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5750-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133015.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

30		freon 113	0.304	0.308	-1.3	116	0.01	6.86
31		1,1-dichloroethene	0.379	0.401	-5.8	126	0.00	6.91
		----------	True	Calc.	% Drift	----------		
32		acetone	50.000	60.386	-20.8#	136	0.00	6.98
		----------	AvgRF	CCRF	% Dev	----------		
33		iso-butyl alcohol	0.011	0.011	0.0	123	-0.01	10.35
34		allyl chloride	0.226	0.249	-10.2	123	0.00	7.43
35		acetonitrile	0.091	0.102	-12.1	135	0.00	7.43
36		iodomethane	0.661	0.700	-5.9	122	0.00	7.20
37		carbon disulfide	1.376	1.512	-9.9	132	0.00	7.33
38		methylene chloride	0.370	0.397	-7.3	126	0.00	7.62
39		1-chloropropane	0.714	0.809	-13.3	131	0.00	7.65
40		methyl acetate	0.163	0.187	-14.7	144	0.00	7.41
41		methyl tert butyl ether	0.827	0.915	-10.6	133	0.00	7.92
42		trans-1,2-dichloroethene	0.402	0.427	-6.2	124	0.00	7.98
43		di-isopropyl ether	1.176	1.359	-15.6	133	0.00	8.49
44		2-butanone	0.023	0.025	-8.7	130	0.00	9.25
45		1,1-dichloroethane	0.705	0.770	-9.2	125	0.00	8.55
46		chloroprene	0.614	0.625	-1.8	114	0.00	8.65
47		acrylonitrile	0.066	0.081	-22.7#	144	0.00	7.96
48		vinyl acetate	0.034	0.035	-2.9	113	0.00	8.51
49		ethyl tert-butyl ether	1.036	1.149	-10.9	125	-0.01	8.95
50		ethyl acetate	0.030	0.033	-10.0	120	-0.01	9.24
51		2,2-dichloropropane	0.577	0.606	-5.0	120	0.00	9.28
52		cis-1,2-dichloroethene	0.391	0.416	-6.4	122	0.00	9.28
53		propionitrile	0.024	0.029	-20.8#	138	0.00	9.36
		----------	True	Calc.	% Drift	----------		
54		methyl acrylate	50.000	53.020	-6.0	122	0.00	9.34
		----------	AvgRF	CCRF	% Dev	----------		
55		methacrylonitrile	0.075	0.086	-14.7	131	0.00	9.54
56		bromochloromethane	0.149	0.163	-9.4	122	0.00	9.60
57		tetrahydrofuran	0.072	0.085	-18.1	150	0.00	9.65
58		chloroform	0.616	0.664	-7.8	122	0.00	9.64
59		tert-Butyl Formate	0.202	0.232	-14.9	127	0.00	9.68
60	S	dibromofluoromethane (s)	0.324	0.339	-4.6	121	0.00	9.85
61	S	1,2-dichloroethane-d4 (s)	0.317	0.317	0.0	118	0.00	10.28
62		1,1,1-trichloroethane	0.600	0.604	-0.7	119	0.00	9.91
63		Cyclohexane	0.563	0.593	-5.3	122	0.00	9.97
		----------	True	Calc.	% Drift	----------		
64		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
65	I	1,4-difluorobenzene	1.000	1.000	0.0	113	0.00	10.72
66		methylcyclohexane	0.490	0.445	9.2	106	0.00	11.29
67		epichlorohydrin	0.012	0.013	-8.3	127	0.00	12.05
68		n-butyl alcohol	0.004	0.004	0.0	137	-0.01	10.84
69		carbon tetrachloride	0.375	0.366	2.4	114	-0.01	10.10
70		1,1-dichloropropene	0.387	0.390	-0.8	119	-0.01	10.07
71		hexane	0.414	0.351	15.2	103	0.00	8.25
72		2,2,4-Trimethylpentane	1.151	1.065	7.5	110	0.00	10.31
73		benzene	1.114	1.140	-2.3	126	0.00	10.35
74		tert-amyl methyl ether	0.640	0.681	-6.4	128	0.00	10.36
75		heptane	0.234	0.216	7.7	110	0.00	10.48
76		isopropyl acetate	0.040	0.044	-10.0	127	0.00	10.38

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5750-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133015.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77		1,2-dichloroethane	0.280	0.281	-0.4	124	0.00	10.37
78		trichloroethene	0.284	0.281	1.1	119	0.00	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	0.004	33.3#	97	0.00	11.89
82		methyl methacrylate	0.039	0.040	-2.6	125	0.00	11.33
83		1,2-dichloropropane	0.259	0.270	-4.2	126	0.00	11.35
84		dibromomethane	0.114	0.119	-4.4	129	0.00	11.53
85		bromodichloromethane	0.311	0.329	-5.8	122	0.00	11.65
86		2-nitropropane	0.040	0.041	-2.5	134	0.00	11.89
87		cis-1,3-dichloropropene	0.380	0.385	-1.3	121	0.00	12.14
88	S	toluene-d8 (s)	0.985	1.053	-6.9	127	0.00	12.44
89		4-methyl-2-pentanone	0.056	0.065	-16.1	140	0.00	12.23
90		toluene	0.683	0.691	-1.2	122	0.00	12.52
91		isoamyl alcohol	0.006	0.007	-16.7	138	0.00	12.25
92		trans-1,3-dichloropropene	0.302	0.322	-6.6	125	0.00	12.74
93		ethyl methacrylate	0.204	0.229	-12.3	131	0.00	12.71
94		1,1,2-trichloroethane	0.136	0.149	-9.6	130	0.00	12.98
95		2-hexanone	0.041	0.049	-19.5	135	0.00	13.16
96	I	chlorobenzene-d5	1.000	1.000	0.0	120	0.00	14.12
97		tetrachloroethene	0.390	0.362	7.2	115	0.00	13.16
98		1,3-dichloropropane	0.352	0.353	-0.3	128	0.00	13.19
		----------	True	Calc.	% Drift	----------		
99		butyl acetate	50.000	50.784	-1.6	142	0.00	13.22
		----------	AvgRF	CCRF	% Dev	----------		
100		3,3-Dimethyl-1-Butanol	0.012	0.012	0.0	133	0.00	13.35
101		dibromochloromethane	0.259	0.255	1.5	123	0.00	13.48
102		1,2-dibromoethane	0.200	0.189	5.5	126	0.00	13.65
103		chlorobenzene	0.895	0.840	6.1	120	0.00	14.15
104		1,1,1,2-tetrachloroethane	0.315	0.296	6.0	120	0.00	14.22
105		ethylbenzene	1.639	1.569	4.3	122	0.00	14.20
106		m,p-xylene	0.620	0.601	3.1	123	0.00	14.32
107		o-xylene	0.594	0.577	2.9	121	0.00	14.79
108		styrene	0.932	0.941	-1.0	125	0.00	14.81
		----------	True	Calc.	% Drift	----------		
109		Butyl Acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
110		bromoform	0.156	0.152	2.6	124	0.00	15.13
		----------	True	Calc.	% Drift	----------		
111		cyclohexanone	500.000	159.226	68.2#	57	0.00	15.39
		----------	AvgRF	CCRF	% Dev	----------		
112	S	4-bromofluorobenzene (s)	0.436	0.437	-0.2	128	0.00	15.41
113	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	125	0.00	16.72
114		isopropylbenzene	3.211	2.900	9.7	118	0.00	15.17
115		1,1,2,2-tetrachloroethane	0.494	0.476	3.6	133	0.00	15.54
116		trans-1,4-dichloro-2-bute	0.133	0.124	6.8	131	0.00	15.58
117		1,2,3-trichloropropane	0.120	0.114	5.0	130	0.00	15.62
118		bromobenzene	0.700	0.668	4.6	128	0.00	15.64

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5750-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133015.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

119	n-propylbenzene	3.754	3.518	6.3	123	0.00	15.63
120	4-Ethyltoluene		----------NA----------				
121	2-chlorotoluene	0.737	0.688	6.6	128	0.00	15.81
122	4-chlorotoluene	2.247	2.060	8.3	128	0.00	15.92
123	1,3,5-trimethylbenzene	2.573	2.435	5.4	125	0.00	15.80
124	tert-butylbenzene	2.392	2.060	13.9	112	0.00	16.19
125	pentachloroethane	0.450	0.437	2.9	126	0.00	16.30
126	1,2,4-trimethylbenzene	2.628	2.433	7.4	123	0.00	16.24
127	sec-butylbenzene	3.568	3.239	9.2	118	0.00	16.43
128	p-isopropyltoluene	2.867	2.628	8.3	118	0.00	16.56
129	1,3-dichlorobenzene	1.434	1.342	6.4	129	0.00	16.66
130	1,4-dichlorobenzene	1.443	1.333	7.6	131	0.00	16.75
131	1,2,3-trimethylbenzene		----------NA----------				
132	1,2-dichlorobenzene	1.255	1.181	5.9	128	0.00	17.20
133	Benzyl Chloride	0.886	0.851	4.0	129	0.00	16.88
134	Vinyl Toluene		----------NA----------				
135	1,4-Diethylbenzene		----------NA----------				
136	n-butylbenzene	1.561	1.434	8.1	120	0.00	17.02
137	hexachloroethane	0.515	0.480	6.8	121	0.00	17.47
138	1,2,4,5-tetramethylbenzen		----------NA----------				
139	1,2-dibromo-3-chloropropa	0.089	0.083	6.7	124	0.00	18.05
140	1,3,5-trichlorobenzene	1.089	1.078	1.0	133	0.00	18.24
141	1,2,4-trichlorobenzene	0.798	0.792	0.8	130	0.00	18.98
142	hexachlorobutadiene	0.625	0.558	10.7	112	0.00	19.09
143	naphthalene	1.182	1.124	4.9	122	0.00	19.32
144	1,2,3-trichlorobenzene	0.676	0.675	0.1	128	0.00	19.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
v132763.D MVS5737.M Wed Mar 13 16:59:56 2013 VOA-05

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133194.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-...vv5756-5758\v133194.D Vial: 20
Acq On    : 15 Mar 2013   9:30 pm                    Operator: thienn
Sample    : cc5737-50                                Inst    : MSV
Misc      : MS44831,VV5757,5,,,,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 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	118	0.00	7.56
2	tertiary butyl alcohol	1.170	1.036	11.5	116	0.00	7.68
3	1,4-dioxane	0.088	0.080	9.1	116	0.00	11.47
4 I	pentafluorobenzene	1.000	1.000	0.0	109	0.00	9.78
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	0.557	-2.4	123	-0.01	4.29
15	dichlorodifluoromethane	0.602	0.528	12.3	110	0.00	4.29
16	chloromethane	0.676	0.596	11.8	113	0.00	4.62
17	vinyl chloride	0.673	0.633	5.9	120	0.00	4.86
	----------	True	Calc.	% Drift	----------		
18	bromomethane	50.000	54.495	-9.0	127	0.00	5.51
	----------	AvgRF	CCRF	% Dev	----------		
19	chloroethane	0.296	0.315	-6.4	130	0.00	5.66
20	trichlorofluoromethane	0.661	0.688	-4.1	126	0.00	6.07
	----------	True	Calc.	% Drift	----------		
21	Vinyl Bromide		----------NA----------				
	----------	AvgRF	CCRF	% Dev	----------		
22	ethyl ether	0.178	0.179	-0.6	125	0.00	6.49
23	Acetaldehyde	0.019	0.021	-10.5	136	0.00	5.07
	----------	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	0.776	-2.2	122	0.00	6.69
29	acrolein	0.044	0.037	15.9	109	0.00	6.76

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133194.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

30		freon 113	0.304	0.323	-6.3	122	0.01	6.86
31		1,1-dichloroethene	0.379	0.398	-5.0	126	0.00	6.91
		----------	True	Calc.	% Drift	----------		
32		acetone	50.000	54.170	-8.3	125	0.00	6.98
		----------	AvgRF	CCRF	% Dev	----------		
33		iso-butyl alcohol	0.011	0.011	0.0	123	0.00	10.35
34		allyl chloride	0.226	0.238	-5.3	119	0.00	7.43
35		acetonitrile	0.091	0.090	1.1	120	0.00	7.43
36		iodomethane	0.661	0.719	-8.8	127	0.00	7.21
37		carbon disulfide	1.376	1.463	-6.3	129	0.00	7.33
38		methylene chloride	0.370	0.397	-7.3	128	0.00	7.62
39		1-chloropropane	0.714	0.734	-2.8	120	0.00	7.66
40		methyl acetate	0.163	0.165	-1.2	129	0.00	7.41
41		methyl tert butyl ether	0.827	0.825	0.2	121	0.00	7.92
42		trans-1,2-dichloroethene	0.402	0.434	-8.0	128	0.00	7.98
43		di-isopropyl ether	1.176	1.253	-6.5	124	0.00	8.48
44		2-butanone	0.023	0.024	-4.3	127	0.00	9.26
45		1,1-dichloroethane	0.705	0.762	-8.1	125	0.00	8.55
46		chloroprene	0.614	0.616	-0.3	114	0.00	8.65
47		acrylonitrile	0.066	0.068	-3.0	123	0.00	7.96
48		vinyl acetate	0.034	0.036	-5.9	117	0.00	8.52
49		ethyl tert-butyl ether	1.036	1.100	-6.2	122	0.00	8.95
50		ethyl acetate	0.030	0.026	13.3	97	0.00	9.25
51		2,2-dichloropropane	0.577	0.621	-7.6	124	0.00	9.28
52		cis-1,2-dichloroethene	0.391	0.434	-11.0	128	0.00	9.29
53		propionitrile	0.024	0.024	0.0	117	0.00	9.37
		----------	True	Calc.	% Drift	----------		
54		methyl acrylate	50.000	49.849	0.3	116	0.00	9.34
		----------	AvgRF	CCRF	% Dev	----------		
55		methacrylonitrile	0.075	0.077	-2.7	119	0.00	9.54
56		bromochloromethane	0.149	0.163	-9.4	123	0.00	9.61
57		tetrahydrofuran	0.072	0.063	12.5	114	0.00	9.66
58		chloroform	0.616	0.684	-11.0	127	0.00	9.65
59		tert-Butyl Formate	0.202	0.207	-2.5	115	-0.01	9.67
60	S	dibromofluoromethane (s)	0.324	0.335	-3.4	121	0.00	9.85
61	S	1,2-dichloroethane-d4 (s)	0.317	0.282	11.0	106	0.00	10.29
62		1,1,1-trichloroethane	0.600	0.622	-3.7	125	0.00	9.90
63		Cyclohexane	0.563	0.593	-5.3	123	0.00	9.97
		----------	True	Calc.	% Drift	----------		
64		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
65	I	1,4-difluorobenzene	1.000	1.000	0.0	115	0.00	10.72
66		methylcyclohexane	0.490	0.466	4.9	113	0.00	11.29
67		epichlorohydrin	0.012	0.011	8.3	114	0.00	12.05
68		n-butyl alcohol	0.004	0.003	25.0#	107	0.00	10.84
69		carbon tetrachloride	0.375	0.379	-1.1	120	0.00	10.10
70		1,1-dichloropropene	0.387	0.396	-2.3	123	0.00	10.08
71		hexane	0.414	0.341	17.6	102	0.00	8.25
72		2,2,4-Trimethylpentane	1.151	1.098	4.6	116	0.00	10.31
73		benzene	1.114	1.145	-2.8	129	0.00	10.35
74		tert-amyl methyl ether	0.640	0.639	0.2	122	0.00	10.36
75		heptane	0.234	0.220	6.0	115	0.00	10.49
76		isopropyl acetate	0.040	0.042	-5.0	123	0.00	10.37

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133194.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77		1,2-dichloroethane	0.280	0.267	4.6	120	0.00	10.37
78		trichloroethene	0.284	0.285	-0.4	123	0.00	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	0.010	-66.7#	217#	0.00	11.89
82		methyl methacrylate	0.039	0.040	-2.6	125	0.00	11.33
83		1,2-dichloropropane	0.259	0.266	-2.7	126	0.00	11.35
84		dibromomethane	0.114	0.117	-2.6	130	0.00	11.53
85		bromodichloromethane	0.311	0.329	-5.8	125	0.00	11.66
86		2-nitropropane	0.040	0.035	12.5	116	0.00	11.89
87		cis-1,3-dichloropropene	0.380	0.383	-0.8	123	0.00	12.13
88	S	toluene-d8 (s)	0.985	1.053	-6.9	130	0.00	12.44
89		4-methyl-2-pentanone	0.056	0.052	7.1	115	0.00	12.23
90		toluene	0.683	0.751	-10.0	135	0.00	12.52
91		isoamyl alcohol	0.006	0.005	16.7	112	0.00	12.25
92		trans-1,3-dichloropropene	0.302	0.311	-3.0	123	0.00	12.74
93		ethyl methacrylate	0.204	0.200	2.0	117	0.00	12.71
94		1,1,2-trichloroethane	0.136	0.142	-4.4	126	0.00	12.99
95		2-hexanone	0.041	0.039	4.9	110	0.00	13.16
96	I	chlorobenzene-d5	1.000	1.000	0.0	129	0.00	14.12
97		tetrachloroethene	0.390	0.397	-1.8	135	0.00	13.16
98		1,3-dichloropropane	0.352	0.318	9.7	125	0.00	13.19
		----------	True	Calc.	% Drift	----------		
99		butyl acetate	50.000	45.619	8.8	138	0.00	13.23
		----------	AvgRF	CCRF	% Dev	----------		
100		3,3-Dimethyl-1-Butanol	0.012	0.009	25.0#	110	0.00	13.35
101		dibromochloromethane	0.259	0.242	6.6	126	0.00	13.48
102		1,2-dibromoethane	0.200	0.179	10.5	129	0.00	13.65
103		chlorobenzene	0.895	0.829	7.4	127	0.00	14.15
104		1,1,1,2-tetrachloroethane	0.315	0.291	7.6	127	0.00	14.22
105		ethylbenzene	1.639	1.530	6.7	128	0.00	14.20
106		m,p-xylene	0.620	0.597	3.7	132	0.00	14.32
107		o-xylene	0.594	0.572	3.7	129	0.00	14.79
108		styrene	0.932	0.905	2.9	130	0.00	14.81
		----------	True	Calc.	% Drift	----------		
109		Butyl Acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
110		bromoform	0.156	0.147	5.8	129	0.00	15.13
		----------	True	Calc.	% Drift	----------		
111		cyclohexanone	500.000	735.636	-47.1#	296	0.00	15.39
		----------	AvgRF	CCRF	% Dev	----------		
112	S	4-bromofluorobenzene (s)	0.436	0.440	-0.9	139	0.00	15.41
113	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	136	0.00	16.72
114		isopropylbenzene	3.211	2.858	11.0	126	0.00	15.17
115		1,1,2,2-tetrachloroethane	0.494	0.433	12.3	131	0.00	15.54
116		trans-1,4-dichloro-2-bute	0.133	0.095	28.6#	108	0.00	15.58
117		1,2,3-trichloropropane	0.120	0.101	15.8	125	0.00	15.62
118		bromobenzene	0.700	0.641	8.4	133	0.00	15.64

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133194.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

119	n-propylbenzene	3.754	3.395	9.6	129	0.00	15.63
120	4-Ethyltoluene		----------NA----------				
121	2-chlorotoluene	0.737	0.677	8.1	136	0.00	15.81
122	4-chlorotoluene	2.247	1.899	15.5	128	0.00	15.92
123	1,3,5-trimethylbenzene	2.573	2.366	8.0	132	0.00	15.80
124	tert-butylbenzene	2.392	2.062	13.8	121	0.00	16.19
125	pentachloroethane	0.450	0.384	14.7	120	0.00	16.30
126	1,2,4-trimethylbenzene	2.628	2.351	10.5	128	0.00	16.24
127	sec-butylbenzene	3.568	3.243	9.1	129	0.00	16.43
128	p-isopropyltoluene	2.867	2.572	10.3	126	0.00	16.56
129	1,3-dichlorobenzene	1.434	1.257	12.3	131	0.00	16.66
130	1,4-dichlorobenzene	1.443	1.244	13.8	132	0.00	16.75
131	1,2,3-trimethylbenzene		----------NA----------				
132	1,2-dichlorobenzene	1.255	1.138	9.3	134	0.00	17.19
133	Benzyl Chloride	0.886	0.743	16.1	122	0.00	16.88
134	Vinyl Toluene		----------NA----------				
135	1,4-Diethylbenzene		----------NA----------				
136	n-butylbenzene	1.561	1.364	12.6	124	0.00	17.02
137	hexachloroethane	0.515	0.493	4.3	135	0.00	17.48
138	1,2,4,5-tetramethylbenzen		----------NA----------				
139	1,2-dibromo-3-chloropropa	0.089	0.074	16.9	119	0.00	18.06
140	1,3,5-trichlorobenzene	1.089	0.981	9.9	131	0.00	18.24
141	1,2,4-trichlorobenzene	0.798	0.703	11.9	126	0.00	18.98
142	hexachlorobutadiene	0.625	0.585	6.4	128	0.00	19.09
143	naphthalene	1.182	0.983	16.8	116	0.00	19.32
144	1,2,3-trichlorobenzene	0.676	0.616	8.9	127	0.00	19.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
v132763.D MVS5737.M Mon Mar 18 15:46:22 2013 VOA-05

6.8.5

6

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133212.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-...vv5756-5758\v133212.D Vial: 4
Acq On    : 16 Mar 2013  11:14 am                    Operator: thienn
Sample    : cc5737-20                                Inst    : MSV
Misc      : MS44831,VV5757,5,,,,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 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	116	0.00	7.56
2		tertiary butyl alcohol	1.170	0.974	16.8	97	0.00	7.68
3		1,4-dioxane	0.088	0.081	8.0	105	0.00	11.48
4	I	pentafluorobenzene	1.000	1.000	0.0	121	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	0.516	5.1	113	-0.02	4.29
15		dichlorodifluoromethane	0.602	0.665	-10.5	129	0.00	4.29
16		chloromethane	0.676	0.638	5.6	114	0.00	4.62
17		vinyl chloride	0.673	0.771	-14.6	132	0.00	4.86
		----------	True	Calc.	% Drift	----------		
18		bromomethane	20.000	20.695	-3.5	112	0.01	5.52
		----------	AvgRF	CCRF	% Dev	----------		
19		chloroethane	0.296	0.312	-5.4	120	0.00	5.66
20		trichlorofluoromethane	0.661	0.683	-3.3	120	0.00	6.08
		----------	True	Calc.	% Drift	----------		
21		Vinyl Bromide		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
22		ethyl ether	0.178	0.181	-1.7	124	0.00	6.48
23		Acetaldehyde	0.019	0.018	5.3	101	0.00	5.07
		----------	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	0.837	-10.3	125	0.00	6.69
29		acrolein	0.044	0.041	6.8	110	0.00	6.76

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133212.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

30		freon 113	0.304	0.327	-7.6	125	0.02	6.87
31		1,1-dichloroethene	0.379	0.434	-14.5	134	0.00	6.91
		----------	True	Calc.	% Drift	----------		
32		acetone	20.000	21.486	-7.4	116	0.00	6.98
		----------	AvgRF	CCRF	% Dev	----------		
33		iso-butyl alcohol	0.011	0.012	-9.1	119	-0.01	10.35
34		allyl chloride	0.226	0.243	-7.5	120	0.00	7.43
35		acetonitrile	0.091	0.090	1.1	114	0.00	7.43
36		iodomethane	0.661	0.742	-12.3	127	0.00	7.21
37		carbon disulfide	1.376	1.609	-16.9	136	0.00	7.33
38		methylene chloride	0.370	0.409	-10.5	128	0.00	7.63
39		1-chloropropane	0.714	0.749	-4.9	117	0.00	7.65
40		methyl acetate	0.163	0.150	8.0	108	0.01	7.42
41		methyl tert butyl ether	0.827	0.783	5.3	107	0.00	7.92
42		trans-1,2-dichloroethene	0.402	0.453	-12.7	127	0.00	7.98
43		di-isopropyl ether	1.176	1.145	2.6	111	0.00	8.48
44		2-butanone	0.023	0.024	-4.3	110	0.02	9.27
45		1,1-dichloroethane	0.705	0.759	-7.7	120	0.00	8.55
46		chloroprene	0.614	0.578	5.9	107	0.00	8.65
47		acrylonitrile	0.066	0.070	-6.1	112	0.00	7.96
48		vinyl acetate	0.034	0.031	8.8	103	0.01	8.53
49		ethyl tert-butyl ether	1.036	0.987	4.7	107	-0.01	8.95
50		ethyl acetate	0.030	0.028	6.7	89	0.00	9.25
51		2,2-dichloropropane	0.577	0.625	-8.3	120	0.00	9.28
52		cis-1,2-dichloroethene	0.391	0.420	-7.4	120	0.00	9.29
53		propionitrile	0.024	0.025	-4.2	109	0.00	9.37
		----------	True	Calc.	% Drift	----------		
54		methyl acrylate	20.000	18.721	6.4	98	0.00	9.34
		----------	AvgRF	CCRF	% Dev	----------		
55		methacrylonitrile	0.075	0.076	-1.3	109	0.00	9.54
56		bromochloromethane	0.149	0.164	-10.1	115	0.00	9.60
57		tetrahydrofuran	0.072	0.070	2.8	111	0.00	9.65
58		chloroform	0.616	0.669	-8.6	118	0.00	9.65
59		tert-Butyl Formate	0.202	0.183	9.4	103	-0.01	9.67
60	S	dibromofluoromethane (s)	0.324	0.348	-7.4	130	0.00	9.85
61	S	1,2-dichloroethane-d4 (s)	0.317	0.296	6.6	111	0.00	10.28
62		1,1,1-trichloroethane	0.600	0.643	-7.2	123	0.00	9.90
63		Cyclohexane	0.563	0.639	-13.5	131	0.00	9.97
		----------	True	Calc.	% Drift	----------		
64		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
65	I	1,4-difluorobenzene	1.000	1.000	0.0	127	0.00	10.72
66		methylcyclohexane	0.490	0.439	10.4	107	0.00	11.29
67		epichlorohydrin	0.012	0.010	16.7	96	0.00	12.05
68		n-butyl alcohol	0.004	0.003	25.0#	85	0.00	10.85
69		carbon tetrachloride	0.375	0.389	-3.7	123	0.00	10.10
70		1,1-dichloropropene	0.387	0.408	-5.4	124	0.00	10.08
71		hexane	0.414	0.323	22.0#	96	0.00	8.25
72		2,2,4-Trimethylpentane	1.151	1.032	10.3	111	0.00	10.31
73		benzene	1.114	1.164	-4.5	126	0.00	10.35
74		tert-amyl methyl ether	0.640	0.587	8.3	110	0.00	10.36
75		heptane	0.234	0.215	8.1	107	0.00	10.48
76		isopropyl acetate	0.040	0.042	-5.0	111	0.00	10.37

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133212.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77		1,2-dichloroethane	0.280	0.266	5.0	113	0.00	10.38
78		trichloroethene	0.284	0.295	-3.9	123	0.00	11.08
		----------	True	Calc.	% Drift	----------		
79		Ethyl Acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
80		tert-Amyl Ethyl Ether		----------NA----------				
81		2-chloroethyl vinyl ether	0.006	0.017	-183.3#	384#	0.00	11.90
82		methyl methacrylate	0.039	0.037	5.1	110	0.01	11.34
83		1,2-dichloropropane	0.259	0.260	-0.4	116	0.00	11.35
84		dibromomethane	0.114	0.116	-1.8	116	0.00	11.53
85		bromodichloromethane	0.311	0.317	-1.9	117	0.00	11.66
86		2-nitropropane	0.040	0.039	2.5	123	0.00	11.90
87		cis-1,3-dichloropropene	0.380	0.373	1.8	115	0.00	12.13
88	S	toluene-d8 (s)	0.985	1.056	-7.2	136	0.00	12.44
89		4-methyl-2-pentanone	0.056	0.050	10.7	102	0.00	12.23
90		toluene	0.683	0.695	-1.8	121	0.00	12.52
91		isoamyl alcohol	0.006	0.005	16.7	95	0.00	12.25
92		trans-1,3-dichloropropene	0.302	0.302	0.0	114	0.00	12.74
93		ethyl methacrylate	0.204	0.185	9.3	107	0.00	12.71
94		1,1,2-trichloroethane	0.136	0.138	-1.5	119	0.00	12.98
95		2-hexanone	0.041	0.034	17.1	94	0.01	13.17
96	I	chlorobenzene-d5	1.000	1.000	0.0	143	0.00	14.12
97		tetrachloroethene	0.390	0.377	3.3	127	0.00	13.16
98		1,3-dichloropropane	0.352	0.311	11.6	115	0.00	13.19
		----------	True	Calc.	% Drift	----------		
99		butyl acetate	20.000	10.911	45.4#	67	0.00	13.23
		----------	AvgRF	CCRF	% Dev	----------		
100		3,3-Dimethyl-1-Butanol	0.012	0.007	41.7#	88	0.00	13.35
101		dibromochloromethane	0.259	0.229	11.6	115	0.00	13.48
102		1,2-dibromoethane	0.200	0.170	15.0	112	0.00	13.66
103		chlorobenzene	0.895	0.801	10.5	120	0.00	14.15
104		1,1,1,2-tetrachloroethane	0.315	0.278	11.7	119	0.00	14.22
105		ethylbenzene	1.639	1.477	9.9	121	0.00	14.20
106		m,p-xylene	0.620	0.582	6.1	123	0.00	14.32
107		o-xylene	0.594	0.536	9.8	119	0.00	14.79
108		styrene	0.932	0.837	10.2	117	0.00	14.81
		----------	True	Calc.	% Drift	----------		
109		Butyl Acrylate		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
110		bromoform	0.156	0.142	9.0	118	0.00	15.13
		----------	True	Calc.	% Drift	----------		
111		cyclohexanone	200.000	81.851	59.1#	53	0.00	15.40
		----------	AvgRF	CCRF	% Dev	----------		
112	S	4-bromofluorobenzene (s)	0.436	0.429	1.6	144	0.00	15.41
113	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	148	0.00	16.72
114		isopropylbenzene	3.211	2.743	14.6	117	0.00	15.17
115		1,1,2,2-tetrachloroethane	0.494	0.437	11.5	121	0.00	15.54
116		trans-1,4-dichloro-2-bute	0.133	0.106	20.3#	99	0.00	15.58
117		1,2,3-trichloropropane	0.120	0.097	19.2	105	0.00	15.62
118		bromobenzene	0.700	0.633	9.6	122	0.00	15.64

Continuing Calibration Summary

Job Number: JB30306 **Sample:** VV5757-CC5737
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V133212.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

119	n-propylbenzene	3.754	3.339	11.1	122	0.00	15.63
120	4-Ethyltoluene		----------NA----------				
121	2-chlorotoluene	0.737	0.664	9.9	123	0.00	15.81
122	4-chlorotoluene	2.247	1.865	17.0	116	0.00	15.92
123	1,3,5-trimethylbenzene	2.573	2.237	13.1	117	0.00	15.80
124	tert-butylbenzene	2.392	1.932	19.2	112	0.00	16.19
125	pentachloroethane	0.450	0.383	14.9	114	0.00	16.30
126	1,2,4-trimethylbenzene	2.628	2.247	14.5	115	0.00	16.25
127	sec-butylbenzene	3.568	3.078	13.7	118	0.00	16.43
128	p-isopropyltoluene	2.867	2.404	16.1	113	0.00	16.56
129	1,3-dichlorobenzene	1.434	1.252	12.7	121	0.00	16.66
130	1,4-dichlorobenzene	1.443	1.237	14.3	124	0.00	16.75
131	1,2,3-trimethylbenzene		----------NA----------				
132	1,2-dichlorobenzene	1.255	1.064	15.2	115	0.00	17.20
133	Benzyl Chloride	0.886	0.702	20.8#	110	0.00	16.88
134	Vinyl Toluene		----------NA----------				
135	1,4-Diethylbenzene		----------NA----------				
136	n-butylbenzene	1.561	1.248	20.1#	108	0.00	17.02
137	hexachloroethane	0.515	0.468	9.1	125	0.00	17.48
138	1,2,4,5-tetramethylbenzen		----------NA----------				
139	1,2-dibromo-3-chloropropa	0.089	0.071	20.2#	102	0.00	18.06
140	1,3,5-trichlorobenzene	1.089	0.968	11.1	121	0.00	18.24
141	1,2,4-trichlorobenzene	0.798	0.678	15.0	115	0.00	18.98
142	hexachlorobutadiene	0.625	0.554	11.4	121	0.00	19.09
143	naphthalene	1.182	0.922	22.0#	107	0.00	19.32
144	1,2,3-trichlorobenzene	0.676	0.582	13.9	116	0.00	19.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
v132762.D MVS5737.M Mon Mar 18 16:10:43 2013 VOA-05

New Jersey

ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5748-5751\
Data File : v133031.D
Acq On : 9 Mar 2013 10:37 pm
Operator : thienn
Sample : jb30306-1
Misc : MS44340,VV5750,9.3,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Mar 13 17:08:55 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

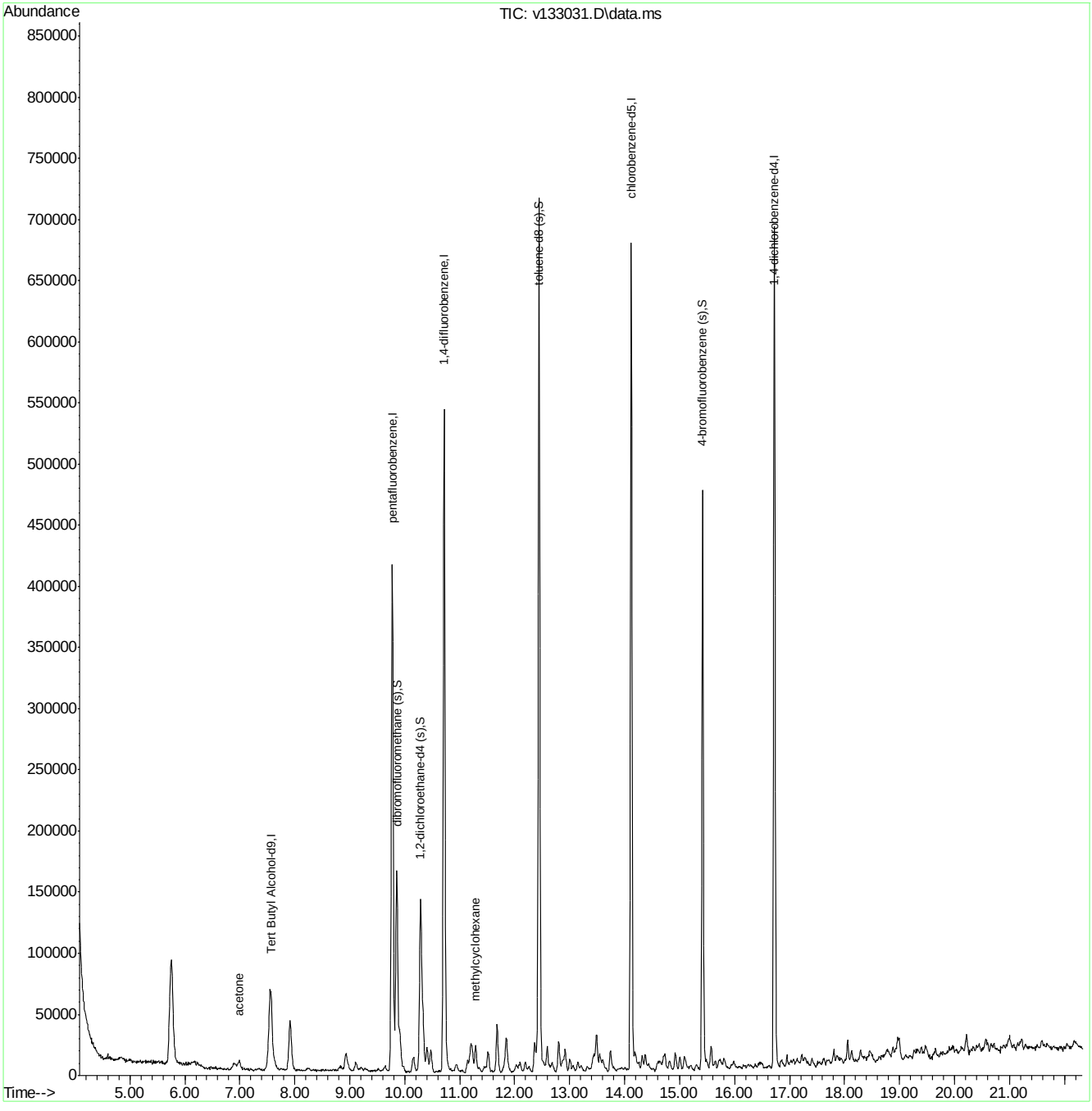
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.568	65	73968	500.00	ug/L	0.00
4) pentafluorobenzene	9.775	168	387684	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	546786	50.00	ug/L	0.00
96) chlorobenzene-d5	14.116	117	447428	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.721	152	216171	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.854	113	129738	51.58	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 103.16%			
61) 1,2-dichloroethane-d4 (s)	10.283	65	115458	46.93	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 93.86%			
88) toluene-d8 (s)	12.443	98	567563	52.72	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 105.44%			
112) 4-bromofluorobenzene (s)	15.419	95	186356	47.77	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 95.54%			
Target Compounds						Qvalue
32) acetone	6.987	43	16106	36.41	ug/L #	86
66) methylcyclohexane	11.287	83	9709	1.81	ug/L	90

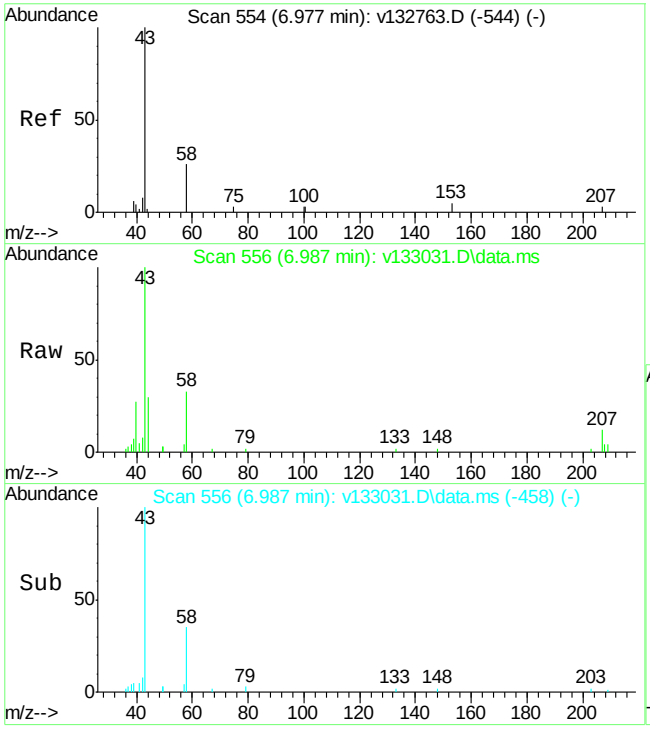
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5748-5751\
Data File : v133031.D
Acq On : 9 Mar 2013 10:37 pm
Operator : thienn
Sample : jb30306-1
Misc : MS44340,VV5750,9.3,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Mar 13 17:08:55 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

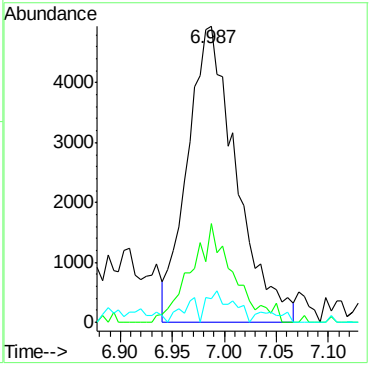


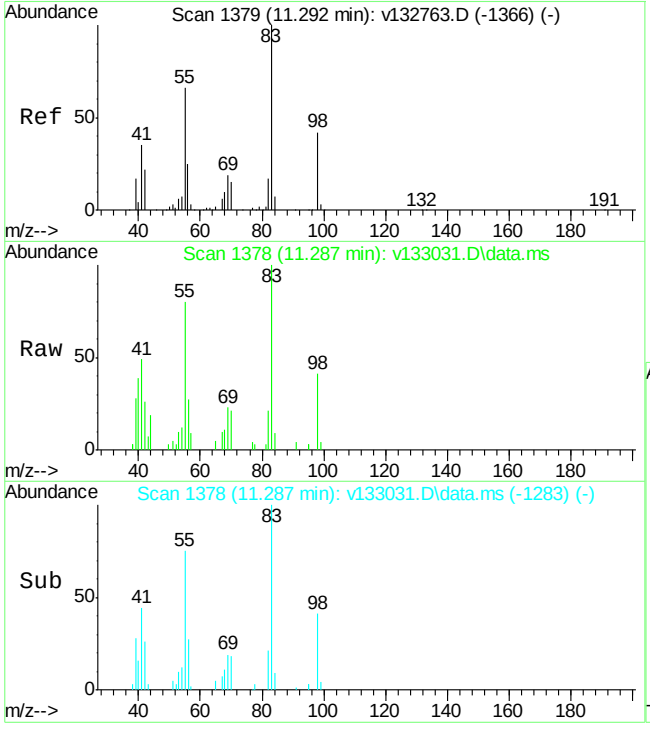


#32
acetone
Concen: 36.41 ug/L
RT: 6.987 min Scan# 556
Delta R.T. 0.010 min
Lab File: v133031.D
Acq: 9 Mar 2013 10:37 pm

Tgt Ion: 43 Resp: 16106

Ion	Ratio	Lower	Upper
43	100		
58	35.5	18.5	34.3#
42	8.6	5.9	10.9

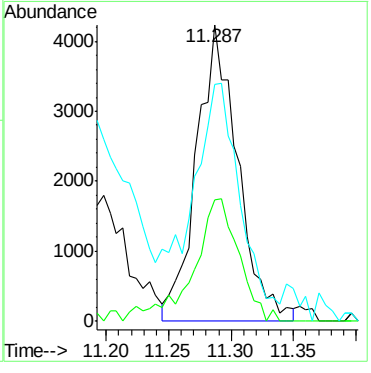




#66
methylcyclohexane
Concen: 1.81 ug/L
RT: 11.287 min Scan# 1378
Delta R.T. -0.005 min
Lab File: v133031.D
Acq: 9 Mar 2013 10:37 pm

Tgt Ion: 83 Resp: 9709

Ion	Ratio	Lower	Upper
83	100		
98	45.4	29.8	55.4
55	96.6	59.4	110.2



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133215.D
Acq On : 16 Mar 2013 1:33 pm
Operator : thienn
Sample : jb30306-2
Misc : MS44340,VV5757,12.1,,,,1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 18 17:55:38 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

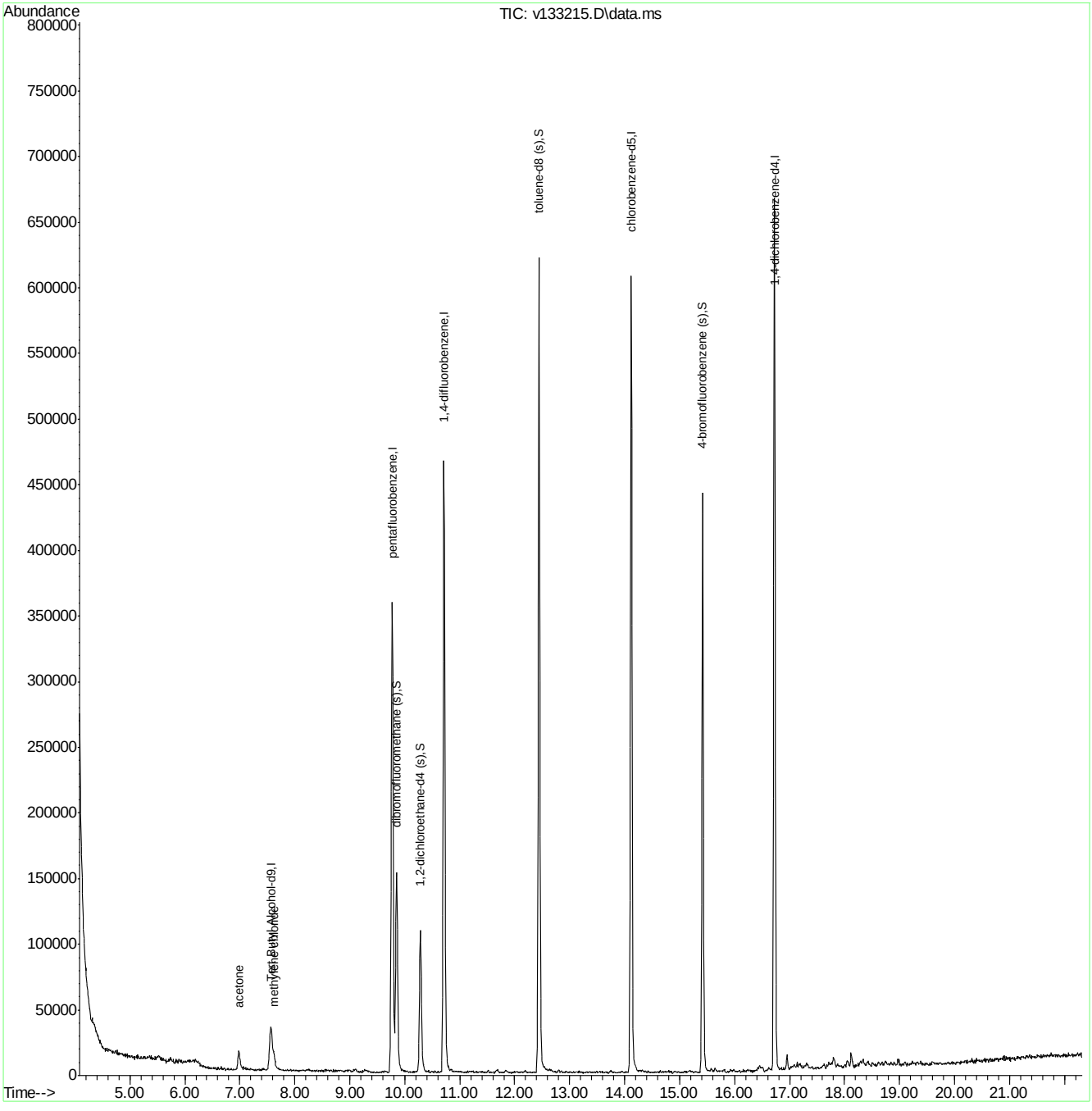
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.563	65	66427	500.00	ug/L	0.00
4) pentafluorobenzene	9.770	168	339969	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	482317	50.00	ug/L	0.00
96) chlorobenzene-d5	14.116	117	424039	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.726	152	204942	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.848	113	119259	54.07	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 108.14%			
61) 1,2-dichloroethane-d4 (s)	10.283	65	94005	43.57	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 87.14%			
88) toluene-d8 (s)	12.443	98	500356	52.68	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 105.36%			
112) 4-bromofluorobenzene (s)	15.419	95	172100	46.55	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 93.10%			
Target Compounds						Qvalue
32) acetone	6.982	43	29114	80.53	ug/L	94
38) methylene chloride	7.620	84	5227	2.08	ug/L	82

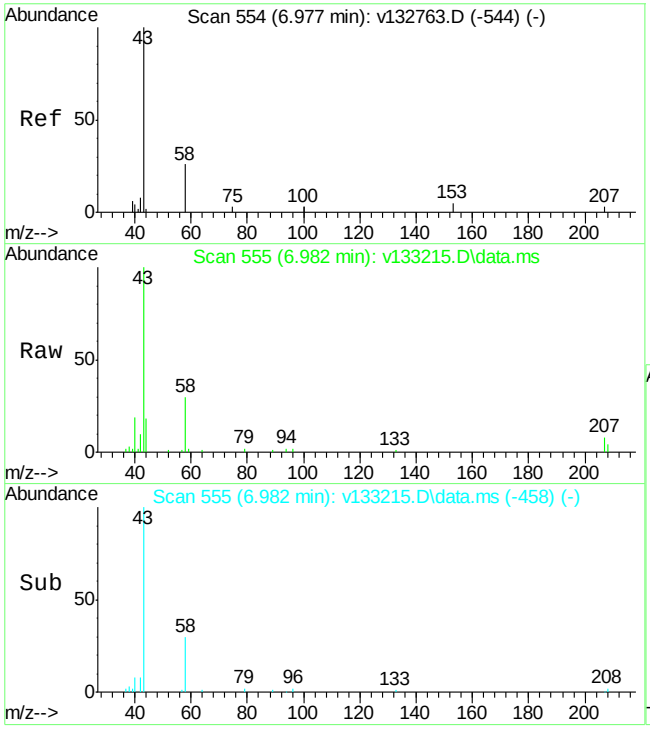
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133215.D
Acq On : 16 Mar 2013 1:33 pm
Operator : thienn
Sample : jb30306-2
Misc : MS44340,VV5757,12.1,,,,1
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 18 17:55:38 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

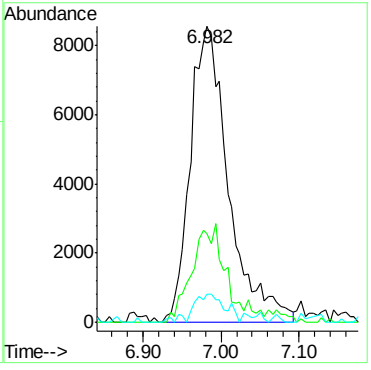


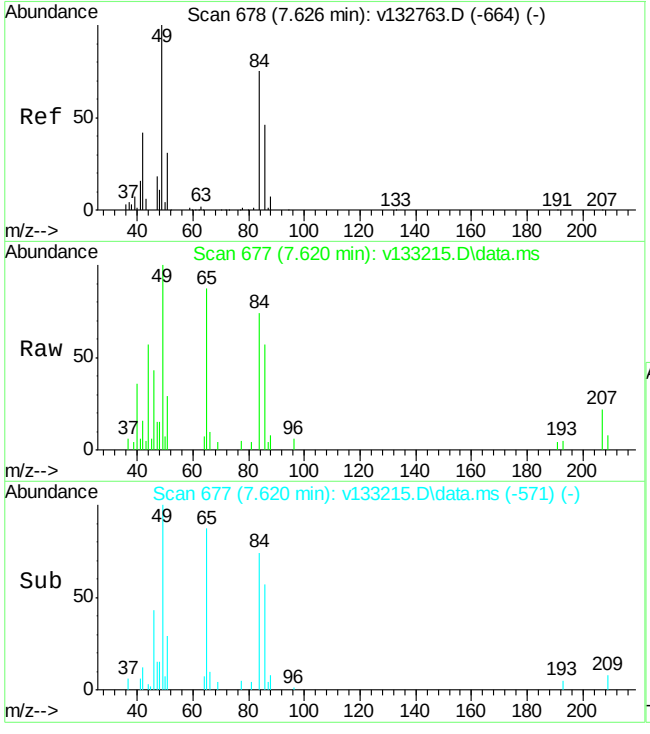


#32
acetone
Concen: 80.53 ug/L
RT: 6.982 min Scan# 555
Delta R.T. 0.005 min
Lab File: v133215.D
Acq: 16 Mar 2013 1:33 pm

Tgt Ion: 43 Resp: 29114

Ion	Ratio	Lower	Upper
43	100		
58	30.1	18.5	34.3
42	9.6	5.9	10.9

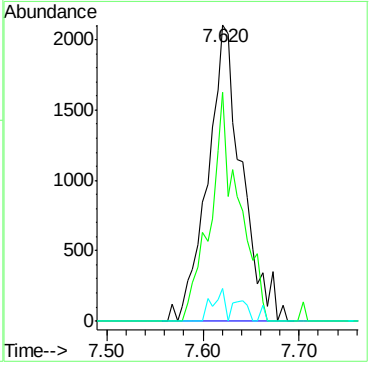




#38
methylene chloride
Concen: 2.08 ug/L
RT: 7.620 min Scan# 677
Delta R.T. -0.005 min
Lab File: v133215.D
Acq: 16 Mar 2013 1:33 pm

Tgt Ion: 84 Resp: 5227

Ion	Ratio	Lower	Upper
84	100		
86	77.3	43.3	80.5
88	11.0	6.9	12.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5748-5751\
Data File : v133032.D
Acq On : 9 Mar 2013 11:08 pm
Operator : thienn
Sample : jb30306-3
Misc : MS44340,VV5750,9.3,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Mar 13 17:21:02 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

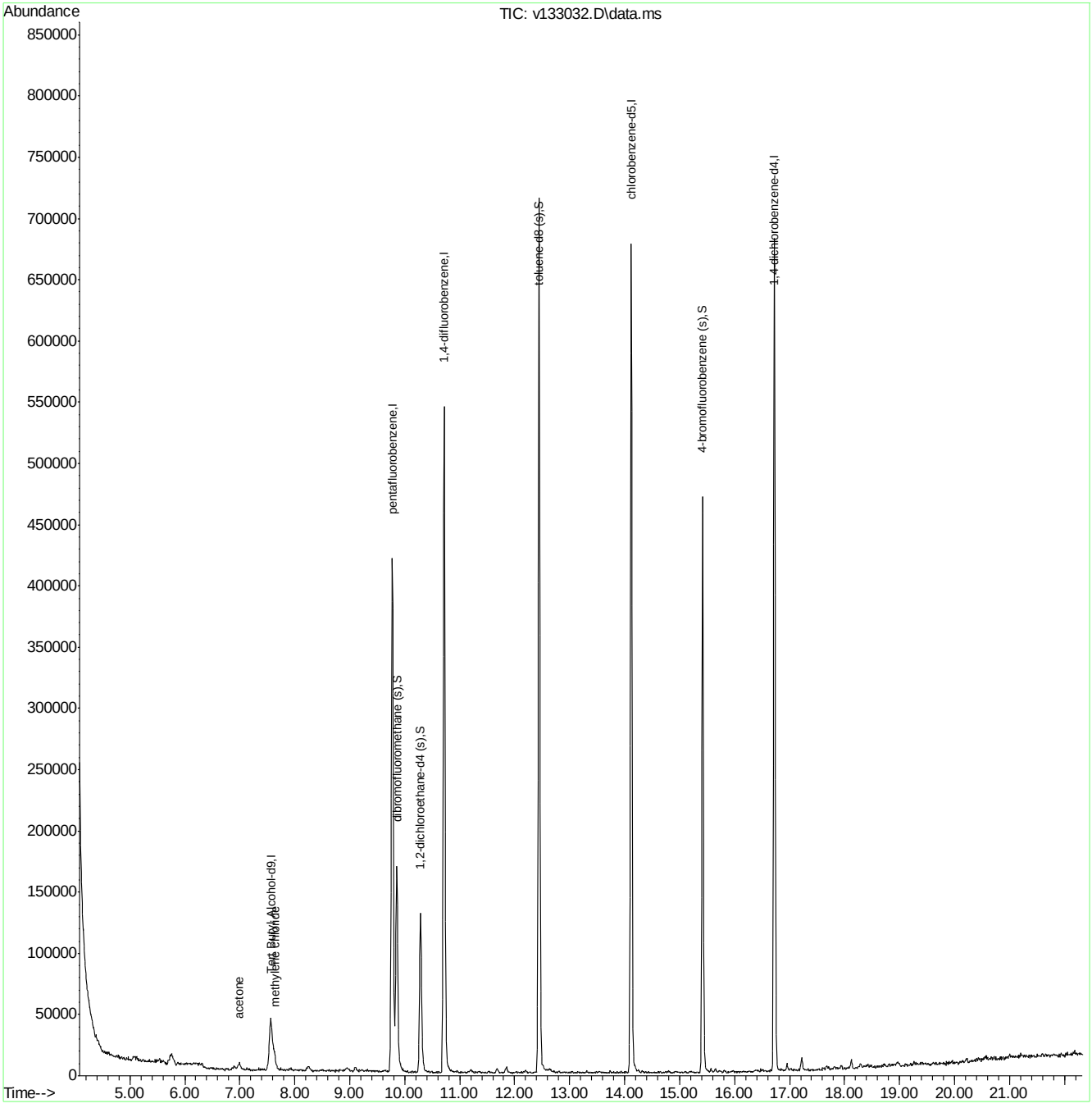
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.563	65	78357	500.00	ug/L	0.00
4) pentafluorobenzene	9.775	168	402004	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	556719	50.00	ug/L	0.00
96) chlorobenzene-d5	14.116	117	456473	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.721	152	215366	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.854	113	131474	50.41	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 100.82%			
61) 1,2-dichloroethane-d4 (s)	10.283	65	113776	44.60	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 89.20%			
88) toluene-d8 (s)	12.443	98	574569	52.41	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 104.82%			
112) 4-bromofluorobenzene (s)	15.419	95	183570	46.13	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 92.26%			
Target Compounds						Qvalue
32) acetone	6.988	43	13806	29.20	ug/L #	84
38) methylene chloride	7.631	84	6955	2.34	ug/L #	85

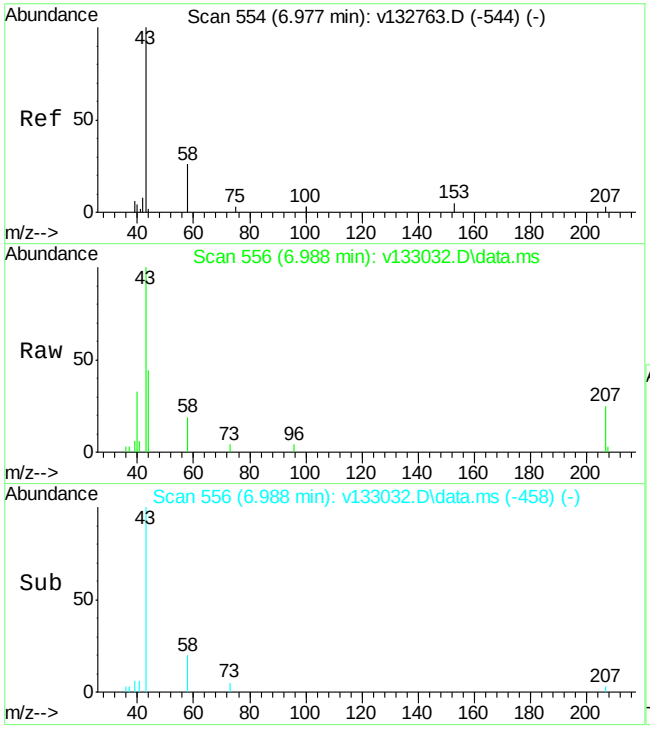
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5748-5751\
Data File : v133032.D
Acq On : 9 Mar 2013 11:08 pm
Operator : thienn
Sample : jb30306-3
Misc : MS44340,VV5750,9.3,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Mar 13 17:21:02 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

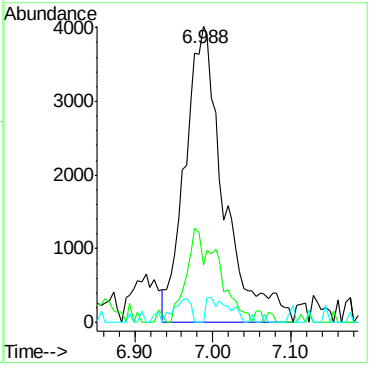


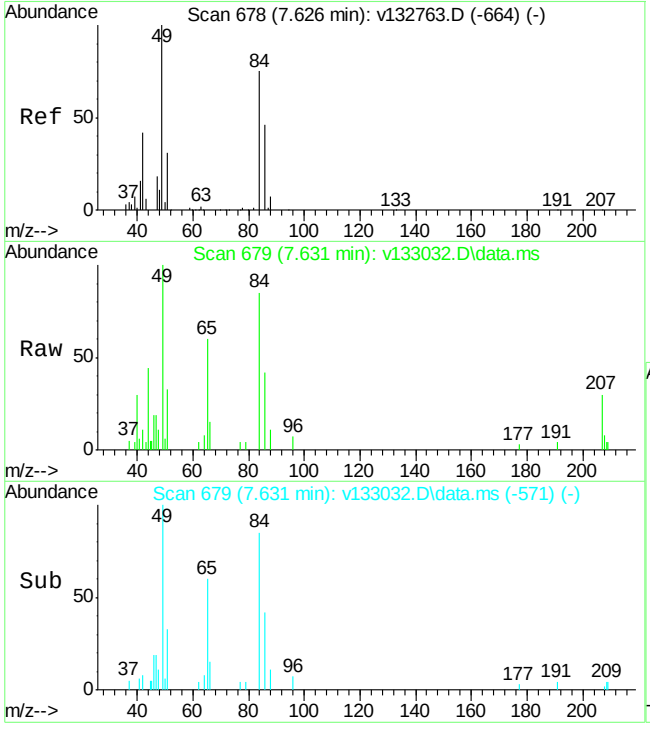


#32
acetone
Concen: 29.20 ug/L
RT: 6.988 min Scan# 556
Delta R.T. 0.011 min
Lab File: v133032.D
Acq: 9 Mar 2013 11:08 pm

Tgt Ion: 43 Resp: 13806

Ion	Ratio	Lower	Upper
43	100		
58	19.4	18.5	34.3
42	0.0	5.9	10.9#

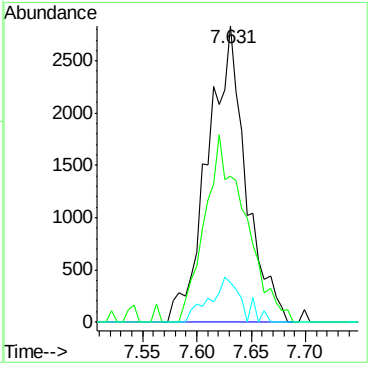




#38
methylene chloride
Concen: 2.34 ug/L
RT: 7.631 min Scan# 679
Delta R.T. 0.005 min
Lab File: v133032.D
Acq: 9 Mar 2013 11:08 pm

Tgt Ion: 84 Resp: 6955

Ion	Ratio	Lower	Upper
84	100		
86	49.4	43.3	80.5
88	13.1	6.9	12.7#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133216.D
Acq On : 16 Mar 2013 2:04 pm
Operator : thienn
Sample : jb30306-4
Misc : MS44340,VV5757,10.2,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 18 16:13:42 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

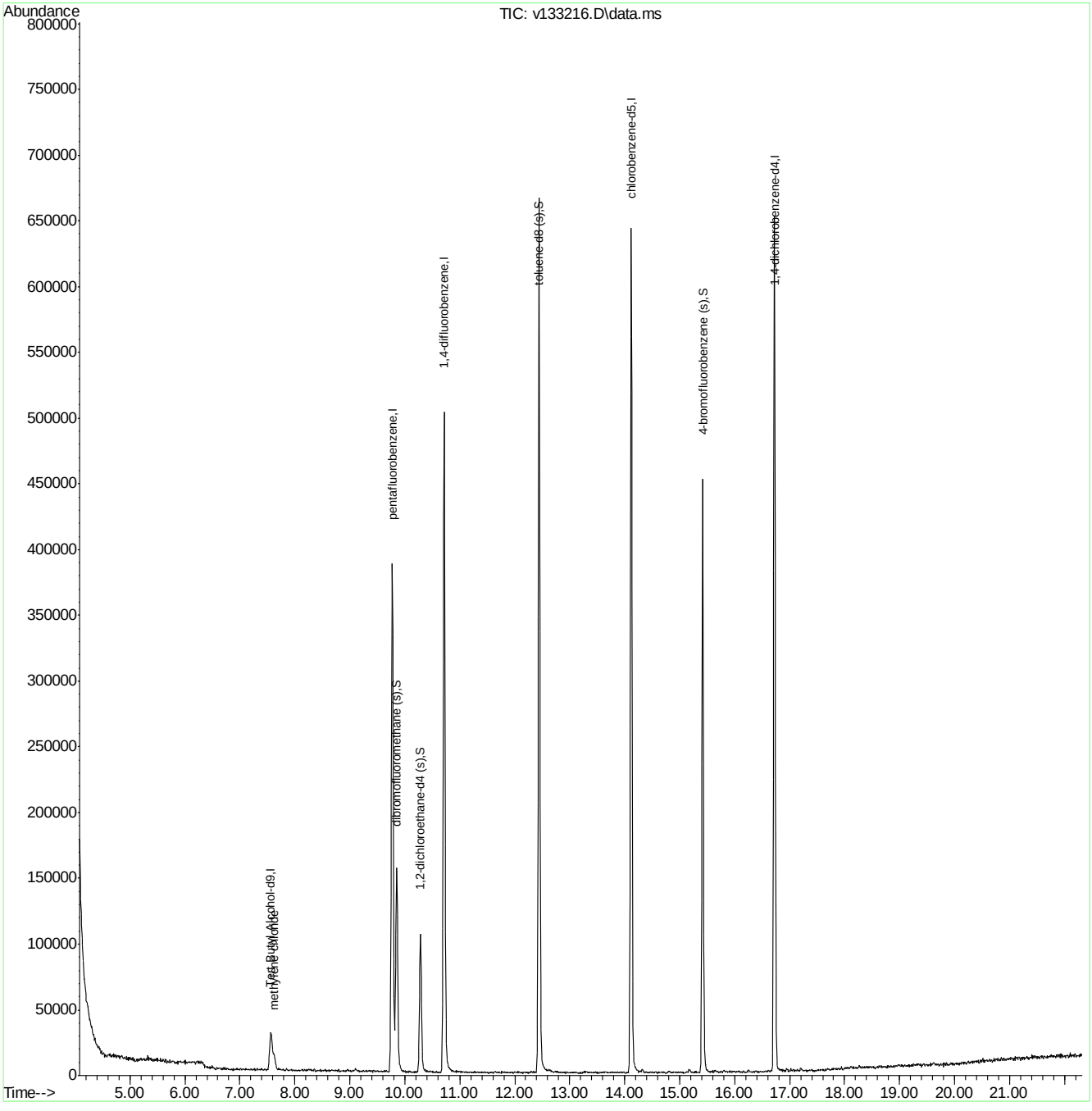
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.558	65	55398	500.00	ug/L	-0.01
4) pentafluorobenzene	9.770	168	364249	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	516234	50.00	ug/L	0.00
96) chlorobenzene-d5	14.122	117	450467	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.726	152	208178	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.849	113	121277	51.32	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 102.64%			
61) 1,2-dichloroethane-d4 (s)	10.283	65	94375	40.83	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 81.66%			
88) toluene-d8 (s)	12.443	98	535765	52.71	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 105.42%			
112) 4-bromofluorobenzene (s)	15.419	95	177134	45.10	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 90.20%			
Target Compounds						Qvalue
38) methylene chloride	7.626	84	4725	1.75	ug/L #	89

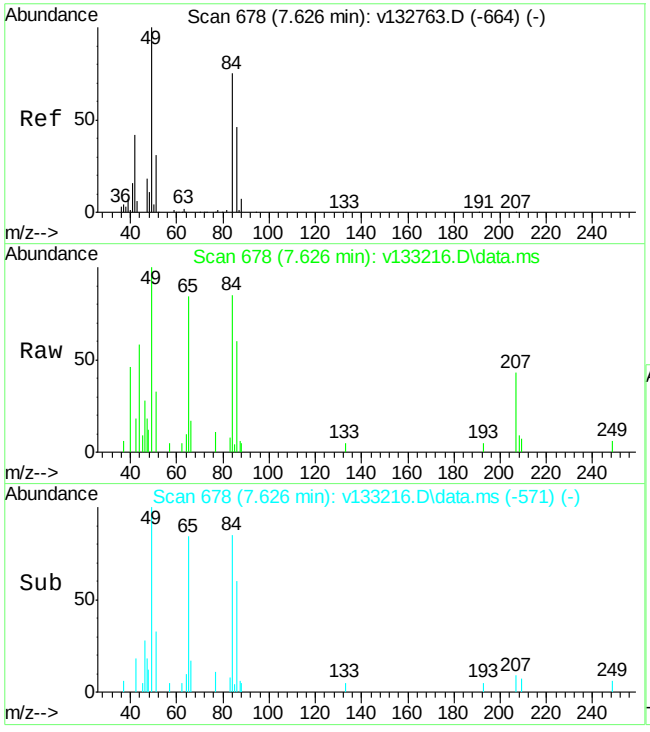
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133216.D
Acq On : 16 Mar 2013 2:04 pm
Operator : thienn
Sample : jb30306-4
Misc : MS44340,VV5757,10.2,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Mar 18 16:13:42 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

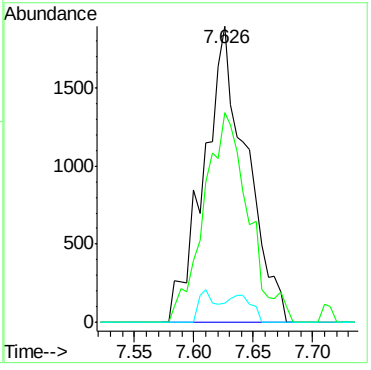




#38
methylene chloride
Concen: 1.75 ug/L
RT: 7.626 min Scan# 678
Delta R.T. 0.000 min
Lab File: v133216.D
Acq: 16 Mar 2013 2:04 pm

Tgt Ion: 84 Resp: 4725

Ion	Ratio	Lower	Upper
84	100		
86	70.7	43.3	80.5
88	6.4	6.9	12.7#



7.1.4

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133217.D
Acq On : 16 Mar 2013 2:35 pm
Operator : thienn
Sample : jb30306-5
Misc : MS44340,VV5757,10.4,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 18 16:23:45 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

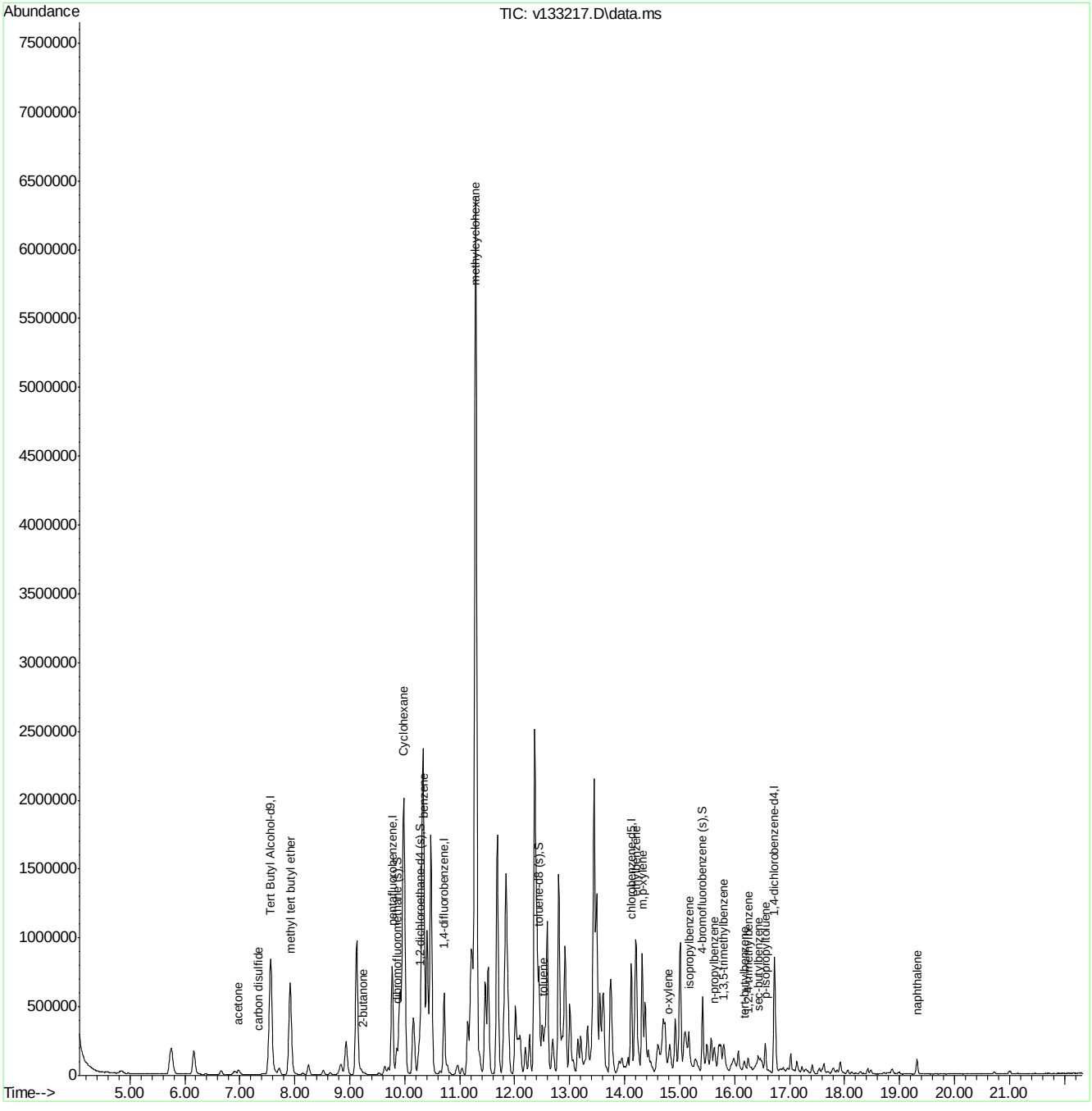
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.558	65	77299	500.00	ug/L	-0.01
4) pentafluorobenzene	9.775	168	390609	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	558688	50.00	ug/L	0.00
96) chlorobenzene-d5	14.116	117	500192	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.721	152	243210	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.854	113	130098	51.34	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 102.68%			
61) 1,2-dichloroethane-d4 (s)	10.283	65	125597	50.67	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 101.34%			
88) toluene-d8 (s)	12.443	98	592218	53.83	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 107.66%			
112) 4-bromofluorobenzene (s)	15.414	95	199532	45.76	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 91.52%			
Target Compounds						Qvalue
32) acetone	6.977	43	74620	186.00	ug/L	95
37) carbon disulfide	7.338	76	5209	0.48	ug/L	90
41) methyl tert butyl ether	7.929	73	2701	0.42	ug/L #	1
44) 2-butanone	9.247	72	5713	32.18	ug/L #	1
63) Cyclohexane	9.974	84	829442	188.70	ug/L #	49
66) methylcyclohexane	11.287	83	3483960	636.51	ug/L	96
73) benzene	10.351	78	587827	47.22	ug/L	96
90) toluene	12.521	92	33147	4.34	ug/L	93
105) ethylbenzene	14.200	91	245563	14.98	ug/L	97
106) m,p-xylene	14.320	106	88732	14.30	ug/L	97
107) o-xylene	14.791	106	17079	2.88	ug/L	88
114) isopropylbenzene	15.173	105	172563	11.05	ug/L	96
119) n-propylbenzene	15.633	91	87688	4.80	ug/L	98
123) 1,3,5-trimethylbenzene	15.795	105	59380	4.74	ug/L	99
124) tert-butylbenzene	16.188	119	12604	1.08	ug/L	88
126) 1,2,4-trimethylbenzene	16.240	105	56026	4.38	ug/L	97
127) sec-butylbenzene	16.428	105	57300	3.30	ug/L	89
128) p-isopropyltoluene	16.559	119	133089	9.54	ug/L	95
143) naphthalene	19.315	128	103568	18.01	ug/L	98

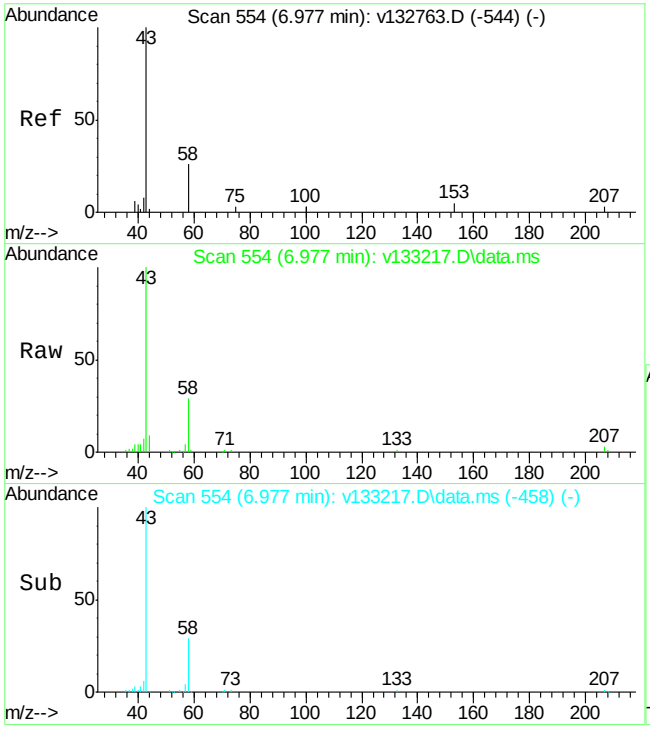
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133217.D
Acq On : 16 Mar 2013 2:35 pm
Operator : thienn
Sample : jb30306-5
Misc : MS44340,VV5757,10.4,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Mar 18 16:23:45 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

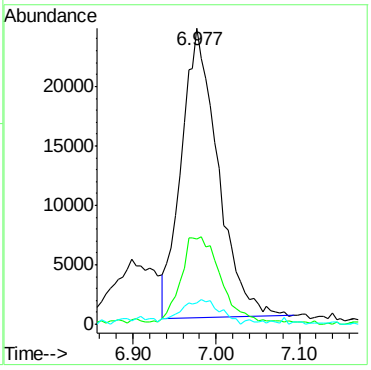


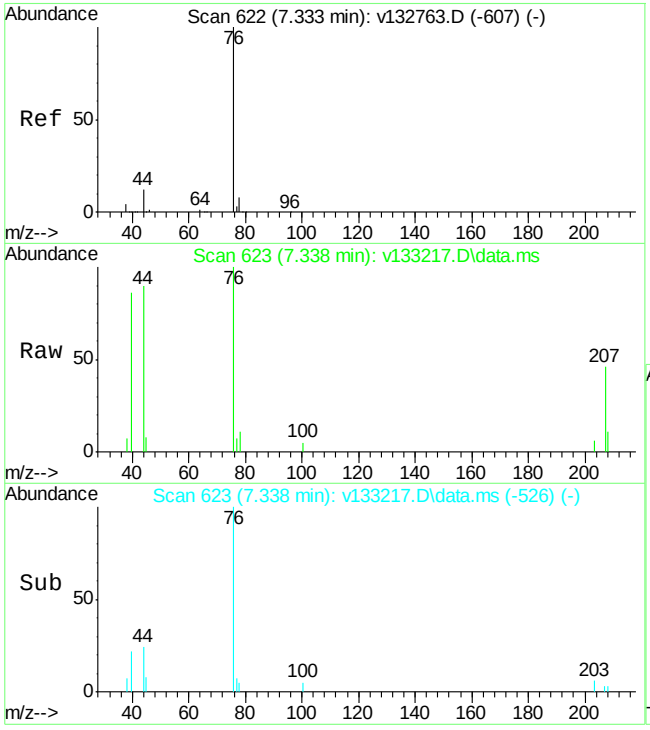


#32
acetone
Concen: 186.00 ug/L
RT: 6.977 min Scan# 554
Delta R.T. 0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 43 Resp: 74620

Ion	Ratio	Lower	Upper
43	100		
58	28.9	18.5	34.3
42	6.5	5.9	10.9

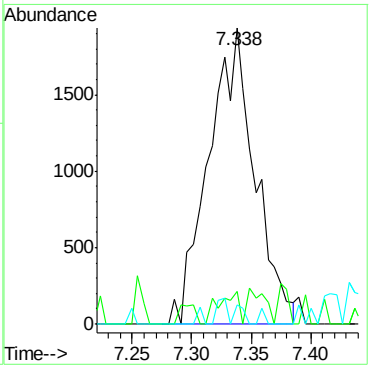


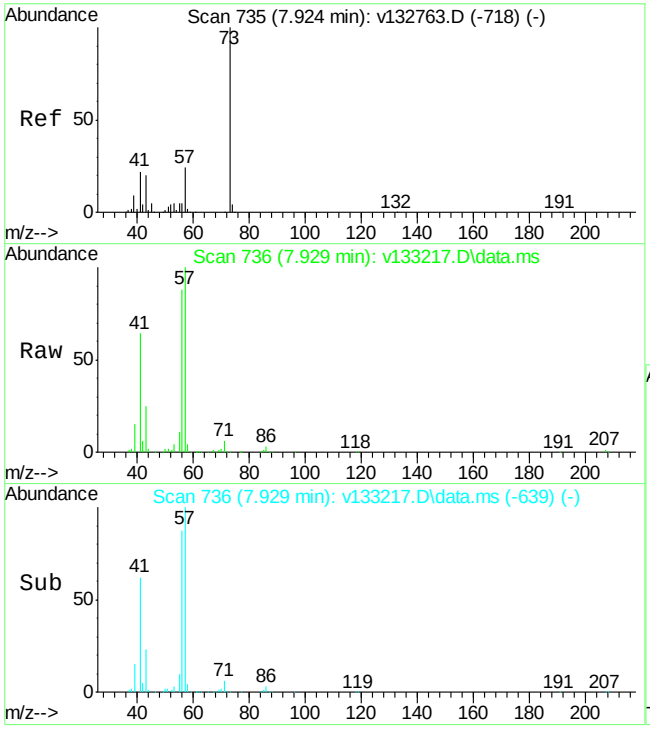


#37
carbon disulfide
Concen: 0.48 ug/L
RT: 7.338 min Scan# 623
Delta R.T. 0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 76 Resp: 5209

Ion	Ratio	Lower	Upper
76	100		
78	11.6	0.0	38.1
38	6.7	0.0	33.0

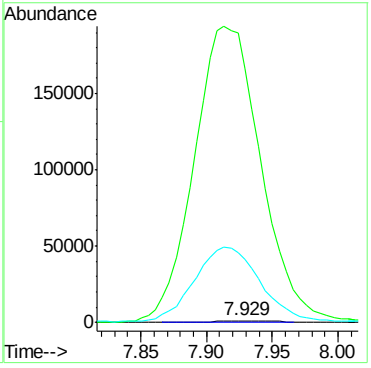


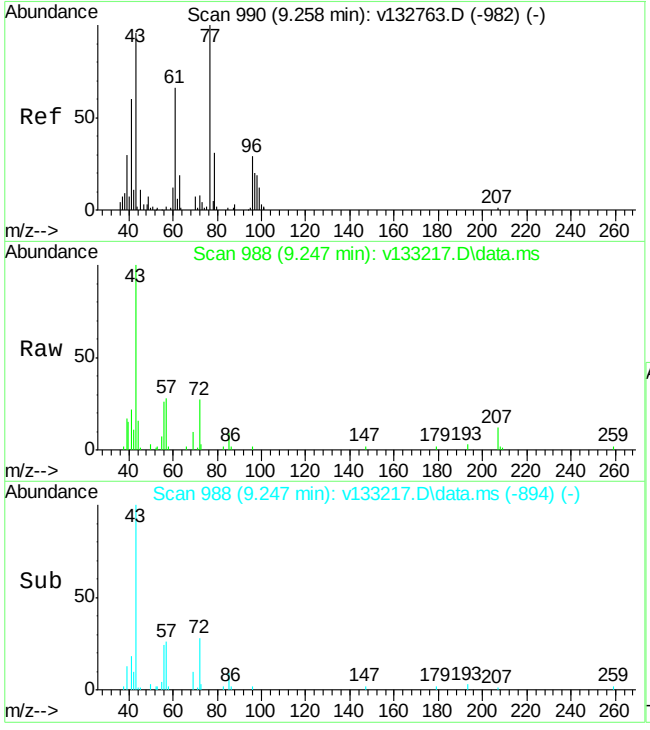


#41
methyl tert butyl ether
Concen: 0.42 ug/L
RT: 7.929 min Scan# 736
Delta R.T. 0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 73 Resp: 2701

Ion	Ratio	Lower	Upper
73	100		
57	25537.2	0.0	52.2#
43	6348.4	0.0	51.5#

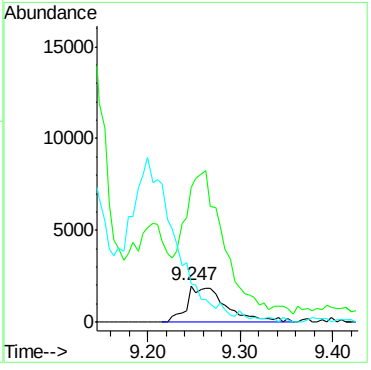


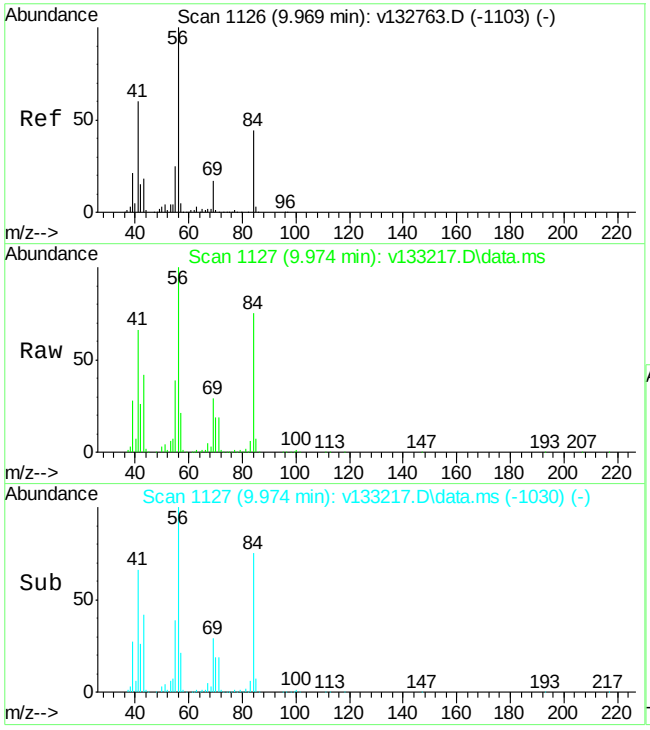


#44
2-butanone
Concen: 32.18 ug/L
RT: 9.247 min Scan# 988
Delta R.T. -0.010 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 72 Resp: 5713

Ion	Ratio	Lower	Upper
72	100		
43	0.0	824.7	1531.5#
57	0.0	22.9	42.5#

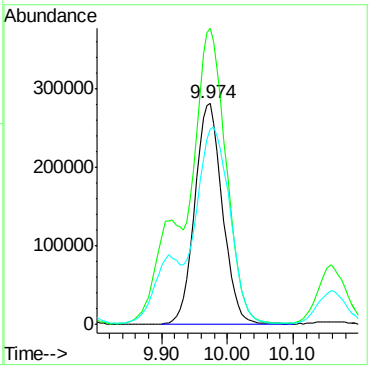


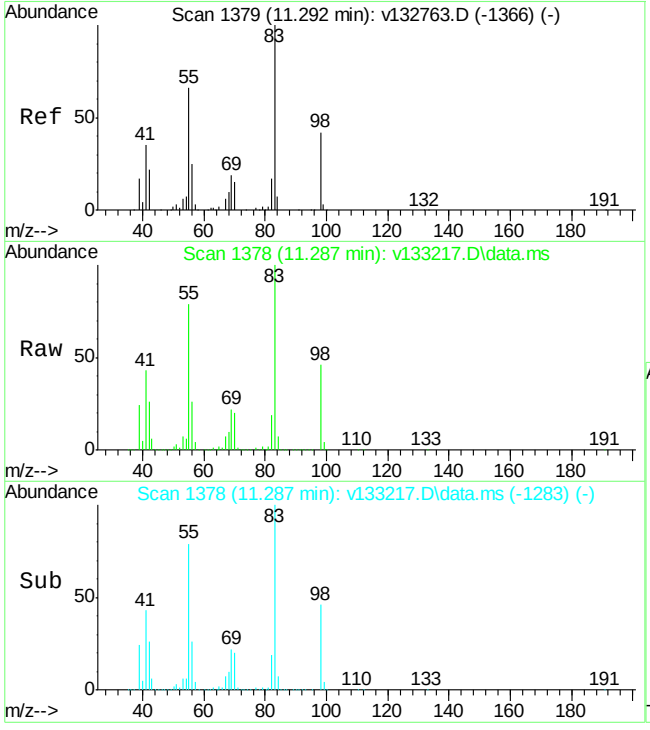


#63
Cyclohexane
Concen: 188.70 ug/L
RT: 9.974 min Scan# 1127
Delta R.T. 0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 84 Resp: 829442

Ion	Ratio	Lower	Upper
84	100		
56	132.9	159.1	295.5#
41	87.1	94.9	176.3#

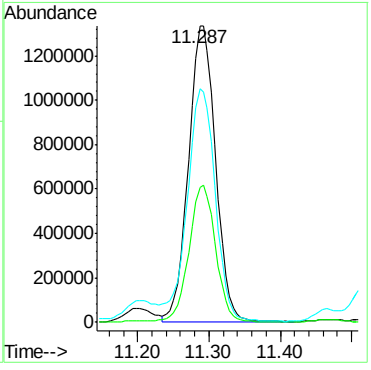


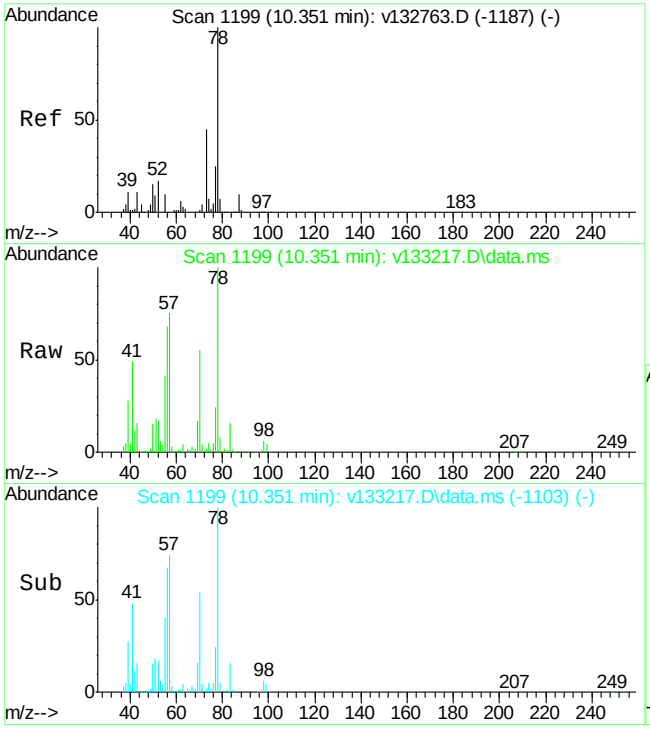


#66
methylcyclohexane
Concen: 636.51 ug/L
RT: 11.287 min Scan# 1378
Delta R.T. -0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 83 Resp: 3483960

Ion	Ratio	Lower	Upper
83	100		
98	46.4	29.8	55.4
55	81.8	59.4	110.2

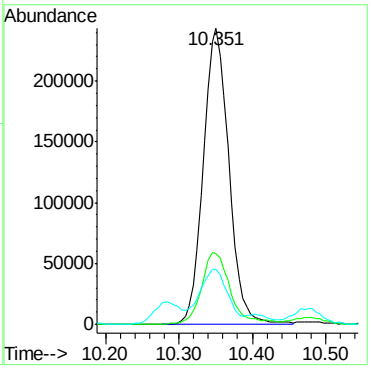


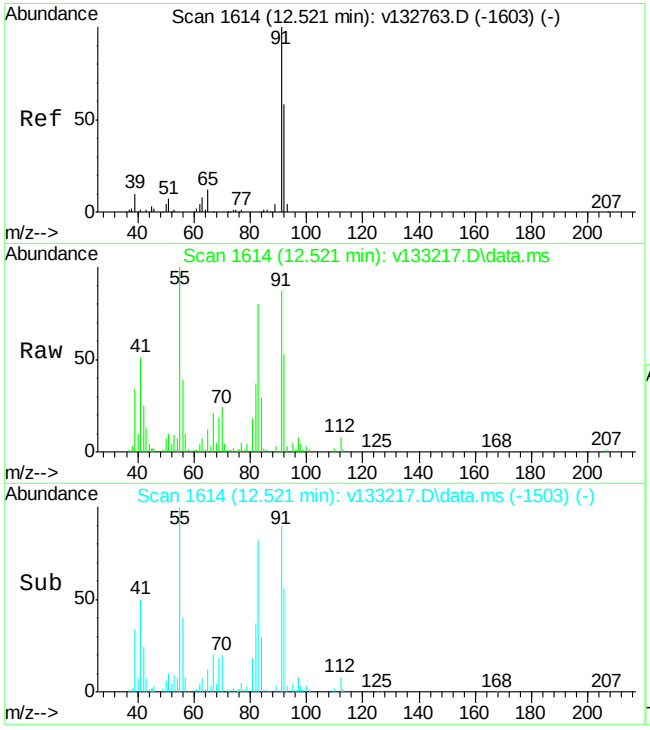


#73
benzene
Concen: 47.22 ug/L
RT: 10.351 min Scan# 1199
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 78 Resp: 587827

Ion	Ratio	Lower	Upper
78	100		
77	23.8	0.0	55.2
51	15.3	0.0	47.6

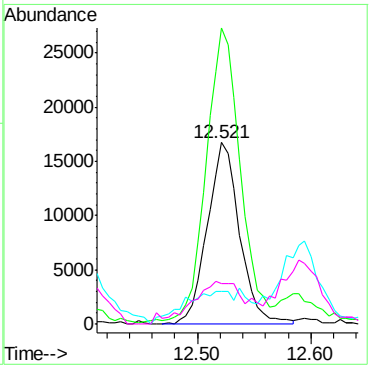


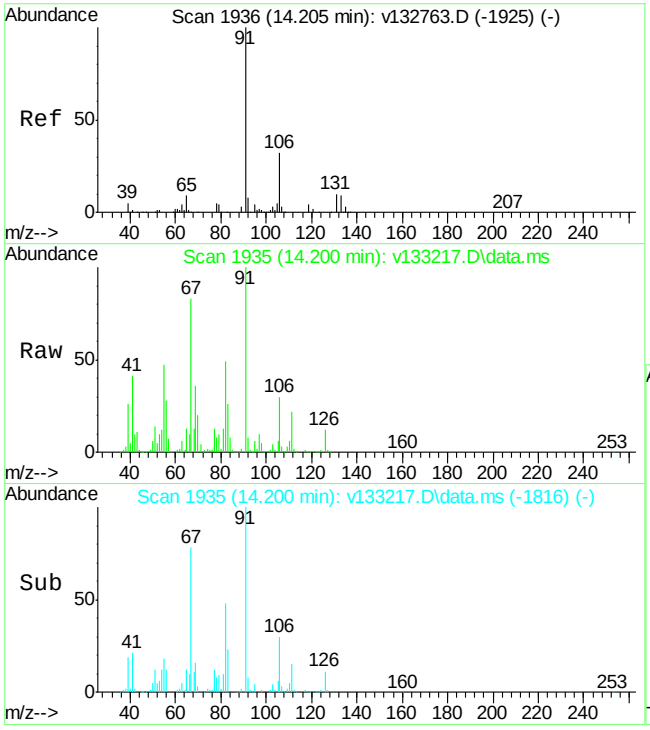


#90
toluene
Concen: 4.34 ug/L
RT: 12.521 min Scan# 1614
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 92 Resp: 33147

Ion	Ratio	Lower	Upper
92	100		
91	161.1	120.4	223.6
51	13.7	7.8	14.6
65	19.0	14.2	26.4

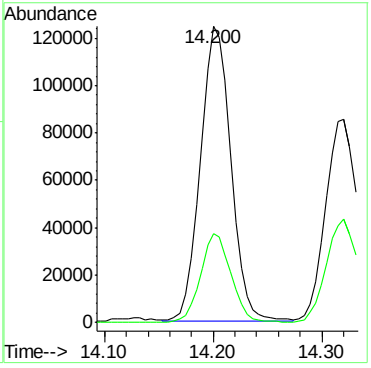


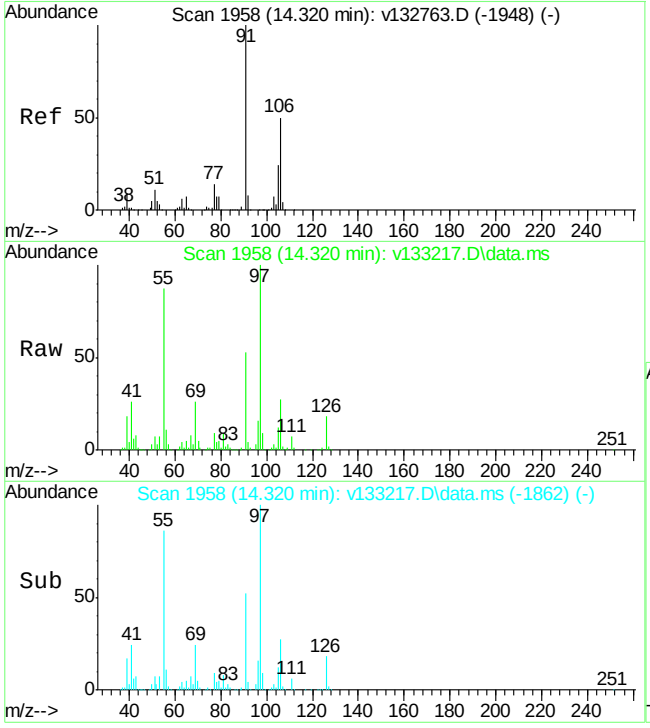


#105
ethylbenzene
Concen: 14.98 ug/L
RT: 14.200 min Scan# 1935
Delta R.T. -0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 91 Resp: 245563

Ion	Ratio	Lower	Upper
91	100		
106	30.1	1.5	61.5

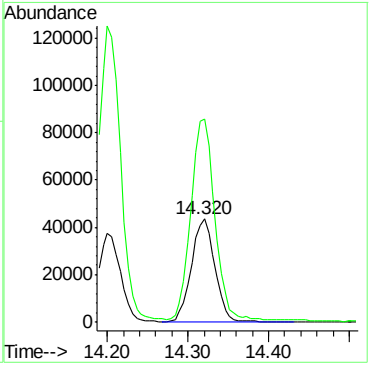


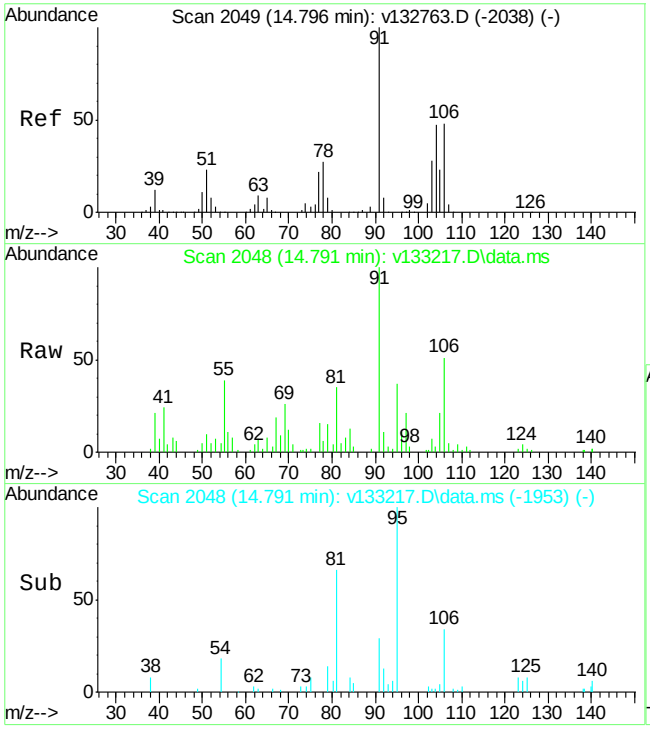


#106
m,p-xylene
Concen: 14.30 ug/L
RT: 14.320 min Scan# 1958
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:106 Resp: 88732

Ion	Ratio	Lower	Upper
106	100		
91	194.3	138.9	258.1

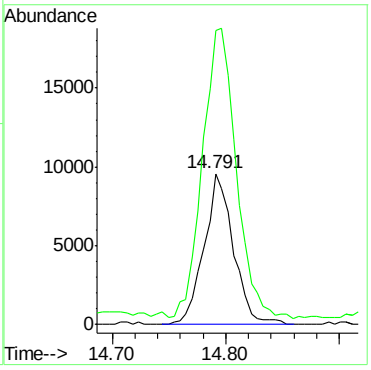


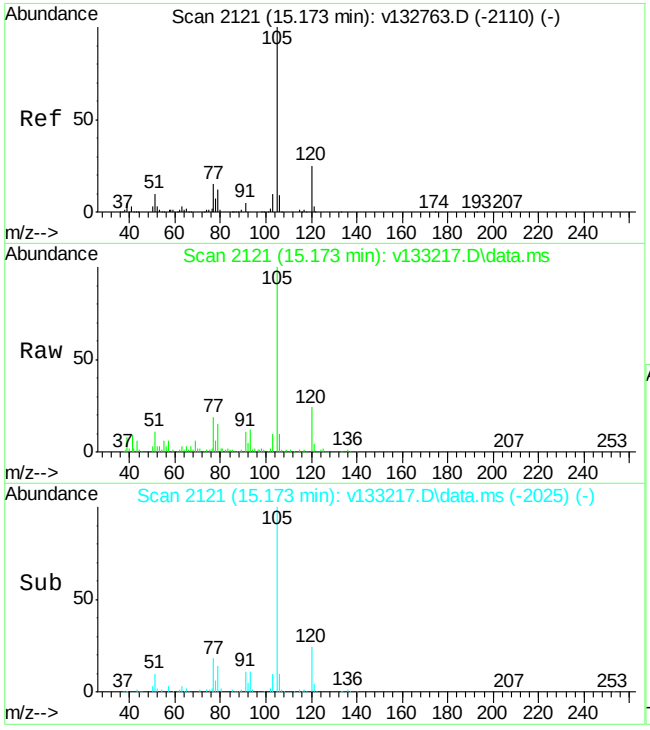


#107
o-xylene
Concen: 2.88 ug/L
RT: 14.791 min Scan# 2048
Delta R.T. -0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:106 Resp: 17079

Ion	Ratio	Lower	Upper
106	100		
91	191.2	146.6	272.2

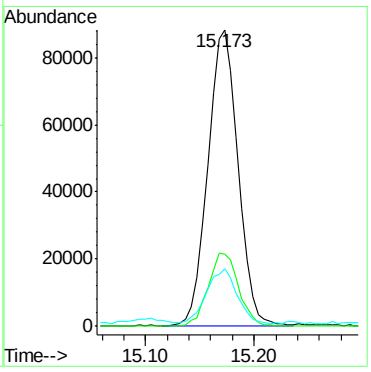


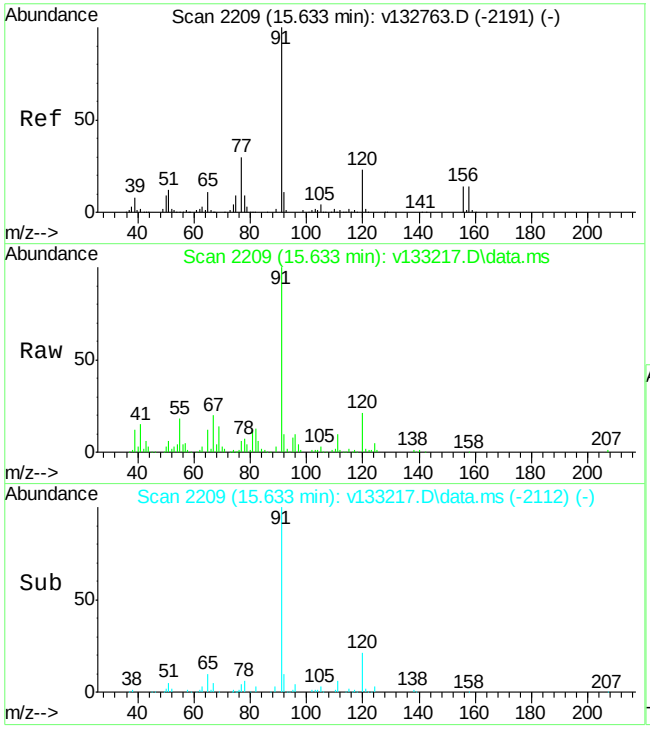


#114
isopropylbenzene
Concen: 11.05 ug/L
RT: 15.173 min Scan# 2121
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:105 Resp: 172563

Ion	Ratio	Lower	Upper
105	100		
120	24.3	0.0	55.2
77	17.8	0.0	45.0

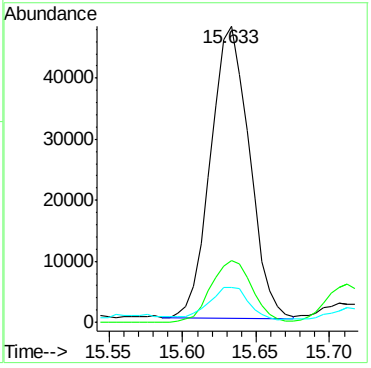


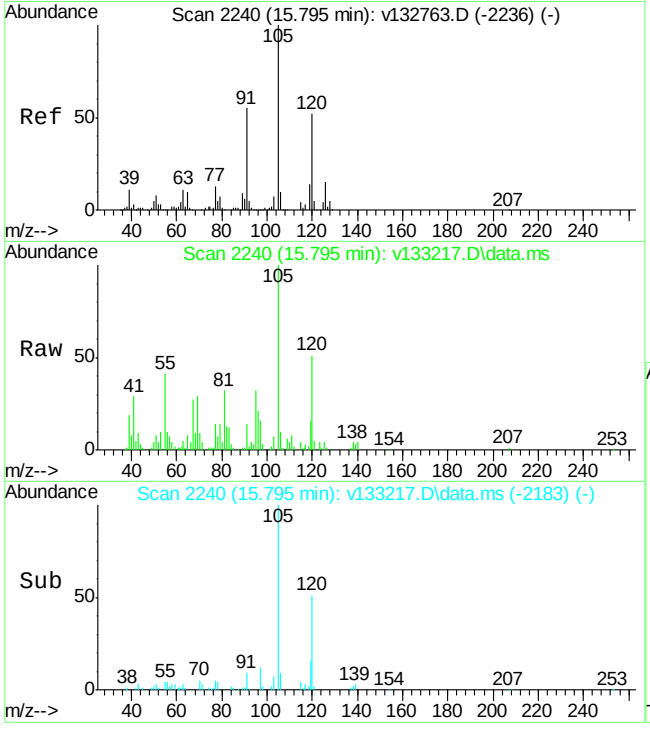


#119
n-propylbenzene
Concen: 4.80 ug/L
RT: 15.633 min Scan# 2209
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion: 91 Resp: 87688

Ion	Ratio	Lower	Upper
91	100		
120	21.2	0.0	52.8
65	10.7	0.0	41.1

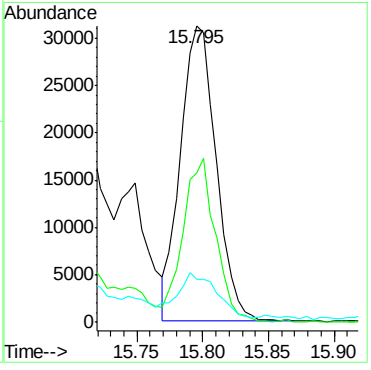


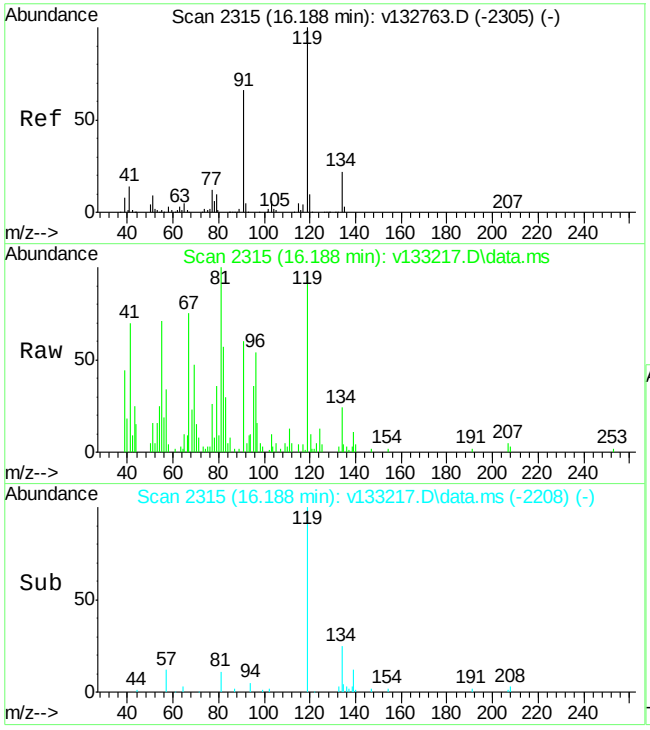


#123
1,3,5-trimethylbenzene
Concen: 4.74 ug/L
RT: 15.795 min Scan# 2240
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:105 Resp: 59380

Ion	Ratio	Lower	Upper
105	100		
120	50.8	20.0	80.0
77	12.8	0.0	42.8

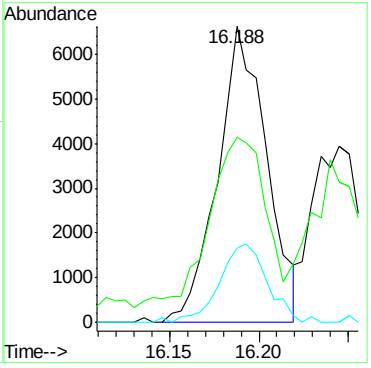


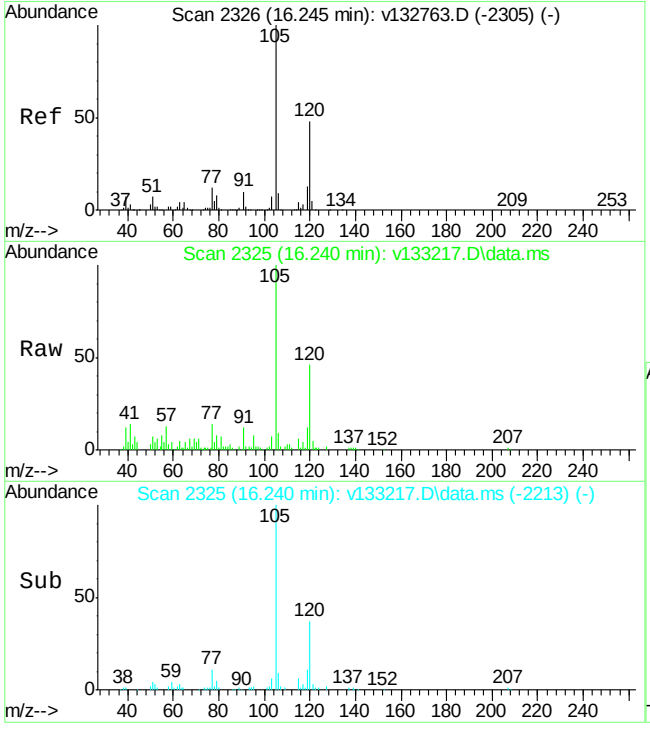


#124
tert-butylbenzene
Concen: 1.08 ug/L
RT: 16.188 min Scan# 2315
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:119 Resp: 12604

Ion	Ratio	Lower	Upper
119	100		
91	54.6	46.4	86.2
134	23.6	15.6	29.0

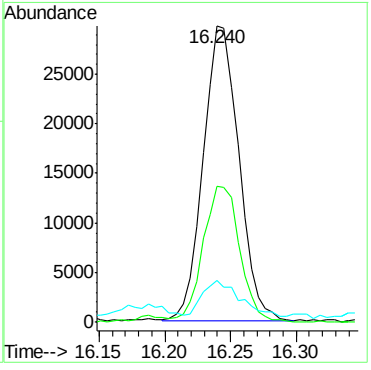




#126
1,2,4-trimethylbenzene
Concen: 4.38 ug/L
RT: 16.240 min Scan# 2325
Delta R.T. -0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

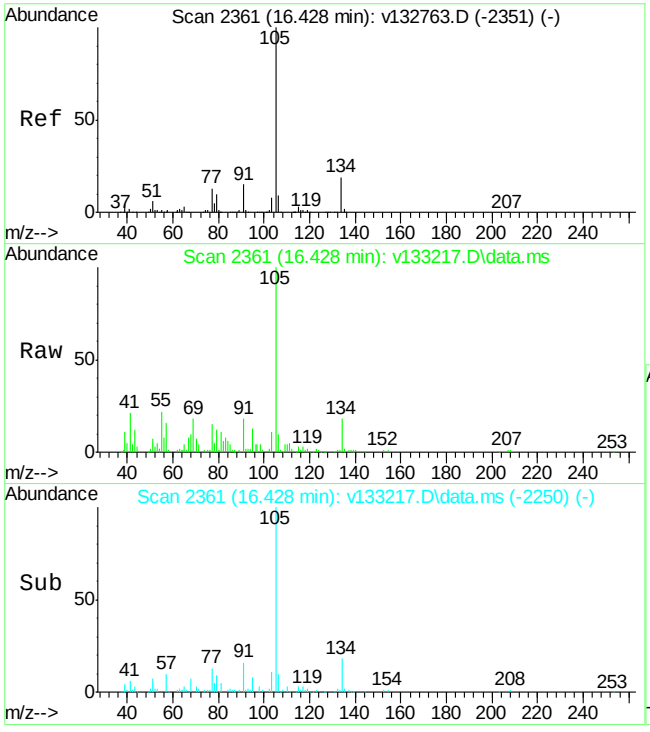
Tgt Ion:105 Resp: 56026

Ion	Ratio	Lower	Upper
105	100		
120	45.9	17.8	77.8
77	11.3	0.0	42.0



7.1.5

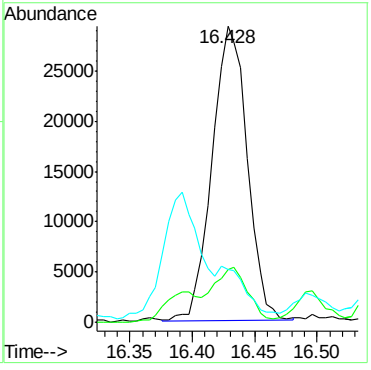
7

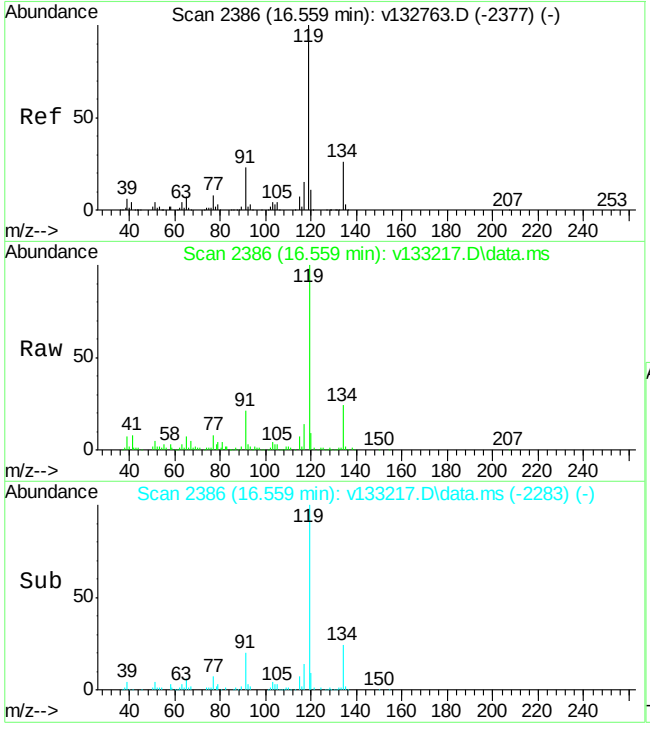


#127
sec-butylbenzene
Concen: 3.30 ug/L
RT: 16.428 min Scan# 2361
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:105 Resp: 57300

Ion	Ratio	Lower	Upper
105	100		
134	13.3	0.0	48.8
91	11.4	0.0	45.0

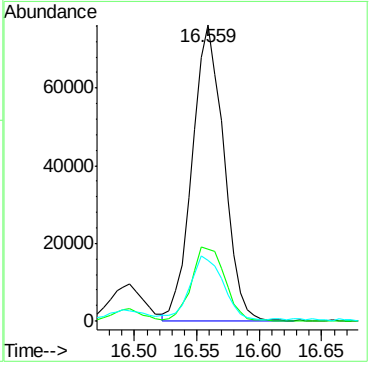


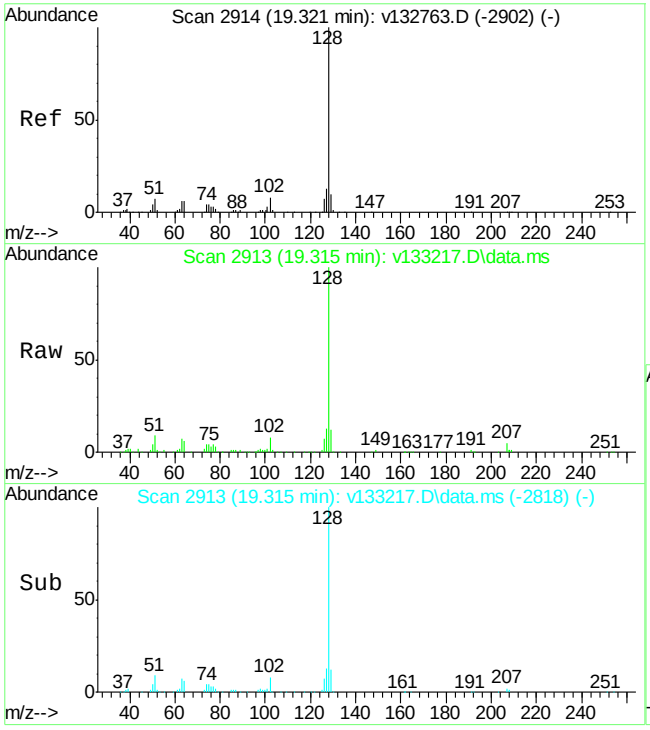


#128
p-isopropyltoluene
Concen: 9.54 ug/L
RT: 16.559 min Scan# 2386
Delta R.T. -0.000 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:119 Resp: 133089

Ion	Ratio	Lower	Upper
119	100		
134	24.5	18.5	34.3
91	19.9	16.0	29.6

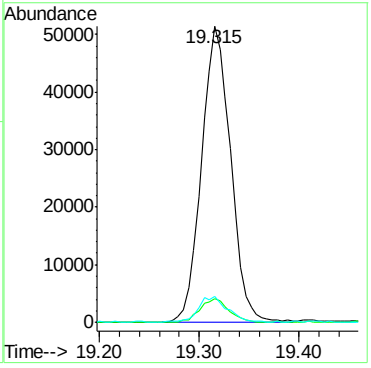




#143
naphthalene
Concen: 18.01 ug/L
RT: 19.315 min Scan# 2913
Delta R.T. -0.005 min
Lab File: v133217.D
Acq: 16 Mar 2013 2:35 pm

Tgt Ion:128 Resp: 103568

Ion	Ratio	Lower	Upper
128	100		
102	7.8	0.0	37.9
51	8.6	0.0	37.4



7.1.5

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5748-5751\
Data File : v133017.D
Acq On : 9 Mar 2013 2:40 pm
Operator : thienn
Sample : mb1
Misc : MS44339,VV5750,5,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 13 15:19:37 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.563	65	55709	500.00	ug/L	0.00
4) pentafluorobenzene	9.775	168	312402	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	431715	50.00	ug/L	0.00
96) chlorobenzene-d5	14.122	117	350931	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.726	152	163547	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.854	113	101677	50.17	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 100.34%			
61) 1,2-dichloroethane-d4 (s)	10.283	65	87380	44.08	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 88.16%			
88) toluene-d8 (s)	12.443	98	452300	53.21	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 106.42%			
112) 4-bromofluorobenzene (s)	15.419	95	138800	45.37	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 90.74%			

Target Compounds Qvalue

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

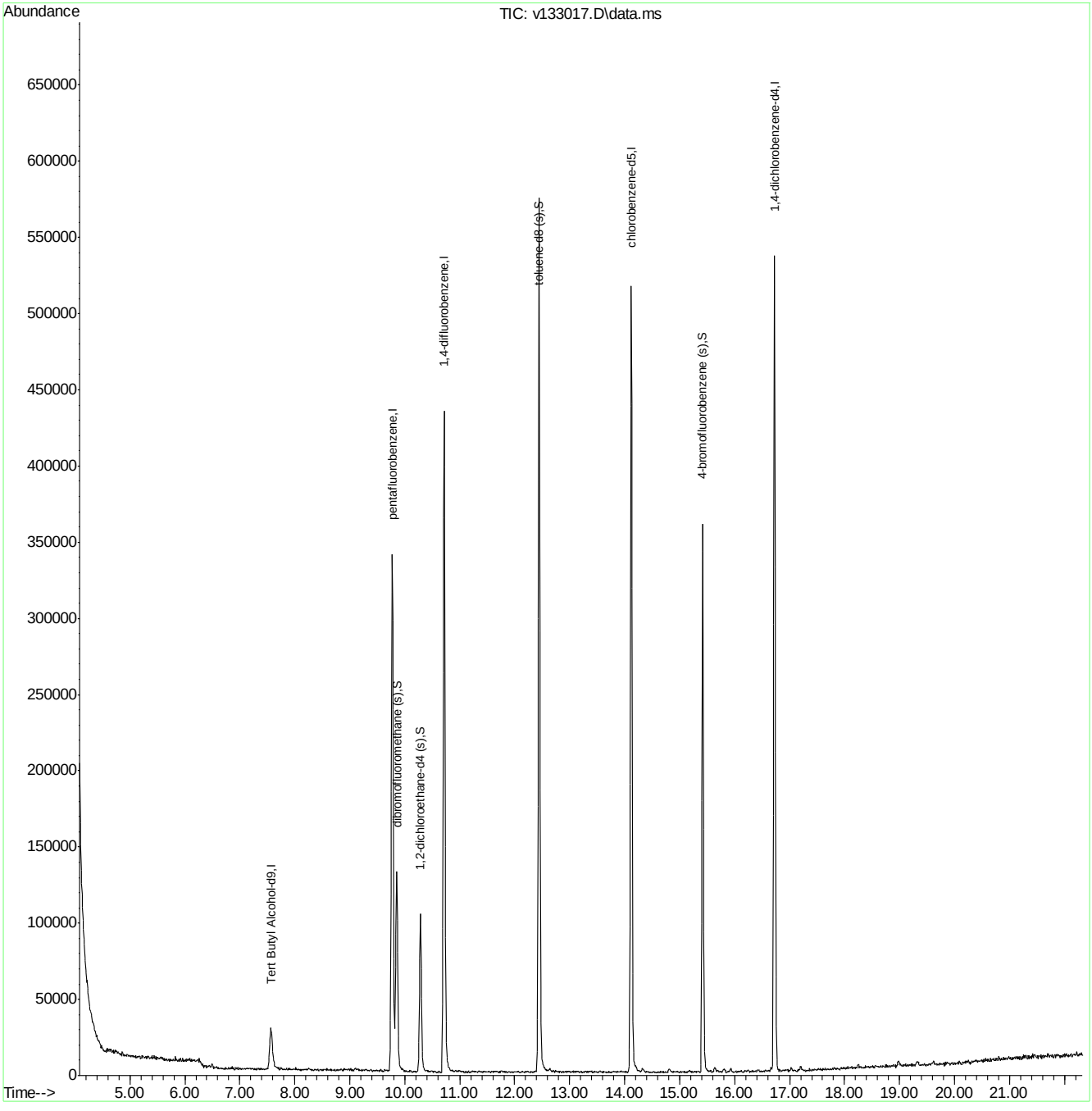
7.2.1

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5748-5751\
Data File : v133017.D
Acq On : 9 Mar 2013 2:40 pm
Operator : thienn
Sample : mb1
Misc : MS44339,VV5750,5,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Mar 13 15:19:37 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration



MVS5737.M Wed Mar 13 15:20:10 2013 VOA-05 Page: 2

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133214.D
Acq On : 16 Mar 2013 12:57 pm
Operator : thienn
Sample : mb2
Misc : MS44831,VV5757,5,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 18 16:11:47 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.573	65	54954	500.00	ug/L	0.00
4) pentafluorobenzene	9.770	168	341963	50.00	ug/L	0.00
65) 1,4-difluorobenzene	10.717	114	483236	50.00	ug/L	0.00
96) chlorobenzene-d5	14.122	117	421543	50.00	ug/L	0.00
113) 1,4-dichlorobenzene-d4	16.726	152	196455	50.00	ug/L	0.00
System Monitoring Compounds						
60) dibromofluoromethane (s)	9.854	113	114072	51.42	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 102.84%			
61) 1,2-dichloroethane-d4 (s)	10.288	65	90637	41.77	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 83.54%			
88) toluene-d8 (s)	12.443	98	494707	51.99	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 103.98%			
112) 4-bromofluorobenzene (s)	15.419	95	166150	45.21	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 90.42%			

Target Compounds Qvalue

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

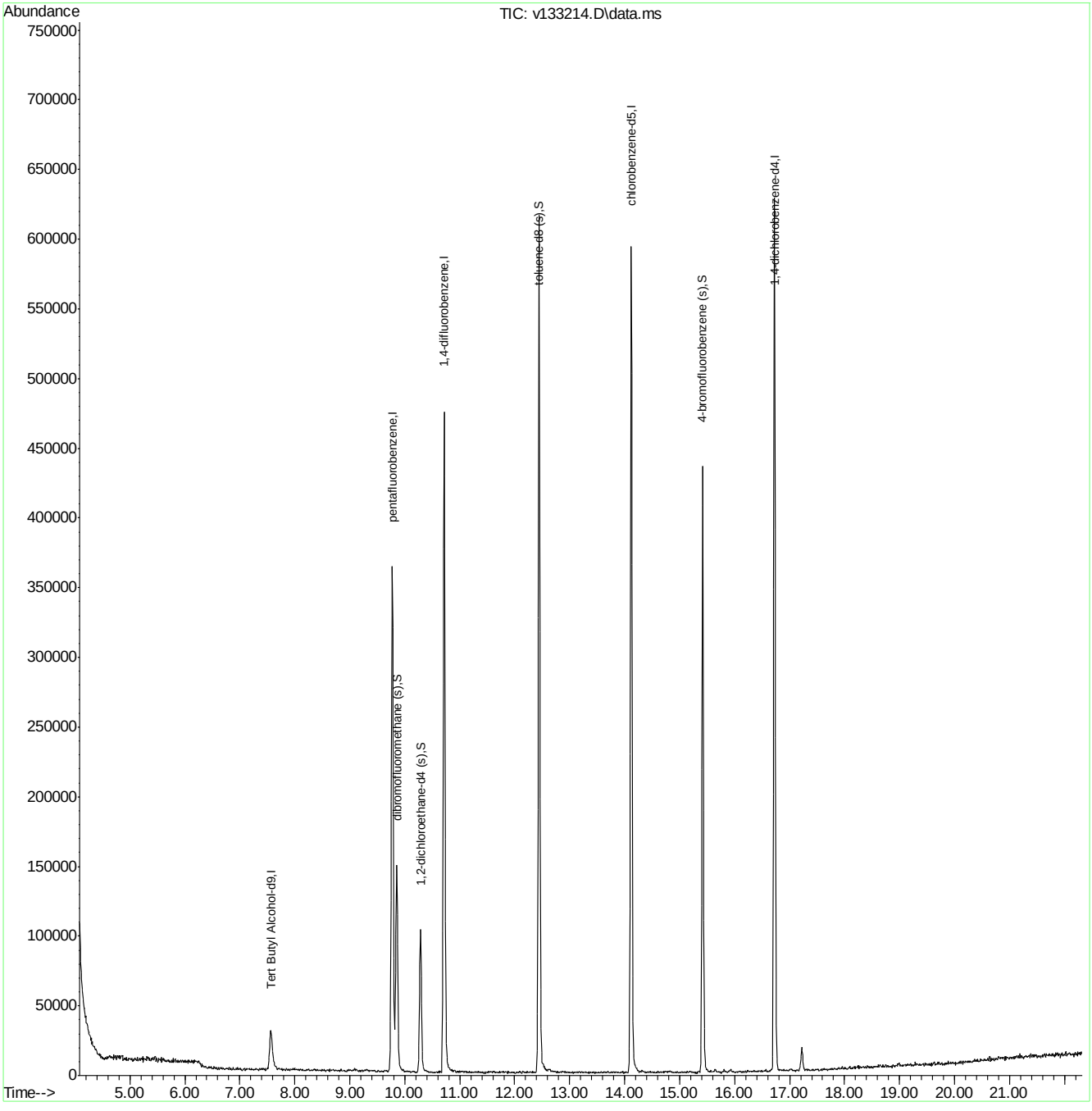
7.2.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5756-5758\
Data File : v133214.D
Acq On : 16 Mar 2013 12:57 pm
Operator : thienn
Sample : mb2
Misc : MS44831,VV5757,5,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Mar 18 16:11:47 2013
Quant Method : C:\MSDCHEM\1\METHODS\MVS5737.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Mar 07 16:53:55 2013
Response via : Initial Calibration



MVS5737.M Mon Mar 18 17:37:15 2013 VOA-05 Page: 2

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: JB30306
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
OP64314-MB1	3E48569.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102

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

JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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	77%	21-116%
4165-62-2	Phenol-d5	77%	19-117%
118-79-6	2,4,6-Tribromophenol	95%	24-136%
4165-60-0	Nitrobenzene-d5	89%	21-122%
321-60-8	2-Fluorobiphenyl	86%	30-117%
1718-51-0	Terphenyl-d14	98%	31-129%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	.78	1300	ug/kg	J
	system artifact	1.17	120	ug/kg	J
	system artifact	1.20	120	ug/kg	J
	system artifact	1.29	170	ug/kg	J
	system artifact	1.33	160	ug/kg	J
	system artifact/aldol-condensation	1.40	360	ug/kg	J
	system artifact	1.46	150	ug/kg	J
	unknown	9.75	140	ug/kg	J
	unknown	12.58	20000	ug/kg	J
	unknown	13.91	310	ug/kg	J
	Total TIC, Semi-Volatile		20450	ug/kg	J

Method Blank Summary

Job Number: JB30306
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
OP64314-MB1	F21533.D	1	03/15/13	NAP	03/13/13	OP64314	EF5115

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

JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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	75%	21-116%
4165-62-2	Phenol-d5	78%	19-117%
118-79-6	2,4,6-Tribromophenol	95%	24-136%
4165-60-0	Nitrobenzene-d5	84%	21-122%
321-60-8	2-Fluorobiphenyl	82%	30-117%
1718-51-0	Terphenyl-d14	97%	31-129%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.56	120	ug/kg	J
	system artifact	2.63	130	ug/kg	J
	system artifact	2.77	260	ug/kg	J
	system artifact	2.83	230	ug/kg	J
	system artifact/aldol-condensation	2.89	450	ug/kg	J
	system artifact	3.01	160	ug/kg	J
	unknown	14.25	14000	ug/kg	J
	unknown	15.56	320	ug/kg	J
	Total TIC, Semi-Volatile		14320	ug/kg	J

Blank Spike Summary

Job Number: JB30306
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
OP64314-BS1	F21534.D	1	03/15/13	NAP	03/13/13	OP64314	EF5115

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

JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	1430	1260	88	59-121
56-55-3	Benzo(a)anthracene	1430	1250	88	54-119
50-32-8	Benzo(a)pyrene	1430	1380	97	59-122
205-99-2	Benzo(b)fluoranthene	1430	1370	96	45-133
191-24-2	Benzo(g,h,i)perylene	1430	1390	97	57-122
218-01-9	Chrysene	1430	1270	89	55-120
86-73-7	Fluorene	1430	1210	85	57-117
91-20-3	Naphthalene	1430	1080	76	49-111
85-01-8	Phenanthrene	1430	1210	85	58-118
129-00-0	Pyrene	1430	1280	90	54-122

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	73%	21-116%
4165-62-2	Phenol-d5	78%	19-117%
118-79-6	2,4,6-Tribromophenol	101%	24-136%
4165-60-0	Nitrobenzene-d5	85%	21-122%
321-60-8	2-Fluorobiphenyl	83%	30-117%
1718-51-0	Terphenyl-d14	97%	31-129%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB30306
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
OP64314-MS	F21537.D	1	03/15/13	NAP	03/13/13	OP64314	EF5115
OP64314-MSD	F21538.D	1	03/15/13	NAP	03/13/13	OP64314	EF5115
JB30827-1	3E48573.D	1	03/15/13	OYA	03/13/13	OP64314	E3E2102

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

JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

CAS No.	Compound	JB30827-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	ND		1690	1090	64	1120	66	3	33-130/30
56-55-3	Benzo(a)anthracene	ND		1690	1070	63	1110	66	4	29-127/33
50-32-8	Benzo(a)pyrene	ND		1690	1160	68	1190	70	3	28-134/34
205-99-2	Benzo(b)fluoranthene	ND		1690	1230	73	1260	74	2	19-143/38
191-24-2	Benzo(g,h,i)perylene	ND		1690	1190	70	1240	73	4	27-135/34
218-01-9	Chrysene	ND		1690	1090	64	1130	67	4	29-129/32
86-73-7	Fluorene	ND		1690	1050	62	1050	62	0	32-125/32
91-20-3	Naphthalene	ND		1690	952	56	1010	60	6	25-117/32
85-01-8	Phenanthrene	ND		1690	1040	61	1070	63	3	28-132/34
129-00-0	Pyrene	ND		1690	1100	65	1150	68	4	27-132/33

CAS No.	Surrogate Recoveries	MS	MSD	JB30827-1	Limits
367-12-4	2-Fluorophenol	13%* [a]	10%* [a]		21-116%
4165-62-2	Phenol-d5	45%	45%		19-117%
118-79-6	2,4,6-Tribromophenol	36%	33%		24-136%
4165-60-0	Nitrobenzene-d5	63%	65%	48%	21-122%
321-60-8	2-Fluorobiphenyl	58%	61%	53%	30-117%
1718-51-0	Terphenyl-d14	66%	70%	75%	31-129%

(a) Outside control limits due to matrix interference.

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E3E2052-DFTPP
Lab File ID: 3E47318.D
Instrument ID: GCMS3E
Injection Date: 01/29/13
Injection Time: 14:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	3131	35.0		Pass
68	Less than 2.0% of mass 69	44	0.49	(1.27) [a]	Pass
69	Mass 69 relative abundance	3455	38.6		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	4844	54.2		Pass
197	Less than 1.0% of mass 198	16	0.18		Pass
198	Base peak, 100% relative abundance	8941	100.0		Pass
199	5.0 - 9.0% of mass 198	559	6.25		Pass
275	10.0 - 30.0% of mass 198	2099	23.5		Pass
365	1.0 - 100.0% of mass 198	218	2.44		Pass
441	Present, but less than mass 443	1006	11.3	(79.1) [b]	Pass
442	40.0 - 100.0% of mass 198	6207	69.4		Pass
443	17.0 - 23.0% of mass 442	1272	14.2	(20.5) [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
E3E2052-IC2052	3E47319.D	01/29/13	14:48	00:18	Initial cal 100
E3E2052-IC2052	3E47320.D	01/29/13	15:12	00:42	Initial cal 80
E3E2052-ICC2052	3E47321.D	01/29/13	15:36	01:06	Initial cal 50
E3E2052-IC2052	3E47322.D	01/29/13	16:32	02:02	Initial cal 25
E3E2052-IC2052	3E47323.D	01/29/13	16:55	02:25	Initial cal 10
E3E2052-IC2052	3E47324.D	01/29/13	17:19	02:49	Initial cal 5
E3E2052-IC2052	3E47325.D	01/29/13	17:42	03:12	Initial cal 2
E3E2052-IC2052	3E47326.D	01/29/13	18:06	03:36	Initial cal 1
E3E2052-ICV2051	3E47327.D	01/29/13	18:29	03:59	Initial cal verification 50
E3E2052-ICV2051	3E47328.D	01/29/13	18:53	04:23	Initial cal verification 50
E3E2052-ICV2052	3E47328A.D	01/29/13	18:53	04:23	Initial cal verification 50
E3E2052-ICV2051	3E47329.D	01/29/13	19:17	04:47	Initial cal verification 50
E3E2052-ICV2052	3E47329A.D	01/29/13	19:17	04:47	Initial cal verification 50
E3E2052-ICV2051	3E47330.D	01/29/13	19:40	05:10	Initial cal verification 50
E3E2052-ICV2051	3E47331.D	01/29/13	20:04	05:34	Initial cal verification 50
E3E2052-ICV2052	3E47332.D	01/29/13	20:27	05:57	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E3E2061-DFTPP
Lab File ID: 3E47535.D
Instrument ID: GCMS3E
Injection Date: 02/06/13
Injection Time: 16:27

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	3129	30.9		Pass
68	Less than 2.0% of mass 69	47	0.46	(1.30) [a]	Pass
69	Mass 69 relative abundance	3629	35.8		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	5230	51.6		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	10136	100.0		Pass
199	5.0 - 9.0% of mass 198	697	6.88		Pass
275	10.0 - 30.0% of mass 198	2554	25.2		Pass
365	1.0 - 100.0% of mass 198	305	3.01		Pass
441	Present, but less than mass 443	1102	10.9	(74.3) [b]	Pass
442	40.0 - 100.0% of mass 198	7287	71.9		Pass
443	17.0 - 23.0% of mass 442	1483	14.6	(20.4) [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
E3E2061-IC2061	3E47536.D	02/06/13	16:52	00:25	Initial cal 100
E3E2061-IC2061	3E47537.D	02/06/13	17:16	00:49	Initial cal 80
E3E2061-ICC2061	3E47538.D	02/06/13	17:40	01:13	Initial cal 50
E3E2061-IC2061	3E47539.D	02/06/13	18:03	01:36	Initial cal 25
E3E2061-IC2061	3E47540.D	02/06/13	18:27	02:00	Initial cal 10
E3E2061-IC2061	3E47541.D	02/06/13	18:50	02:23	Initial cal 5
E3E2061-IC2061	3E47542.D	02/06/13	19:14	02:47	Initial cal 2
E3E2061-IC2061	3E47543.D	02/06/13	19:37	03:10	Initial cal 1
E3E2061-ICV2061	3E47544.D	02/06/13	20:01	03:34	Initial cal verification 50
E3E2061-ICV2061	3E47545.D	02/06/13	20:24	03:57	Initial cal verification 50
E3E2061-ICV2061	3E47546.D	02/06/13	20:48	04:21	Initial cal verification 50
E3E2061-ICV2061	3E47547.D	02/06/13	21:12	04:45	Initial cal verification 50
E3E2061-ICV2061	3E47548.D	02/06/13	21:35	05:08	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E3E2102-DFTPP
Lab File ID: 3E48564.D
Instrument ID: GCMS3E
Injection Date: 03/15/13
Injection Time: 09:37

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	9027	37.0		Pass
68	Less than 2.0% of mass 69	86	0.35	(0.91) [a]	Pass
69	Mass 69 relative abundance	9445	38.7		Pass
70	Less than 2.0% of mass 69	47	0.19	(0.50) [a]	Pass
127	40.0 - 60.0% of mass 198	13476	55.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	24376	100.0		Pass
199	5.0 - 9.0% of mass 198	1643	6.74		Pass
275	10.0 - 30.0% of mass 198	7298	29.9		Pass
365	1.0 - 100.0% of mass 198	1081	4.43		Pass
441	Present, but less than mass 443	3247	13.3	(73.9) [b]	Pass
442	40.0 - 100.0% of mass 198	21059	86.4		Pass
443	17.0 - 23.0% of mass 442	4394	18.0	(20.9) [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
E3E2102-CC2061	3E48565.D	03/15/13	09:54	00:17	Continuing cal 25
E3E2102-CC2052	3E48566.D	03/15/13	10:31	00:54	Continuing cal 25
OP64290-MB1	3E48567.D	03/15/13	11:06	01:29	Method Blank
OP64290-BS1	3E48568.D	03/15/13	11:29	01:52	Blank Spike
OP64314-MB1	3E48569.D	03/15/13	12:18	02:41	Method Blank
OP64214-MB1	3E48572.D	03/15/13	12:41	03:04	Method Blank
ZZZZZZ	3E48570.D	03/15/13	13:04	03:27	(unrelated sample)
ZZZZZZ	3E48571.D	03/15/13	13:27	03:50	(unrelated sample)
JB30827-1	3E48573.D	03/15/13	13:50	04:13	(used for QC only; not part of job JB30306)
ZZZZZZ	3E48574.D	03/15/13	14:13	04:36	(unrelated sample)
ZZZZZZ	3E48575.D	03/15/13	14:37	05:00	(unrelated sample)
ZZZZZZ	3E48576.D	03/15/13	15:00	05:23	(unrelated sample)
ZZZZZZ	3E48577.D	03/15/13	16:05	06:28	(unrelated sample)
ZZZZZZ	3E48578.D	03/15/13	16:28	06:51	(unrelated sample)
ZZZZZZ	3E48579.D	03/15/13	16:51	07:14	(unrelated sample)
ZZZZZZ	3E48580.D	03/15/13	17:14	07:37	(unrelated sample)
JB30255-3	3E48581.D	03/15/13	17:38	08:01	(used for QC only; not part of job JB30306)
ZZZZZZ	3E48582.D	03/15/13	18:01	08:24	(unrelated sample)
ZZZZZZ	3E48583.D	03/15/13	18:24	08:47	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E3E2102-DFTPP
Lab File ID: 3E48564.D
Instrument ID: GCMS3E
Injection Date: 03/15/13
Injection Time: 09:37

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
JB30306-1	3E48584.D	03/15/13	18:48	09:11	S-369_0-2'
JB30306-2	3E48585.D	03/15/13	19:11	09:34	S-369_6-8'
JB30306-3	3E48586.D	03/15/13	19:34	09:57	S-369_8-10'
JB30306-4	3E48587.D	03/15/13	19:57	10:20	S-365_0-2'
JB30306-5	3E48588.D	03/15/13	20:21	10:44	S-365_4-6'
OP64290-MS	3E48589.D	03/15/13	20:44	11:07	Matrix Spike
OP64290-MSD	3E48590.D	03/15/13	21:07	11:30	Matrix Spike Duplicate
JB30659-22A	3E48591.D	03/15/13	21:30	11:53	(used for QC only; not part of job JB30306)

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EF5067-DFTPP
Lab File ID: F20377.D
Instrument ID: GCMSF
Injection Date: 02/12/13
Injection Time: 09:11

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	39781	35.5		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	49108	43.8		Pass
70	Less than 2.0% of mass 69	249	0.22	(0.51) [a]	Pass
127	40.0 - 60.0% of mass 198	56274	50.2		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	112192	100.0		Pass
199	5.0 - 9.0% of mass 198	7705	6.87		Pass
275	10.0 - 30.0% of mass 198	23648	21.1		Pass
365	1.0 - 100.0% of mass 198	3538	3.15		Pass
441	Present, but less than mass 443	15169	13.5	(79.5) [b]	Pass
442	40.0 - 100.0% of mass 198	91314	81.4		Pass
443	17.0 - 23.0% of mass 442	19085	17.0	(20.9) [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
EF5067-ICC5067	F20378.D	02/12/13	09:27	00:16	Initial cal 50
EF5067-IC5067	F20379.D	02/12/13	09:54	00:43	Initial cal 1
EF5067-IC5067	F20380.D	02/12/13	10:20	01:09	Initial cal 100
EF5067-IC5067	F20381.D	02/12/13	10:46	01:35	Initial cal 80
EF5067-IC5067	F20382.D	02/12/13	11:13	02:02	Initial cal 25
EF5067-IC5067	F20383.D	02/12/13	11:40	02:29	Initial cal 10
EF5067-IC5067	F20384.D	02/12/13	12:07	02:56	Initial cal 5
EF5067-IC5067	F20385.D	02/12/13	12:33	03:22	Initial cal 2

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EF5068-DFTPP
Lab File ID: F20386.D
Instrument ID: GCMSF
Injection Date: 02/12/13
Injection Time: 12:56

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	38736	32.6		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	51016	42.9		Pass
70	Less than 2.0% of mass 69	172	0.14	(0.34) [a]	Pass
127	40.0 - 60.0% of mass 198	60770	51.1		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	118944	100.0		Pass
199	5.0 - 9.0% of mass 198	8265	6.95		Pass
275	10.0 - 30.0% of mass 198	26160	22.0		Pass
365	1.0 - 100.0% of mass 198	3383	2.84		Pass
441	Present, but less than mass 443	17202	14.5	(79.5) [b]	Pass
442	40.0 - 100.0% of mass 198	102621	86.3		Pass
443	17.0 - 23.0% of mass 442	21642	18.2	(21.1) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EF5068-ICC5068	F20387.D	02/12/13	13:09	00:13	Initial cal 50
EF5068-IC5068	F20388.D	02/12/13	13:36	00:40	Initial cal 1
EF5068-IC5068	F20389.D	02/12/13	14:02	01:06	Initial cal 100
EF5068-IC5068	F20390.D	02/12/13	14:29	01:33	Initial cal 80
EF5068-IC5068	F20391.D	02/12/13	14:56	02:00	Initial cal 25
EF5068-IC5068	F20392.D	02/12/13	15:23	02:27	Initial cal 10
EF5068-IC5068	F20393.D	02/12/13	15:49	02:53	Initial cal 5
EF5068-IC5068	F20394.D	02/12/13	16:16	03:20	Initial cal 2
EF5068-ICV5068	F20396A.D	02/12/13	17:09	04:13	Initial cal verification 50
EF5068-ICV5067	F20396.D	02/12/13	17:09	04:13	Initial cal verification 50
EF5068-ICV5067	F20397.D	02/12/13	17:36	04:40	Initial cal verification 50
EF5068-ICV5068	F20397A.D	02/12/13	17:36	04:40	Initial cal verification 50
EF5068-ICV5067	F20398.D	02/12/13	18:02	05:06	Initial cal verification 50
EF5068-ICV5067	F20399.D	02/12/13	18:28	05:32	Initial cal verification 50
EF5068-ICV5068	F20400.D	02/12/13	18:56	06:00	Initial cal verification 50
EF5068-ICV5067	F20401.D	02/12/13	19:23	06:27	Initial cal verification 50
EF5068-ICV5068	F20401A.D	02/12/13	19:23	06:27	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EF5115-DFTPP
Lab File ID: F21524.D
Instrument ID: GCMSF
Injection Date: 03/15/13
Injection Time: 15:27

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	84968	37.6		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	100091	44.3		Pass
70	Less than 2.0% of mass 69	375	0.17	(0.37) [a]	Pass
127	40.0 - 60.0% of mass 198	116672	51.6		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	226005	100.0		Pass
199	5.0 - 9.0% of mass 198	15704	6.95		Pass
275	10.0 - 30.0% of mass 198	55050	24.4		Pass
365	1.0 - 100.0% of mass 198	6354	2.81		Pass
441	Present, but less than mass 443	34546	15.3	(79.5) [b]	Pass
442	40.0 - 100.0% of mass 198	210794	93.3		Pass
443	17.0 - 23.0% of mass 442	43448	19.2	(20.6) [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
EF5115-CC5067	F21525.D	03/15/13	15:40	00:13	Continuing cal 25
EF5115-CC5068	F21526.D	03/15/13	16:06	00:39	Continuing cal 50
EF5115-IC5067	F21527.D	03/15/13	16:33	01:06	Initial cal 5
OP64405-BSD	F21528.D	03/15/13	16:59	01:32	Blank Spike Duplicate
OP64375-MB1	F21529.D	03/15/13	17:25	01:58	Method Blank
OP64375-BS1	F21530.D	03/15/13	17:52	02:25	Blank Spike
OP64376-MB1	F21531.D	03/15/13	18:18	02:51	Method Blank
OP64376-BS1	F21532.D	03/15/13	18:44	03:17	Blank Spike
OP64314-MB1	F21533.D	03/15/13	19:11	03:44	Method Blank
OP64314-BS1	F21534.D	03/15/13	19:38	04:11	Blank Spike
ZZZZZZ	F21535.D	03/15/13	20:04	04:37	(unrelated sample)
ZZZZZZ	F21536.D	03/15/13	20:30	05:03	(unrelated sample)
OP64314-MS	F21537.D	03/15/13	20:56	05:29	Matrix Spike
OP64314-MSD	F21538.D	03/15/13	21:23	05:56	Matrix Spike Duplicate
JB30977-1	F21539.D	03/15/13	21:49	06:22	(used for QC only; not part of job JB30306)
OP64376-MS	F21540.D	03/15/13	22:16	06:49	Matrix Spike
OP64376-MSD	F21541.D	03/15/13	22:42	07:15	Matrix Spike Duplicate
ZZZZZZ	F21542.D	03/15/13	23:08	07:41	(unrelated sample)
ZZZZZZ	F21545.D	03/16/13	00:27	09:00	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EF5115-DFTPP
Lab File ID: F21524.D
Instrument ID: GCMSF
Injection Date: 03/15/13
Injection Time: 15:27

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	F21546.D	03/16/13	00:53	09:26	(unrelated sample)
ZZZZZZ	F21547.D	03/16/13	01:19	09:52	(unrelated sample)
ZZZZZZ	F21548.D	03/16/13	01:45	10:18	(unrelated sample)
ZZZZZZ	F21549.D	03/16/13	02:11	10:44	(unrelated sample)
ZZZZZZ	F21550.D	03/16/13	02:38	11:11	(unrelated sample)
ZZZZZZ	F21551.D	03/16/13	03:04	11:37	(unrelated sample)
OP64166-MB1	F21552.D	03/16/13	03:56	12:29	Method Blank
JB30745-1	F21553.D	03/16/13	04:23	12:56	(used for QC only; not part of job JB30306)
OP64375-MS	F21554.D	03/16/13	04:49	13:22	Matrix Spike
OP64375-MSD	F21555.D	03/16/13	05:15	13:48	Matrix Spike Duplicate
ZZZZZZ	F21556.D	03/16/13	05:42	14:15	(unrelated sample)
OP64166-MS	F21557.D	03/16/13	06:08	14:41	Matrix Spike
OP64166-MSD	F21558.D	03/16/13	06:34	15:07	Matrix Spike Duplicate
JB30141-9	F21559.D	03/16/13	07:00	15:33	(used for QC only; not part of job JB30306)
ZZZZZZ	F21560.D	03/16/13	07:26	15:59	(unrelated sample)
ZZZZZZ	F21561.D	03/16/13	07:53	16:26	(unrelated sample)

Semivolatile Internal Standard Area Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	E3E2102-CC2061	**Injection Date:**	03/15/13
Lab File ID:	3E48565.D	**Injection Time:**	09:54
Instrument ID:	GCMS3E	**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	87225	2.69	350834	4.26	212805	6.85	407107	9.09	434003	12.83	357762	14.22
Upper Limit [a]	174450	3.19	701668	4.76	425610	7.35	814214	9.59	868006	13.33	715524	14.72
Lower Limit [b]	43613	2.19	175417	3.76	106403	6.35	203554	8.59	217002	12.33	178881	13.72

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
OP64290-MB1	85761	2.69	341224	4.26	203764	6.86	372285	9.10	397982	12.83	357472	14.22
OP64290-BS1	92221	2.69	369590	4.27	218441	6.86	401951	9.10	411932	12.83	349133	14.22
OP64314-MB1	83319	2.69	342577	4.26	203742	6.86	360972	9.10	383518	12.83	367286	14.22
OP64214-MB1	118786	2.69	483320	4.26	307151	6.86	534610	9.10	597215	12.84	540140	14.22
ZZZZZZ	80557	2.69	340125	4.26	204094	6.86	348416	9.10	370402	12.83	317572	14.22
ZZZZZZ	85967	2.69	350272	4.27	218195	6.86	387856	9.10	394260	12.83	354066	14.22
JB30827-1	86719	2.69	357410	4.27	210910	6.86	369742	9.10	358219	12.83	322740	14.22
ZZZZZZ	89426	2.69	370675	4.26	227178	6.86	396136	9.10	373923	12.83	328890	14.22
ZZZZZZ	94643	2.73	385760	4.29	232709	6.86	400223	9.10	378368	12.83	371884	14.22
ZZZZZZ	109566	2.72	447664	4.28	274958	6.86	469713	9.10	462563	12.85	445984	14.22
ZZZZZZ	94746	2.69	388476	4.27	231344	6.86	409969	9.10	419253	12.83	373177	14.22
ZZZZZZ	89660	2.69	386528	4.26	224979	6.86	398227	9.11	413087	12.83	380642	14.22
ZZZZZZ	99493	2.69	409407	4.26	249186	6.86	433081	9.10	427973	12.83	387231	14.22
ZZZZZZ	98018	2.69	415020	4.26	246151	6.86	418502	9.10	403499	12.83	385266	14.23
JB30255-3	87392	2.70	345743	4.26	225689	6.86	374625	9.10	370589	12.83	318854	14.22
ZZZZZZ	99727	2.70	396402	4.27	245238	6.88	422104	9.13	401470	12.84	399859	14.23
ZZZZZZ	93512	2.69	391303	4.26	241797	6.86	414029	9.10	423278	12.83	378406	14.22
JB30306-1	97780	2.69	394258	4.27	231718	6.86	398613	9.10	395791	12.83	357365	14.22
JB30306-2	95709	2.69	389093	4.26	231683	6.86	405801	9.10	413647	12.83	348810	14.22
JB30306-3	93190	2.69	391014	4.27	239857	6.86	419664	9.10	426391	12.83	367642	14.22
JB30306-4	93510	2.69	396474	4.27	238173	6.86	413352	9.10	417124	12.83	353479	14.22
JB30306-5	99657	2.69	405611	4.26	238166	6.86	441624	9.11	438156	12.84	398012	14.23
OP64290-MS	96019	2.70	393627	4.27	232846	6.86	417909	9.11	406724	12.83	380846	14.23
OP64290-MSD	111373	2.70	462221	4.27	277875	6.86	485667	9.11	483915	12.84	422836	14.23
JB30659-22A	99263	2.70	406568	4.26	242606	6.86	433884	9.11	447056	12.83	408623	14.22

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 Internal Standard Area Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	EF5115-CC5067	**Injection Date:**	03/15/13
Lab File ID:	F21525.D	**Injection Time:**	15:40
Instrument ID:	GCMSF	**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	130824	4.59	519500	6.37	286571	9.12	481639	11.45	496423	14.70	422273	16.15
Upper Limit [a]	261648	5.09	1039000	6.87	573142	9.62	963278	11.95	992846	15.20	844546	16.65
Lower Limit [b]	65412	4.09	259750	5.87	143286	8.62	240820	10.95	248212	14.20	211137	15.65

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
OP64405-BSD	114738	4.59	444519	6.37	246577	9.12	415968	11.45	408691	14.70	351017	16.15
OP64375-MB1	111582	4.59	434899	6.36	245583	9.12	410141	11.45	404663	14.70	351059	16.15
OP64375-BS1	112855	4.59	434980	6.37	242046	9.12	404939	11.45	400184	14.70	343929	16.15
OP64376-MB1	110841	4.59	433047	6.36	238803	9.12	401961	11.44	397951	14.70	340094	16.15
OP64376-BS1	111784	4.59	436318	6.37	243664	9.12	402790	11.45	404944	14.70	347383	16.15
OP64314-MB1	121647	4.59	457596	6.36	247154	9.12	391662	11.45	361172	14.70	306883	16.15
OP64314-BS1	122150	4.59	453957	6.37	251670	9.12	398237	11.45	376587	14.70	322992	16.15
ZZZZZZ	127305	4.59	483821	6.36	260011	9.12	405188	11.45	386198	14.70	329485	16.15
ZZZZZZ	125554	4.58	479044	6.36	261873	9.12	411927	11.45	381040	14.70	326409	16.15
OP64314-MS	125157	4.59	472280	6.36	257714	9.12	412711	11.45	387648	14.70	338303	16.15
OP64314-MSD	121033	4.59	450584	6.36	242398	9.12	382785	11.45	357417	14.70	318643	16.15
JB30977-1	102120	4.59	429517	6.38	286790	9.15	467404	11.49	411225	14.70	334168	16.15
OP64376-MS	106784	4.59	449293	6.38	299965	9.15	479568	11.48	431490	14.70	359444	16.15
OP64376-MSD	101416	4.59	425553	6.38	295037	9.15	458692	11.48	422835	14.70	352867	16.15
ZZZZZZ	112648	4.59	437730	6.36	246999	9.12	412299	11.44	419603	14.69	368107	16.15
ZZZZZZ	102081	4.59	397153	6.36	223969	9.12	367883	11.44	372793	14.70	321305	16.15
ZZZZZZ	99478	4.59	423780	6.37	244713	9.13	392846	11.46	381142	14.70	154044*	16.15
ZZZZZZ	103761	4.59	436250	6.37	231237	9.13	398950	11.46	389414	14.70	174841*	16.15
ZZZZZZ	104845	4.59	415752	6.36	247352	9.13	419581	11.46	485877	14.71	449822	16.17
ZZZZZZ	135044	4.58	495127	6.37	259901	9.12	398703	11.45	424905	14.70	419568	16.16
ZZZZZZ	134413	4.59	485368	6.37	247267	9.12	387273	11.45	424171	14.70	435677	16.16
ZZZZZZ	117929	4.59	466432	6.37	277598	9.13	455191	11.47	460459	14.71	412271	16.16
OP64166-MB1	181058	4.59	693496	6.37	391272	9.13	642952	11.46	626627	14.70	579406	16.16
JB30745-1	120317	4.60	493538	6.39	292600	9.16	463717	11.48	420937	14.70	383324	16.16
OP64375-MS	109694	4.59	422777	6.38	252111	9.14	369801	11.47	395010	14.70	356407	16.16
OP64375-MSD	115526	4.59	429943	6.37	235595	9.13	360724	11.46	390666	14.70	356538	16.16
ZZZZZZ	137219	4.59	531558	6.37	295299	9.12	488881	11.45	502701	14.70	452116	16.16
OP64166-MS	157102	4.59	590329	6.37	315644	9.13	505444	11.46	531697	14.70	497535	16.16
OP64166-MSD	156490	4.59	586913	6.37	313029	9.13	509401	11.45	541257	14.70	485145	16.16
JB30141-9	190566	4.59	736732	6.37	415031	9.12	679845	11.45	662061	14.70	581604	16.16
ZZZZZZ	103519	4.59	391139	6.37	237888	9.13	380267	11.46	362960	14.70	321684	16.16
ZZZZZZ	118984	4.59	446093	6.37	253120	9.12	432607	11.45	408575	14.70	357998	16.15

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8

Semivolatile Internal Standard Area Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	EF5115-CC5067	**Injection Date:**	03/15/13
Lab File ID:	F21525.D	**Injection Time:**	15:40
Instrument ID:	GCMSF	**Method:**	SW846 8270D

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	**AREA**	**RT**	**AREA**	**RT**	**AREA**	**RT**	**AREA**	**RT**	**AREA**	**RT**	**AREA**	**RT**

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: JB30306
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
JB30306-1	3E48584.D	57.0	63.0	76.0
JB30306-2	3E48585.D	60.0	61.0	82.0
JB30306-3	3E48586.D	51.0	50.0	72.0
JB30306-4	3E48587.D	64.0	61.0	75.0
JB30306-5	3E48588.D	57.0	63.0	73.0
OP64314-BS1	F21534.D	85.0	83.0	97.0
OP64314-MB1	3E48569.D	89.0	86.0	98.0
OP64314-MB1	F21533.D	84.0	82.0	97.0
OP64314-MS	F21537.D	63.0	58.0	66.0
OP64314-MSD	F21538.D	65.0	61.0	70.0

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	21-122%
S2 = 2-Fluorobiphenyl	30-117%
S3 = Terphenyl-d14	31-129%

Initial Calibration Summary

Job Number: JB30306 **Sample:** E3E2052-ICC2052
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47321.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                          Response Factor Report  MS3E

  Method       : C:\msdchem\1\METHODS\M3E2052.M (RTE Integrator)
  Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
  Last Update  : Wed Jan 30 09:52:40 2013
  Response via : Initial Calibration

  Calibration Files
  2   =3e47325.D   5   =3e47324.D   25  =3e47322.D   80  =3e47320.D
  100 =3e47319.D   50  =3e47321.D   1   =3e47326.D   10  =3e47323.D

   Compound         2     5     25    80    100   50    1     10    Avg %RSD
  ---------------------------------------------------------------------------

102)     1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 1.435 1.274 1.281 1.166 1.077 1.079 1.275 1.313 1.238   9.91

104)     Acenaphthene-d10a     ----------------ISTD---------------------
105) 1,2,4,5-Tetr 0.588 0.536 0.553 0.513 0.506 0.521 0.557 0.561 0.542   5.14
106) 2-bromonapht 0.784 0.705 0.703 0.656 0.634 0.669 0.696 0.711 0.695   6.49

107)     Phenanthrene-d10a     ----------------ISTD---------------------
108) Atrazine     0.102 0.098 0.101 0.103 0.101 0.104 0.083 0.100 0.099   6.91
109) o-terphenyl  0.714 0.660 0.646 0.601 0.591 0.614 0.622 0.666 0.639   6.35

110) I   Chrysene-d12a         ----------------ISTD---------------------
111) benzidine          0.728 0.781 0.595 0.524 0.624       0.827 0.680  17.26
112) 1-chloroocta 0.394 0.344 0.355 0.328 0.322 0.335 0.231 0.361 0.334  14.18

113) I   naphthalene-d8a       ----------------ISTD---------------------
114) hydroquinone       0.182 0.295 0.357 0.340 0.328       0.234 0.289  23.58
             ----- Linear regression -----  Coefficient =  0.9981
               Response Ratio = -0.02970 + 0.35826 *A

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

           M3E2051.M         Wed Jan 30 09:53:31 2013   MS3E
```

8.7.1

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2052-ICV2052
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47328A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
  Data File : C:\msdchem\1\DATA\E3e2052\3e47328a.D         Vial: 11
  Acq On    : 29 Jan 2013   6:53 pm                    Operator: olgaa
  Sample    : icv2052-50                               Inst    : MS3E
  Misc      : op62959a,e3e2052,bn1                     Multiplr: 1.00
  MS Integration Params: lscint.p

  Method       : C:\msdchem\1\METHODS\M3E2051.M (RTE Integrator)
  Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
  Last Update  : Wed Jan 30 09:52:40 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	98	0.00	7.20
105	1,2,4,5-Tetrachlorobenzen	0.542	0.499	7.9	94	0.00	5.93

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47321.D M3E2051.M Wed Jan 30 09:57:39 2013 MS3E

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2052-ICV2052
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47329A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2052\3e47329a.D        Vial: 12
Acq On    : 29 Jan 2013   7:17 pm                   Operator: olgaa
Sample    : icv2052-50                              Inst    : MS3E
Misc      : op62959a,e3e2052,bn2                    Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2051.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Wed Jan 30 09:52:40 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	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	93	0.00	2.96
103	Benzaldehyde	1.238	1.183	4.4	102	0.00	2.52
107	Phenanthrene-d10a	1.000	1.000	0.0	83	0.00	9.43
108	Atrazine	0.099	0.097	2.0	77	0.00	9.28

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47321.D M3E2051.M Wed Jan 30 09:59:06 2013 MS3E

8.7.3

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2052-ICV2052
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47332.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
  Data File : C:\msdchem\1\DATA\E3e2052\3e47332.D          Vial: 15
  Acq On    : 29 Jan 2013   8:27 pm                    Operator: olgaa
  Sample    : icv2052-50                               Inst    : MS3E
  Misc      : op62959a,e3e2052,benzdn                  Multiplr: 1.00
  MS Integration Params: lscint.p

  Method       : C:\msdchem\1\METHODS\M3E2051.M (RTE Integrator)
  Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
  Last Update  : Wed Jan 30 09:52:40 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.
110	I	Chrysene-d12a	1.000	1.000	0.0	101	0.00	13.08
111	T	benzidine	0.680	0.760	-11.8	123	0.00	11.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47321.D M3E2051.M Wed Jan 30 09:55:56 2013 MS3E

Initial Calibration Summary

Job Number: JB30306 **Sample:** E3E2061-ICC2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47538.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MS3E

Method : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Fri Feb 08 08:22:18 2013
Response via : Initial Calibration

Calibration Files
2 =3e47542.D 5 =3e47541.D 25 =3e47539.D 80 =3e47537.D
100 =3e47536.D 50 =3e47538.D 1 =3e47543.D 10 =3e47540.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
1) I 1,4-Dichlorobenzene-d					ISTD					
2) 1,4-Dioxane	0.613	0.573	0.527	0.564	0.568	0.583	0.694	0.530	0.582	9.16
3) Pyridine	1.115	1.556	1.260	1.469	1.320	1.396		1.085	1.314	13.33
4) N-Nitrosodim	0.919	0.867	0.761	0.900	0.795	0.870	0.977	0.915	0.876	7.94
5) 2-Fluorophen	1.409	1.363	1.220	1.289	1.366	1.394	1.358	1.435	1.354	5.11
6) Indene	2.583	2.559	2.357	2.268	2.390	2.386	2.615	2.531	2.461	5.13
7) Cumene	3.558	3.277	3.260	3.140	3.298	3.479	3.620	3.429	3.383	4.88
8) Phenol-d5	1.797	1.803	1.598	1.557	1.588	1.632	1.875	1.750	1.700	7.07
9) Phenol	1.784	1.791	1.616	1.594	1.594	1.658	1.872	1.757	1.708	6.21
10) Aniline	2.175	2.061	1.924	1.599	1.531	1.811	2.219	1.983	1.913	13.17
11) bis(2-Chloro	1.343	1.357	1.234	1.159	1.169	1.216	1.304	1.336	1.265	6.32
12) 2-Chlorophen	1.531	1.495	1.323	1.365	1.377	1.416	1.552	1.514	1.446	6.01
13) Decane	1.235	1.286	1.177	1.075	1.064	1.163	1.333	1.173	1.188	7.93
14) 1,3-Dichloro	1.757	1.760	1.576	1.582	1.567	1.638	1.873	1.761	1.689	6.72
15) 1,4-Dichloro	1.757	1.740	1.610	1.602	1.580	1.657	1.832	1.778	1.694	5.56
16) Benzyl alcoh	1.042	0.990	0.920	0.901	0.948	0.951	0.986	1.030	0.971	5.17
17) 1,2-Dichloro	1.696	1.642	1.494	1.469	1.520	1.549	1.825	1.680	1.610	7.61
18) Acetophenone	2.182	2.139	2.014	1.994	2.019	2.110	2.249	2.205	2.114	4.57
19) 2-Methylphen	1.329	1.257	1.285	1.218	1.266	1.349	1.359	1.392	1.307	4.56
20) 2,2'-oxybis(	0.502	0.450	0.445	0.436	0.458	0.473	0.512	0.511	0.474	6.54
21) 3&4-Methylph	1.480	1.465	1.265	1.400	1.399	1.485	1.465	1.489	1.431	5.32
22) n-Nitroso-di	1.054	1.059	0.871	0.953	0.920	1.015	0.969	1.040	0.985	6.95
23) Hexachloroet	0.627	0.606	0.540	0.582	0.580	0.600	0.651	0.625	0.601	5.72
24) I Naphthalene-d8					ISTD					
25) Nitrobenzene	0.373	0.406	0.340	0.349	0.341	0.355	0.378	0.367	0.364	6.07
26) Nitrobenzene	0.398	0.417	0.349	0.357	0.348	0.370	0.380	0.385	0.375	6.54
27) Quinoline	0.724	0.734	0.686	0.651	0.725	0.660	0.775	0.719	0.709	5.83
28) Isophorone	0.681	0.655	0.608	0.613	0.591	0.582	0.662	0.663	0.632	5.95
29) 2-Nitropheno	0.190	0.205	0.189	0.186	0.193	0.183	0.173	0.212	0.191	6.42
30) 2,4-Dimethyl	0.293	0.344	0.329	0.359	0.350	0.326	0.314	0.306	0.328	6.91
31) Benzoic acid		0.265	0.284	0.318	0.326	0.311		0.255	0.293	10.08
32) bis(2-Chloro	0.396	0.383	0.350	0.367	0.351	0.375	0.397	0.388	0.376	4.90
33) 2,4-Dichloro	0.326	0.310	0.289	0.283	0.297	0.297	0.307	0.317	0.303	4.71
34) 2,6-Dichloro	0.302	0.304	0.286	0.284	0.295	0.287	0.312	0.307	0.297	3.64
35) 1,3,5-Trichl	0.374	0.387	0.333	0.317	0.329	0.318	0.392	0.365	0.352	8.88
36) 1,2,4-Trichl	0.375	0.353	0.330	0.330	0.331	0.328	0.380	0.364	0.349	6.22
37) 1,2,3-Trichl	0.348	0.341	0.320	0.311	0.325	0.316	0.364	0.344	0.334	5.50
38) Naphthalene	1.175	1.147	1.038	1.040	1.025	1.072	1.248	1.130	1.109	7.16
39) 4-Chloroanil	0.473	0.456	0.425	0.401	0.407	0.421	0.493	0.448	0.441	7.39
40) 2,3-Dichloro	0.375	0.372	0.345	0.347	0.352	0.353	0.384	0.372	0.362	4.14
41) Caprolactam	0.117	0.136	0.127	0.124	0.134	0.123	0.141	0.126	0.129	6.06
42) Hexachlorobu	0.227	0.218	0.203	0.200	0.208	0.193	0.247	0.220	0.214	8.09
43) 4-Chloro-3-m	0.334	0.333	0.314	0.303	0.343	0.325	0.322	0.338	0.326	4.03
44) 2-Methylnaph	0.698	0.679	0.625	0.583	0.650	0.630	0.667	0.683	0.652	5.82
45) 1-Methylnaph	0.679	0.651	0.604	0.571	0.633	0.628	0.682	0.652	0.637	5.87

Initial Calibration Summary

Job Number: JB30306 **Sample:** E3E2061-ICC2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47538.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

46)	Dimethylnaph	0.684	0.650	0.603	0.595	0.621	0.609	0.657	0.656	0.634	4.97
47)	I Acenaphthene-d10	----------ISTD----------									
48)	Hexachlorocy	0.319	0.333	0.366	0.416	0.409	0.372	0.272	0.388	0.359	13.55
49)	2,4,6-Trichl	0.364	0.374	0.368	0.392	0.388	0.369	0.392	0.393	0.380	3.26
50)	2,4,5-Trichl	0.412	0.414	0.396	0.429	0.424	0.399	0.407	0.420	0.413	2.82
51)	2-Fluorobiph	1.345	1.309	1.260	1.278	1.266	1.219	1.392	1.318	1.298	4.19
52)	2-Chloronaph	1.220	1.152	1.104	1.147	1.087	1.097	1.237	1.174	1.152	4.86
53)	Biphenyl	1.539	1.521	1.443	1.481	1.391	1.399	1.650	1.508	1.492	5.65
54)	2-Nitroanili	0.300	0.297	0.306	0.335	0.327	0.309	0.265	0.316	0.307	6.94
55)	Dimethylphth	1.421	1.351	1.282	1.254	1.250	1.290	1.451	1.356	1.332	5.68
56)	Acenaphthyle	1.989	1.942	1.872	1.815	1.806	1.830	2.007	1.963	1.903	4.30
57)	2,6-Dinitrot	0.260	0.258	0.271	0.279	0.281	0.282	0.209	0.289	0.266	9.57
58)	3-Nitroanili	0.344	0.338	0.320	0.317	0.318	0.339	0.271	0.338	0.323	7.29
59)	Acenaphthene	1.264	1.235	1.155	1.132	1.120	1.201	1.374	1.209	1.211	6.83
60)	2,4-Dinitrop		0.102	0.146	0.178	0.183	0.171		0.162	0.157	19.03
61)	4-Nitropheno	0.170	0.189	0.192	0.202	0.203	0.186	0.144	0.187	0.184	10.44
62)	Dibenzofuran	1.664	1.633	1.514	1.480	1.466	1.486	1.752	1.592	1.573	6.59
63)	2,4-Dinitrot	0.395	0.381	0.383	0.390	0.393	0.369	0.294	0.412	0.377	9.48
64)	2,3,4,6-Tetr	0.366	0.349	0.341	0.345	0.351	0.331	0.326	0.359	0.346	3.91
65)	Diethylphtha	1.533	1.410	1.319	1.284	1.344	1.230	1.562	1.390	1.384	8.37
66)	Fluorene	1.491	1.374	1.321	1.291	1.341	1.225	1.386	1.381	1.351	5.79
67)	4-Chlorophen	0.711	0.638	0.616	0.599	0.619	0.585	0.677	0.650	0.637	6.52
68)	4-Nitroanili	0.376	0.325	0.315	0.322	0.342	0.304	0.286	0.328	0.325	8.25
69)	I Phenanthrene-d10	----------ISTD----------									
70)	4,6-Dinitro-	0.107	0.099	0.128	0.144	0.151	0.139		0.143	0.130	15.36
71)	n-Nitrosodip	0.644	0.568	0.521	0.519	0.527	0.528	0.591	0.561	0.557	7.84
72)	1,2-Diphenyl	0.961	0.752	0.721	0.689	0.716	0.732	0.797	0.754	0.765	11.13
73)	2,4,6-Tribro	0.121	0.115	0.116	0.120	0.122	0.120	0.093	0.121	0.116	8.14
74)	4-Bromopheny	0.241	0.224	0.216	0.219	0.216	0.231	0.232	0.232	0.226	3.98
75)	Hexachlorobe	0.257	0.255	0.238	0.241	0.238	0.251	0.266	0.260	0.251	4.27
76)	Pentachlorop	0.139	0.139	0.159	0.165	0.167	0.163	0.112	0.166	0.151	12.92
77)	Phenanthrene	1.242	1.185	1.115	1.092	1.072	1.133	1.335	1.171	1.168	7.42
78)	Anthracene	1.231	1.205	1.130	1.086	1.064	1.104	1.245	1.201	1.158	6.06
79)	Carbazole	1.053	1.020	0.974	0.947	0.942	0.991	1.015	1.015	0.995	3.88
80)	Di-n-butylph	1.314	1.369	1.305	1.234	1.227	1.339	1.791	1.328	1.363	13.18
81)	Fluoranthene	1.246	1.222	1.292	1.160	1.174	1.207	1.208	1.272	1.223	3.72
82)	Octadecane	0.399	0.387	0.379	0.355	0.353	0.374	0.379	0.399	0.378	4.62
83)	I Chrysene-d12	----------ISTD----------									
84)	Pyrene	1.460	1.261	1.177	1.201	1.236	1.246	1.304	1.277	1.270	6.83
85)	Terphenyl-d1	0.943	0.882	0.800	0.852	0.840	0.869	0.910	0.907	0.875	5.16
86)	Butylbenzylp	0.561	0.547	0.582	0.563	0.551	0.568	0.563	0.630	0.571	4.62
87)	Butyl steara	0.361	0.257	0.273	0.226	0.219	0.228		0.270	0.262	18.60
88)	Benzo[a]anth	1.238	1.169	1.145	1.128	1.122	1.163	1.320	1.181	1.183	5.59
89)	3,3'-Dichlor	0.439	0.435	0.434	0.430	0.427	0.445	0.431	0.451	0.437	1.87
90)	Chrysene	1.129	1.100	1.032	1.005	1.006	1.050	1.166	1.067	1.069	5.45
91)	bis(2-Ethylh	0.875	0.753	0.774	0.755	0.741	0.769	0.721	0.831	0.777	6.52
92)	I Perylene-d12	----------ISTD----------									
93)	Di-n-octylph	1.523	1.460	1.403	1.407	1.269	1.512	1.307	1.496	1.422	6.64
94)	Benzo[b]fluo	1.300	1.268	1.116	1.394	1.417	1.333	1.245	1.379	1.306	7.50
95)	Benzo[k]fluo	1.367	1.330	1.131	1.039	0.801	1.239	1.426	1.129	1.183	17.21
96)	Benzo[a]pyre	1.176	1.169	1.159	1.137	1.113	1.209	1.167	1.182	1.164	2.51
97)	Indeno[1,2,3	1.400	1.359	1.243	1.343	1.273	1.434	1.336	1.385	1.347	4.74
98)	Dibenz(a,h)a	1.005	0.952	0.904	0.995	0.938	1.049	0.921	1.020	0.973	5.31
99)	Dibenz[a,h]a	1.212	1.114	1.028	1.144	1.073	1.197	1.166	1.183	1.140	5.62
100)	7,12-Dimethy	0.426	0.482	0.505	0.561	0.517	0.583	0.518	0.461	0.507	10.09
101)	Benzo[g,h,i]	1.197	1.088	0.994	1.112	1.028	1.190	1.114	1.155	1.110	6.52

Initial Calibration Summary

Job Number: JB30306 **Sample:** E3E2061-ICC2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47538.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

          M3E2061.M         Fri Feb 08 08:26:16 2013   MS3E
```

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2061-ICV2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47544.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2061\3e47544.D          Vial: 10
Acq On    :  6 Feb 2013   8:01 pm                    Operator: olgaa
Sample    : icv2061-50                               Inst    : MS3E
Misc      : op63324,e3e2061,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Feb 07 10:54:16 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	105	0.00	2.92
9	t	Phenol	1.708	1.683	1.5	107	0.00	2.67
12	t	2-Chlorophenol	1.446	1.525	-5.5	113	0.00	2.74
19	t	2-Methylphenol	1.307	1.383	-5.8	108	0.00	3.34
21	t	3&4-Methylphenol	1.431	1.471	-2.8	104	0.00	3.53
24	I	Naphthalene-d8	1.000	1.000	0.0	98	0.00	4.53
29	t	2-Nitrophenol	0.191	0.204	-6.8	109	0.00	4.07
30	t	2,4-Dimethylphenol	0.328	0.400	-22.0	120	0.00	4.22
31	t	Benzoic acid	0.293	0.297	-1.4	94	0.00	4.50
33	t	2,4-Dichlorophenol	0.303	0.323	-6.6	107	0.00	4.40
34	t	2,6-Dichlorophenol	0.297	0.309	-4.0	106	0.00	4.73
43	t	4-Chloro-3-methylphenol	0.326	0.318	2.5	96	-0.02	5.53
47	I	Acenaphthene-d10	1.000	1.000	0.0	97	0.00	7.15
49	t	2,4,6-Trichlorophenol	0.380	0.376	1.1	99	0.00	6.08
50	t	2,4,5-Trichlorophenol	0.413	0.409	1.0	99	-0.01	6.14
60	t	2,4-Dinitrophenol	0.157	0.144	8.3	82	-0.01	7.36
61	t	4-Nitrophenol	0.184	0.200	-8.7	104	0.00	7.60
64		2,3,4,6-Tetrachlorophenol	0.346	0.344	0.6	100	0.00	7.76
69	I	Phenanthrene-d10	1.000	1.000	0.0	96	0.00	9.39
70	t	4,6-Dinitro-2-methylpheno	0.130	0.134	-3.1	93	-0.02	8.21
76	t	Pentachlorophenol	0.151	0.164	-8.6	98	-0.01	9.27

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47538.D M3E2061.M Thu Feb 07 11:08:38 2013 MS3E

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2061-ICV2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47545.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\E3e2061\3e47545.D Vial: 11
Acq On : 6 Feb 2013 8:24 pm Operator: olgaa
Sample : icv2061-50 Inst : MS3E
Misc : op63324,e3e2061, Multiplr: 1.00
MS Integration Params: lscint.p

Method : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Fri Feb 08 08:22:18 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	98	0.00	2.92
3	t	Pyridine	1.314	1.497	-13.9	105	0.00	1.05
4	t	N-Nitrosodimethylamine	0.876	0.793	9.5	89	0.00	1.05
11	t	bis(2-Chloroethyl)ether	1.265	1.390	-9.9	112	0.00	2.71
14	t	1,3-Dichlorobenzene	1.689	1.763	-4.4	106	0.00	2.88
15	t	1,4-Dichlorobenzene	1.694	1.709	-0.9	101	0.00	2.94
16	t	Benzyl alcohol	0.971	1.015	-4.5	105	0.00	3.15
17	t	1,2-Dichlorobenzene	1.610	1.646	-2.2	104	0.00	3.15
20	t	2,2'-oxybis(1-Chloropropa	0.474	0.514	-8.4	107	0.00	3.33
22	t	n-Nitroso-di-n-propylamin	0.985	1.023	-3.9	99	-0.01	3.51
23	t	Hexachloroethane	0.601	0.613	-2.0	100	0.00	3.51
24	I	Naphthalene-d8	1.000	1.000	0.0	93	0.00	4.53
26	t	Nitrobenzene	0.375	0.393	-4.8	99	0.00	3.64
28	t	Isophorone	0.632	0.671	-6.2	107	0.00	3.96
32	t	bis(2-Chloroethoxy)methan	0.376	0.411	-9.3	102	0.00	4.33
36	t	1,2,4-Trichlorobenzene	0.349	0.360	-3.2	102	0.00	4.49
38	t	Naphthalene	1.109	1.079	2.7	94	0.00	4.56
42	t	Hexachlorobutadiene	0.214	0.219	-2.3	106	0.00	4.87
44	t	2-Methylnaphthalene	0.652	0.650	0.3	96	0.00	5.57
47	I	Acenaphthene-d10	1.000	1.000	0.0	90	0.00	7.15
48	t	Hexachlorocyclopentadiene	0.359	0.344	4.2	82	0.00	5.93
52	t	2-Chloronaphthalene	1.152	1.223	-6.2	100	0.00	6.28
54	t	2-Nitroaniline	0.307	0.350	-14.0	102	0.00	6.55
55	t	Dimethylphthalate	1.332	1.316	1.2	92	0.00	6.96
56	t	Acenaphthylene	1.903	1.792	5.8	88	0.00	6.90
57	t	2,6-Dinitrotoluene	0.266	0.286	-7.5	91	0.00	7.02
58	t	3-Nitroaniline	0.323	0.292	9.6	77	0.00	7.21
59	t	Acenaphthene	1.211	1.201	0.8	90	0.00	7.20
62	t	Dibenzofuran	1.573	1.651	-5.0	100	0.00	7.45
63	t	2,4-Dinitrotoluene	0.377	0.363	3.7	88	0.00	7.61
65	t	Diethylphthalate	1.384	1.408	-1.7	103	0.00	8.07
66	t	Fluorene	1.351	1.328	1.7	97	0.00	7.98
67	t	4-Chlorophenyl-phenylethe	0.637	0.656	-3.0	101	0.00	8.05
68	t	4-Nitroaniline	0.325	0.343	-5.5	101	0.00	8.16
69	I	Phenanthrene-d10	1.000	1.000	0.0	89	0.00	9.39
71	t	n-Nitrosodiphenylamine	0.557	0.564	-1.3	95	0.00	8.27
72	t	1,2-Diphenylhydrazine	0.765	0.843	-10.2	102	0.00	8.29
74	t	4-Bromophenyl-phenylether	0.226	0.245	-8.4	94	0.00	8.79
75	t	Hexachlorobenzene	0.251	0.262	-4.4	92	0.00	8.95

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2061-ICV2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47545.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	t	Phenanthrene	1.168	1.199	-2.7	94	0.00	9.43
78	t	Anthracene	1.158	1.204	-4.0	97	0.00	9.50
79	t	Carbazole	0.995	1.033	-3.8	92	0.00	9.82
80	t	Di-n-butylphthalate	1.363	1.322	3.0	88	0.00	10.63
81	t	Fluoranthene	1.223	1.212	0.9	89	0.00	11.26
83	I	Chrysene-d12	1.000	1.000	0.0	94	0.00	13.05
84	t	Pyrene	1.270	1.263	0.6	95	0.00	11.56
86	t	Butylbenzylphthalate	0.571	0.569	0.4	94	0.00	12.61
88	t	Benzo[a]anthracene	1.183	1.158	2.1	94	0.00	13.04
89	t	3,3'-Dichlorobenzidine	0.437	0.311	28.8	66	0.00	13.09
90	t	Chrysene	1.069	1.105	-3.4	99	0.00	13.08
91	t	bis(2-Ethylhexyl)phthalat	0.777	0.783	-0.8	96	0.00	13.32
92	I	Perylene-d12	1.000	1.000	0.0	94	0.00	14.43
93	t	Di-n-octylphthalate	1.422	1.493	-5.0	93	0.00	13.92
94	t	Benzo[b]fluoranthene	1.306	1.356	-3.8	96	0.00	14.11
95	t	Benzo[k]fluoranthene	1.183	1.130	4.5	86	0.00	14.13
96	t	Benzo[a]pyrene	1.164	1.191	-2.3	93	0.00	14.37
97	t	Indeno[1,2,3-cd]pyrene	1.347	1.413	-4.9	93	0.00	15.25
99	t	Dibenz[a,h]anthracene	1.140	1.170	-2.6	92	0.00	15.27
101	t	Benzo[g,h,i]perylene	1.110	1.235	-11.3	98	0.00	15.43

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47538.D M3E2061.M Fri Feb 08 08:22:54 2013 MS3E

8.7.7

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2061-ICV2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47546.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2061\3e47546.D          Vial: 12
Acq On    :  6 Feb 2013   8:48 pm                     Operator: olgaa
Sample    : icv2061-50                                Inst    : MS3E
Misc      : op63324,e3e2061,                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Feb 07 10:54:16 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	110	0.00	2.92
2	t	1,4-Dioxane	0.582	0.599	-2.9	113	0.00	0.91
6	t	Indene	2.461	2.452	0.4	113	0.00	3.24
7	t	Cumene	3.383	3.536	-4.5	112	0.00	2.18
13	t	Decane	1.188	1.073	9.7	102	0.00	2.82
18	t	Acetophenone	2.114	1.991	5.8	104	0.00	3.45
24	I	Naphthalene-d8	1.000	1.000	0.0	101	0.00	4.53
27	t	Quinoline	0.709	0.759	-7.1	116	-0.02	5.05
40	t	2,3-Dichloroaniline	0.362	0.307	15.2	88	0.00	6.07
41	t	Caprolactam	0.129	0.133	-3.1	109	-0.06	5.19
45	t	1-Methylnaphthalene	0.637	0.624	2.0	100	0.00	5.72
46	t	Dimethylnaphthalene	0.634	0.637	-0.5	105	0.00	6.53
47	I	Acenaphthene-d10	1.000	1.000	0.0	94	0.00	7.15
53	t	Biphenyl	1.492	1.600	-7.2	108	0.00	6.31
69	I	Phenanthrene-d10	1.000	1.000	0.0	103	0.00	9.39
82	t	Octadecane	0.378	0.383	-1.3	106	0.00	9.53
92	I	Perylene-d12	1.000	1.000	0.0	102	0.00	14.42
100	t	7,12-Dimethylbenz(a)anthr	0.507	0.631	-24.5	110	-0.01	14.13

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47538.D M3E2061.M Thu Feb 07 11:17:48 2013 MS3E

8.7.8

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2061-ICV2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47547.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2061\3e47547.D          Vial: 13
Acq On    :  6 Feb 2013   9:12 pm                    Operator: olgaa
Sample    : icv2061-50                               Inst    : MS3E
Misc      : op63324,e3e2061,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Feb 07 10:54:16 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	97	0.00	2.92
5	S	2-Fluorophenol	1.354	1.296	4.3	90	0.00	1.80
8	S	Phenol-d5	1.700	1.548	8.9	92	0.00	2.65
24	I	Naphthalene-d8	1.000	1.000	0.0	87	0.00	4.53
25	S	Nitrobenzene-d5	0.364	0.363	0.3	89	0.00	3.62
47	I	Acenaphthene-d10	1.000	1.000	0.0	86	0.00	7.15
51	S	2-Fluorobiphenyl	1.298	1.306	-0.6	92	0.00	6.20
69	I	Phenanthrene-d10	1.000	1.000	0.0	89	0.00	9.39
73	S	2,4,6-Tribromophenol	0.116	0.112	3.4	83	0.00	8.38
83	I	Chrysene-d12	1.000	1.000	0.0	93	0.00	13.05
85	S	Terphenyl-d14	0.875	0.923	-5.5	99	0.00	11.90

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 3e47538.D  M3E2061.M        Thu Feb 07 11:19:35 2013   MS3E
```

8.7.9

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2061-ICV2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47548.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2061\3e47548.D          Vial: 14
Acq On    :  6 Feb 2013   9:35 pm                    Operator: olgaa
Sample    : icv2061-50                               Inst    : MS3E
Misc      : op63324,e3e2061,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Thu Feb 07 10:54:16 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	136	0.00	2.92
10		Aniline	1.913	2.007	-4.9	151	0.00	2.63
24	I	Naphthalene-d8	1.000	1.000	0.0	126	0.00	4.53
39	t	4-Chloroaniline	0.441	0.409	7.3	123	0.00	4.73

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47538.D M3E2061.M Thu Feb 07 11:21:18 2013 MS3E

8.7.10

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** E3E2073-ICV2052
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E47800.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
  Data File : C:\msdchem\1\DATA\E3e2073\3e47800.D          Vial: 4
  Acq On    : 15 Feb 2013  10:19 am                     Operator: olgaa
  Sample    : icv2052-50                                Inst    : MS3E
  Misc      : op63535,e3e2073,                          Multiplr: 1.00
  MS Integration Params: lscint.p

  Method       : C:\msdchem\1\METHODS\M3E2061a.M (RTE Integrator)
  Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
  Last Update  : Fri Feb 08 11:17:44 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.
  ---------------------------------------------------------------------------

113 I   naphthalene-d8a             1.000   1.000      0.0   66  -0.10    4.47

            ------------------------ True    Calc.   % Drift  ------------
114     hydroquinone               50.000  55.147    -10.3   74  -0.05    5.34
 ---------------------------------------------------------------------------
 ---------------------------------------------------------------------------

    (#) = Out of Range              SPCC's out = 0  CCC's out = 0
     3e47321.D  M3E2061a.M       Fri Feb 15 16:14:07 2013   MS3E
```

Continuing Calibration Summary

Job Number: JB30306 **Sample:** E3E2102-CC2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E48565.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2102\3e48565.D          Vial: 2
Acq On    : 15 Mar 2013   9:54 am                    Operator: olgaa
Sample    : cc2061-25                                Inst    : MS3E
Misc      : op64286,e3e2102,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Mon Feb 25 16:46:30 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	120	-0.14	2.69
2	t	1,4-Dioxane	0.582	0.370	36.4#	85	-0.07	0.80
3	t	Pyridine	1.314	0.962	26.8#	92	-0.08	0.93
4	t	N-Nitrosodimethylamine	0.876	0.590	32.6#	93	-0.07	0.93
5	S	2-Fluorophenol	1.354	1.142	15.7	113	-0.10	1.66
6	t	Indene	2.461	2.153	12.5	110	-0.15	3.00
7	t	Cumene	3.383	3.264	3.5	121	-0.12	1.98
8	S	Phenol-d5	1.700	1.380	18.8	104	-0.12	2.48
9	t	Phenol	1.708	1.563	8.5	117	-0.12	2.49
10		Aniline	1.913	1.361	28.9#	85	-0.13	2.43
11	t	bis(2-Chloroethyl)ether	1.265	1.152	8.9	113	-0.13	2.49
12	t	2-Chlorophenol	1.446	1.361	5.9	124	-0.13	2.53
13	t	Decane	1.188	1.097	7.7	112	-0.14	2.59
14	t	1,3-Dichlorobenzene	1.689	1.534	9.2	117	-0.14	2.65
15	t	1,4-Dichlorobenzene	1.694	1.597	5.7	119	-0.14	2.71
16	t	Benzyl alcohol	0.971	0.881	9.3	115	-0.14	2.93
17	t	1,2-Dichlorobenzene	1.610	1.547	3.9	125	-0.14	2.91
18	t	Acetophenone	2.114	1.981	6.3	118	-0.14	3.22
19	t	2-Methylphenol	1.307	1.195	8.6	112	-0.14	3.14
20	t	2,2'-oxybis(1-Chloropropa	0.474	0.428	9.7	116	-0.14	3.10
21	t	3&4-Methylphenol	1.431	1.265	11.6	120	-0.13	3.33
22	t	n-Nitroso-di-n-propylamin	0.985	0.973	1.2	135	-0.15	3.27
23	t	Hexachloroethane	0.601	0.589	2.0	131	-0.16	3.25
24	I	Naphthalene-d8	1.000	1.000	0.0	129	-0.17	4.26
25	S	Nitrobenzene-d5	0.364	0.372	-2.2	141	-0.15	3.38
26	t	Nitrobenzene	0.375	0.391	-4.3	144	-0.15	3.40
27	t	Quinoline	0.709	0.670	5.5	126	-0.16	4.80
28	t	Isophorone	0.632	0.613	3.0	130	-0.16	3.71
29	t	2-Nitrophenol	0.191	0.192	-0.5	130	-0.16	3.82
30	t	2,4-Dimethylphenol	0.328	0.328	0.0	128	-0.15	3.99
31	t	Benzoic acid	0.293	0.296	-1.0	134	-0.13	4.31
32	t	bis(2-Chloroethoxy)methan	0.376	0.322	14.4	118	-0.15	4.08
33	t	2,4-Dichlorophenol	0.303	0.285	5.9	127	-0.14	4.18
34	t	2,6-Dichlorophenol	0.297	0.282	5.1	127	-0.16	4.48
35		1,3,5-Trichlorobenzene	0.352	0.333	5.4	129	-0.16	3.81
36	t	1,2,4-Trichlorobenzene	0.349	0.328	6.0	128	-0.17	4.23
37		1,2,3-Trichlorobenzene	0.334	0.313	6.3	126	-0.17	4.55
38	t	Naphthalene	1.109	1.031	7.0	128	-0.17	4.29
39	t	4-Chloroaniline	0.441	0.395	10.4	120	-0.16	4.48
40	t	2,3-Dichloroaniline	0.362	0.348	3.9	130	-0.17	5.80
41	t	Caprolactam	0.129	0.131	-1.6	132	-0.17	4.98

Continuing Calibration Summary

Job Number: JB30306 **Sample:** E3E2102-CC2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E48565.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.214	0.234	-9.3	149	-0.17	4.59
43	t	4-Chloro-3-methylphenol	0.326	0.349	-7.1	143	-0.15	5.33
44	t	2-Methylnaphthalene	0.652	0.640	1.8	132	-0.17	5.29
45	t	1-Methylnaphthalene	0.637	0.613	3.8	131	-0.18	5.44
46	t	Dimethylnaphthalene	0.634	0.622	1.9	133	-0.18	6.24
47	I	Acenaphthene-d10	1.000	1.000	0.0	134	-0.19	6.85
48	t	Hexachlorocyclopentadiene	0.359	0.291	18.9	106	-0.18	5.65
49	t	2,4,6-Trichlorophenol	0.380	0.358	5.8	130	-0.17	5.84
50	t	2,4,5-Trichlorophenol	0.413	0.389	5.8	132	-0.15	5.93
51	S	2-Fluorobiphenyl	1.298	1.238	4.6	132	-0.18	5.92
52	t	2-Chloronaphthalene	1.152	1.098	4.7	133	-0.18	6.00
53	t	Biphenyl	1.492	1.432	4.0	133	-0.18	6.03
54	t	2-Nitroaniline	0.307	0.370	-20.5#	162	-0.16	6.30
55	t	Dimethylphthalate	1.332	1.394	-4.7	146	-0.17	6.68
56	t	Acenaphthylene	1.903	1.830	3.8	131	-0.18	6.61
57	t	2,6-Dinitrotoluene	0.266	0.286	-7.5	141	-0.17	6.75
58	t	3-Nitroaniline	0.323	0.317	1.9	132	-0.16	6.96
59	t	Acenaphthene	1.211	1.174	3.1	136	-0.19	6.90
60	t	2,4-Dinitrophenol	0.157	0.154	1.9	142	-0.13	7.15
61	t	4-Nitrophenol	0.184	0.269	-46.2#	188	-0.12	7.46
62	t	Dibenzofuran	1.573	1.544	1.8	136	-0.19	7.16
63	t	2,4-Dinitrotoluene	0.377	0.420	-11.4	147	-0.16	7.36
64		2,3,4,6-Tetrachlorophenol	0.346	0.286	17.3	112	-0.17	7.50
65	t	Diethylphthalate	1.384	1.574	-13.7	160	-0.18	7.78
66	t	Fluorene	1.351	1.359	-0.6	138	-0.19	7.68
67	t	4-Chlorophenyl-phenylethe	0.637	0.650	-2.0	141	-0.19	7.76
68	t	4-Nitroaniline	0.325	0.318	2.2	135	-0.17	7.91
69	I	Phenanthrene-d10	1.000	1.000	0.0	147	-0.19	9.09
70	t	4,6-Dinitro-2-methylpheno	0.130	0.119	8.5	136	-0.16	7.99
71	t	n-Nitrosodiphenylamine	0.557	0.504	9.5	142	-0.19	7.98
72	t	1,2-Diphenylhydrazine	0.765	0.867	-13.3	176	-0.19	7.99
73	S	2,4,6-Tribromophenol	0.116	0.109	6.0	139	-0.18	8.11
74	t	4-Bromophenyl-phenylether	0.226	0.215	4.9	147	-0.19	8.49
75	t	Hexachlorobenzene	0.251	0.235	6.4	145	-0.19	8.66
76	t	Pentachlorophenol	0.151	0.117	22.5#	108	-0.18	9.00
77	t	Phenanthrene	1.168	1.101	5.7	145	-0.19	9.13
78	t	Anthracene	1.158	1.094	5.5	142	-0.19	9.20
79	t	Carbazole	0.995	0.917	7.8	138	-0.18	9.54
80	t	Di-n-butylphthalate	1.363	1.346	1.2	151	-0.19	10.33
81	t	Fluoranthene	1.223	1.166	4.7	132	-0.20	10.97
82	t	Octadecane	0.378	0.373	1.3	144	-0.19	9.23
83	I	Chrysene-d12	1.000	1.000	0.0	142	-0.15	12.83
84	t	Pyrene	1.270	1.134	10.7	137	-0.18	11.28
85	S	Terphenyl-d14	0.875	0.834	4.7	149	-0.17	11.64
86	t	Butylbenzylphthalate	0.571	0.597	-4.6	146	-0.16	12.37
87		Butyl stearate	0.262	0.221	15.6	116	-0.15	12.50
88	t	Benzo[a]anthracene	1.183	1.112	6.0	138	-0.16	12.81
89	t	3,3'-Dichlorobenzidine	0.437	0.410	6.2	134	-0.15	12.87
90	t	Chrysene	1.069	0.999	6.5	138	-0.15	12.86
91	t	bis(2-Ethylhexyl)phthalat	0.777	0.812	-4.5	149	-0.14	13.09
92	I	Perylene-d12	1.000	1.000	0.0	129	-0.14	14.22
93	t	Di-n-octylphthalate	1.422	1.657	-16.5	152	-0.14	13.69
94	t	Benzo[b]fluoranthene	1.306	1.321	-1.1	153	-0.14	13.89
95	t	Benzo[k]fluoranthene	1.183	1.317	-11.3	150	-0.15	13.91
96	t	Benzo[a]pyrene	1.164	1.103	5.2	123	-0.14	14.17
97	t	Indeno[1,2,3-cd]pyrene	1.347	1.382	-2.6	143	-0.14	15.05

Continuing Calibration Summary

Job Number: JB30306 **Sample:** E3E2102-CC2061
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E48565.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

98	t	Dibenz(a,h)acridine	0.973	1.009	-3.7	144	-0.14	14.90
99	t	Dibenz[a,h]anthracene	1.140	1.167	-2.4	146	-0.14	15.06
100	t	7,12-Dimethylbenz(a)anthr	0.507	0.505	0.4	129	-0.16	13.91
101	t	Benzo[g,h,i]perylene	1.110	1.102	0.7	143	-0.14	15.22

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3e47322.D M3E2061.M Fri Mar 15 13:59:33 2013 MS3E

8.7.12

8

Continuing Calibration Summary

Job Number: JB30306 **Sample:** E3E2102-CC2052
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 3E48566.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\E3e2102\3e48566.D          Vial: 3
Acq On    : 15 Mar 2013  10:31 am                    Operator: olgaa
Sample    : cc2052-25                                Inst    : MS3E
Misc      : op64286,e3e2102,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\msdchem\1\METHODS\M3E2061.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Mon Feb 25 16:46:30 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	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	105	-0.14	2.69
103	Benzaldehyde	1.238	1.088	12.1	89	-0.24	2.28
104	Acenaphthene-d10a	1.000	1.000	0.0	117	-0.18	6.86
105	1,2,4,5-Tetrachlorobenzen	0.542	0.557	-2.8	117	-0.32	5.61
106	Phenanthrene-d10a	1.000	1.000	0.0	121	-0.19	9.10
107	Atrazine	0.099	0.105	-6.1	126	-0.32	8.96
108 I	Chrysene-d12a	1.000	1.000	0.0	133	-0.15	12.83
109 T	benzidine	0.680	0.521	23.4#	88	-0.29	11.31

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 3e47322.D  M3E2061.M        Fri Mar 15 14:00:42 2013   MS3E
```

8.7.13

8

Initial Calibration Summary

Job Number: JB30306 **Sample:** EF5067-ICC5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20378.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSF

Method : C:\MSDCHEM\1\METHODS\MFAP5067.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Tue Feb 12 13:02:03 2013
Response via : Initial Calibration

Calibration Files
2 =F20385.D 5 =F20384.D 25 =F20382.D 80 =F20381.D
100 =F20380.D 50 =F20378.D 10 =F20383.D 1 =F20379.D

Compound	2	5	25	80	100	50	10	1	Avg	%RSD
1) I 1,4-Dichlorobenzene-d					ISTD					
2) 1,4-Dioxane	0.796	0.790	0.750	0.658	0.630	0.666	0.654		0.706	9.87
3) Pyridine	2.247	2.156	1.842	1.633	1.692	1.766	1.422	1.929	1.836	14.81
4) N-Nitrosodim	0.871	0.730	0.789	0.648	0.624	0.665	0.768	0.729	0.728	11.28
5) 2-Fluorophen	1.744	1.587	1.555	1.413	1.395	1.497	1.569	1.614	1.547	7.29
6) Indene	2.895	2.488	2.505	2.182	2.088	2.329	2.673	2.695	2.482	11.00
7) Cumene	4.324	3.736	3.613	3.184	3.012	3.349	3.742	3.759	3.590	11.39
8) Phenol-d5	2.075	1.879	1.994	1.810	1.755	1.910	2.148	1.869	1.930	6.91
9) Phenol	2.150	1.929	1.999	1.810	1.794	1.951	2.173	1.974	1.972	6.98
10) Aniline	2.592	2.285	2.019	1.704	1.658	1.688	2.345	2.549	2.105	18.53
11) bis(2-Chloro	1.746	1.504	1.481	1.335	1.301	1.404	1.626	1.692	1.511	10.87
12) 2-Chlorophen	1.719	1.538	1.521	1.368	1.340	1.459	1.652	1.496	1.512	8.54
13) Decane	1.806	1.565	1.487	1.269	1.212	1.349	1.500	1.778	1.496	14.61
14) 1,3-Dichloro	2.044	1.842	1.731	1.526	1.513	1.653	1.831	1.921	1.758	10.67
15) 1,4-Dichloro	2.131	1.789	1.745	1.571	1.520	1.665	1.877	1.875	1.772	11.02
16) Benzyl alcoh	0.931	0.931	0.992	0.927	0.935	1.005	1.129	0.788	0.955	10.03
17) 1,2-Dichloro	1.951	1.724	1.613	1.473	1.414	1.541	1.762	1.716	1.649	10.59
18) Acetophenone	2.107	1.938	1.954	1.750	1.664	1.866	2.198	1.923	1.925	9.03
19) 2-Methylphen	1.338	1.312	1.380	1.262	1.206	1.324	1.528	1.219	1.321	7.78
20) 2,2'-oxybis(	0.570	0.464	0.476	0.435	0.433	0.460	0.536	0.538	0.489	10.64
21) 3&4-Methylph	1.183	1.332	1.448	1.387	1.330	1.457	1.611	1.106	1.357	11.77
22) n-Nitroso-di	1.172	1.065	1.070	0.999	0.999	1.060	1.228	1.054	1.081	7.42
23) Hexachloroet	0.671	0.558	0.547	0.510	0.506	0.546	0.572	0.576	0.561	9.15
24) I Naphthalene-d8					ISTD					
25) Nitrobenzene	0.432	0.395	0.407	0.384	0.375	0.404	0.456	0.429	0.410	6.61
26) Nitrobenzene	0.455	0.409	0.427	0.397	0.387	0.420	0.471	0.486	0.432	8.27
27) Quinoline	0.798	0.739	0.734	0.657	0.649	0.701	0.772	0.733	0.723	7.19
28) Isophorone	0.814	0.717	0.725	0.659	0.636	0.693	0.817	0.763	0.728	9.15
29) 2-Nitropheno	0.180	0.170	0.199	0.190	0.185	0.197	0.224	0.145	0.186	12.36
30) 2,4-Dimethyl	0.225	0.281	0.321	0.333	0.333	0.330	0.319	0.250	0.299	14.02
31) Benzoic acid		0.184	0.243	0.272	0.281	0.262	0.231		0.246	14.39
32) bis(2-Chloro	0.492	0.429	0.441	0.400	0.395	0.416	0.477	0.428	0.435	7.93
33) 2,4-Dichloro	0.273	0.266	0.297	0.280	0.281	0.301	0.330	0.222	0.281	11.09
34) 2,6-Dichloro	0.319	0.293	0.293	0.273	0.265	0.290	0.323	0.283	0.292	6.94
35) 1,3,5-Trichl	0.445	0.374	0.366	0.322	0.314	0.340	0.386	0.397	0.368	11.67
36) 1,2,4-Trichl	0.418	0.364	0.353	0.319	0.311	0.337	0.386	0.387	0.359	10.19
37) 1,2,3-Trichl	0.404	0.358	0.335	0.295	0.290	0.317	0.362	0.391	0.344	12.29
38) Naphthalene	1.366	1.186	1.143	1.023	0.992	1.105	1.261	1.284	1.170	11.10
39) 4-Chloroanil	0.477	0.445	0.435	0.393	0.374	0.414	0.494	0.429	0.432	9.27
40) 2,3-Dichloro	0.434	0.357	0.355	0.314	0.309	0.342	0.385	0.395	0.361	11.60
41) Caprolactam	0.151	0.148	0.158	0.151	0.152	0.164	0.163	0.152	0.155	3.87
42) Hexachlorobu	0.214	0.197	0.186	0.163	0.162	0.178	0.198	0.201	0.188	9.88
43) 4-Chloro-3-m	0.340	0.308	0.312	0.297	0.293	0.311	0.351	0.297	0.314	6.72
44) 2-Methylnaph	0.700	0.613	0.617	0.545	0.533	0.586	0.666	0.663	0.615	9.65
45) 1-Methylnaph	0.851	0.705	0.706	0.631	0.620	0.689	0.769	0.802	0.721	11.19

Initial Calibration Summary

Job Number: JB30306 **Sample:** EF5067-ICC5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20378.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

46)	Dimethylnaph	0.723	0.640	0.622	0.547	0.534	0.590	0.677	0.634	0.621	10.20
47)	I Acenaphthene-d10	----------ISTD----------									
48)	Hexachlorocy	0.308	0.277	0.329	0.328	0.322	0.343	0.348	0.271	0.316	9.04
49)	2,4,6-Trichl	0.424	0.366	0.372	0.348	0.336	0.366	0.393	0.371	0.372	7.26
50)	2,4,5-Trichl	0.420	0.402	0.408	0.391	0.389	0.416	0.432	0.375	0.404	4.59
51)	2-Fluorobiph	1.618	1.417	1.370	1.208	1.178	1.291	1.405	1.516	1.376	10.82
52)	2-Chloronaph	1.460	1.250	1.206	1.050	1.007	1.124	1.225	1.411	1.217	13.11
53)	Biphenyl	1.902	1.658	1.541	1.357	1.269	1.455	1.584	1.733	1.562	13.12
54)	2-Nitroanili	0.316	0.328	0.367	0.328	0.319	0.350	0.376	0.320	0.338	6.88
55)	Dimethylphth	1.538	1.328	1.297	1.185	1.147	1.263	1.365	1.510	1.329	10.52
56)	Acenaphthyle	2.188	1.960	1.989	1.789	1.696	1.881	2.070	2.093	1.958	8.36
57)	2,6-Dinitrot	0.246	0.235	0.278	0.272	0.266	0.280	0.298	0.214	0.261	10.48
58)	3-Nitroanili	0.331	0.307	0.347	0.331	0.324	0.339	0.369	0.285	0.329	7.66
59)	Acenaphthene	1.495	1.291	1.251	1.125	1.084	1.187	1.311	1.484	1.278	11.86
60)	2,4-Dinitrop			0.108	0.145	0.148	0.140	0.138		0.136	11.76
61)	4-Nitropheno	0.125	0.129	0.161	0.159	0.162	0.160	0.148		0.149	10.71
62)	Dibenzofuran	1.993	1.688	1.638	1.444	1.398	1.538	1.708	1.862	1.659	12.17
63)	2,4-Dinitrot	0.312	0.319	0.384	0.374	0.371	0.391	0.421	0.256	0.353	15.17
64)	2,3,4,6-Tetr	0.275	0.268	0.304	0.300	0.296	0.316	0.335	0.222	0.290	11.93
65)	Diethylphtha	1.516	1.315	1.286	1.152	1.135	1.227	1.344	1.527	1.313	11.30
66)	Fluorene	1.564	1.397	1.387	1.238	1.192	1.323	1.444	1.468	1.377	8.89
67)	4-Chlorophen	0.805	0.678	0.655	0.582	0.572	0.624	0.686	0.733	0.667	11.64
68)	4-Nitroanili	0.272	0.300	0.346	0.329	0.327	0.345	0.368	0.248	0.317	12.85
69)	I Phenanthrene-d10	----------ISTD----------									
70)	4,6-Dinitro-			0.106	0.133	0.134	0.126	0.138		0.128	9.98
71)	n-Nitrosodip	0.682	0.613	0.582	0.540	0.526	0.575	0.648	0.595	0.595	8.77
72)	1,2-Diphenyl	1.038	0.882	0.873	0.796	0.766	0.845	0.944	0.912	0.882	9.73
73)	2,4,6-Tribro	0.086	0.081	0.094	0.091	0.090	0.093	0.105	0.072	0.089	10.94
74)	4-Bromopheny	0.239	0.211	0.203	0.191	0.186	0.199	0.222	0.231	0.210	9.16
75)	Hexachlorobe	0.266	0.224	0.212	0.189	0.188	0.206	0.227	0.250	0.220	12.61
76)	Pentachlorop	0.094	0.100	0.132	0.136	0.136	0.140	0.151		0.127	16.86
77)	Phenanthrene	1.517	1.304	1.213	1.082	1.047	1.168	1.317	1.531	1.272	14.29
78)	Anthracene	1.413	1.262	1.220	1.084	1.047	1.170	1.335	1.372	1.238	10.73
79)	Carbazole	1.189	1.072	1.081	0.971	0.938	1.051	1.168	1.190	1.083	8.88
80)	Di-n-butylph	1.324	1.267	1.263	1.157	1.117	1.253	1.392	1.716	1.311	14.12
81)	Fluoranthene	1.395	1.238	1.248	1.123	1.072	1.220	1.356	1.401	1.256	9.68
82)	Octadecane	0.570	0.475	0.506	0.457	0.440	0.496	0.545	0.570	0.507	9.88
83)	I Chrysene-d12	----------ISTD----------									
84)	Pyrene	1.582	1.350	1.340	1.184	1.130	1.225	1.426	1.553	1.349	12.30
85)	Terphenyl-d1	1.003	0.865	0.860	0.778	0.750	0.803	0.945	0.952	0.870	10.43
86)	Butylbenzylp	0.553	0.493	0.560	0.533	0.520	0.548	0.632	0.515	0.544	7.70
87)	Butyl steara	0.272	0.331	0.309	0.313	0.303	0.330	0.357		0.316	8.37
88)	Benzo[a]anth	1.369	1.177	1.177	1.045	0.996	1.101	1.273	1.411	1.194	12.44
89)	3,3'-Dichlor	0.377	0.347	0.411	0.380	0.365	0.389	0.448	0.308	0.378	11.02
90)	Chrysene	1.426	1.179	1.160	0.996	0.959	1.048	1.238	1.429	1.179	15.24
91)	bis(2-Ethylh	0.694	0.680	0.781	0.735	0.716	0.762	0.877	0.657	0.738	9.45
92)	I Perylene-d12	----------ISTD----------									
93)	Di-n-octylph	1.121	1.143	1.460	1.435	1.416	1.523	1.567	1.047	1.339	15.12
94)	Benzo[b]fluo	1.418	1.300	1.263	1.169	1.164	1.287	1.258	1.255	1.264	6.33
95)	Benzo[k]fluo	1.493	1.268	1.358	1.176	1.122	1.243	1.387	1.659	1.338	13.13
96)	Benzo[a]pyre	1.179	1.076	1.208	1.092	1.075	1.166	1.245	1.102	1.143	5.69
97)	Indeno[1,2,3	1.296	1.166	1.317	1.226	1.200	1.290	1.342	1.054	1.236	7.73
98)	Dibenz(a,h)a	0.787	0.778	0.922	0.888	0.875	0.920	0.943	0.707	0.852	9.95
99)	Dibenz[a,h]a	1.050	0.991	1.110	1.042	1.017	1.101	1.137	0.862	1.039	8.36
100)	7,12-Dimethy	0.459	0.468	0.576	0.541	0.533	0.567	0.475	0.630	0.531	11.40
101)	Benzo[g,h,i]	1.161	1.036	1.122	1.045	1.028	1.096	1.132	0.991	1.076	5.55

Initial Calibration Summary

Job Number: JB30306 **Sample:** EF5067-ICC5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20378.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

          MFAP5067.M        Tue Feb 12 13:08:41 2013   RT1
```

Initial Calibration Summary

Job Number: JB30306 **Sample:** EF5068-ICC5068
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20387.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                          Response Factor Report  MSF

  Method       : C:\MSDCHEM\1\METHODS\MFAP5067.M (RTE Integrator)
  Title        : Semi Volatile Extractables by GC/MS
  Last Update  : Tue Feb 12 16:42:40 2013
  Response via : Initial Calibration

  Calibration Files
  2   =F20394.D    5   =F20393.D    25  =F20391.D    80  =F20390.D
  100 =F20389.D    50  =F20387.D    10  =F20392.D    1   =F20388.D

   Compound         2     5     25    80    100   50    10    1     Avg %RSD
  ---------------------------------------------------------------------------
159) I   1,4-Dichlorobenzene-d ----------------ISTD---------------------
160) Benzaldehyde 1.188 1.141 1.131 1.043 0.874 1.166 1.183 1.159 1.111   9.56

161) I   Naphthalene-d8       ----------------ISTD---------------------
162) Hydroquinone       0.236 0.321 0.384 0.366 0.384 0.280       0.329  18.44


170) I   Acenaphthene-d10     ----------------ISTD---------------------
171) 1,2,4,5-Tetr 0.604 0.580 0.562 0.545 0.543 0.567 0.583 0.601 0.573   4.03

173)     Phenanthrene-d10     ----------------ISTD---------------------
174) Atrazine     0.178 0.169 0.193 0.207 0.202 0.215 0.194 0.142 0.187  12.72

175) I   Chrysene-d12         ----------------ISTD---------------------
176) Benzidine          0.578 0.497 0.486 0.431 0.647 0.690       0.555  18.19


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

           MFAP5067.M        Tue Feb 12 16:43:24 2013   RT1
```

8.7.15

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5068
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20396A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20396A.D          Vial: 11
Acq On    : 12 Feb 2013   5:09 pm                   Operator: ninap
Sample    : icv5068-50                              Inst    : MSF
Misc      : op63302,ef5068,bn#1 2nd source          Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	105	0.00	4.91
104 I	Naphthalene-d8a	1.000	1.000	0.0	107	0.13	6.71
106 I	Acenaphthene-d10a	1.000	1.000	0.0	99	0.09	9.48
107 t	1,2,4,5-Tetrachlorobenzen	0.573	0.559	2.4	97	0.00	8.13
108	Phenanthrene-d10a	1.000	1.000	0.0	94	0.06	11.78
110 I	Chrysene-d12a	1.000	1.000	0.0	88	0.04	14.97

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Wed Feb 13 11:46:45 2013 RT1

8.7.16

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20396.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20396.D            Vial: 11
Acq On    : 12 Feb 2013   5:09 pm                    Operator: ninap
Sample    : icv5067-50                               Inst    : MSF
Misc      : op63302,ef5068,bn#1 2nd source           Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	105	0.00	4.91
3	t	Pyridine	1.845	1.941	-5.2	111	0.00	2.41
4	t	N-Nitrosodimethylamine	0.731	0.695	4.9	106	0.00	2.38
11	t	bis(2-Chloroethyl)ether	1.519	1.509	0.7	109	0.00	4.60
14	t	1,3-Dichlorobenzene	1.767	1.691	4.3	104	0.00	4.86
15	t	1,4-Dichlorobenzene	1.780	1.675	5.9	102	0.00	4.93
16	t	Benzyl alcohol	0.960	0.934	2.7	94	0.00	5.10
17	t	1,2-Dichlorobenzene	1.657	1.590	4.0	104	0.00	5.17
20	t	2,2'-oxybis(1-Chloropropa	0.491	0.465	5.3	102	0.00	5.32
22		n-Nitroso-di-n-propylamin	1.087	1.005	7.5	96	0.00	5.51
23	t	Hexachloroethane	0.564	0.550	2.5	102	0.00	5.60
24	I	Naphthalene-d8	1.000	1.000	0.0	107	0.00	6.71
26	t	Nitrobenzene	0.437	0.419	4.1	97	0.00	5.71
28	t	Isophorone	0.737	0.738	-0.1	103	-0.01	6.05
32	t	bis(2-Chloroethoxy)methan	0.440	0.452	-2.7	106	0.00	6.39
36	t	1,2,4-Trichlorobenzene	0.364	0.355	2.5	102	0.00	6.65
38	t	Naphthalene	1.184	1.128	4.7	99	0.00	6.74
42	t	Hexachlorobutadiene	0.190	0.190	0.0	104	0.00	7.03
44	t	2-Methylnaphthalene	0.623	0.608	2.4	101	0.00	7.81
47	I	Acenaphthene-d10	1.000	1.000	0.0	99	0.00	9.48
48	t	Hexachlorocyclopentadiene	0.318	0.296	6.9	80	0.00	8.18
52	t	2-Chloronaphthalene	1.224	1.174	4.1	98	0.00	8.56
54	t	2-Nitroaniline	0.340	0.326	4.1	87	0.00	8.79
55	t	Dimethylphthalate	1.337	1.239	7.3	92	0.00	9.15
56	t	Acenaphthylene	1.970	1.711	13.1	85	0.00	9.23

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20396.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

57	t	2,6-Dinitrotoluene	0.263	0.265	-0.8	89	0.00	9.25
58	t	3-Nitroaniline	0.331	0.282	14.8	78	0.00	9.45
59	t	Acenaphthene	1.286	1.194	7.2	94	0.00	9.53
62	t	Dibenzofuran	1.669	1.584	5.1	97	0.00	9.78
63	t	2,4-Dinitrotoluene	0.356	0.330	7.3	79	0.00	9.86
65	t	Diethylphthalate	1.321	1.212	8.3	93	-0.01	10.29
66	t	Fluorene	1.385	1.323	4.5	94	0.00	10.33
67	t	4-Chlorophenyl-phenylethe	0.671	0.644	4.0	97	0.00	10.36
68	t	4-Nitroaniline	0.319	0.303	5.0	82	-0.01	10.44
69	I	Phenanthrene-d10	1.000	1.000	0.0	94	0.00	11.78
71	t	n-Nitrosodiphenylamine	0.599	0.561	6.3	87	0.00	10.56
72	t	1,2-Diphenylhydrazine	0.888	0.891	-0.3	94	0.00	10.61
74	t	4-Bromophenyl-phenylether	0.212	0.212	0.0	95	0.00	11.13
75	t	Hexachlorobenzene	0.222	0.209	5.9	90	0.00	11.34
77	t	Phenanthrene	1.281	1.204	6.0	92	0.00	11.81
78	t	Anthracene	1.246	1.219	2.2	93	0.00	11.88
79	t	Carbazole	1.090	1.009	7.4	86	0.00	12.12
80	t	Di-n-butylphthalate	1.320	1.231	6.7	88	0.00	12.70
81	t	Fluoranthene	1.265	1.177	7.0	86	0.00	13.36
83	I	Chrysene-d12	1.000	1.000	0.0	88	0.00	14.97
84	t	Pyrene	1.361	1.305	4.1	87	0.00	13.63
86	t	Butylbenzylphthalate	0.550	0.539	2.0	80	0.00	14.41
88	t	Benzo[a]anthracene	1.205	1.109	8.0	82	0.00	14.95
90	t	Chrysene	1.190	1.120	5.9	87	0.00	14.99
91	t	bis(2-Ethylhexyl)phthalat	0.746	0.754	-1.1	80	0.00	15.04
92	I	Perylene-d12	1.000	1.000	0.0	79	0.00	16.48
93	t	Di-n-octylphthalate	1.339	1.510	-12.8	78	0.00	15.63
94	t	Benzo[b]fluoranthene	1.264	1.241	1.8	76	0.00	16.06
95	t	Benzo[k]fluoranthene	1.338	1.276	4.6	81	0.00	16.08
96	t	Benzo[a]pyrene	1.143	1.141	0.2	77	0.00	16.41
97	t	Indeno[1,2,3-cd]pyrene	1.236	1.248	-1.0	77	-0.01	17.90
99	t	Dibenz[a,h]anthracene	1.039	1.043	-0.4	75	-0.01	17.91
101	t	Benzo[g,h,i]perylene	1.076	1.084	-0.7	78	-0.01	18.31

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Wed Feb 13 11:45:55 2013 RT1

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5068
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20397A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20397A.D          Vial: 12
Acq On    : 12 Feb 2013   5:36 pm                   Operator: ninap
Sample    : icv5068-50                              Inst    : MSF
Misc      : op63302,ef5068,bn#2 2nd source          Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	112	0.00	4.91
103	t	Benzaldehyde	1.111	1.185	-6.7	114	0.00	4.37
104	I	Naphthalene-d8a	1.000	1.000	0.0	111	0.13	6.71
106	I	Acenaphthene-d10a	1.000	1.000	0.0	108	0.08	9.47
108		Phenanthrene-d10a	1.000	1.000	0.0	106	0.06	11.78
109	t	Atrazine	0.187	0.200	-7.0	98	0.00	11.47
110	I	Chrysene-d12a	1.000	1.000	0.0	95	0.03	14.96

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Wed Feb 13 11:50:05 2013 RT1

8.7.18

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20397.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20397.D            Vial: 12
Acq On    : 12 Feb 2013   5:36 pm                     Operator: ninap
Sample    : icv5067-50                                Inst    : MSF
Misc      : op63302,ef5068,bn#2 2nd source            Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	112	0.00	4.91
2	t	1,4-Dioxane	0.710	0.682	3.9	110	0.00	2.17
6	t	Indene	2.494	2.463	1.2	114	0.00	5.28
7	t	Cumene	3.608	3.463	4.0	111	0.00	4.00
13	t	Decane	1.503	1.321	12.1	105	0.00	4.72
18	t	Acetophenone	1.935	1.785	7.8	103	0.00	5.47
24	I	Naphthalene-d8	1.000	1.000	0.0	111	0.00	6.71
27	t	Quinoline	0.732	0.725	1.0	104	-0.01	7.25
40	t	2,3-Dichloroaniline	0.366	0.311	15.0	92	0.00	8.30
41	t	Caprolactam	0.157	0.145	7.6	89	-0.03	7.32
45	t	1-Methylnaphthalene	0.730	0.704	3.6	103	0.00	7.97
46	t	Dimethylnaphthalene	0.628	0.628	0.0	107	0.00	8.80
47	I	Acenaphthene-d10	1.000	1.000	0.0	108	0.00	9.47
53	t	Biphenyl	1.572	1.509	4.0	106	0.00	8.56
69	I	Phenanthrene-d10	1.000	1.000	0.0	106	0.00	11.78
82	t	Octadecane	0.511	0.492	3.7	99	0.00	11.70
83	I	Chrysene-d12	1.000	1.000	0.0	95	0.00	14.96
92	I	Perylene-d12	1.000	1.000	0.0	87	0.00	16.48
100	t	7,12-Dimethylbenz(a)anthr	0.531	0.585	-10.2	89	0.00	16.07

```
(#) = Out of Range                SPCC's out = 0  CCC's out = 0
 F20387.D   MF5067.M         Wed Feb 13 11:49:15 2013   RT1
```

8.7.19

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20398.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20398.D            Vial: 13
Acq On    : 12 Feb 2013   6:02 pm                    Operator: ninap
Sample    : icv5067-50                               Inst    : MSF
Misc      : op63302,ef5068,abn surr 2nd source       Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	106	0.00	4.91
5	S	2-Fluorophenol	1.555	1.373	11.7	93	0.00	3.46
8	S	Phenol-d5	1.940	1.663	14.3	89	-0.01	4.47
24	I	Naphthalene-d8	1.000	1.000	0.0	105	0.00	6.71
25	S	Nitrobenzene-d5	0.415	0.395	4.8	93	0.00	5.69
47	I	Acenaphthene-d10	1.000	1.000	0.0	99	0.00	9.48
51	S	2-Fluorobiphenyl	1.384	1.307	5.6	95	0.00	8.43
69	I	Phenanthrene-d10	1.000	1.000	0.0	96	0.00	11.78
73	S	2,4,6-Tribromophenol	0.090	0.086	4.4	83	0.00	10.75
83	I	Chrysene-d12	1.000	1.000	0.0	85	0.00	14.96
85	S	Terphenyl-d14	0.878	0.906	-3.2	89	0.00	13.83
92	I	Perylene-d12	1.000	1.000	0.0	78	0.00	16.48

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Wed Feb 13 11:50:55 2013 RT1

8.7.20

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20399.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20399.D            Vial: 14
Acq On    : 12 Feb 2013   6:28 pm                    Operator: ninap
Sample    : icv5067-50                               Inst    : MSF
Misc      : op63302,ef5068,aniline  3rd source       Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	134	0.00	4.91
10	t	Aniline	2.114	2.096	0.9	160	0.00	4.54
24	I	Naphthalene-d8	1.000	1.000	0.0	143	0.00	6.71
39	t	4-Chloroaniline	0.438	0.405	7.5	127	0.00	6.86
47	I	Acenaphthene-d10	1.000	1.000	0.0	134	0.00	9.48
69	I	Phenanthrene-d10	1.000	1.000	0.0	132	0.00	11.78
83	I	Chrysene-d12	1.000	1.000	0.0	122	0.00	14.97
92	I	Perylene-d12	1.000	1.000	0.0	115	0.00	16.48

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 F20387.D   MF5067.M         Wed Feb 13 11:51:45 2013   RT1
```

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5068
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20400.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20400.D            Vial: 15
Acq On    : 12 Feb 2013   6:56 pm                    Operator: ninap
Sample    : icv5068-50                               Inst    : MSF
Misc      : op63302,ef5068,HQ  2nd source            Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	99	0.00	4.91
104	I	Naphthalene-d8a	1.000	1.000	0.0	97	0.13	6.71
105	t	Hydroquinone	0.329	0.351	-6.7	88	0.00	7.39
106	I	Acenaphthene-d10a	1.000	1.000	0.0	94	0.09	9.48
108		Phenanthrene-d10a	1.000	1.000	0.0	93	0.06	11.78
110	I	Chrysene-d12a	1.000	1.000	0.0	84	0.03	14.96

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Wed Feb 13 11:52:35 2013 RT1

8.7.22

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5068
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20401A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20401A.D          Vial: 16
Acq On    : 12 Feb 2013   7:23 pm                   Operator: ninap
Sample    : icv5068-50                              Inst    : MSF
Misc      : op63302,ef5068,bezidine  3rd source     Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	127	0.00	4.91
104	I	Naphthalene-d8a	1.000	1.000	0.0	124	0.13	6.71
106	I	Acenaphthene-d10a	1.000	1.000	0.0	120	0.08	9.47
108		Phenanthrene-d10a	1.000	1.000	0.0	120	0.06	11.78
110	I	Chrysene-d12a	1.000	1.000	0.0	117	0.04	14.97
111	t	Benzidine	0.555	0.679	-22.3	122	0.00	13.54

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Wed Feb 13 11:55:55 2013 RT1

8.7.23

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5068-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20401.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5068\F20401.D            Vial: 16
Acq On    : 12 Feb 2013   7:23 pm                    Operator: ninap
Sample    : icv5067-50                               Inst    : MSF
Misc      : op63302,ef5068,bezidine  3rd source      Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	127	0.00	4.91
24	I	Naphthalene-d8	1.000	1.000	0.0	124	0.00	6.71
47	I	Acenaphthene-d10	1.000	1.000	0.0	120	0.00	9.47
69	I	Phenanthrene-d10	1.000	1.000	0.0	120	0.00	11.78
83	I	Chrysene-d12	1.000	1.000	0.0	117	0.00	14.97
89	t	3,3'-Dichlorobenzidine	0.382	0.360	5.8	100	0.00	14.93
92	I	Perylene-d12	1.000	1.000	0.0	107	0.00	16.48

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 F20387.D   MF5067.M         Wed Feb 13 11:55:05 2013   RT1
```

8.7.24

8

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5073-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20446.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5073\F20446.D            Vial: 5
Acq On    : 13 Feb 2013   2:17 pm                    Operator: ninap
Sample    : icv5067-50                               Inst    : MSF
Misc      : op63302,ef5073,acid 2nd source           Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Tue Feb 12 16:42:40 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	98	0.00	4.90
9	t	Phenol	1.983	1.866	5.9	90	-0.01	4.49
12	t	2-Chlorophenol	1.519	1.392	8.4	90	0.00	4.67
19	t	2-Methylphenol	1.328	1.331	-0.2	95	0.00	5.27
21	t	3&4-Methylphenol	1.364	1.379	-1.1	89	-0.01	5.47
24	I	Naphthalene-d8	1.000	1.000	0.0	103	0.00	6.71
29	t	2-Nitrophenol	0.189	0.191	-1.1	91	0.00	6.17
30	t	2,4-Dimethylphenol	0.303	0.347	-14.5	98	0.00	6.24
31	t	Benzoic acid	0.250	0.257	-2.8	91	-0.02	6.40
33	t	2,4-Dichlorophenol	0.285	0.295	-3.5	92	0.00	6.52
34		2,6-Dichlorophenol	0.296	0.287	3.0	92	0.00	6.87
43	t	4-Chloro-3-methylphenol	0.318	0.303	4.7	91	-0.02	7.62
47	I	Acenaphthene-d10	1.000	1.000	0.0	93	0.00	9.47
49	t	2,4,6-Trichlorophenol	0.375	0.378	-0.8	92	-0.01	8.29
50	t	2,4,5-Trichlorophenol	0.407	0.415	-2.0	89	-0.01	8.35
60	t	2,4-Dinitrophenol	0.137	0.112	18.2	70	-0.01	9.61
61	t	4-Nitrophenol	0.150	0.150	0.0	83	-0.01	9.74
64		2,3,4,6-Tetrachlorophenol	0.292	0.309	-5.8	87	0.00	10.06
69	I	Phenanthrene-d10	1.000	1.000	0.0	93	0.00	11.78
70	t	4,6-Dinitro-2-methylpheno	0.129	0.125	3.1	87	-0.01	10.50
76	t	Pentachlorophenol	0.128	0.142	-10.9	90	0.00	11.61
83	I	Chrysene-d12	1.000	1.000	0.0	83	0.00	14.97
92	I	Perylene-d12	1.000	1.000	0.0	76	0.00	16.48

Initial Calibration Verification

Job Number: JB30306 **Sample:** EF5073-ICV5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F20446.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------

   (#) = Out of Range                SPCC's out = 0  CCC's out = 0
    F20387.D   MF5067.M         Wed Feb 13 15:00:55 2013   RT1
```

Continuing Calibration Summary

Job Number: JB30306 **Sample:** EF5115-CC5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F21525.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5115\F21525.D            Vial: 2
Acq On    : 15 Mar 2013   3:40 pm                    Operator: ninap
Sample    : cc5067-25                                Inst    : MSF
Misc      : op64309,ef5115,1000                      Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Mar 13 13:31:15 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	90	-0.05	4.59
2	t	1,4-Dioxane	0.710	0.607	14.5	73	-0.04	1.94
3	t	Pyridine	1.845	1.665	9.8	81	-0.04	2.17
4	t	N-Nitrosodimethylamine	0.731	0.771	-5.5	88	-0.04	2.15
5	S	2-Fluorophenol	1.555	1.490	4.2	86	-0.05	3.21
6	t	Indene	2.494	2.499	-0.2	90	-0.05	4.95
7	t	Cumene	3.608	3.559	1.4	89	-0.05	3.70
8	S	Phenol-d5	1.940	1.939	0.1	88	-0.06	4.22
9	t	Phenol	1.983	2.187	-10.3	99	-0.06	4.23
10	t	Aniline	2.114	1.829	13.5	82	-0.05	4.23
11	t	bis(2-Chloroethyl)ether	1.519	1.461	3.8	89	-0.05	4.30
12	t	2-Chlorophenol	1.519	1.511	0.5	89	-0.06	4.37
13	t	Decane	1.503	1.561	-3.9	95	-0.05	4.41
14	t	1,3-Dichlorobenzene	1.767	1.730	2.1	90	-0.05	4.54
15	t	1,4-Dichlorobenzene	1.780	1.748	1.8	90	-0.05	4.61
16	t	Benzyl alcohol	0.960	1.060	-10.4	96	-0.05	4.80
17	t	1,2-Dichlorobenzene	1.657	1.618	2.4	90	-0.05	4.85
18	t	Acetophenone	1.935	2.106	-8.8	97	-0.05	5.16
19	t	2-Methylphenol	1.328	1.427	-7.5	93	-0.06	4.99
20	t	2,2'-oxybis(1-Chloropropa	0.491	0.470	4.3	89	-0.06	5.00
21	t	3&4-Methylphenol	1.364	1.526	-11.9	95	-0.06	5.19
22		n-Nitroso-di-n-propylamin	1.087	1.156	-6.3	97	-0.05	5.19
23	t	Hexachloroethane	0.564	0.591	-4.8	97	-0.06	5.26
24	I	Naphthalene-d8	1.000	1.000	0.0	95	-0.06	6.37
25	S	Nitrobenzene-d5	0.415	0.426	-2.7	100	-0.06	5.37
26	t	Nitrobenzene	0.437	0.448	-2.5	100	-0.05	5.39
27	t	Quinoline	0.732	0.706	3.6	92	-0.06	6.92
28	t	Isophorone	0.737	0.741	-0.5	97	-0.06	5.72
29	t	2-Nitrophenol	0.189	0.209	-10.6	100	-0.05	5.85
30	t	2,4-Dimethylphenol	0.303	0.327	-7.9	97	-0.06	5.94
31	t	Benzoic acid	0.250	0.304	-21.6#	119	-0.06	6.13
32	t	bis(2-Chloroethoxy)methan	0.440	0.429	2.5	93	-0.06	6.07
33	t	2,4-Dichlorophenol	0.285	0.301	-5.6	97	-0.06	6.21
34		2,6-Dichlorophenol	0.296	0.299	-1.0	97	-0.06	6.55
35		1,3,5-Trichlorobenzene	0.372	0.358	3.8	93	-0.06	5.86
36	t	1,2,4-Trichlorobenzene	0.364	0.352	3.3	95	-0.05	6.32
37		1,2,3-Trichlorobenzene	0.348	0.334	4.0	95	-0.06	6.67
38	t	Naphthalene	1.184	1.122	5.2	94	-0.06	6.40
39	t	4-Chloroaniline	0.438	0.417	4.8	91	-0.06	6.54
40	t	2,3-Dichloroaniline	0.366	0.353	3.6	95	-0.06	7.97
41	t	Caprolactam	0.157	0.179	-14.0	109	-0.06	7.01

Continuing Calibration Summary

Job Number: JB30306 **Sample:** EF5115-CC5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F21525.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.190	0.195	-2.6	100	-0.06	6.68
43	t	4-Chloro-3-methylphenol	0.318	0.341	-7.2	104	-0.06	7.34
44	t	2-Methylnaphthalene	0.623	0.606	2.7	94	-0.06	7.46
45	t	1-Methylnaphthalene	0.730	0.682	6.6	92	-0.06	7.62
46	t	Dimethylnaphthalene	0.628	0.615	2.1	94	-0.06	8.45
47	I	Acenaphthene-d10	1.000	1.000	0.0	95	-0.06	9.12
48	t	Hexachlorocyclopentadiene	0.318	0.263	17.3	76	-0.06	7.82
49	t	2,4,6-Trichlorophenol	0.375	0.387	-3.2	99	-0.06	7.97
50	t	2,4,5-Trichlorophenol	0.407	0.409	-0.5	95	-0.06	8.05
51	S	2-Fluorobiphenyl	1.384	1.326	4.2	92	-0.05	8.08
52	t	2-Chloronaphthalene	1.224	1.230	-0.5	97	-0.06	8.21
53	t	Biphenyl	1.572	1.547	1.6	95	-0.06	8.21
54	t	2-Nitroaniline	0.340	0.434	-27.6#	112	-0.06	8.46
55	t	Dimethylphthalate	1.337	1.340	-0.2	98	-0.06	8.81
56	t	Acenaphthylene	1.970	1.968	0.1	94	-0.06	8.88
57	t	2,6-Dinitrotoluene	0.263	0.305	-16.0	104	-0.06	8.91
58	t	3-Nitroaniline	0.331	0.351	-6.0	96	-0.06	9.13
59	t	Acenaphthene	1.286	1.245	3.2	95	-0.06	9.17
60	t	2,4-Dinitrophenol	0.137	0.153	-11.7	134	-0.05	9.30
61	t	4-Nitrophenol	0.150	0.169	-12.7	100	-0.06	9.49
62	t	Dibenzofuran	1.669	1.610	3.5	93	-0.06	9.43
63	t	2,4-Dinitrotoluene	0.356	0.425	-19.4	105	-0.05	9.54
64		2,3,4,6-Tetrachlorophenol	0.292	0.311	-6.5	97	-0.06	9.73
65	t	Diethylphthalate	1.321	1.373	-3.9	101	-0.06	9.95
66	t	Fluorene	1.385	1.397	-0.9	96	-0.06	9.98
67	t	4-Chlorophenyl-phenylethe	0.671	0.670	0.1	97	-0.06	10.01
68	t	4-Nitroaniline	0.319	0.345	-8.2	95	-0.06	10.11
69	I	Phenanthrene-d10	1.000	1.000	0.0	98	-0.05	11.45
70	t	4,6-Dinitro-2-methylpheno	0.129	0.140	-8.5	129	-0.05	10.19
71	t	n-Nitrosodiphenylamine	0.599	0.584	2.5	98	-0.06	10.22
72	t	1,2-Diphenylhydrazine	0.888	0.954	-7.4	107	-0.06	10.25
73	S	2,4,6-Tribromophenol	0.090	0.100	-11.1	104	-0.06	10.40
74	t	4-Bromophenyl-phenylether	0.212	0.208	1.9	100	-0.06	10.78
75	t	Hexachlorobenzene	0.222	0.216	2.7	100	-0.05	11.00
76	t	Pentachlorophenol	0.128	0.130	-1.6	96	-0.05	11.30
77	t	Phenanthrene	1.281	1.223	4.5	99	-0.05	11.48
78	t	Anthracene	1.246	1.216	2.4	97	-0.05	11.55
79	t	Carbazole	1.090	1.072	1.7	97	-0.05	11.81
80	t	Di-n-butylphthalate	1.320	1.356	-2.7	105	-0.04	12.41
81	t	Fluoranthene	1.265	1.277	-0.9	100	-0.04	13.08
82	t	Octadecane	0.511	0.580	-13.5	112	-0.05	11.39
83	I	Chrysene-d12	1.000	1.000	0.0	102	-0.04	14.70
84	t	Pyrene	1.361	1.308	3.9	99	-0.04	13.34
85	S	Terphenyl-d14	0.878	0.848	3.4	100	-0.04	13.55
86	t	Butylbenzylphthalate	0.550	0.590	-7.3	107	-0.04	14.15
87		Butyl stearate	0.320	0.374	-16.9	123	-0.03	14.19
88	t	Benzo[a]anthracene	1.205	1.149	4.6	99	-0.03	14.68
89	t	3,3'-Dichlorobenzidine	0.382	0.411	-7.6	101	-0.04	14.67
90	t	Chrysene	1.190	1.097	7.8	96	-0.04	14.72
91	t	bis(2-Ethylhexyl)phthalat	0.746	0.829	-11.1	108	-0.03	14.78
92	I	Perylene-d12	1.000	1.000	0.0	101	-0.04	16.15
93	t	Di-n-octylphthalate	1.339	1.641	-22.6#	113	-0.03	15.38
94	t	Benzo[b]fluoranthene	1.264	1.416	-12.0	113	-0.04	15.76
95	t	Benzo[k]fluoranthene	1.338	1.135	15.2	84	-0.04	15.78
96	t	Benzo[a]pyrene	1.143	1.166	-2.0	97	-0.04	16.09
97	t	Indeno[1,2,3-cd]pyrene	1.236	1.295	-4.8	99	-0.05	17.45

Continuing Calibration Summary

Job Number: JB30306 **Sample:** EF5115-CC5067
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F21525.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

98	t	Dibenz(a,h)acridine	0.852	0.925	-8.6	101	-0.04	17.14
99	t	Dibenz[a,h]anthracene	1.039	1.103	-6.2	100	-0.05	17.45
100	t	7,12-Dimethylbenz(a)anthr	0.531	0.542	-2.1	95	-0.03	15.77
101	t	Benzo[g,h,i]perylene	1.076	1.096	-1.9	99	-0.05	17.81

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F21396.D MF5067.M Sat Mar 16 13:47:49 2013 RT1

8.7.26

8

Continuing Calibration Summary

Job Number: JB30306 **Sample:** EF5115-CC5068
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** F21526.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\MSDCHEM\1\DATA\EF5115\F21526.D          Vial: 3
Acq On    : 15 Mar 2013   4:06 pm                   Operator: ninap
Sample    : cc5068-50                               Inst    : MSF
Misc      : op64309,ef5115,1000                     Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title        : Semi Volatile Extractables by GC/MS
Last Update  : Wed Mar 13 13:31:15 2013
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  48%  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	66	-0.05	4.58
103	t	Benzaldehyde	1.111	1.203	-8.3	68	-0.06	4.07
104	I	Naphthalene-d8a	1.000	1.000	0.0	72	-0.06	6.37
105	t	Hydroquinone	0.329	0.381	-15.8	72	0.00	7.13
106	I	Acenaphthene-d10a	1.000	1.000	0.0	70	-0.06	9.12
107	t	1,2,4,5-Tetrachlorobenzen	0.573	0.574	-0.2	71	-0.10	7.78
108		Phenanthrene-d10a	1.000	1.000	0.0	72	-0.05	11.45
109	t	Atrazine	0.187	0.218	-16.6	73	-0.20	11.16
110	I	Chrysene-d12a	1.000	1.000	0.0	72	-0.04	14.70
111	t	Benzidine	0.555	0.584	-5.2	65	-0.04	13.26

(#) = Out of Range SPCC's out = 0 CCC's out = 0
F20387.D MF5067.M Sat Mar 16 13:48:39 2013 RT1

8.7.27

8

New Jersey

ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48584.D
Acq On : 15 Mar 2013 6:48 pm
Operator : olgaa
Sample : jb30306-1
Misc : op64314,e3e2102,30.8
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Mar 16 15:32:26 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

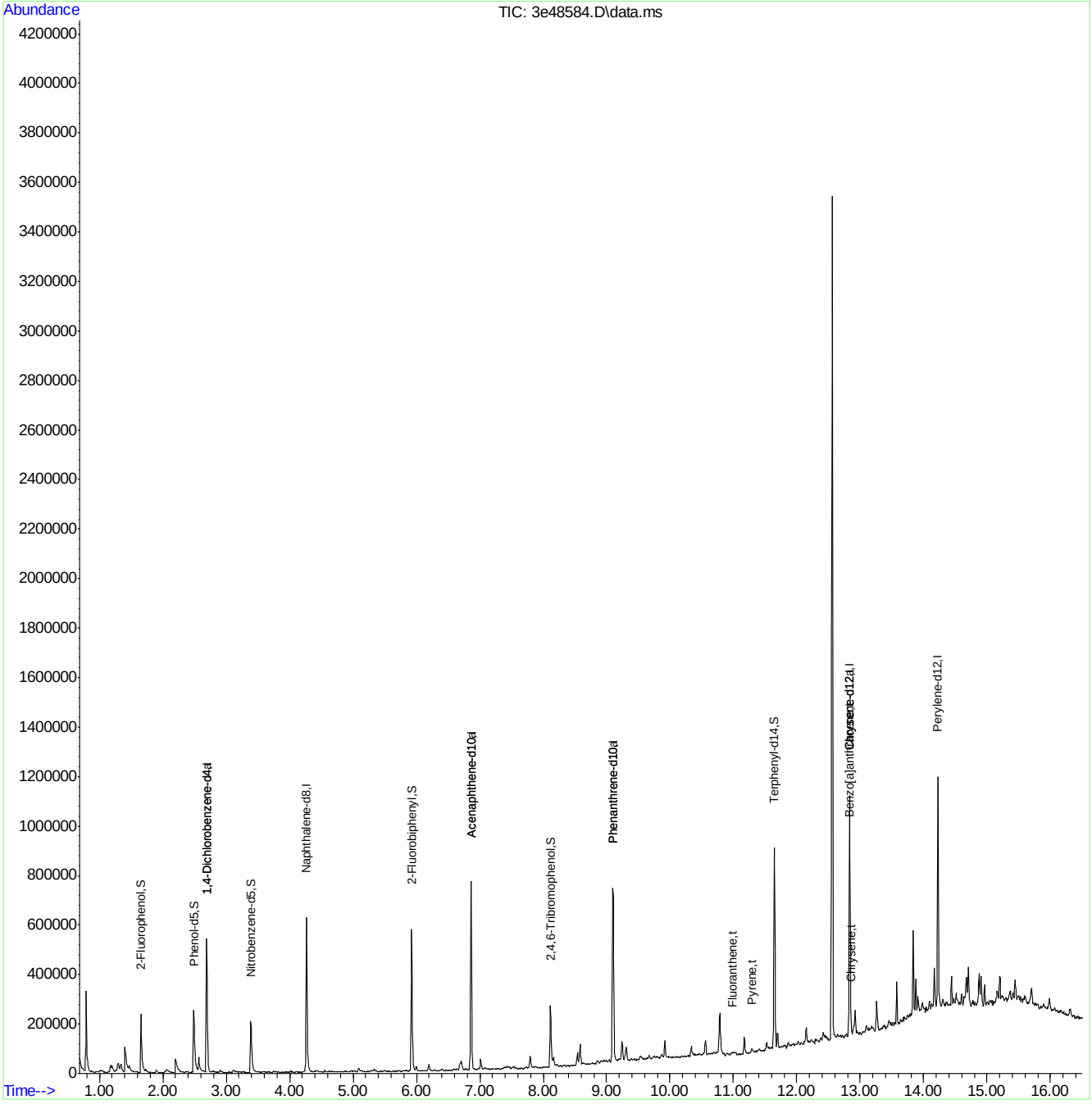
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.693	152	97780	40.00 ppb	0.00
24) Naphthalene-d8	4.265	136	394258	40.00 ppb	0.00
47) Acenaphthene-d10	6.865	164	231718	40.00 ppb	0.01
69) Phenanthrene-d10	9.100	188	398613	40.00 ppb	0.00
83) Chrysene-d12	12.834	240	395791	40.00 ppb	0.00
92) Perylene-d12	14.224	264	357365	40.00 ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.693	152	97780	40.00 ppb	0.00
104) Acenaphthene-d10a	6.865	164	231718	40.00 ppb	0.01
106) Phenanthrene-d10a	9.100	188	398613	40.00 ppb	0.00
108) Chrysene-d12a	12.834	240	395791	40.00 ppb	0.00
System Monitoring Compounds					
5) 2-Fluorophenol	1.655	112	89254	26.96 ppb	0.00
Spiked Amount 50.000			Recovery	= 53.92%	
8) Phenol-d5	2.489	99	120387	28.97 ppb	0.01
Spiked Amount 50.000			Recovery	= 57.94%	
25) Nitrobenzene-d5	3.388	82	102868	28.69 ppb	0.00
Spiked Amount 50.000			Recovery	= 57.38%	
51) 2-Fluorobiphenyl	5.929	172	237246	31.55 ppb	0.01
Spiked Amount 50.000			Recovery	= 63.10%	
73) 2,4,6-Tribromophenol	8.116	330	44829	38.81 ppb	0.01
Spiked Amount 50.000			Recovery	= 77.62%	
85) Terphenyl-d14	11.646	244	330898	38.21 ppb	0.01
Spiked Amount 50.000			Recovery	= 76.42%	
Target Compounds					Qvalue
81) Fluoranthene	10.983	202	8170	0.67 ppb	91
84) Pyrene	11.293	202	8802	0.70 ppb	94
88) Benzo[a]anthracene	12.823	228	5598	0.48 ppb	91
90) Chrysene	12.860	228	5178	0.49 ppb	88

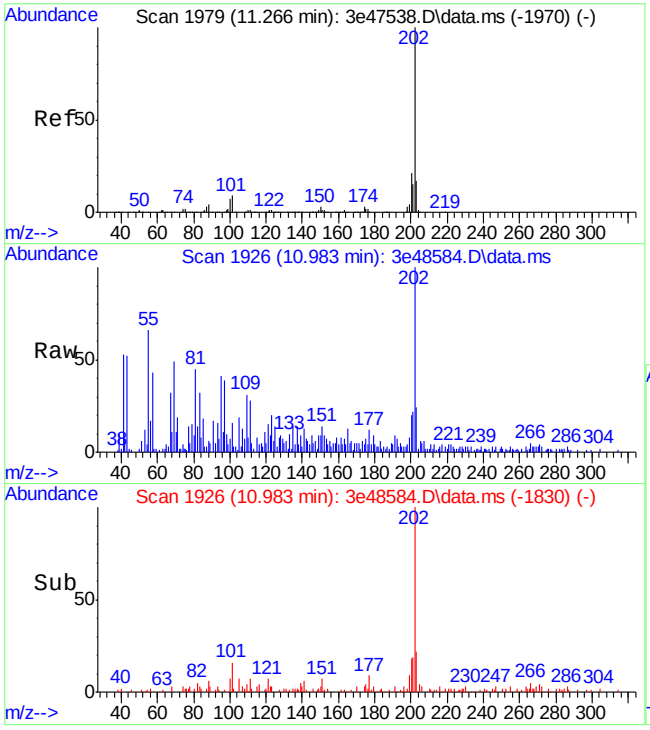
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48584.D
Acq On : 15 Mar 2013 6:48 pm
Operator : olgaa
Sample : jb30306-1
Misc : op64314,e3e2102,30.8
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Mar 16 15:32:26 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

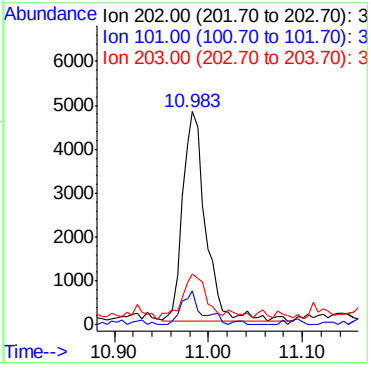


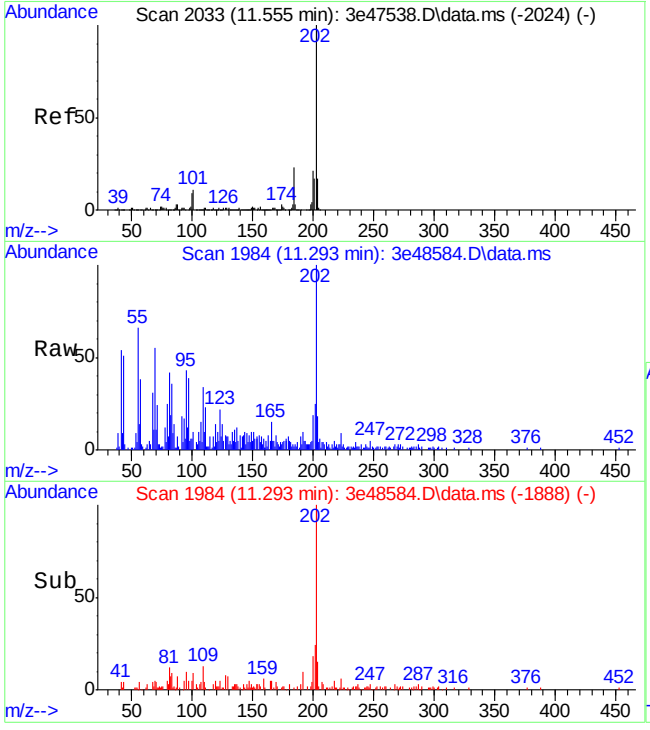


#81
Fluoranthene
Concen: 0.67 ppb
RT: 10.983 min Scan# 1926
Delta R.T. 0.016 min
Lab File: 3e48584.D
Acq: 15 Mar 2013 6:48 pm

Tgt Ion:202 Resp: 8170

Ion	Ratio	Lower	Upper
202	100		
101	15.1	0.0	39.1
203	19.8	0.0	47.3

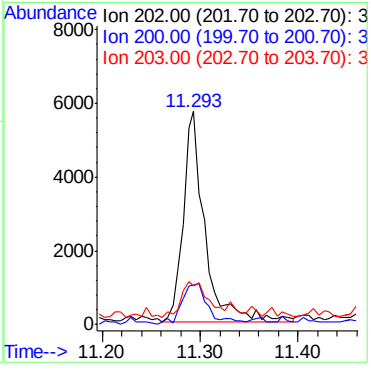


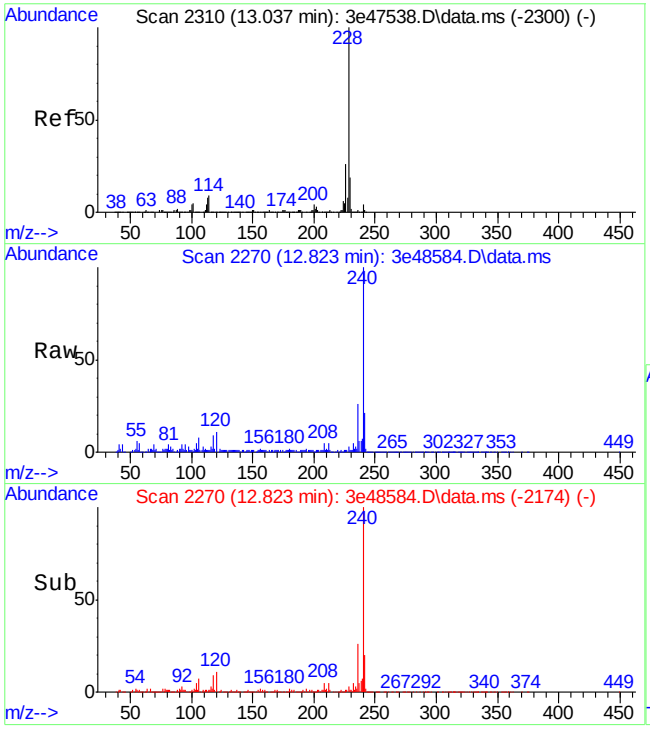


#84
Pyrene
Concen: 0.70 ppb
RT: 11.293 min Scan# 1984
Delta R.T. 0.016 min
Lab File: 3e48584.D
Acq: 15 Mar 2013 6:48 pm

Tgt Ion:202 Resp: 8802

Ion	Ratio	Lower	Upper
202	100		
200	17.9	0.0	50.6
203	14.9	0.0	47.2

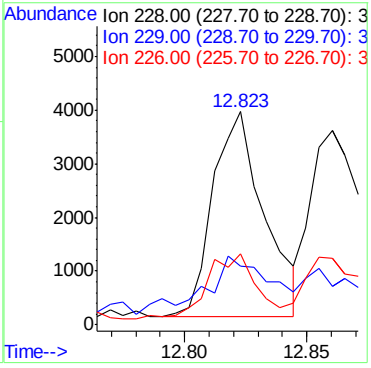


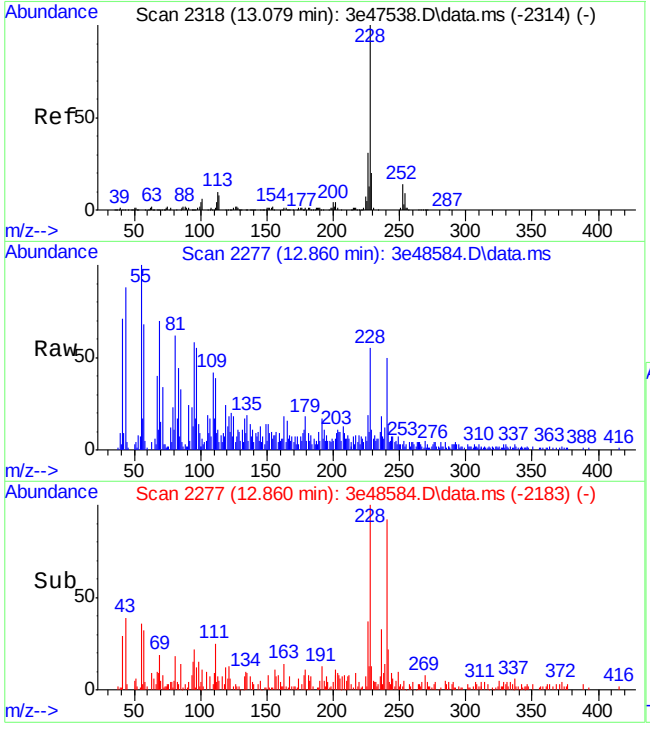


#88
Benzo[a]anthracene
Concen: 0.48 ppb
RT: 12.823 min Scan# 2270
Delta R.T. 0.016 min
Lab File: 3e48584.D
Acq: 15 Mar 2013 6:48 pm

Tgt Ion:228 Resp: 5598

Ion	Ratio	Lower	Upper
228	100		
229	15.9	0.0	49.3
226	30.9	0.0	55.8

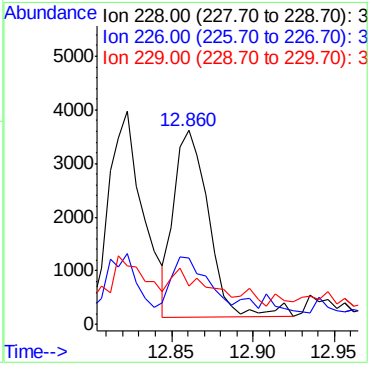




#90
Chrysene
Concen: 0.49 ppb
RT: 12.860 min Scan# 2277
Delta R.T. 0.005 min
Lab File: 3e48584.D
Acq: 15 Mar 2013 6:48 pm

Tgt Ion:228 Resp: 5178

Ion	Ratio	Lower	Upper
228	100		
226	30.0	0.6	60.6
229	6.6	0.0	50.3



9.1.1

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48585.D
Acq On : 15 Mar 2013 7:11 pm
Operator : olgaa
Sample : jb30306-2
Misc : op64314,e3e2102,32.8
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Mar 16 15:33:20 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.692	152	95709	40.00 ppb	0.00
24) Naphthalene-d8	4.265	136	389093	40.00 ppb	0.00
47) Acenaphthene-d10	6.864	164	231683	40.00 ppb	0.01
69) Phenanthrene-d10	9.100	188	405801	40.00 ppb	0.00
83) Chrysene-d12	12.833	240	413647	40.00 ppb	0.00
92) Perylene-d12	14.224	264	348810	40.00 ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.692	152	95709	40.00 ppb	0.00
104) Acenaphthene-d10a	6.864	164	231683	40.00 ppb	0.01
106) Phenanthrene-d10a	9.100	188	405801	40.00 ppb	0.00
108) Chrysene-d12a	12.833	240	413647	40.00 ppb	0.00

System Monitoring Compounds					
5) 2-Fluorophenol	1.655	112	89684	27.68 ppb	0.00
Spiked Amount 50.000			Recovery	= 55.36%	
8) Phenol-d5	2.489	99	120970	29.74 ppb	0.01
Spiked Amount 50.000			Recovery	= 59.48%	
25) Nitrobenzene-d5	3.388	82	106447	30.08 ppb	0.00
Spiked Amount 50.000			Recovery	= 60.16%	
51) 2-Fluorobiphenyl	5.928	172	228481	30.38 ppb	0.01
Spiked Amount 50.000			Recovery	= 60.76%	
73) 2,4,6-Tribromophenol	8.116	330	44270	37.64 ppb	0.01
Spiked Amount 50.000			Recovery	= 75.28%	
85) Terphenyl-d14	11.646	244	370800	40.97 ppb	0.01
Spiked Amount 50.000			Recovery	= 81.94%	

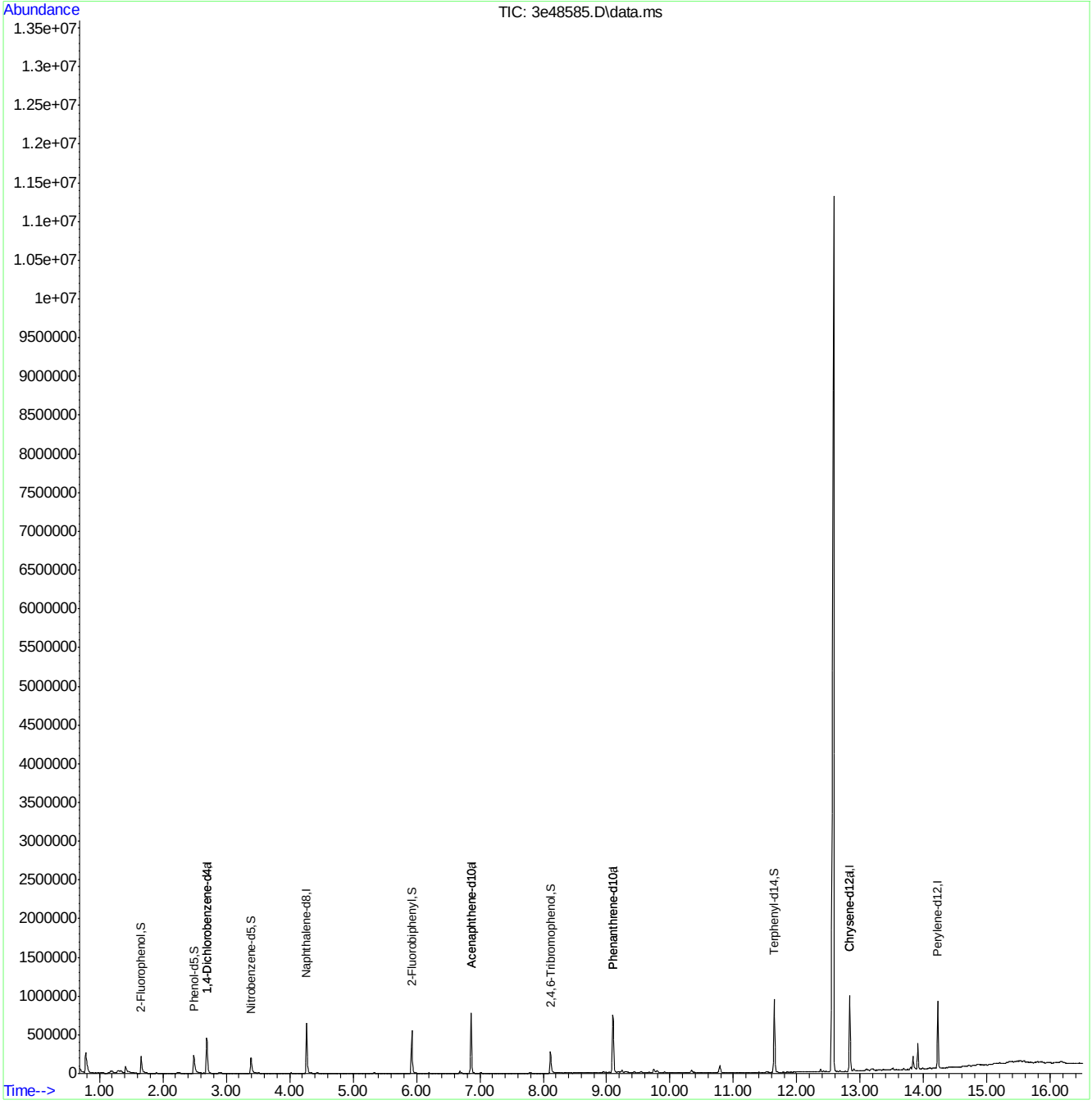
Target Compounds	Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48585.D
Acq On : 15 Mar 2013 7:11 pm
Operator : olgaa
Sample : jb30306-2
Misc : op64314,e3e2102,32.8
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Mar 16 15:33:20 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48586.D
Acq On : 15 Mar 2013 7:34 pm
Operator : olgaa
Sample : jb30306-3
Misc : op64314,e3e2102,32.6
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Mar 16 15:34:05 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.693	152	93190	40.00 ppb	0.00
24) Naphthalene-d8	4.265	136	391014	40.00 ppb	0.00
47) Acenaphthene-d10	6.859	164	239857	40.00 ppb	0.00
69) Phenanthrene-d10	9.100	188	419664	40.00 ppb	0.00
83) Chrysene-d12	12.834	240	426391	40.00 ppb	0.00
92) Perylene-d12	14.224	264	367642	40.00 ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.693	152	93190	40.00 ppb	0.00
104) Acenaphthene-d10a	6.859	164	239857	40.00 ppb	0.00
106) Phenanthrene-d10a	9.100	188	419664	40.00 ppb	0.00
108) Chrysene-d12a	12.834	240	426391	40.00 ppb	0.00

System Monitoring Compounds

5) 2-Fluorophenol	1.660	112	74607	23.65 ppb	0.00
Spiked Amount 50.000			Recovery = 47.30%		
8) Phenol-d5	2.489	99	95699	24.16 ppb	0.01
Spiked Amount 50.000			Recovery = 48.32%		
25) Nitrobenzene-d5	3.393	82	91439	25.71 ppb	0.01
Spiked Amount 50.000			Recovery = 51.42%		
51) 2-Fluorobiphenyl	5.928	172	195996	25.18 ppb	0.01
Spiked Amount 50.000			Recovery = 50.36%		
73) 2,4,6-Tribromophenol	8.116	330	36957	30.39 ppb	0.01
Spiked Amount 50.000			Recovery = 60.78%		
85) Terphenyl-d14	11.646	244	335141	35.92 ppb	0.01
Spiked Amount 50.000			Recovery = 71.84%		

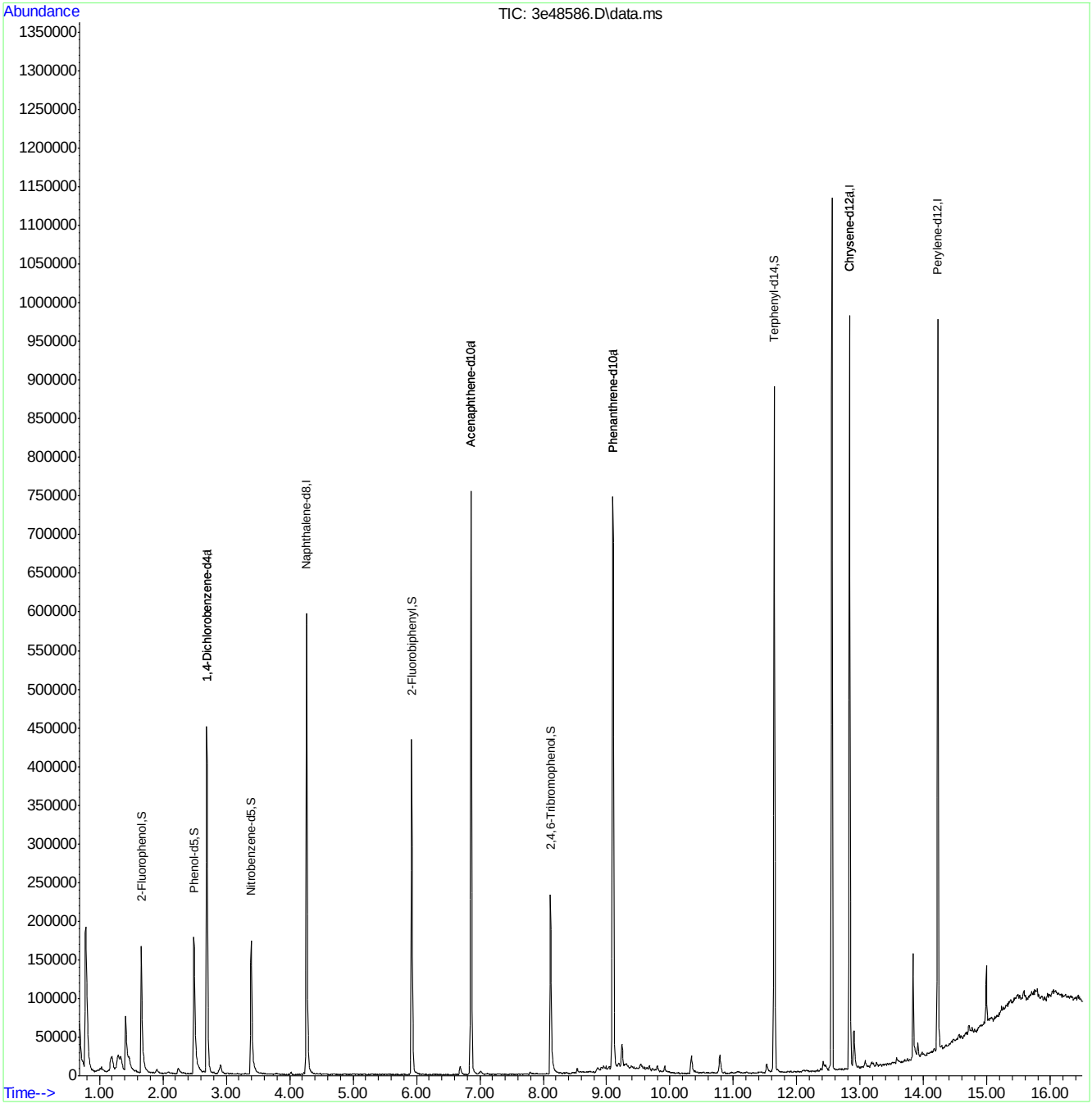
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48586.D
Acq On : 15 Mar 2013 7:34 pm
Operator : olgaa
Sample : jb30306-3
Misc : op64314,e3e2102,32.6
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Mar 16 15:34:05 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/18/13 17:52

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48587.D
Acq On : 15 Mar 2013 7:57 pm
Operator : olgaa
Sample : jb30306-4
Misc : op64314,e3e2102,33.8
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Mar 16 15:35:21 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.693	152	93510	40.00	ppb	0.00
24) Naphthalene-d8	4.265	136	396474	40.00	ppb	0.00
47) Acenaphthene-d10	6.864	164	238173	40.00	ppb	0.01
69) Phenanthrene-d10	9.100	188	413352	40.00	ppb	0.00
83) Chrysene-d12	12.834	240	417124	40.00	ppb	0.00
92) Perylene-d12	14.224	264	353479	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.693	152	93510	40.00	ppb	0.00
104) Acenaphthene-d10a	6.864	164	238173	40.00	ppb	0.01
106) Phenanthrene-d10a	9.100	188	413352	40.00	ppb	0.00
108) Chrysene-d12a	12.834	240	417124	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.655	112	90278	28.52	ppb	0.00
Spiked Amount 50.000			Recovery = 57.04%			
8) Phenol-d5	2.489	99	118163	29.73	ppb	0.01
Spiked Amount 50.000			Recovery = 59.46%			
25) Nitrobenzene-d5	3.393	82	114524	31.76	ppb	0.01
Spiked Amount 50.000			Recovery = 63.52%			
51) 2-Fluorobiphenyl	5.923	172	236341	30.57	ppb	0.00
Spiked Amount 50.000			Recovery = 61.14%			
73) 2,4,6-Tribromophenol	8.116	330	43823	36.58	ppb	0.01
Spiked Amount 50.000			Recovery = 73.16%			
85) Terphenyl-d14	11.646	244	343059	37.59	ppb	0.01
Spiked Amount 50.000			Recovery = 75.18%			

Target Compounds						Qvalue
77) Phenanthrene	9.138	178	5278	0.44	ppb	95
81) Fluoranthene	10.983	202	12789	1.01	ppb	95
84) Pyrene	11.293	202	11660	0.88	ppb	95
88) Benzo[a]anthracene	12.818	228	7375	0.60	ppb	95
90) Chrysene	12.860	228	9282	0.83	ppb	97
94) Benzo[b]fluoranthene	13.909	252	12074m	1.05	ppb	
95) Benzo[k]fluoranthene	13.919	252	4997m	0.48	ppb	
96) Benzo[a]pyrene	14.181	252	7449	0.72	ppb	93
97) Indeno[1,2,3-cd]pyrene	15.069	276	7707	0.65	ppb	95
101) Benzo[g,h,i]perylene	15.240	276	8551	0.87	ppb	100

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

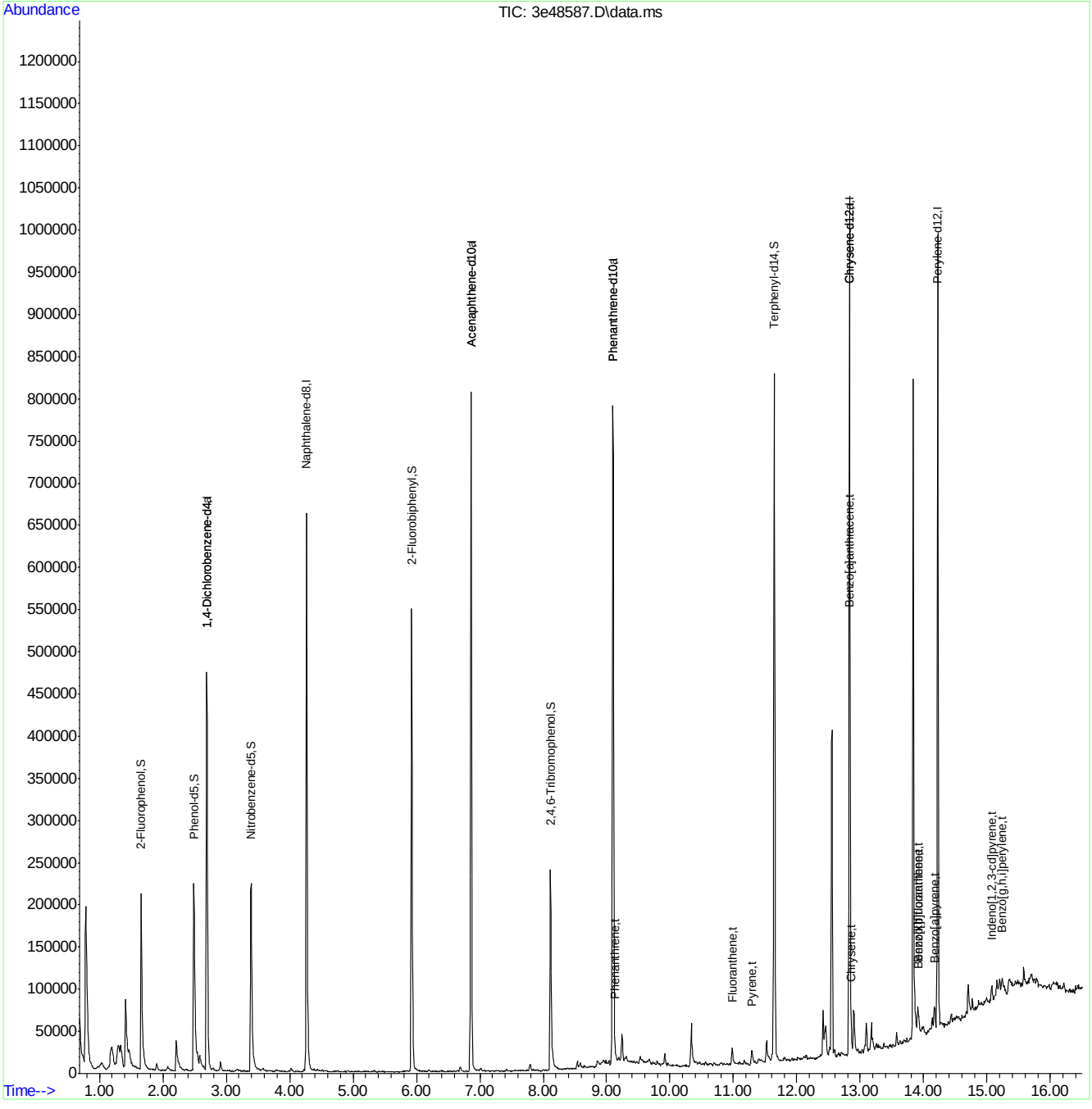
9.1.4

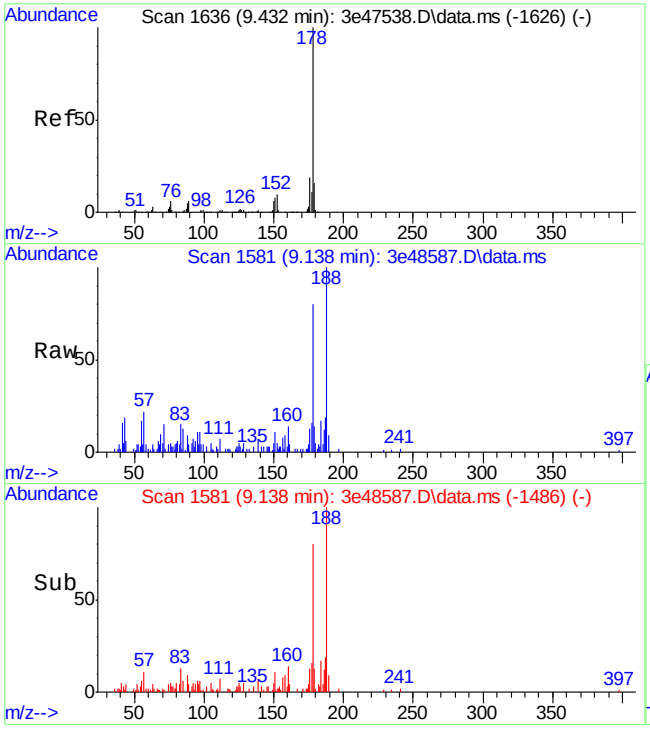
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48587.D
Acq On : 15 Mar 2013 7:57 pm
Operator : olgaa
Sample : jb30306-4
Misc : op64314,e3e2102,33.8
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Mar 16 15:35:21 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

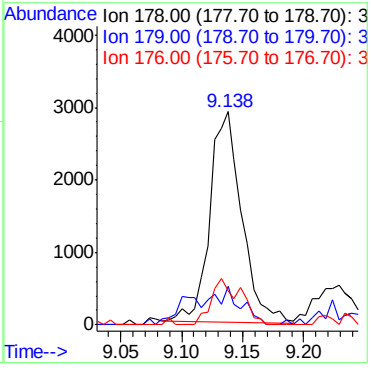


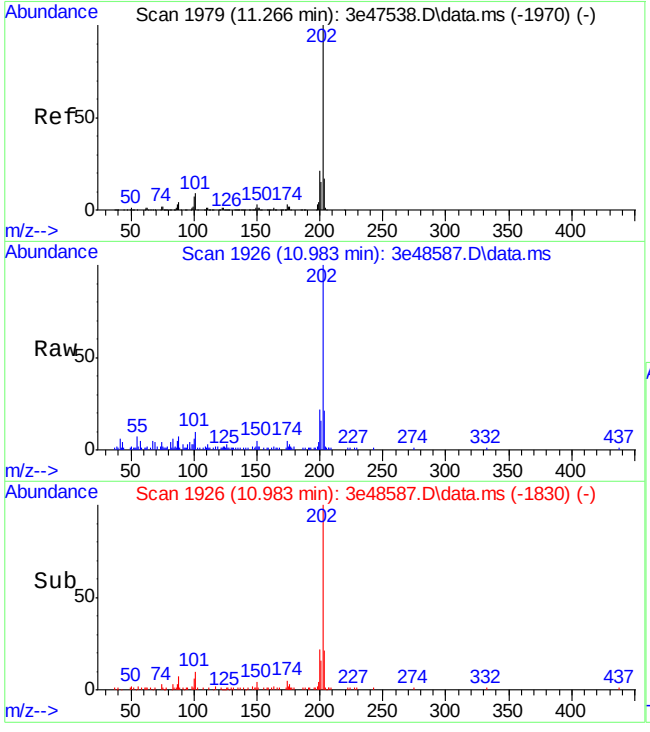


#77
Phenanthrene
Concen: 0.44 ppb
RT: 9.138 min Scan# 1581
Delta R.T. 0.011 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:178 Resp: 5278

Ion	Ratio	Lower	Upper
178	100		
179	16.7	0.0	45.7
176	16.4	0.0	49.5

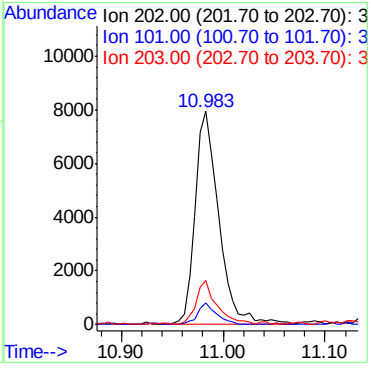


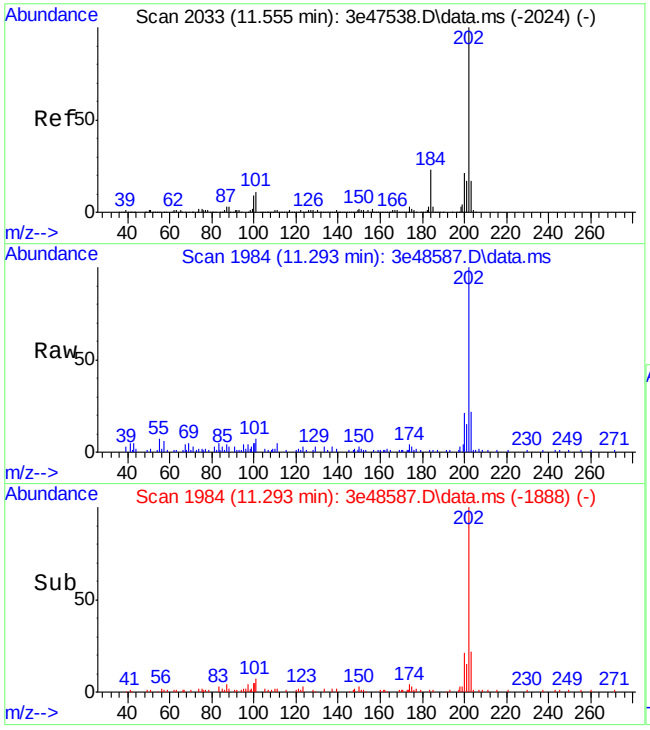


#81
Fluoranthene
Concen: 1.01 ppb
RT: 10.983 min Scan# 1926
Delta R.T. 0.016 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:202 Resp: 12789

Ion	Ratio	Lower	Upper
202	100		
101	10.2	0.0	39.1
203	19.8	0.0	47.3

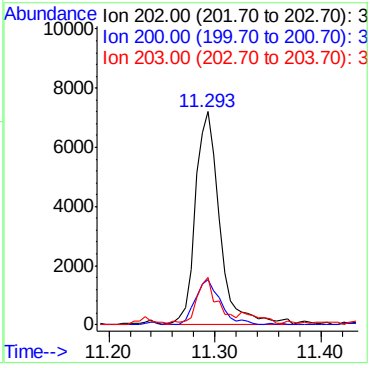


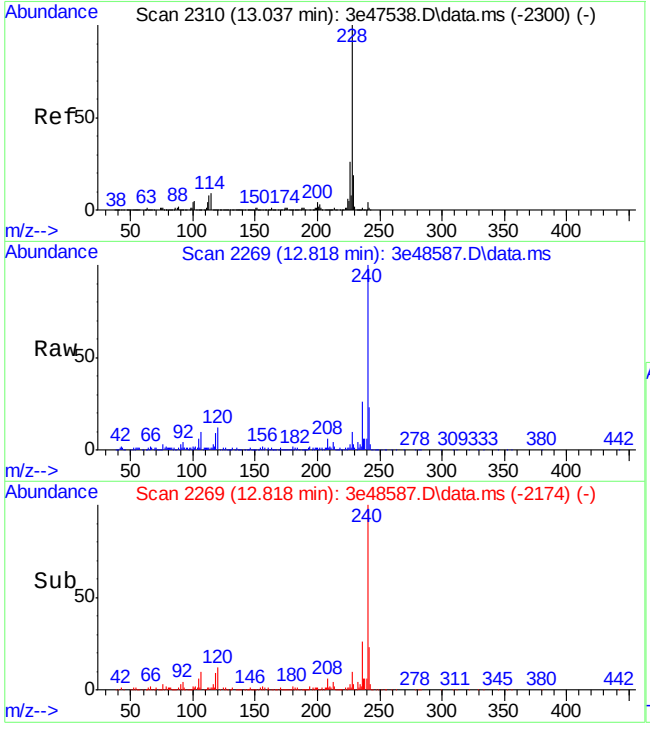


#84
Pyrene
Concen: 0.88 ppb
RT: 11.293 min Scan# 1984
Delta R.T. 0.016 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:202 Resp: 11660

Ion	Ratio	Lower	Upper
202	100		
200	21.3	0.0	50.6
203	21.2	0.0	47.2

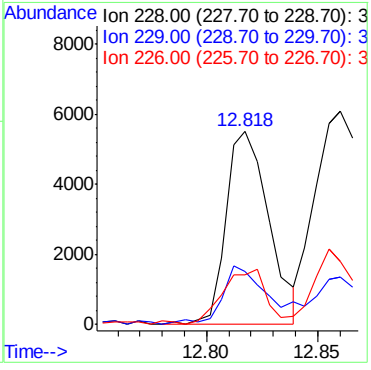


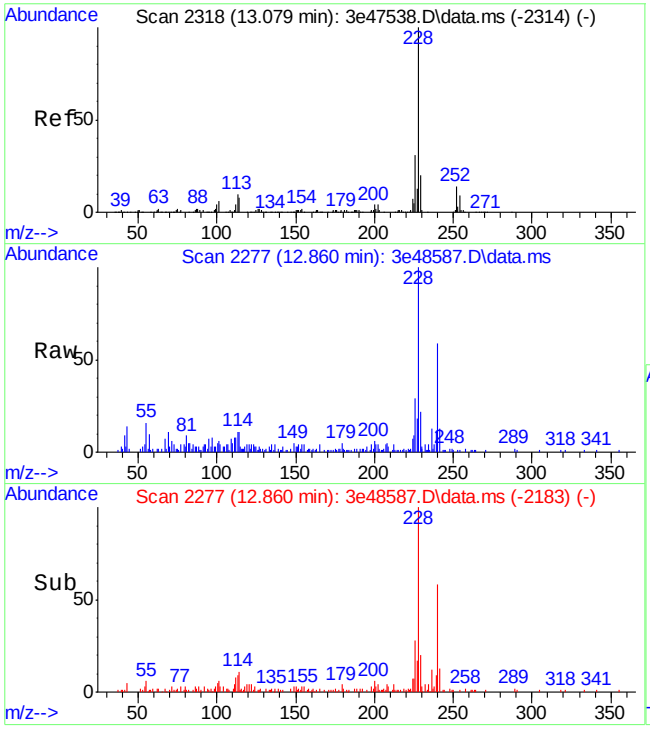


#88
Benzo[a]anthracene
Concen: 0.60 ppb
RT: 12.818 min Scan# 2269
Delta R.T. 0.011 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:228 Resp: 7375

Ion	Ratio	Lower	Upper
228	100		
229	23.9	0.0	49.3
226	24.8	0.0	55.8

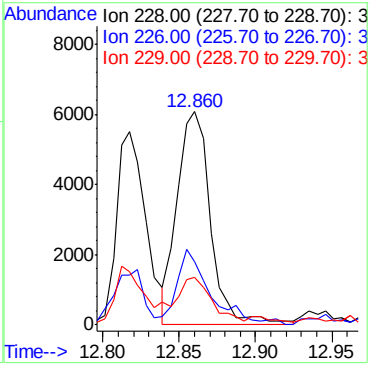


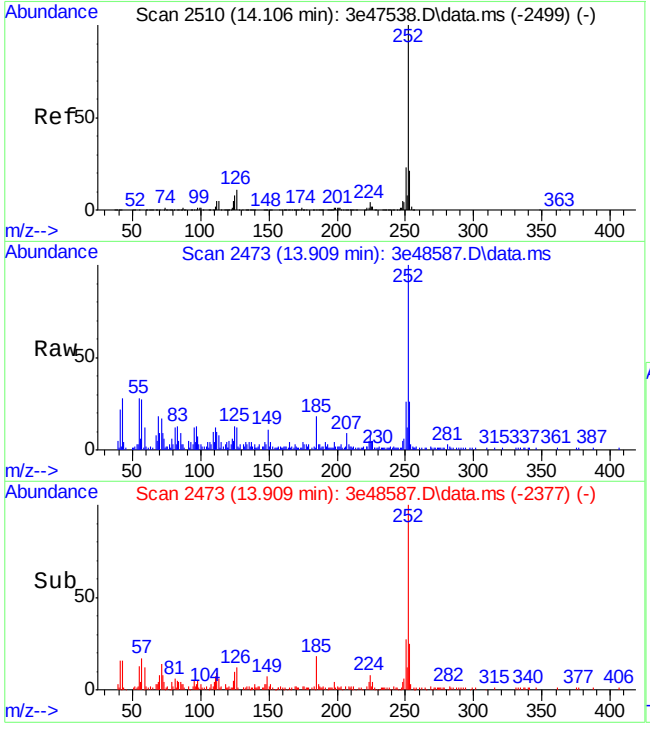


#90
Chrysene
Concen: 0.83 ppb
RT: 12.860 min Scan# 2277
Delta R.T. 0.005 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:228 Resp: 9282

Ion	Ratio	Lower	Upper
228	100		
226	30.4	0.6	60.6
229	17.7	0.0	50.3

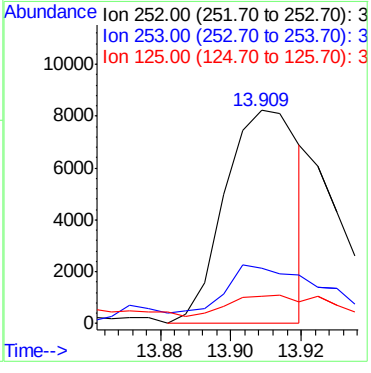


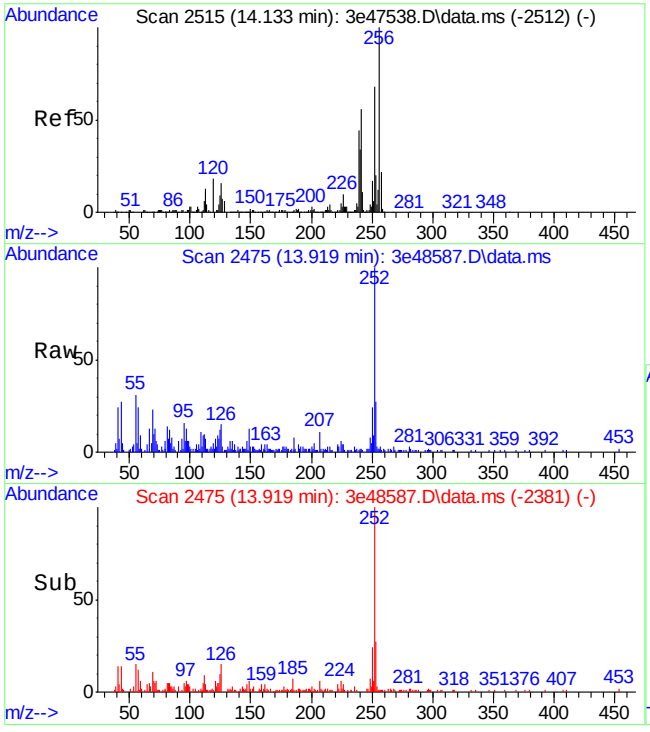


#94
Benzo[b]fluoranthene
Concen: 1.05 ppb m
RT: 13.909 min Scan# 2473
Delta R.T. 0.016 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:252 Resp: 12074

Ion	Ratio	Lower	Upper
252	100		
253	25.8	0.0	51.0
125	12.9	0.0	38.1

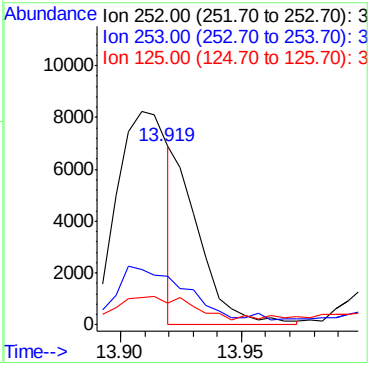


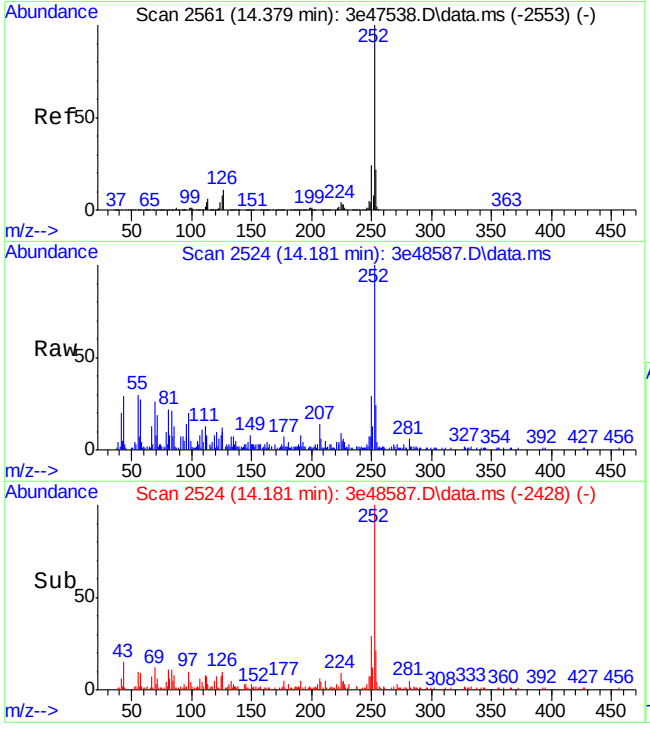


#95
Benzo[k]fluoranthene
Concen: 0.48 ppb m
RT: 13.919 min Scan# 2475
Delta R.T. 0.005 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:252 Resp: 4997

Ion	Ratio	Lower	Upper
252	100		
253	27.2	0.0	56.2
125	12.2	0.0	41.2

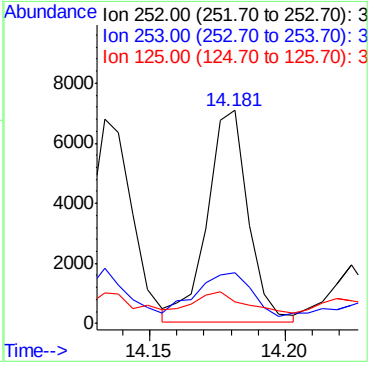




#96
Benzo[a]pyrene
Concen: 0.72 ppb
RT: 14.181 min Scan# 2524
Delta R.T. 0.016 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

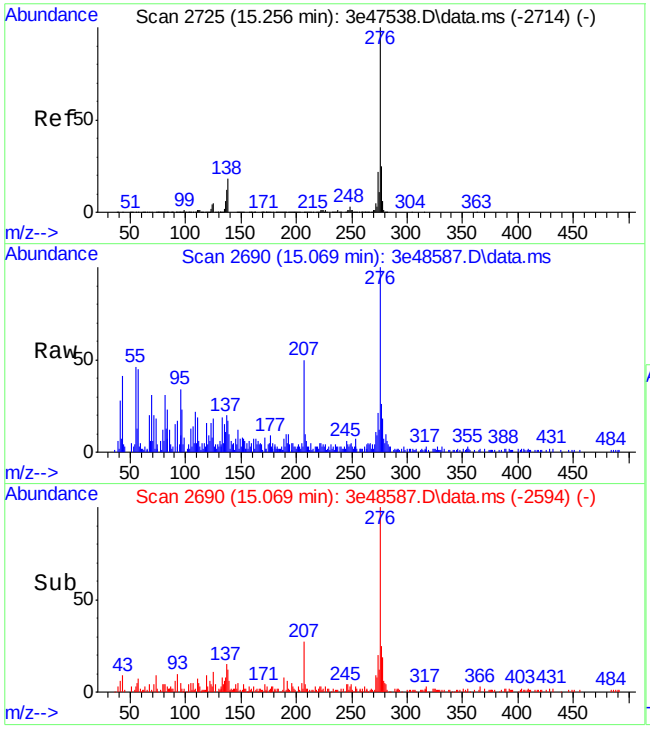
Tgt Ion:252 Resp: 7449

Ion	Ratio	Lower	Upper
252	100		
253	19.7	0.0	52.0
125	3.6	0.0	38.1



9.1.4

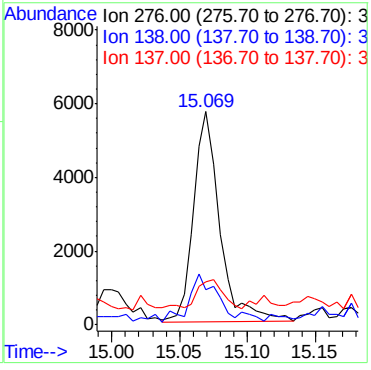
9

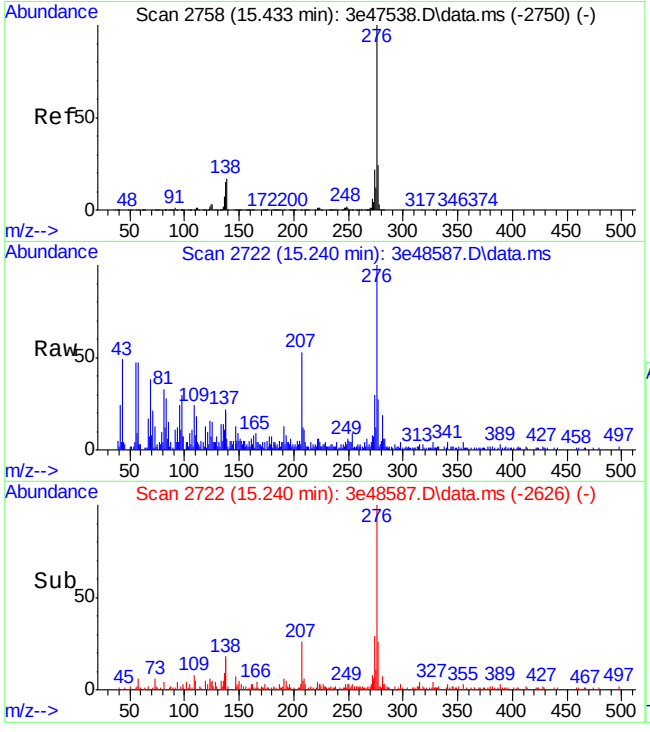


#97
Indeno[1,2,3-cd]pyrene
Concen: 0.65 ppb
RT: 15.069 min Scan# 2690
Delta R.T. 0.016 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:276 Resp: 7707

Ion	Ratio	Lower	Upper
276	100		
138	14.6	0.0	47.7
137	10.9	0.0	42.0

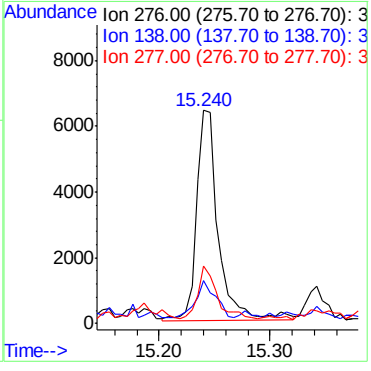




#101
Benzo[g,h,i]perylene
Concen: 0.87 ppb
RT: 15.240 min Scan# 2722
Delta R.T. 0.016 min
Lab File: 3e48587.D
Acq: 15 Mar 2013 7:57 pm

Tgt Ion:276 Resp: 8551

Ion	Ratio	Lower	Upper
276	100		
138	16.9	0.0	47.2
277	23.8	0.0	53.7



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 03/18/13 17:52

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48588.D
Acq On : 15 Mar 2013 8:21 pm
Operator : olgaa
Sample : jb30306-5
Misc : op64314,e3e2102,30.5
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Mar 16 15:36:41 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.692	152	99657	40.00 ppb	0.00
24) Naphthalene-d8	4.265	136	405611	40.00 ppb	0.00
47) Acenaphthene-d10	6.864	164	238166	40.00 ppb	0.01
69) Phenanthrene-d10	9.105	188	441624	40.00 ppb	0.01
83) Chrysene-d12	12.839	240	438156	40.00 ppb	0.01
92) Perylene-d12	14.235	264	398012	40.00 ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.692	152	99657	40.00 ppb	0.00
104) Acenaphthene-d10a	6.864	164	238166	40.00 ppb	0.01
106) Phenanthrene-d10a	9.105	188	441624	40.00 ppb	0.01
108) Chrysene-d12a	12.839	240	438156	40.00 ppb	0.01
System Monitoring Compounds					
5) 2-Fluorophenol	1.655	112	90335	26.78 ppb	0.00
Spiked Amount 50.000			Recovery	= 53.56%	
8) Phenol-d5	2.489	99	124721	29.45 ppb	0.01
Spiked Amount 50.000			Recovery	= 58.90%	
25) Nitrobenzene-d5	3.388	82	104301	28.28 ppb	0.00
Spiked Amount 50.000			Recovery	= 56.56%	
51) 2-Fluorobiphenyl	5.928	172	244894	31.68 ppb	0.01
Spiked Amount 50.000			Recovery	= 63.36%	
73) 2,4,6-Tribromophenol	8.116	330	47377	37.02 ppb	0.01
Spiked Amount 50.000			Recovery	= 74.04%	
85) Terphenyl-d14	11.651	244	350507	36.56 ppb	0.02
Spiked Amount 50.000			Recovery	= 73.12%	

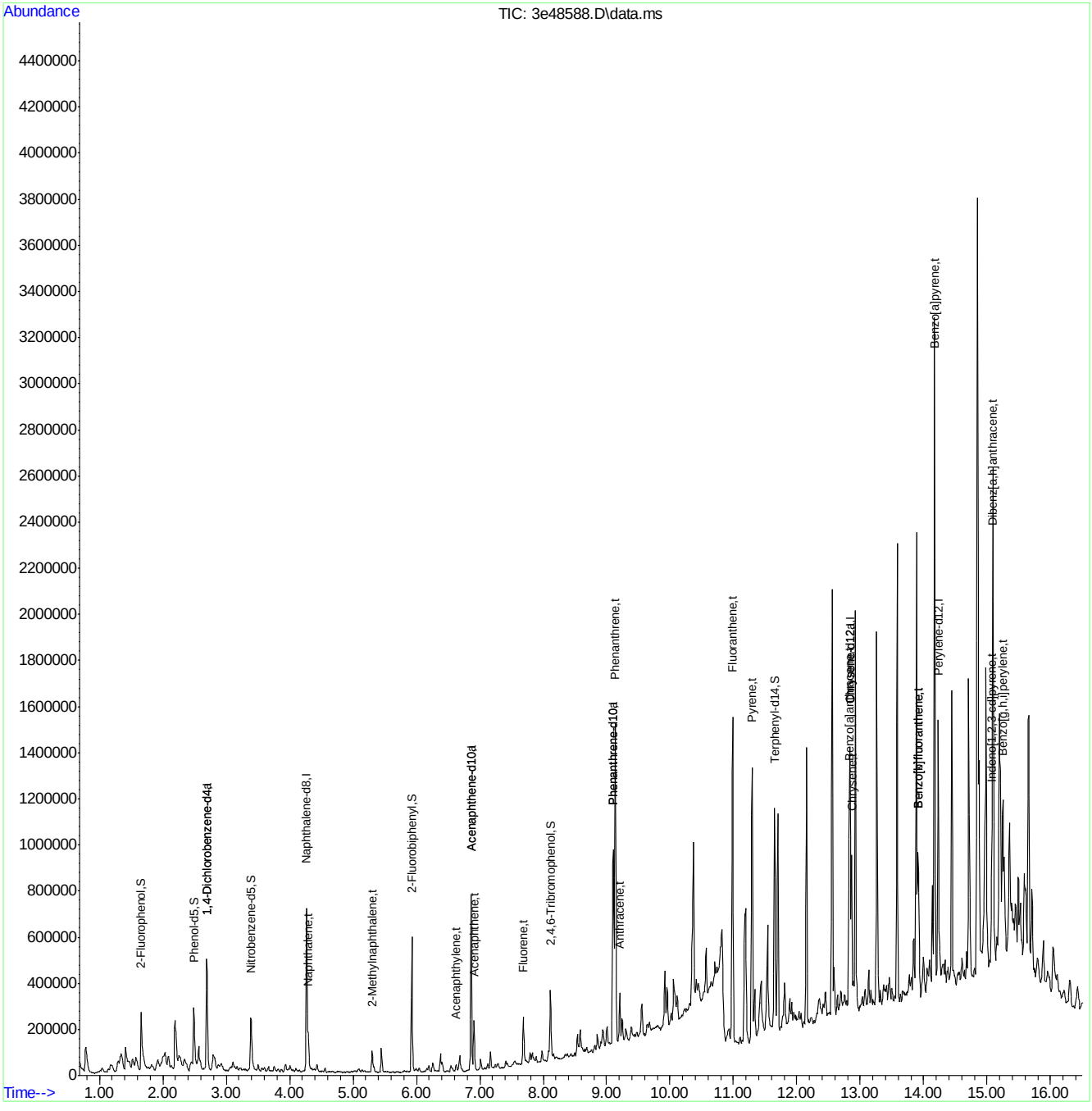
Target Compounds					Qvalue
38) Naphthalene	4.292	128	91176	8.10 ppb	98
44) 2-Methylnaphthalene	5.303	141	33379	5.05 ppb	97
56) Acenaphthylene	6.624	152	23776	2.10 ppb	91
59) Acenaphthene	6.907	153	77106	10.69 ppb	98
66) Fluorene	7.688	166	80081	9.95 ppb	95
77) Phenanthrene	9.138	178	724885	56.21 ppb	99
78) Anthracene	9.207	178	117198	9.16 ppb	96
81) Fluoranthene	10.988	202	849796	62.96 ppb	99
84) Pyrene	11.293	202	707806	50.87 ppb	97
88) Benzo[a]anthracene	12.823	228	281082	21.69 ppb	92
90) Chrysene	12.866	228	296781	25.34 ppb	98
94) Benzo[b]fluoranthene	13.909	252	268692m	20.67 ppb	
95) Benzo[k]fluoranthene	13.914	252	191238m	16.25 ppb	
96) Benzo[a]pyrene	14.181	252	246166	21.26 ppb	99
97) Indeno[1,2,3-cd]pyrene	15.075	276	171744	12.82 ppb	92
99) Dibenz[a,h]anthracene	15.085	278	70889	6.25 ppb	95
101) Benzo[g,h,i]perylene	15.251	276	155032	14.04 ppb	95

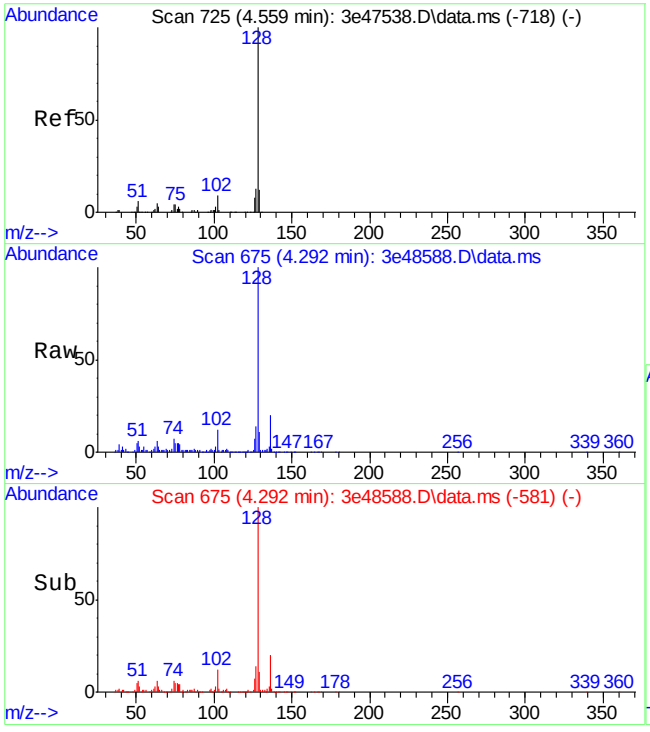
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48588.D
Acq On : 15 Mar 2013 8:21 pm
Operator : olgaa
Sample : jb30306-5
Misc : op64314,e3e2102,30.5
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Mar 16 15:36:41 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Sat Mar 16 09:22:00 2013
Response via : Initial Calibration

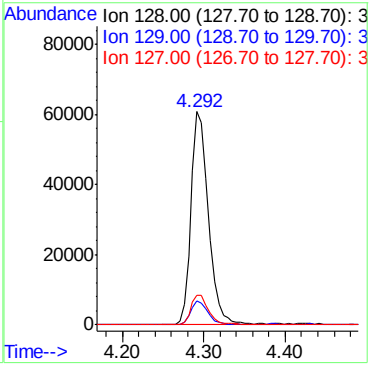


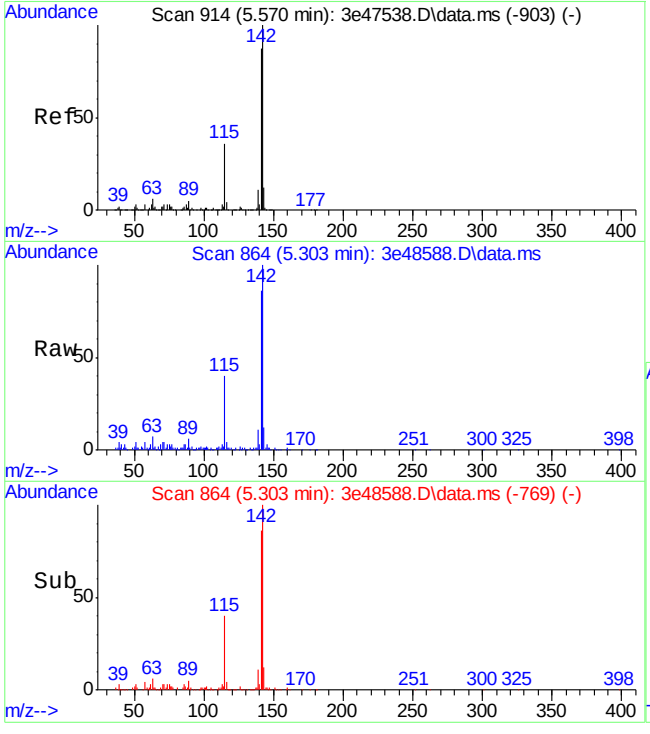


#38
Naphthalene
Concen: 8.10 ppb
RT: 4.292 min Scan# 675
Delta R.T. 0.005 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:128 Resp: 91176

Ion	Ratio	Lower	Upper
128	100		
129	11.2	0.0	41.7
127	13.9	0.0	42.7

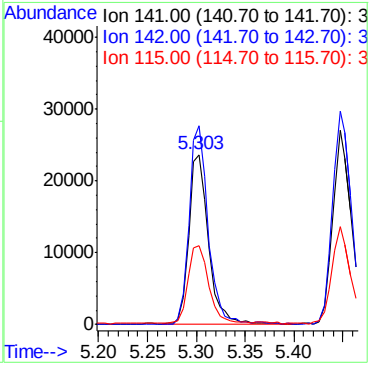


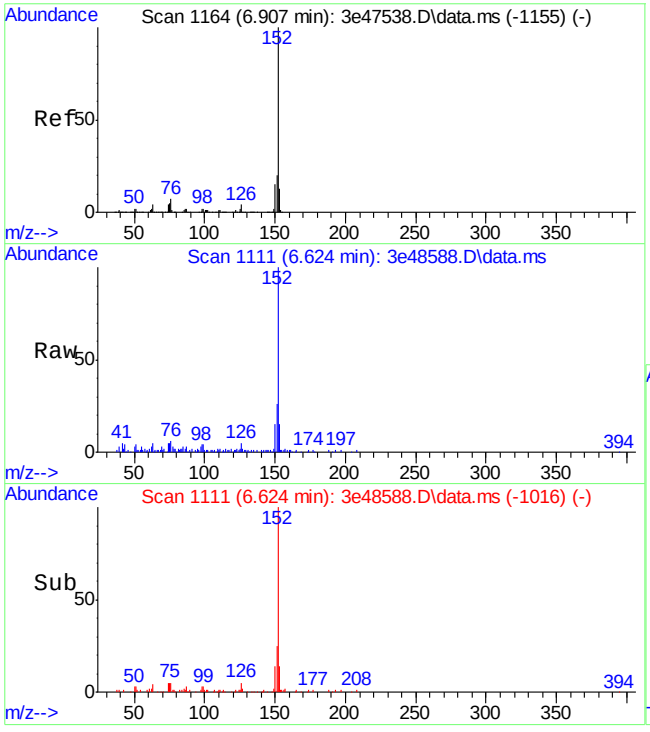


#44
2-Methylnaphthalene
Concen: 5.05 ppb
RT: 5.303 min Scan# 864
Delta R.T. 0.011 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:141 Resp: 33379

Ion	Ratio	Lower	Upper
141	100		
142	116.6	85.3	145.3
115	46.0	11.5	71.5

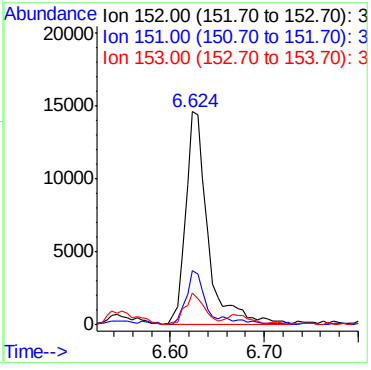


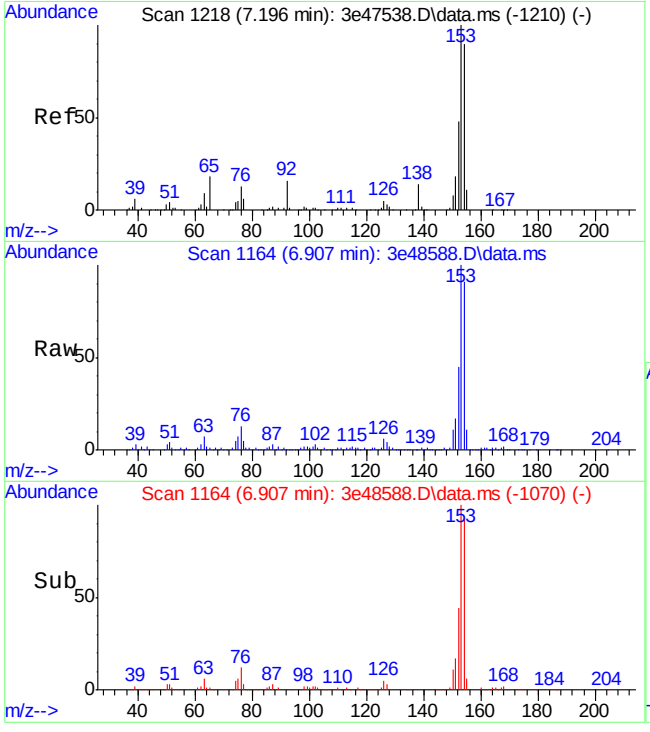


#56
Acenaphthylene
Concen: 2.10 ppb
RT: 6.624 min Scan# 1111
Delta R.T. 0.011 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:152 Resp: 23776

Ion	Ratio	Lower	Upper
152	100		
151	25.6	0.0	49.9
153	14.5	0.0	43.2

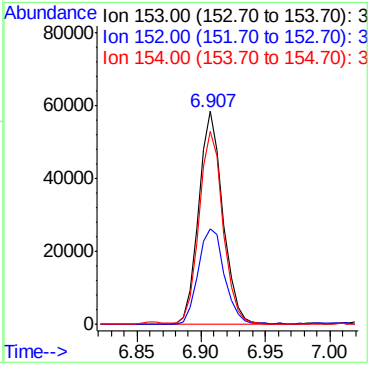


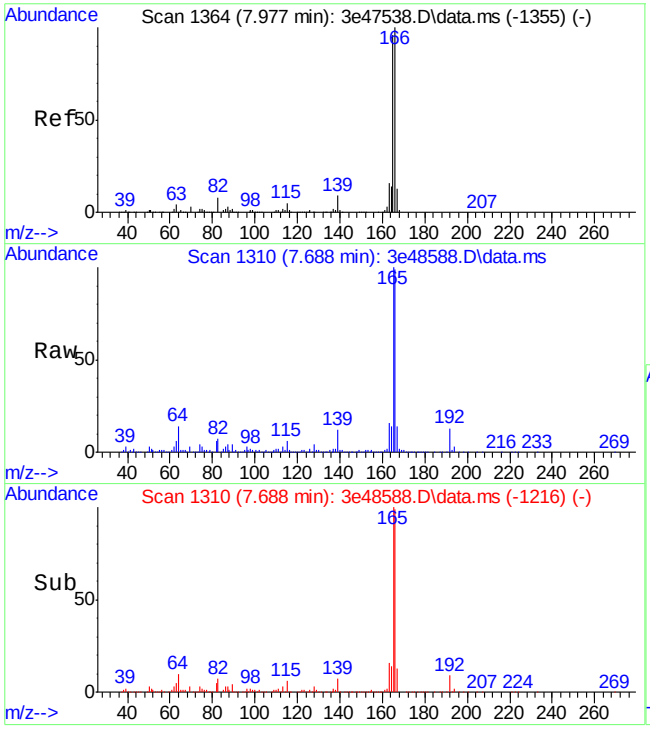


#59
Acenaphthene
Concen: 10.69 ppb
RT: 6.907 min Scan# 1164
Delta R.T. 0.005 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:153 Resp: 77106

Ion	Ratio	Lower	Upper
153	100		
152	44.5	17.8	77.8
154	90.2	60.3	120.3

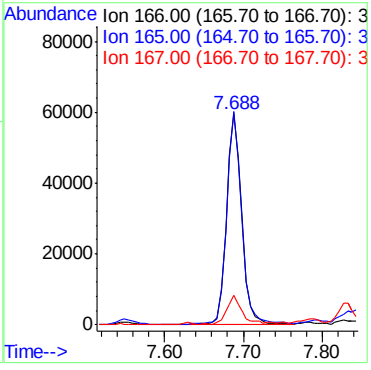


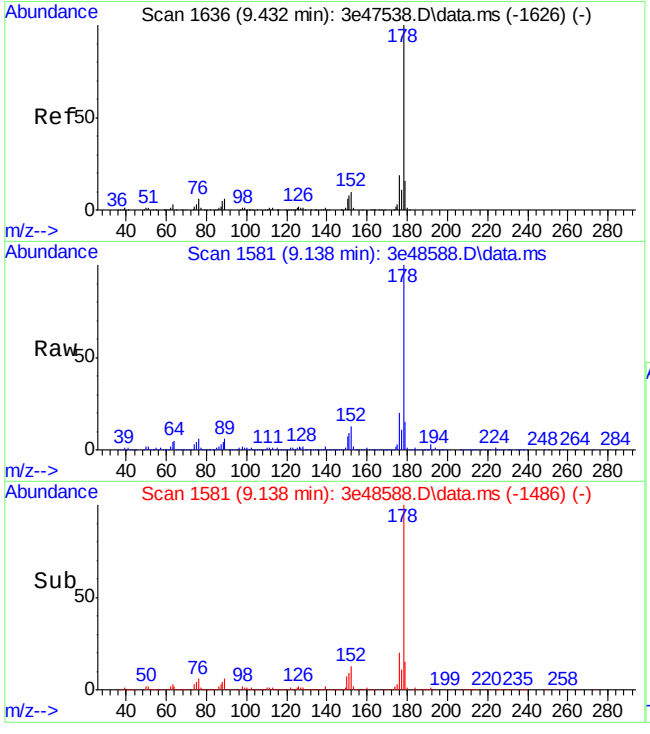


#66
Fluorene
Concen: 9.95 ppb
RT: 7.688 min Scan# 1310
Delta R.T. 0.005 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:166 Resp: 80081

Ion	Ratio	Lower	Upper
166	100		
165	100.9	65.7	125.7
167	13.1	0.0	43.4

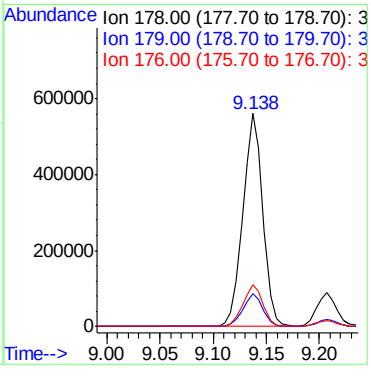


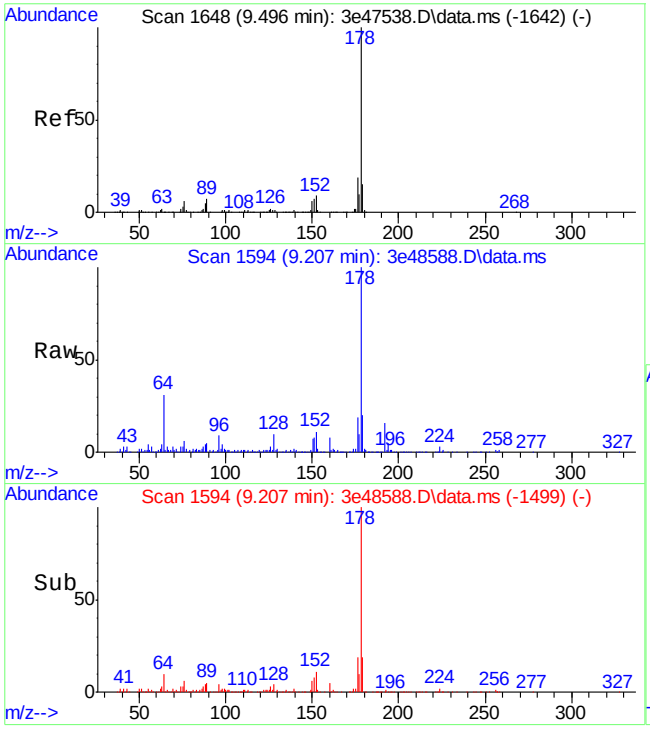


#77
Phenanthrene
Concen: 56.21 ppb
RT: 9.138 min Scan# 1581
Delta R.T. 0.011 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:178 Resp: 724885

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	45.7
176	19.7	0.0	49.5

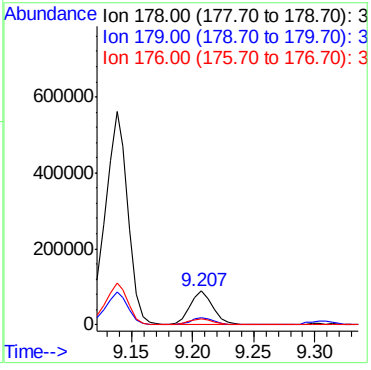


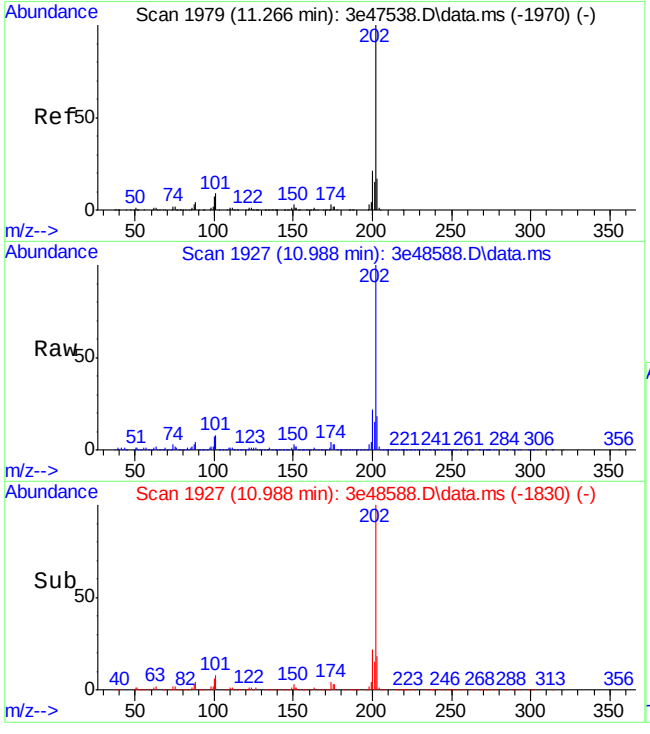


#78
Anthracene
Concen: 9.16 ppb
RT: 9.207 min Scan# 1594
Delta R.T. 0.011 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:178 Resp: 117198

Ion	Ratio	Lower	Upper
178	100		
179	18.6	0.0	45.1
176	18.6	0.0	48.6

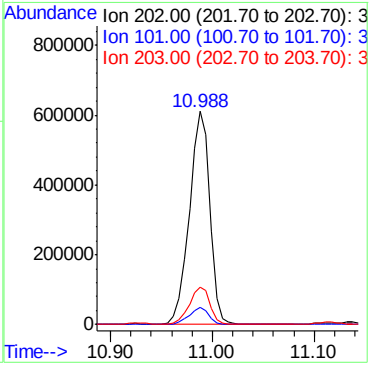


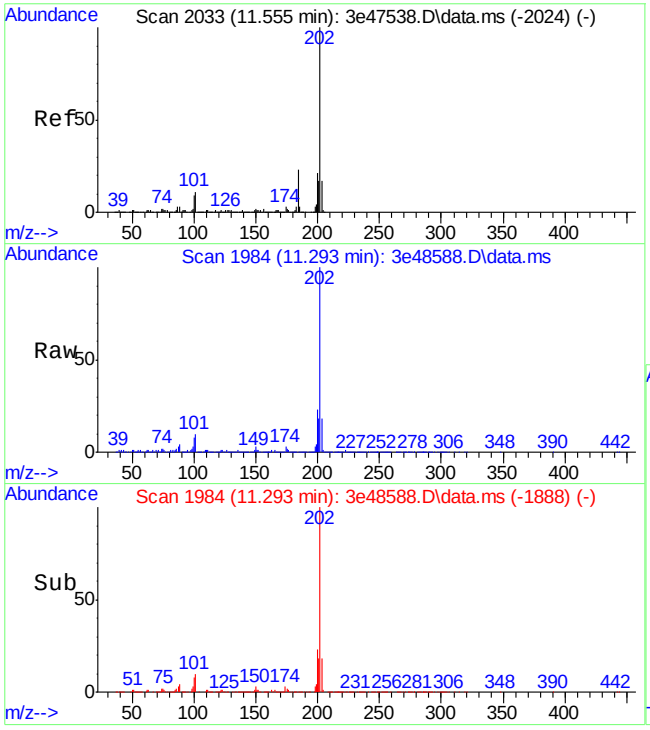


#81
Fluoranthene
Concen: 62.96 ppb
RT: 10.988 min Scan# 1927
Delta R.T. 0.021 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:202 Resp: 849796

Ion	Ratio	Lower	Upper
202	100		
101	8.3	0.0	39.1
203	17.6	0.0	47.3

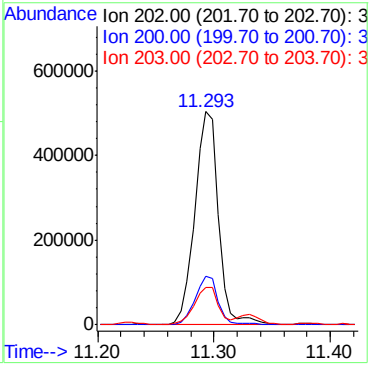


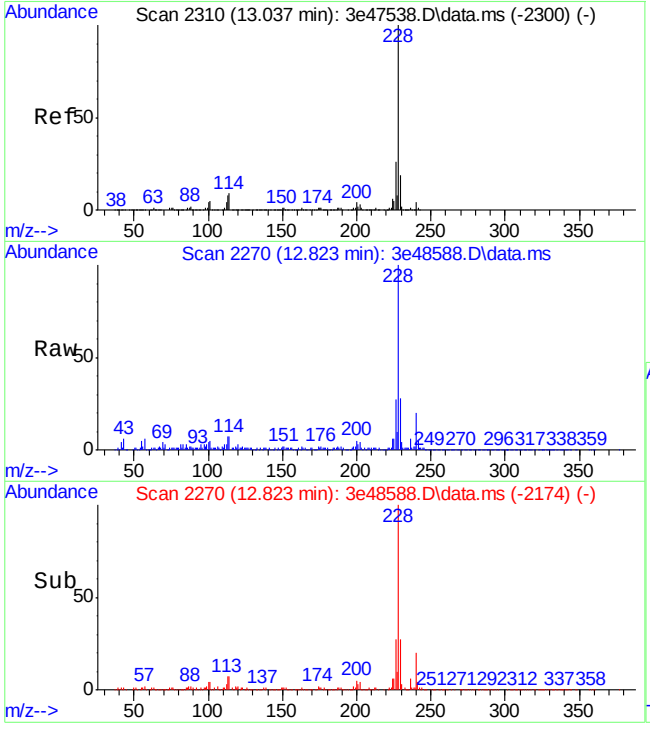


#84
Pyrene
Concen: 50.87 ppb
RT: 11.293 min Scan# 1984
Delta R.T. 0.016 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:202 Resp: 707806

Ion	Ratio	Lower	Upper
202	100		
200	22.7	0.0	50.6
203	17.4	0.0	47.2

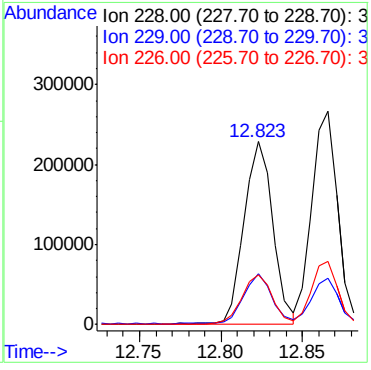


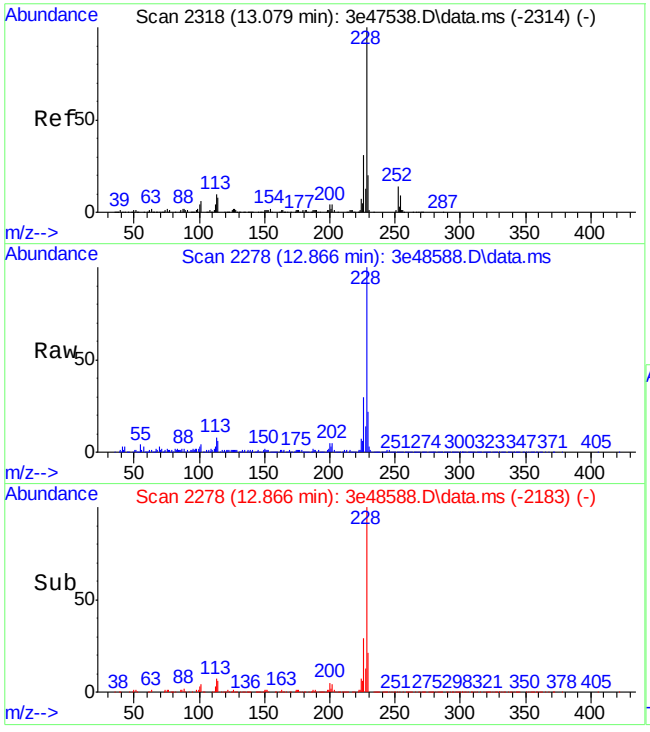


#88
Benzo[a]anthracene
Concen: 21.69 ppb
RT: 12.823 min Scan# 2270
Delta R.T. 0.016 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:228 Resp: 281082

Ion	Ratio	Lower	Upper
228	100		
229	26.8	0.0	49.3
226	26.7	0.0	55.8

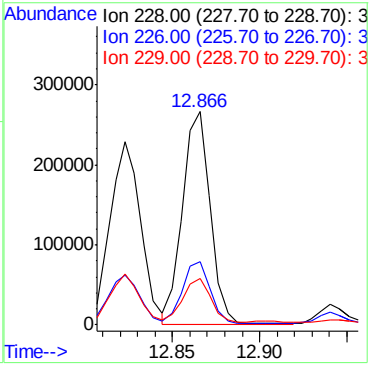


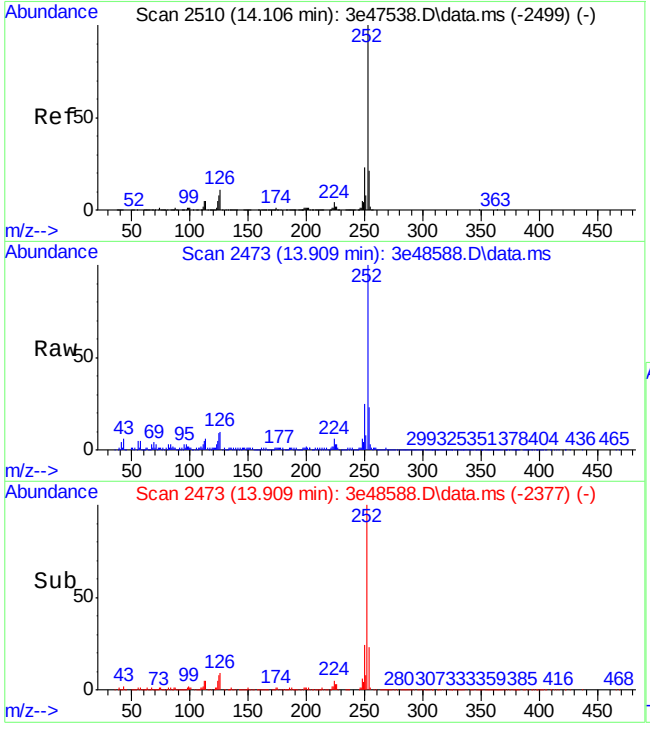


#90
Chrysene
Concen: 25.34 ppb
RT: 12.866 min Scan# 2278
Delta R.T. 0.011 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:228 Resp: 296781

Ion	Ratio	Lower	Upper
228	100		
226	29.4	0.6	60.6
229	20.6	0.0	50.3

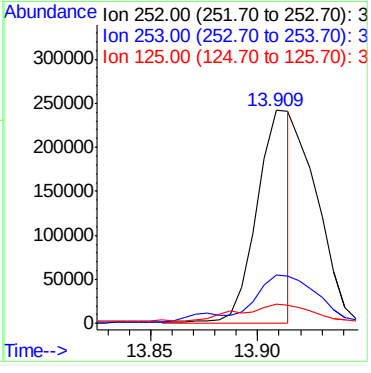


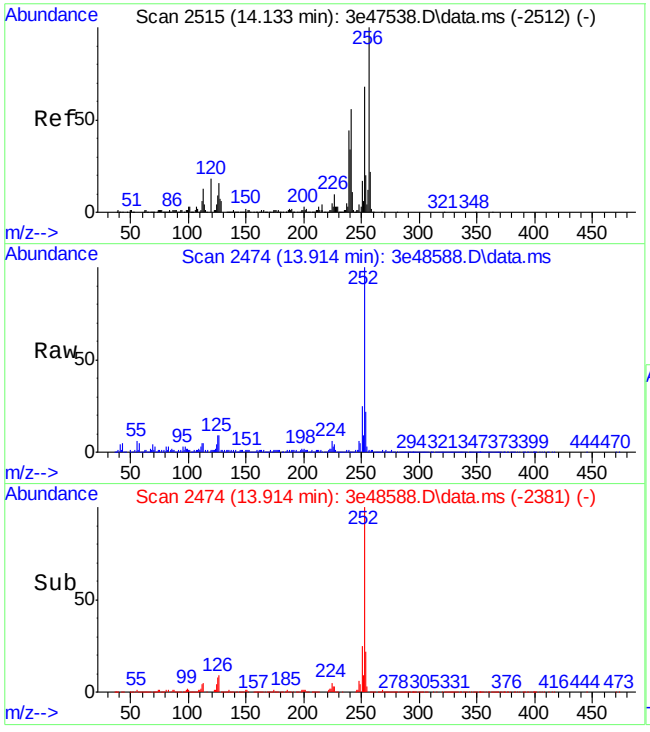


#94
Benzo[b]fluoranthene
Concen: 20.67 ppb m
RT: 13.909 min Scan# 2473
Delta R.T. 0.016 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:252 Resp: 268692

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	51.0
125	8.9	0.0	38.1

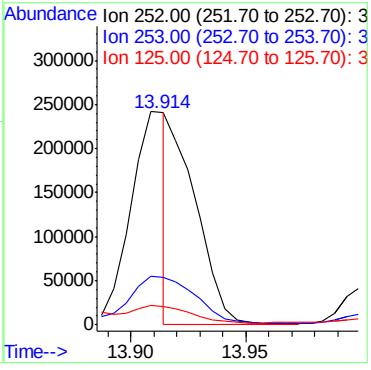


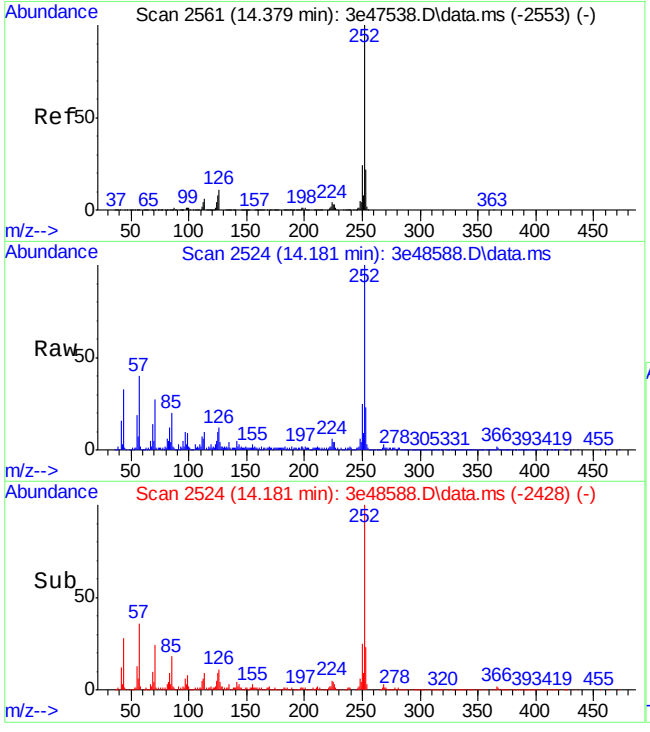


#95
Benzo[k]fluoranthene
Concen: 16.25 ppb m
RT: 13.914 min Scan# 2474
Delta R.T. -0.000 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:252 Resp: 191238

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	56.2
125	8.8	0.0	41.2

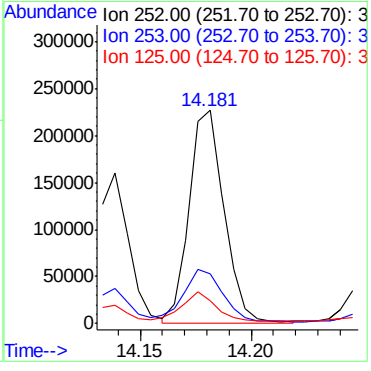


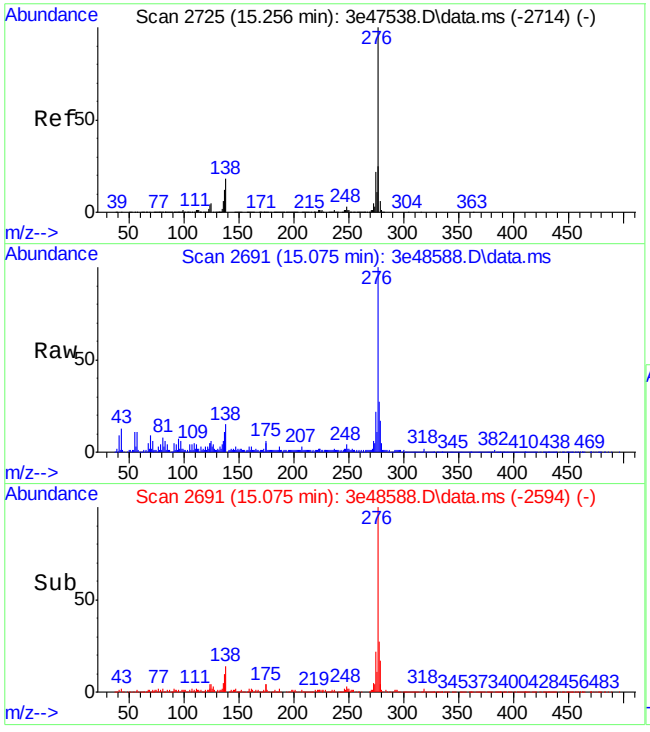


#96
Benzo[a]pyrene
Concen: 21.26 ppb
RT: 14.181 min Scan# 2524
Delta R.T. 0.016 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:252 Resp: 246166

Ion	Ratio	Lower	Upper
252	100		
253	21.4	0.0	52.0
125	8.7	0.0	38.1

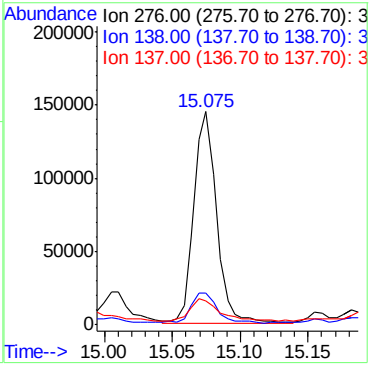


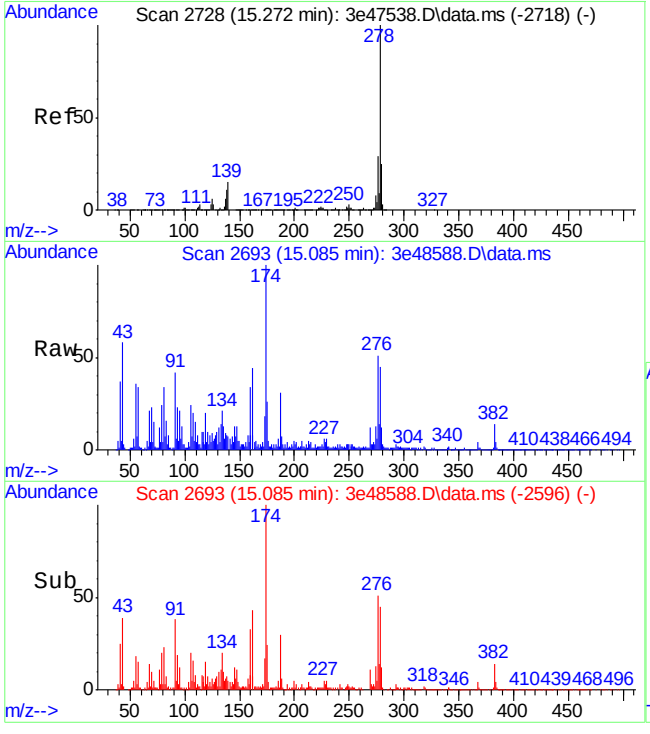


#97
Indeno[1,2,3-cd]pyrene
Concen: 12.82 ppb
RT: 15.075 min Scan# 2691
Delta R.T. 0.021 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:276 Resp: 171744

Ion	Ratio	Lower	Upper
276	100		
138	13.9	0.0	47.7
137	9.7	0.0	42.0

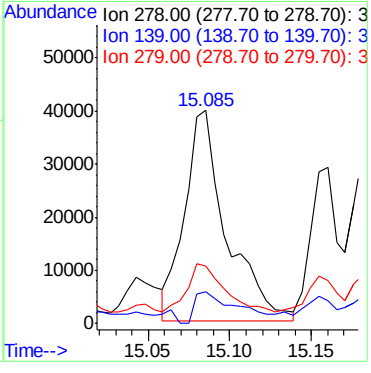


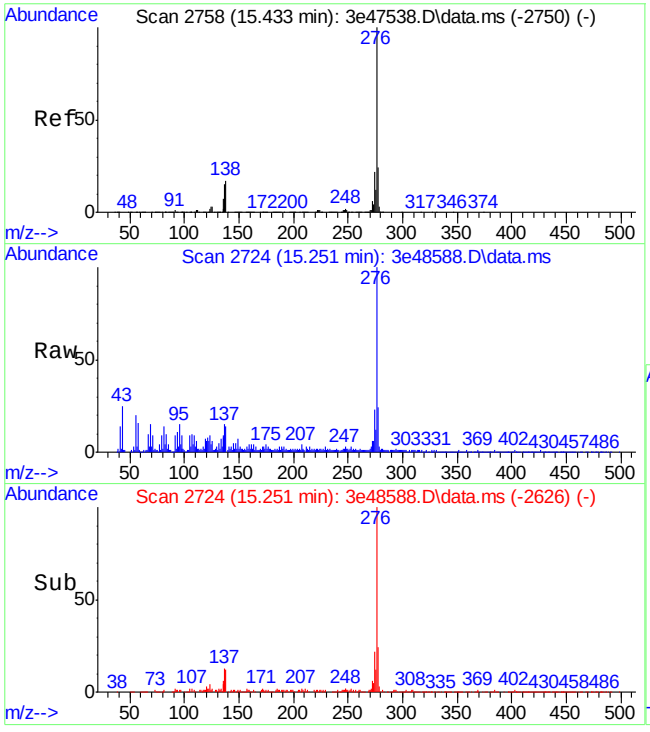


#99
Dibenz[a,h]anthracene
Concen: 6.25 ppb
RT: 15.085 min Scan# 2693
Delta R.T. 0.021 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:278 Resp: 70889

Ion	Ratio	Lower	Upper
278	100		
139	12.0	0.0	44.8
279	22.8	0.0	54.9

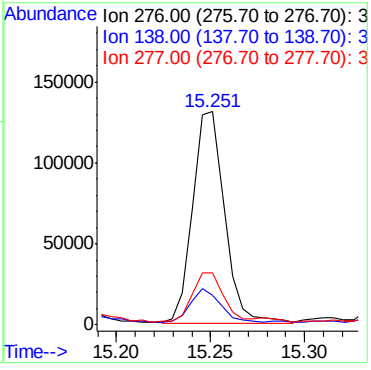




#101
Benzo[g,h,i]perylene
Concen: 14.04 ppb
RT: 15.251 min Scan# 2724
Delta R.T. 0.027 min
Lab File: 3e48588.D
Acq: 15 Mar 2013 8:21 pm

Tgt Ion:276 Resp: 155032

Ion	Ratio	Lower	Upper
276	100		
138	12.6	0.0	47.2
277	23.0	0.0	53.7



9.1.5

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48569.D
Acq On : 15 Mar 2013 12:18 pm
Operator : olgaa
Sample : op64314-mb1
Misc : op64314,e3e2102,35.0
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 15 14:03:25 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Fri Mar 15 13:41:59 2013
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.692	152	83319	40.00 ppb	-0.02
24) Naphthalene-d8	4.265	136	342577	40.00 ppb	-0.03
47) Acenaphthene-d10	6.859	164	203742	40.00 ppb	-0.03
69) Phenanthrene-d10	9.100	188	360972	40.00 ppb	-0.03
83) Chrysene-d12	12.833	240	383518	40.00 ppb	-0.02
92) Perylene-d12	14.224	264	367286	40.00 ppb	-0.02
102) 1,4-Dichlorobenzene-d4a	2.692	152	83319	40.00 ppb	-0.02
104) Acenaphthene-d10a	6.859	164	203742	40.00 ppb	-0.03
106) Phenanthrene-d10a	9.100	188	360972	40.00 ppb	-0.03
108) Chrysene-d12a	12.833	240	383518	40.00 ppb	-0.02

System Monitoring Compounds					
5) 2-Fluorophenol	1.649	112	108469	38.45 ppb	-0.02
Spiked Amount 50.000			Recovery = 76.90%		
8) Phenol-d5	2.484	99	136894	38.66 ppb	-0.02
Spiked Amount 50.000			Recovery = 77.32%		
25) Nitrobenzene-d5	3.388	82	138519	44.46 ppb	-0.02
Spiked Amount 50.000			Recovery = 88.92%		
51) 2-Fluorobiphenyl	5.923	172	284921	43.09 ppb	-0.03
Spiked Amount 50.000			Recovery = 86.18%		
73) 2,4,6-Tribromophenol	8.116	330	49429	47.25 ppb	-0.03
Spiked Amount 50.000			Recovery = 94.50%		
85) Terphenyl-d14	11.646	244	412737	49.18 ppb	-0.03
Spiked Amount 50.000			Recovery = 98.36%		

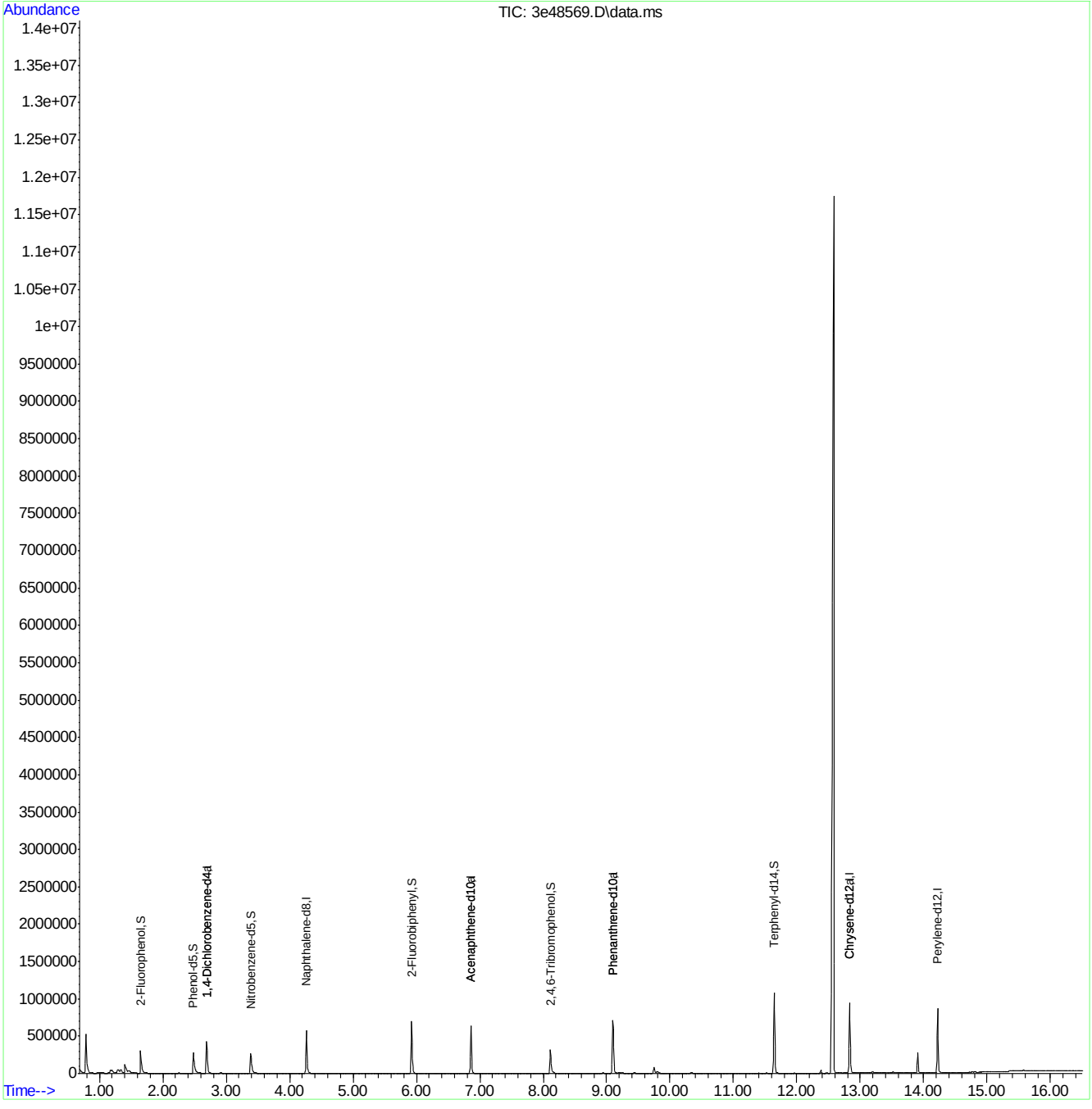
Target Compounds	Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\E3e2102\
Data File : 3e48569.D
Acq On : 15 Mar 2013 12:18 pm
Operator : olgaa
Sample : op64314-mb1
Misc : op64314,e3e2102,35.0
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Mar 15 14:03:25 2013
Quant Method : C:\msdchem\1\METHODS\M3E2061.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Fri Mar 15 13:41:59 2013
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\EF5115\F21533.D Vial: 10
Acq On : 15 Mar 2013 7:11 pm Operator: ninap
Sample : op64314-mb1 Inst : MSF
Misc : op64314,ef5115,35.0 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Mar 15 19:30:27 2013 Quant Results File: MF5067.RES

Quant Method : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Mar 13 13:31:15 2013
Response via : Initial Calibration
DataAcq Meth : MF5067

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	4.59	152	121647	40.00	ppb	-0.05
24) Naphthalene-d8	6.36	136	457596	40.00	ppb	-0.06
47) Acenaphthene-d10	9.12	164	247154	40.00	ppb	-0.06
69) Phenanthrene-d10	11.45	188	391662	40.00	ppb	-0.05
83) Chrysene-d12	14.70	240	361172	40.00	ppb	-0.04
92) Perylene-d12	16.15	264	306883	40.00	ppb	-0.04
102) 1,4-Dichlorobenzene-d4a	4.59	152	121647	40.00	ppb	-0.05
104) Naphthalene-d8a	6.36	136	457596	40.00	ppb	-0.06
106) Acenaphthene-d10a	9.12	164	247154	40.00	ppb	-0.06
108) Phenanthrene-d10a	11.45	188	391662	40.00	ppb	-0.05
110) Chrysene-d12a	14.70	240	361172	40.00	ppb	-0.04

System Monitoring Compounds						
5) 2-Fluorophenol	3.21	112	176233	37.27	ppb	-0.05
Spiked Amount 50.000			Recovery = 74.54%			
8) Phenol-d5	4.21	99	230470	39.06	ppb	-0.06
Spiked Amount 50.000			Recovery = 78.12%			
25) Nitrobenzene-d5	5.37	82	199252	41.94	ppb	-0.06
Spiked Amount 50.000			Recovery = 83.88%			
51) 2-Fluorobiphenyl	8.08	172	349564	40.88	ppb	-0.06
Spiked Amount 50.000			Recovery = 81.76%			
73) 2,4,6-Tribromophenol	10.40	330	41630	47.34	ppb	-0.06
Spiked Amount 50.000			Recovery = 94.68%			
85) Terphenyl-d14	13.55	244	385580	48.65	ppb	-0.04
Spiked Amount 50.000			Recovery = 97.30%			

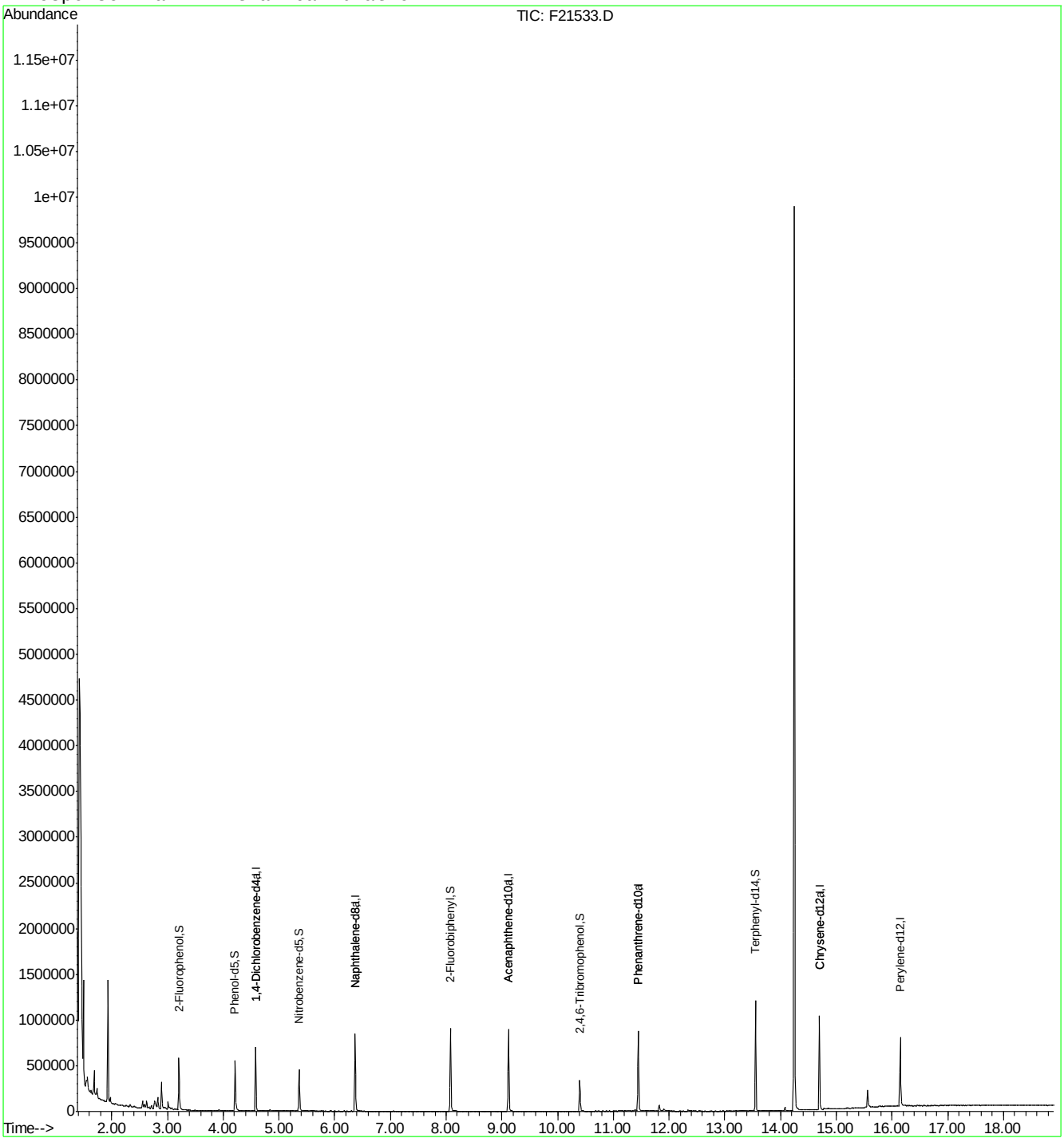
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\EF5115\F21533.D Vial: 10
Acq On : 15 Mar 2013 7:11 pm Operator: ninap
Sample : op64314-mb1 Inst : MSF
Misc : op64314,ef5115,35.0 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Mar 16 13:59 2013 Quant Results File: MF5067.RES

Method : C:\MSDCHEM\1\METHODS\MF5067.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Mar 13 13:31:15 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:43	MA30705-STD1	1		STDA
12:49	MA30705-STD2	1		STDB
12:55	MA30705-STD3	1		STDC
13:00	MA30705-STD4	1		STDD
13:06	MA30705-CCV1	1		
13:12	MA30705-CCB1	1		
13:18	MA30705-CRI1	1		
13:24	MA30705-CRID1	1		
13:30	MA30705-CRIA1	1		
13:41	MA30705-ICV1	1		
13:49	MA30705-ICB1	1		
13:56	MA30705-ICCV1	1		
14:13	MA30705-CCB2	1		
14:18	ZZZZZZ	1		
14:24	ZZZZZZ	1		
14:30	ZZZZZZ	1		
14:36	ZZZZZZ	1		
14:41	ZZZZZZ	1		
14:47	MA30705-ICSA1	1		
14:53	MA30705-ICSAB1	1		
14:59	ZZZZZZ	1		
15:05	ZZZZZZ	1		
15:11	ZZZZZZ	1		
15:17	ZZZZZZ	1		
15:29	ZZZZZZ	1		
15:35	MA30705-CCV2	1		
15:41	MA30705-CCB3	1		
15:47	MP70390-MB1	1		
15:53	MP70390-MB2	1		
15:59	MP70390-LC1	1		
16:05	MP70390-LC2	1		
16:10	MP70390-B1	1		
16:16	MP70390-S1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:22	MP70390-S2	1		
16:27	JB30356-1	1		(sample used for QC only; not part of login JB30306)
16:33	MP70390-SD1	5		
16:39	MA30705-CCV3	1		
16:45	MA30705-CCB4	1		
16:53	MP70390-S3	1		Rerun with the QC sample
16:58	ZZZZZZ	1		
17:05	ZZZZZZ	1		
17:11	ZZZZZZ	1		
17:20	ZZZZZZ	5		
17:26	ZZZZZZ	5		
17:32	ZZZZZZ	5		
17:38	ZZZZZZ	5		
17:44	MA30705-CCV4	1		
17:50	MA30705-CCB5	1		
17:56	MP70444-MB1	1		
18:02	MP70444-B1	1		
18:08	MP70444-S1	1		
18:13	MP70444-S2	1		
18:19	JB26814-1R	1		(sample used for QC only; not part of login JB30306)
18:25	MP70444-SD1	5		
18:31	ZZZZZZ	1		
18:37	ZZZZZZ	1		
18:43	ZZZZZZ	1		
18:49	MA30705-CCV5	1		
18:54	MA30705-CCB6	1		
19:00	ZZZZZZ	1		
19:06	ZZZZZZ	1		
19:12	ZZZZZZ	1		
19:18	ZZZZZZ	1		
19:24	MP70421-MB1	1		
19:30	MP70421-B1	1		
19:36	MP70421-S1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	19:41	MP70421-S2	1		
	19:47	MA30705-CCV6	1		
	19:53	MA30705-CCB7	1		
	19:59	JB30267-1	1		(sample used for QC only; not part of login JB30306)
	20:05	MP70421-SD1	5		
---------->	Last reportable sample/prep for job JB30306				
	20:11	ZZZZZZ	1		
	20:17	ZZZZZZ	1		
	20:22	ZZZZZZ	1		
	20:28	MP70387-LC1	1		
	20:34	MP70387-S1	1		CRID out
	20:40	MP70387-S2	1		CRID out
	20:46	MA30705-CCV7	1		
	20:51	MA30705-CCB8	1		
	20:57	MA30705-CRI2	1		
	21:03	MA30705-CRID2	1		
	21:09	MA30705-CRIA2	1		
	21:15	MA30705-ICSA2	1		
	21:21	MA30705-ICSAB2	1		
	21:27	MA30705-CCV8	1		
	21:32	MA30705-CCB9	1		
---------->	Last reportable CCB for job JB30306				
	21:38	JB30177-8	1		(sample used for QC only; not part of login JB30306)
	21:44	MP70387-SD1	5		CRID out
	21:50	ZZZZZZ	1		
	21:56	ZZZZZZ	1		
	22:02	ZZZZZZ	1		
	22:08	ZZZZZZ	1		
	22:14	ZZZZZZ	1		
	22:20	MP70381-MB1	1		CRID out
	22:26	MP70381-MB2	1		CRID out
	22:32	MA30705-CCV9	1		
	22:37	MA30705-CCB10	1		
	22:43	MP70381-LC1	1		CRID out
	22:49	MP70381-LC2	1		CRID out

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
22:55	MP70381-S1	1		CRID out
23:00	MP70381-S2	1		CRID out
23:06	JB30140-1	1		(sample used for QC only; not part of login JB30306)
23:12	MP70381-SD1	5		CRID out
23:18	ZZZZZZ	1		
23:24	ZZZZZZ	1		
23:30	ZZZZZZ	1		
23:36	MA30705-CCV10	1		
23:42	MA30705-CCB11	1		
23:47	ZZZZZZ	1		
23:53	ZZZZZZ	1		
23:59	ZZZZZZ	1		
00:05	ZZZZZZ	1		
00:11	ZZZZZZ	1		
00:17	ZZZZZZ	1		
00:23	ZZZZZZ	1		
00:29	ZZZZZZ	1		
00:35	ZZZZZZ	1		
00:41	MA30705-CCV11	1		
00:46	MA30705-CCB12	1		
00:52	ZZZZZZ	1		
00:58	ZZZZZZ	1		
01:04	ZZZZZZ	1		
01:10	ZZZZZZ	1		
01:16	ZZZZZZ	1		
01:21	ZZZZZZ	1		
01:27	ZZZZZZ	1		
01:33	MP70395-MB1	1		
01:39	MP70395-B1	1		
01:45	MA30705-CCV12	1		
01:51	MA30705-CCB13	1		
01:57	MP70395-S1	1		
02:03	MP70395-S2	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:08	JB29495-5R	1		(sample used for QC only; not part of login JB30306)
02:14	MP70395-SD1	5		
02:20	MP70395-PS1	1		
02:26	ZZZZZZ	1		
02:32	ZZZZZZ	1		
02:37	ZZZZZZ	1		
02:43	ZZZZZZ	1		
02:49	ZZZZZZ	1		
02:55	MA30705-CCV13	1		
03:00	MA30705-CCB14	1		
03:06	ZZZZZZ	1		
03:12	ZZZZZZ	1		
03:18	ZZZZZZ	1		
03:24	ZZZZZZ	1		
03:30	ZZZZZZ	1		
03:35	ZZZZZZ	1		
03:41	ZZZZZZ	1		
03:47	ZZZZZZ	1		
03:53	ZZZZZZ	1		
03:59	ZZZZZZ	1		
04:05	MA30705-CCV14	1		
04:10	MA30705-CCB15	1		
04:16	MA30705-CRI3	1		
04:22	MA30705-CRID3	1		
04:28	MA30705-CRIA3	1		
04:34	MA30705-ICSA3	1		
04:40	MA30705-ICSAB3	1		
04:46	MA30705-CCV15	1		
04:51	MA30705-CCB16	1		
04:57	ZZZZZZ	1		
05:03	ZZZZZZ	1		
05:09	ZZZZZZ	1		
05:15	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
05:21	ZZZZZZ	1		
05:27	ZZZZZZ	1		
05:33	ZZZZZZ	1		
05:39	ZZZZZZ	1		
05:45	MA30705-CCV16	1		
05:51	MA30705-CCB17	1		
05:56	ZZZZZZ	1		
06:02	ZZZZZZ	1		
06:08	ZZZZZZ	1		
06:14	ZZZZZZ	1		
06:20	MA30705-CCV17	1		
06:26	MA30705-CCB18	1		
06:32	MA30705-CRI4	1		
06:37	MA30705-CRID4	1		
06:43	MA30705-CRIA4	1		
06:49	MA30705-ICSA4	1		
06:55	MA30705-ICSAB4	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
12:43	MA30705-STD1	2377 R	132390 R	33984 R	6718 R
12:49	MA30705-STD2	2284	126170	33426	6150
12:55	MA30705-STD3	2258	124620	33058	5990
13:00	MA30705-STD4	2136	118740	32622	5631
13:06	MA30705-CCV1	No results reported for the elements associated with this internal standard.			
13:12	MA30705-CCB1	No results reported for the elements associated with this internal standard.			
13:18	MA30705-CRI1	2369	130450	33509	6598
13:24	MA30705-CRID1	2362	132400	33956	6649
13:30	MA30705-CRIA1	2394	133350	33725	6721
13:41	MA30705-ICV1	2240	123450	32940	5949
13:49	MA30705-ICB1	2376	132510	34070	6716
13:56	MA30705-ICCV1	2269	124360	32820	6019
14:13	MA30705-CCB2	2381	133660	33885	6746
14:18	ZZZZZZ	2120	119530	33070	5444
14:24	ZZZZZZ	2276	125240	33782	5779
14:30	ZZZZZZ	2216	124170	33970	5667
14:36	ZZZZZZ	2364	130690	33528	6595
14:41	ZZZZZZ	2341	131670	33696	6608
14:47	MA30705-ICSA1	2054	112930	30985	5211
14:53	MA30705-ICSAB1	2019	112150	31021	5146
14:59	ZZZZZZ	2366	123580	32799	5962
15:05	ZZZZZZ	2134	120240	31905	5688
15:11	ZZZZZZ	2327	129890	33342	6624
15:17	ZZZZZZ	2160	120360	31921	5770
15:29	ZZZZZZ	2415	133350	33453	6772
15:35	MA30705-CCV2	2231	124210	32599	5950
15:41	MA30705-CCB3	2423	132150	33295	6825
15:47	MP70390-MB1	2361	134180	34296	6782
15:53	MP70390-MB2	2360	132660	33916	6772
15:59	MP70390-LC1	2307	130120	33333	6421
16:05	MP70390-LC2	2302	129740	33442	6404
16:10	MP70390-B1	2272	127970	33074	6240
16:16	MP70390-S1	2227	126100	33116	6143

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:22	MP70390-S2	2288	127190	33071	6264
16:27	JB30356-1	2325	132860	33983	6648
16:33	MP70390-SD1	2379	132280	33510	6711
16:39	MA30705-CCV3	2233	124320	32380	5951
16:45	MA30705-CCB4	2371	132670	33472	6696
16:53	MP70390-S3	No results reported for the elements associated with this internal standard.			
16:58	ZZZZZZ	1730	97885	28870	4287 !
17:05	ZZZZZZ	1741	99001	29175	4319 !
17:11	ZZZZZZ	1717	97362	29262	4267 !
17:20	ZZZZZZ	2079	111560	31651	5433
17:26	ZZZZZZ	2110	115990	31304	5444
17:32	ZZZZZZ	2087	115830	31567	5406
17:38	ZZZZZZ	2104	116190	31713	5436
17:44	MA30705-CCV4	2243	124080	32423	5975
17:50	MA30705-CCB5	2383	132750	33547	6731
17:56	MP70444-MB1	2377	133440	33470	6746
18:02	MP70444-B1	2354	132640	33517	6652
18:08	MP70444-S1	2383	132640	33084	6647
18:13	MP70444-S2	2349	131990	33304	6575
18:19	JB26814-1R	2379	132190	33124	6659
18:25	MP70444-SD1	2389	134080	33540	6767
18:31	ZZZZZZ	2344	131330	33115	6552
18:37	ZZZZZZ	2363	132860	33197	6630
18:43	ZZZZZZ	2305	129740	32922	6376
18:49	MA30705-CCV5	2257	125680	32300	6016
18:54	MA30705-CCB6	2396	133640	33242	6767
19:00	ZZZZZZ	2355	132530	33110	6585
19:06	ZZZZZZ	2332	131250	33178	6551
19:12	ZZZZZZ	2359	132470	33179	6590
19:18	ZZZZZZ	2338	130710	33329	6596
19:24	MP70421-MB1	2397	134520	33706	6846
19:30	MP70421-B1	2308	128210	32746	6338
19:36	MP70421-S1	2368	130680	33731	6187

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
19:41	MP70421-S2	2345	131010	33631	6169
19:47	MA30705-CCV6	2285	125780	32617	6056
19:53	MA30705-CCB7	2405	134010	33359	6791
19:59	JB30267-1	2388	133250	34017	6349
20:05	MP70421-SD1	2412	134610	33561	6657
20:11	ZZZZZZ	2245	125680	32905	6160
20:17	ZZZZZZ	2251	127850	33271	5856
20:22	ZZZZZZ	2389	134080	33311	6777
20:28	MP70387-LC1	2373	132420	32979	6564
20:34	MP70387-S1	2213	123970	32431	5850
20:40	MP70387-S2	2244	125330	32366	5911
20:46	MA30705-CCV7	2260	125320	32280	6005
20:51	MA30705-CCB8	2439	135590	33451	6838
20:57	MA30705-CRI2	2368	132280	33351	6590
21:03	MA30705-CRID2	2426	134260	32977	6786
21:09	MA30705-CRIA2	2407	134300	33377	6773
21:15	MA30705-ICSA2	2078	114150	30604	5269
21:21	MA30705-ICSAB2	2049	113980	30721	5220
21:27	MA30705-CCV8	2299	126050	32426	6089
21:32	MA30705-CCB9	2396	133910	33509	6765
21:38	JB30177-8	2305	127190	32705	6119
21:44	MP70387-SD1	2359	131730	33203	6518
21:50	ZZZZZZ	2241	123890	32751	5709
21:56	ZZZZZZ	2147	120530	32072	5491
22:02	ZZZZZZ	2291	126530	33282	5842
22:08	ZZZZZZ	2270	126680	33243	5800
22:14	ZZZZZZ	2410	135220	33689	6789
22:20	MP70381-MB1	2396	135490	33721	6785
22:26	MP70381-MB2	2414	135340	33476	6803
22:32	MA30705-CCV9	2270	126450	32499	6028
22:37	MA30705-CCB10	2421	134790	33376	6794
22:43	MP70381-LC1	2383	133290	33228	6592
22:49	MP70381-LC2	2375	132580	33469	6564

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
22:55	MP70381-S1	2118	117400	31482	5461
23:00	MP70381-S2	2094	116820	31600	5400
23:06	JB30140-1	2162	119400	31664	5560
23:12	MP70381-SD1	2295	128400	33122	6202
23:18	ZZZZZZ	2156	122340	31762	5635
23:24	ZZZZZZ	2079	116650	31561	5361
23:30	ZZZZZZ	2215	123710	32255	5851
23:36	MA30705-CCV10	2274	126670	32605	6042
23:42	MA30705-CCB11	2435	135590	33230	6851
23:47	ZZZZZZ	2377	135350	33670	6728
23:53	ZZZZZZ	2386	132820	31885	6547
23:59	ZZZZZZ	2404	135560	33622	6747
00:05	ZZZZZZ	2411	135580	33879	6732
00:11	ZZZZZZ	2161	120420	31974	5668
00:17	ZZZZZZ	2194	120480	32050	5735
00:23	ZZZZZZ	1552 !	88739 !	27172	3782 !
00:29	ZZZZZZ	1916	105330	29825	4780
00:35	ZZZZZZ	2383	133520	33478	6532
00:41	MA30705-CCV11	2283	126350	32436	6053
00:46	MA30705-CCB12	2428	135580	33341	6844
00:52	ZZZZZZ	2369	131540	33650	6640
00:58	ZZZZZZ	2345	131730	33163	6456
01:04	ZZZZZZ	2379	133740	33540	6682
01:10	ZZZZZZ	2432	135670	33596	6798
01:16	ZZZZZZ	2354	133000	33583	6524
01:21	ZZZZZZ	2401	133860	33249	6710
01:27	ZZZZZZ	2203	124330	32492	5936
01:33	MP70395-MB1	2421	136090	33601	6865
01:39	MP70395-B1	2351	131030	33078	6402
01:45	MA30705-CCV12	2290	126880	32434	6064
01:51	MA30705-CCB13	2445	135880	33083	6861
01:57	MP70395-S1	2360	130920	33042	6340
02:03	MP70395-S2	2387	131300	32992	6397

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:08	JB29495-5R	2434	135520	33564	6686
02:14	MP70395-SD1	2423	134910	33406	6795
02:20	MP70395-PS1	2210	123120	31914	5713
02:26	ZZZZZZ	2392	132930	33461	6257
02:32	ZZZZZZ	2251	128320	32719	6081
02:37	ZZZZZZ	2445	134440	33987	6113
02:43	ZZZZZZ	2282	129130	33123	6150
02:49	ZZZZZZ	2328	130130	33234	5982
02:55	MA30705-CCV13	2296	126180	31774	6085
03:00	MA30705-CCB14	2449	135510	32902	6899
03:06	ZZZZZZ	2320	130640	33377	5852
03:12	ZZZZZZ	2318	129940	32840	6373
03:18	ZZZZZZ	2291	128230	32582	6128
03:24	ZZZZZZ	2332	129500	32506	6539
03:30	ZZZZZZ	2360	131720	33269	6323
03:35	ZZZZZZ	2356	131150	32672	6369
03:41	ZZZZZZ	2288	128360	32526	6011
03:47	ZZZZZZ	2293	127830	32380	6022
03:53	ZZZZZZ	2289	128920	32891	6176
03:59	ZZZZZZ	2366	133090	33115	6639
04:05	MA30705-CCV14	2311	126840	32132	6130
04:10	MA30705-CCB15	2440	135380	33122	6855
04:16	MA30705-CRI3	2411	133450	32890	6696
04:22	MA30705-CRID3	2432	134660	32851	6814
04:28	MA30705-CRIA3	2443	135740	33132	6853
04:34	MA30705-ICSA3	2081	113950	30476	5270
04:40	MA30705-ICSAB3	2085	114680	30519	5296
04:46	MA30705-CCV15	2286	126390	32091	6056
04:51	MA30705-CCB16	2429	135450	32932	6824
04:57	ZZZZZZ	2431	135670	33082	6818
05:03	ZZZZZZ	2417	134060	32835	6788
05:09	ZZZZZZ	2457	136000	32954	6919
05:15	ZZZZZZ	2428	134940	33079	6816

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30705
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
05:21	ZZZZZZ	2425	135040	32921	6814
05:27	ZZZZZZ	2468	136630	32959	6918
05:33	ZZZZZZ	2439	134960	32916	6896
05:39	ZZZZZZ	2451	135590	32911	6893
05:45	MA30705-CCV16	2297	126700	32026	6090
05:51	MA30705-CCB17	2466	135230	33079	6934
05:56	ZZZZZZ	2378	131720	33016	6442
06:02	ZZZZZZ	2429	132360	32925	6425
06:08	ZZZZZZ	2490	138860	34307	6628
06:14	ZZZZZZ	2456	135470	33953	6380
06:20	MA30705-CCV17	2303	126790	31990	6095
06:26	MA30705-CCB18	2473	135950	32541	6945
06:32	MA30705-CRI4	2413	133630	32540	6690
06:37	MA30705-CRID4	2439	135800	32981	6821
06:43	MA30705-CRIA4	2458	135200	32706	6879
06:49	MA30705-ICSA4	2103	115110	30152	5322
06:55	MA30705-ICSAB4	2090	114900	30227	5306

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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30705 Units: ug/l

Time:			13:49		14:13		15:41		16:45	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	8.7	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	.8								
Boron	100	.5								
Cadmium	3.0	.2	anr							
Calcium	5000	180	anr							
Chromium	10	.3	anr							
Cobalt	50	.2	anr							
Copper	10	.3	anr							
Iron	100	3.6	anr							
Lead	3.0	1	-0.50	<3.0	-0.10	<3.0	-0.70	<3.0	-0.60	<3.0
Lithium	20	.7								
Magnesium	5000	22	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.5	anr							
Palladium	50	.7								
Potassium	10000	110	anr							
Selenium	10	1.5	anr							
Silicon	200	7.9								
Silver	10	.5	anr							
Sodium	10000	19	anr							
Sulfur	50	6.8								
Strontium	10	.6								
Thallium	2.0	1.5	anr							
Tin	10	.6								
Titanium	10	.4								
Tungsten	50	8.5								
Vanadium	50	.2	anr							
Zinc	20	3.9	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30705 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30705 Units: ug/l

Time:			17:50		18:54		19:53		20:51	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	8.7	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	.8								
Boron	100	.5								
Cadmium	3.0	.2	anr							
Calcium	5000	180	anr							
Chromium	10	.3	anr							
Cobalt	50	.2	anr							
Copper	10	.3	anr							
Iron	100	3.6	anr							
Lead	3.0	1	0.30	<3.0	0.60	<500	0.40	<3.0	-0.20	<3.0
Lithium	20	.7								
Magnesium	5000	22	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.5	anr							
Palladium	50	.7								
Potassium	10000	110	anr							
Selenium	10	1.5	anr							
Silicon	200	7.9								
Silver	10	.5	anr							
Sodium	10000	19	anr							
Sulfur	50	6.8								
Strontium	10	.6								
Thallium	2.0	1.5	anr							
Tin	10	.6								
Titanium	10	.4								
Tungsten	50	8.5								
Vanadium	50	.2	anr							
Zinc	20	3.9	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30705 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30705 Units: ug/l

Time:			21:32	
Sample ID:			CCB9	
Metal	RL	IDL	raw	final
Aluminum	200	8.7	anr	
Antimony	6.0	1.2	anr	
Arsenic	3.0	.9	anr	
Barium	200	.3	anr	
Beryllium	1.0	.04	anr	
Bismuth	20	.8		
Boron	100	.5		
Cadmium	3.0	.2	anr	
Calcium	5000	180	anr	
Chromium	10	.3	anr	
Cobalt	50	.2	anr	
Copper	10	.3	anr	
Iron	100	3.6	anr	
Lead	3.0	1	0.30	<3.0
Lithium	20	.7		
Magnesium	5000	22	anr	
Manganese	15	.2	anr	
Molybdenum	20	.5	anr	
Nickel	10	.5	anr	
Palladium	50	.7		
Potassium	10000	110	anr	
Selenium	10	1.5	anr	
Silicon	200	7.9		
Silver	10	.5	anr	
Sodium	10000	19	anr	
Sulfur	50	6.8		
Strontium	10	.6		
Thallium	2.0	1.5	anr	
Tin	10	.6		
Titanium	10	.4		
Tungsten	50	8.5		
Vanadium	50	.2	anr	
Zinc	20	3.9	anr	

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30705 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:		13:56	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	2010	100.5
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum	anr		
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:		13:41			15:35			16:39	
Sample ID:	ICV	ICV1		CCV	CCV2		CCV	CCV3	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2000	100.0	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:		17:44			18:49			19:47	
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	2000	100.0	2000	2000	100.0	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:		20:46			21:27	
Sample ID:	CCV	CCV7		CCV	CCV8	
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	2010	100.5	2000	2010	100.5
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30705 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.1.4
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30705 Units: ug/l

Time:				13:18		13:24		13:30	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
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	3.8	126.7			18.5	92.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30705 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30705 Units: ug/l

Time:				20:57		21:03		21:09	
Sample ID:	CRI	CRIA	CRID	CRI2		CRID2		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.6	120.0			18.7	93.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30705 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30705 Units: ug/l

Time:			14:47		14:53		21:15		21:21	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	510000	102.0	497000	99.4	507000	101.4	493000	98.6
Antimony		1000	1.2		997	99.7	-0.10		999	99.9
Arsenic		1000	4.2		1010	101.0	3.5		1010	101.0
Barium		500	-1.5		494	98.8	-1.5		491	98.2
Beryllium		500	-0.50		464	92.8	-0.50		466	93.2
Bismuth		500	-0.20		492	98.4	0.60		490	98.0
Boron			0.0		8.1		-1.1		8.3	
Cadmium		1000	-0.30		977	97.7	-0.40		977	97.7
Calcium	400000	400000	369000	92.3	370000	92.5	375000	93.8	376000	94.0
Chromium		500	-0.60		449	89.8	-0.30		451	90.2
Cobalt		500	-0.20		449	89.8	-0.40		450	90.0
Copper		500	-0.20		499	99.8	-0.40		498	99.6
Iron	200000	200000	194000	97.0	183000	91.5	196000	98.0	184000	92.0
Lead		1000	5.7		887	88.7	2.4		893	89.3
Lithium		500	0.80		532	106.4	0.70		527	105.4
Magnesium	500000	500000	533000	106.6	529000	105.8	538000	107.6	533000	106.6
Manganese		500	-2.7		453	90.6	-2.3		453	90.6
Molybdenum		500	-2.0		469	93.8	-2.1		470	94.0
Nickel		1000	-2.0		883	88.3	-2.2		884	88.4
Palladium		500	10.8		559	111.8	9.8		559	111.8
Potassium			7.6		7.0		6.5		0.20	
Selenium		1000	0.40		989	98.9	1.5		991	99.1
Silicon			0.40		3.0		0.50		4.0	
Silver		1000	0.10		1010	101.0	0.70		1010	101.0
Sodium			-3.3		-2.0		-6.4		-2.8	
Sulfur		500	80.1		531	106.2	80.6		531	106.2
Strontium			0.30		0.40		0.0		0.10	
Thallium		1000	-2.0		926	92.6	0.90		933	93.3
Tin			-0.40		-0.60		0.0		-0.70	
Titanium			-0.40		-0.80		-0.80		-0.70	
Tungsten		500	3.5		516	103.2	-3.0		511	102.2
Vanadium		500	9.7		474	94.8	9.4		474	94.8
Zinc		1000	-1.9		902	90.2	-1.9		911	91.1

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031413M1.ICP Date Analyzed: 03/14/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30705 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-2.9	410	82.0	-3.1	406	81.2

(*) Outside of QC limits
(anr) Analyte not requested

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:15	MA30715-STD1	1		STDA
16:21	MA30715-STD2	1		STDB
16:27	MA30715-STD3	1		STDC
16:33	MA30715-STD4	1		STDD
16:39	MA30715-CCV1	1		
16:44	MA30715-CCB1	1		
16:50	MA30715-CRI1	1		
16:56	MA30715-CRID1	1		
17:02	MA30715-CRIA1	1		
17:08	MA30715-ICV1	1		
17:21	MA30715-ICB1	1		
17:31	MA30715-ICCV1	1		
17:42	MA30715-CCB2	1		
17:47	ZZZZZZ	1		
17:58	ZZZZZZ	1		
18:03	ZZZZZZ	5		
18:09	ZZZZZZ	3		
18:15	MA30715-ICSA1	1		
18:21	MA30715-ICSAB1	1		
18:27	ZZZZZZ	1		
18:33	ZZZZZZ	1		
18:39	ZZZZZZ	1		
18:45	ZZZZZZ	1		
18:51	MA30715-CCV2	1		
18:56	MA30715-CCB3	1		
19:02	ZZZZZZ	1		
19:08	ZZZZZZ	1		
19:14	ZZZZZZ	1		
19:20	ZZZZZZ	1		
19:26	ZZZZZZ	1		
19:32	ZZZZZZ	1		
19:38	ZZZZZZ	1		
19:44	ZZZZZZ	3		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:50	ZZZZZZ	1		
19:56	ZZZZZZ	3		
20:02	MA30715-CCV3	1		
20:07	MA30715-CCB4	1		
20:13	ZZZZZZ	10		
20:19	ZZZZZZ	5		
20:25	ZZZZZZ	1		
20:31	ZZZZZZ	1		
20:37	MP70381-S1	1		
20:43	MP70381-S2	1		
20:49	MP70381-SD1	5		
20:55	MP70387-S1	1		
21:00	MP70387-S2	1		
21:06	MA30715-CCV4	1		
21:12	MA30715-CCB5	1		
21:18	MP70387-SD1	5		
21:24	ZZZZZZ	1		
21:30	MP70390-S3	1		
21:35	JB30356-2	1		(sample used for QC only; not part of login JB30306)
21:41	ZZZZZZ	1		
21:47	ZZZZZZ	1		
21:53	ZZZZZZ	1		
21:59	ZZZZZZ	1		
22:05	ZZZZZZ	1		
22:11	MA30715-CCV5	1		
22:16	MA30715-CCB6	1		
22:22	ZZZZZZ	1		
22:28	ZZZZZZ	1		
22:34	ZZZZZZ	1		
22:40	ZZZZZZ	1		
22:46	ZZZZZZ	1		
22:52	ZZZZZZ	1		
22:58	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:04	ZZZZZZ	1		
23:09	ZZZZZZ	1		
23:15	ZZZZZZ	1		
23:21	MA30715-CCV6	1		
23:27	MA30715-CCB7	1		
23:33	ZZZZZZ	1		
23:39	MP70467-MB1	1		
23:45	MP70467-LC1	1		
23:51	MP70467-B1	1		
23:56	MP70467-S1	1		
00:02	MP70467-S2	1		
00:08	JB31276-1	1		(sample used for QC only; not part of login JB30306)
00:14	MP70467-SD1	5		
00:20	ZZZZZZ	1		
00:26	MA30715-CCV7	1		
00:31	MA30715-CCB8	1		
00:37	MA30715-CRI2	1		
00:43	MA30715-CRID2	1		
00:49	MA30715-CRIA2	1		
00:55	MA30715-ICSA2	1		
01:01	MA30715-ICSAB2	1		
01:07	MA30715-CCV8	1		
01:13	MA30715-CCB9	1		
01:19	ZZZZZZ	1		
01:25	ZZZZZZ	1		
01:31	ZZZZZZ	1		
01:36	ZZZZZZ	1		
01:42	ZZZZZZ	1		
01:48	ZZZZZZ	1		
01:54	ZZZZZZ	1		
02:00	ZZZZZZ	1		
02:06	ZZZZZZ	1		
02:12	MA30715-CCV9	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:18	MA30715-CCB10	1		
02:24	ZZZZZZ	1		
02:30	ZZZZZZ	1		
02:36	ZZZZZZ	1		
02:42	ZZZZZZ	1		
02:47	ZZZZZZ	1		
02:53	ZZZZZZ	1		
02:59	ZZZZZZ	1		
03:05	ZZZZZZ	1		
03:10	ZZZZZZ	1		
03:16	ZZZZZZ	1		
03:22	MA30715-CCV10	1		
03:28	MA30715-CCB11	1		
03:34	ZZZZZZ	1		
03:39	ZZZZZZ	1		
03:45	ZZZZZZ	1		
03:51	ZZZZZZ	1		
03:57	ZZZZZZ	1		
04:03	ZZZZZZ	1		
04:08	ZZZZZZ	1		
04:14	ZZZZZZ	1		
04:20	ZZZZZZ	1		
04:26	ZZZZZZ	1		
04:32	MA30715-CCV11	1		
04:38	MA30715-CCB12	1		
04:44	ZZZZZZ	1		
04:50	ZZZZZZ	1		
04:56	ZZZZZZ	1		
05:02	ZZZZZZ	1		
05:07	ZZZZZZ	1		
05:13	ZZZZZZ	1		
05:19	ZZZZZZ	1		
05:25	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
05:31	ZZZZZZ	1		
05:37	ZZZZZZ	1		
05:42	MA30715-CCV12	1		
05:48	MA30715-CCB13	1		
05:54	ZZZZZZ	1		
06:00	JB30306-1	1		
06:06	JB30306-2	1		
06:12	JB30306-3	1		
06:17	JB30306-4	1		
06:23	JB30306-5	1		
06:29	ZZZZZZ	1		
06:35	ZZZZZZ	1		
06:41	ZZZZZZ	1		
06:47	ZZZZZZ	1		
06:53	MA30715-CCV13	1		
06:58	MA30715-CCB14	1		
07:04	ZZZZZZ	1		
07:10	MP70470-S1	1		
07:16	MP70470-S2	1		
07:22	JB30509-9	1		(sample used for QC only; not part of login JB30306)
07:28	MP70470-SD1	5		
07:34	MA30715-CCV14	1		
07:40	MA30715-CCB15	1		
07:46	MA30715-CRI3	1		
07:51	MA30715-CRID3	1		
07:57	MA30715-CRIA3	1		
08:03	MA30715-ICSA3	1		
08:09	MA30715-ICSAB3	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:15	MA30715-STD1	2172 R	121670 R	29051 R	6201 R
16:21	MA30715-STD2	2059	116050	28591	5631
16:27	MA30715-STD3	2016	113080	28327	5450
16:33	MA30715-STD4	1938	109930	28085	5191
16:39	MA30715-CCV1	No results reported for the elements associated with this internal standard.			
16:44	MA30715-CCB1	No results reported for the elements associated with this internal standard.			
16:50	MA30715-CRI1	2103	118940	28839	5971
16:56	MA30715-CRID1	2143	120550	28810	6100
17:02	MA30715-CRIA1	2159	121660	29129	6180
17:08	MA30715-ICV1	2009	113100	28187	5430
17:21	MA30715-ICB1	2119	120880	29194	6086
17:31	MA30715-ICCV1	1998	113130	28222	5402
17:42	MA30715-CCB2	2151	121700	29090	6174
17:47	ZZZZZZ	2112	120930	29073	6066
17:58	ZZZZZZ	2147	120890	28931	6146
18:03	ZZZZZZ	2101	119080	29128	5931
18:09	ZZZZZZ	2136	120000	28986	6091
18:15	MA30715-ICSA1	1803	101730	26530	4668
18:21	MA30715-ICSAB1	1822	101470	26493	4707
18:27	ZZZZZZ	2120	112370	28048	5406
18:33	ZZZZZZ	1899	108390	27619	5120
18:39	ZZZZZZ	2102	118120	28625	6076
18:45	ZZZZZZ	1913	109120	27499	5178
18:51	MA30715-CCV2	2020	113310	28092	5455
18:56	MA30715-CCB3	2137	121270	29007	6119
19:02	ZZZZZZ	2112	120890	29178	6098
19:08	ZZZZZZ	1859	104840	27161	4846
19:14	ZZZZZZ	1921	110160	27928	5177
19:20	ZZZZZZ	2146	121490	29139	6177
19:26	ZZZZZZ	2096	119220	29115	5843
19:32	ZZZZZZ	2124	121220	29329	6057
19:38	ZZZZZZ	2144	121790	29290	6105
19:44	ZZZZZZ	2011	114360	28461	5503

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
19:50	ZZZZZZ	2158	121810	28964	6167
19:56	ZZZZZZ	2015	113930	28166	5519
20:02	MA30715-CCV3	2019	113240	28147	5442
20:07	MA30715-CCB4	2145	121380	28908	6148
20:13	ZZZZZZ	1875	104900	27236	4899
20:19	ZZZZZZ	1945	107650	27901	5132
20:25	ZZZZZZ	1352 !	78173 !	22942	3337 !
20:31	ZZZZZZ	1669	93279	25649	4244 !
20:37	MP70381-S1	1854	105110	27282	4850
20:43	MP70381-S2	1860	104860	27234	4856
20:49	MP70381-SD1	2072	116200	27361	5669
20:55	MP70387-S1	1973	111920	28386	5269
21:00	MP70387-S2	2007	111770	27778	5340
21:06	MA30715-CCV4	2029	114280	28395	5464
21:12	MA30715-CCB5	2154	121890	28736	6164
21:18	MP70387-SD1	2126	119290	28551	5938
21:24	ZZZZZZ	2127	121410	29231	6187
21:30	MP70390-S3	2046	115640	28687	5674
21:35	JB30356-2	2119	120920	28833	6102
21:41	ZZZZZZ	2117	120280	29297	6108
21:47	ZZZZZZ	2101	120020	28809	6048
21:53	ZZZZZZ	2105	120270	29064	6109
21:59	ZZZZZZ	2046	116710	28899	5777
22:05	ZZZZZZ	1973	113070	28475	5436
22:11	MA30715-CCV5	2026	113210	28189	5449
22:16	MA30715-CCB6	2138	120930	28647	6116
22:22	ZZZZZZ	2018	113480	28609	5534
22:28	ZZZZZZ	2014	114010	28317	5519
22:34	ZZZZZZ	1911	109370	27720	5188
22:40	ZZZZZZ	2041	116080	28811	5677
22:46	ZZZZZZ	2077	118180	28807	5814
22:52	ZZZZZZ	2037	116000	28753	5585
22:58	ZZZZZZ	1876	105600	27093	4932

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:04	ZZZZZZ	1570	89884	25583	4012 !
23:09	ZZZZZZ	2149	121730	28389	6115
23:15	ZZZZZZ	1972	111540	28030	5337
23:21	MA30715-CCV6	2003	113520	27965	5395
23:27	MA30715-CCB7	2158	121450	28827	6153
23:33	ZZZZZZ	1765	100440	26591	4551
23:39	MP70467-MB1	2117	121110	29179	6142
23:45	MP70467-LC1	2127	118590	28862	5681
23:51	MP70467-B1	2083	117300	28268	5735
23:56	MP70467-S1	2117	117540	28847	5596
00:02	MP70467-S2	2114	117570	28810	5608
00:08	JB31276-1	2134	120430	29341	5774
00:14	MP70467-SD1	2173	121870	28889	6080
00:20	ZZZZZZ	1823	104700	26431	5007
00:26	MA30715-CCV7	2064	114660	28047	5528
00:31	MA30715-CCB8	2163	122520	28819	6178
00:37	MA30715-CRI2	2153	120340	28575	6055
00:43	MA30715-CRID2	2160	121950	28882	6123
00:49	MA30715-CRIA2	2173	122390	28608	6186
00:55	MA30715-ICSA2	1843	102910	26222	4724
01:01	MA30715-ICSAB2	1842	102810	26189	4732
01:07	MA30715-CCV8	2045	114720	27851	5493
01:13	MA30715-CCB9	2157	122640	28872	6139
01:19	ZZZZZZ	2181	122920	28966	6203
01:25	ZZZZZZ	2149	121640	29245	6117
01:31	ZZZZZZ	2189	122090	28322	6241
01:36	ZZZZZZ	2165	122340	28888	6153
01:42	ZZZZZZ	2178	122570	29009	6197
01:48	ZZZZZZ	2194	122770	28213	6238
01:54	ZZZZZZ	2095	121890	28943	6143
02:00	ZZZZZZ	2168	122230	28458	6155
02:06	ZZZZZZ	2157	122800	28991	6142
02:12	MA30715-CCV9	2061	114330	27864	5515

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:18	MA30715-CCB10	2187	123020	28764	6232
02:24	ZZZZZZ	2194	122670	29881	5759
02:30	ZZZZZZ	1961	112270	28309	5106
02:36	ZZZZZZ	2117	120250	29366	5659
02:42	ZZZZZZ	2132	119290	28776	5675
02:47	ZZZZZZ	2107	119230	29101	5575
02:53	ZZZZZZ	2143	120070	29202	5667
02:59	ZZZZZZ	2132	120670	29020	5744
03:05	ZZZZZZ	2119	119350	28786	5714
03:10	ZZZZZZ	2143	119570	28840	5753
03:16	ZZZZZZ	2158	122370	29262	5854
03:22	MA30715-CCV10	2065	114370	27756	5521
03:28	MA30715-CCB11	2193	123620	28305	6231
03:34	ZZZZZZ	2140	121160	29015	5747
03:39	ZZZZZZ	2170	121390	29054	5802
03:45	ZZZZZZ	2138	121640	29048	5680
03:51	ZZZZZZ	2139	121500	29149	5804
03:57	ZZZZZZ	2188	121860	28892	5891
04:03	ZZZZZZ	2161	122200	29029	5839
04:08	ZZZZZZ	2142	120950	28918	5787
04:14	ZZZZZZ	2183	123720	28893	6276
04:20	ZZZZZZ	1907	108140	27146	4717
04:26	ZZZZZZ	2180	121340	29395	5471
04:32	MA30715-CCV11	2055	114960	27772	5511
04:38	MA30715-CCB12	2179	122770	29683	6189
04:44	ZZZZZZ	1696	97922	25585	4301 !
04:50	ZZZZZZ	1874	106890	27174	4649
04:56	ZZZZZZ	2201	124250	29511	5900
05:02	ZZZZZZ	2167	120650	28616	5813
05:07	ZZZZZZ	2208	124060	29411	5946
05:13	ZZZZZZ	2157	122110	29272	5838
05:19	ZZZZZZ	2168	122420	29095	5885
05:25	ZZZZZZ	2151	120150	28683	5709

INTERNAL STANDARD SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
Analyst: BL Run ID: MA30715
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
05:31	ZZZZZZ	2143	120260	28760	5627
05:37	ZZZZZZ	2214	123880	29766	5736
05:42	MA30715-CCV12	2055	115380	27695	5498
05:48	MA30715-CCB13	2189	122410	28505	6215
05:54	ZZZZZZ	2028	117660	28698	5290
06:00	JB30306-1	2141	120570	28763	5702
06:06	JB30306-2	2175	123020	29094	5711
06:12	JB30306-3	2186	121900	29343	5680
06:17	JB30306-4	2155	121030	28931	5706
06:23	JB30306-5	2067	117610	28551	5377
06:29	ZZZZZZ	2207	123540	28678	6277
06:35	ZZZZZZ	2208	124060	28573	6263
06:41	ZZZZZZ	2198	123620	28552	6259
06:47	ZZZZZZ	2186	123320	28690	6217
06:53	MA30715-CCV13	2085	116010	27805	5565
06:58	MA30715-CCB14	2220	123880	28656	6295
07:04	ZZZZZZ	1778	99771	26504	4511
07:10	MP70470-S1	1757	98596	26051	4385
07:16	MP70470-S2	1778	98854	25961	4435
07:22	JB30509-9	1754	98728	26007	4382
07:28	MP70470-SD1	1999	111020	27476	5253
07:34	MA30715-CCV14	2042	113940	27569	5462
07:40	MA30715-CCB15	2191	123440	28560	6217
07:46	MA30715-CRI3	2179	121070	28184	6104
07:51	MA30715-CRID3	2177	122070	28294	6144
07:57	MA30715-CRIA3	2222	123420	28194	6290
08:03	MA30715-ICSA3	1866	103460	25994	4767
08:09	MA30715-ICSAB3	1863	103320	25902	4767

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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 Units: ug/l

Time:			17:21		17:42		18:56		20:07	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	8.7	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	.8								
Boron	100	.5								
Cadmium	3.0	.2	anr							
Calcium	5000	180	anr							
Chromium	10	.3	anr							
Cobalt	50	.2	anr							
Copper	10	.3	anr							
Iron	100	3.6	anr							
Lead	3.0	1	0.10	<3.0	0.20	<3.0	0.60	<3.0	0.60	<3.0
Lithium	20	.7								
Magnesium	5000	22	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.5	anr							
Palladium	50	.7								
Potassium	10000	110	anr							
Selenium	10	1.5	anr							
Silicon	200	7.9								
Silver	10	.5	anr							
Sodium	10000	19	anr							
Sulfur	50	6.8								
Strontium	10	.6								
Thallium	2.0	1.5	anr							
Tin	10	.6								
Titanium	10	.4								
Tungsten	50	8.5								
Vanadium	50	.2	anr							
Zinc	20	3.9	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 Units: ug/l

Time:			21:12		22:16		23:27		00:31	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	8.7	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	.8								
Boron	100	.5								
Cadmium	3.0	.2	anr							
Calcium	5000	180	anr							
Chromium	10	.3	anr							
Cobalt	50	.2	anr							
Copper	10	.3	anr							
Iron	100	3.6	anr							
Lead	3.0	1	0.80	<3.0	0.30	<3.0	0.60	<3.0	0.70	<3.0
Lithium	20	.7								
Magnesium	5000	22	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.5	anr							
Palladium	50	.7								
Potassium	10000	110	anr							
Selenium	10	1.5	anr							
Silicon	200	7.9								
Silver	10	.5	anr							
Sodium	10000	19	anr							
Sulfur	50	6.8								
Strontium	10	.6								
Thallium	2.0	1.5	anr							
Tin	10	.6								
Titanium	10	.4								
Tungsten	50	8.5								
Vanadium	50	.2	anr							
Zinc	20	3.9	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 Units: ug/l

Time:			01:13		02:18		03:28		04:38	
Sample ID:			CCB9		CCB10		CCB11		CCB12	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	8.7	anr							
Antimony	6.0	1.2	anr							
Arsenic	3.0	.9	anr							
Barium	200	.3	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	.8								
Boron	100	.5								
Cadmium	3.0	.2	anr							
Calcium	5000	180	anr							
Chromium	10	.3	anr							
Cobalt	50	.2	anr							
Copper	10	.3	anr							
Iron	100	3.6	anr							
Lead	3.0	1	0.30	<3.0	1.1	<3.0	0.70	<3.0	1.2	<3.0
Lithium	20	.7								
Magnesium	5000	22	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.5	anr							
Palladium	50	.7								
Potassium	10000	110	anr							
Selenium	10	1.5	anr							
Silicon	200	7.9								
Silver	10	.5	anr							
Sodium	10000	19	anr							
Sulfur	50	6.8								
Strontium	10	.6								
Thallium	2.0	1.5	anr							
Tin	10	.6								
Titanium	10	.4								
Tungsten	50	8.5								
Vanadium	50	.2	anr							
Zinc	20	3.9	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 Units: ug/l

Time:			05:48		06:58		07:40	
Sample ID:			CCB13		CCB14		CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final
Aluminum	200	8.7	anr					
Antimony	6.0	1.2	anr					
Arsenic	3.0	.9	anr					
Barium	200	.3	anr					
Beryllium	1.0	.04	anr					
Bismuth	20	.8						
Boron	100	.5						
Cadmium	3.0	.2	anr					
Calcium	5000	180	anr					
Chromium	10	.3	anr					
Cobalt	50	.2	anr					
Copper	10	.3	anr					
Iron	100	3.6	anr					
Lead	3.0	1	0.80	<3.0	0.70	<3.0	0.60	<3.0
Lithium	20	.7						
Magnesium	5000	22	anr					
Manganese	15	.2	anr					
Molybdenum	20	.5	anr					
Nickel	10	.5	anr					
Palladium	50	.7						
Potassium	10000	110	anr					
Selenium	10	1.5	anr					
Silicon	200	7.9						
Silver	10	.5	anr					
Sodium	10000	19	anr					
Sulfur	50	6.8						
Strontium	10	.6						
Thallium	2.0	1.5	anr					
Tin	10	.6						
Titanium	10	.4						
Tungsten	50	8.5						
Vanadium	50	.2	anr					
Zinc	20	3.9	anr					

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30715 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.3

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:		17:31	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	1980	99.0
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum	anr		
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:		17:08			18:51			20:02	
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	1970	98.5	2000	1990	99.5	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:		21:06			22:11			23:21	
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	1990	99.5	2000	1990	99.5	2000	2010	100.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:		00:26			01:07			02:12	
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	2000	100.0	2000	1990	99.5	2000	1990	99.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:		03:22			04:32			05:42	
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	1990	99.5	2000	2000	100.0	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:		06:53			07:34	
Sample ID:	CCV	CCV13		CCV	CCV14	
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	2000	100.0	2000	2020	101.0
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30715 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

(*) Outside of QC limits
(anr) Analyte not requested

10.2.4
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30715 Units: ug/l

Time:				16:50		16:56		17:02	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
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	3.1	103.3			19.6	98.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30715 Units: ug/l

Time:				00:37		00:43		00:49	
Sample ID:	CRI	CRIA	CRID	CRI2		CRID2		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.6	120.0			20.0	100.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30715 Units: ug/l

Time:				07:46		07:51		07:57	
Sample ID:	CRI	CRIA	CRID	CRI3		CRID3		CRIA3	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.2	106.7			19.6	98.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30715 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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30715 Units: ug/l

Time:			18:15		18:21		00:55		01:01	
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	508000	101.6	527000	105.4	505000	101.0
Antimony		1000	-1.1		1010	101.0	-1.1		1010	101.0
Arsenic		1000	-1.9		1010	101.0	-0.90		1000	100.0
Barium		500	-1.1		506	101.2	-1.0		506	101.2
Beryllium		500	0.0		475	95.0	0.0		475	95.0
Bismuth		500	0.40		499	99.8	-0.40		498	99.6
Boron			0.20		10.6		0.40		9.4	
Cadmium		1000	0.50		992	99.2	0.20		994	99.4
Calcium	400000	400000	377000	94.3	380000	95.0	382000	95.5	380000	95.0
Chromium		500	0.60		457	91.4	0.40		454	90.8
Cobalt		500	0.60		452	90.4	0.20		453	90.6
Copper		500	1.5		514	102.8	1.4		515	103.0
Iron	200000	200000	198000	99.0	186000	93.0	200000	100.0	187000	93.5
Lead		1000	0.30		903	90.3	1.0		907	90.7
Lithium		500	1.0		547	109.4	1.0		552	110.4
Magnesium	500000	500000	542000	108.4	539000	107.8	547000	109.4	541000	108.2
Manganese		500	-2.6		459	91.8	-2.1		457	91.4
Molybdenum		500	-0.60		473	94.6	-0.90		472	94.4
Nickel		1000	-2.1		887	88.7	-2.8		890	89.0
Palladium		500	14.3		579	115.8	12.3		582	116.4
Potassium			32.9		14.0		28.5		12.6	
Selenium		1000	-2.4		997	99.7	1.3		1000	100.0
Silicon			-2.0		1.5		-0.90		1.1	
Silver		1000	0.0		1040	104.0	0.70		1040	104.0
Sodium			7.5		9.1		7.1		8.0	
Sulfur		500	80.2		541	108.2	82.9		542	108.4
Strontium			1.0		0.90		0.60		0.70	
Thallium		1000	-1.2		944	94.4	-0.30		957	95.7
Tin			0.80		0.70		0.20		1.3	
Titanium			0.20		0.30		0.40		0.40	
Tungsten		500	21.9		529	105.8	15.4		525	105.0
Vanadium		500	2.2		476	95.2	1.5		472	94.4
Zinc		1000	-1.7		909	90.9	-1.8		906	90.6

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30715 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-2.1	416	83.2	-2.3	411	82.2

(*) Outside of QC limits
(anr) Analyte not requested

10.2.6
10

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30715 Units: ug/l

Time:			08:03		08:09	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3	
Metal	True	True	Results	% Rec	Results	% Rec
Aluminum	500000	500000	522000	104.4	508000	101.6
Antimony		1000	0.40		1020	102.0
Arsenic		1000	-0.30		1010	101.0
Barium		500	-1.0		509	101.8
Beryllium		500	0.0		477	95.4
Bismuth		500	0.20		499	99.8
Boron			1.0		10.2	
Cadmium		1000	0.40		998	99.8
Calcium	400000	400000	380000	95.0	386000	96.5
Chromium		500	0.50		462	92.4
Cobalt		500	0.30		454	90.8
Copper		500	1.3		517	103.4
Iron	200000	200000	199000	99.5	189000	94.5
Lead		1000	3.5		916	91.6
Lithium		500	1.1		561	112.2
Magnesium	500000	500000	549000	109.8	548000	109.6
Manganese		500	-1.8		467	93.4
Molybdenum		500	-1.0		472	94.4
Nickel		1000	-3.5		891	89.1
Palladium		500	10.3		586	117.2
Potassium			22.4		26.3	
Selenium		1000	1.3		1010	101.0
Silicon			-1.5		2.3	
Silver		1000	1.2		1060	106.0
Sodium			12.6		14.0	
Sulfur		500	83.6		550	110.0
Strontium			0.80		0.70	
Thallium		1000	2.1		971	97.1
Tin			0.90		0.60	
Titanium			0.50		0.20	
Tungsten		500	16.0		525	105.0
Vanadium		500	1.4		473	94.6
Zinc		1000	-1.6		910	91.0

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SA031513M2.ICP Date Analyzed: 03/15/13 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30715 Units: ug/l

Time:				
Sample ID:				
Metal				
Zirconium	500	-2.1	412	82.4

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.87	.74		
Antimony	2.0	.12	.15		
Arsenic	2.0	.09	.13		
Barium	20	.03	.054		
Beryllium	0.20	.004	.02		
Bismuth	2.0	.08	.14		
Boron	10	.05	.14		
Cadmium	0.50	.02	.025		
Calcium	500	18	2.3		
Chromium	1.0	.03	.11		
Cobalt	5.0	.02	.031		
Copper	2.5	.03	.13		
Iron	50	.36	.79		
Lead	2.0	.1	.11	-0.030	<2.0
Lithium	2.0	.07	.25		
Magnesium	500	2.2	3.1		
Manganese	1.5	.02	.048		
Molybdenum	2.0	.05	.074		
Nickel	4.0	.05	.11		
Palladium	5.0	.07	.17		
Potassium	1000	11	14		
Selenium	2.0	.15	.24		
Silicon	20	.79	1.9		
Silver	0.50	.05	.063		
Sodium	1000	1.9	13		
Strontium	1.0	.06	.17		
Sulfur	5.0	.68	.65		
Thallium	1.0	.15	.22		
Tin	5.0	.06	1.5		
Titanium	1.0	.04	.62		
Tungsten	5.0	.85	1.1		
Vanadium	5.0	.02	.1		
Zinc	2.0	.39	.19		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal			
Zirconium	2.0	.03	.1

Associated samples MP70421: JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/13

Metal	JB30267-1 Original	MS	Spikelot MPIRS1	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron					
Lead	3.3	98.2	105	90.7	75-125
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	anr				
Palladium					
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium					
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				
Zinc	anr				

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421 | Methods: SW846 6010C
Matrix Type: SOLID | Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP70421: JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/13

Metal	JB30267-1 Original	MSD	Spikelot MPIRS1	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron						
Lead	3.3	97.2	104	90.6	1.0	20
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Palladium						
Potassium						
Selenium	anr					
Silicon						
Silver	anr					
Sodium						
Strontium						
Sulfur						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP70421: JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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

10.3.2

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SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/14/13

Metal	BSP Result	Spikelot MPIRS1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron				
Lead	93.3	100	93.3	80-120
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP70421: JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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

10.3.3 10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/14/13

Metal	JB30267-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron				
Lead	31.7	30.2	4.7	0-10
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Palladium				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			
Zinc	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB30306
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP70421 Methods: SW846 6010C
Matrix Type: SOLID Units: ug/l

Prep Date:

Metal

Zirconium

Associated samples MP70421: JB30306-1, JB30306-2, JB30306-3, JB30306-4, JB30306-5

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

New Jersey

ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Job Number: JB30306
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB30306-1 **Analyzed:** 14-MAR-13 by CV **Method:** SM2540 G-97
ClientID: S-369_0-2'

Wet Weight (Total)	31.89	g
Tare Weight	25.78	g
Dry Weight (Total)	31.12	g
Solids, Percent	87.4	%

Sample: JB30306-2 **Analyzed:** 14-MAR-13 by CV **Method:** SM2540 G-97
ClientID: S-369_6-8'

Wet Weight (Total)	34.56	g
Tare Weight	26.99	g
Dry Weight (Total)	33.29	g
Solids, Percent	83.2	%

Sample: JB30306-3 **Analyzed:** 14-MAR-13 by CV **Method:** SM2540 G-97
ClientID: S-369_8-10'

Wet Weight (Total)	37.05	g
Tare Weight	28.02	g
Dry Weight (Total)	35.46	g
Solids, Percent	82.4	%

Sample: JB30306-4 **Analyzed:** 14-MAR-13 by CV **Method:** SM2540 G-97
ClientID: S-365_0-2'

Wet Weight (Total)	31.9	g
Tare Weight	26.12	g
Dry Weight (Total)	31.23	g
Solids, Percent	88.4	%

Sample: JB30306-5 **Analyzed:** 14-MAR-13 by CV **Method:** SM2540 G-97
ClientID: S-365_4-6'

Wet Weight (Total)	27.14	g
Tare Weight	18.55	g
Dry Weight (Total)	25.81	g
Solids, Percent	84.5	%