New Jersey
ACCUTEST LABORATORIES

11/21/15

Technical Report for

Stantec Consulting Services Inc.

Sunoco - Marcus Hook Facility, PA

MHIC MH10 Post Ex

Accutest Job Number: JC7895

Sampling Date: 11/05/15

Report to:

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Total number of pages in report: **292**

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

Nancy Cole
Laboratory Director

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Sections: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Table of Contents

-1-

Section 1: Sample Summary **4**
Section 2: Case Narrative/Conformance Summary **5**
Section 3: Summary of Hits **8**
Section 4: Sample Results **10**
4.1: JC7895-1: MH10-1C-1-20151105 11
4.2: JC7895-2: MH10-1D-1-20151105 16
Section 5: Misc. Forms **21**
5.1: Chain of Custody 22
5.2: Sample Tracking Chronicle 25
5.3: Internal Chain of Custody 26
Section 6: GC/MS Volatiles - QC Data Summaries **29**
6.1: Method Blank Summary 30
6.2: Blank Spike Summary 32
6.3: Matrix Spike Summary 34
6.4: Matrix Spike/Matrix Spike Duplicate Summary 35
6.5: Duplicate Summary 36
6.6: Instrument Performance Checks (BFB) 37
6.7: Internal Standard Area Summaries 41
6.8: Surrogate Recovery Summaries 43
6.9: Initial and Continuing Calibration Summaries 44
Section 7: GC/MS Volatiles - Raw Data **72**
7.1: Samples 73
7.2: Method Blanks 91
Section 8: GC/MS Semi-volatiles - QC Data Summaries **95**
8.1: Method Blank Summary 96
8.2: Blank Spike Summary 102
8.3: Matrix Spike/Matrix Spike Duplicate Summary 108
8.4: Instrument Performance Checks (DFTPP) 112
8.5: Internal Standard Area Summaries 121
8.6: Surrogate Recovery Summaries 125
8.7: Initial and Continuing Calibration Summaries 126
Section 9: GC/MS Semi-volatiles - Raw Data **170**
9.1: Samples 171
9.2: Method Blanks 199
Section 10: Metals Analysis - QC Data Summaries **205**
10.1: Inst QC MA38045: Co,Pb,Ni,V,Zn 206
10.2: Prep QC MP90287: Co,Pb,Ni,V,Zn 254
Section 11: General Chemistry - QC Data Summaries **264**
11.1: Percent Solids Raw Data Summary 265
Section 12: Misc. Forms (Accutest Labs of New England, Inc.) **266**
12.1: Chain of Custody 267
12.2: Sample Tracking Chronicle 269

Table of Contents

12.3: Internal Chain of Custody 270
Section 13: GC Volatiles - QC Data (Accutest Labs of New England, Inc.) 271
13.1: Method Blank Summary 272
13.2: Blank Spike Summary 273
13.3: Matrix Spike/Matrix Spike Duplicate Summary 274
13.4: Surrogate Recovery Summaries 275
13.5: GC Surrogate Retention Time Summaries 276
13.6: Initial and Continuing Calibration Summaries 277
Section 14: GC Volatiles - Raw Data (Accutest Labs of New England, Inc.) 280
14.1: Samples 281
14.2: Method Blanks 289

Sample Summary

Stantec Consulting Services Inc.

Job No: JC7895

Sunoco - Marcus Hook Facility, PA
Project No: MHIC MH10 Post Ex

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JC7895-1	11/05/15	13:45	DD/JD	11/05/15	SO	Soil	MH10-1C-1-20151105
JC7895-2	11/05/15	13:50	DD/JD	11/05/15	SO	Soil	MH10-1D-1-20151105

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Stantec Consulting Services Inc.	**Job No**	JC7895
Site:	Sunoco - Marcus Hook Facility, PA	**Report Date**	11/21/2015 11:52:34 A

On 11/05/2015, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a maximum corrected temperature of 2.2 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JC7895 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 8260C

Matrix: SO **Batch ID:** VD9626

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC7984-3MS, JC7984-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JC7895-1: Dilution required due to matrix interference.

Matrix: SO **Batch ID:** VV6649

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC8031-3DUP, JC8038-12MS were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270D

Matrix: SO **Batch ID:** OP88822

- All samples were extracted within the recommended method holding time.
- Sample(s) JC7769-1MS, JC7769-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike / Matrix Spike Duplicate Recovery(s) for 2-Methylnaphthalene, Acenaphthene, Fluorene, Naphthalene are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike / Matrix Spike Duplicate Recovery(s) for Fluoranthene, Phenanthrene, Pyrene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- RPD(s) for MSD for 2,4-Dinitrophenol are outside control limits for sample OP88822-MSD. Analytical precision exceeds in-house control limits.
- JC7895-2: Elevated detection limit due to high final volume of viscous extract.

Matrix: SO **Batch ID:** OP89030

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC8066-21MS, JC8066-21MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for 2,4-Dinitrophenol are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for 2,4-Dinitrophenol, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Pyrene are outside control limits. Outside control limits due to matrix interference.

Volatiles by GC By Method SW846 8011

Matrix: SO	Batch ID: M:GBB3513

- The data for SW846 8011 meets quality control requirements.
- JC7895-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JC7895-2: Analysis performed at Accutest Laboratories, Marlborough, MA.

Metals By Method SW846 6010C

Matrix: SO	Batch ID: MP90287

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC7762-12MS, JC7762-12MSD, JC7762-12SDL were used as the QC samples for metals.

Wet Chemistry By Method SM2540 G-97

Matrix: SO	Batch ID: GN35781

- 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

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Accutest New Jersey	**Job No**	JC7895
Site:	SECORPAE: Marcus Hook Industrial Complex	**Report Date**	11/19/2015 9:15:21 AM

2 Sample(s) were collected on 11/05/2015 and were received at Accutest on 11/05/2015 properly preserved, at 5 Deg. C and intact. These Samples received an Accutest job number of JC7895. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GC By Method SW846 8011

Matrix: SO **Batch ID:** OP45402

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC7895-1MS, JC7895-1MSD were used as the QC samples indicated.
- Continuing calibration check standard GBB3513-ECC3513, signal #1 for 1,2-Dibromoethane exceeded 15% Dev. 1,2-Dibromoethane was reported from signal #2.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JC7895).

Summary of Hits

Job Number: JC7895
Account: Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Collected: 11/05/15

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC7895-1	**MH10-1C-1-20151105**					
sec-Butylbenzene [a]		0.142 J	0.23	0.019	mg/kg	SW846 8260C
Isopropylbenzene [a]		0.0439 J	0.23	0.012	mg/kg	SW846 8260C
Naphthalene [a]		0.927	0.57	0.021	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene [a]		0.0626 J	0.23	0.023	mg/kg	SW846 8260C
1,3,5-Trimethylbenzene [a]		0.0285 J	0.23	0.022	mg/kg	SW846 8260C
Acenaphthene		3.85	0.13	0.12	mg/kg	SW846 8270D
Anthracene		2.41	0.13	0.011	mg/kg	SW846 8270D
Benzo(a)anthracene		1.62	0.13	0.024	mg/kg	SW846 8270D
Benzo(a)pyrene		1.98	0.13	0.027	mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.825	0.13	0.026	mg/kg	SW846 8270D
Benzo(g,h,i)perylene		1.52	0.13	0.038	mg/kg	SW846 8270D
Benzo(k)fluoranthene		0.115 J	0.13	0.028	mg/kg	SW846 8270D
Chrysene		3.40	0.13	0.020	mg/kg	SW846 8270D
Dibenzo(a,h)anthracene		0.393	0.13	0.045	mg/kg	SW846 8270D
Fluoranthene		1.09	0.13	0.015	mg/kg	SW846 8270D
Fluorene		5.67	0.13	0.015	mg/kg	SW846 8270D
Indeno(1,2,3-cd)pyrene		0.354	0.13	0.065	mg/kg	SW846 8270D
2-Methylnaphthalene		24.2	1.3	0.12	mg/kg	SW846 8270D
Phenanthrene		16.5	0.63	0.070	mg/kg	SW846 8270D
Pyrene		6.64	0.13	0.016	mg/kg	SW846 8270D
Cobalt		5.7	5.6	0.045	mg/kg	SW846 6010C
Lead		70.4	2.2	0.27	mg/kg	SW846 6010C
Nickel		24.0	4.5	0.11	mg/kg	SW846 6010C
Vanadium		27.7	5.6	0.083	mg/kg	SW846 6010C
Zinc		60.9	5.6	0.85	mg/kg	SW846 6010C
JC7895-2	**MH10-1D-1-20151105**					
Benzene		0.0014	0.00069	0.00018	mg/kg	SW846 8260C
Toluene		0.0012 J	0.0014	0.00029	mg/kg	SW846 8260C
Ethylbenzene		0.0029	0.0014	0.00023	mg/kg	SW846 8260C
Xylene (total)		0.0253	0.0014	0.00038	mg/kg	SW846 8260C
sec-Butylbenzene		0.00042 J	0.0028	0.00024	mg/kg	SW846 8260C
Cyclohexane		0.0060	0.0028	0.00044	mg/kg	SW846 8260C
Hexane		0.0020 J	0.0069	0.00054	mg/kg	SW846 8260C
Isopropylbenzene		0.00045 J	0.0028	0.00015	mg/kg	SW846 8260C
Naphthalene		0.0077	0.0069	0.00026	mg/kg	SW846 8260C
1,2,4-Trimethylbenzene		0.0168	0.0028	0.00028	mg/kg	SW846 8260C
1,3,5-Trimethylbenzene		0.0109	0.0028	0.00026	mg/kg	SW846 8260C
Acenaphthene [b]		3.36	0.16	0.15	mg/kg	SW846 8270D
Anthracene [b]		2.45	0.16	0.014	mg/kg	SW846 8270D
Benzo(a)anthracene [b]		2.14	0.16	0.031	mg/kg	SW846 8270D
Benzo(a)pyrene [b]		1.36	0.16	0.035	mg/kg	SW846 8270D

Summary of Hits

Job Number: JC7895
Account: Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Collected: 11/05/15

Lab Sample ID Client Sample ID Analyte	Result/ Qual	RL	MDL	Units	Method
Benzo(b)fluoranthene [b]	0.569	0.16	0.034	mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]	0.652	0.16	0.049	mg/kg	SW846 8270D
Benzo(k)fluoranthene [b]	0.121 J	0.16	0.036	mg/kg	SW846 8270D
Chrysene [b]	4.19	0.16	0.026	mg/kg	SW846 8270D
bis(2-Ethylhexyl)phthalate [b]	2.12	0.33	0.057	mg/kg	SW846 8270D
Fluoranthene [b]	1.24	0.16	0.020	mg/kg	SW846 8270D
Fluorene [b]	3.98	0.16	0.019	mg/kg	SW846 8270D
2-Methylnaphthalene [b]	3.61	0.33	0.031	mg/kg	SW846 8270D
Phenanthrene [b]	11.8	0.16	0.018	mg/kg	SW846 8270D
Pyrene [b]	5.98	0.16	0.020	mg/kg	SW846 8270D
Cobalt	5.0 J	5.3	0.042	mg/kg	SW846 6010C
Lead	55.7	2.1	0.25	mg/kg	SW846 6010C
Nickel	21.0	4.2	0.10	mg/kg	SW846 6010C
Vanadium	15.5	5.3	0.079	mg/kg	SW846 6010C
Zinc	365	5.3	0.81	mg/kg	SW846 6010C

(a) Dilution required due to matrix interference.
(b) Elevated detection limit due to high final volume of viscous extract.

New Jersey

ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	MH10-1C-1-20151105		
Lab Sample ID:	JC7895-1	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8260C	**Percent Solids:**	86.4
Project:	Sunoco - Marcus Hook Facility, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D235790.D	1	11/13/15	BM	n/a	n/a	VD9626
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.5 g	10.0 ml	100 ul
Run #2			

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.057	0.015	mg/kg	
108-88-3	Toluene	ND	0.11	0.024	mg/kg	
100-41-4	Ethylbenzene	ND	0.11	0.018	mg/kg	
1330-20-7	Xylene (total)	ND	0.11	0.031	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.11	0.017	mg/kg	
135-98-8	sec-Butylbenzene	0.142	0.23	0.019	mg/kg	J
98-06-6	tert-Butylbenzene	ND	0.23	0.024	mg/kg	
110-82-7	Cyclohexane	ND	0.23	0.036	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.11	0.015	mg/kg	
110-54-3	Hexane	ND	0.57	0.044	mg/kg	
98-82-8	Isopropylbenzene	0.0439	0.23	0.012	mg/kg	J
91-20-3	Naphthalene	0.927	0.57	0.021	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.0626	0.23	0.023	mg/kg	J
108-67-8	1,3,5-Trimethylbenzene	0.0285	0.23	0.022	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-122%
17060-07-0	1,2-Dichloroethane-D4	93%		68-124%
2037-26-5	Toluene-D8	102%		77-125%
460-00-4	4-Bromofluorobenzene	98%		72-130%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MH10-1C-1-20151105		
Lab Sample ID:	JC7895-1	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.4
Project:	Sunoco - Marcus Hook Facility, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P23331.D	2	11/17/15	SD	11/17/15	OP89030	E5P1188
Run #2	5P23366.D	10	11/18/15	AP	11/17/15	OP89030	E5P1189

	Initial Weight	Final Volume
Run #1	18.4 g	1.0 ml
Run #2	18.4 g	1.0 ml

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.63	0.23	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.63	0.55	mg/kg	
95-48-7	2-Methylphenol	ND	0.25	0.18	mg/kg	
	3&4-Methylphenol	ND	0.25	0.12	mg/kg	
100-02-7	4-Nitrophenol	ND	1.3	0.21	mg/kg	
108-95-2	Phenol	ND	0.25	0.094	mg/kg	
83-32-9	Acenaphthene	3.85	0.13	0.12	mg/kg	
120-12-7	Anthracene	2.41	0.13	0.011	mg/kg	
56-55-3	Benzo(a)anthracene	1.62	0.13	0.024	mg/kg	
50-32-8	Benzo(a)pyrene	1.98	0.13	0.027	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.825	0.13	0.026	mg/kg	
191-24-2	Benzo(g,h,i)perylene	1.52	0.13	0.038	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.115	0.13	0.028	mg/kg	J
92-52-4	1,1'-Biphenyl	ND	0.25	0.023	mg/kg	
218-01-9	Chrysene	3.40	0.13	0.020	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	0.393	0.13	0.045	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.25	0.015	mg/kg	
84-66-2	Diethyl phthalate	ND	0.25	0.016	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	0.25	0.044	mg/kg	
206-44-0	Fluoranthene	1.09	0.13	0.015	mg/kg	
86-73-7	Fluorene	5.67	0.13	0.015	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.354	0.13	0.065	mg/kg	
91-57-6	2-Methylnaphthalene	24.2 [a]	1.3	0.12	mg/kg	
91-20-3	Naphthalene	ND	0.13	0.020	mg/kg	
85-01-8	Phenanthrene	16.5 [a]	0.63	0.070	mg/kg	
129-00-0	Pyrene	6.64	0.13	0.016	mg/kg	
110-86-1	Pyridine	ND	0.25	0.063	mg/kg	
91-22-5	Quinoline	ND	0.63	0.046	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%	59%	30-106%

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

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

Report of Analysis

Client Sample ID:	MH10-1C-1-20151105		
Lab Sample ID:	JC7895-1	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.4
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	63%	60%	30-106%
118-79-6	2,4,6-Tribromophenol	66%	70%	24-140%
4165-60-0	Nitrobenzene-d5	77%	75%	26-122%
321-60-8	2-Fluorobiphenyl	70%	83%	36-112%
1718-51-0	Terphenyl-d14	71%	85%	36-132%

(a) Result is from Run# 2

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

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	MH10-1C-1-20151105		
Lab Sample ID:	JC7895-1	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	86.4
Project:	Sunoco - Marcus Hook Facility, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	BB65163.D	1	11/13/15	AMA	11/13/15	M:OP45402	M:GBB3513
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.00048	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	143%		70-170%
460-00-4	Bromofluorobenzene (S)	117%		70-170%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MH10-1C-1-20151105		
Lab Sample ID:	JC7895-1	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
		Percent Solids:	86.4
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cobalt	5.7	5.6	0.045	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Lead	70.4	2.2	0.27	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Nickel	24.0	4.5	0.11	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Vanadium	27.7	5.6	0.083	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Zinc	60.9	5.6	0.85	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA38045
(2) Prep QC Batch: MP90287

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	MH10-1D-1-20151105		
Lab Sample ID:	JC7895-2	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8260C	**Percent Solids:**	92.6
Project:	Sunoco - Marcus Hook Facility, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V157429.D	1	11/10/15	PR	n/a	n/a	VV6649
Run #2							

	Initial Weight
Run #1	3.9 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0014	0.00069	0.00018	mg/kg	
108-88-3	Toluene	0.0012	0.0014	0.00029	mg/kg	J
100-41-4	Ethylbenzene	0.0029	0.0014	0.00023	mg/kg	
1330-20-7	Xylene (total)	0.0253	0.0014	0.00038	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0014	0.00021	mg/kg	
135-98-8	sec-Butylbenzene	0.00042	0.0028	0.00024	mg/kg	J
98-06-6	tert-Butylbenzene	ND	0.0028	0.00029	mg/kg	
110-82-7	Cyclohexane	0.0060	0.0028	0.00044	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0014	0.00019	mg/kg	
110-54-3	Hexane	0.0020	0.0069	0.00054	mg/kg	J
98-82-8	Isopropylbenzene	0.00045	0.0028	0.00015	mg/kg	J
91-20-3	Naphthalene	0.0077	0.0069	0.00026	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.0168	0.0028	0.00028	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0109	0.0028	0.00026	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-122%
17060-07-0	1,2-Dichloroethane-D4	91%		68-124%
2037-26-5	Toluene-D8	100%		77-125%
460-00-4	4-Bromofluorobenzene	98%		72-130%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	MH10-1D-1-20151105		
Lab Sample ID:	JC7895-2	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8270D SW846 3546	**Percent Solids:**	92.6
Project:	Sunoco - Marcus Hook Facility, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z106074.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295
Run #2							

	Initial Weight	Final Volume
Run #1	33.1 g	5.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	0.82	0.30	mg/kg	
51-28-5	2,4-Dinitrophenol	ND	0.82	0.71	mg/kg	
95-48-7	2-Methylphenol	ND	0.33	0.24	mg/kg	
	3&4-Methylphenol	ND	0.33	0.16	mg/kg	
100-02-7	4-Nitrophenol	ND	1.6	0.28	mg/kg	
108-95-2	Phenol	ND	0.33	0.12	mg/kg	
83-32-9	Acenaphthene	3.36	0.16	0.15	mg/kg	
120-12-7	Anthracene	2.45	0.16	0.014	mg/kg	
56-55-3	Benzo(a)anthracene	2.14	0.16	0.031	mg/kg	
50-32-8	Benzo(a)pyrene	1.36	0.16	0.035	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.569	0.16	0.034	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.652	0.16	0.049	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.121	0.16	0.036	mg/kg	J
92-52-4	1,1'-Biphenyl	ND	0.33	0.030	mg/kg	
218-01-9	Chrysene	4.19	0.16	0.026	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.16	0.058	mg/kg	
84-74-2	Di-n-butyl phthalate	ND	0.33	0.019	mg/kg	
84-66-2	Diethyl phthalate	ND	0.33	0.021	mg/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	2.12	0.33	0.057	mg/kg	
206-44-0	Fluoranthene	1.24	0.16	0.020	mg/kg	
86-73-7	Fluorene	3.98	0.16	0.019	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.16	0.084	mg/kg	
91-57-6	2-Methylnaphthalene	3.61	0.33	0.031	mg/kg	
91-20-3	Naphthalene	ND	0.16	0.026	mg/kg	
85-01-8	Phenanthrene	11.8	0.16	0.018	mg/kg	
129-00-0	Pyrene	5.98	0.16	0.020	mg/kg	
110-86-1	Pyridine	ND	0.33	0.082	mg/kg	
91-22-5	Quinoline	ND	0.82	0.060	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		30-106%

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

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

Report of Analysis

Client Sample ID:	MH10-1D-1-20151105		
Lab Sample ID:	JC7895-2	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8270D SW846 3546	**Percent Solids:**	92.6
Project:	Sunoco - Marcus Hook Facility, PA		

ABN Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	39%		30-106%
118-79-6	2,4,6-Tribromophenol	57%		24-140%
4165-60-0	Nitrobenzene-d5	44%		26-122%
321-60-8	2-Fluorobiphenyl	47%		36-112%
1718-51-0	Terphenyl-d14	42%		36-132%

(a) Elevated detection limit due to high final volume of viscous extract.

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

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	MH10-1D-1-20151105		
Lab Sample ID:	JC7895-2	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
Method:	SW846 8011 SW846 3550B	**Percent Solids:**	92.6
Project:	Sunoco - Marcus Hook Facility, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	BB65164.D	1	11/13/15	AMA	11/13/15	M:OP45402	M:GBB3513
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0027	0.00044	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	144%		70-170%
460-00-4	Bromofluorobenzene (S)	117%		70-170%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MH10-1D-1-20151105		
Lab Sample ID:	JC7895-2	**Date Sampled:**	11/05/15
Matrix:	SO - Soil	**Date Received:**	11/05/15
		Percent Solids:	92.6
Project:	Sunoco - Marcus Hook Facility, PA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Cobalt	5.0 J	5.3	0.042	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Lead	55.7	2.1	0.25	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Nickel	21.0	4.2	0.10	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Vanadium	15.5	5.3	0.079	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]
Zinc	365	5.3	0.81	mg/kg	1	11/12/15	11/13/15	BS	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA38045
(2) Prep QC Batch: MP90287

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

SLC

CHAIN OF CUSTODY

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

PAGE 1 OF 1

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: JC7895

Client / Reporting Information

Company Name: Stantec
Street Address: 1060 Andrew Dr. Suite 140
City: West Chester State: PA Zip: 19380
Project Contact: Jennifer Menges E-mail: Jennifer.Menges@stantec.com
Phone #: (610) 840-2500 Fax #:
Sampler(s) Name(s): Jenny DeBoer Dan Downing Phone #:

Project Information

Project Name: Marcus Hook Industrial Complex – MH10 Post Ex.
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

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

Requested Analysis (see TEST CODE sheet)

Matrix Codes

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

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Select VOCs * 8260	Select SVOCs * 8270	Select Metals 6020/6010*	EDB 8011	LAB USE ONLY
1	MH10-1C-1-20151105	5009 5208 5209	11/5/15	13:45	DD/JD	SO	6					3	2	1		X	X	X	X	D3
2	MH10-1D-1-20151105	7645 4909 7646	11/5/15	13:50	DD/JD	SO	6					3	2	1		X	X	X	X	P23
																				14N3
																				40135
																				SUB

D.I. slurry voc vials frozen storage
Date: 11/5/15 Time: 2:00 Initials: DS

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

INITIAL ASESSMENT: ZBJ
LABEL VERIFICATION:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format EQuIS
- [ ] Other

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

Comments / Special Instructions

*See attached "Comprehensive COC Lists for Evergreen Characterizations" for analytes.

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	11/5/15 1700	1	2	11/5/15 1922	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. 1.0 C-IR

JC7895: Chain of Custody
Page 1 of 3

JC7895

Comprehensive COC List for Evergreen Characterizations (August 2015)

VOCs by EPA Method 8260	CAS No.
Benzene	71-43-2
Butylbenzene, sec-	135-98-8
Butylbenzene, tert-	98-06-6
Cumene	98-82-8
Cyclohexane	110-82-7
Dichloroethane, 1,2-	107-06-2
Ethylbenzene	100-41-4
Ethylene Dibromide*	106-93-4
Hexane	110-54-3
Methyl tert butyl ether	1634-04-4
Toluene	108-88-3
Trimethylbenzene, 1,2,4-	95-63-6
Trimethylbenzene, 1,3,5-	108-67-8
Xylenes	1330-20-7

Metals by Method 6010/6020	CAS No.
Cobalt ***	7440-48-4
Lead***	7439-92-1
Nickel***	7440-02-0
Vanadium***	7440-62-2
Zinc***	7440-66-6

SVOCs by EPA Method 8270	CAS No.
Acenaphthene	83-32-9
Anthracene	120-12-7
Benzo(a)anthracene	56-55-3
Benzo(a)pyrene	50-32-8
Benzo(b)fluroranthene	205-99-2
Benzo(g,h,i)perylene	191-24-2
Benzo(k)fluoranthene	207-08-9
Biphenyl, 1,1-	92-52-4
Bis(2-ethylhexyl) phthalate	117-81-7
Chrysene	218-01-9
Cresol, m- (3-methylphenol)	108-39-4
Cresol, o- (2-methylphenol)	95-48-7
Cresol, p- (4-methylphenol)	106-44-5
Dibenz(a,h)anthracene	53-70-3
Diethyl phthalate	84-66-2
Dimethylphenol, 2,4-	105-67-9
Dibutyl phthalate, n-	84-74-2
Dinitrophenol, 2,4-	51-28-5
Fluoranthene	206-44-0
Fluorene	86-73-7
Indeno(1,2,3-cd)pyrene	193-39-5
Methylnaphthalene, 2-	91-57-6
Naphthalene**	91-20-3
Nitrophenol, 4-	100-02-7
Phenanthrene	85-01-8
Phenol	108-95-2
Pyrene	129-00-0
Pyridine	110-86-1
Quinoline	91-22-5

*Ethylene Dibromide should be analyzed by EPA Method 8011 instead of 8260 in soil for tank investigations and in **all groundwater samples**.
**Naphthalene should be analyzed by EPA Method 8260 instead of 8270 for tank investigations.
***Metals analysis should be total in soil and dissolved in groundwater.

This list is generated from the PADEP SERO Crude Oil Parameters for Corrective Action (CDB|SERO|PADEP|9 Aug 2013) combined with PADEP Short List of Petroleum Products (leaded and unleaded gasoline and No. 1, 2, 4, 5, 6 Fuel Oils).

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC7895 **Client:** **Project:**

Date / Time Received: 11/5/2015 7:22:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.2);

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

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JC7895: Chain of Custody
Page 3 of 3

Internal Sample Tracking Chronicle

Stantec Consulting Services Inc.

Job No: JC7895

Sunoco - Marcus Hook Facility, PA
Project No: MHIC MH10 Post Ex

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC7895-1	Collected: 05-NOV-15 13:45 By: DD/JD		Received: 05-NOV-15 By: AS			
MH10-1C-1-20151105						
JC7895-1	SM2540 G-97	09-NOV-15 13:30	KP			%SOL
JC7895-1	SW846 8260C	13-NOV-15 01:00	BM			V8260SL2
JC7895-1	SW846 6010C	13-NOV-15 22:31	BS	12-NOV-15	RM	CO,NI,PB,V,ZN
JC7895-1	SW846 8011	13-NOV-15 22:59	AMA	13-NOV-15	AMA	V8011EDB
JC7895-1	SW846 8270D	17-NOV-15 22:08	SD	17-NOV-15	TM	AB8270SL
JC7895-1	SW846 8270D	18-NOV-15 17:00	AP	17-NOV-15	TM	AB8270SL
JC7895-2	Collected: 05-NOV-15 13:50 By: DD/JD		Received: 05-NOV-15 By: AS			
MH10-1D-1-20151105						
JC7895-2	SM2540 G-97	09-NOV-15 13:30	KP			%SOL
JC7895-2	SW846 8260C	10-NOV-15 20:00	PR			V8260SL2
JC7895-2	SW846 8270D	13-NOV-15 18:03	BP	10-NOV-15	AQ	AB8270SL
JC7895-2	SW846 6010C	13-NOV-15 22:34	BS	12-NOV-15	RM	CO,NI,PB,V,ZN
JC7895-2	SW846 8011	13-NOV-15 23:27	AMA	13-NOV-15	AMA	V8011EDB

Accutest Internal Chain of Custody

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Received: 11/05/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7895-1.1	Secured Storage	Finley Nyaata	11/10/15 08:15	Retrieve from Storage
JC7895-1.1	Finley Nyaata	Secured Storage	11/10/15 10:16	Return to Storage
JC7895-1.1	Secured Storage	Shanice Grant	11/17/15 05:21	Retrieve from Storage
JC7895-1.1	Shanice Grant	Secured Storage	11/17/15 07:49	Return to Storage
JC7895-1.1.1	Finley Nyaata	Organics Prep	11/10/15 08:25	Extract from JC7895-1.1
JC7895-1.1.1	Organics Prep	Adil Quyser	11/10/15 22:20	Extract from JC7895-1.1
JC7895-1.1.1	Adil Quyser	Extract Storage	11/10/15 22:20	Return to Storage
JC7895-1.1.1	Extract Storage	Brittany Piercy	11/13/15 15:37	Retrieve from Storage
JC7895-1.1.1	Brittany Piercy	GCMSZ	11/13/15 15:37	Load on Instrument
JC7895-1.1.1	GCMSZ	Brittany Piercy	11/20/15 14:09	Unload from Instrument
JC7895-1.1.1	Brittany Piercy	Extract Freezer	11/20/15 14:09	Return to Storage
JC7895-1.1.2	Shanice Grant	Organics Prep	11/17/15 05:21	Extract from JC7895-1.1
JC7895-1.1.2	Organics Prep	Tin Marlar	11/17/15 10:12	Extract from JC7895-1.1
JC7895-1.1.2	Tin Marlar	Extract Storage	11/17/15 10:12	Return to Storage
JC7895-1.1.2	Extract Storage	Sara Davis	11/17/15 20:16	Retrieve from Storage
JC7895-1.1.2	Sara Davis	GCMS5P	11/17/15 20:16	Load on Instrument
JC7895-1.1.2	GCMS5P	Alicja Pawelec	11/19/15 12:50	Unload from Instrument
JC7895-1.1.2	Alicja Pawelec	Extract Freezer	11/19/15 12:50	Return to Storage
JC7895-1.2	Secured Storage	Alfredo Crespo	11/09/15 11:35	Retrieve from Storage
JC7895-1.2	Alfredo Crespo	Secured Staging Area	11/09/15 11:35	Return to Storage
JC7895-1.2	Secured Staging Area	Kruti Patel	11/09/15 12:47	Retrieve from Storage
JC7895-1.2	Kruti Patel	Secured Storage	11/09/15 13:39	Return to Storage
JC7895-1.2	Secured Storage	Sahara Feliciano	11/12/15 12:38	Retrieve from Storage
JC7895-1.2	Sahara Feliciano	Secured Staging Area	11/12/15 12:38	Return to Storage
JC7895-1.2	Secured Staging Area	Radhika Mistry	11/12/15 12:54	Retrieve from Storage
JC7895-1.2	Radhika Mistry	Secured Storage	11/12/15 14:47	Return to Storage
JC7895-1.2.1	Radhika Mistry	Metals Digestion	11/12/15 14:40	Digestate from JC7895-1.2
JC7895-1.2.1	Metals Digestion	Radhika Mistry	11/12/15 14:41	Digestate from JC7895-1.2
JC7895-1.2.1	Radhika Mistry	Metals Digestate Storage	11/12/15 14:41	Return to Storage
JC7895-1.2.1	Metals Digestate Storage	Bryan Stokes-Cawley	11/13/15 12:39	Retrieve from Storage
JC7895-1.2.1	Bryan Stokes-Cawley	Metals Digestate Storage	11/13/15 12:39	Return to Storage
JC7895-1.2.1	Metals Digestate Storage	Rakesh Pathak	11/20/15 15:34	Retrieve from Storage
JC7895-1.2.1	Rakesh Pathak	Metals Digestate Storage	11/20/15 20:34	Return to Storage
JC7895-1.3	Secured Storage	Bernadette Vassilatos	11/09/15 10:01	Retrieve from Storage
JC7895-1.3	Bernadette Vassilatos		11/09/15 10:01	Subcontract
JC7895-1.4	Secured Storage	Benjamin Mendez	11/09/15 16:15	Retrieve from Storage
JC7895-1.4	Benjamin Mendez	Secured Storage	11/09/15 16:15	Return to Storage
JC7895-1.4	Secured Storage	Alexis Jones	11/10/15 11:48	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Received: 11/05/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7895-1.4	Alexis Jones	Secured Storage	11/10/15 16:33	Return to Storage
JC7895-1.4	Secured Storage	Alexis Jones	11/11/15 09:12	Retrieve from Storage
JC7895-1.4	Alexis Jones	Secured Storage	11/11/15 16:33	Return to Storage
JC7895-1.4	Secured Storage	Alexis Jones	11/12/15 08:55	Retrieve from Storage
JC7895-1.4	Alexis Jones	Secured Storage	11/12/15 16:32	Return to Storage
JC7895-2.1	Secured Storage	Finley Nyaata	11/10/15 08:15	Retrieve from Storage
JC7895-2.1	Finley Nyaata	Secured Storage	11/10/15 10:16	Return to Storage
JC7895-2.1.1	Finley Nyaata	Organics Prep	11/10/15 08:25	Extract from JC7895-2.1
JC7895-2.1.1	Organics Prep	Adil Quyser	11/10/15 22:20	Extract from JC7895-2.1
JC7895-2.1.1	Adil Quyser	Extract Storage	11/10/15 22:20	Return to Storage
JC7895-2.1.1	Extract Storage	Brittany Piercy	11/13/15 15:37	Retrieve from Storage
JC7895-2.1.1	Brittany Piercy	GCMSZ	11/13/15 15:37	Load on Instrument
JC7895-2.1.1	GCMSZ	Brittany Piercy	11/20/15 14:09	Unload from Instrument
JC7895-2.1.1	Brittany Piercy	Extract Freezer	11/20/15 14:09	Return to Storage
JC7895-2.2	Secured Storage	Alfredo Crespo	11/09/15 11:35	Retrieve from Storage
JC7895-2.2	Alfredo Crespo	Secured Staging Area	11/09/15 11:35	Return to Storage
JC7895-2.2	Secured Staging Area	Kruti Patel	11/09/15 12:47	Retrieve from Storage
JC7895-2.2	Kruti Patel	Secured Storage	11/09/15 13:39	Return to Storage
JC7895-2.2	Secured Storage	Sahara Feliciano	11/12/15 12:38	Retrieve from Storage
JC7895-2.2	Sahara Feliciano	Secured Staging Area	11/12/15 12:38	Return to Storage
JC7895-2.2	Secured Staging Area	Radhika Mistry	11/12/15 12:54	Retrieve from Storage
JC7895-2.2	Radhika Mistry	Secured Storage	11/12/15 14:47	Return to Storage
JC7895-2.2.1	Radhika Mistry	Metals Digestion	11/12/15 14:40	Digestate from JC7895-2.2
JC7895-2.2.1	Metals Digestion	Radhika Mistry	11/12/15 14:41	Digestate from JC7895-2.2
JC7895-2.2.1	Radhika Mistry	Metals Digestate Storage	11/12/15 14:41	Return to Storage
JC7895-2.2.1	Metals Digestate Storage	Bryan Stokes-Cawley	11/13/15 12:39	Retrieve from Storage
JC7895-2.2.1	Bryan Stokes-Cawley	Metals Digestate Storage	11/13/15 12:39	Return to Storage
JC7895-2.2.1	Metals Digestate Storage	Rakesh Pathak	11/20/15 15:34	Retrieve from Storage
JC7895-2.2.1	Rakesh Pathak	Metals Digestate Storage	11/20/15 20:34	Return to Storage
JC7895-2.3	Secured Storage	Bernadette Vassilatos	11/09/15 10:01	Retrieve from Storage
JC7895-2.3	Bernadette Vassilatos		11/09/15 10:01	Subcontract
JC7895-2.5	Secured Storage	Payal Rana	11/09/15 16:18	Retrieve from Storage
JC7895-2.5	Payal Rana	GCMSX	11/10/15 08:38	Load on Instrument
JC7895-2.5	GCMSX	Payal Rana	11/10/15 09:57	Unload from Instrument
JC7895-2.5	Payal Rana		11/10/15 09:58	Depleted
JC7895-2.6	Secured Storage	Payal Rana	11/10/15 16:14	Retrieve from Storage
JC7895-2.6	Payal Rana	GCMSV	11/10/15 16:14	Load on Instrument

Accutest Internal Chain of Custody

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Received: 11/05/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7895-2.6	GCMSV	Payal Rana	11/12/15 10:04	Unload from Instrument
JC7895-2.6	Payal Rana		11/12/15 10:04	Depleted

New Jersey
ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV6649-MB	V157412.D	1	11/10/15	PR	n/a	n/a	VV6649

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

JC7895-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.13	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.17	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.21	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.13	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.16	ug/kg	
110-54-3	Hexane	ND	5.0	0.39	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	0.11	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.15	ug/kg	
91-20-3	Naphthalene	ND	5.0	0.19	ug/kg	
108-88-3	Toluene	ND	1.0	0.21	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.20	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.19	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.27	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	70-122%
17060-07-0	1,2-Dichloroethane-D4	85%	68-124%
2037-26-5	Toluene-D8	100%	77-125%
460-00-4	4-Bromofluorobenzene	99%	72-130%

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

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9626-MB	D235780.D	1	11/12/15	BM	n/a	n/a	VD9626

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

JC7895-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	25	6.7	ug/kg	
135-98-8	sec-Butylbenzene	ND	100	8.5	ug/kg	
98-06-6	tert-Butylbenzene	ND	100	11	ug/kg	
110-82-7	Cyclohexane	ND	100	16	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	6.7	ug/kg	
100-41-4	Ethylbenzene	ND	50	8.2	ug/kg	
110-54-3	Hexane	ND	250	19	ug/kg	
98-82-8	Isopropylbenzene	ND	100	5.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	7.7	ug/kg	
91-20-3	Naphthalene	ND	250	9.5	ug/kg	
108-88-3	Toluene	ND	50	10	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	100	10	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	100	9.6	ug/kg	
1330-20-7	Xylene (total)	ND	50	14	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	94%	70-122%
17060-07-0	1,2-Dichloroethane-D4	92%	68-124%
2037-26-5	Toluene-D8	101%	77-125%
460-00-4	4-Bromofluorobenzene	99%	72-130%

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

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV6649-BS	V157413.D	1	11/10/15	PR	n/a	n/a	VV6649

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

JC7895-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.7	95	77-122
135-98-8	sec-Butylbenzene	50	47.1	94	70-125
98-06-6	tert-Butylbenzene	50	47.1	94	70-126
110-82-7	Cyclohexane	50	47.9	96	66-131
107-06-2	1,2-Dichloroethane	50	45.9	92	77-140
100-41-4	Ethylbenzene	50	46.1	92	75-121
110-54-3	Hexane	50	47.6	95	37-137
98-82-8	Isopropylbenzene	50	46.3	93	70-126
1634-04-4	Methyl Tert Butyl Ether	100	93.6	94	77-121
91-20-3	Naphthalene	50	47.9	96	74-126
108-88-3	Toluene	50	47.4	95	75-123
95-63-6	1,2,4-Trimethylbenzene	50	49.5	99	75-126
108-67-8	1,3,5-Trimethylbenzene	50	46.6	93	72-124
1330-20-7	Xylene (total)	150	145	97	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	70-122%
17060-07-0	1,2-Dichloroethane-D4	89%	68-124%
2037-26-5	Toluene-D8	102%	77-125%
460-00-4	4-Bromofluorobenzene	101%	72-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD9626-BS	D235781.D	1	11/12/15	BM	n/a	n/a	VD9626

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

JC7895-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2530	101	77-122
135-98-8	sec-Butylbenzene	2500	2330	93	70-125
98-06-6	tert-Butylbenzene	2500	2370	95	70-126
110-82-7	Cyclohexane	2500	2580	103	66-131
107-06-2	1,2-Dichloroethane	2500	2280	91	77-140
100-41-4	Ethylbenzene	2500	2430	97	75-121
110-54-3	Hexane	2500	1560	62	37-137
98-82-8	Isopropylbenzene	2500	2450	98	70-126
1634-04-4	Methyl Tert Butyl Ether	5000	4680	94	77-121
91-20-3	Naphthalene	2500	2610	104	74-126
108-88-3	Toluene	2500	2520	101	75-123
95-63-6	1,2,4-Trimethylbenzene	2500	2460	98	75-126
108-67-8	1,3,5-Trimethylbenzene	2500	2390	96	72-124
1330-20-7	Xylene (total)	7500	7610	101	76-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	96%	70-122%
17060-07-0	1,2-Dichloroethane-D4	93%	68-124%
2037-26-5	Toluene-D8	103%	77-125%
460-00-4	4-Bromofluorobenzene	98%	72-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC8038-12MS	V157419.D	1	11/10/15	PR	n/a	n/a	VV6649
JC8038-12	V157417.D	1	11/10/15	PR	n/a	n/a	VV6649

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

JC7895-2

CAS No.	Compound	JC8038-12 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND		526	391	74	48-136
135-98-8	sec-Butylbenzene	ND		526	230	44	23-151
98-06-6	tert-Butylbenzene	ND		526	263	50	30-149
110-82-7	Cyclohexane	ND		526	311	59	22-154
107-06-2	1,2-Dichloroethane	ND		526	344	65	56-140
100-41-4	Ethylbenzene	ND		526	308	59	34-145
110-54-3	Hexane	ND		526	249	47	10-157
98-82-8	Isopropylbenzene	ND		526	316	60	36-145
1634-04-4	Methyl Tert Butyl Ether	ND		1050	680	65	54-129
91-20-3	Naphthalene	ND		526	127	24	12-160
108-88-3	Toluene	ND		526	351	67	40-141
95-63-6	1,2,4-Trimethylbenzene	ND		526	290	55	23-152
108-67-8	1,3,5-Trimethylbenzene	ND		526	275	52	26-150
1330-20-7	Xylene (total)	ND		1580	931	59	34-146

CAS No.	Surrogate Recoveries	MS	JC8038-12	Limits
1868-53-7	Dibromofluoromethane	98%	101%	70-122%
17060-07-0	1,2-Dichloroethane-D4	85%	97%	68-124%
2037-26-5	Toluene-D8	102%	100%	77-125%
460-00-4	4-Bromofluorobenzene	93%	98%	72-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC7984-3MS	D235791.D	1	11/13/15	BM	n/a	n/a	VD9626
JC7984-3MSD	D235792.D	1	11/13/15	BM	n/a	n/a	VD9626
JC7984-3 [a]	D235783.D	1	11/12/15	BM	n/a	n/a	VD9626

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

JC7895-1

CAS No.	Compound	JC7984-3 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		13900	14100	101	13900	13800	99	2	48-136/30
135-98-8	sec-Butylbenzene	976		13900	13700	91	13900	13700	91	0	23-151/34
98-06-6	tert-Butylbenzene	ND		13900	13200	95	13900	13000	93	2	30-149/34
110-82-7	Cyclohexane	636		13900	15700	108	13900	15100	104	4	22-154/33
107-06-2	1,2-Dichloroethane	ND		13900	13000	93	13900	12900	93	1	56-140/24
100-41-4	Ethylbenzene	11900		13900	25900	101	13900	25900	101	0	34-145/29
110-54-3	Hexane	2610		13900	14200	83	13900	13800	80	3	10-157/33
98-82-8	Isopropylbenzene	2590		13900	15500	93	13900	15500	93	0	36-145/33
1634-04-4	Methyl Tert Butyl Ether	ND		27800	26400	95	27800	25600	92	3	54-129/25
91-20-3	Naphthalene	12200		13900	28700	119	13900	28400	116	1	12-160/33
108-88-3	Toluene	ND		13900	14200	102	13900	14000	101	1	40-141/30
95-63-6	1,2,4-Trimethylbenzene	69200	E	13900	80000	78	13900	79700	76	0	23-152/31
108-67-8	1,3,5-Trimethylbenzene	18800		13900	31800	93	13900	31900	94	0	26-150/32
1330-20-7	Xylene (total)	40900		41700	86300	109	41700	85800	108	1	34-146/29

CAS No.	Surrogate Recoveries	MS	MSD	JC7984-3	Limits
1868-53-7	Dibromofluoromethane	94%	93%	95%	70-122%
17060-07-0	1,2-Dichloroethane-D4	94%	94%	91%	68-124%
2037-26-5	Toluene-D8	103%	101%	103%	77-125%
460-00-4	4-Bromofluorobenzene	97%	96%	98%	72-130%

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

* = Outside of Control Limits.

Duplicate Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC8031-3DUP	V157423.D	1	11/10/15	PR	n/a	n/a	VV6649
JC8031-3	V157422.D	1	11/10/15	PR	n/a	n/a	VV6649

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

JC7895-2

CAS No.	Compound	JC8031-3 ug/kg	Q	DUP ug/kg	Q	RPD	Limits
71-43-2	Benzene	ND		ND		nc	17
135-98-8	sec-Butylbenzene	ND		ND		nc	30
98-06-6	tert-Butylbenzene	ND		ND		nc	30
110-82-7	Cyclohexane	ND		ND		nc	30
107-06-2	1,2-Dichloroethane	ND		ND		nc	30
100-41-4	Ethylbenzene	ND		ND		nc	23
110-54-3	Hexane	ND		ND		nc	30
98-82-8	Isopropylbenzene	ND		ND		nc	22
1634-04-4	Methyl Tert Butyl Ether	ND		ND		nc	30
91-20-3	Naphthalene	ND		ND		nc	30
108-88-3	Toluene	ND		ND		nc	22
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	30
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	30
1330-20-7	Xylene (total)	ND		ND		nc	21

CAS No.	Surrogate Recoveries	DUP	JC8031-3	Limits
1868-53-7	Dibromofluoromethane	99%	99%	70-122%
17060-07-0	1,2-Dichloroethane-D4	92%	89%	68-124%
2037-26-5	Toluene-D8	102%	101%	77-125%
460-00-4	4-Bromofluorobenzene	101%	101%	72-130%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VD9588-BFB
Lab File ID: D234784.D
Instrument ID: GCMSD
Injection Date: 10/15/15
Injection Time: 11:21

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	20776	21.9		Pass
75	30.0 - 60.0% of mass 95	49408	52.2		Pass
95	Base peak, 100% relative abundance	94693	100.0		Pass
96	5.0 - 9.0% of mass 95	6389	6.75		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	77493	81.8		Pass
175	5.0 - 9.0% of mass 174	5909	6.24	(7.63) [a]	Pass
176	95.0 - 101.0% of mass 174	76122	80.4	(98.2) [a]	Pass
177	5.0 - 9.0% of mass 176	4951	5.23	(6.50) [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
VD9588-IC9588	D234785.D	10/15/15	11:55	00:34	Initial cal 0.2
VD9588-IC9588	D234786.D	10/15/15	12:25	01:04	Initial cal 0.5
VD9588-IC9588	D234787.D	10/15/15	12:56	01:35	Initial cal 1.0
VD9588-IC9588	D234788.D	10/15/15	13:26	02:05	Initial cal 2.0
VD9588-IC9588	D234789.D	10/15/15	13:57	02:36	Initial cal 4.0
VD9588-IC9588	D234790.D	10/15/15	14:28	03:07	Initial cal 8.0
VD9588-IC9588	D234791.D	10/15/15	14:58	03:37	Initial cal 20
VD9588-ICC9588	D234792.D	10/15/15	15:29	04:08	Initial cal 50
VD9588-IC9588	D234793.D	10/15/15	16:00	04:39	Initial cal 100
VD9588-IC9588	D234794.D	10/15/15	16:30	05:09	Initial cal 200
VD9588-ICV9588	D234797.D	10/15/15	18:02	06:41	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VD9626-BFB
Lab File ID: D235776.D
Instrument ID: GCMSD
Injection Date: 11/12/15
Injection Time: 17:00

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	17171	19.4		Pass
75	30.0 - 60.0% of mass 95	42851	48.5		Pass
95	Base peak, 100% relative abundance	88344	100.0		Pass
96	5.0 - 9.0% of mass 95	6365	7.20		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	70032	79.3		Pass
175	5.0 - 9.0% of mass 174	5164	5.85	(7.37) [a]	Pass
176	95.0 - 101.0% of mass 174	66853	75.7	(95.5) [a]	Pass
177	5.0 - 9.0% of mass 176	4689	5.31	(7.01) [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
VD9626-CC9588	D235777.D	11/12/15	17:31	00:31	Continuing cal 20
VD9626-CC9588	D235778.D	11/12/15	18:01	01:01	Continuing cal 20
VD9626-CC9588	D235779.D	11/12/15	18:54	01:54	Continuing cal 0.5
ZZZZZZ	D235780A.D	11/12/15	19:55	02:55	(unrelated sample)
VD9626-MB	D235780.D	11/12/15	19:55	02:55	Method Blank
VD9626-BS	D235781.D	11/12/15	20:25	03:25	Blank Spike
JC7984-3	D235783.D	11/12/15	21:26	04:26	(used for QC only; not part of job JC7895)
ZZZZZZ	D235784.D	11/12/15	21:56	04:56	(unrelated sample)
ZZZZZZ	D235786.D	11/12/15	22:57	05:57	(unrelated sample)
ZZZZZZ	D235787.D	11/12/15	23:28	06:28	(unrelated sample)
ZZZZZZ	D235788.D	11/12/15	23:58	06:58	(unrelated sample)
ZZZZZZ	D235789.D	11/13/15	00:29	07:29	(unrelated sample)
JC7895-1	D235790.D	11/13/15	01:00	08:00	MH10-1C-1-20151105
JC7984-3MS	D235791.D	11/13/15	01:30	08:30	Matrix Spike
JC7984-3MSD	D235792.D	11/13/15	02:01	09:01	Matrix Spike Duplicate
ZZZZZZ	D235796.D	11/13/15	04:02	11:02	(unrelated sample)
ZZZZZZ	D235797.D	11/13/15	04:33	11:33	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VV6633-BFB
Lab File ID: V156927.D
Instrument ID: GCMSV
Injection Date: 10/28/15
Injection Time: 17:02

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	23424	19.6		Pass
75	30.0 - 60.0% of mass 95	57877	48.5		Pass
95	Base peak, 100% relative abundance	119450	100.0		Pass
96	5.0 - 9.0% of mass 95	8408	7.04		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 150.0% of mass 95	117664	98.5		Pass
175	5.0 - 9.0% of mass 174	8716	7.30	(7.41) [a]	Pass
176	95.0 - 101.0% of mass 174	112608	94.3	(95.7) [a]	Pass
177	5.0 - 9.0% of mass 176	7182	6.01	(6.38) [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
VV6633-IC6633	V156929.D	10/28/15	18:09	01:07	Initial cal 0.5
VV6633-IC6633	V156930.D	10/28/15	18:38	01:36	Initial cal 1
VV6633-IC6633	V156931.D	10/28/15	19:06	02:04	Initial cal 2
VV6633-IC6633	V156932.D	10/28/15	19:35	02:33	Initial cal 4
VV6633-IC6633	V156933.D	10/28/15	20:03	03:01	Initial cal 8
VV6633-IC6633	V156934.D	10/28/15	20:32	03:30	Initial cal 20
VV6633-ICC6633	V156935.D	10/28/15	21:00	03:58	Initial cal 50
VV6633-IC6633	V156936.D	10/28/15	21:29	04:27	Initial cal 100
VV6633-IC6633	V156937.D	10/28/15	21:58	04:56	Initial cal 200
VV6633-ICV6633	V156940.D	10/28/15	23:23	06:21	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VV6649-BFB
Lab File ID: V157409.D
Instrument ID: GCMSV
Injection Date: 11/10/15
Injection Time: 10:05

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	18364	17.9		Pass
75	30.0 - 60.0% of mass 95	46923	45.8		Pass
95	Base peak, 100% relative abundance	102425	100.0		Pass
96	5.0 - 9.0% of mass 95	7002	6.84		Pass
173	Less than 2.0% of mass 174	142	0.14	(0.15) [a]	Pass
174	50.0 - 150.0% of mass 95	95265	93.0		Pass
175	5.0 - 9.0% of mass 174	7040	6.87	(7.39) [a]	Pass
176	95.0 - 101.0% of mass 174	91142	89.0	(95.7) [a]	Pass
177	5.0 - 9.0% of mass 176	6132	5.99	(6.73) [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
VV6649-CC6633	V157410.D	11/10/15	10:34	00:29	Continuing cal 20
VV6649-MB	V157412.D	11/10/15	11:34	01:29	Method Blank
VV6649-BS	V157413.D	11/10/15	12:13	02:08	Blank Spike
ZZZZZZ	V157415.D	11/10/15	13:14	03:09	(unrelated sample)
ZZZZZZ	V157416.D	11/10/15	13:42	03:37	(unrelated sample)
JC8038-12	V157417.D	11/10/15	14:11	04:06	(used for QC only; not part of job JC7895)
ZZZZZZ	V157418.D	11/10/15	14:39	04:34	(unrelated sample)
JC8038-12MS	V157419.D	11/10/15	15:12	05:07	Matrix Spike
ZZZZZZ	V157421.D	11/10/15	16:09	06:04	(unrelated sample)
JC8031-3	V157422.D	11/10/15	16:38	06:33	(used for QC only; not part of job JC7895)
JC8031-3DUP	V157423.D	11/10/15	17:09	07:04	Duplicate
ZZZZZZ	V157424.D	11/10/15	17:38	07:33	(unrelated sample)
ZZZZZZ	V157425.D	11/10/15	18:06	08:01	(unrelated sample)
ZZZZZZ	V157426.D	11/10/15	18:35	08:30	(unrelated sample)
ZZZZZZ	V157427.D	11/10/15	19:03	08:58	(unrelated sample)
ZZZZZZ	V157428.D	11/10/15	19:32	09:27	(unrelated sample)
JC7895-2	V157429.D	11/10/15	20:00	09:55	MH10-1D-1-20151105
ZZZZZZ	V157430.D	11/10/15	20:28	10:23	(unrelated sample)
ZZZZZZ	V157431.D	11/10/15	20:57	10:52	(unrelated sample)

Volatile Internal Standard Area Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VD9626-CC9588	**Injection Date:**	11/12/15
Lab File ID:	D235777.D	**Injection Time:**	17:31
Instrument ID:	GCMSD	**Method:**	SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	154251	7.95	267817	10.13	362160	11.05	342358	14.39	214695	16.97
Upper Limit [a]	308502	8.45	535634	10.63	724320	11.55	684716	14.89	429390	17.47
Lower Limit [b]	77126	7.45	133909	9.63	181080	10.55	171179	13.89	107348	16.47

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
ZZZZZZ	142437	7.97	257086	10.13	346235	11.05	333163	14.39	208066	16.97
VD9626-MB	142437	7.97	257086	10.13	346235	11.05	333163	14.39	208066	16.97
VD9626-BS	145770	7.96	266118	10.13	360792	11.06	348787	14.39	220258	16.97
JC7984-3	134664	7.96	264289	10.13	353719	11.06	341427	14.39	217964	16.97
ZZZZZZ	159613	7.97	276006	10.13	373639	11.06	366715	14.39	232151	16.96
ZZZZZZ	151320	7.95	272465	10.13	361685	11.05	356209	14.39	228820	16.96
ZZZZZZ	140308	7.96	262874	10.13	349830	11.05	335826	14.39	221395	16.97
ZZZZZZ	145594	7.96	260441	10.12	348252	11.05	340780	14.39	223673	16.97
ZZZZZZ	140846	7.97	266647	10.12	356307	11.06	353404	14.39	228616	16.97
JC7895-1 [c]	141699	7.97	251513	10.13	334227	11.06	338929	14.39	230632	16.97
JC7984-3MS	151460	7.98	265785	10.12	356744	11.06	356500	14.39	242045	16.97
JC7984-3MSD	155806	7.98	271219	10.13	365542	11.05	357689	14.39	243153	16.97
ZZZZZZ	163520	7.97	266183	10.12	353531	11.05	340759	14.39	229486	16.97
ZZZZZZ	144073	7.96	256308	10.12	338002	11.05	336329	14.39	227325	16.96

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

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Dilution required due to matrix interference.

Volatile Internal Standard Area Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Check Std:	VV6649-CC6633	**Injection Date:**	11/10/15
Lab File ID:	V157410.D	**Injection Time:**	10:34
Instrument ID:	GCMSV	**Method:**	SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	204135	7.68	442731	9.91	522889	10.86	484721	14.27	285888	16.87
Upper Limit [a]	408270	8.18	885462	10.41	1045778	11.36	969442	14.77	571776	17.37
Lower Limit [b]	102068	7.18	221366	9.41	261445	10.36	242361	13.77	142944	16.37

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV6649-MB	174133	7.68	454207	9.91	527111	10.86	478354	14.27	275215	16.87
VV6649-BS	202992	7.68	411463	9.91	491462	10.85	455015	14.27	264637	16.87
ZZZZZZ	178490	7.67	414444	9.91	488320	10.86	446784	14.27	257852	16.87
ZZZZZZ	172444	7.67	424055	9.91	497885	10.86	457320	14.27	266233	16.88
JC8038-12	247088	7.67	427713	9.91	507010	10.86	463863	14.27	253423	16.87
ZZZZZZ	202466	7.67	457174	9.91	542693	10.86	498227	14.27	282012	16.87
JC8038-12MS	130278	7.69	441778	9.91	522144	10.86	443062	14.27	213670	16.87
ZZZZZZ	191059	7.69	455170	9.91	535307	10.86	476550	14.27	280452	16.87
JC8031-3	189738	7.69	451423	9.91	530965	10.86	484043	14.27	279675	16.87
JC8031-3DUP	208963	7.69	434035	9.91	513178	10.86	477506	14.27	278628	16.87
ZZZZZZ	190740	7.68	426286	9.91	504100	10.86	460957	14.27	265939	16.87
ZZZZZZ	174048	7.68	429160	9.91	503848	10.86	462047	14.27	270922	16.87
ZZZZZZ	172435	7.69	436522	9.91	514582	10.86	469535	14.27	277170	16.87
ZZZZZZ	175653	7.68	426329	9.91	498627	10.86	458677	14.27	266314	16.88
ZZZZZZ	181988	7.68	432857	9.91	511983	10.86	476274	14.27	277976	16.87
JC7895-2	165735	7.69	383006	9.91	449111	10.86	393747	14.27	183597	16.88
ZZZZZZ	201601	7.67	462089	9.91	548351	10.86	505357	14.27	289050	16.87
ZZZZZZ	213968	7.67	462157	9.91	539553	10.86	485807	14.27	280898	16.88

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: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Method: SW846 8260C **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JC7895-1	D235790.D	94	93	102	98
JC7895-2	V157429.D	99	91	100	98
JC7984-3MS	D235791.D	94	94	103	97
JC7984-3MSD	D235792.D	93	94	101	96
JC8031-3DUP	V157423.D	99	92	102	101
JC8038-12MS	V157419.D	98	85	102	93
VD9626-BS	D235781.D	96	93	103	98
VD9626-MB	D235780.D	94	92	101	99
VV6649-BS	V157413.D	99	89	102	101
VV6649-MB	V157412.D	96	85	100	99

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-122%
S2 = 1,2-Dichloroethane-D4	68-124%
S3 = Toluene-D8	77-125%
S4 = 4-Bromofluorobenzene	72-130%

Initial Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VD9588-ICC9588
Lab FileID: D234792.D


```
                         Response Factor Report  MSD

Method       : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
Title        : SW-846 Method 8260C
Last Update  : Mon Oct 19 09:20:02 2015
Response via : Initial Calibration

Calibration Files
4   =d234789.D   2   =d234788.D   0.5 =d234786.D   50  =d234792.D
100 =d234793.D   1   =d234787.D   200 =d234794.D   20  =d234791.D
8   =d234790.D   0.2 =d234785.D       =                =

Compound
        4     2     0.5   50    100   1     200   20    8     0.2    Avg   %RSD
-------------------------------------------------------------------------------

1) I   Tert Butyl Alcohol-d9 ----------------ISTD---------------------
2)  1,4-dioxane
     0.097 0.095       0.103 0.105 0.098 0.095 0.102 0.101        0.099    3.87
3)  tertiary butyl alcohol
     1.183 1.114       1.128 1.127 1.153 1.070 1.160 1.124        1.132    2.99

4) I   pentafluorobenzene    ----------------ISTD---------------------
5)  1,2-dichloro-1,2,2-trifluoroet
                                                                  0.000#  -1.00
6)  chlorodifluoromethane
     0.788 0.770       0.843 0.779 0.762 0.792 0.789 0.744        0.783    3.71
7)  dichlorodifluoromethane
     1.018 0.958       1.076 1.132 0.907 1.073 1.077 1.095        1.042    7.26
8)  chloromethane
     0.824 0.756       0.863 0.984 0.984 0.949 0.855 0.846        0.883    9.28
9)  1,3-butadiene
                                                                  0.000#  -1.00
10)  vinyl chloride
      0.936 0.865 0.985 0.986 1.061 0.973 1.031 0.933 0.950 0.766  0.949    8.85
11)  bromomethane
      0.564 0.630 0.638 0.689 0.839 0.749 0.859 0.605 0.603        0.686   15.56
12)  chloroethane
      0.437 0.448 0.489 0.476 0.559 0.525 0.577 0.448 0.451        0.490   10.59
13)  vinyl bromide
                                                                  0.000#  -1.00
14)  trichlorofluoromethane
      1.058 0.962 1.001 1.130 1.239 1.022 1.224 1.096 1.101        1.093    8.69
15)  pentane
                                                                  0.000#  -1.00
16)  ethyl ether
      0.266 0.264 0.298 0.250 0.249 0.245 0.255 0.239 0.260        0.258    6.66
17)  acrolein
      0.100 0.106       0.096       0.105       0.092 0.098        0.099    5.34
18)  chlorotrifluoroethene
                                                                  0.000#  -1.00
19)  2-chloropropane
      1.129 1.144 1.122 1.106 1.126 1.425 1.074 0.981 1.131        1.137   10.43
20)  1,1-dichloroethene
      0.902 0.824 0.824 0.953 0.978 0.923 0.929 0.820 0.918 0.985  0.906    6.92
21)  acetone
      0.033 0.051       0.036 0.037       0.038 0.034 0.037        0.038   15.79
22)  allyl chloride
      1.402 1.330 1.681 1.340 1.349 1.610 1.299 1.253 1.336        1.400   10.41
23)  acetonitrile
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VD9588-ICC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D234792.D
Project: Sunoco - Marcus Hook Facility, PA

```
      0.045 0.051       0.042 0.042       0.041 0.041 0.042        0.043    8.28
24)  acetaldehyde
                                                                   0.000#  -1.00
25)  iodomethane
      0.981 0.963 0.981 1.068 1.119 1.038 1.076 0.936 1.052 1.053  1.027    5.70
26)  iso-butyl alcohol
      0.008 0.005       0.007 0.007       0.007 0.006 0.007        0.007#  10.87
27)  carbon disulfide
      2.030 1.842 1.909 2.164 2.166 2.056 2.053 1.819 2.063 2.434  2.054    8.76
28)  methylene chloride
      0.598 0.571 0.660 0.603 0.630 0.624 0.600 0.553 0.616 0.709  0.616    7.18
29)  1-chloropropane
      1.635             1.046 1.031       0.991 1.008 1.345        1.176   22.18
            ----- Linear regression -----  Coefficient =  0.9996
              Response Ratio = 0.05143 + 0.98320 *A

30)  methyl acetate
      0.069             0.065 0.064       0.066 0.065 0.054        0.064    7.79
31)  methyl tert butyl ether
      1.881 1.688 2.057 1.819 1.864 2.164 1.781 1.681 1.867        1.867    8.49
32)  trans-1,2-dichloroethene
      0.791 0.709 0.738 0.776 0.789 0.810 0.783 0.704 0.792 0.923  0.782    7.90
33)  di-isopropyl ether
      1.696 1.622 1.845 1.774 1.828 1.801 1.726 1.718 1.603 1.908  1.752    5.58
34)  ethyl tert-butyl ether
      1.758 1.729 1.873 1.922 1.983 1.753 1.887 1.813 1.708 1.829  1.826    4.94
35)  2-butanone
      0.049             0.047 0.049       0.050 0.043 0.048        0.048    5.35
36)  1,1-dichloroethane
      0.918 0.856 0.905 0.920 0.937 0.909 0.927 0.847 0.934 1.086  0.924    7.02
37)  chloroprene
      0.643 0.624 0.559 0.692 0.695 0.644 0.698 0.672 0.652 0.582  0.646    7.32
38)  acrylonitrile
      0.161 0.152 0.146 0.159 0.161 0.164 0.159 0.154 0.167        0.158    4.07
39)  vinyl acetate
      0.073 0.052       0.088 0.091       0.091 0.090 0.078        0.081   17.86
40)  ethyl acetate
      0.061             0.051 0.052       0.050 0.051 0.052        0.053    7.77
41)  2,2-dichloropropane
      1.035 0.974 1.195 1.061 1.046 1.089 1.015 0.902 1.049 1.539  1.091   16.03
42)  cis-1,2-dichloroethene
      0.611 0.611 0.875 0.559 0.563 0.744 0.570 0.512 0.595 0.556  0.620   17.53
43)  propionitrile
      0.060 0.052 0.052 0.059 0.060 0.061 0.060 0.058 0.063 0.049  0.057    8.29
44)  methyl acrylate
      0.050             0.058 0.060       0.060 0.052 0.055        0.056    7.31
45)  bromochloromethane
      0.257 0.243 0.278 0.254 0.266 0.277 0.266 0.242 0.264 0.170  0.252   12.38
46)  tetrahydrofuran
      0.058 0.048       0.054 0.056 0.042 0.057 0.050 0.054        0.052   10.16
47)  chloroform
      0.888 0.824 0.897 0.873 0.886 0.935 0.894 0.804 0.884 0.946  0.883    4.89
48)  dibromofluoromethane (s)
      0.464 0.463 0.467 0.452 0.461 0.459 0.463 0.457 0.459 0.460  0.461    0.93
49)  1,2-dichloroethane-d4 (s)
      0.553 0.548 0.551 0.550 0.562 0.544 0.573 0.547 0.543 0.541  0.551    1.76
50)  freon 113
      0.366 0.330       0.424 0.424 0.341 0.415 0.397 0.376        0.384    9.54
51)  methacrylonitrile
      0.252 0.223 0.340 0.227 0.232 0.293 0.231 0.227 0.244        0.252   15.69
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VD9588-ICC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D234792.D
Project: Sunoco - Marcus Hook Facility, PA

```
52)  t-butyl formate
      0.513 0.511       0.567 0.589 0.510 0.566 0.533 0.498        0.536    6.33
53)  1,1,1-trichloroethane
      0.913 0.839 0.940 1.019 1.032 0.892 1.005 0.858 0.964 1.052  0.952    7.88
54)  tert-amyl methyl ether
      1.673 1.589 1.703 1.776 1.868 1.698 1.822 1.669 1.579 1.881  1.726    6.22

55) I   1,4-difluorobenzene   ----------------ISTD---------------------
56)  cyclohexane
      0.663 0.581 0.503 0.750 0.757 0.668 0.741 0.610 0.699 0.806  0.678   13.68
57)  tert amyl alcohol
                                                                    0.000#  -1.00
58)  2,2,4-trimethylpentane
      1.273 1.128       1.562 1.638 1.307 1.564 1.412 1.289        1.397   12.73
59)  epichlorohydrin *This compound does not meet Initial Calibration criteria
      0.033 0.028       0.034 0.036 0.031 0.034 0.033 0.033        0.033    7.61
60)  n-butyl alcohol
      0.009 0.008       0.010 0.010 0.008 0.010 0.010 0.009        0.009#   9.20
61)  carbon tetrachloride
      0.584 0.534 0.495 0.647 0.674 0.609 0.673 0.530 0.592 0.654  0.599   10.65
62)  1,1-dichloropropene
      0.469 0.446 0.476 0.497 0.491 0.512 0.508 0.430 0.485 0.530  0.484    6.31
63)  hexane
      0.404 0.363       0.418 0.424 0.449 0.408 0.413 0.397        0.410    6.00
64)  benzene
      1.434 1.355 1.512 1.449 1.467 1.554 1.484 1.319 1.463 1.859  1.489    9.86
65)  heptane
      0.227 0.214 0.163 0.244 0.246 0.279 0.233 0.237 0.222 0.213  0.228   13.06
66)  isopropyl acetate
      0.779 0.791 0.775 0.899 0.921 0.847 0.897 0.816 0.766 1.223  0.872   15.59
67)  1,2-dichloroethane
      0.494 0.457 0.498 0.500 0.510 0.516 0.519 0.476 0.513 0.593  0.508    7.03
68)  Ethyl Acrylate
                                                                    0.000#  -1.00
69)  trichloroethene
      0.355 0.333 0.383 0.368 0.370 0.363 0.381 0.331 0.374 0.428  0.369    7.42
70)  2-nitropropane
      0.577 0.482 0.601 0.547 0.570 0.626 0.561 0.514 0.532        0.557    7.90
71)  2-chloroethyl vinyl ether
      0.178 0.176 0.173 0.195 0.209 0.183 0.204 0.190 0.174 0.170  0.185    7.37
72)  methyl methacrylate
      0.075 0.056       0.081 0.089       0.089 0.076 0.076        0.078   14.30
73)  tert-amyl ethyl ether
                                                                    0.000#  -1.00
74)  1,2-dichloropropane
      0.346 0.326 0.362 0.364 0.368 0.370 0.365 0.333 0.362 0.383  0.358    4.85
75)  methylcyclohexane
      0.627 0.568       0.736 0.766 0.659 0.746 0.674 0.622        0.675   10.31
76)  dibromomethane
      0.220 0.214 0.213 0.224 0.234 0.227 0.232 0.214 0.228 0.216  0.222    3.61
77)  bromodichloromethane
      0.509 0.474 0.514 0.512 0.533 0.513 0.533 0.474 0.512 0.561  0.514    5.10
78)  cis-1,3-dichloropropene
      0.581 0.538 0.614 0.599 0.621 0.631 0.610 0.560 0.590 0.670  0.601    6.22
79)  toluene-d8 (s)
      1.255 1.255 1.266 1.296 1.344 1.262 1.300 1.273 1.260 1.256  1.277    2.25
80)  4-methyl-2-pentanone
      0.118 0.110       0.127 0.137       0.135 0.118 0.123        0.124    7.91
81)  toluene
      0.858 0.794 0.902 0.913 0.958 0.892 0.941 0.820 0.900 1.024  0.900    7.42
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VD9588-ICC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D234792.D
Project: Sunoco - Marcus Hook Facility, PA

```
 82)  3-methyl-1-butanol
       0.009 0.008       0.010 0.011       0.011 0.010 0.009        0.010#  11.59
 83)  trans-1,3-dichloropropene
       0.542 0.502 0.602 0.552 0.589 0.588 0.574 0.519 0.550 0.594  0.561    6.03
 84)  ethyl methacrylate
       0.417 0.368 0.395 0.431 0.473 0.431 0.459 0.401 0.416 0.288  0.408   12.74
 85)  1,1,2-trichloroethane
       0.244 0.225 0.228 0.248 0.268 0.261 0.261 0.233 0.248 0.303  0.252    9.09
 86)  2-hexanone
       0.118 0.105       0.116 0.130 0.101 0.126 0.112 0.112        0.115    8.60

 87) I   chlorobenzene-d5      ----------------ISTD---------------------
 88)  tetrachloroethene
       0.385 0.372 0.388 0.415 0.405 0.387 0.416 0.364 0.398 0.498  0.403    9.31
 89)  1,3-dichloropropane
       0.531 0.496 0.473 0.536 0.535 0.506 0.528 0.510 0.547 0.581  0.524    5.72
 90)  butyl acetate
       0.205 0.218 0.238 0.213 0.218 0.233 0.212 0.213 0.204 0.207  0.216    5.23
 91)  3,3-dimethyl-1-butanol
       0.037 0.034 0.036 0.042 0.042 0.038 0.044 0.041 0.038 0.037  0.039    8.48
 92)  dibromochloromethane
       0.375 0.335 0.340 0.390 0.400 0.391 0.407 0.365 0.382 0.413  0.380    6.94
 93)  1,2-dibromoethane
       0.335 0.302 0.340 0.322 0.333 0.351 0.329 0.305 0.333 0.386  0.334    7.03
 94)  chlorobenzene
       1.059 0.980 1.023 1.051 1.068 1.072 1.070 0.967 1.068 1.184  1.054    5.66
 95)  1,1,1,2-tetrachloroethane
       0.452 0.418 0.390 0.477 0.475 0.473 0.497 0.435 0.465 0.462  0.454    7.00
 96)  ethylbenzene
       1.896 1.731 1.943 1.900 1.918 1.913 1.901 1.727 1.906 2.344  1.918    8.77
 97)  m,p-xylene
       0.694 0.644 0.694 0.731 0.742 0.712 0.761 0.655 0.729 0.757  0.712    5.63
 98)  o-xylene
       0.733 0.686 0.734 0.775 0.787 0.752 0.809 0.712 0.759 0.823  0.757    5.63
 99)  styrene
       1.177 1.075 1.114 1.220 1.284 1.143 1.311 1.116 1.203 1.262  1.190    6.66
100)  bromoform
       0.274 0.230 0.265 0.287 0.304 0.253 0.317 0.261 0.282 0.223  0.270   11.00

101) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
102)  isopropylbenzene
       3.360 3.122 3.364 3.550 3.522 3.468 3.374 3.180 3.466 3.804  3.421    5.63
103)  4-bromofluorobenzene (s)
       0.950 0.961 0.964 0.905 0.932 0.974 0.896 0.936 0.939 0.953  0.941    2.68
104)  bromobenzene
       0.864 0.812 0.818 0.829 0.883 0.922 0.896 0.780 0.847 0.771  0.842    5.90
105)  cyclohexanone
       0.040 0.042       0.037 0.036       0.031 0.038 0.040        0.038    9.42
106)  1,1,2,2-tetrachloroethane
       0.846 0.767 0.850 0.803 0.801 0.903 0.763 0.792 0.845 0.879  0.825    5.70
107)  trans-1,4-dichloro-2-butene
       0.267 0.272 0.273 0.249 0.252 0.296 0.239 0.245 0.265 0.300  0.266    7.78
108)  1,2,3-trichloropropane
       0.232 0.220 0.176 0.223 0.234 0.254 0.231 0.223 0.239 0.162  0.219   12.99
109)  n-propylbenzene
       3.906 3.630 3.935 3.904 3.926 4.198 3.725 3.588 3.986 5.133  3.993   10.99
110)  p-ethyltoluene
                                                                    0.000#  -1.00
111)  2-chlorotoluene
       0.813 0.749 0.855 0.830 0.864 0.901 0.880 0.762 0.838        0.832    6.13
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VD9588-ICC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D234792.D
Project: Sunoco - Marcus Hook Facility, PA

```
112)  4-chlorotoluene
       2.486 2.324 2.934 2.384 2.473 2.789 2.401 2.272 2.460 3.480  2.600   14.28
113)  1,3,5-trimethylbenzene
       3.002 2.801 2.949 3.189 3.195 3.219 3.161 2.891 3.115 3.445  3.097    6.08
114)  tert-butylbenzene
       2.467 2.243 2.508 2.709 2.585 2.591 2.662 2.367 2.522 3.313  2.597   11.03
115)  pentachloroethane
       0.581 0.559 0.606 0.633 0.634 0.584 0.676 0.569 0.586 0.606  0.603    5.89
116)  1,2,4-trimethylbenzene
       3.044 2.795 3.105 3.166 3.175 3.176 3.111 2.887 3.109 3.727  3.130    7.84
117)  sec-butylbenzene
       3.935 3.598 3.843 4.340 4.175 4.105 4.075 3.819 4.097 4.748  4.073    7.76
118)  1,3-dichlorobenzene
       1.778 1.625 1.762 1.762 1.796 1.825 1.808 1.640 1.798 2.153  1.795    7.98
119)  p-isopropyltoluene
       3.353 2.986 3.217 3.590 3.515 3.447 3.488 3.136 3.400 4.143  3.427    9.13
120)  1,4-dichlorobenzene
       1.781 1.681 1.898 1.792 1.820 1.907 1.828 1.666 1.837        1.801    4.65
121)  1,2,3-trimethylbenzene
                                                                    0.000#  -1.00
122)  Benzyl Chloride
       1.854 1.782 2.238 1.783 1.773 1.925 1.679 1.821 1.747        1.845    8.82
123)  p-diethylbenzene
                                                                    0.000#  -1.00
124)  INDANE
                                                                    0.000#  -1.00
125)  1,2-dichlorobenzene
       1.781 1.623 1.652 1.807 1.808 1.820 1.789 1.692 1.834 2.081  1.789    7.10
126)  n-butylbenzene
       1.736 1.564 1.682 1.859 1.827 1.800 1.805 1.637 1.786 1.964  1.766    6.54
127)  1,2,4,5-tetramethylbenzene
                                                                    0.000#  -1.00
128)  1,2-dibromo-3-chloropropane
       0.180 0.179 0.177 0.208 0.202 0.185 0.201 0.194 0.199 0.235  0.196    8.99
129)  1,3,5-trichlorobenzene
       1.448 1.289 1.405 1.688 1.632 1.372 1.639 1.463 1.537 1.649  1.512    9.03
130)  1,2,4-trichlorobenzene
       1.111 0.936 1.023 1.414 1.350 1.008 1.377 1.189 1.157 1.305  1.187   14.22
131)  hexachlorobutadiene
       0.621 0.564 0.585 0.724 0.679 0.634 0.688 0.598 0.632 0.715  0.644    8.58
132)  naphthalene
       2.187 1.840       2.816 2.726 1.965 2.662 2.432 2.332        2.370   15.08
133)  1,2,3-trichlorobenzene
       0.892 0.792 0.877 1.171 1.139 0.884 1.149 0.998 0.962 1.144  1.001   14.01
134)  hexachloroethane
       0.604 0.581 0.664 0.667 0.642 0.675 0.699 0.596 0.617        0.638    6.37
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           MD9588.M          Mon Oct 19 09:22:26 2015   RPT1
```

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: VD9588-ICV9588
Lab FileID: D234797.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d234797.D Vial: 14
Acq On : 15 Oct 2015 6:02 pm Operator: BenM
Sample : icv9588-50 Inst : MSD
Misc : ms92609,vd9588,5.0,,100,5,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
Title : SW-846 Method 8260C
Last Update : Mon Oct 19 09:20:02 2015
Response via : Multiple Level Calibration

Min. RRF : 0.010 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	Tert Butyl Alcohol-d9	1.000	1.000	0.0	101	0.00	7.97
2	M	1,4-dioxane	0.099	0.109	-10.1	107	0.00	11.82
3	M	tertiary butyl alcohol	1.132	1.194	-5.5	107	0.00	8.08
4	I	pentafluorobenzene	1.000	1.000	0.0	106	0.00	10.13
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.783	0.756	3.4	95	0.01	4.42
7	M	dichlorodifluoromethane	1.042	1.035	0.7	102	0.00	4.39
8	M	chloromethane	0.883	0.854	3.3	105	0.01	4.76
9		1,3-butadiene		----------NA----------				
10	M	vinyl chloride	0.949	0.938	1.2	101	0.00	5.04
11	M	bromomethane	0.686	0.721	-5.1	111	0.00	5.72
12	M	chloroethane	0.490	0.487	0.6	108	0.00	5.89
13	M	vinyl bromide		----------NA----------				
14	M	trichlorofluoromethane	1.093	1.120	-2.5	105	0.00	6.37
15		pentane		----------NA----------				
16	M	ethyl ether	0.258	0.243	5.8	103	0.00	6.78
17	M	acrolein	0.099	0.105	-6.1	116	0.00	7.09
18	M	chlorotrifluoroethene		----------NA----------				
19	M	2-chloropropane	1.137	1.025	9.9	98	0.00	7.01
20	M	1,1-dichloroethene	0.906	0.876	3.3	97	0.00	7.23
21	M	acetone	0.038	0.037	2.6	109	-0.01	7.31
22	M	allyl chloride	1.400	1.355	3.2	107	0.00	7.77
23	M	acetonitrile	0.043	0.042	2.3	106	0.00	7.79
24	M	acetaldehyde		----------NA----------				
25	M	iodomethane	1.027	1.007	1.9	100	0.00	7.54
26	M	iso-butyl alcohol	0.007	0.005#	28.6	82	0.00	10.43
27	M	carbon disulfide	2.054	1.984	3.4	97	0.00	7.66
28	M	methylene chloride	0.616	0.583	5.4	103	0.00	7.98
		----------	True	Calc.	% Drift	----------		
29	M	1-chloropropane	50.000	44.905	10.2	95	0.00	7.99
		----------	AvgRF	CCRF	% Dev	----------		
30	M	methyl acetate	0.064	0.064	0.0	104	0.00	7.75
31	M	methyl tert butyl ether	1.867	1.724	7.7	101	0.00	8.28
32	M	trans-1,2-dichloroethene	0.782	0.720	7.9	99	0.00	8.33
33	M	di-isopropyl ether	1.752	1.766	-0.8	106	0.00	8.85
34	M	ethyl tert-butyl ether	1.826	1.888	-3.4	104	0.00	9.32
35	M	2-butanone	0.048	0.048	0.0	109	0.00	9.63
36	M	1,1-dichloroethane	0.924	0.888	3.9	102	0.00	8.91
37	M	chloroprene	0.646	0.673	-4.2	103	0.00	9.00

Initial Calibration Verification

Job Number: JC7895 **Sample:** VD9588-ICV9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D234797.D
Project: Sunoco - Marcus Hook Facility, PA

38	M	acrylonitrile	0.158	0.159	-0.6	106	0.00	8.33
39	M	vinyl acetate	0.081	0.087	-7.4	104	0.00	8.88
40	M	ethyl acetate	0.053	0.059	-11.3	122	0.00	9.61
41	M	2,2-dichloropropane	1.091	1.003	8.1	100	0.00	9.65
42	M	cis-1,2-dichloroethene	0.620	0.521	16.0	99	0.00	9.65
43	M	propionitrile	0.057	0.059	-3.5	105	0.00	9.76
44		methyl acrylate	0.056	0.058	-3.6	108	0.00	9.70
45	M	bromochloromethane	0.252	0.245	2.8	102	0.00	9.97
46	M	tetrahydrofuran	0.052	0.056	-7.7	109	0.00	10.00
47	M	chloroform	0.883	0.841	4.8	102	0.00	10.02
48	S	dibromofluoromethane (s)	0.461	0.450	2.4	106	0.00	10.22
49	S	1,2-dichloroethane-d4 (s)	0.551	0.536	2.7	103	0.00	10.65
50	M	freon 113	0.384	0.467	-21.6	117	0.00	7.18
51	M	methacrylonitrile	0.252	0.228	9.5	106	0.00	9.92
52	m	t-butyl formate	0.536	0.617	-15.1	115	0.00	10.04
53	M	1,1,1-trichloroethane	0.952	0.954	-0.2	99	0.00	10.26
54	M	tert-amyl methyl ether	1.726	1.770	-2.5	106	0.00	10.70
55	I	1,4-difluorobenzene	1.000	1.000	0.0	105	0.00	11.06
56	M	cyclohexane	0.678	0.689	-1.6	96	0.00	10.31
57		tert amyl alcohol		----------NA----------				
58	M	2,2,4-trimethylpentane	1.397	1.489	-6.6	100	0.00	10.65
59	M	epichlorohydrin		----------NA----------				
60	M	n-butyl alcohol	0.009	0.010#	-11.1	104	0.00	11.21
61	M	carbon tetrachloride	0.599	0.616	-2.8	100	0.00	10.45
62	M	1,1-dichloropropene	0.484	0.480	0.8	101	0.00	10.42
63	M	hexane	0.410	0.312	23.9	78	0.00	8.59
64	M	benzene	1.489	1.399	6.0	101	0.00	10.70
65	M	heptane	0.228	0.244	-7.0	105	0.00	10.80
66	M	isopropyl acetate	0.872	0.867	0.6	101	0.00	10.60
67	M	1,2-dichloroethane	0.508	0.496	2.4	104	0.00	10.74
68		Ethyl Acrylate		----------NA----------				
69	M	trichloroethene	0.369	0.350	5.1	100	0.00	11.40
70	M	2-nitropropane	0.557	0.594	-6.6	114	0.00	11.67
71	M	2-chloroethyl vinyl ether	0.185	0.227	-22.7	122	0.00	12.22
72	M	methyl methacrylate	0.078	0.091	-16.7	118	0.00	11.67
73	M	tert-amyl ethyl ether		----------NA----------				
74	M	1,2-dichloropropane	0.358	0.368	-2.8	106	0.00	11.69
75	M	methylcyclohexane	0.675	0.719	-6.5	102	0.00	11.60
76	M	dibromomethane	0.222	0.222	0.0	104	0.00	11.87
77	M	bromodichloromethane	0.514	0.503	2.1	103	0.00	11.99
78	M	cis-1,3-dichloropropene	0.601	0.614	-2.2	107	0.00	12.46
79	S	toluene-d8 (s)	1.277	1.355	-6.1	110	0.00	12.75
80	M	4-methyl-2-pentanone	0.124	0.144	-16.1	119	0.00	12.55
81	M	toluene	0.900	0.932	-3.6	107	0.00	12.83
82	M	3-methyl-1-butanol	0.010	0.016	-60.0#	163	0.00	12.57
83	M	trans-1,3-dichloropropene	0.561	0.592	-5.5	112	0.00	13.05
84	M	ethyl methacrylate	0.408	0.500	-22.5	122	0.00	13.01
85	M	1,1,2-trichloroethane	0.252	0.276	-9.5	117	0.00	13.29
86	M	2-hexanone	0.115	0.144	-25.2	130	0.00	13.46
87	I	chlorobenzene-d5	1.000	1.000	0.0	122	0.00	14.40
88	M	tetrachloroethene	0.403	0.365	9.4	108	0.00	13.44
89	M	1,3-dichloropropane	0.524	0.515	1.7	117	0.00	13.49
90	M	butyl acetate	0.216	0.236	-9.3	135	0.00	13.51
91	m	3,3-dimethyl-1-butanol	0.039	0.036	7.7	106	0.00	13.64
92	M	dibromochloromethane	0.380	0.368	3.2	115	0.00	13.78
93	M	1,2-dibromoethane	0.334	0.321	3.9	122	0.00	13.95
94	M	chlorobenzene	1.054	1.039	1.4	121	0.00	14.43
95	M	1,1,1,2-tetrachloroethane	0.454	0.395	13.0	101	0.00	14.50

Initial Calibration Verification

Job Number: JC7895 **Sample:** VD9588-ICV9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D234797.D
Project: Sunoco - Marcus Hook Facility, PA

96	M	ethylbenzene	1.918	1.820	5.1	117	0.00	14.47
97	M	m,p-xylene	0.712	0.704	1.1	118	0.00	14.58
98	M	o-xylene	0.757	0.723	4.5	114	0.00	15.06
99	M	styrene	1.190	1.262	-6.1	127	0.00	15.07
100	M	bromoform	0.270	0.296	-9.6	126	0.00	15.41
101	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	122	0.00	16.97
102	M	isopropylbenzene	3.421	3.121	8.8	107	0.00	15.43
103	S	4-bromofluorobenzene (s)	0.941	0.967	-2.8	130	0.00	15.68
104	M	bromobenzene	0.842	0.862	-2.4	127	0.00	15.90
105	M	cyclohexanone	0.038	0.033	13.2	106	0.00	15.67
106	M	1,1,2,2-tetrachloroethane	0.825	0.747	9.5	113	0.00	15.81
107	M	trans-1,4-dichloro-2-bute	0.266	0.258	3.0	126	0.00	15.84
108	M	1,2,3-trichloropropane	0.219	0.220	-0.5	120	0.00	15.89
109	M	n-propylbenzene	3.993	3.963	0.8	124	0.00	15.88
110	M	p-ethyltoluene		----------NA----------				
111	M	2-chlorotoluene	0.832	0.795	4.4	117	0.00	16.06
112	M	4-chlorotoluene	2.600	2.449	5.8	125	0.00	16.17
113	M	1,3,5-trimethylbenzene	3.097	2.834	8.5	108	0.00	16.04
114	M	tert-butylbenzene	2.597	2.193	15.6	98	0.00	16.44
115	M	pentachloroethane	0.603	0.538	10.8	103	0.00	16.56
116	M	1,2,4-trimethylbenzene	3.130	3.018	3.6	116	0.00	16.49
117	M	sec-butylbenzene	4.073	3.671	9.9	103	0.00	16.67
118	M	1,3-dichlorobenzene	1.795	1.709	4.8	118	0.00	16.91
119	M	p-isopropyltoluene	3.427	3.197	6.7	108	0.00	16.80
120	M	1,4-dichlorobenzene	1.801	1.754	2.6	119	0.00	17.00
121		1,2,3-trimethylbenzene		----------NA----------				
122		Benzyl Chloride	1.845	1.739	5.7	119	0.00	17.14
123	M	p-diethylbenzene		----------NA----------				
124		INDANE		----------NA----------				
125	M	1,2-dichlorobenzene	1.789	1.676	6.3	113	0.00	17.45
126	M	n-butylbenzene	1.766	1.725	2.3	113	0.00	17.26
127	M	1,2,4,5-tetramethylbenzen		----------NA----------				
128	M	1,2-dibromo-3-chloropropa	0.196	0.175	10.7	102	0.00	18.32
129	M	1,3,5-trichlorobenzene	1.512	1.384	8.5	100	0.00	18.49
130	M	1,2,4-trichlorobenzene	1.187	1.140	4.0	98	0.00	19.23
131	M	hexachlorobutadiene	0.644	0.570	11.5	96	0.00	19.33
132	M	naphthalene	2.370	2.209	6.8	95	0.00	19.56
133	M	1,2,3-trichlorobenzene	1.001	0.935	6.6	97	0.00	19.84
134	M	hexachloroethane	0.638	0.539	15.5	98	0.00	17.71

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d234792.D MD9588.M Mon Oct 19 09:22:02 2015 RPT1

6.9.2

6

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235777.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\D\vd9626\d235777.D         Vial: 2
Acq On    : 12 Nov 2015   5:31 pm                     Operator: BenM
Sample    : cc9588-20                                 Inst    : MSD
Misc      : ms93861,vd9626,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
Title        : SW-846 Method 8260C
Last Update  : Mon Oct 19 11:56:02 2015
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	114	-0.02	7.95
2	M	1,4-dioxane	0.099	0.105	-6.1	117	-0.01	11.81
3	M	tertiary butyl alcohol	1.132	1.117	1.3	109	-0.01	8.08
4	I	pentafluorobenzene	1.000	1.000	0.0	103	0.00	10.13
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.783	0.745	4.9	97	0.00	4.40
7	M	dichlorodifluoromethane	1.042	1.024	1.7	97	0.00	4.39
8	M	chloromethane	0.883	1.080	-22.3#	130	0.00	4.75
9		1,3-butadiene		----------NA----------				
10	M	vinyl chloride	0.949	1.118	-17.8	123	0.02	5.05
11	M	bromomethane	0.686	0.548	20.1#	93	-0.01	5.70
12	M	chloroethane	0.490	0.473	3.5	108	0.00	5.88
13	M	vinyl bromide		----------NA----------				
14	M	trichlorofluoromethane	1.093	0.945	13.5	88	0.00	6.37
15		pentane		----------NA----------				
16	M	ethyl ether	0.258	0.282	-9.3	121	0.00	6.77
17	M	acrolein	0.099	0.085	14.1	95	0.00	7.08
18	M	chlorotrifluoroethene		----------NA----------				
19	M	2-chloropropane	1.137	1.134	0.3	118	-0.01	6.99
20	M	1,1-dichloroethene	0.906	0.872	3.8	109	0.00	7.22
21	M	acetone	0.038	0.034	10.5	101	0.00	7.32
22	M	allyl chloride	1.400	1.565	-11.8	128	0.00	7.77
23	M	acetonitrile	0.043	0.050	-16.3	125	0.00	7.79
24	M	acetaldehyde		----------NA----------				
25	M	iodomethane	1.027	0.943	8.2	103	0.00	7.53
26	M	iso-butyl alcohol	0.007	0.007#	0.0	112	0.00	10.42
27	M	carbon disulfide	2.054	2.061	-0.3	116	-0.01	7.64
28	M	methylene chloride	0.616	0.596	3.2	110	0.00	7.97
		----------	True	Calc.	% Drift	----------		
29	M	1-chloropropane	20.000	20.122	-0.6	114	0.00	7.98
		----------	AvgRF	CCRF	% Dev	----------		
30	M	methyl acetate	0.064	0.067	-4.7	106	0.00	7.76
31	M	methyl tert butyl ether	1.867	1.782	4.6	109	0.00	8.26
32	M	trans-1,2-dichloroethene	0.782	0.779	0.4	113	0.00	8.32
33	M	di-isopropyl ether	1.752	1.860	-6.2	111	0.00	8.84
34	M	ethyl tert-butyl ether	1.826	1.806	1.1	102	0.00	9.30
35	M	2-butanone	0.048	0.048	0.0	115	0.00	9.63
36	M	1,1-dichloroethane	0.924	0.934	-1.1	113	0.00	8.91
37	M	chloroprene	0.646	0.679	-5.1	104	0.00	9.00

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235777.D
Project: Sunoco - Marcus Hook Facility, PA

38	M	acrylonitrile	0.158	0.191	-20.9#	128	0.00	8.33
39	M	vinyl acetate	0.081	0.085	-4.9	97	0.00	8.88
40	M	ethyl acetate	0.053	0.060	-13.2	122	0.00	9.61
41	M	2,2-dichloropropane	1.091	0.958	12.2	109	0.00	9.64
42	M	cis-1,2-dichloroethene	0.620	0.577	6.9	116	0.00	9.65
43	M	propionitrile	0.057	0.078	-36.8#	137	0.00	9.75
44		methyl acrylate	0.056	0.060	-7.1	117	0.00	9.70
45	M	bromochloromethane	0.252	0.260	-3.2	110	0.00	9.97
46	M	tetrahydrofuran	0.052	0.061	-17.3	126	0.00	10.00
47	M	chloroform	0.883	0.848	4.0	108	0.00	10.01
48	S	dibromofluoromethane (s)	0.461	0.439	4.8	99	0.00	10.22
49	S	1,2-dichloroethane-d4 (s)	0.551	0.513	6.9	96	0.00	10.64
50	M	freon 113	0.384	0.370	3.6	96	0.00	7.17
51	M	methacrylonitrile	0.252	0.279	-10.7	126	0.00	9.92
52	m	t-butyl formate	0.536	0.518	3.4	100	0.00	10.03
53	M	1,1,1-trichloroethane	0.952	0.858	9.9	103	0.00	10.25
54	M	tert-amyl methyl ether	1.726	1.691	2.0	104	0.00	10.69
55	I	1,4-difluorobenzene	1.000	1.000	0.0	102	0.00	11.05
56	M	cyclohexane	0.678	0.707	-4.3	118	0.00	10.30
57		tert amyl alcohol		----------NA----------				
58	M	2,2,4-trimethylpentane	1.397	1.146	18.0	83	-0.01	10.64
59	M	epichlorohydrin	0.033	0.041	-24.2#	125	0.00	12.38
60	M	n-butyl alcohol	0.009	0.012	-33.3#	129	0.00	11.21
61	M	carbon tetrachloride	0.599	0.525	12.4	101	0.00	10.44
62	M	1,1-dichloropropene	0.484	0.490	-1.2	116	0.00	10.42
63	M	hexane	0.410	0.366	10.7	91	0.00	8.58
64	M	benzene	1.489	1.512	-1.5	117	0.00	10.69
65	M	heptane	0.228	0.206	9.6	89	0.00	10.80
66	M	isopropyl acetate	0.872	0.823	5.6	103	0.00	10.59
67	M	1,2-dichloroethane	0.508	0.473	6.9	102	0.00	10.73
68		Ethyl Acrylate		----------NA----------				
69	M	trichloroethene	0.369	0.358	3.0	110	0.00	11.40
70	M	2-nitropropane	0.557	0.559	-0.4	111	0.00	11.67
71	M	2-chloroethyl vinyl ether	0.185	0.196	-5.9	105	0.00	12.21
72	M	methyl methacrylate	0.078	0.081	-3.8	110	0.00	11.67
73	M	tert-amyl ethyl ether		----------NA----------				
74	M	1,2-dichloropropane	0.358	0.384	-7.3	118	0.00	11.69
75	M	methylcyclohexane	0.675	0.615	8.9	93	0.00	11.60
76	M	dibromomethane	0.222	0.218	1.8	104	0.00	11.86
77	M	bromodichloromethane	0.514	0.483	6.0	104	0.00	11.98
78	M	cis-1,3-dichloropropene	0.601	0.603	-0.3	110	0.00	12.45
79	S	toluene-d8 (s)	1.277	1.287	-0.8	103	0.00	12.74
80	M	4-methyl-2-pentanone	0.124	0.145	-16.9	125	0.00	12.54
81	M	toluene	0.900	0.902	-0.2	113	0.00	12.82
82	M	3-methyl-1-butanol	0.010	0.011	-10.0	114	0.00	12.57
83	M	trans-1,3-dichloropropene	0.561	0.540	3.7	106	0.00	13.05
84	M	ethyl methacrylate	0.408	0.431	-5.6	110	0.00	13.00
85	M	1,1,2-trichloroethane	0.252	0.257	-2.0	112	0.00	13.29
86	M	2-hexanone	0.115	0.151	-31.3#	138	0.00	13.45
87	I	chlorobenzene-d5	1.000	1.000	0.0	102	0.00	14.39
88	M	tetrachloroethene	0.403	0.384	4.7	107	0.00	13.44
89	M	1,3-dichloropropane	0.524	0.557	-6.3	111	-0.01	13.48
90	M	butyl acetate	0.216	0.239	-10.6	114	0.00	13.51
91	m	3,3-dimethyl-1-butanol	0.039	0.042	-7.7	103	0.00	13.64
92	M	dibromochloromethane	0.380	0.374	1.6	104	0.00	13.77
93	M	1,2-dibromoethane	0.334	0.321	3.9	107	-0.01	13.94
94	M	chlorobenzene	1.054	1.026	2.7	108	0.00	14.43
95	M	1,1,1,2-tetrachloroethane	0.454	0.440	3.1	103	0.00	14.49

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235777.D
Project: Sunoco - Marcus Hook Facility, PA

96	M	ethylbenzene	1.918	1.870	2.5	110	0.00	14.46
97	M	m,p-xylene	0.712	0.718	-0.8	111	0.00	14.58
98	M	o-xylene	0.757	0.774	-2.2	111	0.00	15.05
99	M	styrene	1.190	1.179	0.9	108	0.00	15.07
100	M	bromoform	0.270	0.269	0.4	105	0.00	15.39
101	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	105	0.00	16.97
102	M	isopropylbenzene	3.421	3.369	1.5	111	0.00	15.42
103	S	4-bromofluorobenzene (s)	0.941	0.919	2.3	103	0.00	15.67
104	M	bromobenzene	0.842	0.796	5.5	107	-0.01	15.89
105	M	cyclohexanone	0.038	0.047	-23.7#	132	0.00	15.67
106	M	1,1,2,2-tetrachloroethane	0.825	0.880	-6.7	116	0.00	15.80
107	M	trans-1,4-dichloro-2-bute	0.266	0.256	3.8	109	0.00	15.84
108	M	1,2,3-trichloropropane	0.219	0.227	-3.7	106	-0.01	15.88
109	M	n-propylbenzene	3.993	3.760	5.8	110	0.00	15.88
110	M	p-ethyltoluene		----------NA----------				
111	M	2-chlorotoluene	0.832	0.776	6.7	107	0.00	16.06
112	M	4-chlorotoluene	2.600	2.424	6.8	112	0.00	16.17
113	M	1,3,5-trimethylbenzene	3.097	2.999	3.2	109	0.00	16.03
114	M	tert-butylbenzene	2.597	2.441	6.0	108	0.00	16.43
115	M	pentachloroethane	0.603	0.603	0.0	111	0.00	16.55
116	M	1,2,4-trimethylbenzene	3.130	3.036	3.0	110	0.00	16.48
117	M	sec-butylbenzene	4.073	3.814	6.4	105	0.00	16.67
118	M	1,3-dichlorobenzene	1.795	1.717	4.3	110	0.00	16.90
119	M	p-isopropyltoluene	3.427	3.198	6.7	107	0.00	16.79
120	M	1,4-dichlorobenzene	1.801	1.762	2.2	111	0.00	17.00
121		1,2,3-trimethylbenzene		----------NA----------				
122		Benzyl Chloride	1.845	2.082	-12.8	120	0.00	17.13
123	M	p-diethylbenzene		----------NA----------				
124		INDANE		----------NA----------				
125	M	1,2-dichlorobenzene	1.789	1.774	0.8	110	0.00	17.44
126	M	n-butylbenzene	1.766	1.660	6.0	106	0.00	17.25
127	M	1,2,4,5-tetramethylbenzen		----------NA----------				
128	M	1,2-dibromo-3-chloropropa	0.196	0.187	4.6	101	0.00	18.31
129	M	1,3,5-trichlorobenzene	1.512	1.397	7.6	100	0.00	18.48
130	M	1,2,4-trichlorobenzene	1.187	1.115	6.1	98	0.00	19.22
131	M	hexachlorobutadiene	0.644	0.549	14.8	96	0.00	19.32
132	M	naphthalene	2.370	2.423	-2.2	104	0.00	19.55
133	M	1,2,3-trichlorobenzene	1.001	0.901	10.0	95	0.00	19.83
134	M	hexachloroethane	0.638	0.576	9.7	101	0.00	17.71

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d234791.D MD9588.M Fri Nov 13 07:26:11 2015 T

6.9.3

6

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235778.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\D\vd9626\d235778.D         Vial: 3
Acq On    : 12 Nov 2015   6:01 pm                    Operator: BenM
Sample    : cc9588-20                                Inst    : MSD
Misc      : ms93861,vd9626,5,,100,5,1                Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
Title        : SW-846 Method 8260C
Last Update  : Mon Oct 19 11:56:02 2015
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	108	-0.03	7.94
2	M	1,4-dioxane	0.099	0.100	-1.0	105	-0.01	11.81
3	M	tertiary butyl alcohol	1.132	1.100	2.8	102	-0.02	8.07
4	I	pentafluorobenzene	1.000	1.000	0.0	100	0.00	10.13
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.783	0.794	-1.4	100	0.00	4.41
7	M	dichlorodifluoromethane	1.042	1.061	-1.8	98	0.02	4.40
8	M	chloromethane	0.883	1.093	-23.8#	128	0.02	4.76
9		1,3-butadiene		----------NA----------				
10	M	vinyl chloride	0.949	1.182	-24.6#	126	0.03	5.06
11	M	bromomethane	0.686	0.575	16.2	95	0.00	5.72
12	M	chloroethane	0.490	0.494	-0.8	110	0.00	5.89
13	M	vinyl bromide		----------NA----------				
14	M	trichlorofluoromethane	1.093	0.988	9.6	90	0.02	6.38
15		pentane		----------NA----------				
16	M	ethyl ether	0.258	0.282	-9.3	118	-0.01	6.76
17	M	acrolein	0.099	0.084	15.2	91	-0.01	7.08
18	M	chlorotrifluoroethene		----------NA----------				
19	M	2-chloropropane	1.137	1.164	-2.4	118	-0.02	6.99
20	M	1,1-dichloroethene	0.906	0.893	1.4	109	-0.01	7.22
21	M	acetone	0.038	0.034	10.5	99	0.00	7.32
22	M	allyl chloride	1.400	1.554	-11.0	124	0.00	7.77
23	M	acetonitrile	0.043	0.048	-11.6	117	0.00	7.79
24	M	acetaldehyde		----------NA----------				
25	M	iodomethane	1.027	0.963	6.2	103	0.00	7.53
26	M	iso-butyl alcohol	0.007	0.007#	0.0	108	0.00	10.42
27	M	carbon disulfide	2.054	2.119	-3.2	116	-0.01	7.65
28	M	methylene chloride	0.616	0.605	1.8	109	0.00	7.97
		----------	True	Calc.	% Drift	----------		
29	M	1-chloropropane	20.000	20.305	-1.5	112	0.00	7.99
		----------	AvgRF	CCRF	% Dev	----------		
30	M	methyl acetate	0.064	0.067	-4.7	103	0.00	7.76
31	M	methyl tert butyl ether	1.867	1.792	4.0	106	0.00	8.27
32	M	trans-1,2-dichloroethene	0.782	0.792	-1.3	112	-0.01	8.32
33	M	di-isopropyl ether	1.752	1.896	-8.2	110	0.00	8.84
34	M	ethyl tert-butyl ether	1.826	1.851	-1.4	102	0.00	9.31
35	M	2-butanone	0.048	0.047	2.1	109	0.00	9.63
36	M	1,1-dichloroethane	0.924	0.943	-2.1	111	0.00	8.91
37	M	chloroprene	0.646	0.684	-5.9	102	0.00	8.99

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235778.D
Project: Sunoco - Marcus Hook Facility, PA

38	M	acrylonitrile	0.158	0.186	-17.7	121	0.00	8.33
39	M	vinyl acetate	0.081	0.086	-6.2	95	0.00	8.88
40	M	ethyl acetate	0.053	0.058	-9.4	115	0.00	9.61
41	M	2,2-dichloropropane	1.091	0.988	9.4	109	0.00	9.64
42	M	cis-1,2-dichloroethene	0.620	0.563	9.2	110	0.00	9.64
43	M	propionitrile	0.057	0.075	-31.6#	129	0.00	9.76
44		methyl acrylate	0.056	0.059	-5.4	113	0.00	9.70
45	M	bromochloromethane	0.252	0.259	-2.8	107	0.00	9.97
46	M	tetrahydrofuran	0.052	0.063	-21.2#	126	0.00	9.99
47	M	chloroform	0.883	0.841	4.8	104	0.00	10.01
48	S	dibromofluoromethane (s)	0.461	0.438	5.0	96	0.00	10.21
49	S	1,2-dichloroethane-d4 (s)	0.551	0.504	8.5	92	0.00	10.64
50	M	freon 113	0.384	0.386	-0.5	97	0.00	7.18
51	M	methacrylonitrile	0.252	0.276	-9.5	121	0.00	9.92
52	m	t-butyl formate	0.536	0.525	2.1	98	0.00	10.03
53	M	1,1,1-trichloroethane	0.952	0.877	7.9	102	0.00	10.25
54	M	tert-amyl methyl ether	1.726	1.720	0.3	103	0.00	10.69
55	I	1,4-difluorobenzene	1.000	1.000	0.0	98	0.00	11.06
56	M	cyclohexane	0.678	0.732	-8.0	118	0.00	10.30
57		tert amyl alcohol		----------NA----------				
58	M	2,2,4-trimethylpentane	1.397	1.219	12.7	85	-0.01	10.64
59	M	epichlorohydrin	0.033	0.039	-18.2	116	0.00	12.37
60	M	n-butyl alcohol	0.009	0.012	-33.3#	120	0.00	11.20
61	M	carbon tetrachloride	0.599	0.553	7.7	103	0.00	10.44
62	M	1,1-dichloropropene	0.484	0.498	-2.9	114	0.00	10.42
63	M	hexane	0.410	0.377	8.0	90	0.00	8.58
64	M	benzene	1.489	1.531	-2.8	114	0.00	10.69
65	M	heptane	0.228	0.219	3.9	91	0.00	10.80
66	M	isopropyl acetate	0.872	0.815	6.5	98	0.00	10.59
67	M	1,2-dichloroethane	0.508	0.473	6.9	98	0.00	10.73
68		Ethyl Acrylate		----------NA----------				
69	M	trichloroethene	0.369	0.363	1.6	108	0.00	11.40
70	M	2-nitropropane	0.557	0.551	1.1	105	0.00	11.67
71	M	2-chloroethyl vinyl ether	0.185	0.201	-8.6	104	0.00	12.21
72	M	methyl methacrylate	0.078	0.082	-5.1	106	0.00	11.66
73	M	tert-amyl ethyl ether		----------NA----------				
74	M	1,2-dichloropropane	0.358	0.392	-9.5	116	0.00	11.69
75	M	methylcyclohexane	0.675	0.649	3.9	95	0.00	11.60
76	M	dibromomethane	0.222	0.217	2.3	100	-0.01	11.86
77	M	bromodichloromethane	0.514	0.491	4.5	102	0.00	11.99
78	M	cis-1,3-dichloropropene	0.601	0.609	-1.3	107	0.00	12.45
79	S	toluene-d8 (s)	1.277	1.301	-1.9	101	0.00	12.74
80	M	4-methyl-2-pentanone	0.124	0.146	-17.7	121	0.00	12.55
81	M	toluene	0.900	0.912	-1.3	109	0.00	12.82
82	M	3-methyl-1-butanol	0.010	0.011	-10.0	107	-0.01	12.57
83	M	trans-1,3-dichloropropene	0.561	0.554	1.2	105	0.00	13.05
84	M	ethyl methacrylate	0.408	0.446	-9.3	109	0.00	13.00
85	M	1,1,2-trichloroethane	0.252	0.260	-3.2	110	-0.01	13.28
86	M	2-hexanone	0.115	0.154	-33.9#	136	0.00	13.45
87	I	chlorobenzene-d5	1.000	1.000	0.0	99	0.00	14.39
88	M	tetrachloroethene	0.403	0.395	2.0	108	0.00	13.44
89	M	1,3-dichloropropane	0.524	0.561	-7.1	109	-0.01	13.48
90	M	butyl acetate	0.216	0.239	-10.6	111	0.00	13.51
91	m	3,3-dimethyl-1-butanol	0.039	0.042	-7.7	101	0.00	13.64
92	M	dibromochloromethane	0.380	0.374	1.6	102	0.00	13.78
93	M	1,2-dibromoethane	0.334	0.325	2.7	105	-0.01	13.94
94	M	chlorobenzene	1.054	1.041	1.2	107	0.00	14.42
95	M	1,1,1,2-tetrachloroethane	0.454	0.445	2.0	102	0.00	14.49

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235778.D
Project: Sunoco - Marcus Hook Facility, PA

96	M	ethylbenzene	1.918	1.911	0.4	110	0.00	14.47
97	M	m,p-xylene	0.712	0.728	-2.2	110	0.00	14.58
98	M	o-xylene	0.757	0.784	-3.6	109	0.00	15.05
99	M	styrene	1.190	1.192	-0.2	106	0.00	15.07
100	M	bromoform	0.270	0.272	-0.7	103	0.00	15.40
101	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	102	-0.01	16.97
102	M	isopropylbenzene	3.421	3.432	-0.3	110	0.00	15.42
103	S	4-bromofluorobenzene (s)	0.941	0.930	1.2	102	-0.01	15.67
104	M	bromobenzene	0.842	0.804	4.5	105	-0.01	15.89
105	M	cyclohexanone	0.038	0.045	-18.4	122	-0.01	15.66
106	M	1,1,2,2-tetrachloroethane	0.825	0.860	-4.2	111	0.00	15.80
107	M	trans-1,4-dichloro-2-bute	0.266	0.250	6.0	104	0.00	15.84
108	M	1,2,3-trichloropropane	0.219	0.231	-5.5	106	0.00	15.89
109	M	n-propylbenzene	3.993	3.815	4.5	109	-0.01	15.87
110	M	p-ethyltoluene		----------NA----------				
111	M	2-chlorotoluene	0.832	0.792	4.8	106	-0.01	16.06
112	M	4-chlorotoluene	2.600	2.439	6.2	110	-0.01	16.17
113	M	1,3,5-trimethylbenzene	3.097	3.069	0.9	109	0.00	16.03
114	M	tert-butylbenzene	2.597	2.488	4.2	107	-0.01	16.43
115	M	pentachloroethane	0.603	0.605	-0.3	109	-0.01	16.55
116	M	1,2,4-trimethylbenzene	3.130	3.083	1.5	109	0.00	16.48
117	M	sec-butylbenzene	4.073	3.911	4.0	105	0.00	16.67
118	M	1,3-dichlorobenzene	1.795	1.727	3.8	108	0.00	16.90
119	M	p-isopropyltoluene	3.427	3.276	4.4	107	0.00	16.79
120	M	1,4-dichlorobenzene	1.801	1.759	2.3	108	0.00	17.00
121		1,2,3-trimethylbenzene		----------NA----------				
122		Benzyl Chloride	1.845	2.070	-12.2	116	0.00	17.13
123	M	p-diethylbenzene		----------NA----------				
124		INDANE		----------NA----------				
125	M	1,2-dichlorobenzene	1.789	1.806	-1.0	109	-0.01	17.44
126	M	n-butylbenzene	1.766	1.688	4.4	105	0.00	17.25
127	M	1,2,4,5-tetramethylbenzen		----------NA----------				
128	M	1,2-dibromo-3-chloropropa	0.196	0.193	1.5	102	0.00	18.31
129	M	1,3,5-trichlorobenzene	1.512	1.431	5.4	100	0.00	18.48
130	M	1,2,4-trichlorobenzene	1.187	1.182	0.4	102	0.00	19.22
131	M	hexachlorobutadiene	0.644	0.573	11.0	98	0.00	19.32
132	M	naphthalene	2.370	2.578	-8.8	108	0.00	19.55
133	M	1,2,3-trichlorobenzene	1.001	0.965	3.6	99	0.00	19.83
134	M	hexachloroethane	0.638	0.588	7.8	101	0.00	17.71

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d234791.D MD9588.M Fri Nov 13 07:26:14 2015 T

6.9.4

6

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235779.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\D\vd9626\d235779.D         Vial: 4
Acq On    : 12 Nov 2015   6:54 pm                    Operator: BenM
Sample    : cc9588-0.5                               Inst    : MSD
Misc      : ms93861,vd9626,5,,100,5,1                Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MD9588.M (RTE Integrator)
Title        : SW-846 Method 8260C
Last Update  : Mon Oct 19 11:56:02 2015
Response via : Multiple Level Calibration

Min. RRF     :   0.010  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :          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	106	-0.03	7.94
2	M	1,4-dioxane		NA				
3	M	tertiary butyl alcohol		NA				
4	I	pentafluorobenzene	1.000	1.000	0.0	88	-0.01	10.12
5	M	1,2-dichloro-1,2,2-triflu		NA				
6	M	chlorodifluoromethane		NA				
7	M	dichlorodifluoromethane		NA				
8	M	chloromethane		NA				
9		1,3-butadiene		NA				
10	M	vinyl chloride		NA				
11	M	bromomethane	0.686	0.630	8.2	86	0.00	5.71
12	M	chloroethane		NA				
13	M	vinyl bromide		NA				
14	M	trichlorofluoromethane		NA				
15		pentane		NA				
16	M	ethyl ether		NA				
17	M	acrolein		NA				
18	M	chlorotrifluoroethene		NA				
19	M	2-chloropropane		NA				
20	M	1,1-dichloroethene		NA				
21	M	acetone		NA				
22	M	allyl chloride		NA				
23	M	acetonitrile		NA				
24	M	acetaldehyde		NA				
25	M	iodomethane		NA				
26	M	iso-butyl alcohol		NA				
27	M	carbon disulfide		NA				
28	M	methylene chloride		NA				
		----------	True	Calc.	% Drift	----------		
29	M	1-chloropropane		NA				
		----------	AvgRF	CCRF	% Dev	----------		
30	M	methyl acetate		NA				
31	M	methyl tert butyl ether		NA				
32	M	trans-1,2-dichloroethene		NA				
33	M	di-isopropyl ether		NA				
34	M	ethyl tert-butyl ether		NA				
35	M	2-butanone		NA				
36	M	1,1-dichloroethane		NA				
37	M	chloroprene		NA				

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235779.D
Project: Sunoco - Marcus Hook Facility, PA

38	M	acrylonitrile		----------NA----------				
39	M	vinyl acetate		----------NA----------				
40	M	ethyl acetate		----------NA----------				
41	M	2,2-dichloropropane		----------NA----------				
42	M	cis-1,2-dichloroethene		----------NA----------				
43	M	propionitrile		----------NA----------				
44		methyl acrylate		----------NA----------				
45	M	bromochloromethane		----------NA----------				
46	M	tetrahydrofuran		----------NA----------				
47	M	chloroform		----------NA----------				
48	S	dibromofluoromethane (s)	0.461	0.438	5.0	82	0.00	10.21
49	S	1,2-dichloroethane-d4 (s)	0.551	0.510	7.4	81	-0.01	10.64
50	M	freon 113		----------NA----------				
51	M	methacrylonitrile		----------NA----------				
52	m	t-butyl formate		----------NA----------				
53	M	1,1,1-trichloroethane		----------NA----------				
54	M	tert-amyl methyl ether		----------NA----------				
55	I	1,4-difluorobenzene	1.000	1.000	0.0	85	0.00	11.05
56	M	cyclohexane		----------NA----------				
57		tert amyl alcohol		----------NA----------				
58	M	2,2,4-trimethylpentane		----------NA----------				
59	M	epichlorohydrin		----------NA----------				
60	M	n-butyl alcohol		----------NA----------				
61	M	carbon tetrachloride		----------NA----------				
62	M	1,1-dichloropropene		----------NA----------				
63	M	hexane		----------NA----------				
64	M	benzene		----------NA----------				
65	M	heptane		----------NA----------				
66	M	isopropyl acetate		----------NA----------				
67	M	1,2-dichloroethane		----------NA----------				
68		Ethyl Acrylate		----------NA----------				
69	M	trichloroethene		----------NA----------				
70	M	2-nitropropane		----------NA----------				
71	M	2-chloroethyl vinyl ether		----------NA----------				
72	M	methyl methacrylate		----------NA----------				
73	M	tert-amyl ethyl ether		----------NA----------				
74	M	1,2-dichloropropane		----------NA----------				
75	M	methylcyclohexane		----------NA----------				
76	M	dibromomethane		----------NA----------				
77	M	bromodichloromethane		----------NA----------				
78	M	cis-1,3-dichloropropene		----------NA----------				
79	S	toluene-d8 (s)	1.277	1.284	-0.5	87	0.00	12.74
80	M	4-methyl-2-pentanone		----------NA----------				
81	M	toluene		----------NA----------				
82	M	3-methyl-1-butanol		----------NA----------				
83	M	trans-1,3-dichloropropene		----------NA----------				
84	M	ethyl methacrylate		----------NA----------				
85	M	1,1,2-trichloroethane		----------NA----------				
86	M	2-hexanone		----------NA----------				
87	I	chlorobenzene-d5	1.000	1.000	0.0	86	0.00	14.39
88	M	tetrachloroethene		----------NA----------				
89	M	1,3-dichloropropane		----------NA----------				
90	M	butyl acetate		----------NA----------				
91	m	3,3-dimethyl-1-butanol		----------NA----------				
92	M	dibromochloromethane		----------NA----------				
93	M	1,2-dibromoethane		----------NA----------				
94	M	chlorobenzene		----------NA----------				
95	M	1,1,1,2-tetrachloroethane		----------NA----------				

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VD9626-CC9588
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** D235779.D
Project: Sunoco - Marcus Hook Facility, PA

96	M	ethylbenzene		----------NA----------				
97	M	m,p-xylene		----------NA----------				
98	M	o-xylene		----------NA----------				
99	M	styrene		----------NA----------				
100	M	bromoform		----------NA----------				
101	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	90	0.00	16.97
102	M	isopropylbenzene		----------NA----------				
103	S	4-bromofluorobenzene (s)	0.941	0.917	2.6	86	0.00	15.67
104	M	bromobenzene		----------NA----------				
105	M	cyclohexanone		----------NA----------				
106	M	1,1,2,2-tetrachloroethane		----------NA----------				
107	M	trans-1,4-dichloro-2-bute		----------NA----------				
108	M	1,2,3-trichloropropane		----------NA----------				
109	M	n-propylbenzene		----------NA----------				
110	M	p-ethyltoluene		----------NA----------				
111	M	2-chlorotoluene		----------NA----------				
112	M	4-chlorotoluene		----------NA----------				
113	M	1,3,5-trimethylbenzene		----------NA----------				
114	M	tert-butylbenzene		----------NA----------				
115	M	pentachloroethane		----------NA----------				
116	M	1,2,4-trimethylbenzene		----------NA----------				
117	M	sec-butylbenzene		----------NA----------				
118	M	1,3-dichlorobenzene		----------NA----------				
119	M	p-isopropyltoluene		----------NA----------				
120	M	1,4-dichlorobenzene		----------NA----------				
121		1,2,3-trimethylbenzene		----------NA----------				
122		Benzyl Chloride		----------NA----------				
123	M	p-diethylbenzene		----------NA----------				
124		INDANE		----------NA----------				
125	M	1,2-dichlorobenzene		----------NA----------				
126	M	n-butylbenzene		----------NA----------				
127	M	1,2,4,5-tetramethylbenzen		----------NA----------				
128	M	1,2-dibromo-3-chloropropa		----------NA----------				
129	M	1,3,5-trichlorobenzene		----------NA----------				
130	M	1,2,4-trichlorobenzene		----------NA----------				
131	M	hexachlorobutadiene		----------NA----------				
132	M	naphthalene		----------NA----------				
133	M	1,2,3-trichlorobenzene		----------NA----------				
134	M	hexachloroethane		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d234786.D MD9588.M Fri Nov 13 07:25:58 2015 T

6.9.5

6

Initial Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VV6633-ICC6633
Lab FileID: V156935.D

Response Factor Report MSV

```
Method       : C:\MSDCHEM\1\METHODS\MVS6633.M (RTE Integrator)
Title        : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update  : Thu Oct 29 11:45:05 2015
Response via : Initial Calibration

Calibration Files
1   =V156930.D   4   =V156932.D   100 =V156936.D   50  =V156935.D
20  =V156934.D   200 =V156937.D   8   =V156933.D   0.5 =V156929.D
2   =V156931.D       =

 Compound
           1     4     100   50    20    200   8     0.5   2       Avg    %RSD
-------------------------------------------------------------------------------

1) I   Tert Butyl Alcohol-d9 ----------------ISTD---------------------
2)  tertiary butyl alcohol
          1.553 1.256 1.245 1.232 1.225 1.194 1.205       1.357   1.284    9.33
3)  1,4-dioxane
          0.057 0.098 0.105 0.099 0.097 0.096 0.096       0.088   0.092   16.30

4) I   pentafluorobenzene    ----------------ISTD---------------------
5)  propene
                                                                      0.000   -1.00
6)  chlorodifluoromethane  **This compound does not meet initial calibration criteria
          0.823 0.711 0.691 0.696 0.688 0.698 0.667       0.817   0.724    8.37
7)  dichlorodifluoromethane
                0.849 0.798 0.780 0.829 0.767 0.828       0.825   0.811    3.69
8)  chloromethane
                0.753 0.762 0.729 0.717 0.771 0.737       0.791   0.751    3.43
9)  vinyl chloride
                0.758 0.787 0.756 0.743 0.786 0.764       0.794   0.770    2.50
10)  1,3-butadiene
                                                                      0.000   -1.00
11)  bromomethane
                0.462 0.454 0.451 0.416 0.431 0.431       0.428   0.439    3.81
12)  chloroethane
                0.377 0.351 0.347 0.335 0.347 0.349       0.359   0.352    3.72
13)  trichlorofluoromethane
                0.776 0.784 0.767 0.774 0.748 0.785       0.770   0.772    1.63
14)  vinyl bromide
                                                                      0.000   -1.00
15)  ethyl ether
          0.220 0.218 0.204 0.208 0.207 0.209 0.206       0.220   0.211    3.25
16)  2-chloropropane
                0.822 0.806 0.806 0.805 0.806 0.829       0.946   0.831    6.18
17)  acrolein
                0.078 0.072 0.070 0.070 0.073 0.069       0.070   0.072    4.54
18)  freon 113
                0.363 0.349 0.342 0.361 0.347 0.340       0.384   0.355    4.29
19)  1,1-dichloroethene
          0.734 0.692 0.669 0.656 0.652 0.655 0.677       0.668   0.676    4.01
20)  acetone
                      0.030 0.031 0.033 0.031 0.040               0.033   12.60
21)  iso-butyl alcohol
                0.014 0.015 0.014 0.014 0.015 0.013       0.015   0.014    3.39
22)  allyl chloride
                0.246 0.230 0.249 0.242 0.234 0.215       0.226   0.235    5.17
23)  acetonitrile
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VV6633-ICC6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V156935.D
Project: Sunoco - Marcus Hook Facility, PA

```
                0.118 0.108 0.109 0.107 0.110 0.109       0.118   0.111    4.13
24)  iodomethane
          0.925 0.888 0.890 0.892 0.850 0.862 0.906       0.842   0.882    3.20
25)  carbon disulfide
          1.786 1.734 1.695 1.658 1.664 1.634 1.769       1.680   1.702    3.21
26)  methylene chloride
          0.688 0.529 0.476 0.478 0.477 0.464 0.507       0.602   0.527   14.91
27)  1-chloropropane
                0.895 0.753 0.749 0.776 0.741 0.849               0.794    8.00
28)  methyl acetate
                0.232 0.227 0.235 0.236 0.242 0.243               0.236    2.60
29)  methyl tert butyl ether
          1.686 1.461 1.426 1.435 1.409 1.481 1.377 1.650 1.387   1.479    7.59
30)  trans-1,2-dichloroethene
          0.684 0.689 0.631 0.622 0.639 0.608 0.646 0.627 0.629   0.642    4.28
31)  di-isopropyl ether
          1.560 1.561 1.552 1.504 1.482 1.540 1.461       1.531   1.524    2.46
32)  2-butanone
                0.043 0.040 0.039 0.039 0.043 0.035       0.042   0.040    6.80
33)  1,1-dichloroethane
          0.741 0.803 0.776 0.759 0.745 0.754 0.783 0.837 0.736   0.771    4.31
34)  chloroprene
          0.636 0.584 0.601 0.572 0.563 0.584 0.575       0.634   0.594    4.70
35)  acrylonitrile
                0.134 0.120 0.117 0.120 0.126 0.116       0.125   0.123    5.05
36)  vinyl acetate
                      0.063 0.061 0.060 0.065 0.059               0.061    4.31
37)  ethyl tert-butyl ether
          1.454 1.503 1.529 1.517 1.451 1.580 1.401       1.499   1.492    3.71
38)  ethyl acetate
                0.051 0.040 0.041 0.045 0.044 0.042       0.049   0.045    9.36
39)  2,2-dichloropropane
          0.894 0.833 0.765 0.757 0.774 0.767 0.793       0.847   0.804    6.12
40)  cis-1,2-dichloroethene
          0.704 0.499 0.479 0.472 0.467 0.476 0.487       0.423   0.501   16.95
41)  propionitrile
                0.048 0.046 0.045 0.047 0.051 0.044       0.042   0.046    6.17
42)  methyl acrylate
                0.046 0.046 0.044 0.047 0.051 0.042       0.034   0.044   11.82
43)  methacrylonitrile
                0.130 0.124 0.128 0.132 0.138 0.117       0.131   0.128    5.14
44)  bromochloromethane
          0.239 0.215 0.221 0.224 0.222 0.225 0.213 0.215 0.223   0.222    3.51
45)  tetrahydrofuran
                0.142 0.117 0.116 0.116 0.127 0.125       0.152   0.128   11.17
46)  chloroform
          0.788 0.773 0.740 0.739 0.732 0.744 0.751 0.781 0.770   0.758    2.71
47)  tert-Butyl Formate
          0.325 0.320 0.354 0.350 0.328 0.387 0.312       0.336   0.339    7.12
48)  dibromofluoromethane (s)
          0.400 0.399 0.404 0.394 0.388 0.398 0.395 0.397 0.398   0.397    1.09
49)  1,2-dichloroethane-d4 (s)
          0.386 0.390 0.402 0.385 0.388 0.424 0.383 0.382 0.393   0.392    3.36
50)  1,1,1-trichloroethane
          0.813 0.776 0.769 0.756 0.764 0.774 0.762 0.846 0.778   0.782    3.71
51)  Cyclohexane
          0.801 0.769 0.746 0.712 0.758 0.743 0.737       0.792   0.757    3.88

52) I   1,4-difluorobenzene   ----------------ISTD---------------------
53)  methylcyclohexane
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VV6633-ICC6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V156935.D
Project: Sunoco - Marcus Hook Facility, PA

```
          0.655 0.647 0.644 0.607 0.647 0.641 0.636       0.626   0.638    2.36
54)  epichlorohydrin
                0.024 0.025 0.025 0.026 0.028 0.026       0.032   0.027   10.01
55)  n-butyl alcohol
                0.010 0.010 0.009 0.010 0.011 0.008       0.009   0.010   10.73
56)  carbon tetrachloride
          0.591 0.566 0.547 0.540 0.557 0.561 0.563 0.626 0.506   0.562    5.92
57)  1,1-dichloropropene
          0.454 0.447 0.434 0.428 0.434 0.440 0.439 0.496 0.432   0.445    4.68
58)  hexane
                0.397 0.339 0.328 0.369 0.326 0.359       0.438   0.365   11.17
59)  2,2,4-Trimethylpentane
          1.311 1.333 1.369 1.257 1.303 1.364 1.220       1.317   1.309    3.86
60)  benzene
          1.479 1.426 1.380 1.362 1.382 1.394 1.386 1.602 1.325   1.415    5.79
61)  tert-amyl methyl ether
          1.286 1.205 1.198 1.176 1.159 1.268 1.127       1.248   1.208    4.57
62)  heptane
          0.304 0.232 0.219 0.209 0.236 0.215 0.213       0.242   0.234   13.12
63)  isopropyl acetate
                0.080 0.106 0.108 0.121 0.116 0.094               0.104   14.59
64)  1,2-dichloroethane
          0.411 0.427 0.407 0.411 0.415 0.422 0.414 0.378 0.380   0.407    4.20
65)  ethyl acrylate
                                                                  0.000   -1.00
66)  trichloroethene
          0.353 0.344 0.330 0.327 0.327 0.336 0.331 0.392 0.315   0.340    6.60
67)  2-chloroethyl vinyl ether
          0.157 0.156 0.160 0.157 0.158 0.175 0.146       0.150   0.157    5.46
68)  methyl methacrylate
          0.058 0.058 0.067 0.066 0.066 0.075 0.063       0.067   0.065    8.43
69)  1,2-dichloropropane
          0.333 0.334 0.333 0.328 0.332 0.339 0.338 0.320 0.312   0.330    2.68
70)  dibromomethane
          0.207 0.187 0.191 0.187 0.192 0.196 0.199 0.193 0.188   0.193    3.38
71)  bromodichloromethane
          0.482 0.459 0.458 0.449 0.440 0.459 0.448 0.423 0.420   0.449    4.29
72)  2-nitropropane
                0.111 0.103 0.100 0.104 0.115 0.097       0.122   0.107    8.38
73)  cis-1,3-dichloropropene
          0.513 0.513 0.505 0.494 0.503 0.522 0.494 0.508 0.486   0.504    2.27
74)  toluene-d8 (s)
          1.200 1.210 1.231 1.199 1.235 1.228 1.205 1.200 1.189   1.211    1.37
75)  4-methyl-2-pentanone
                0.107 0.112 0.109 0.117 0.126 0.104       0.112   0.113    6.42
76)  toluene
          1.018 0.881 0.844 0.818 0.834 0.850 0.827       0.851   0.865    7.47
77)  isoamyl alcohol
                0.018 0.016 0.015 0.017 0.019 0.014       0.021   0.017   14.50
78)  trans-1,3-dichloropropene
          0.445 0.433 0.441 0.435 0.435 0.458 0.411 0.454 0.425   0.438    3.29
79)  ethyl methacrylate
          0.445 0.359 0.351 0.346 0.357 0.374 0.337       0.353   0.365    9.33
80)  1,1,2-trichloroethane
          0.235 0.210 0.210 0.209 0.217 0.218 0.208 0.249 0.210   0.219    6.47
81)  2-hexanone
                0.100 0.097 0.085 0.102 0.102 0.080       0.084   0.093   10.49

82) I   chlorobenzene-d5      ----------------ISTD---------------------
83)  tetrachloroethene
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VV6633-ICC6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V156935.D
Project: Sunoco - Marcus Hook Facility, PA

```
          0.445 0.423 0.437 0.430 0.438 0.426 0.426 0.435 0.408   0.430    2.47
 84)  1,3-dichloropropane
          0.506 0.460 0.461 0.459 0.457 0.472 0.442 0.464 0.445   0.463    4.02
 85)  butyl acetate
                0.194 0.190 0.186 0.191 0.201 0.182       0.202   0.192    3.79
 86)  3,3-Dimethyl-1-Butanol
                0.036 0.034 0.033 0.035 0.039 0.030       0.038   0.035    8.65
 87)  dibromochloromethane
          0.380 0.342 0.379 0.368 0.367 0.386 0.366 0.391 0.337   0.368    5.03
 88)  1,2-dibromoethane
          0.301 0.281 0.287 0.283 0.290 0.297 0.288 0.294 0.259   0.287    4.21
 89)  chlorobenzene
          1.043 1.002 1.003 1.006 1.016 1.007 1.038 1.102 0.973   1.021    3.60
 90)  1,1,1,2-tetrachloroethane
          0.485 0.462 0.475 0.468 0.460 0.485 0.476 0.489 0.473   0.475    2.13
 91)  ethylbenzene
          1.981 1.821 1.810 1.809 1.842 1.830 1.850 2.277 1.776   1.888    8.30
 92)  m,p-xylene
          0.784 0.732 0.737 0.721 0.733 0.721 0.744 0.880 0.726   0.753    6.79
 93)  o-xylene
          0.758 0.807 0.809 0.793 0.804 0.790 0.797 0.843 0.748   0.794    3.55
 94)  styrene
          1.326 1.202 1.186 1.193 1.194 1.169 1.192 1.419 1.138   1.224    7.29
 95)  bromoform
          0.288 0.253 0.261 0.255 0.257 0.272 0.256 0.272 0.257   0.263    4.38
 96)  cyclohexanone
                0.024 0.017 0.017 0.019 0.019 0.018       0.019   0.019   11.65
 97)  4-bromofluorobenzene (s)
          0.501 0.503 0.492 0.492 0.495 0.482 0.498 0.492 0.502   0.495    1.32

 98) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
 99)  isopropylbenzene
          3.837 3.557 3.914 3.847 3.741 4.049 3.711 3.923 3.523   3.789    4.57
100)  1,1,2,2-tetrachloroethane
          0.911 0.790 0.782 0.775 0.781 0.843 0.730 0.966 0.780   0.817    9.25
101)  trans-1,4-dichloro-2-butene
          0.270 0.234 0.200 0.201 0.202 0.213 0.189 0.233 0.241   0.220   11.81
102)  1,2,3-trichloropropane
          0.216 0.191 0.194 0.196 0.201 0.211 0.184 0.189 0.201   0.198    5.17
103)  bromobenzene
          0.852 0.855 0.880 0.881 0.859 0.897 0.859 0.903 0.813   0.867    3.14
104)  n-propylbenzene
          4.305 3.989 4.100 4.069 4.008 4.195 4.043 4.535 3.862   4.123    4.83
105)  2-chlorotoluene
          0.944 0.839 0.902 0.893 0.900 0.919 0.887 1.127 0.848   0.918    9.25
106)  4-chlorotoluene
          2.555 2.406 2.365 2.380 2.363 2.440 2.306 3.044 2.336   2.466    9.26
107)  1,3,5-trimethylbenzene
          3.446 3.077 3.442 3.313 3.263 3.538 3.183 3.659 3.213   3.348    5.57
108)  tert-butylbenzene
          2.756 2.539 2.997 2.932 2.784 3.181 2.723 2.742 2.520   2.797    7.58
109)  pentachloroethane
          0.633 0.581 0.663 0.655 0.601 0.720 0.595 0.584 0.514   0.616    9.62
110)  1,2,4-trimethylbenzene
          3.176 3.162 3.325 3.306 3.243 3.487 3.182 3.656 3.006   3.283    5.88
111)  sec-butylbenzene
          4.602 4.207 4.708 4.635 4.501 4.974 4.409 4.527 4.195   4.529    5.39
112)  p-isopropyltoluene
          3.552 3.512 3.930 3.851 3.757 4.060 3.664 3.835 3.410   3.730    5.70
113)  1,3-dichlorobenzene
```

Initial Calibration Summary

Job Number: JC7895 **Sample:** VV6633-ICC6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V156935.D
Project: Sunoco - Marcus Hook Facility, PA

```
            1.950 1.816 1.769 1.812 1.789 1.831 1.840 1.965 1.757   1.837    4.02
114)  1,4-dichlorobenzene
            1.847 1.790 1.744 1.761 1.749 1.795 1.777 1.962 1.767   1.799    3.80
115)  1,2-dichlorobenzene
            1.966 1.852 1.850 1.861 1.843 1.942 1.832 2.109 1.808   1.896    5.02
116)  Benzyl Chloride
            2.021 1.623 1.532 1.539 1.566 1.642 1.522       1.761   1.651   10.25
117)  Indane
                                                                    0.000   -1.00
118)  n-butylbenzene
            1.961 1.800 1.924 1.916 1.929 1.966 1.883 2.093 1.852   1.925    4.29
119)  hexachloroethane
            0.598 0.557 0.727 0.702 0.643 0.773 0.630 0.564 0.567   0.640   12.25
120)  1,2-dibromo-3-chloropropane
                  0.228 0.208 0.209 0.216 0.236 0.202       0.251   0.221    8.01
121)  1,3,5-trichlorobenzene
            2.132 1.987 1.900 1.948 1.938 1.992 1.941 2.179 1.886   1.989    5.09
122)  1,2,4-trichlorobenzene
            2.156 1.821 1.815 1.863 1.840 1.907 1.862 2.018 1.852   1.904    5.92
123)  hexachlorobutadiene
            1.093 0.970 1.068 1.063 1.016 1.150 0.996 1.012 0.920   1.032    6.68
124)  naphthalene
            4.449 3.845 3.795 3.759 3.829 4.178 3.707 4.993 3.848   4.045   10.58
125)  1,2,3-trichlorobenzene
            2.157 1.902 1.833 1.835 1.832 1.946 1.793 2.204 1.799   1.922    8.04
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           MVS6633.M         Thu Oct 29 11:49:10 2015   MSV
```

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: VV6633-ICV6633
Lab FileID: V156940.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\V156940.D Vial: 14
Acq On : 28 Oct 2015 11:23 pm Operator: payalr
Sample : icv6633-50 Inst : MSV
Misc : MS92958,VV6633,5,,,,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MVS6633.M (RTE Integrator)
Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Thu Oct 29 11:45:05 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 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	Tert Butyl Alcohol-d9	1.000	1.000	0.0	110	0.00	7.68
2		tertiary butyl alcohol	1.284	1.247	2.9	112	0.02	7.81
3		1,4-dioxane	0.092	0.092	0.0	102	0.00	11.62
4	I	pentafluorobenzene	1.000	1.000	0.0	103	0.00	9.91
5		propene		----------NA----------				
6		chlorodifluoromethane	0.724	0.445	38.5#	66	0.00	4.34
7		dichlorodifluoromethane	0.811	0.688	15.2	91	0.02	4.33
8		chloromethane	0.751	0.711	5.3	100	0.00	4.65
9		vinyl chloride	0.770	0.737	4.3	100	0.00	4.91
10		1,3-butadiene		----------NA----------				
11		bromomethane	0.439	0.448	-2.1	102	0.00	5.57
12		chloroethane	0.352	0.342	2.8	101	0.00	5.72
13		trichlorofluoromethane	0.772	0.743	3.8	100	0.00	6.18
14		vinyl bromide		----------NA----------				
15		ethyl ether	0.211	0.213	-0.9	105	0.00	6.56
16		2-chloropropane	0.831	0.781	6.0	100	0.00	6.78
17		acrolein	0.072	0.072	0.0	105	0.00	6.86
18		freon 113	0.355	0.309	13.0	93	0.00	6.96
19		1,1-dichloroethene	0.676	0.657	2.8	103	0.00	7.01
20		acetone	0.033	0.033	0.0	109	0.00	7.09
21		iso-butyl alcohol	0.014	0.014	0.0	103	0.00	10.50
22		allyl chloride	0.235	0.272	-15.7	112	0.00	7.54
23		acetonitrile	0.111	0.116	-4.5	110	0.00	7.54
24		iodomethane	0.882	0.875	0.8	101	0.00	7.32
25		carbon disulfide	1.702	1.678	1.4	104	0.00	7.44
26		methylene chloride	0.527	0.483	8.3	104	0.00	7.75
27		1-chloropropane	0.794	0.754	5.0	103	0.00	7.77
28		methyl acetate	0.236	0.243	-3.0	106	0.00	7.52
29		methyl tert butyl ether	1.479	1.404	5.1	100	0.00	8.04
30		trans-1,2-dichloroethene	0.642	0.620	3.4	102	0.00	8.10
31		di-isopropyl ether	1.524	1.464	3.9	100	0.00	8.60
32		2-butanone	0.040	0.041	-2.5	109	0.00	9.39
33		1,1-dichloroethane	0.771	0.788	-2.2	107	0.00	8.68
34		chloroprene	0.594	0.689	-16.0	124	0.00	8.78
35		acrylonitrile	0.123	0.129	-4.9	113	0.00	8.09
36		vinyl acetate	0.061	0.058	4.9	98	0.00	8.64
37		ethyl tert-butyl ether	1.492	1.464	1.9	99	0.00	9.07
38		ethyl acetate	0.045	0.041	8.9	101	0.00	9.37
39		2,2-dichloropropane	0.804	0.752	6.5	102	0.00	9.43
40		cis-1,2-dichloroethene	0.501	0.475	5.2	103	0.00	9.43
41		propionitrile	0.046	0.049	-6.5	111	0.00	9.51

Initial Calibration Verification

Job Number: JC7895 **Sample:** VV6633-ICV6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V156940.D
Project: Sunoco - Marcus Hook Facility, PA

42		methyl acrylate	0.044	0.047	-6.8	110	0.00	9.47
43		methacrylonitrile	0.128	0.131	-2.3	105	0.00	9.69
44		bromochloromethane	0.222	0.224	-0.9	103	0.00	9.75
45		tetrahydrofuran	0.128	0.126	1.6	111	0.00	9.79
46		chloroform	0.758	0.763	-0.7	106	0.00	9.80
47		tert-Butyl Formate	0.339	0.373	-10.0	109	0.00	9.81
48	S	dibromofluoromethane (s)	0.397	0.399	-0.5	104	0.00	10.00
49	S	1,2-dichloroethane-d4 (s)	0.392	0.391	0.3	105	0.00	10.43
50		1,1,1-trichloroethane	0.782	0.779	0.4	106	0.00	10.05
51		Cyclohexane	0.757	0.679	10.3	98	0.01	10.11
52	I	1,4-difluorobenzene	1.000	1.000	0.0	102	0.00	10.86
53		methylcyclohexane	0.638	0.553	13.3	93	0.00	11.43
54		epichlorohydrin	0.027	0.024	11.1	101	0.00	12.20
55		n-butyl alcohol	0.010	0.010	0.0	111	0.00	10.98
56		carbon tetrachloride	0.562	0.551	2.0	104	0.00	10.25
57		1,1-dichloropropene	0.445	0.457	-2.7	109	0.00	10.22
58		hexane	0.365	0.281	23.0	87	0.00	8.36
59		2,2,4-Trimethylpentane	1.309	1.067	18.5	86	0.00	10.45
60		benzene	1.415	1.391	1.7	104	0.00	10.50
61		tert-amyl methyl ether	1.208	1.177	2.6	102	0.00	10.49
62		heptane	0.234	0.183	21.8	89	0.00	10.61
63		isopropyl acetate	0.104	0.112	-7.7	106	0.00	10.38
64		1,2-dichloroethane	0.407	0.424	-4.2	105	0.00	10.53
65		ethyl acrylate		----------NA----------				
66		trichloroethene	0.340	0.330	2.9	103	0.00	11.22
67		2-chloroethyl vinyl ether	0.157	0.154	1.9	100	0.00	12.04
68		methyl methacrylate	0.065	0.072	-10.8	111	0.00	11.48
69		1,2-dichloropropane	0.330	0.344	-4.2	107	0.00	11.51
70		dibromomethane	0.193	0.193	0.0	105	0.00	11.69
71		bromodichloromethane	0.449	0.461	-2.7	104	0.00	11.81
72		2-nitropropane	0.107	0.108	-0.9	110	0.00	12.06
73		cis-1,3-dichloropropene	0.504	0.500	0.8	103	0.00	12.29
74	S	toluene-d8 (s)	1.211	1.196	1.2	102	0.00	12.59
75		4-methyl-2-pentanone	0.113	0.118	-4.4	111	0.00	12.38
76		toluene	0.865	0.825	4.6	103	0.00	12.67
77		isoamyl alcohol	0.017	0.016	5.9	110	0.00	12.40
78		trans-1,3-dichloropropene	0.438	0.415	5.3	97	0.00	12.90
79		ethyl methacrylate	0.365	0.355	2.7	104	0.00	12.86
80		1,1,2-trichloroethane	0.219	0.216	1.4	105	0.00	13.14
81		2-hexanone	0.093	0.091	2.2	110	0.00	13.31
82	I	chlorobenzene-d5	1.000	1.000	0.0	100	0.00	14.27
83		tetrachloroethene	0.430	0.442	-2.8	102	0.00	13.31
84		1,3-dichloropropane	0.463	0.468	-1.1	102	0.00	13.34
85		butyl acetate	0.192	0.203	-5.7	109	0.00	13.37
86		3,3-Dimethyl-1-Butanol	0.035	0.036	-2.9	108	0.00	13.49
87		dibromochloromethane	0.368	0.386	-4.9	105	0.00	13.64
88		1,2-dibromoethane	0.287	0.295	-2.8	104	0.00	13.81
89		chlorobenzene	1.021	1.025	-0.4	102	0.00	14.31
90		1,1,1,2-tetrachloroethane	0.475	0.472	0.6	101	0.00	14.37
91		ethylbenzene	1.888	1.835	2.8	101	0.00	14.35
92		m,p-xylene	0.753	0.749	0.5	104	0.00	14.47
93		o-xylene	0.794	0.832	-4.8	105	0.00	14.94
94		styrene	1.224	1.201	1.9	100	0.00	14.96
95		bromoform	0.263	0.272	-3.4	106	0.00	15.29
96		cyclohexanone	0.019	0.018	5.3	102	0.00	15.56
97	S	4-bromofluorobenzene (s)	0.495	0.492	0.6	100	0.00	15.57
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	16.88

Initial Calibration Verification

Job Number: JC7895 **Sample:** VV6633-ICV6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V156940.D
Project: Sunoco - Marcus Hook Facility, PA

99	isopropylbenzene	3.789	3.887	-2.6	101	0.00	15.32
100	1,1,2,2-tetrachloroethane	0.817	0.795	2.7	103	0.00	15.70
101	trans-1,4-dichloro-2-bute	0.220	0.205	6.8	102	0.00	15.74
102	1,2,3-trichloropropane	0.198	0.203	-2.5	104	0.00	15.78
103	bromobenzene	0.867	0.885	-2.1	101	0.00	15.80
104	n-propylbenzene	4.123	4.331	-5.0	107	0.00	15.78
105	2-chlorotoluene	0.918	0.912	0.7	102	0.00	15.96
106	4-chlorotoluene	2.466	2.401	2.6	101	0.00	16.07
107	1,3,5-trimethylbenzene	3.348	3.404	-1.7	103	0.00	15.94
108	tert-butylbenzene	2.797	2.981	-6.6	102	0.00	16.33
109	pentachloroethane	0.616	0.672	-9.1	103	0.00	16.45
110	1,2,4-trimethylbenzene	3.283	3.482	-6.1	106	0.00	16.39
111	sec-butylbenzene	4.529	4.667	-3.0	101	0.00	16.57
112	p-isopropyltoluene	3.730	3.940	-5.6	103	0.00	16.70
113	1,3-dichlorobenzene	1.837	1.805	1.7	100	0.00	16.82
114	1,4-dichlorobenzene	1.799	1.793	0.3	102	0.00	16.90
115	1,2-dichlorobenzene	1.896	1.898	-0.1	102	0.00	17.35
116	Benzyl Chloride	1.651	1.416	14.2	92	0.00	17.04
117	Indane		----------NA----------				
118	n-butylbenzene	1.925	1.954	-1.5	102	0.00	17.17
119	hexachloroethane	0.640	0.719	-12.3	103	0.00	17.63
120	1,2-dibromo-3-chloropropa	0.221	0.220	0.5	106	0.00	18.22
121	1,3,5-trichlorobenzene	1.989	1.933	2.8	99	0.00	18.40
122	1,2,4-trichlorobenzene	1.904	1.810	4.9	97	0.00	19.14
123	hexachlorobutadiene	1.032	1.020	1.2	96	0.00	19.25
124	naphthalene	4.045	3.821	5.5	102	0.00	19.49
125	1,2,3-trichlorobenzene	1.922	1.795	6.6	98	0.00	19.79

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V156935.D MVS6633.M Thu Oct 29 11:48:50 2015 MSV

6.9.7

6

Continuing Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: VV6649-CC6633
Lab FileID: V157410.D

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\1\DATA\V157410.D Vial: 2
Acq On : 10 Nov 2015 10:34 am Operator: payalr
Sample : cc6633-20 Inst : MSV
Misc : MS94183,VV6649,5.0,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MVS6633.M (RTE Integrator)
Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
Last Update : Thu Oct 29 11:45:05 2015
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	84	0.00	7.68
2	tertiary butyl alcohol	1.284	1.339	-4.3	92	0.02	7.80
3	1,4-dioxane	0.092	0.109	-18.5	95	0.00	11.62
4 I	pentafluorobenzene	1.000	1.000	0.0	87	0.00	9.91
5	propene		----------NA----------				
6	chlorodifluoromethane	0.724	0.668	7.7	85	0.00	4.33
7	dichlorodifluoromethane	0.811	0.790	2.6	83	0.02	4.33
8	chloromethane	0.751	0.810	-7.9	99	-0.01	4.63
9	vinyl chloride	0.770	0.838	-8.8	98	0.00	4.91
10	1,3-butadiene		----------NA----------				
11	bromomethane	0.439	0.503	-14.6	105	-0.03	5.55
12	chloroethane	0.352	0.365	-3.7	95	0.00	5.72
13	trichlorofluoromethane	0.772	0.773	-0.1	87	0.00	6.18
14	vinyl bromide		----------NA----------				
15	ethyl ether	0.211	0.238	-12.8	101	0.00	6.56
16	2-chloropropane	0.831	0.828	0.4	90	0.00	6.78
17	acrolein	0.072	0.081	-12.5	101	0.00	6.86
18	freon 113	0.355	0.361	-1.7	87	0.01	6.97
19	1,1-dichloroethene	0.676	0.674	0.3	90	0.00	7.01
20	acetone	0.033	0.036	-9.1	96	0.00	7.08
21	iso-butyl alcohol	0.014	0.015	-7.1	94	0.00	10.49
22	allyl chloride	0.235	0.265	-12.8	96	0.00	7.54
23	acetonitrile	0.111	0.117	-5.4	95	0.00	7.54
24	iodomethane	0.882	0.963	-9.2	99	0.00	7.31
25	carbon disulfide	1.702	1.798	-5.6	94	0.00	7.44
26	methylene chloride	0.527	0.546	-3.6	100	0.00	7.74
27	1-chloropropane	0.794	0.796	-0.3	89	0.00	7.77
28	methyl acetate	0.236	0.244	-3.4	90	0.00	7.52
29	methyl tert butyl ether	1.479	1.531	-3.5	95	0.00	8.03
30	trans-1,2-dichloroethene	0.642	0.677	-5.5	92	0.00	8.10
31	di-isopropyl ether	1.524	1.573	-3.2	93	0.00	8.60
32	2-butanone	0.040	0.042	-5.0	94	0.00	9.40
33	1,1-dichloroethane	0.771	0.837	-8.6	98	0.00	8.68
34	chloroprene	0.594	0.566	4.7	88	0.00	8.78
35	acrylonitrile	0.123	0.141	-14.6	103	0.00	8.09
36	vinyl acetate	0.061	0.064	-4.9	94	0.00	8.64
37	ethyl tert-butyl ether	1.492	1.554	-4.2	93	0.00	9.07
38	ethyl acetate	0.045	0.043	4.4	83	0.00	9.37
39	2,2-dichloropropane	0.804	0.680	15.4	77	0.00	9.41
40	cis-1,2-dichloroethene	0.501	0.538	-7.4	100	0.00	9.43
41	propionitrile	0.046	0.054	-17.4	102	0.00	9.52

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VV6649-CC6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V157410.D
Project: Sunoco - Marcus Hook Facility, PA

42		methyl acrylate	0.044	0.050	-13.6	93	0.00	9.47
43		methacrylonitrile	0.128	0.142	-10.9	93	0.01	9.70
44		bromochloromethane	0.222	0.252	-13.5	99	0.00	9.75
45		tetrahydrofuran	0.128	0.135	-5.5	102	0.00	9.79
46		chloroform	0.758	0.800	-5.5	95	0.00	9.79
47		tert-Butyl Formate	0.339	0.350	-3.2	93	-0.01	9.80
48	S	dibromofluoromethane (s)	0.397	0.400	-0.8	90	0.00	10.00
49	S	1,2-dichloroethane-d4 (s)	0.392	0.367	6.4	82	0.00	10.43
50		1,1,1-trichloroethane	0.782	0.796	-1.8	91	0.00	10.05
51		Cyclohexane	0.757	0.765	-1.1	88	0.00	10.10
52	I	1,4-difluorobenzene	1.000	1.000	0.0	87	0.00	10.86
53		methylcyclohexane	0.638	0.651	-2.0	88	0.00	11.42
54		epichlorohydrin	0.027	0.027	0.0	89	0.00	12.20
55		n-butyl alcohol	0.010	0.011	-10.0	99	0.00	10.99
56		carbon tetrachloride	0.562	0.587	-4.4	92	0.00	10.25
57		1,1-dichloropropene	0.445	0.459	-3.1	93	0.00	10.21
58		hexane	0.365	0.337	7.7	80	0.00	8.36
59		2,2,4-Trimethylpentane	1.309	1.200	8.3	80	0.00	10.44
60		benzene	1.415	1.551	-9.6	98	0.00	10.49
61		tert-amyl methyl ether	1.208	1.248	-3.3	94	0.00	10.49
62		heptane	0.234	0.204	12.8	76	-0.01	10.60
63		isopropyl acetate	0.104	0.138	-32.7#	99	0.00	10.38
64		1,2-dichloroethane	0.407	0.430	-5.7	91	0.00	10.53
65		ethyl acrylate		----------NA----------				
66		trichloroethene	0.340	0.365	-7.4	97	0.00	11.22
67		2-chloroethyl vinyl ether	0.157	0.169	-7.6	94	0.00	12.04
68		methyl methacrylate	0.065	0.076	-16.9	101	0.00	11.48
69		1,2-dichloropropane	0.330	0.379	-14.8	100	0.00	11.51
70		dibromomethane	0.193	0.216	-11.9	98	0.00	11.68
71		bromodichloromethane	0.449	0.486	-8.2	97	0.00	11.81
72		2-nitropropane	0.107	0.095	11.2	79	0.00	12.05
73		cis-1,3-dichloropropene	0.504	0.541	-7.3	94	0.00	12.29
74	S	toluene-d8 (s)	1.211	1.237	-2.1	88	0.00	12.59
75		4-methyl-2-pentanone	0.113	0.128	-13.3	96	0.00	12.37
76		toluene	0.865	0.929	-7.4	97	0.00	12.67
77		isoamyl alcohol	0.017	0.018	-5.9	92	0.00	12.40
78		trans-1,3-dichloropropene	0.438	0.468	-6.8	94	0.00	12.90
79		ethyl methacrylate	0.365	0.385	-5.5	94	0.00	12.86
80		1,1,2-trichloroethane	0.219	0.240	-9.6	97	0.00	13.14
81		2-hexanone	0.093	0.116	-24.7#	99	0.00	13.31
82	I	chlorobenzene-d5	1.000	1.000	0.0	92	0.00	14.27
83		tetrachloroethene	0.430	0.431	-0.2	90	0.00	13.31
84		1,3-dichloropropane	0.463	0.499	-7.8	100	0.00	13.34
85		butyl acetate	0.192	0.210	-9.4	101	0.00	13.37
86		3,3-Dimethyl-1-Butanol	0.035	0.034	2.9	90	0.00	13.49
87		dibromochloromethane	0.368	0.398	-8.2	99	0.00	13.64
88		1,2-dibromoethane	0.287	0.309	-7.7	98	0.00	13.81
89		chlorobenzene	1.021	1.084	-6.2	98	0.00	14.30
90		1,1,1,2-tetrachloroethane	0.475	0.502	-5.7	100	0.00	14.37
91		ethylbenzene	1.888	1.924	-1.9	96	0.00	14.35
92		m,p-xylene	0.753	0.793	-5.3	99	0.00	14.46
93		o-xylene	0.794	0.847	-6.7	97	0.00	14.94
94		styrene	1.224	1.258	-2.8	97	0.00	14.95
95		bromoform	0.263	0.285	-8.4	102	0.00	15.29
96		cyclohexanone	0.019	0.016	15.8	77	0.00	15.55
97	S	4-bromofluorobenzene (s)	0.495	0.502	-1.4	93	0.00	15.57
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	95	0.00	16.87

Continuing Calibration Summary

Job Number: JC7895 **Sample:** VV6649-CC6633
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** V157410.D
Project: Sunoco - Marcus Hook Facility, PA

99	isopropylbenzene	3.789	3.796	-0.2	96	0.00	15.31
100	1,1,2,2-tetrachloroethane	0.817	0.831	-1.7	101	0.00	15.69
101	trans-1,4-dichloro-2-bute	0.220	0.192	12.7	90	0.00	15.74
102	1,2,3-trichloropropane	0.198	0.209	-5.6	99	0.00	15.78
103	bromobenzene	0.867	0.927	-6.9	102	0.00	15.80
104	n-propylbenzene	4.123	4.153	-0.7	98	0.00	15.77
105	2-chlorotoluene	0.918	0.928	-1.1	98	0.00	15.96
106	4-chlorotoluene	2.466	2.485	-0.8	100	0.00	16.07
107	1,3,5-trimethylbenzene	3.348	3.325	0.7	97	0.00	15.94
108	tert-butylbenzene	2.797	2.768	1.0	94	0.00	16.33
109	pentachloroethane	0.616	0.685	-11.2	108	0.00	16.45
110	1,2,4-trimethylbenzene	3.283	3.343	-1.8	98	0.00	16.39
111	sec-butylbenzene	4.529	4.529	0.0	95	0.00	16.57
112	p-isopropyltoluene	3.730	3.869	-3.7	98	0.00	16.70
113	1,3-dichlorobenzene	1.837	1.918	-4.4	102	0.00	16.81
114	1,4-dichlorobenzene	1.799	1.902	-5.7	103	0.00	16.90
115	1,2-dichlorobenzene	1.896	1.997	-5.3	103	0.00	17.35
116	Benzyl Chloride	1.651	1.252	24.2#	76	0.00	17.04
117	Indane		----------NA----------				
118	n-butylbenzene	1.925	1.958	-1.7	96	0.00	17.17
119	hexachloroethane	0.640	0.688	-7.5	101	0.00	17.63
120	1,2-dibromo-3-chloropropa	0.221	0.223	-0.9	98	0.00	18.22
121	1,3,5-trichlorobenzene	1.989	2.021	-1.6	99	0.00	18.39
122	1,2,4-trichlorobenzene	1.904	1.969	-3.4	101	0.00	19.14
123	hexachlorobutadiene	1.032	1.058	-2.5	99	0.00	19.25
124	naphthalene	4.045	3.984	1.5	99	0.00	19.49
125	1,2,3-trichlorobenzene	1.922	1.927	-0.3	100	0.00	19.79

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V156934.D MVS6633.M Tue Nov 10 15:58:45 2015 MSV

New Jersey

ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Manual Integrations
APPROVED
(compounds with "m" flag)
Mei Chen
11/13/15 09:08

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9626\
Data File : d235790.D
Acq On : 13 Nov 2015 1:00 am
Operator : BenM
Sample : jc7895-1
Misc : ms94128,vd9626,5.5,,100,10,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Nov 13 07:37:55 2015
Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
Quant Title : SW-846 Method 8260C
QLast Update : Thu Nov 05 07:40:57 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Tert Butyl Alcohol-d9	7.969	65	141699	500.00 ug/L	-0.01
4) pentafluorobenzene	10.129	168	251513	50.00 ug/L	0.00
55) 1,4-difluorobenzene	11.055	114	334227	50.00 ug/L	0.00
87) chlorobenzene-d5	14.392	117	338929	50.00 ug/L	0.00
101) 1,4-dichlorobenzene-d4	16.965	152	230632	50.00 ug/L	-0.01
System Monitoring Compounds					
48) dibromofluoromethane (s)	10.213	113	108843	46.96 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 93.92%		
49) 1,2-dichloroethane-d4 (s)	10.637	65	128362	46.31 ug/L	-0.01
Spiked Amount 50.000	Range 68 - 124		Recovery = 92.62%		
79) toluene-d8 (s)	12.739	98	433892	50.84 ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 101.68%		
103) 4-bromofluorobenzene (s)	15.668	95	213186	49.12 ug/L	-0.01
Spiked Amount 50.000	Range 72 - 130		Recovery = 98.24%		
Target Compounds					Qvalue
56) cyclohexane	10.307	84	1345	0.30 ug/L #	35
75) methylcyclohexane	11.604	83	10873	2.41 ug/L	93
102) isopropylbenzene	15.417	105	6132	0.39 ug/L	93
109) n-propylbenzene	15.872	91	30911	1.68 ug/L	99
113) 1,3,5-trimethylbenzene	16.039	105	3594	0.25 ug/L	93
116) 1,2,4-trimethylbenzene	16.479	105	7991	0.55 ug/L	96
117) sec-butylbenzene	16.667	105	23648	1.26 ug/L	96
119) p-isopropyltoluene	16.798	119	3246	0.21 ug/L	94
126) n-butylbenzene	17.253	92	25706	3.16 ug/L	93
132) naphthalene	19.570	128	89615m	8.20 ug/L	

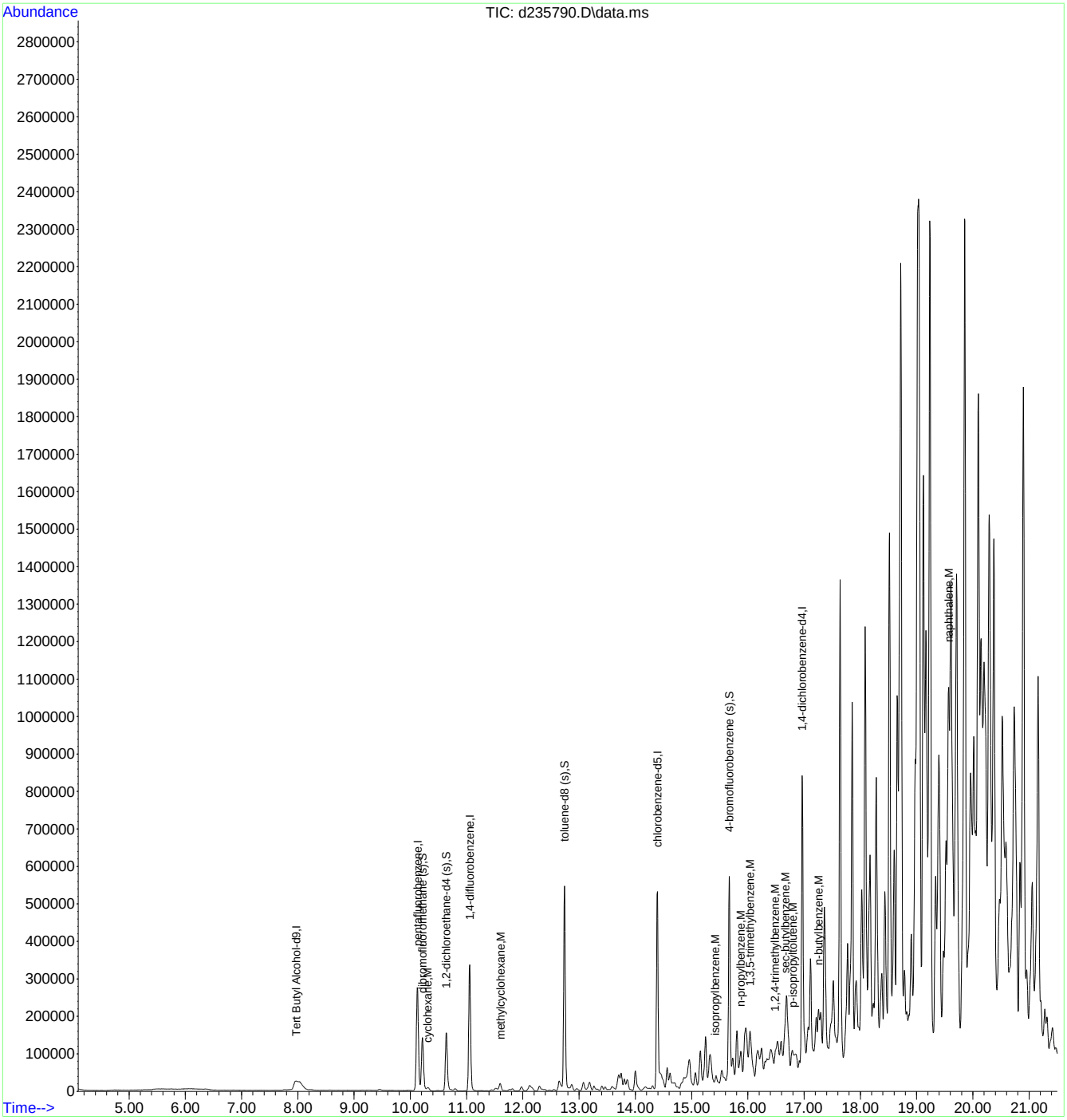
(#) = qualifier out of range (m) = manual integration (+) = signals summed

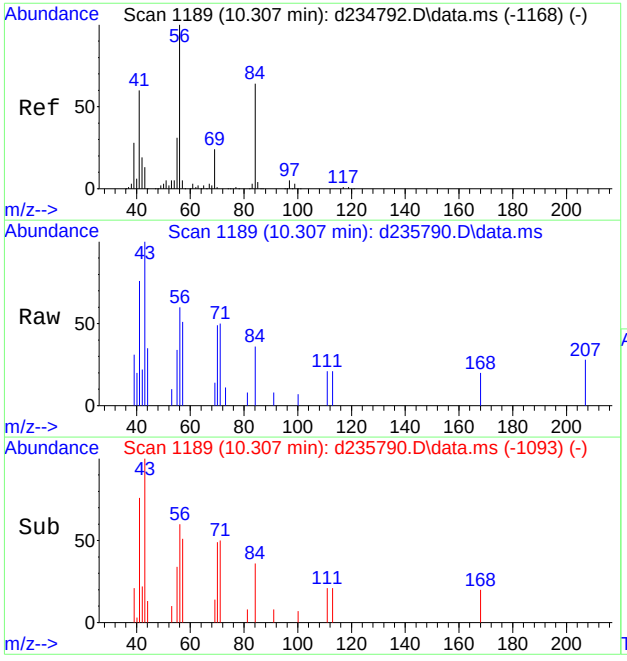
7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9626\
Data File : d235790.D
Acq On : 13 Nov 2015 1:00 am
Operator : BenM
Sample : jc7895-1
Misc : ms94128,vd9626,5.5,,100,10,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Nov 13 07:37:55 2015
Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
Quant Title : SW-846 Method 8260C
QLast Update : Thu Nov 05 07:40:57 2015
Response via : Initial Calibration

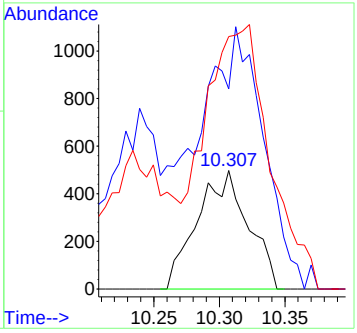


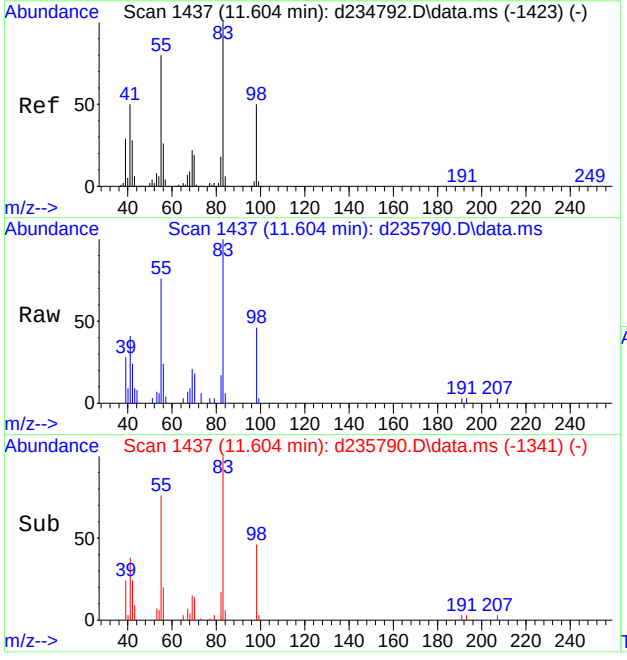


#56
cyclohexane
Concen: 0.30 ug/L
RT: 10.307 min Scan# 1189
Delta R.T. -0.000 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion: 84 Resp: 1345

Ion	Ratio	Lower	Upper
84	100		
56	236.3	145.0	269.4
41	285.4	86.1	159.9#

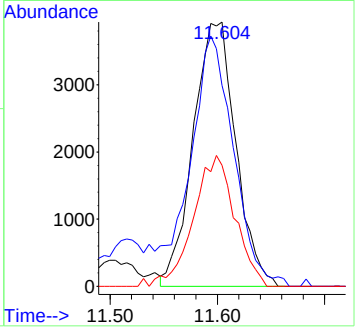




#75
methylcyclohexane
Concen: 2.41 ug/L
RT: 11.604 min Scan# 1437
Delta R.T. -0.000 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

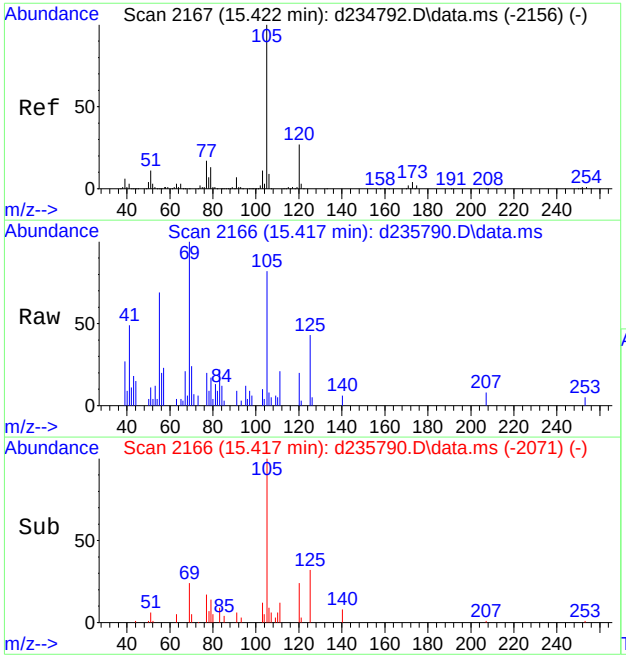
Tgt Ion: 83 Resp: 10873

Ion	Ratio	Lower	Upper
83	100		
55	73.0	50.5	110.5
98	45.8	19.5	79.5



7.1.1

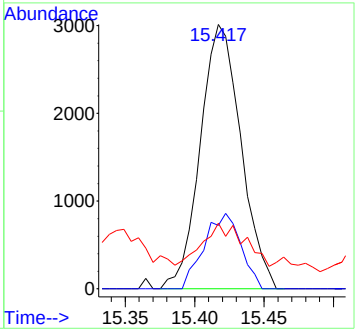
7

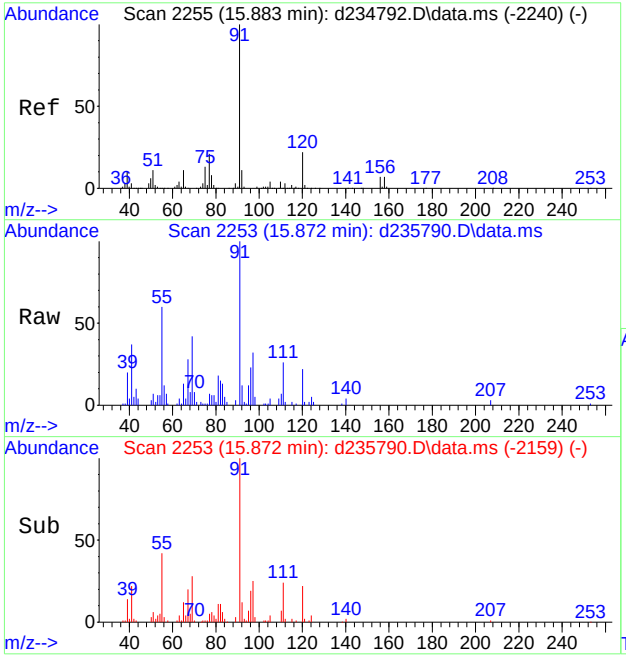


#102
isopropylbenzene
Concen: 0.39 ug/L
RT: 15.417 min Scan# 2166
Delta R.T. -0.005 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion:105 Resp: 6132

Ion	Ratio	Lower	Upper
105	100		
120	24.0	0.0	57.1
77	12.9	0.0	46.5

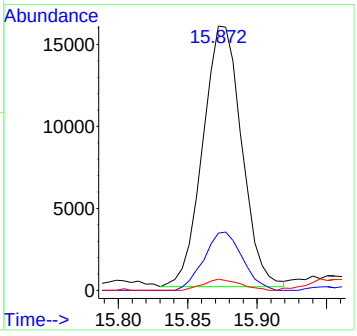


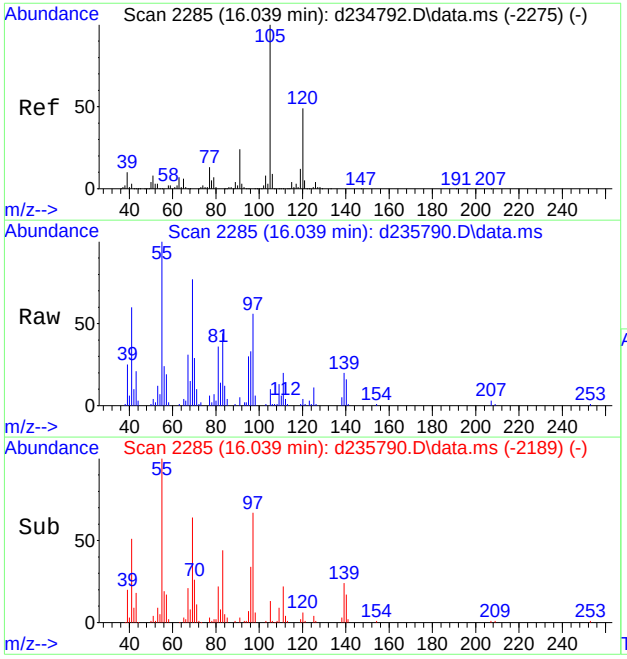


#109
n-propylbenzene
Concen: 1.68 ug/L
RT: 15.872 min Scan# 2253
Delta R.T. -0.010 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion: 91 Resp: 30911

Ion	Ratio	Lower	Upper
91	100		
120	21.9	0.0	52.4
105	4.4	0.0	33.8

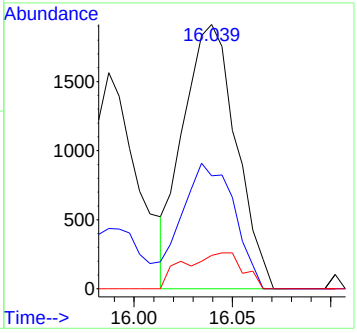


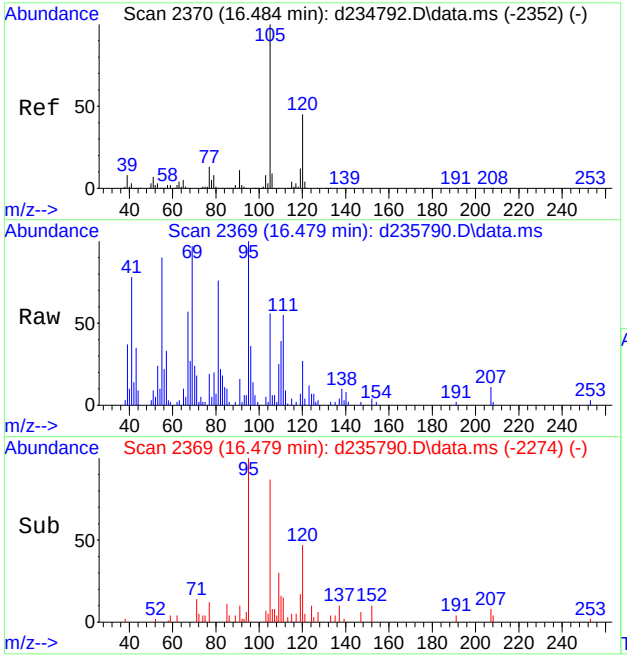


#113
1,3,5-trimethylbenzene
Concen: 0.25 ug/L
RT: 16.039 min Scan# 2285
Delta R.T. -0.000 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion:105 Resp: 3594

Ion	Ratio	Lower	Upper
105	100		
120	42.8	18.6	78.6
119	12.6	0.0	42.5

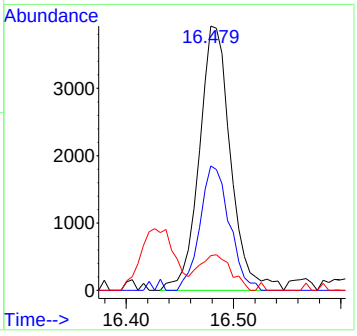


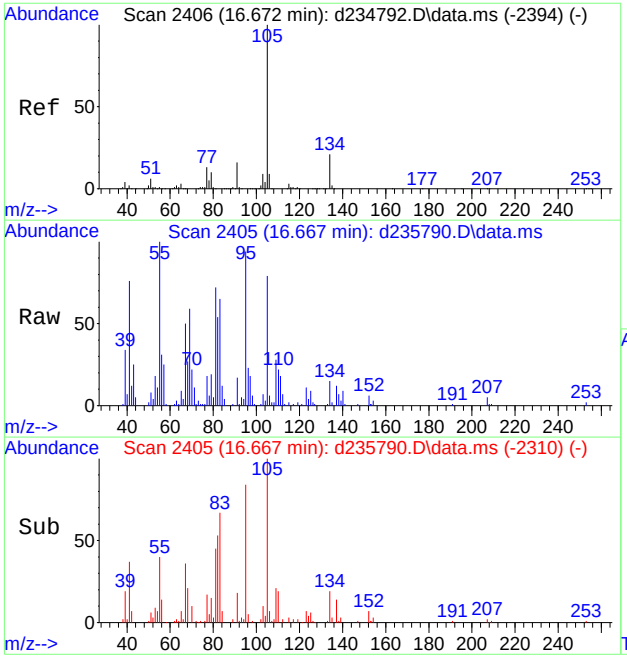


#116
1,2,4-trimethylbenzene
Concen: 0.55 ug/L
RT: 16.479 min Scan# 2369
Delta R.T. -0.005 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion:105 Resp: 7991

Ion	Ratio	Lower	Upper
105	100		
120	47.1	14.8	74.8
119	13.2	0.0	41.7

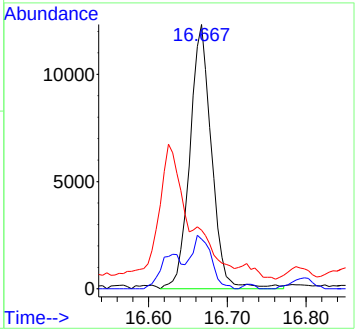


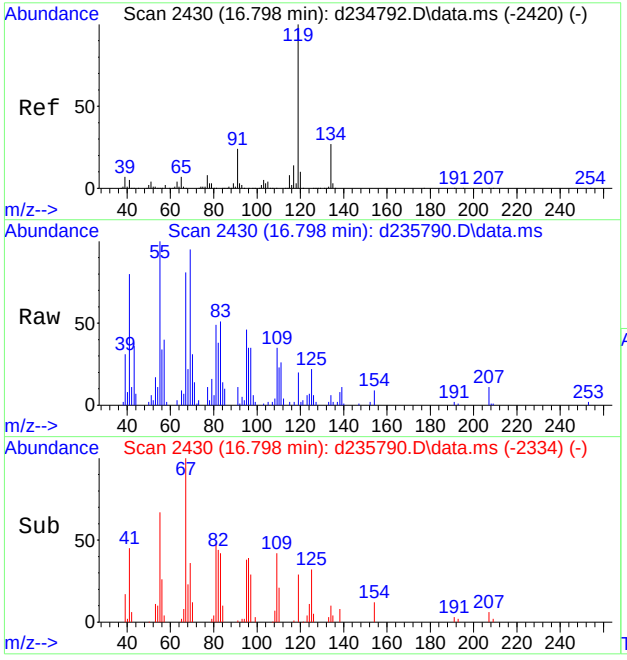


#117
sec-butylbenzene
Concen: 1.26 ug/L
RT: 16.667 min Scan# 2405
Delta R.T. -0.005 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion:105 Resp: 23648

Ion	Ratio	Lower	Upper
105	100		
134	17.7	0.0	50.8
91	17.0	0.0	46.4

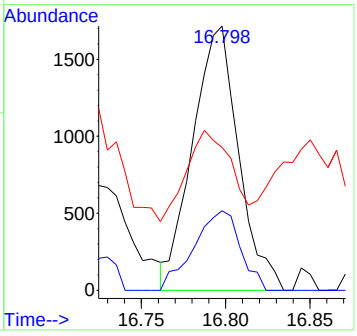


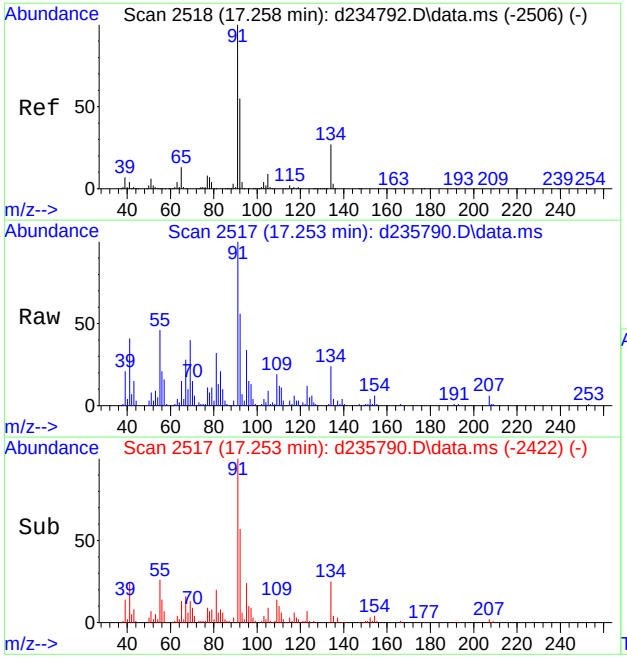


#119
p-isopropyltoluene
Concen: 0.21 ug/L
RT: 16.798 min Scan# 2430
Delta R.T. -0.000 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion:119 Resp: 3246

Ion	Ratio	Lower	Upper
119	100		
134	30.1	0.0	57.4
91	28.1	0.0	54.5

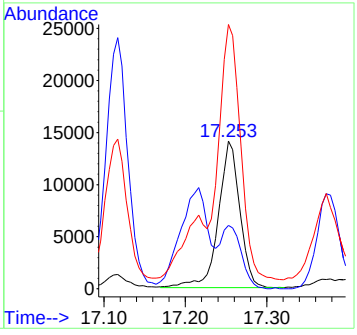


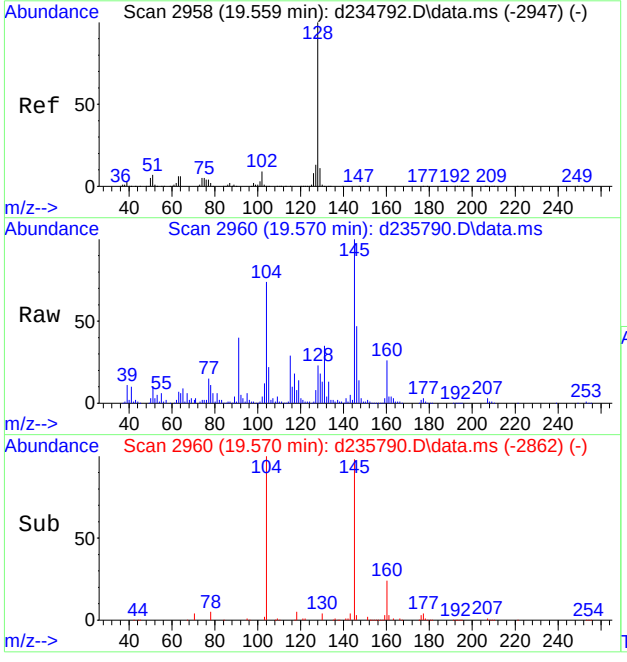


#126
n-butylbenzene
Concen: 3.16 ug/L
RT: 17.253 min Scan# 2517
Delta R.T. -0.005 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion: 92 Resp: 25706

Ion	Ratio	Lower	Upper
92	100		
134	43.3	19.0	79.0
91	174.4	153.1	213.1

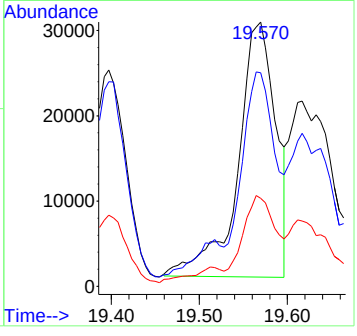




#132
naphthalene
Concen: 8.20 ug/L m
RT: 19.570 min Scan# 2960
Delta R.T. 0.010 min
Lab File: d235790.D
Acq: 13 Nov 2015 1:00 am

Tgt Ion:128 Resp: 89615

Ion	Ratio	Lower	Upper
128	100		
129	80.8	0.0	41.3#
127	33.3	0.0	43.4



7.1.1

7

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 11/16/15 12:48

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : V157429.D
Acq On : 10 Nov 2015 8:00 pm
Operator : payalr
Sample : jc7895-2
Misc : MS94128,VV6649,3.9,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Nov 18 11:31:41 2015
Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Oct 29 11:45:05 2015
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.69	65	165735	500.00	ug/L	0.00
4) pentafluorobenzene	9.91	168	383006	50.00	ug/L	0.00
52) 1,4-difluorobenzene	10.86	114	449111	50.00	ug/L	0.00
82) chlorobenzene-d5	14.27	117	393747	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.88	152	183597	50.00	ug/L	0.00

System Monitoring Compounds

48) dibromofluoromethane (s)	10.00	113	150051	49.35	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 98.70%			
49) 1,2-dichloroethane-d4 (s)	10.43	65	136252	45.33	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery = 90.66%			
74) toluene-d8 (s)	12.59	98	544636	50.08	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 100.16%			
97) 4-bromofluorobenzene (s)	15.57	95	191034	48.98	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery = 97.96%			

Target Compounds

						Qvalue
20) acetone	7.07	58	13140	51.86	ug/L	83
25) carbon disulfide	7.44	76	5412	0.42	ug/L	89
32) 2-butanone	9.40	72	3000	9.78	ug/L #	1
51) Cyclohexane	10.11	84	24953	4.30	ug/L	84
53) methylcyclohexane	11.43	83	59127	10.32	ug/L	92
58) hexane	8.36	57	4691	1.43	ug/L	80
60) benzene	10.50	78	12564	0.99	ug/L	94
76) toluene	12.66	92	6877	0.88	ug/L #	70
91) ethylbenzene	14.35	91	31027	2.09	ug/L	99
92) m,p-xylene	14.47	106	70595	11.90	ug/L	96
93) o-xylene	14.94	106	40043	6.40	ug/L	93
99) isopropylbenzene	15.31	105	4536	0.33	ug/L	90
104) n-propylbenzene	15.78	91	16526	1.09	ug/L	94
107) 1,3,5-trimethylbenzene	15.94	105	96379	7.84	ug/L	97
110) 1,2,4-trimethylbenzene	16.39	105	146508	12.16	ug/L	97
111) sec-butylbenzene	16.57	105	4994	0.30	ug/L	85
124) naphthalene	19.50	128	82695m	5.57	ug/L	
125) 1,2,3-trichlorobenzene	19.90	180	4209	0.60	ug/L	71

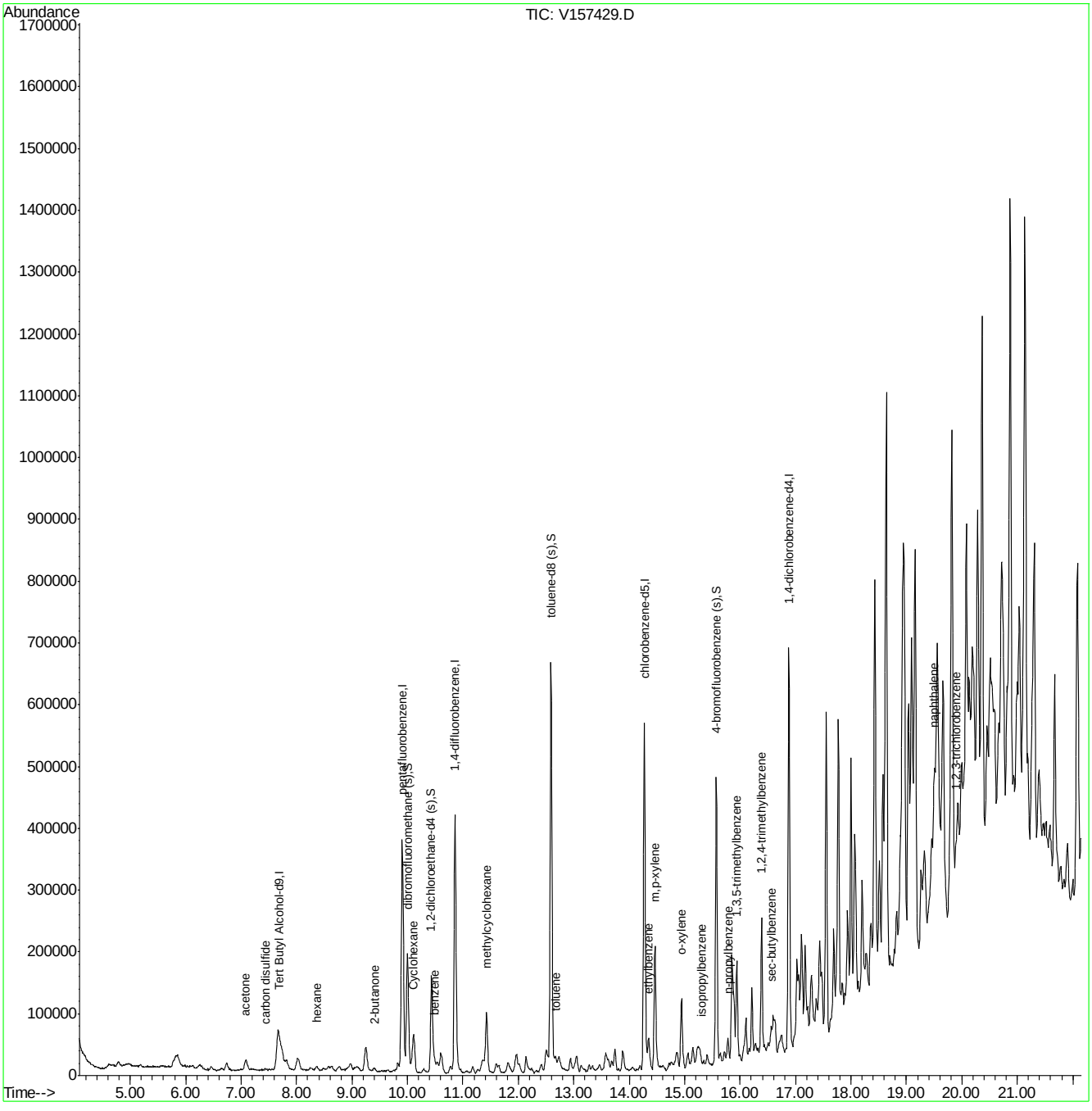
(#) = qualifier out of range (m) = manual integration (+) = signals summed

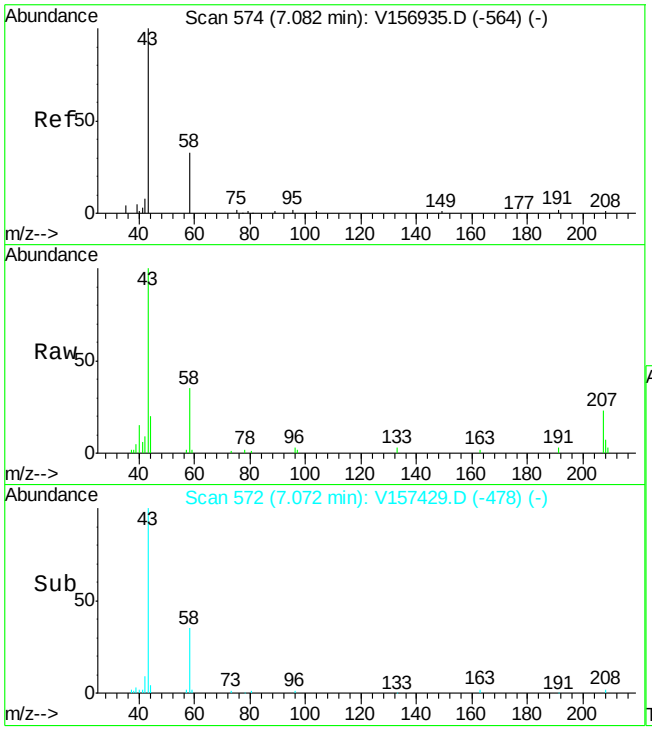
7.1.2
7

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : V157429.D
Acq On : 10 Nov 2015 8:00 pm
Operator : payalr
Sample : jc7895-2
Misc : MS94128,VV6649,3.9,,,,1
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Nov 18 11:31:41 2015
Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Oct 29 11:45:05 2015
Response via : Initial Calibration

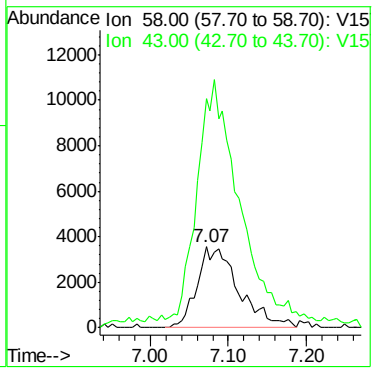


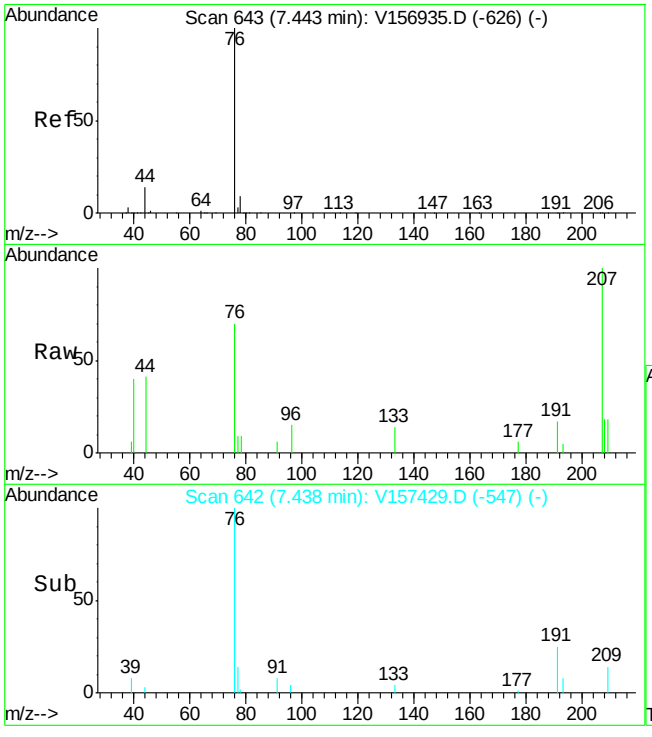


#20
acetone
Concen: 51.86 ug/L
RT: 7.07 min Scan# 572
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 58 Resp: 13140

Ion	Ratio	Lower	Upper
58	100		
43	273.4	215.7	400.5

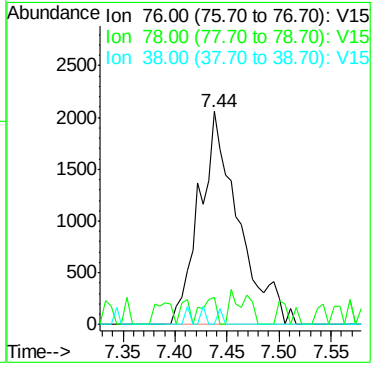




#25
carbon disulfide
Concen: 0.42 ug/L
RT: 7.44 min Scan# 642
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

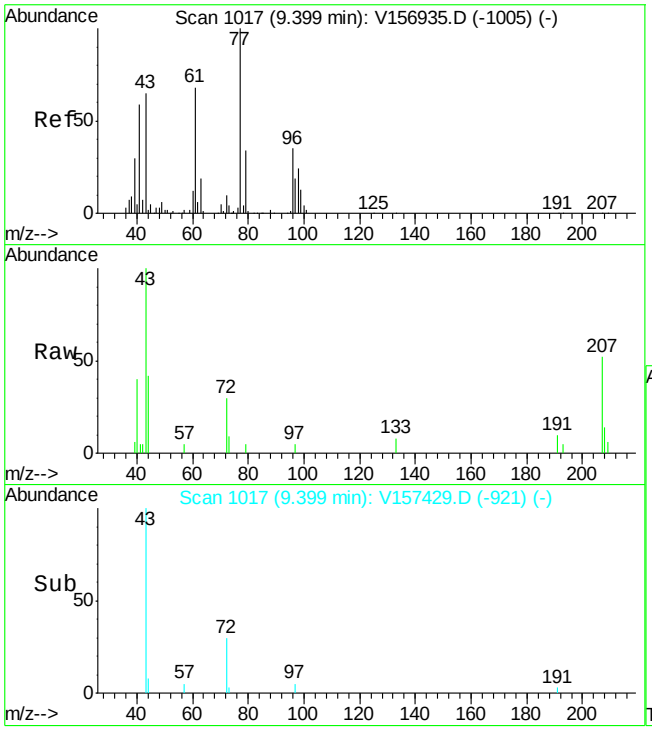
Tgt Ion: 76 Resp: 5412

Ion	Ratio	Lower	Upper
76	100		
78	5.1	0.0	39.1
38	0.0	0.0	33.2



7.1.2

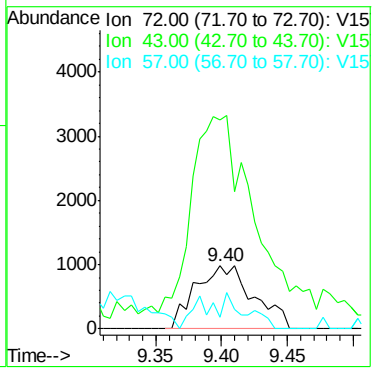
7

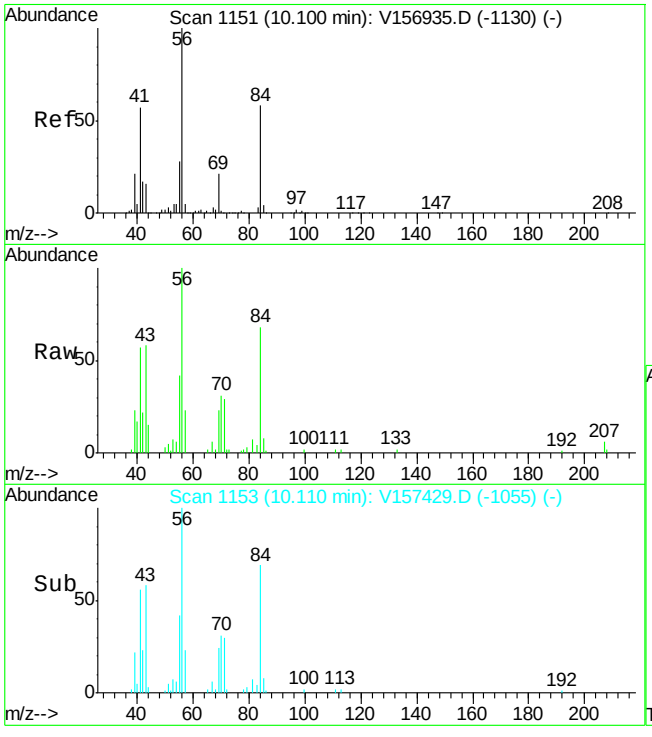


#32
2-butanone
Concen: 9.78 ug/L
RT: 9.40 min Scan# 1017
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 72 Resp: 3000

Ion	Ratio	Lower	Upper
72	100		
43	281.1	474.3	880.8#
57	17.7	17.9	33.3#

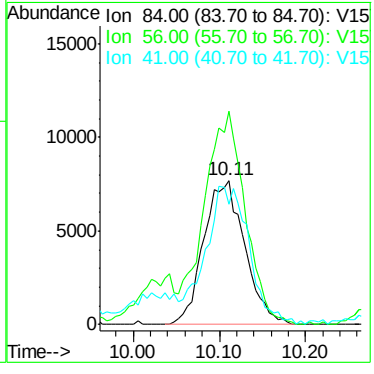




#51
Cyclohexane
Concen: 4.30 ug/L
RT: 10.11 min Scan# 1153
Delta R.T. 0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

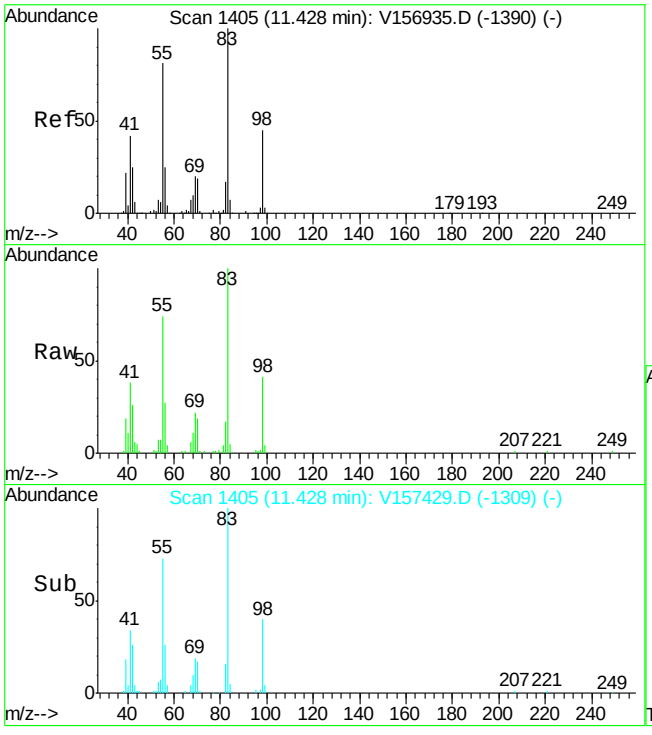
Tgt Ion: 84 Resp: 24953

Ion	Ratio	Lower	Upper
84	100		
56	147.7	119.7	222.3
41	83.6	68.6	127.4



7.1.2

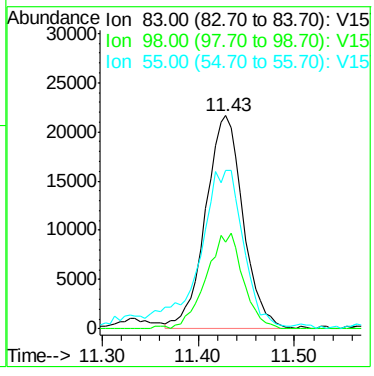
7

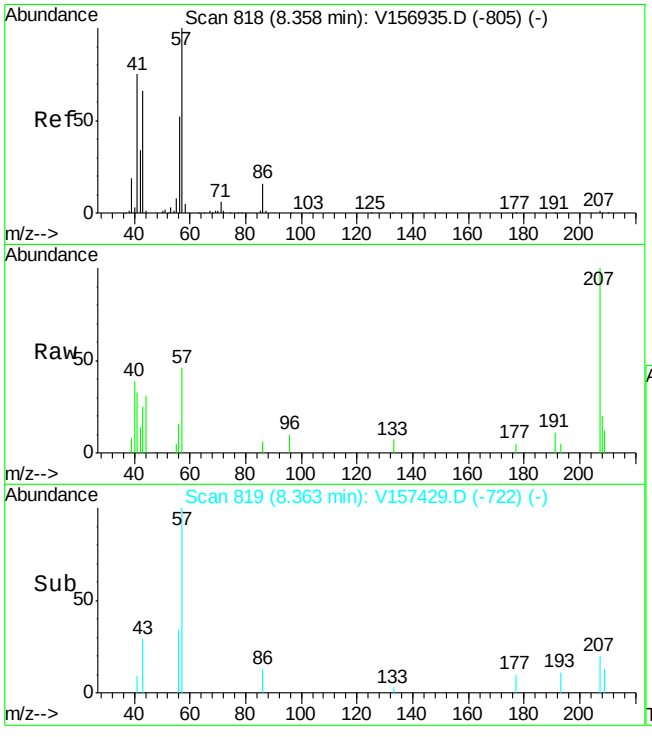


#53
methylcyclohexane
Concen: 10.32 ug/L
RT: 11.43 min Scan# 1405
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 83 Resp: 59127

Ion	Ratio	Lower	Upper
83	100		
98	40.8	31.4	58.4
55	72.6	56.6	105.0

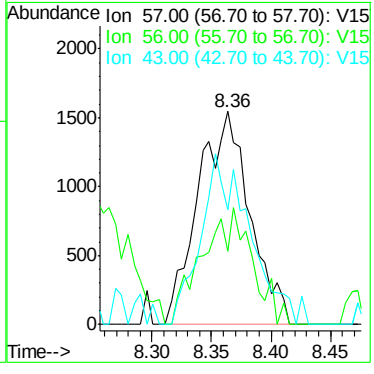


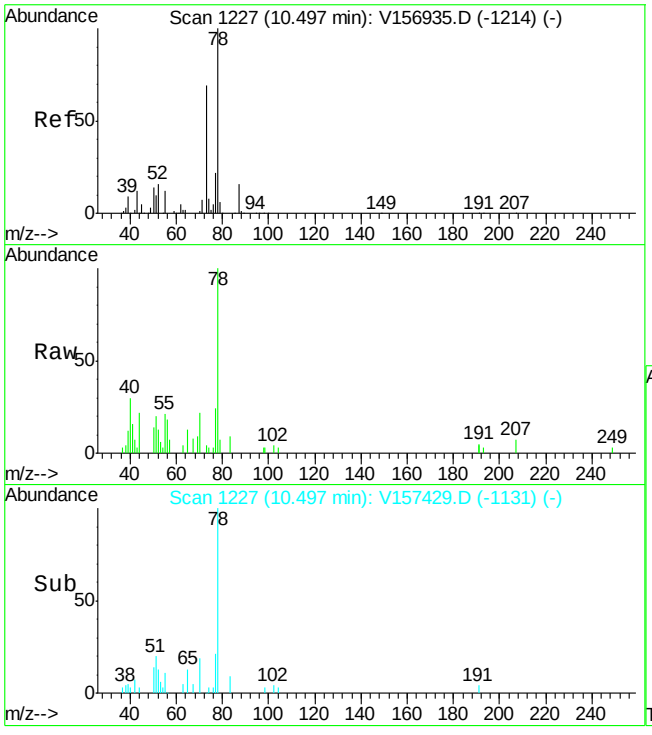


#58
hexane
Concen: 1.43 ug/L
RT: 8.36 min Scan# 819
Delta R.T. 0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 57 Resp: 4691

Ion	Ratio	Lower	Upper
57	100		
56	34.4	21.7	81.7
43	53.7	36.1	96.1

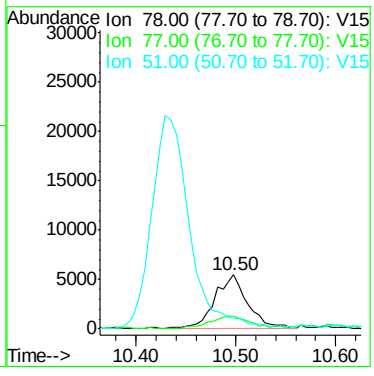


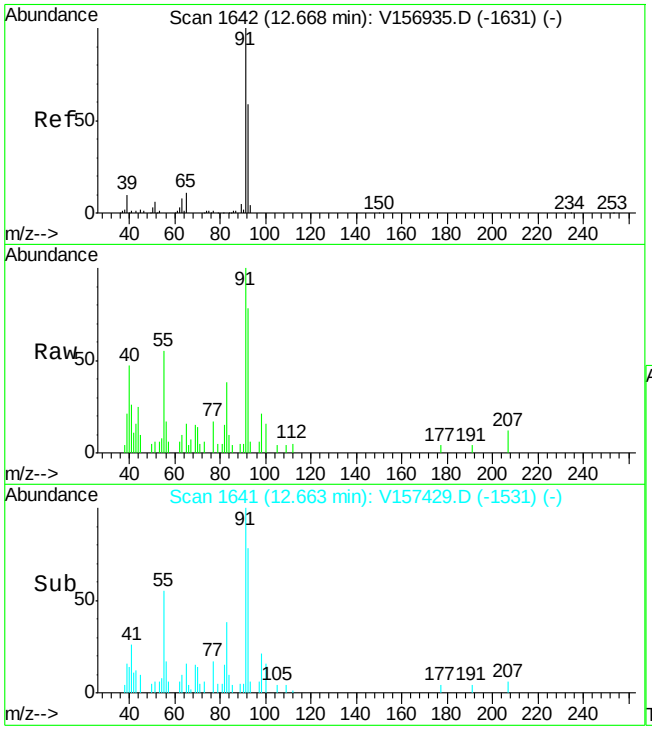


#60
benzene
Concen: 0.99 ug/L
RT: 10.50 min Scan# 1227
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 78 Resp: 12564

Ion	Ratio	Lower	Upper
78	100		
77	23.8	0.0	51.7
51	14.7	0.0	47.8

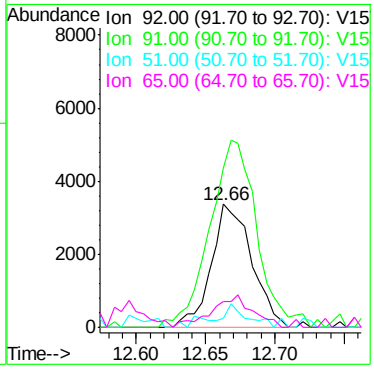




#76
toluene
Concen: 0.88 ug/L
RT: 12.66 min Scan# 1641
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

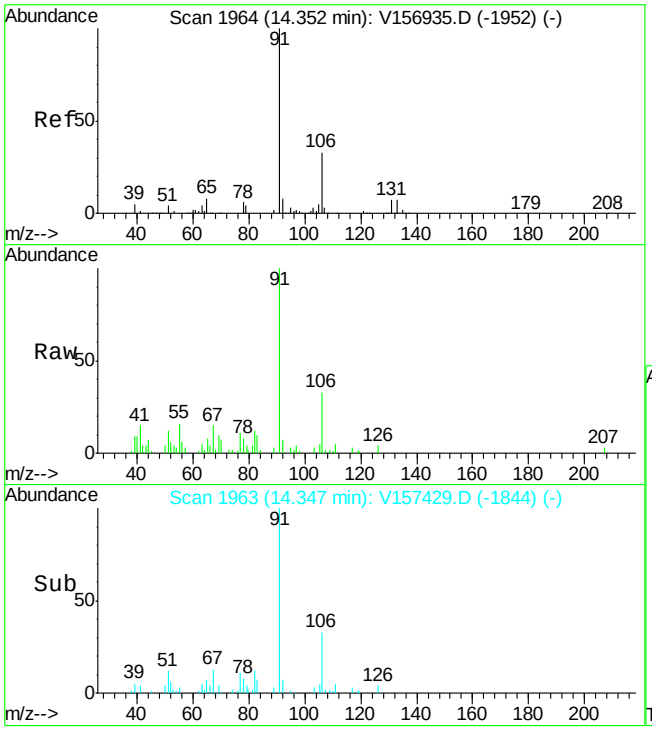
Tgt Ion: 92 Resp: 6877

Ion	Ratio	Lower	Upper
92	100		
91	122.6	117.9	218.9
51	7.3	7.4	13.8#
65	15.5	13.2	24.4



7.1.2

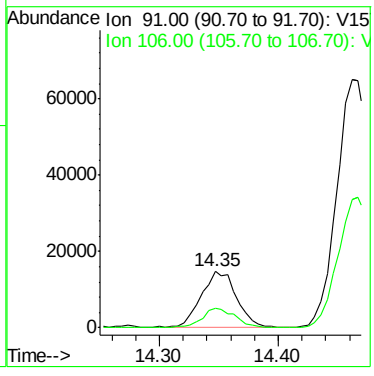
7

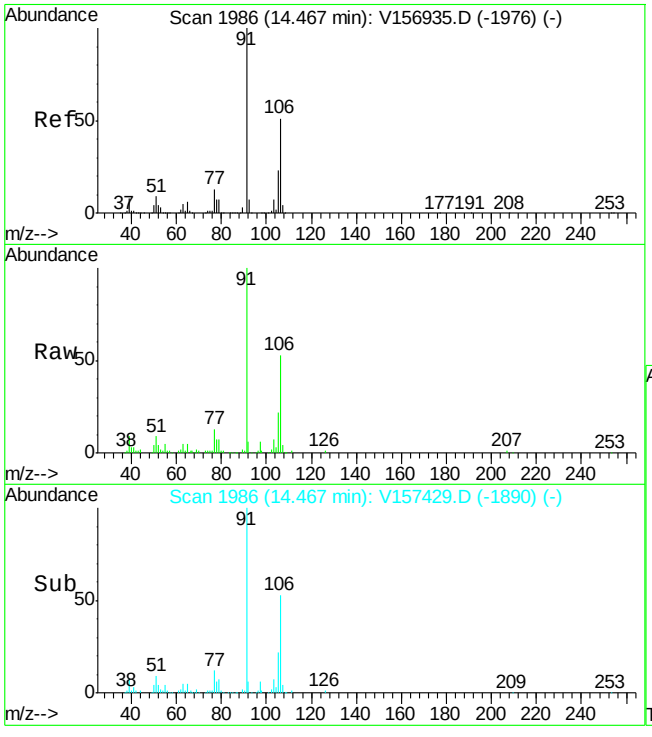


#91
ethylbenzene
Concen: 2.09 ug/L
RT: 14.35 min Scan# 1963
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 91 Resp: 31027

Ion	Ratio	Lower	Upper
91	100		
106	33.4	2.8	62.8

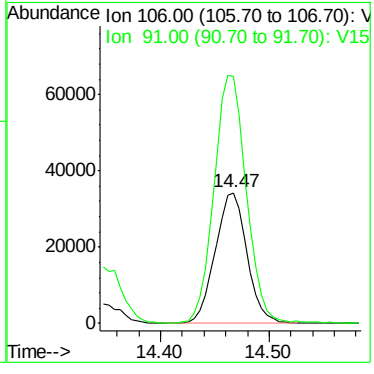


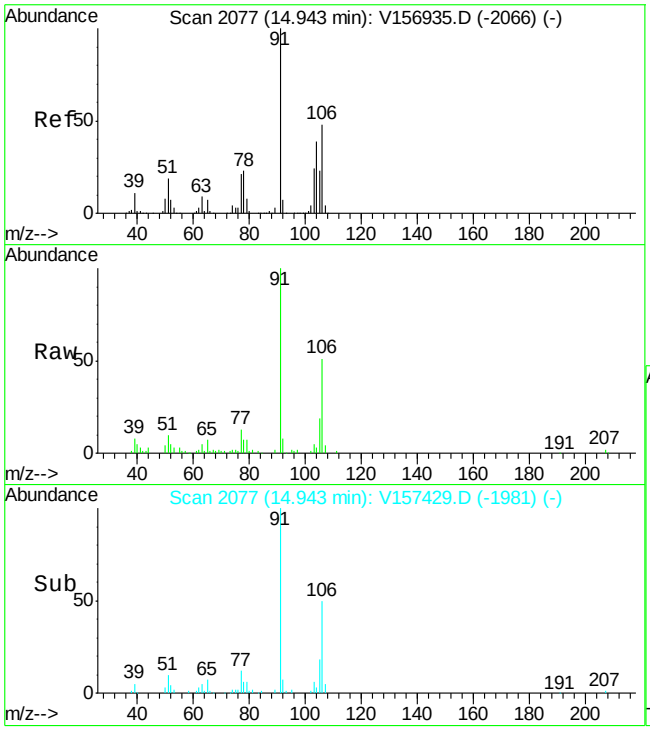


#92
m,p-xylene
Concen: 11.90 ug/L
RT: 14.47 min Scan# 1986
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:106 Resp: 70595

Ion	Ratio	Lower	Upper
106	100		
91	188.5	136.6	253.6

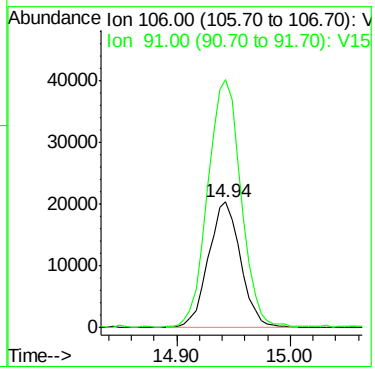


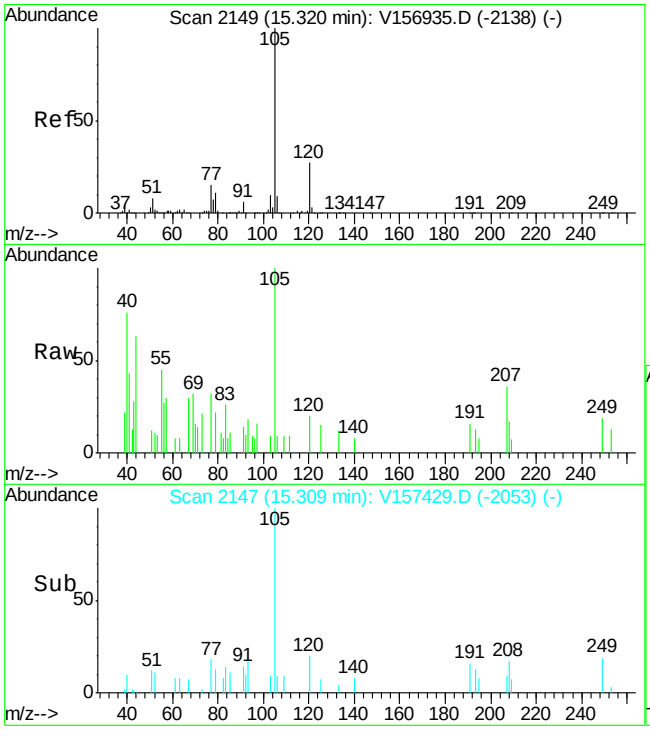


#93
o-xylene
Concen: 6.40 ug/L
RT: 14.94 min Scan# 2077
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:106 Resp: 40043

Ion	Ratio	Lower	Upper
106	100		
91	196.4	144.5	268.4

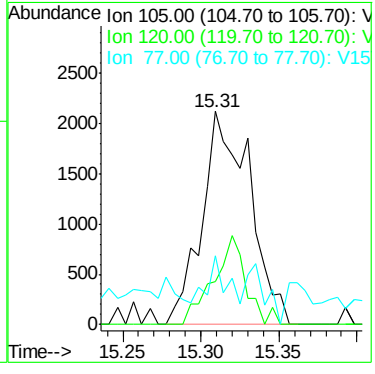


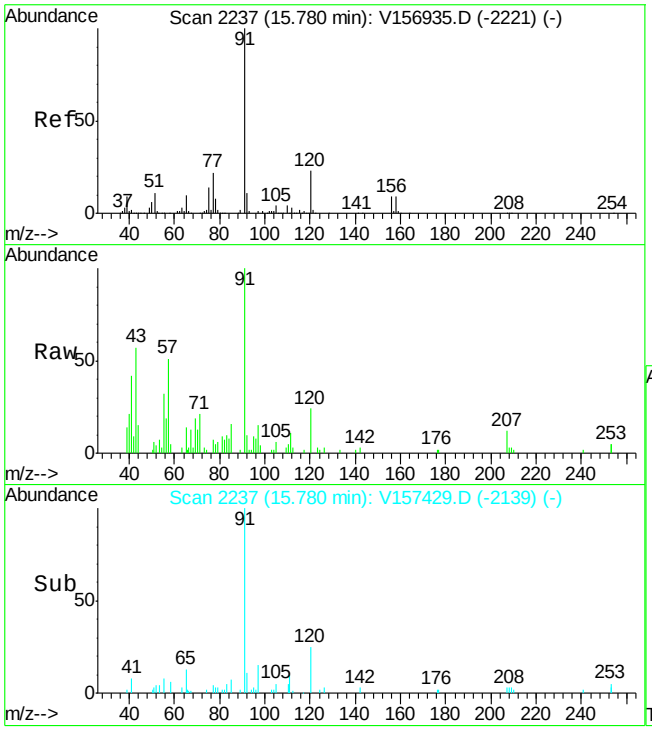


#99
isopropylbenzene
Concen: 0.33 ug/L
RT: 15.31 min Scan# 2147
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:105 Resp: 4536

Ion	Ratio	Lower	Upper
105	100		
120	20.3	0.0	56.7
77	12.8	0.0	45.2

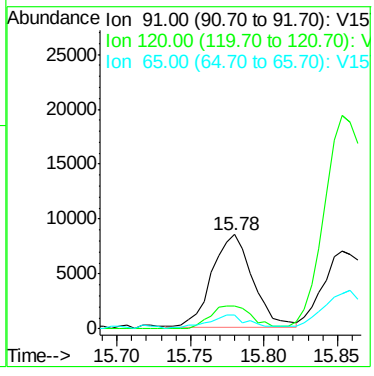


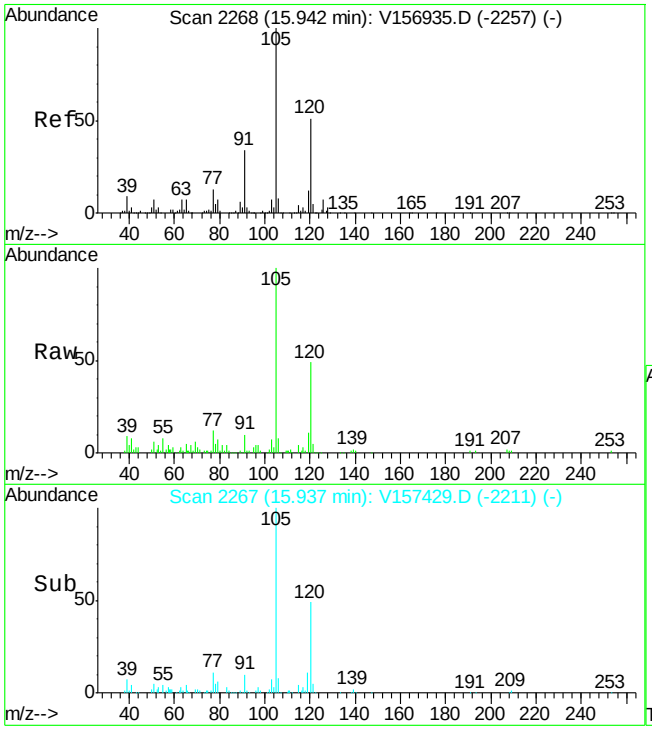


#104
n-propylbenzene
Concen: 1.09 ug/L
RT: 15.78 min Scan# 2237
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion: 91 Resp: 16526

Ion	Ratio	Lower	Upper
91	100		
120	24.8	0.0	53.4
65	14.6	0.0	39.7

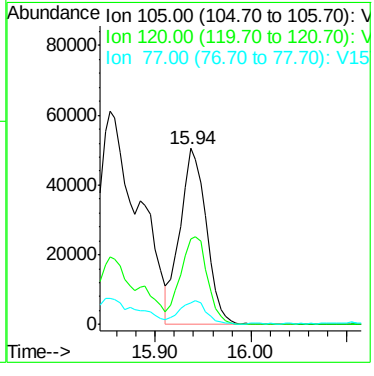


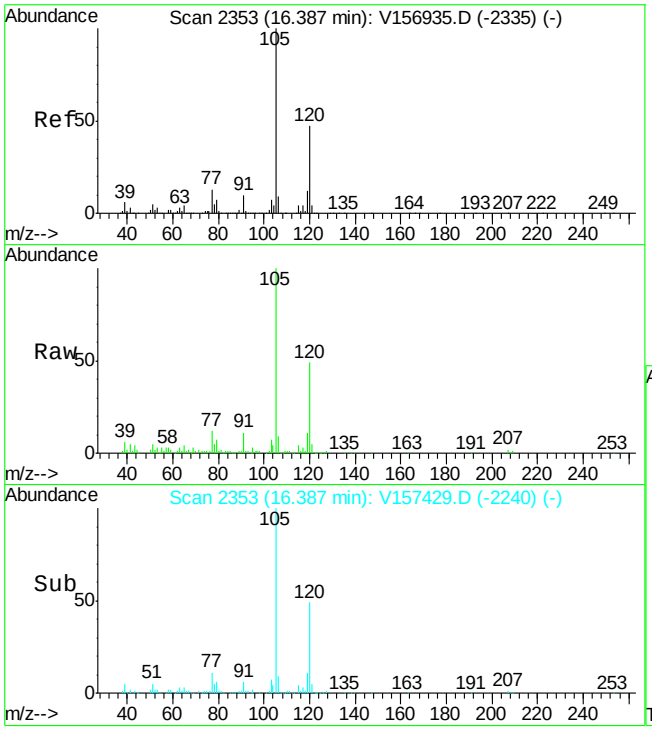


#107
1,3,5-trimethylbenzene
Concen: 7.84 ug/L
RT: 15.94 min Scan# 2267
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:105 Resp: 96379

Ion	Ratio	Lower	Upper
105	100		
120	48.7	21.2	81.2
77	11.7	0.0	42.5

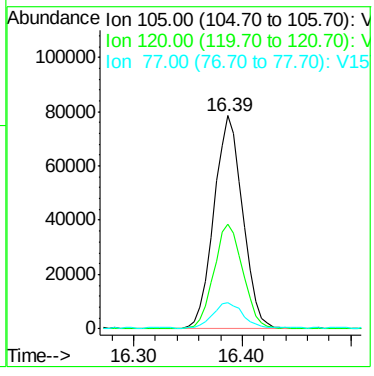


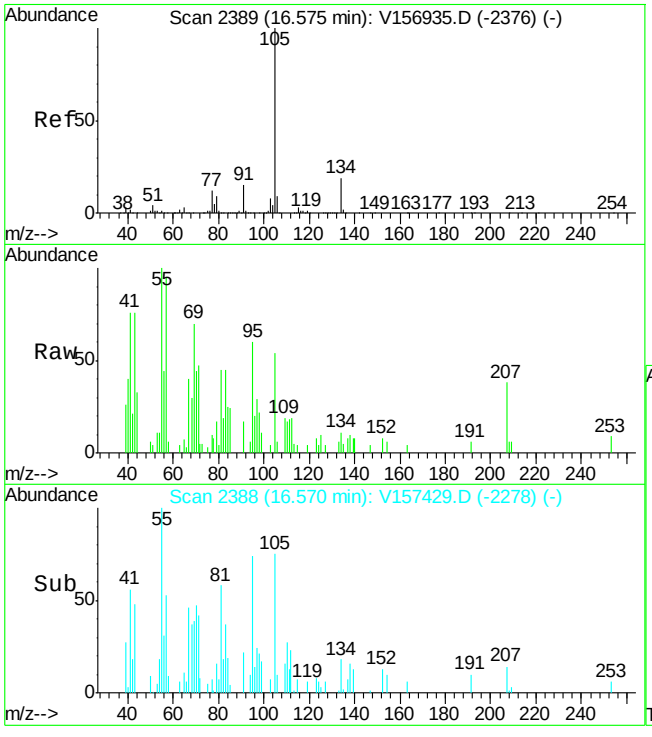


#110
1,2,4-trimethylbenzene
Concen: 12.16 ug/L
RT: 16.39 min Scan# 2353
Delta R.T. 0.00 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:105 Resp: 146508

Ion	Ratio	Lower	Upper
105	100		
120	49.2	17.0	77.0
77	11.6	0.0	42.7

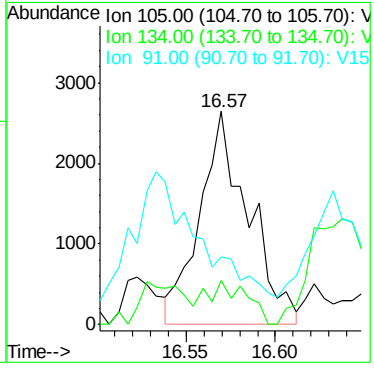




#111
sec-butylbenzene
Concen: 0.30 ug/L
RT: 16.57 min Scan# 2388
Delta R.T. -0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

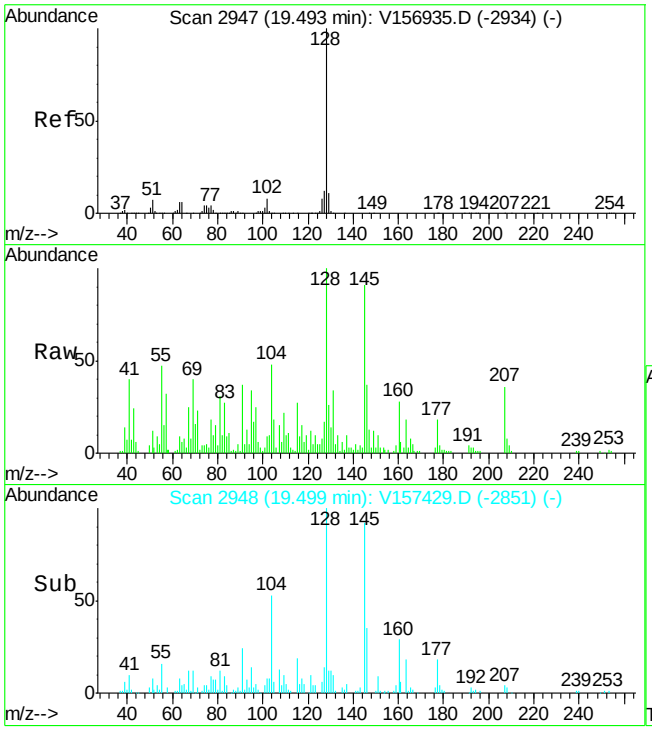
Tgt Ion:105 Resp: 4994

Ion	Ratio	Lower	Upper
105	100		
134	12.4	0.0	49.1
91	9.4	0.0	45.4



7.1.2

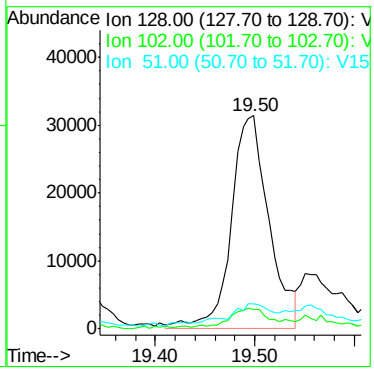
7

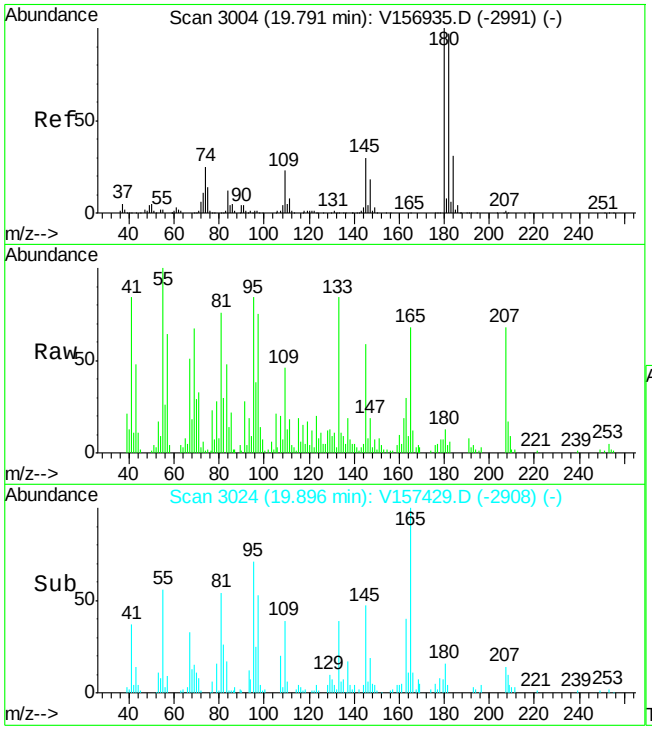


#124
naphthalene
Concen: 5.57 ug/L m
RT: 19.50 min Scan# 2948
Delta R.T. 0.01 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:128 Resp: 82695

Ion	Ratio	Lower	Upper
128	100		
102	9.0	0.0	37.5
51	11.9	0.0	36.6

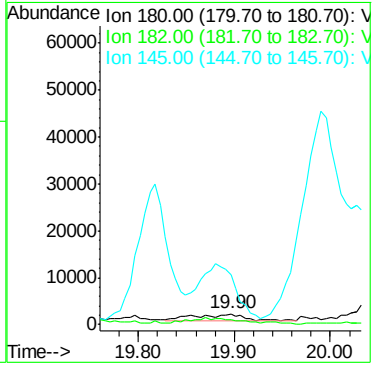




#125
1,2,3-trichlorobenzene
Concen: 0.60 ug/L
RT: 19.90 min Scan# 3024
Delta R.T. 0.10 min
Lab File: V157429.D
Acq: 10 Nov 2015 8:00 pm

Tgt Ion:180 Resp: 4209

Ion	Ratio	Lower	Upper
180	100		
182	76.9	67.4	127.4
145	0.0	0.0	59.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9626\
Data File : d235780.D
Acq On : 12 Nov 2015 7:55 pm
Operator : BenM
Sample : mb
Misc : ms93980,vd9626,5,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 13 07:26:44 2015
Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
Quant Title : SW-846 Method 8260C
QLast Update : Thu Nov 05 07:40:57 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Tert Butyl Alcohol-d9	7.974	65	142437	500.00 ug/L	0.00
4) pentafluorobenzene	10.129	168	257086	50.00 ug/L	0.00
55) 1,4-difluorobenzene	11.055	114	346235	50.00 ug/L	0.00
87) chlorobenzene-d5	14.392	117	333163	50.00 ug/L	0.00
101) 1,4-dichlorobenzene-d4	16.965	152	208066	50.00 ug/L	-0.01
System Monitoring Compounds					
48) dibromofluoromethane (s)	10.213	113	111538	47.08 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 94.16%		
49) 1,2-dichloroethane-d4 (s)	10.642	65	130347	46.00 ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery = 92.00%		
79) toluene-d8 (s)	12.739	98	444287	50.26 ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 100.52%		
103) 4-bromofluorobenzene (s)	15.673	95	193786	49.49 ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery = 98.98%		

Target Compounds Qvalue

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

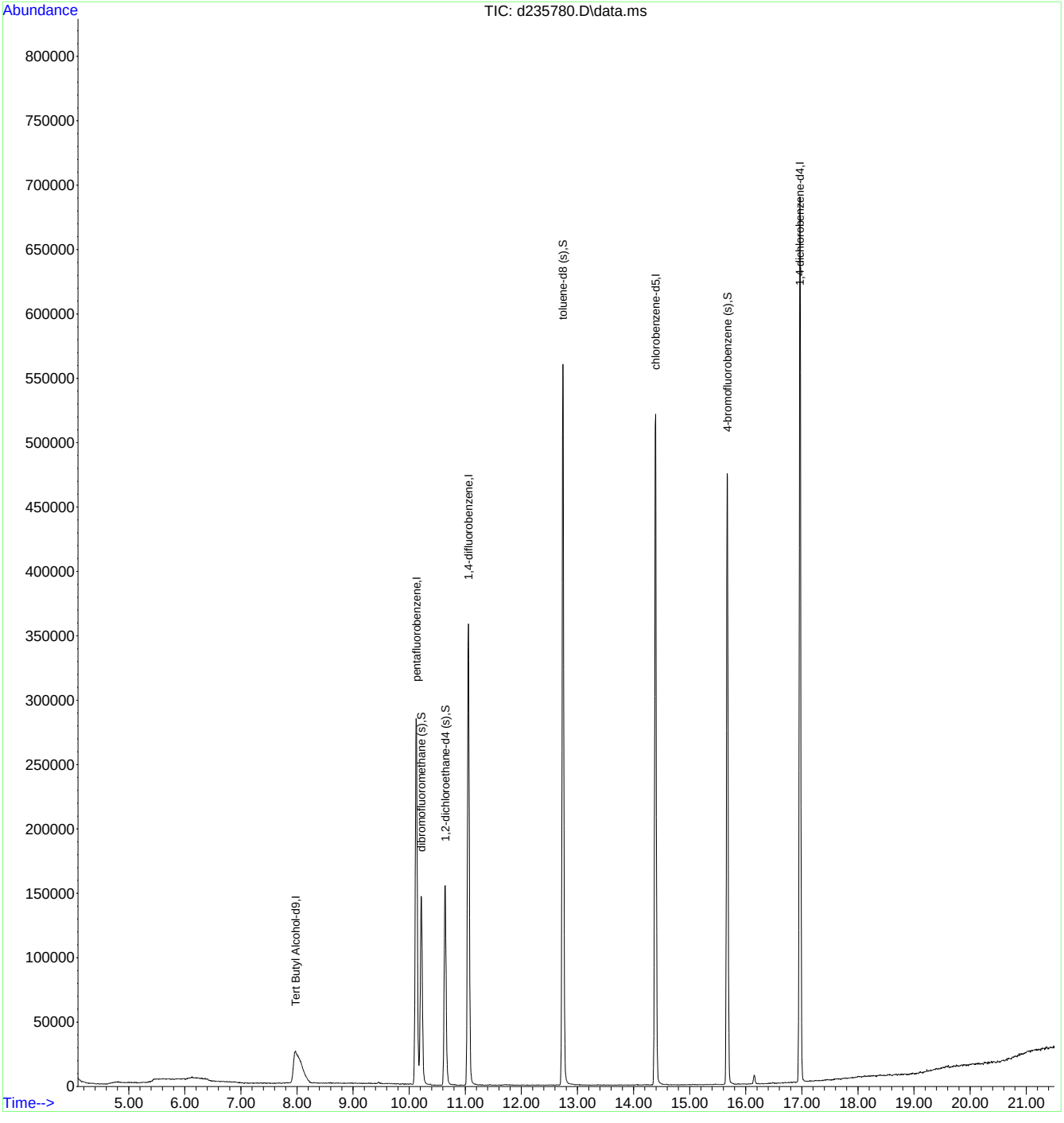
7.2.1

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\D\vd9626\
Data File : d235780.D
Acq On : 12 Nov 2015 7:55 pm
Operator : BenM
Sample : mb
Misc : ms93980,vd9626,5,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 13 07:26:44 2015
Quant Method : C:\MSDCHEM\1\METHODS\MD9588.M
Quant Title : SW-846 Method 8260C
QLast Update : Thu Nov 05 07:40:57 2015
Response via : Initial Calibration



ACCUTEST LABORATORIES JC7895

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : V157412.D
Acq On : 10 Nov 2015 11:34 am
Operator : payalr
Sample : mb
Misc : MS94183,VV6649,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 10 15:53:38 2015
Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Oct 29 11:45:05 2015
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.68	65	174133	500.00	ug/L	0.00
4) pentafluorobenzene	9.91	168	454207	50.00	ug/L	0.00
52) 1,4-difluorobenzene	10.86	114	527111	50.00	ug/L	0.00
82) chlorobenzene-d5	14.27	117	478354	50.00	ug/L	0.00
98) 1,4-dichlorobenzene-d4	16.87	152	275215	50.00	ug/L	0.00

System Monitoring Compounds

48) dibromofluoromethane (s)	10.00	113	173298	48.06	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 96.12%			
49) 1,2-dichloroethane-d4 (s)	10.43	65	151347	42.46	ug/L	0.00
Spiked Amount 50.000	Range 68 - 124		Recovery = 84.92%			
74) toluene-d8 (s)	12.59	98	640611	50.19	ug/L	0.00
Spiked Amount 50.000	Range 77 - 125		Recovery = 100.38%			
97) 4-bromofluorobenzene (s)	15.57	95	235190	49.63	ug/L	0.00
Spiked Amount 50.000	Range 72 - 130		Recovery = 99.26%			

Target Compounds Qvalue

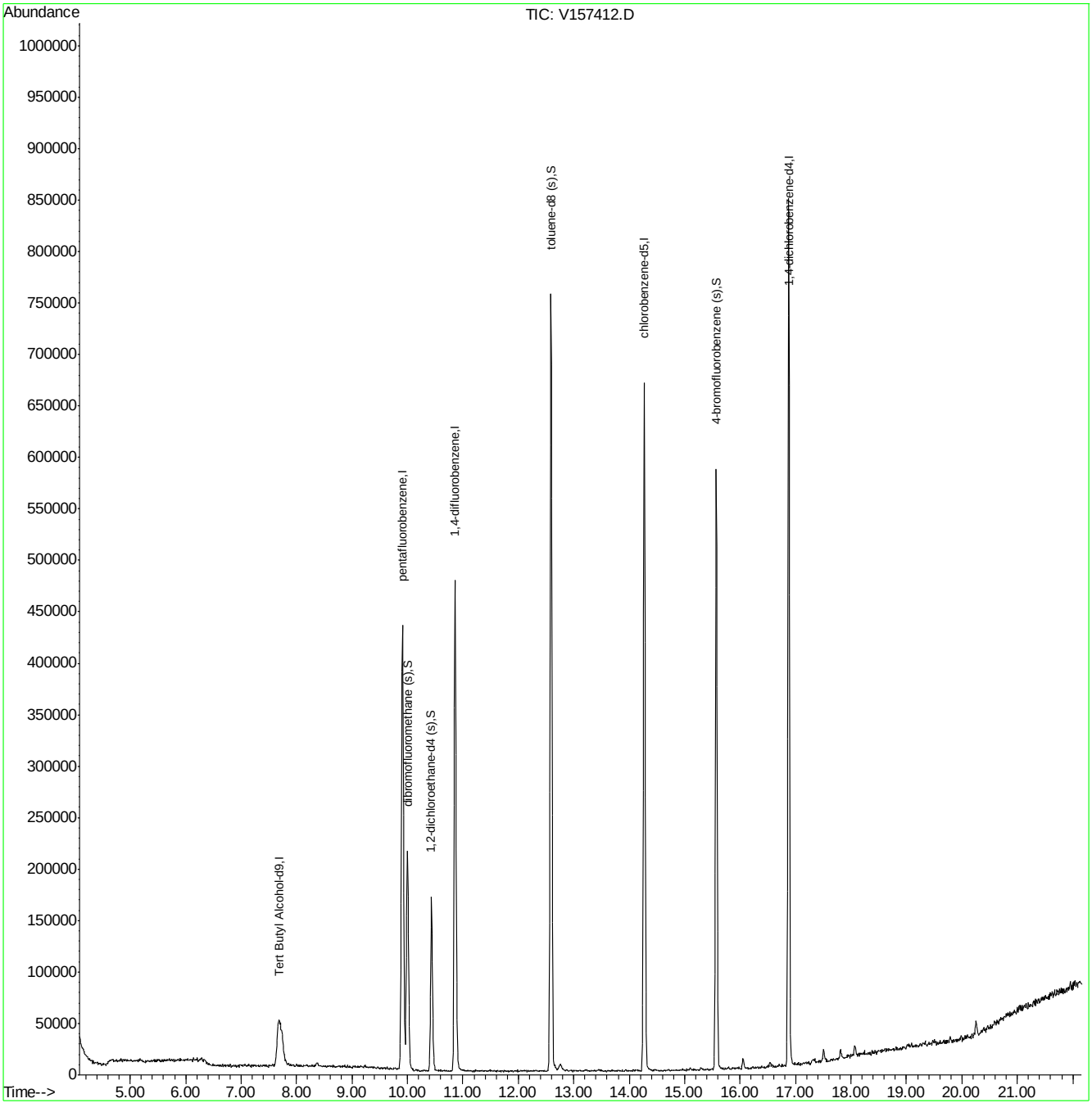
(#) = qualifier out of range (m) = manual integration (+) = signals summed

ACCUTEST LABORATORIES JC7895

Quantitation Report (QT Reviewed)

Data Path : C:\MSDCHEM\1\DATA\
Data File : V157412.D
Acq On : 10 Nov 2015 11:34 am
Operator : payalr
Sample : mb
Misc : MS94183,VV6649,5.0,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 10 15:53:38 2015
Quant Method : C:\MSDCHEM\1\METHODS\MVS6633.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Thu Oct 29 11:45:05 2015
Response via : Initial Calibration



ACCUTEST LABORATORIES JC7895

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: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	Z106071.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

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

JC7895-2

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
91-20-3	Naphthalene	ND	33	5.3	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	73%	30-106%
4165-62-2	Phenol-d5	69%	30-106%
118-79-6	2,4,6-Tribromophenol	96%	24-140%
4165-60-0	Nitrobenzene-d5	87%	26-122%

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	Z106071.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

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

JC7895-2

CAS No.	Surrogate Recoveries		Limits
321-60-8	2-Fluorobiphenyl	90%	36-112%
1718-51-0	Terphenyl-d14	87%	36-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.20	150	ug/kg	J
	system artifact/aldol-condensation	3.42	850	ug/kg	J
	Total TIC, Semi-Volatile		0	ug/kg	

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	5P23284.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

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

JC7895-2

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
91-20-3	Naphthalene	ND	33	5.3	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	82%	30-106%
4165-62-2	Phenol-d5	83%	30-106%
118-79-6	2,4,6-Tribromophenol	71%	24-140%
4165-60-0	Nitrobenzene-d5	94%	26-122%

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MB1	5P23284.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

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

JC7895-2

CAS No.	Surrogate Recoveries		Limits
321-60-8	2-Fluorobiphenyl	93%	36-112%
1718-51-0	Terphenyl-d14	94%	36-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.18	180	ug/kg	J
	system artifact/aldol-condensation	3.44	940	ug/kg	J
	system artifact	7.33	380	ug/kg	J
	system artifact	8.45	310	ug/kg	J
	system artifact	9.44	200	ug/kg	J
	system artifact	10.31	160	ug/kg	J
	system artifact	14.06	140	ug/kg	J
	system artifact	14.72	140	ug/kg	J
	system artifact	15.34	140	ug/kg	J
	system artifact	15.93	140	ug/kg	J
	Total TIC, Semi-Volatile		0	ug/kg	

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89030-MB1	5P23325.D	1	11/17/15	SD	11/17/15	OP89030	E5P1188

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

JC7895-1

CAS No.	Compound	Result	RL	MDL	Units	Q
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	150	ug/kg	
95-48-7	2-Methylphenol	ND	67	48	ug/kg	
	3&4-Methylphenol	ND	67	32	ug/kg	
100-02-7	4-Nitrophenol	ND	330	57	ug/kg	
108-95-2	Phenol	ND	67	25	ug/kg	
83-32-9	Acenaphthene	ND	33	31	ug/kg	
120-12-7	Anthracene	ND	33	2.9	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	6.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	7.1	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	6.9	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	10	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	7.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	67	6.2	ug/kg	
218-01-9	Chrysene	ND	33	5.4	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	12	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	3.9	ug/kg	
84-66-2	Diethyl phthalate	ND	67	4.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	12	ug/kg	
206-44-0	Fluoranthene	ND	33	4.1	ug/kg	
86-73-7	Fluorene	ND	33	4.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	17	ug/kg	
91-57-6	2-Methylnaphthalene	ND	67	6.2	ug/kg	
91-20-3	Naphthalene	ND	33	5.3	ug/kg	
85-01-8	Phenanthrene	ND	33	3.7	ug/kg	
129-00-0	Pyrene	ND	33	4.2	ug/kg	
110-86-1	Pyridine	ND	67	17	ug/kg	
91-22-5	Quinoline	ND	170	12	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	80%	30-106%
4165-62-2	Phenol-d5	79%	30-106%
118-79-6	2,4,6-Tribromophenol	75%	24-140%
4165-60-0	Nitrobenzene-d5	91%	26-122%

Method Blank Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89030-MB1	5P23325.D	1	11/17/15	SD	11/17/15	OP89030	E5P1188

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

JC7895-1

CAS No.	Surrogate Recoveries		Limits
321-60-8	2-Fluorobiphenyl	93%	36-112%
1718-51-0	Terphenyl-d14	96%	36-132%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	2.15	140	ug/kg	J
	system artifact/aldol-condensation	3.41	220	ug/kg	J
	Total TIC, Semi-Volatile		0	ug/kg	

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	Z106072.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

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

JC7895-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
105-67-9	2,4-Dimethylphenol	1670	1310	79	49-115
51-28-5	2,4-Dinitrophenol	3330	2050	62	30-127
95-48-7	2-Methylphenol	1670	1170	70	53-103
	3&4-Methylphenol	1670	1120	67	53-102
100-02-7	4-Nitrophenol	1670	1600	96	36-143
108-95-2	Phenol	1670	983	59	45-106
83-32-9	Acenaphthene	1670	1250	75	60-108
120-12-7	Anthracene	1670	1270	76	59-109
56-55-3	Benzo(a)anthracene	1670	1240	74	52-113
50-32-8	Benzo(a)pyrene	1670	1350	81	56-122
205-99-2	Benzo(b)fluoranthene	1670	1380	83	53-119
191-24-2	Benzo(g,h,i)perylene	1670	1110	67	48-117
207-08-9	Benzo(k)fluoranthene	1670	1270	76	52-115
92-52-4	1,1'-Biphenyl	1670	1210	73	54-101
218-01-9	Chrysene	1670	1240	74	51-119
53-70-3	Dibenzo(a,h)anthracene	1670	1260	76	49-118
84-74-2	Di-n-butyl phthalate	1670	1420	85	56-117
84-66-2	Diethyl phthalate	1670	1310	79	54-112
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1440	86	45-130
206-44-0	Fluoranthene	1670	1280	77	58-110
86-73-7	Fluorene	1670	1260	76	59-108
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1230	74	48-120
91-57-6	2-Methylnaphthalene	1670	1240	74	48-104
91-20-3	Naphthalene	1670	1200	72	49-100
85-01-8	Phenanthrene	1670	1270	76	57-105
129-00-0	Pyrene	1670	1210	73	50-117
110-86-1	Pyridine	1670	675	41	26-110
91-22-5	Quinoline	1670	1230	74	51-102

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	67%	30-106%
4165-62-2	Phenol-d5	66%	30-106%
118-79-6	2,4,6-Tribromophenol	91%	24-140%
4165-60-0	Nitrobenzene-d5	74%	26-122%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	Z106072.D	1	11/13/15	BP	11/10/15	OP88822	EZ5295

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

JC7895-2

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	79%	36-112%
1718-51-0	Terphenyl-d14	77%	36-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	5P23283.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

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

JC7895-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
105-67-9	2,4-Dimethylphenol	1670	1470	88	49-115
51-28-5	2,4-Dinitrophenol	3330	2600	78	30-127
95-48-7	2-Methylphenol	1670	1240	74	53-103
	3&4-Methylphenol	1670	1230	74	53-102
100-02-7	4-Nitrophenol	1670	1410	85	36-143
108-95-2	Phenol	1670	1170	70	45-106
83-32-9	Acenaphthene	1670	1260	76	60-108
120-12-7	Anthracene	1670	1200	72	59-109
56-55-3	Benzo(a)anthracene	1670	1200	72	52-113
50-32-8	Benzo(a)pyrene	1670	1300	78	56-122
205-99-2	Benzo(b)fluoranthene	1670	1330	80	53-119
191-24-2	Benzo(g,h,i)perylene	1670	1160	70	48-117
207-08-9	Benzo(k)fluoranthene	1670	1250	75	52-115
92-52-4	1,1'-Biphenyl	1670	1310	79	54-101
218-01-9	Chrysene	1670	1180	71	51-119
53-70-3	Dibenzo(a,h)anthracene	1670	1260	76	49-118
84-74-2	Di-n-butyl phthalate	1670	1310	79	56-117
84-66-2	Diethyl phthalate	1670	1290	77	54-112
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1530	92	45-130
206-44-0	Fluoranthene	1670	1170	70	58-110
86-73-7	Fluorene	1670	1220	73	59-108
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1300	78	48-120
91-57-6	2-Methylnaphthalene	1670	1290	77	48-104
91-20-3	Naphthalene	1670	1130	68	49-100
85-01-8	Phenanthrene	1670	1140	68	57-105
129-00-0	Pyrene	1670	1320	79	50-117
110-86-1	Pyridine	1670	968	58	26-110
91-22-5	Quinoline	1670	1240	74	51-102

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	78%	30-106%
4165-62-2	Phenol-d5	76%	30-106%
118-79-6	2,4,6-Tribromophenol	71%	24-140%
4165-60-0	Nitrobenzene-d5	84%	26-122%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-BS1	5P23283.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185

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

JC7895-2

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	84%	36-112%
1718-51-0	Terphenyl-d14	86%	36-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89030-BS1	5P23326.D	1	11/17/15	SD	11/17/15	OP89030	E5P1188

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

JC7895-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
105-67-9	2,4-Dimethylphenol	1670	1470	88	49-115
51-28-5	2,4-Dinitrophenol	3330	2760	83	30-127
95-48-7	2-Methylphenol	1670	1300	78	53-103
	3&4-Methylphenol	1670	1290	77	53-102
100-02-7	4-Nitrophenol	1670	1680	101	36-143
108-95-2	Phenol	1670	1210	73	45-106
83-32-9	Acenaphthene	1670	1410	85	60-108
120-12-7	Anthracene	1670	1340	80	59-109
56-55-3	Benzo(a)anthracene	1670	1350	81	52-113
50-32-8	Benzo(a)pyrene	1670	1470	88	56-122
205-99-2	Benzo(b)fluoranthene	1670	1540	92	53-119
191-24-2	Benzo(g,h,i)perylene	1670	1270	76	48-117
207-08-9	Benzo(k)fluoranthene	1670	1410	85	52-115
92-52-4	1,1'-Biphenyl	1670	1460	88	54-101
218-01-9	Chrysene	1670	1300	78	51-119
53-70-3	Dibenzo(a,h)anthracene	1670	1380	83	49-118
84-74-2	Di-n-butyl phthalate	1670	1490	89	56-117
84-66-2	Diethyl phthalate	1670	1440	86	54-112
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1730	104	45-130
206-44-0	Fluoranthene	1670	1320	79	58-110
86-73-7	Fluorene	1670	1360	82	59-108
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1440	86	48-120
91-57-6	2-Methylnaphthalene	1670	1370	82	48-104
91-20-3	Naphthalene	1670	1250	75	49-100
85-01-8	Phenanthrene	1670	1290	77	57-105
129-00-0	Pyrene	1670	1500	90	50-117
110-86-1	Pyridine	1670	1070	64	26-110
91-22-5	Quinoline	1670	1330	80	51-102

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	82%	30-106%
4165-62-2	Phenol-d5	80%	30-106%
118-79-6	2,4,6-Tribromophenol	82%	24-140%
4165-60-0	Nitrobenzene-d5	93%	26-122%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89030-BS1	5P23326.D	1	11/17/15	SD	11/17/15	OP89030	E5P1188

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

JC7895-1

CAS No.	Surrogate Recoveries	BSP	Limits
321-60-8	2-Fluorobiphenyl	93%	36-112%
1718-51-0	Terphenyl-d14	96%	36-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MS	5P23291.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
OP88822-MSD	5P23292.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23296.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23272.D	5	11/16/15	AP	11/10/15	OP88822	E5P1184

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

JC7895-2

CAS No.	Compound	JC7769-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
105-67-9	2,4-Dimethylphenol	ND		2010	1720	86	1940	1550	80	10	23-133/34
51-28-5	2,4-Dinitrophenol	ND		4010	864	22	3870	394	10	75* [a]	10-110/51
95-48-7	2-Methylphenol	ND		2010	1410	70	1940	1290	67	9	32-111/34
	3&4-Methylphenol	ND		2010	1410	70	1940	1260	65	11	32-113/34
100-02-7	4-Nitrophenol	ND		2010	1650	82	1940	1390	72	17	14-154/39
108-95-2	Phenol	57.2	J	2010	1290	61	1940	1190	59	8	25-112/33
83-32-9	Acenaphthene	3280		2010	3230	0* [b]	1940	3540	13* [b]	9	34-125/36
120-12-7	Anthracene	1040		2010	2030	49	1940	1890	44	7	31-131/41
56-55-3	Benzo(a)anthracene	1210		2010	2110	45	1940	2090	45	1	23-136/43
50-32-8	Benzo(a)pyrene	853		2010	1920	53	1940	1890	54	2	22-144/42
205-99-2	Benzo(b)fluoranthene	1290		2010	2200	45	1940	2100	42	5	18-145/43
191-24-2	Benzo(g,h,i)perylene	343		2010	1480	57	1940	1340	51	10	20-138/43
207-08-9	Benzo(k)fluoranthene	321		2010	1570	62	1940	1510	61	4	27-129/43
92-52-4	1,1'-Biphenyl	480		2010	1740	63	1940	1580	57	10	33-116/32
218-01-9	Chrysene	946		2010	1890	47	1940	1890	49	0	21-142/43
53-70-3	Dibenzo(a,h)anthracene	98.5		2010	1480	69	1940	1290	62	14	25-135/41
84-74-2	Di-n-butyl phthalate	ND		2010	1490	74	1940	1280	66	15	32-131/34
84-66-2	Diethyl phthalate	ND		2010	1460	73	1940	1260	65	15	35-124/32
117-81-7	bis(2-Ethylhexyl)phthalate	ND		2010	1740	87	1940	1460	75	18	25-146/35
206-44-0	Fluoranthene	6890 [d]		2010	4630	0* [c]	1940	4880	0* [c]	5	15-143/46
86-73-7	Fluorene	2720		2010	2940	11* [b]	1940	3080	19* [b]	5	30-129/37
193-39-5	Indeno(1,2,3-cd)pyrene	418		2010	1690	63	1940	1570	59	7	23-141/44
91-57-6	2-Methylnaphthalene	2370		2010	2530	8* [b]	1940	2790	22	10	21-125/33
91-20-3	Naphthalene	2920		2010	2790	0* [b]	1940	3210	15* [b]	14	24-118/35
85-01-8	Phenanthrene	9420 [d]		2010	5900	0* [c]	1940	5770	0* [c]	2	14-144/44
129-00-0	Pyrene	5340 [d]		2010	4220	4* [c]	1940	4260	7* [c]	1	16-147/46
110-86-1	Pyridine	ND		2010	909	45	1940	988	51	8	10-110/43
91-22-5	Quinoline	ND		2010	1380	69	1940	1260	65	9	26-116/32

CAS No.	Surrogate Recoveries	MS	MSD	JC7769-1	JC7769-1	Limits
367-12-4	2-Fluorophenol	68%	69%	69%	87%	30-106%
4165-62-2	Phenol-d5	70%	68%	68%	90%	30-106%
118-79-6	2,4,6-Tribromophenol	67%	62%	62%	69%	24-140%
4165-60-0	Nitrobenzene-d5	74%	74%	77%	94%	26-122%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP88822-MS	5P23291.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
OP88822-MSD	5P23292.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23296.D	1	11/16/15	AP	11/10/15	OP88822	E5P1185
JC7769-1	5P23272.D	5	11/16/15	AP	11/10/15	OP88822	E5P1184

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

JC7895-2

CAS No.	Surrogate Recoveries	MS	MSD	JC7769-1	JC7769-1	Limits
321-60-8	2-Fluorobiphenyl	79%	72%	75%	91%	36-112%
1718-51-0	Terphenyl-d14	80%	70%	71%	86%	36-132%

(a) Analytical precision exceeds in-house control limits.
(b) Outside control limits due to matrix interference.
(c) Outside control limits due to high level in sample relative to spike amount.
(d) Result is from Run #2.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89030-MS	5P23346.D	1	11/18/15	SD	11/17/15	OP89030	E5P1188
OP89030-MSD	5P23347.D	1	11/18/15	SD	11/17/15	OP89030	E5P1188
JC8066-21 [a]	5P23330.D	1	11/17/15	SD	11/17/15	OP89030	E5P1188

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

JC7895-1

CAS No.	Compound	JC8066-21 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
105-67-9	2,4-Dimethylphenol	ND		1890	1580	84	1920	1470	77	7	23-133/34
51-28-5	2,4-Dinitrophenol	ND		3780	ND	0* [b]	3840	ND	0* [b]	nc	10-110/51
95-48-7	2-Methylphenol	ND		1890	1240	66	1920	1140	59	8	32-111/34
	3&4-Methylphenol	49.2	J	1890	1220	62	1920	1130	56	8	32-113/34
100-02-7	4-Nitrophenol	ND		1890	1510	80	1920	1400	73	8	14-154/39
108-95-2	Phenol	73.2	J	1890	1150	57	1920	1040	50	10	25-112/33
83-32-9	Acenaphthene	158		1890	1600	76	1920	1480	69	8	34-125/36
120-12-7	Anthracene	407		1890	1610	64	1920	1330	48	19	31-131/41
56-55-3	Benzo(a)anthracene	1350		1890	2120	41	1920	1640	15* [b]	26	23-136/43
50-32-8	Benzo(a)pyrene	1390		1890	2170	41	1920	1730	18* [b]	23	22-144/42
205-99-2	Benzo(b)fluoranthene	1740		1890	2530	42	1920	1890	8* [b]	29	18-145/43
191-24-2	Benzo(g,h,i)perylene	814		1890	1690	46	1920	1370	29	21	20-138/43
207-08-9	Benzo(k)fluoranthene	575		1890	1650	57	1920	1420	44	15	27-129/43
92-52-4	1,1'-Biphenyl	ND		1890	1390	74	1920	1300	68	7	33-116/32
218-01-9	Chrysene	1270		1890	2020	40	1920	1550	15* [b]	26	21-142/43
53-70-3	Dibenzo(a,h)anthracene	212		1890	1460	66	1920	1300	57	12	25-135/41
84-74-2	Di-n-butyl phthalate	406		1890	1420	54	1920	1270	45	11	32-131/34
84-66-2	Diethyl phthalate	ND		1890	1380	73	1920	1260	66	9	35-124/32
117-81-7	bis(2-Ethylhexyl)phthalate	300		1890	2180	100	1920	2080	93	5	25-146/35
206-44-0	Fluoranthene	2770		1890	3500	39	1920	2550	-11* [b]	31	15-143/46
86-73-7	Fluorene	114		1890	1470	72	1920	1330	63	10	30-129/37
193-39-5	Indeno(1,2,3-cd)pyrene	950		1890	2150	64	1920	1730	41	22	23-141/44
91-57-6	2-Methylnaphthalene	26.6	J	1890	1360	71	1920	1280	65	6	21-125/33
91-20-3	Naphthalene	292		1890	1380	58	1920	1310	53	5	24-118/35
85-01-8	Phenanthrene	1450		1890	2630	62	1920	1950	26	30	14-144/44
129-00-0	Pyrene	2650		1890	2950	16	1920	2260	-20* [b]	26	16-147/46
110-86-1	Pyridine	ND		1890	961	51	1920	895	47	7	10-110/43
91-22-5	Quinoline	ND		1890	1270	67	1920	1150	60	10	26-116/32

CAS No.	Surrogate Recoveries	MS	MSD	JC8066-21	Limits
367-12-4	2-Fluorophenol	67%	60%	56%	30-106%
4165-62-2	Phenol-d5	67%	60%	72%	30-106%
118-79-6	2,4,6-Tribromophenol	66%	55%	4%* [b]	24-140%
4165-60-0	Nitrobenzene-d5	79%	73%	85%	26-122%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP89030-MS	5P23346.D	1	11/18/15	SD	11/17/15	OP89030	E5P1188
OP89030-MSD	5P23347.D	1	11/18/15	SD	11/17/15	OP89030	E5P1188
JC8066-21 [a]	5P23330.D	1	11/17/15	SD	11/17/15	OP89030	E5P1188

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

JC7895-1

CAS No.	Surrogate Recoveries	MS	MSD	JC8066-21	Limits
321-60-8	2-Fluorobiphenyl	78%	71%	92%	36-112%
1718-51-0	Terphenyl-d14	74%	66%	83%	36-132%

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to matrix interference.

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1165-DFTPP
Lab File ID: 5P22775.D
Instrument ID: GCMS5P
Injection Date: 11/04/15
Injection Time: 09:56

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	32250	34.9		Pass
68	Less than 2.0% of mass 69	2	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	41805	45.2		Pass
70	Less than 2.0% of mass 69	49	0.05	(0.12) [a]	Pass
127	40.0 - 60.0% of mass 198	50813	54.9		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	92512	100.0		Pass
199	5.0 - 9.0% of mass 198	6411	6.93		Pass
275	10.0 - 30.0% of mass 198	22352	24.2		Pass
365	1.0 - 100.0% of mass 198	2324	2.51		Pass
441	Present, but less than mass 443	11877	12.8	(76.6) [b]	Pass
442	40.0 - 100.0% of mass 198	81306	87.9		Pass
443	17.0 - 23.0% of mass 442	15500	16.8	(19.1) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1165-IC1165	5P22776.D	11/04/15	10:10	00:14	Initial cal 2
E5P1165-IC1165	5P22778.D	11/04/15	11:04	01:08	Initial cal 1
E5P1165-IC1165	5P22779.D	11/04/15	11:30	01:34	Initial cal 5
E5P1165-IC1165	5P22780.D	11/04/15	11:57	02:01	Initial cal 10
E5P1165-IC1165	5P22781.D	11/04/15	12:24	02:28	Initial cal 80
E5P1165-IC1165	5P22782.D	11/04/15	12:51	02:55	Initial cal 25
E5P1165-ICC1165	5P22783.D	11/04/15	13:19	03:23	Initial cal 50
E5P1165-IC1165	5P22784.D	11/04/15	13:45	03:49	Initial cal 100

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1166-DFTPP
Lab File ID: 5P22786.D
Instrument ID: GCMS5P
Injection Date: 11/04/15
Injection Time: 14:39

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	39616	35.4		Pass
68	Less than 2.0% of mass 69	449	0.40	(0.96) [a]	Pass
69	Mass 69 relative abundance	46568	41.6		Pass
70	Less than 2.0% of mass 69	275	0.25	(0.59) [a]	Pass
127	40.0 - 60.0% of mass 198	59346	53.0		Pass
197	Less than 1.0% of mass 198	403	0.36		Pass
198	Base peak, 100% relative abundance	111941	100.0		Pass
199	5.0 - 9.0% of mass 198	7526	6.72		Pass
275	10.0 - 30.0% of mass 198	26808	23.9		Pass
365	1.0 - 100.0% of mass 198	3219	2.88		Pass
441	Present, but less than mass 443	15283	13.7	(75.4) [b]	Pass
442	40.0 - 100.0% of mass 198	106328	95.0		Pass
443	17.0 - 23.0% of mass 442	20271	18.1	(19.1) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1166-IC1166	5P22787.D	11/04/15	14:54	00:15	Initial cal 1
E5P1166-IC1166	5P22788.D	11/04/15	15:21	00:42	Initial cal 2
E5P1166-IC1166	5P22789.D	11/04/15	15:48	01:09	Initial cal 5
E5P1166-IC1166	5P22790.D	11/04/15	16:15	01:36	Initial cal 10
E5P1166-IC1166	5P22791.D	11/04/15	16:42	02:03	Initial cal 25
E5P1166-ICC1166	5P22792.D	11/04/15	17:09	02:30	Initial cal 50
E5P1166-IC1166	5P22793.D	11/04/15	17:36	02:57	Initial cal 80
E5P1166-IC1166	5P22794.D	11/04/15	18:03	03:24	Initial cal 100
E5P1166-ICV1165	5P22795.D	11/04/15	18:30	03:51	Initial cal verification 50
E5P1166-ICV1165	5P22796.D	11/04/15	18:57	04:18	Initial cal verification 50
E5P1166-ICV1166	5P22797A.D	11/04/15	19:24	04:45	Initial cal verification 50
E5P1166-ICV1165	5P22797.D	11/04/15	19:24	04:45	Initial cal verification 50
E5P1166-ICV1165	5P22798.D	11/04/15	19:51	05:12	Initial cal verification 50
E5P1166-ICV1166	5P22798A.D	11/04/15	19:51	05:12	Initial cal verification 50
E5P1166-ICV1166	5P22800.D	11/04/15	20:46	06:07	Initial cal verification 50
E5P1166-ICV1165	5P22802.D	11/04/15	21:40	07:01	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1185-DFTPP
Lab File ID: 5P23279.D
Instrument ID: GCMS5P
Injection Date: 11/16/15
Injection Time: 13:41

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	55946	31.4		Pass
68	Less than 2.0% of mass 69	660	0.37	(0.97) [a]	Pass
69	Mass 69 relative abundance	67821	38.1		Pass
70	Less than 2.0% of mass 69	213	0.12	(0.31) [a]	Pass
127	40.0 - 60.0% of mass 198	88725	49.8		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	178112	100.0		Pass
199	5.0 - 9.0% of mass 198	11614	6.52		Pass
275	10.0 - 30.0% of mass 198	40400	22.7		Pass
365	1.0 - 100.0% of mass 198	5013	2.81		Pass
441	Present, but less than mass 443	22829	12.8	(79.3) [b]	Pass
442	40.0 - 100.0% of mass 198	151029	84.8		Pass
443	17.0 - 23.0% of mass 442	28786	16.2	(19.1) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1185-CC1165	5P23280.D	11/16/15	13:54	00:13	Continuing cal 50
E5P1185-CC1166	5P23281.D	11/16/15	14:28	00:47	Continuing cal 50
OP88822-BS1	5P23283.D	11/16/15	15:21	01:40	Blank Spike
OP88822-MB1	5P23284.D	11/16/15	15:48	02:07	Method Blank
JC8061-1	5P23285.D	11/16/15	16:15	02:34	(used for QC only; not part of job JC7895)
ZZZZZZ	5P23286.D	11/16/15	16:42	03:01	(unrelated sample)
ZZZZZZ	5P23287.D	11/16/15	17:10	03:29	(unrelated sample)
ZZZZZZ	5P23288.D	11/16/15	17:37	03:56	(unrelated sample)
ZZZZZZ	5P23289.D	11/16/15	18:03	04:22	(unrelated sample)
ZZZZZZ	5P23290.D	11/16/15	18:30	04:49	(unrelated sample)
OP88822-MS	5P23291.D	11/16/15	18:56	05:15	Matrix Spike
OP88822-MSD	5P23292.D	11/16/15	19:23	05:42	Matrix Spike Duplicate
ZZZZZZ	5P23293.D	11/16/15	19:50	06:09	(unrelated sample)
ZZZZZZ	5P23294.D	11/16/15	20:17	06:36	(unrelated sample)
ZZZZZZ	5P23295.D	11/16/15	20:43	07:02	(unrelated sample)
JC7769-1	5P23296.D	11/16/15	21:10	07:29	(used for QC only; not part of job JC7895)
ZZZZZZ	5P23297.D	11/16/15	21:36	07:55	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1188-DFTPP
Lab File ID: 5P23322.D
Instrument ID: GCMS5P
Injection Date: 11/17/15
Injection Time: 18:18

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	60445	33.4		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	69728	38.5		Pass
70	Less than 2.0% of mass 69	405	0.22	(0.58) [a]	Pass
127	40.0 - 60.0% of mass 198	92637	51.1		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	181128	100.0		Pass
199	5.0 - 9.0% of mass 198	11998	6.62		Pass
275	10.0 - 30.0% of mass 198	41474	22.9		Pass
365	1.0 - 100.0% of mass 198	5115	2.82		Pass
441	Present, but less than mass 443	23858	13.2	(76.5) [b]	Pass
442	40.0 - 100.0% of mass 198	157237	86.8		Pass
443	17.0 - 23.0% of mass 442	31178	17.2	(19.8) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P1188-CC1165	5P23323.D	11/17/15	18:32	00:14	Continuing cal 50
E5P1188-CC1166	5P23324.D	11/17/15	18:59	00:41	Continuing cal 50
OP89030-MB1	5P23325.D	11/17/15	19:30	01:12	Method Blank
OP89030-BS1	5P23326.D	11/17/15	19:56	01:38	Blank Spike
ZZZZZZ	5P23327.D	11/17/15	20:22	02:04	(unrelated sample)
ZZZZZZ	5P23328.D	11/17/15	20:49	02:31	(unrelated sample)
ZZZZZZ	5P23329.D	11/17/15	21:16	02:58	(unrelated sample)
JC8066-21	5P23330.D	11/17/15	21:42	03:24	(used for QC only; not part of job JC7895)
JC7895-1	5P23331.D	11/17/15	22:08	03:50	MH10-1C-1-20151105
ZZZZZZ	5P23332.D	11/17/15	22:35	04:17	(unrelated sample)
ZZZZZZ	5P23333.D	11/17/15	23:01	04:43	(unrelated sample)
ZZZZZZ	5P23334.D	11/17/15	23:27	05:09	(unrelated sample)
ZZZZZZ	5P23335.D	11/17/15	23:53	05:35	(unrelated sample)
ZZZZZZ	5P23336.D	11/18/15	00:20	06:02	(unrelated sample)
ZZZZZZ	5P23337.D	11/18/15	00:46	06:28	(unrelated sample)
ZZZZZZ	5P23338.D	11/18/15	01:12	06:54	(unrelated sample)
ZZZZZZ	5P23339.D	11/18/15	01:39	07:21	(unrelated sample)
ZZZZZZ	5P23340.D	11/18/15	02:05	07:47	(unrelated sample)
ZZZZZZ	5P23341.D	11/18/15	02:31	08:13	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1188-DFTPP
Lab File ID: 5P23322.D
Instrument ID: GCMS5P
Injection Date: 11/17/15
Injection Time: 18:18

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	5P23342.D	11/18/15	02:57	08:39	(unrelated sample)
ZZZZZZ	5P23343.D	11/18/15	03:23	09:05	(unrelated sample)
ZZZZZZ	5P23344.D	11/18/15	03:50	09:32	(unrelated sample)
ZZZZZZ	5P23345.D	11/18/15	04:16	09:58	(unrelated sample)
OP89030-MS	5P23346.D	11/18/15	04:42	10:24	Matrix Spike
OP89030-MSD	5P23347.D	11/18/15	05:08	10:50	Matrix Spike Duplicate

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1189-DFTPP
Lab File ID: 5P23349.D
Instrument ID: GCMS5P
Injection Date: 11/18/15
Injection Time: 09:37

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	52420	31.1		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	62720	37.2		Pass
70	Less than 2.0% of mass 69	325	0.19	(0.52) [a]	Pass
127	40.0 - 60.0% of mass 198	83436	49.5		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	168661	100.0		Pass
199	5.0 - 9.0% of mass 198	11010	6.53		Pass
275	10.0 - 30.0% of mass 198	37896	22.5		Pass
365	1.0 - 100.0% of mass 198	4483	2.66		Pass
441	Present, but less than mass 443	18672	11.1	(80.7) [b]	Pass
442	40.0 - 100.0% of mass 198	124432	73.8		Pass
443	17.0 - 23.0% of mass 442	23131	13.7	(18.6) [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
E5P1189-CC1165	5P23350.D	11/18/15	09:52	00:15	Continuing cal 25
E5P1189-CC1166	5P23351.D	11/18/15	10:18	00:41	Continuing cal 50
OP88974-MB1	5P23354.D	11/18/15	11:38	02:01	Method Blank
OP88974-BS1	5P23355.D	11/18/15	12:05	02:28	Blank Spike
ZZZZZZ	5P23356.D	11/18/15	12:32	02:55	(unrelated sample)
ZZZZZZ	5P23357.D	11/18/15	12:59	03:22	(unrelated sample)
ZZZZZZ	5P23358.D	11/18/15	13:26	03:49	(unrelated sample)
ZZZZZZ	5P23359.D	11/18/15	13:53	04:16	(unrelated sample)
ZZZZZZ	5P23360.D	11/18/15	14:19	04:42	(unrelated sample)
ZZZZZZ	5P23361.D	11/18/15	14:46	05:09	(unrelated sample)
ZZZZZZ	5P23362.D	11/18/15	15:13	05:36	(unrelated sample)
ZZZZZZ	5P23363.D	11/18/15	15:40	06:03	(unrelated sample)
ZZZZZZ	5P23364.D	11/18/15	16:07	06:30	(unrelated sample)
ZZZZZZ	5P23365.D	11/18/15	16:34	06:57	(unrelated sample)
JC7895-1	5P23366.D	11/18/15	17:00	07:23	MH10-1C-1-20151105
OP89033-MB1	5P23368.D	11/18/15	18:21	08:44	Method Blank
ZZZZZZ	5P23369.D	11/18/15	18:48	09:11	(unrelated sample)
ZZZZZZ	5P23370.D	11/18/15	19:15	09:38	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5255-DFTPP
Lab File ID: Z105278.D
Instrument ID: GCMSZ
Injection Date: 10/16/15
Injection Time: 11:36

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	30390	58.4		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	21889	42.1		Pass
70	Less than 2.0% of mass 69	185	0.36	(0.85) [a]	Pass
127	40.0 - 60.0% of mass 198	22757	43.7		Pass
197	Less than 1.0% of mass 198	328	0.63		Pass
198	Base peak, 100% relative abundance	52053	100.0		Pass
199	5.0 - 9.0% of mass 198	3240	6.22		Pass
275	10.0 - 30.0% of mass 198	11251	21.6		Pass
365	1.0 - 100.0% of mass 198	1685	3.24		Pass
441	Present, but less than mass 443	4333	8.32	(85.0) [b]	Pass
442	40.0 - 100.0% of mass 198	27194	52.2		Pass
443	17.0 - 23.0% of mass 442	5096	9.79	(18.7) [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
EZ5255-IC5255	Z105281.D	10/16/15	13:37	02:01	Initial cal 100
EZ5255-IC5255	Z105282.D	10/16/15	14:07	02:31	Initial cal 80
EZ5255-ICC5255	Z105283.D	10/16/15	14:38	03:02	Initial cal 50
EZ5255-IC5255	Z105284.D	10/16/15	15:09	03:33	Initial cal 25
EZ5255-IC5255	Z105285.D	10/16/15	15:39	04:03	Initial cal 10
EZ5255-IC5255	Z105286.D	10/16/15	16:10	04:34	Initial cal 5
EZ5255-IC5255	Z105287.D	10/16/15	16:41	05:05	Initial cal 2
EZ5255-IC5255	Z105288.D	10/16/15	17:12	05:36	Initial cal 1
EZ5255-ICV5255	Z105289.D	10/16/15	17:42	06:06	Initial cal verification 50
EZ5255-ICV5255	Z105290.D	10/16/15	18:13	06:37	Initial cal verification 50
EZ5255-ICV5255	Z105291.D	10/16/15	18:44	07:08	Initial cal verification 50
EZ5255-ICV5255	Z105292.D	10/16/15	19:14	07:38	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5278-DFTPP
Lab File ID: Z105710.D
Instrument ID: GCMSZ
Injection Date: 11/03/15
Injection Time: 00:17

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	44173	32.0		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	66783	48.3		Pass
70	Less than 2.0% of mass 69	61	0.04	(0.09) [a]	Pass
127	40.0 - 60.0% of mass 198	65782	47.6		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	138181	100.0		Pass
199	5.0 - 9.0% of mass 198	8766	6.34		Pass
275	10.0 - 30.0% of mass 198	39424	28.5		Pass
365	1.0 - 100.0% of mass 198	5635	4.08		Pass
441	Present, but less than mass 443	17172	12.4	(84.7) [b]	Pass
442	40.0 - 100.0% of mass 198	106109	76.8		Pass
443	17.0 - 23.0% of mass 442	20268	14.7	(19.1) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ5278-IC5278	Z105711.D	11/03/15	00:37	00:20	Initial cal 1
EZ5278-IC5278	Z105712.D	11/03/15	01:09	00:52	Initial cal 100
EZ5278-IC5278	Z105713.D	11/03/15	01:40	01:23	Initial cal 80
EZ5278-ICC5278	Z105714.D	11/03/15	02:11	01:54	Initial cal 50
EZ5278-IC5278	Z105715.D	11/03/15	02:42	02:25	Initial cal 25
EZ5278-IC5278	Z105716.D	11/03/15	03:13	02:56	Initial cal 10
EZ5278-IC5278	Z105717.D	11/03/15	03:45	03:28	Initial cal 5
EZ5278-IC5278	Z105718.D	11/03/15	04:16	03:59	Initial cal 2
EZ5278-ICV5278	Z105719.D	11/03/15	04:47	04:30	Initial cal verification 50
EZ5278-ICV5278	Z105720.D	11/03/15	07:54	07:37	Initial cal verification 50
EZ5278-ICV5278	Z105721.D	11/03/15	08:25	08:08	Initial cal verification 50
EZ5278-ICV5278	Z105722.D	11/03/15	08:56	08:39	Initial cal verification 50
EZ5278-ICV5278	Z105723.D	11/03/15	09:27	09:10	Initial cal verification 50
EZ5278-ICV5278	Z105724.D	11/03/15	10:00	09:43	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5295-DFTPP
Lab File ID: Z106062.D
Instrument ID: GCMSZ
Injection Date: 11/13/15
Injection Time: 11:42

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	41493	45.7		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	44607	49.2		Pass
70	Less than 2.0% of mass 69	382	0.42	(0.86) [a]	Pass
127	40.0 - 60.0% of mass 198	46176	50.9		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	90754	100.0		Pass
199	5.0 - 9.0% of mass 198	6700	7.38		Pass
275	10.0 - 30.0% of mass 198	26303	29.0		Pass
365	1.0 - 100.0% of mass 198	4030	4.44		Pass
441	Present, but less than mass 443	12053	13.3	(80.9) [b]	Pass
442	40.0 - 100.0% of mass 198	77266	85.1		Pass
443	17.0 - 23.0% of mass 442	14893	16.4	(19.3) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ5295-CC5278	Z106063.D	11/13/15	11:58	00:16	Continuing cal 50
EZ5295-CC5255	Z106064.D	11/13/15	12:45	01:03	Continuing cal 50
OP88855-MB1	Z106067.D	11/13/15	14:22	02:40	Method Blank
ZZZZZZ	Z106068.D	11/13/15	14:53	03:11	(unrelated sample)
ZZZZZZ	Z106069.D	11/13/15	15:25	03:43	(unrelated sample)
ZZZZZZ	Z106070.D	11/13/15	15:56	04:14	(unrelated sample)
OP88822-MB1	Z106071.D	11/13/15	16:27	04:45	Method Blank
OP88822-BS1	Z106072.D	11/13/15	16:59	05:17	Blank Spike
JC7895-2	Z106074.D	11/13/15	18:03	06:21	MH10-1D-1-20151105
ZZZZZZ	Z106075.D	11/13/15	18:34	06:52	(unrelated sample)
ZZZZZZ	Z106076.D	11/13/15	19:06	07:24	(unrelated sample)
ZZZZZZ	Z106077.D	11/13/15	19:37	07:55	(unrelated sample)
ZZZZZZ	Z106079.D	11/13/15	20:40	08:58	(unrelated sample)
ZZZZZZ	Z106080.D	11/13/15	21:12	09:30	(unrelated sample)
ZZZZZZ	Z106081.D	11/13/15	21:43	10:01	(unrelated sample)
ZZZZZZ	Z106082.D	11/13/15	22:14	10:32	(unrelated sample)
ZZZZZZ	Z106084.D	11/13/15	23:17	11:35	(unrelated sample)

Semivolatile Internal Standard Area Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E5P1185-CC1165	**Injection Date:**	11/16/15
Lab File ID:	5P23280.D	**Injection Time:**	13:54
Instrument ID:	GCMS5P	**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	208164	5.14	788829	6.61	463353	8.72	743982	10.55	687522	14.33	665273	16.40
Upper Limit [a]	416328	5.64	1577658	7.11	926706	9.22	1487964	11.05	1375044	14.83	1330546	16.90
Lower Limit [b]	104082	4.64	394415	6.11	231677	8.22	371991	10.05	343761	13.83	332637	15.90

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
OP88822-BS1	246003	5.14	924072	6.61	530378	8.72	845883	10.55	703581	14.33	676688	16.40
OP88822-MB1	283547	5.14	1054170	6.61	591197	8.72	914937	10.54	725516	14.32	659829	16.40
JC8061-1	266929	5.14	1009498	6.61	569303	8.72	887508	10.54	732895	14.32	716694	16.40
ZZZZZZ	260794	5.14	959710	6.61	528172	8.72	792642	10.54	628351	14.32	572741	16.40
ZZZZZZ	252616	5.14	951937	6.61	544187	8.72	879755	10.54	744004	14.32	720554	16.40
ZZZZZZ	257509	5.14	955923	6.61	532519	8.72	819844	10.54	647193	14.32	591040	16.40
ZZZZZZ	236068	5.14	883235	6.61	496100	8.72	773047	10.54	628598	14.32	584748	16.39
ZZZZZZ	223325	5.14	845423	6.61	472575	8.72	755021	10.54	619477	14.32	581232	16.40
OP88822-MS	236738	5.14	883173	6.61	494312	8.72	779285	10.55	657764	14.33	665619	16.40
OP88822-MSD	227277	5.14	843874	6.61	487868	8.72	774693	10.55	683334	14.33	700138	16.40
ZZZZZZ	220525	5.14	829779	6.61	465274	8.72	732037	10.54	621458	14.32	602078	16.40
ZZZZZZ	230517	5.14	859033	6.61	494006	8.72	780470	10.54	663641	14.32	639833	16.40
ZZZZZZ	206485	5.14	786042	6.61	457841	8.72	737674	10.54	637387	14.33	640288	16.40
JC7769-1	210028	5.14	786322	6.61	446726	8.72	720249	10.55	641160	14.33	649206	16.41
ZZZZZZ	241248	5.14	884652	6.61	497545	8.72	784799	10.55	684918	14.34	707862	16.41

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: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E5P1188-CC1165	**Injection Date:**	11/17/15
Lab File ID:	5P23323.D	**Injection Time:**	18:32
Instrument ID:	GCMS5P	**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	184771	5.12	695097	6.58	409262	8.69	663448	10.51	610494	14.28	584610	16.35
Upper Limit [a]	369542	5.62	1390194	7.08	818524	9.19	1326896	11.01	1220988	14.78	1169220	16.85
Lower Limit [b]	92386	4.62	347549	6.08	204631	8.19	331724	10.01	305247	13.78	292305	15.85

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
OP89030-MB1	206692	5.11	766679	6.58	426230	8.69	654985	10.50	520264	14.27	494845	16.34
OP89030-BS1	199220	5.12	716813	6.58	398271	8.69	619971	10.50	514451	14.28	484914	16.34
ZZZZZZ	195832	5.11	711812	6.58	397994	8.69	615634	10.51	572144	14.30	588873	16.37
ZZZZZZ	199106	5.12	722159	6.58	394502	8.69	614885	10.51	531475	14.27	549042	16.35
ZZZZZZ	196948	5.12	704747	6.58	387923	8.69	609706	10.50	532742	14.28	549987	16.35
JC8066-21	192742	5.12	696442	6.58	376656	8.69	596796	10.51	548730	14.29	571522	16.36
JC7895-1	173485	5.12	629991	6.59	385269	8.71	623116	10.53	601254	14.31	583623	16.40
ZZZZZZ	183327	5.13	680868	6.59	388025	8.70	624215	10.52	589350	14.31	593583	16.39
ZZZZZZ	183675	5.13	675110	6.59	380768	8.70	610674	10.53	580736	14.32	585227	16.40
ZZZZZZ	190131	5.13	706925	6.59	393576	8.70	644544	10.53	597458	14.33	606165	16.41
ZZZZZZ	189586	5.13	707857	6.60	403245	8.71	641000	10.53	603004	14.33	610432	16.41
ZZZZZZ	181938	5.13	673158	6.60	386665	8.71	615205	10.54	571804	14.33	572083	16.41
ZZZZZZ	185915	5.13	687159	6.60	392080	8.71	631227	10.53	591195	14.33	598705	16.41
ZZZZZZ	181137	5.13	671976	6.60	381650	8.71	610818	10.54	566863	14.33	580689	16.41
ZZZZZZ	172965	5.13	621526	6.60	355617	8.71	570884	10.53	520297	14.33	533623	16.41
ZZZZZZ	176100	5.13	653147	6.60	374961	8.71	601786	10.55	562171	14.33	570901	16.41
ZZZZZZ	180522	5.13	650209	6.60	357675	8.71	560043	10.54	520042	14.33	533596	16.41
ZZZZZZ	186563	5.13	678695	6.60	378442	8.71	597243	10.54	565114	14.33	583367	16.41
ZZZZZZ	176404	5.13	638155	6.60	362828	8.71	581092	10.55	539412	14.33	538174	16.41
ZZZZZZ	174784	5.13	627420	6.60	352999	8.71	559156	10.55	524307	14.33	528189	16.41
ZZZZZZ	164164	5.13	601405	6.60	339980	8.71	537096	10.54	505535	14.33	510287	16.41
OP89030-MS	173411	5.13	623999	6.60	350710	8.71	559617	10.54	537370	14.34	535424	16.42
OP89030-MSD	170679	5.13	612585	6.60	341711	8.71	552167	10.54	524829	14.34	522408	16.42

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: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Check Std:	E5P1189-CC1165	**Injection Date:**	11/18/15
Lab File ID:	5P23350.D	**Injection Time:**	09:52
Instrument ID:	GCMS5P	**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	179120	5.12	674532	6.59	405690	8.70	655708	10.52	640411	14.31	635394	16.38
Upper Limit [a]	358240	5.62	1349064	7.09	811380	9.20	1311416	11.02	1280822	14.81	1270788	16.88
Lower Limit [b]	89560	4.62	337266	6.09	202845	8.20	327854	10.02	320206	13.81	317697	15.88

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
OP88974-MB1	227557	5.12	851108	6.59	500765	8.70	813226	10.52	726384	14.31	697625	16.38
OP88974-BS1	184898	5.12	705358	6.59	426835	8.70	713285	10.52	667272	14.31	631555	16.38
ZZZZZZ	193959	5.12	720132	6.59	412627	8.70	647870	10.52	573745	14.31	561125	16.38
ZZZZZZ	156700	5.12	590603	6.59	342292	8.70	560779	10.52	511905	14.30	489616	16.37
ZZZZZZ	171396	5.12	609075	6.59	362079	8.70	582752	10.52	526769	14.30	506766	16.37
ZZZZZZ	199744	5.12	727848	6.59	422368	8.70	661021	10.52	583344	14.30	560618	16.37
ZZZZZZ	172591	5.12	645301	6.59	369880	8.70	592383	10.52	521856	14.30	380280	16.37
ZZZZZZ	147074	5.12	550557	6.59	318293	8.70	514735	10.52	464217	14.30	445642	16.37
ZZZZZZ	149929	5.12	551477	6.59	318435	8.70	513942	10.52	450047	14.30	439920	16.37
ZZZZZZ	169901	5.12	644429	6.59	374176	8.70	607789	10.52	546779	14.30	531770	16.37
ZZZZZZ	179767	5.12	678170	6.59	391312	8.70	608864	10.52	542423	14.30	514915	16.37
ZZZZZZ	164601	5.12	621826	6.59	359076	8.70	585826	10.52	505547	14.30	482211	16.37
JC7895-1	162681	5.12	607032	6.59	364505	8.70	595828	10.52	559928	14.30	559904	16.38
OP89033-MB1	169141	5.12	624635	6.59	354762	8.70	560319	10.52	476677	14.31	469789	16.38
ZZZZZZ	125265	5.12	471924	6.59	279930	8.70	458363	10.52	428186	14.31	416200	16.38
ZZZZZZ	130280	5.12	477679	6.60	180671*	8.71	493577	10.55	451440	14.31	440956	16.38

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: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Check Std:	EZ5295-CC5278	**Injection Date:**	11/13/15
Lab File ID:	Z106063.D	**Injection Time:**	11:58
Instrument ID:	GCMSZ	**Method:**	SW846 8270D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	94957	4.67	357811	5.59	239856	6.99	423256	8.84	526853	14.07	499304	17.10
Upper Limit [a]	189914	5.17	715622	6.09	479712	7.49	846512	9.34	1053706	14.57	998608	17.60
Lower Limit [b]	47479	4.17	178906	5.09	119928	6.49	211628	8.34	263427	13.57	249652	16.60

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP88855-MB1	119695	4.67	454057	5.59	292897	6.99	513560	8.83	625125	14.05	642140	17.10
ZZZZZZ	125313	4.67	458694	5.59	303045	7.00	523270	8.89	387976	14.12	335518	17.14
ZZZZZZ	128843	4.67	513055	5.59	319318	6.99	545443	8.83	630453	14.06	538779	17.10
ZZZZZZ	102728	4.67	407960	5.59	263131	6.99	459153	8.83	538444	14.06	511435	17.10
OP88822-MB1	124590	4.67	465015	5.59	290866	6.99	512732	8.83	567261	14.05	551497	17.10
OP88822-BS1	120231	4.67	459374	5.59	284094	6.99	500638	8.83	575132	14.06	541610	17.10
JC7895-2 [c]	158704	4.68	598181	5.60	345921	7.01	515884	8.89	529477	14.17	557589	17.24
ZZZZZZ	118253	4.68	419793	5.60	235246	7.01	352969	8.89	454740	14.25	540988	17.38
ZZZZZZ	122160	4.69	453148	5.61	231663	7.02	359426	8.90	411844	14.21	531802	17.36
ZZZZZZ	121758	4.69	426011	5.62	250389	7.04	373682	8.94	452388	14.29	564759	17.41
ZZZZZZ	71171	4.70	261953	5.62	160357	7.04	247936	8.95	328112	14.33	336089	17.46
ZZZZZZ	70150	4.70	269206	5.62	166845	7.03	246283	8.94	348828	14.36	396655	17.53
ZZZZZZ	69689	4.70	253989	5.62	147772	7.04	222296	8.94	274105	14.34	342675	17.52
ZZZZZZ	68861	4.70	273342	5.62	170492	7.04	262188	8.95	206411*	14.28	220694*	17.39
ZZZZZZ	83502	4.70	323063	5.62	195475	7.04	293582	8.94	262767*	14.25	176728*	17.33

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Elevated detection limit due to high final volume of viscous extract.

Semivolatile Surrogate Recovery Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Method: SW846 8270D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JC7895-1	5P23331.D	60	63	66	77	70	71
JC7895-1	5P23366.D	59	60	70	75	83	85
JC7895-2	Z106074.D	36	39	57	44	47	42
OP88822-BS1	Z106072.D	67	66	91	74	79	77
OP88822-BS1	5P23283.D	78	76	71	84	84	86
OP88822-MB1	Z106071.D	73	69	96	87	90	87
OP88822-MB1	5P23284.D	82	83	71	94	93	94
OP88822-MS	5P23291.D	68	70	67	74	79	80
OP88822-MSD	5P23292.D	69	68	62	74	72	70
OP89030-BS1	5P23326.D	82	80	82	93	93	96
OP89030-MB1	5P23325.D	80	79	75	91	93	96
OP89030-MS	5P23346.D	67	67	66	79	78	74
OP89030-MSD	5P23347.D	60	60	55	73	71	66

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	30-106%
S2 = Phenol-d5	30-106%
S3 = 2,4,6-Tribromophenol	24-140%
S4 = Nitrobenzene-d5	26-122%
S5 = 2-Fluorobiphenyl	36-112%
S6 = Terphenyl-d14	36-132%

Initial Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1165-ICC1165
Lab FileID: 5P22783.D

Response Factor Report MS5P

Method : C:\msdchem\1\METHODS\M5P1165.M (RTE Integrator)
Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update : Wed Nov 04 14:47:17 2015
Response via : Initial Calibration

Calibration Files
2 =5p22776.D 5 =5p22779.D 25 =5p22782.D 80 =5p22781.D
100 =5p22784.D 50 =5p22783.D 1 =5p22778.D 10 =5p22780.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
1) I 1,4-Dichlorobenzene-d	----------ISTD----------									
2) 1,4-Dioxane	0.564	0.699	0.587	0.573	0.580	0.582	0.621	0.634	0.605	7.43
3) Pyridine	1.506	1.540	1.503	1.483	1.488	1.450	1.646	1.553	1.521	3.94
4) N-Nitrosodim	0.993	0.931	0.933	0.855	0.914	0.881	1.061	0.932	0.937	6.86
5) 2-Fluorophen	1.467	1.444	1.404	1.394	1.437	1.369	1.515	1.468	1.437	3.28
6) Indene	2.853	2.769	2.671	2.501	2.544	2.524	2.747	2.823	2.679	5.23
7) Cumene	3.473	3.398	3.161	3.070	3.110	3.104	3.679	3.461	3.307	6.81
8) Phenol-d5	1.753	1.758	1.761	1.633	1.665	1.646	1.733	1.804	1.719	3.64
9) Phenol	2.028	1.954	1.954	1.819	1.876	1.858	2.004	1.995	1.936	3.92
10) Aniline	2.322	2.328	2.238	1.609	2.089	2.091	2.302	2.266	2.156	11.16
11) bis(2-Chloro	1.439	1.375	1.369	1.271	1.325	1.297	1.377	1.408	1.358	4.16
12) 2-Chlorophen	1.586	1.538	1.504	1.448	1.475	1.434	1.656	1.557	1.525	4.90
13) Decane	1.520	1.404	1.238	1.157	1.153	1.187	1.661	1.365	1.336	13.94
14) 1,3-Dichloro	1.626	1.676	1.614	1.513	1.565	1.535	1.601	1.691	1.603	3.94
15) 1,4-Dichloro	1.690	1.685	1.632	1.531	1.560	1.568	1.820	1.693	1.647	5.75
16) Benzyl alcoh	0.953	0.914	0.955	0.899	0.914	0.893	0.905	0.962	0.925	3.01
17) 1,2-Dichloro	1.592	1.570	1.537	1.421	1.455	1.456	1.754	1.615	1.550	7.01
18) Acetophenone	1.978	2.025	1.941	1.822	1.857	1.842	1.941	1.995	1.925	3.95
19) 2-Methylphen	1.326	1.311	1.353	1.177	1.257	1.264	1.357	1.340	1.298	4.76
20) 2,2'-oxybis(	2.013	1.836	1.739	1.522	1.571	1.633	2.007	1.805	1.766	10.52
21) 3&4-Methylph	1.389	1.397	1.485	1.367	1.408	1.378	1.247	1.450	1.390	5.02
22) n-Nitroso-di	0.976	0.987	1.015	0.884	0.948	0.929	1.034	0.983	0.970	4.98
23) Hexachloroet	0.511	0.505	0.487	0.465	0.487	0.467	0.512	0.508	0.493	3.90
24) I Naphthalene-d8	----------ISTD----------									
25) Nitrobenzene	0.355	0.345	0.340	0.328	0.323	0.332	0.388	0.350	0.345	5.87
26) Nitrobenzene	0.376	0.357	0.350	0.338	0.333	0.342	0.356	0.367	0.352	4.09
27) Quinoline	0.802	0.770	0.784	0.765	0.738	0.755	0.773	0.798	0.773	2.78
28) Isophorone	0.652	0.651	0.631	0.597	0.598	0.623	0.635	0.650	0.630	3.57
29) 2-Nitropheno	0.195	0.205	0.201	0.200	0.198	0.197	0.187	0.203	0.198	2.74
30) 2,4-Dimethyl	0.292	0.272	0.344	0.322	0.327	0.334	0.305	0.287	0.310	8.12
31) Benzoic acid		0.187	0.261	0.285	0.282	0.266		0.220	0.250	15.48
32) bis(2-Chloro	0.424	0.423	0.424	0.393	0.399	0.409	0.434	0.420	0.416	3.37
33) 2,4-Dichloro	0.269	0.291	0.297	0.292	0.287	0.291	0.296	0.312	0.292	4.11
34) 2,6-Dichloro	0.290	0.308	0.292	0.278	0.279	0.284	0.280	0.295	0.288	3.55
35) 1,3,5-Trichl	0.332	0.344	0.317	0.319	0.307	0.313	0.380	0.342	0.332	7.14
36) 1,2,4-Trichl	0.312	0.328	0.318	0.297	0.301	0.308	0.346	0.329	0.317	5.12
37) 1,2,3-Trichl	0.300	0.313	0.300	0.298	0.290	0.302	0.332	0.321	0.307	4.53
38) Naphthalene	1.159	1.172	1.274	1.070	1.175	1.231	1.261	1.194	1.192	5.44
39) 4-Chloroanil	0.466	0.503	0.484	0.422	0.454	0.469	0.448	0.502	0.469	5.92
40) 2,3-Dichloro	0.380	0.388	0.369	0.359	0.353	0.355	0.380	0.384	0.371	3.75
41) Caprolactam	0.167	0.154	0.150	0.150	0.144	0.146	0.188	0.156	0.157	9.21
42) Hexachlorobu	0.151	0.154	0.147	0.144	0.145	0.149	0.160	0.153	0.150	3.56
43) 4-Chloro-3-m	0.289	0.312	0.315	0.298	0.294	0.304	0.303	0.314	0.304	3.13
44) 2-Methylnaph	0.629	0.618	0.603	0.570	0.557	0.580	0.633	0.637	0.603	5.12
45) 1-Methylnaph	0.636	0.635	0.616	0.584	0.572	0.600	0.612	0.657	0.614	4.59

Initial Calibration Summary

Job Number: JC7895 **Sample:** E5P1165-ICC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P22783.D
Project: Sunoco - Marcus Hook Facility, PA

```
46) Dimethylnaph 0.631 0.649 0.631 0.598 0.591 0.598 0.610 0.654 0.620   3.91

47) I   Acenaphthene-d10      ----------------ISTD---------------------
48) Hexachlorocy 0.247 0.269 0.306 0.311 0.311 0.300 0.215 0.298 0.282  12.50
49) 2,4,6-Trichl 0.332 0.344 0.335 0.338 0.328 0.330 0.389 0.346 0.343   5.72
50) 2,4,5-Trichl 0.350 0.360 0.367 0.364 0.361 0.358 0.409 0.370 0.367   4.92
51) 2-Fluorobiph 1.308 1.311 1.226 1.196 1.185 1.203 1.365 1.331 1.266   5.57
52) 2-Chloronaph 1.165 1.182 1.097 1.053 1.055 1.056 1.230 1.178 1.127   6.20
53) Biphenyl     1.560 1.575 1.437 1.394 1.343 1.396 1.622 1.573 1.487   7.15
54) 2-Nitroanili 0.310 0.312 0.299 0.302 0.290 0.289 0.369 0.318 0.311   8.17
55) Dimethylphth 1.255 1.238 1.239 1.184 1.216 1.210 1.354 1.284 1.248   4.21
56) Acenaphthyle 1.913 1.932 2.105 1.789 1.983 2.042 2.006 1.998 1.971   4.81
57) 2,6-Dinitrot 0.274 0.287 0.281 0.282 0.285 0.277 0.331 0.293 0.289   6.34
58) 3-Nitroanili 0.314 0.355 0.340 0.348 0.343 0.337 0.404 0.358 0.350   7.36
59) Acenaphthene 1.212 1.205 1.262 1.075 1.185 1.228 1.299 1.214 1.210   5.38
60) 2,4-Dinitrop 0.038 0.060 0.150 0.187 0.183 0.160       0.107 0.127  46.74
         ----- Quadratic regression -----                Coefficient =  0.9981
              Response Ratio = -0.02276 + 0.16088 *A + 0.00599 *A^2

61) 4-Nitropheno 0.120 0.140 0.151 0.153 0.148 0.147 0.191 0.144 0.149  13.20
62) Dibenzofuran 1.663 1.707 1.552 1.507 1.458 1.517 1.838 1.730 1.622   8.18
63) 2,4-Dinitrot 0.371 0.408 0.378 0.368 0.367 0.379 0.407 0.409 0.386   4.82
64) 2,3,4,6-Tetr 0.240 0.259 0.271 0.287 0.284 0.272 0.314 0.281 0.276   7.80
65) Diethylphtha 1.457 1.235 1.218 1.160 1.170 1.195 1.401 1.265 1.263   8.63
66) Fluorene     1.329 1.355 1.428 1.201 1.329 1.383 1.607 1.362 1.374   8.33
67) 4-Chlorophen 0.611 0.578 0.561 0.521 0.533 0.552 0.609 0.588 0.569   5.85
68) 4-Nitroanili 0.308 0.352 0.347 0.351 0.350 0.337 0.346 0.367 0.345   4.94

69) I   Phenanthrene-d10      ----------------ISTD---------------------
70) 4,6-Dinitro- 0.069 0.090 0.127 0.147 0.144 0.130       0.109 0.117  24.65
         ----- Quadratic regression -----                Coefficient =  0.9986
              Response Ratio = -0.00484 + 0.12964 *A + 0.00743 *A^2

71) n-Nitrosodip 0.603 0.616 0.587 0.556 0.561 0.568 0.749 0.608 0.606  10.22
72) 1,2-Diphenyl 0.800 0.811 0.748 0.715 0.690 0.709 0.946 0.804 0.778  10.62
73) 2,4,6-Tribro 0.106 0.102 0.105 0.108 0.109 0.103 0.147 0.100 0.110  13.70
74) 4-Bromopheny 0.198 0.205 0.211 0.202 0.206 0.204 0.256 0.211 0.211   8.65
75) Hexachlorobe 0.223 0.226 0.223 0.218 0.220 0.214 0.289 0.223 0.230  10.51
76) Pentachlorop 0.050 0.056 0.096 0.126 0.122 0.105       0.071 0.090  34.25
         ----- Quadratic regression -----                Coefficient =  0.9970
              Response Ratio = -0.01304 + 0.10418 *A + 0.00457 *A^2

77) Phenanthrene 1.229 1.211 1.259 1.067 1.186 1.203 1.608 1.206 1.246  12.56
78) Anthracene   1.189 1.233 1.311 1.091 1.198 1.250 1.421 1.215 1.239   7.80
79) Carbazole    1.121 1.176 1.089 1.073 1.051 1.051 1.399 1.187 1.143  10.15
80) Di-n-butylph 1.272 1.335 1.335 1.263 1.295 1.298 1.362 1.345 1.313   2.76
81) Fluoranthene 1.188 1.216 1.330 1.147 1.254 1.268 1.485 1.220 1.263   8.30
82) Octadecane   0.497 0.506 0.458 0.438 0.420 0.441 0.574 0.501 0.480  10.46

83) I   Chrysene-d12          ----------------ISTD---------------------
84) Pyrene       1.289 1.350 1.416 1.241 1.352 1.346 1.685 1.341 1.377   9.75
85) Terphenyl-d1 0.962 0.846 0.779 0.780 0.774 0.759       0.837 0.820   8.66
86) Butylbenzylp 0.565 0.596 0.593 0.588 0.583 0.575 0.627 0.600 0.591   3.14
87) Butyl steara 0.319 0.334 0.324 0.325 0.301 0.308 0.327 0.355 0.324   5.06
88) Benzo[a]anth 1.144 1.150 1.225 1.047 1.170 1.164 1.616 1.164 1.210  14.15
89) 3,3'-Dichlor 0.333 0.408 0.413 0.408 0.400 0.390 0.458 0.422 0.404   8.66
90) Chrysene     1.127 1.155 1.219 1.074 1.203 1.175 1.500 1.138 1.199  10.83
91) bis(2-Ethylh 0.795 0.806 0.814 0.811 0.814 0.805 0.915 0.830 0.824   4.65

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

Initial Calibration Summary

Job Number: JC7895 **Sample:** E5P1165-ICC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P22783.D
Project: Sunoco - Marcus Hook Facility, PA

93)	Di-n-octylph	1.312	1.389	1.401	1.355	1.393	1.385	1.455	1.384	1.384	2.93
94)	Benzo[b]fluo	1.064	1.155	1.243	1.068	1.244	1.240	1.171	1.149	1.167	6.32
95)	Benzo[k]fluo	1.099	1.116	1.257	1.060	1.216	1.161	1.335	1.134	1.172	7.78
96)	Benzo[a]pyre	0.969	1.030	1.179	1.015	1.184	1.140	1.139	1.050	1.088	7.53
97)	Indeno[1,2,3	0.954	1.035	1.185	1.077	1.221	1.163	1.113	1.009	1.094	8.46
98)	Dibenz(a,h)a	0.874	0.932	0.924	0.922	0.929	0.897	0.970	0.943	0.924	3.14
99)	Dibenz[a,h]a	1.000	1.064	1.216	1.054	1.228	1.168	1.202	1.066	1.125	7.86
100)	7,12-Dimethy	0.373	0.408	0.518	0.478	0.499	0.497	0.466	0.451	0.461	10.67
101)	Benzo[g,h,i]	1.135	1.115	1.242	1.084	1.238	1.197	1.257	1.115	1.173	5.82

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

M5P1165.M Wed Nov 04 14:53:46 2015 RPT1

8.7.1

8

Initial Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: E5P1166-ICC1166
Lab FileID: 5P22792.D

```
                          Response Factor Report  MS5P

  Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
  Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
  Last Update  : Wed Nov 04 18:27:28 2015
  Response via : Initial Calibration

  Calibration Files
  2   =5p22788.D  5   =5p22789.D  25  =5p22791.D  80  =5p22793.D
  100 =5p22794.D  50  =5p22792.D  1   =5p22787.D  10  =5p22790.D

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



102)     1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 1.518 1.019 1.132 1.080 1.030 1.089 1.247 1.170 1.161  14.02

104)     Acenaphthene-d10a     ----------------ISTD---------------------
105) 1,2,4,5-Tetr 0.579 0.434 0.476 0.461 0.445 0.475 0.504 0.485 0.482   9.30

106)     Chrysene-d12a         ----------------ISTD---------------------
107) Benzidine    0.529 0.656 0.648 0.411 0.319 0.475 0.803 0.727 0.571  28.94
          ----- Quadratic regression -----                Coefficient =  0.9952
               Response Ratio = 0.00412 + 0.68956 *A + -0.14729 *A^2

108) 1-chloroocta 0.369 0.287 0.334 0.305 0.289 0.313 0.323 0.329 0.319   8.43

109)     Phenanthrene-d10a     ----------------ISTD---------------------
110) o-terphenyl  0.644 0.480 0.508 0.494 0.474 0.502 0.563 0.530 0.524  10.72
111) Atrazine     0.125 0.094 0.104 0.104 0.099 0.103 0.123 0.103 0.107  10.55

112) I   Naphthalene-d8a       ----------------ISTD---------------------
113) Hydroquinone 0.375 0.287 0.357 0.380 0.378 0.351       0.287 0.345  11.91
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M5P1165.M         Thu Nov 05 09:48:13 2015   RPT1
```

8.7.2

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: E5P1166-ICV1165
Lab FileID: 5P22795.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22795.D          Vial: 10
Acq On    :  4 Nov 2015   6:30 pm                    Operator: alicjap
Sample    : icv1165-50                               Inst    : MS5P
Misc      : op88593,e5p1166                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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	5.24
9	t	Phenol	1.936	1.913	1.2	108	0.00	4.89
12	t	2-Chlorophenol	1.525	1.596	-4.7	117	0.00	5.02
19	t	2-Methylphenol	1.298	1.435	-10.6	119	-0.01	5.55
21	t	3&4-Methylphenol	1.390	1.512	-8.8	115	0.00	5.73
24	I	Naphthalene-d8	1.000	1.000	0.0	107	0.00	6.70
29	t	2-Nitrophenol	0.198	0.202	-2.0	110	0.00	6.26
30	t	2,4-Dimethylphenol	0.310	0.372	-20.0	120	0.00	6.34
31	t	Benzoic acid	0.250	0.240	4.0	97	-0.02	6.48
33	t	2,4-Dichlorophenol	0.292	0.312	-6.8	115	0.00	6.56
34	t	2,6-Dichlorophenol	0.288	0.316	-9.7	119	0.00	6.82
43	t	4-Chloro-3-methylphenol	0.304	0.325	-6.9	115	-0.02	7.42
47	I	Acenaphthene-d10	1.000	1.000	0.0	108	0.00	8.82
49	t	2,4,6-Trichlorophenol	0.343	0.338	1.5	111	-0.01	7.92
50	t	2,4,5-Trichlorophenol	0.367	0.377	-2.7	114	-0.01	7.97
		----------	True	Calc.	% Drift		----------	
60	t	2,4-Dinitrophenol	50.000	40.268	19.5	78	-0.01	8.91
		----------	AvgRF	CCRF	% Dev		----------	
61	t	4-Nitrophenol	0.149	0.150	-0.7	110	0.00	9.04
64		2,3,4,6-Tetrachlorophenol	0.276	0.267	3.3	106	0.00	9.24
69	I	Phenanthrene-d10	1.000	1.000	0.0	106	0.00	10.64
		----------	True	Calc.	% Drift		----------	
70	t	4,6-Dinitro-2-methylpheno	50.000	43.856	12.3	95	-0.01	9.56
76	t	Pentachlorophenol	50.000	48.152	3.7	96	0.00	10.42

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 19:21:46 2015 RPT1

8.7.3

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: E5P1166-ICV1165
Lab FileID: 5P22796.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22796.D          Vial: 11
Acq On    :  4 Nov 2015   6:57 pm                    Operator: alicjap
Sample    : icv1165-50                               Inst    : MS5P
Misc      : op88593,e5p1166                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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	128	0.00	5.25
3	t	Pyridine	1.521	1.618	-6.4	143	0.06	2.62
10		Aniline	2.156	2.123	1.5	130	0.00	4.89
16	t	Benzyl alcohol	0.925	0.938	-1.4	135	0.00	5.41
24	I	Naphthalene-d8	1.000	1.000	0.0	132	0.00	6.71
44	t	2-Methylnaphthalene	0.603	0.549	9.0	125	0.00	7.56
47	I	Acenaphthene-d10	1.000	1.000	0.0	128	0.00	8.82
54	t	2-Nitroaniline	0.311	0.282	9.3	125	0.00	8.28
58	t	3-Nitroaniline	0.350	0.308	12.0	117	-0.01	8.78
62	t	Dibenzofuran	1.622	1.472	9.2	124	0.00	9.07
68	t	4-Nitroaniline	0.345	0.316	8.4	120	-0.01	9.52
69	I	Phenanthrene-d10	1.000	1.000	0.0	124	0.00	10.64
79	t	Carbazole	1.143	1.040	9.0	123	0.00	10.97

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 19:21:48 2015 RPT1

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1166-ICV1166
Lab FileID: 5P22797A.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22797a.D        Vial: 12
Acq On    :  4 Nov 2015   7:24 pm                   Operator: alicjap
Sample    : icv1166-50                              Inst    : MS5P
Misc      : op88593,e5p1166                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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	91	0.00	8.82
105	1,2,4,5-Tetrachlorobenzen	0.482	0.470	2.5	90	0.00	7.77

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 21:42:27 2015 RPT1

8.7.5

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: E5P1166-ICV1165
Lab FileID: 5P22797.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1166\5p22797.D Vial: 12
Acq On : 4 Nov 2015 7:24 pm Operator: alicjap
Sample : icv1165-50 Inst : MS5P
Misc : op88593,e5p1166 Multiplr: 1.00
MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update : Wed Nov 04 18:27:28 2015
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	120	0.00	5.24
4	t	N-Nitrosodimethylamine	0.937	0.839	10.5	115	0.00	2.53
11	t	bis(2-Chloroethyl)ether	1.358	1.309	3.6	121	0.00	4.95
14	t	1,3-Dichlorobenzene	1.603	1.507	6.0	118	0.00	5.18
15	t	1,4-Dichlorobenzene	1.647	1.509	8.4	116	0.00	5.26
17	t	1,2-Dichlorobenzene	1.550	1.475	4.8	122	0.00	5.43
20	t	2,2'-oxybis(1-Chloropropa	1.766	1.555	11.9	115	0.00	5.56
22	t	n-Nitroso-di-n-propylamin	0.970	0.884	8.9	115	-0.01	5.70
23	t	Hexachloroethane	0.493	0.470	4.7	121	0.00	5.81
24	I	Naphthalene-d8	1.000	1.000	0.0	122	0.00	6.70
26	t	Nitrobenzene	0.352	0.329	6.5	117	0.00	5.89
28	t	Isophorone	0.630	0.617	2.1	121	-0.01	6.17
32	t	bis(2-Chloroethoxy)methan	0.416	0.408	1.9	122	0.00	6.43
36	t	1,2,4-Trichlorobenzene	0.317	0.299	5.7	118	0.00	6.65
38	t	Naphthalene	1.192	1.040	12.8	103	0.00	6.73
42	t	Hexachlorobutadiene	0.150	0.148	1.3	121	0.00	6.90
47	I	Acenaphthene-d10	1.000	1.000	0.0	120	0.00	8.82
48	t	Hexachlorocyclopentadiene	0.282	0.260	7.8	104	0.00	7.77
52	t	2-Chloronaphthalene	1.127	1.053	6.6	119	0.00	8.15
55	t	Dimethylphthalate	1.248	1.159	7.1	115	0.00	8.51
56	t	Acenaphthylene	1.971	1.632	17.2	96	0.00	8.64
57	t	2,6-Dinitrotoluene	0.289	0.263	9.0	114	0.00	8.57
59	t	Acenaphthene	1.210	1.090	9.9	106	0.00	8.86
63	t	2,4-Dinitrotoluene	0.386	0.348	9.8	110	0.00	9.07
65	t	Diethylphthalate	1.263	1.164	7.8	117	0.00	9.37
66	t	Fluorene	1.374	1.224	10.9	106	0.00	9.48
67	t	4-Chlorophenyl-phenylethe	0.569	0.543	4.6	118	0.00	9.49
69	I	Phenanthrene-d10	1.000	1.000	0.0	123	0.00	10.64
71	t	n-Nitrosodiphenylamine	0.606	0.497	18.0	107	0.00	9.64
72	t	1,2-Diphenylhydrazine	0.778	0.690	11.3	119	0.00	9.69
74	t	4-Bromophenyl-phenylether	0.211	0.191	9.5	115	0.00	10.09
75	t	Hexachlorobenzene	0.230	0.203	11.7	117	0.00	10.17
77	t	Phenanthrene	1.246	1.040	16.5	106	0.00	10.67
78	t	Anthracene	1.239	1.063	14.2	104	-0.01	10.74
80	t	Di-n-butylphthalate	1.313	1.222	6.9	115	0.00	11.47
81	t	Fluoranthene	1.263	1.123	11.1	109	0.00	12.30
83	I	Chrysene-d12	1.000	1.000	0.0	121	0.00	14.43
84	t	Pyrene	1.377	1.195	13.2	108	0.00	12.62

Initial Calibration Verification

Job Number: JC7895 **Sample:** E5P1166-ICV1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P22797.D
Project: Sunoco - Marcus Hook Facility, PA

86	t	Butylbenzylphthalate	0.591	0.564	4.6	119	0.00	13.65
88	t	Benzo[a]anthracene	1.210	1.027	15.1	107	0.00	14.42
89	t	3,3'-Dichlorobenzidine	0.404	0.328	18.8	102	0.00	14.41
90	t	Chrysene	1.199	1.039	13.3	107	0.00	14.48
91	t	bis(2-Ethylhexyl)phthalat	0.824	0.793	3.8	120	0.00	14.57
92	I	Perylene-d12	1.000	1.000	0.0	123	0.00	16.50
93	t	Di-n-octylphthalate	1.384	1.356	2.0	121	0.00	15.53
94	t	Benzo[b]fluoranthene	1.167	1.058	9.3	105	-0.01	15.99
95	t	Benzo[k]fluoranthene	1.172	1.087	7.3	115	-0.02	16.03
96	t	Benzo[a]pyrene	1.088	1.031	5.2	111	-0.01	16.43
97	t	Indeno[1,2,3-cd]pyrene	1.094	0.972	11.2	103	-0.02	18.10
99	t	Dibenz[a,h]anthracene	1.125	1.021	9.2	108	-0.02	18.14
101	t	Benzo[g,h,i]perylene	1.173	1.008	14.1	104	-0.02	18.56

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 21:41:02 2015 RPT1

8.7.6

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1166-ICV1165
Lab FileID: 5P22798.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22798.D          Vial: 13
Acq On    :  4 Nov 2015   7:51 pm                    Operator: alicjap
Sample    : icv1165-50                               Inst    : MS5P
Misc      : op88593,e5p1166                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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	123	0.00	5.24
2	t	1,4-Dioxane	0.605	0.546	9.8	116	0.00	2.26
6	t	Indene	2.679	2.542	5.1	124	0.00	5.53
7	t	Cumene	3.307	3.082	6.8	122	0.00	4.38
13	t	Decane	1.336	1.132	15.3	117	0.00	5.08
18	t	Acetophenone	1.925	1.859	3.4	124	0.00	5.69
24	I	Naphthalene-d8	1.000	1.000	0.0	125	0.00	6.70
27	t	Quinoline	0.773	0.754	2.5	125	0.00	7.13
40	t	2,3-Dichloroaniline	0.371	0.326	12.1	114	0.00	7.91
41	t	Caprolactam	0.157	0.138	12.1	118	-0.05	7.19
45	t	1-Methylnaphthalene	0.614	0.583	5.0	121	0.00	7.68
46	t	Dimethylnaphthalene	0.620	0.619	0.2	129	0.00	8.32
47	I	Acenaphthene-d10	1.000	1.000	0.0	125	0.00	8.82
53	t	Biphenyl	1.487	1.382	7.1	124	0.00	8.13
69	I	Phenanthrene-d10	1.000	1.000	0.0	123	0.00	10.64
82	t	Octadecane	0.480	0.441	8.1	123	0.00	10.57
83	I	Chrysene-d12	1.000	1.000	0.0	121	-0.01	14.43
92	I	Perylene-d12	1.000	1.000	0.0	120	0.00	16.50
100	t	7,12-Dimethylbenz(a)anthr	0.461	0.512	-11.1	124	-0.02	15.98

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 5p22792a.D M5P1165.M        Wed Nov 04 20:53:02 2015   RPT1
```

8.7.7

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: E5P1166-ICV1166
Lab FileID: 5P22798A.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22798a.D        Vial: 13
Acq On    :  4 Nov 2015   7:51 pm                   Operator: alicjap
Sample    : icv1166-50                              Inst    : MS5P
Misc      : op88593,e5p1166                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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	87	0.00	5.24
103	Benzaldehyde	1.161	1.107	4.7	88	0.00	4.75
109	Phenanthrene-d10a	1.000	1.000	0.0	97	0.00	10.64
111	Atrazine	0.107	0.103	3.7	97	-0.01	10.32

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 20:52:20 2015 RPT1

8.7.8

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1166-ICV1166
Lab FileID: 5P22800.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22800.D          Vial: 15
Acq On    :  4 Nov 2015   8:46 pm                    Operator: sarad
Sample    : icv1166-50                               Inst    : MS5P
Misc      : op88593,e5p1166                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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.
112 I	Naphthalene-d8a	1.000	1.000	0.0	98	0.00	6.70
113	Hydroquinone	0.345	0.370	-7.2	104	0.00	7.26

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 04 21:12:06 2015 RPT1

8.7.9

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1166-ICV1165
Lab FileID: 5P22802.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1166\5p22802.D          Vial: 17
Acq On    :  4 Nov 2015   9:40 pm                    Operator: sarad
Sample    : icv1165-50                               Inst    : MS5P
Misc      : op88593,e5p1166                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 04 18:27:28 2015
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	180	0.00	5.24
5	S	2-Fluorophenol	1.437	1.478	-2.9	195	0.00	3.87
8	S	Phenol-d5	1.719	1.767	-2.8	193	0.00	4.87
24	I	Naphthalene-d8	1.000	1.000	0.0	184	0.00	6.70
25	S	Nitrobenzene-d5	0.345	0.347	-0.6	192	0.00	5.87
47	I	Acenaphthene-d10	1.000	1.000	0.0	180	0.00	8.82
51	S	2-Fluorobiphenyl	1.266	1.240	2.1	185	0.00	8.01
69	I	Phenanthrene-d10	1.000	1.000	0.0	177	0.00	10.64
73	S	2,4,6-Tribromophenol	0.110	0.099	10.0	169	0.00	9.78
83	I	Chrysene-d12	1.000	1.000	0.0	175	0.00	14.43
85	S	Terphenyl-d14	0.820	0.781	4.8	180	0.00	12.88

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 5p22792a.D M5P1165.M        Wed Nov 04 22:03:42 2015   RPT1
```

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1185-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23280.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1185\5p23280.D          Vial: 2
Acq On    : 16 Nov 2015   1:54 pm                    Operator: alicjap
Sample    : cc1165-50                                Inst    : MS5P
Misc      : op88822,e5p1185,1000,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Fri Nov 13 19:32:26 2015
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	109	-0.02	5.14
2	t	1,4-Dioxane	0.605	0.523	13.6	98	-0.04	2.19
3	t	Pyridine	1.521	1.291	15.1	97	-0.04	2.49
4	t	N-Nitrosodimethylamine	0.937	0.786	16.1	97	-0.04	2.45
5	S	2-Fluorophenol	1.437	1.247	13.2	99	-0.02	3.79
6	t	Indene	2.679	2.328	13.1	100	-0.01	5.43
7	t	Cumene	3.307	2.967	10.3	104	-0.03	4.28
8	S	Phenol-d5	1.719	1.535	10.7	101	0.00	4.80
9	t	Phenol	1.936	1.680	13.2	98	0.00	4.81
10		Aniline	2.156	1.543	28.4#	80	-0.02	4.79
11	t	bis(2-Chloroethyl)ether	1.358	1.202	11.5	101	-0.02	4.86
12	t	2-Chlorophenol	1.525	1.359	10.9	103	-0.01	4.93
13	t	Decane	1.336	1.269	5.0	116	-0.02	4.98
14	t	1,3-Dichlorobenzene	1.603	1.555	3.0	110	-0.02	5.08
15	t	1,4-Dichlorobenzene	1.647	1.558	5.4	108	-0.02	5.16
16	t	Benzyl alcohol	0.925	0.831	10.2	101	0.00	5.32
17	t	1,2-Dichlorobenzene	1.550	1.471	5.1	110	-0.01	5.34
18	t	Acetophenone	1.925	1.717	10.8	101	0.00	5.60
19	t	2-Methylphenol	1.298	1.145	11.8	98	0.00	5.48
20	t	2,2'-oxybis(1-Chloropropa	1.766	1.772	-0.3	118	-0.01	5.46
21	t	3&4-Methylphenol	1.390	1.268	8.8	100	0.00	5.65
22	t	n-Nitroso-di-n-propylamin	0.970	0.879	9.4	103	0.00	5.61
23	t	Hexachloroethane	0.493	0.494	-0.2	115	-0.02	5.71
24	I	Naphthalene-d8	1.000	1.000	0.0	107	-0.04	6.61
25	S	Nitrobenzene-d5	0.345	0.338	2.0	109	-0.04	5.78
26	t	Nitrobenzene	0.352	0.345	2.0	108	-0.04	5.80
27	t	Quinoline	0.773	0.701	9.3	99	-0.02	7.05
28	t	Isophorone	0.630	0.578	8.3	99	-0.04	6.08
29	t	2-Nitrophenol	0.198	0.201	-1.5	109	-0.04	6.17
30	t	2,4-Dimethylphenol	0.310	0.299	3.5	96	-0.03	6.26
31	t	Benzoic acid	0.250	0.250	0.0	101	0.00	6.44
32	t	bis(2-Chloroethoxy)methan	0.416	0.378	9.1	99	-0.03	6.34
33	t	2,4-Dichlorophenol	0.292	0.298	-2.1	109	-0.03	6.47
34	t	2,6-Dichlorophenol	0.288	0.285	1.0	107	-0.03	6.73
35		1,3,5-Trichlorobenzene	0.332	0.319	3.9	109	-0.04	6.18
36	t	1,2,4-Trichlorobenzene	0.317	0.309	2.5	107	-0.04	6.55
37		1,2,3-Trichlorobenzene	0.307	0.303	1.3	107	-0.04	6.81
38	t	Naphthalene	1.192	1.164	2.3	101	-0.04	6.64
39	t	4-Chloroaniline	0.469	0.399	14.9	91	-0.03	6.72
40	t	2,3-Dichloroaniline	0.371	0.355	4.3	107	-0.02	7.82
41	t	Caprolactam	0.157	0.153	2.5	112	-0.03	7.14

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1185-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23280.D
Project: Sunoco - Marcus Hook Facility, PA

42	t	Hexachlorobutadiene	0.150	0.146	2.7	105	-0.04	6.80
43	t	4-Chloro-3-methylphenol	0.304	0.288	5.3	101	-0.01	7.35
44	t	2-Methylnaphthalene	0.603	0.569	5.6	105	-0.02	7.47
45	t	1-Methylnaphthalene	0.614	0.584	4.9	104	-0.03	7.58
46	t	Dimethylnaphthalene	0.620	0.599	3.4	107	-0.02	8.22
47	I	Acenaphthene-d10	1.000	1.000	0.0	105	-0.02	8.72
48	t	Hexachlorocyclopentadiene	0.282	0.278	1.4	97	-0.04	7.67
49	t	2,4,6-Trichlorophenol	0.343	0.340	0.9	108	-0.03	7.83
50	t	2,4,5-Trichlorophenol	0.367	0.366	0.3	107	-0.02	7.89
51	S	2-Fluorobiphenyl	1.266	1.222	3.5	106	-0.03	7.92
52	t	2-Chloronaphthalene	1.127	1.065	5.5	106	-0.03	8.05
53	t	Biphenyl	1.487	1.419	4.6	106	-0.03	8.03
54	t	2-Nitroaniline	0.311	0.317	-1.9	115	-0.02	8.20
55	t	Dimethylphthalate	1.248	1.232	1.3	106	-0.02	8.42
56	t	Acenaphthylene	1.971	2.041	-3.6	105	-0.03	8.55
57	t	2,6-Dinitrotoluene	0.289	0.276	4.5	104	-0.02	8.49
58	t	3-Nitroaniline	0.350	0.332	5.1	103	-0.02	8.70
59	t	Acenaphthene	1.210	1.246	-3.0	106	-0.03	8.76
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	100.000	106.328	-6.3	117	0.00	8.83
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.149	0.160	-7.4	114	0.00	8.97
62	t	Dibenzofuran	1.622	1.515	6.6	104	-0.02	8.98
63	t	2,4-Dinitrotoluene	0.386	0.381	1.3	105	-0.01	8.98
64		2,3,4,6-Tetrachlorophenol	0.276	0.256	7.2	98	-0.02	9.15
65	t	Diethylphthalate	1.263	1.252	0.9	110	-0.02	9.28
66	t	Fluorene	1.374	1.382	-0.6	104	-0.02	9.39
67	t	4-Chlorophenyl-phenylethe	0.569	0.537	5.6	102	-0.02	9.40
68	t	4-Nitroaniline	0.345	0.326	5.5	101	0.00	9.45
69	I	Phenanthrene-d10	1.000	1.000	0.0	103	-0.05	10.55
		----------	True	Calc.	% Drift	----------		
70	t	4,6-Dinitro-2-methylpheno	50.000	51.713	-3.4	111	-0.04	9.48
		----------	AvgRF	CCRF	% Dev	----------		
71	t	n-Nitrosodiphenylamine	0.606	0.566	6.6	103	-0.05	9.55
72	t	1,2-Diphenylhydrazine	0.778	0.724	6.9	105	-0.06	9.59
73	S	2,4,6-Tribromophenol	0.110	0.094	14.5	94	-0.05	9.69
74	t	4-Bromophenyl-phenylether	0.211	0.193	8.5	98	-0.06	9.99
75	t	Hexachlorobenzene	0.230	0.200	13.0	97	-0.06	10.07
		----------	True	Calc.	% Drift	----------		
76	t	Pentachlorophenol	100.000	102.413	-2.4	111	-0.04	10.34
		----------	AvgRF	CCRF	% Dev	----------		
77	t	Phenanthrene	1.246	1.217	2.3	104	-0.05	10.58
78	t	Anthracene	1.239	1.229	0.8	101	-0.06	10.64
79	t	Carbazole	1.143	1.039	9.1	102	-0.05	10.87
80	t	Di-n-butylphthalate	1.313	1.357	-3.4	108	-0.06	11.36
81	t	Fluoranthene	1.263	1.282	-1.5	104	-0.06	12.19
82	t	Octadecane	0.480	0.464	3.3	108	-0.06	10.46
83	I	Chrysene-d12	1.000	1.000	0.0	97	-0.13	14.33
84	t	Pyrene	1.377	1.447	-5.1	104	-0.13	12.51
85	S	Terphenyl-d14	0.820	0.744	9.3	95	-0.13	12.77
86	t	Butylbenzylphthalate	0.591	0.646	-9.3	109	-0.13	13.54

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1185-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23280.D
Project: Sunoco - Marcus Hook Facility, PA

87		Butyl stearate	0.324	0.358	-10.5	113	-0.14	13.68
88	t	Benzo[a]anthracene	1.210	1.166	3.6	97	-0.13	14.32
89	t	3,3'-Dichlorobenzidine	0.404	0.399	1.2	99	-0.13	14.31
90	t	Chrysene	1.199	1.164	2.9	96	-0.13	14.37
91	t	bis(2-Ethylhexyl)phthalat	0.824	0.915	-11.0	110	-0.14	14.45
92	I	Perylene-d12	1.000	1.000	0.0	94	-0.14	16.40
93	t	Di-n-octylphthalate	1.384	1.630	-17.8	110	-0.15	15.42
94	t	Benzo[b]fluoranthene	1.167	1.300	-11.4	98	-0.14	15.89
95	t	Benzo[k]fluoranthene	1.172	1.192	-1.7	96	-0.14	15.93
96	t	Benzo[a]pyrene	1.088	1.144	-5.1	94	-0.14	16.33
97	t	Indeno[1,2,3-cd]pyrene	1.094	1.234	-12.8	100	-0.19	17.97
98	t	Dibenz(a,h)acridine	0.924	0.929	-0.5	97	-0.18	17.60
99	t	Dibenz[a,h]anthracene	1.125	1.206	-7.2	97	-0.19	18.00
100	t	7,12-Dimethylbenz(a)anthr	0.461	0.491	-6.5	93	-0.15	15.88
101	t	Benzo[g,h,i]perylene	1.173	1.204	-2.6	94	-0.20	18.42

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Tue Nov 17 12:56:30 2015 RPT1

8.7.11

8

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1185-CC1166
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23281.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1185\5p23281.D          Vial: 3
Acq On    : 16 Nov 2015   2:28 pm                    Operator: alicjap
Sample    : cc1166-50                                Inst    : MS5P
Misc      : op88822,e5p1185,1000,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Fri Nov 13 19:32:26 2015
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	82	-0.02	5.14
103	Benzaldehyde	1.161	1.022	12.0	77	-0.02	4.66
104	Acenaphthene-d10a	1.000	1.000	0.0	84	-0.03	8.72
105	1,2,4,5-Tetrachlorobenzen	0.482	0.481	0.2	85	-0.04	7.67
106	Chrysene-d12a	1.000	1.000	0.0	80	-0.13	14.33
	----------	True	Calc.	% Drift	----------		
107	Benzidine	50.000	63.938	-27.9#	98	-0.13	12.41
	----------	AvgRF	CCRF	% Dev	----------		
108	Phenanthrene-d10a	1.000	1.000	0.0	83	-0.06	10.54
109	Atrazine	0.107	0.102	4.7	83	-0.05	10.23
110 I	Naphthalene-d8a	1.000	1.000	0.0	82	-0.04	6.61
111	Hydroquinone	0.345	0.332	3.8	78	-0.02	7.19

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Tue Nov 17 12:57:27 2015 RPT1

8.7.12

8

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1188-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23323.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1188\5p23323.D          Vial: 2
Acq On    : 17 Nov 2015   6:32 pm                    Operator: sarad
Sample    : cc1165-50                                Inst    : MS5P
Misc      : op88871,e5p1188,1000,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Tue Nov 17 19:14:06 2015
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	96	0.00	5.12
2	t	1,4-Dioxane	0.605	0.510	15.7	85	-0.05	2.16
3	t	Pyridine	1.521	1.298	14.7	86	-0.04	2.46
4	t	N-Nitrosodimethylamine	0.937	0.787	16.0	86	-0.04	2.43
5	S	2-Fluorophenol	1.437	1.260	12.3	89	-0.02	3.76
6	t	Indene	2.679	2.342	12.6	90	0.00	5.41
7	t	Cumene	3.307	2.972	10.1	92	-0.03	4.25
8	S	Phenol-d5	1.719	1.545	10.1	91	0.00	4.77
9	t	Phenol	1.936	1.670	13.7	87	0.00	4.78
10		Aniline	2.156	1.511	29.9#	70	0.00	4.76
11	t	bis(2-Chloroethyl)ether	1.358	1.172	13.7	87	0.00	4.83
12	t	2-Chlorophenol	1.525	1.370	10.2	92	0.00	4.90
13	t	Decane	1.336	1.313	1.7	107	0.00	4.95
14	t	1,3-Dichlorobenzene	1.603	1.566	2.3	98	0.00	5.05
15	t	1,4-Dichlorobenzene	1.647	1.571	4.6	97	0.00	5.13
16	t	Benzyl alcohol	0.925	0.844	8.8	91	0.00	5.29
17	t	1,2-Dichlorobenzene	1.550	1.464	5.5	97	0.00	5.30
18	t	Acetophenone	1.925	1.721	10.6	90	0.01	5.58
19	t	2-Methylphenol	1.298	1.140	12.2	87	0.01	5.44
20	t	2,2'-oxybis(1-Chloropropa	1.766	1.760	0.3	104	0.00	5.43
21	t	3&4-Methylphenol	1.390	1.258	9.5	88	0.02	5.62
22	t	n-Nitroso-di-n-propylamin	0.970	0.884	8.9	92	0.01	5.59
23	t	Hexachloroethane	0.493	0.485	1.6	100	0.00	5.68
24	I	Naphthalene-d8	1.000	1.000	0.0	94	0.00	6.58
25	S	Nitrobenzene-d5	0.345	0.341	1.2	97	-0.01	5.75
26	t	Nitrobenzene	0.352	0.350	0.6	96	-0.01	5.77
27	t	Quinoline	0.773	0.714	7.6	89	0.02	7.01
28	t	Isophorone	0.630	0.587	6.8	89	-0.01	6.05
29	t	2-Nitrophenol	0.198	0.203	-2.5	97	0.00	6.14
30	t	2,4-Dimethylphenol	0.310	0.308	0.6	87	0.00	6.23
31	t	Benzoic acid	0.250	0.267	-6.8	95	0.03	6.41
32	t	bis(2-Chloroethoxy)methan	0.416	0.385	7.5	89	0.00	6.31
33	t	2,4-Dichlorophenol	0.292	0.301	-3.1	97	0.00	6.44
34	t	2,6-Dichlorophenol	0.288	0.292	-1.4	97	0.00	6.70
35		1,3,5-Trichlorobenzene	0.332	0.322	3.0	97	0.00	6.15
36	t	1,2,4-Trichlorobenzene	0.317	0.317	0.0	97	0.00	6.52
37		1,2,3-Trichlorobenzene	0.307	0.299	2.6	93	0.00	6.78
38	t	Naphthalene	1.192	1.171	1.8	90	0.00	6.61
39	t	4-Chloroaniline	0.469	0.399	14.9	80	0.00	6.69
40	t	2,3-Dichloroaniline	0.371	0.361	2.7	96	0.02	7.78
41	t	Caprolactam	0.157	0.155	1.3	100	0.02	7.12

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1188-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23323.D
Project: Sunoco - Marcus Hook Facility, PA

42	t	Hexachlorobutadiene	0.150	0.149	0.7	94	0.00	6.77
43	t	4-Chloro-3-methylphenol	0.304	0.292	3.9	90	0.02	7.31
44	t	2-Methylnaphthalene	0.603	0.575	4.6	93	0.02	7.44
45	t	1-Methylnaphthalene	0.614	0.603	1.8	95	0.02	7.55
46	t	Dimethylnaphthalene	0.620	0.600	3.2	94	0.03	8.19
47	I	Acenaphthene-d10	1.000	1.000	0.0	92	0.00	8.69
48	t	Hexachlorocyclopentadiene	0.282	0.280	0.7	86	-0.02	7.63
49	t	2,4,6-Trichlorophenol	0.343	0.342	0.3	96	0.00	7.80
50	t	2,4,5-Trichlorophenol	0.367	0.371	-1.1	96	0.00	7.86
51	S	2-Fluorobiphenyl	1.266	1.199	5.3	92	-0.01	7.89
52	t	2-Chloronaphthalene	1.127	1.089	3.4	95	-0.01	8.02
53	t	Biphenyl	1.487	1.407	5.4	93	-0.01	8.00
54	t	2-Nitroaniline	0.311	0.318	-2.3	102	0.00	8.16
55	t	Dimethylphthalate	1.248	1.250	-0.2	95	0.00	8.39
56	t	Acenaphthylene	1.971	2.021	-2.5	91	0.00	8.52
57	t	2,6-Dinitrotoluene	0.289	0.280	3.1	93	0.00	8.46
58	t	3-Nitroaniline	0.350	0.334	4.6	92	0.00	8.66
59	t	Acenaphthene	1.210	1.245	-2.9	94	0.00	8.73
			True	Calc.	% Drift			
60	t	2,4-Dinitrophenol	100.000	102.345	-2.3	99	0.02	8.80
			AvgRF	CCRF	% Dev			
61	t	4-Nitrophenol	0.149	0.171	-14.8	107	0.02	8.93
62	t	Dibenzofuran	1.622	1.525	6.0	93	0.00	8.94
63	t	2,4-Dinitrotoluene	0.386	0.383	0.8	93	0.01	8.95
64		2,3,4,6-Tetrachlorophenol	0.276	0.261	5.4	89	0.01	9.11
65	t	Diethylphthalate	1.263	1.265	-0.2	98	0.01	9.25
66	t	Fluorene	1.374	1.408	-2.5	94	0.01	9.35
67	t	4-Chlorophenyl-phenylethe	0.569	0.560	1.6	94	0.01	9.37
68	t	4-Nitroaniline	0.345	0.309	10.4	85	0.02	9.41
69	I	Phenanthrene-d10	1.000	1.000	0.0	92	0.00	10.51
			True	Calc.	% Drift			
70	t	4,6-Dinitro-2-methylpheno	50.000	50.142	-0.3	96	0.00	9.45
			AvgRF	CCRF	% Dev			
71	t	n-Nitrosodiphenylamine	0.606	0.569	6.1	92	0.00	9.51
72	t	1,2-Diphenylhydrazine	0.778	0.736	5.4	95	0.00	9.56
73	S	2,4,6-Tribromophenol	0.110	0.094	14.5	83	0.00	9.65
74	t	4-Bromophenyl-phenylether	0.211	0.191	9.5	86	0.00	9.95
75	t	Hexachlorobenzene	0.230	0.200	13.0	86	0.00	10.03
			True	Calc.	% Drift			
76	t	Pentachlorophenol	100.000	105.639	-5.6	103	0.00	10.29
			AvgRF	CCRF	% Dev			
77	t	Phenanthrene	1.246	1.212	2.7	93	0.00	10.54
78	t	Anthracene	1.239	1.230	0.7	90	0.00	10.60
79	t	Carbazole	1.143	1.036	9.4	91	0.00	10.83
80	t	Di-n-butylphthalate	1.313	1.362	-3.7	96	0.00	11.33
81	t	Fluoranthene	1.263	1.266	-0.2	92	0.00	12.15
82	t	Octadecane	0.480	0.471	1.9	98	0.00	10.43
83	I	Chrysene-d12	1.000	1.000	0.0	86	0.00	14.28
84	t	Pyrene	1.377	1.450	-5.3	93	-0.02	12.47
85	S	Terphenyl-d14	0.820	0.752	8.3	85	-0.02	12.73
86	t	Butylbenzylphthalate	0.591	0.670	-13.4	100	0.00	13.49

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1188-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23323.D
Project: Sunoco - Marcus Hook Facility, PA

87		Butyl stearate	0.324	0.363	-12.0	101	0.00	13.64
88	t	Benzo[a]anthracene	1.210	1.184	2.1	88	0.00	14.26
89	t	3,3'-Dichlorobenzidine	0.404	0.381	5.7	84	0.00	14.26
90	t	Chrysene	1.199	1.171	2.3	86	0.00	14.32
91	t	bis(2-Ethylhexyl)phthalat	0.824	0.926	-12.4	99	0.00	14.41
92	I	Perylene-d12	1.000	1.000	0.0	83	0.00	16.35
93	t	Di-n-octylphthalate	1.384	1.673	-20.9#	100	-0.02	15.37
94	t	Benzo[b]fluoranthene	1.167	1.296	-11.1	86	0.00	15.84
95	t	Benzo[k]fluoranthene	1.172	1.220	-4.1	87	-0.01	15.88
96	t	Benzo[a]pyrene	1.088	1.147	-5.4	83	0.00	16.27
97	t	Indeno[1,2,3-cd]pyrene	1.094	1.244	-13.7	88	-0.05	17.89
98	t	Dibenz(a,h)acridine	0.924	0.927	-0.3	85	-0.04	17.53
99	t	Dibenz[a,h]anthracene	1.125	1.204	-7.0	85	-0.06	17.92
100	t	7,12-Dimethylbenz(a)anthr	0.461	0.496	-7.6	82	-0.02	15.83
101	t	Benzo[g,h,i]perylene	1.173	1.208	-3.0	83	0.00	18.33

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Tue Nov 17 19:15:52 2015 RPT1

8.7.13

8

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1188-CC1166
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23324.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1188\5p23324.D          Vial: 3
Acq On    : 17 Nov 2015   6:59 pm                    Operator: sarad
Sample    : cc1166-50                                Inst    : MS5P
Misc      : op88871,e5p1188,1000,,,1,1               Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Tue Nov 17 19:14:06 2015
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	73	0.00	5.11
103	Benzaldehyde	1.161	1.017	12.4	68	-0.01	4.63
104	Acenaphthene-d10a	1.000	1.000	0.0	77	0.00	8.69
105	1,2,4,5-Tetrachlorobenzen	0.482	0.486	-0.8	79	-0.01	7.64
106	Chrysene-d12a	1.000	1.000	0.0	75	0.00	14.27
	----------	True	Calc.	% Drift	----------		
107	Benzidine	50.000	34.290	31.4#	61	-0.02	12.36
	----------	AvgRF	CCRF	% Dev	----------		
108	Phenanthrene-d10a	1.000	1.000	0.0	79	0.00	10.50
109	Atrazine	0.107	0.102	4.7	78	0.00	10.19
110 I	Naphthalene-d8a	1.000	1.000	0.0	74	0.00	6.58
111	Hydroquinone	0.345	0.341	1.2	72	0.02	7.15

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Tue Nov 17 20:16:43 2015 RPT1

8.7.14

8

Continuing Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: E5P1189-CC1165
Lab FileID: 5P23350.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\e5p1189\5p23350.D Vial: 2
Acq On : 18 Nov 2015 9:52 am Operator: alicjap
Sample : cc1165-25 Inst : MS5P
Misc : op89030,e5p1189 Multiplr: 1.00
MS Integration Params: lscint.p

Method : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update : Wed Nov 18 14:22:41 2015
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	72	0.00	5.12
2	t	1,4-Dioxane	0.605	0.494	18.3	60	-0.04	2.17
3	t	Pyridine	1.521	1.233	18.9	59	-0.03	2.47
4	t	N-Nitrosodimethylamine	0.937	0.745	20.5#	57	-0.03	2.44
5	S	2-Fluorophenol	1.437	1.180	17.9	60	0.00	3.79
6	t	Indene	2.679	2.244	16.2	60	0.00	5.41
7	t	Cumene	3.307	2.839	14.2	64	-0.02	4.26
8	S	Phenol-d5	1.719	1.445	15.9	59	0.03	4.80
9	t	Phenol	1.936	1.540	20.5#	57	0.03	4.82
10		Aniline	2.156	1.476	31.5#	47#	0.00	4.77
11	t	bis(2-Chloroethyl)ether	1.358	1.163	14.4	61	0.00	4.83
12	t	2-Chlorophenol	1.525	1.316	13.7	63	0.01	4.92
13	t	Decane	1.336	1.236	7.5	72	0.00	4.96
14	t	1,3-Dichlorobenzene	1.603	1.568	2.2	70	0.00	5.06
15	t	1,4-Dichlorobenzene	1.647	1.588	3.6	70	0.00	5.14
16	t	Benzyl alcohol	0.925	0.800	13.5	60	0.01	5.30
17	t	1,2-Dichlorobenzene	1.550	1.491	3.8	70	0.00	5.32
18	t	Acetophenone	1.925	1.657	13.9	61	0.01	5.58
19	t	2-Methylphenol	1.298	1.089	16.1	58	0.04	5.48
20	t	2,2'-oxybis(1-Chloropropa	1.766	1.683	4.7	70	0.01	5.44
21	t	3&4-Methylphenol	1.390	1.197	13.9	58	0.05	5.66
22	t	n-Nitroso-di-n-propylamin	0.970	0.845	12.9	60	0.00	5.59
23	t	Hexachloroethane	0.493	0.512	-3.9	75	0.00	5.69
24	I	Naphthalene-d8	1.000	1.000	0.0	68	0.00	6.59
25	S	Nitrobenzene-d5	0.345	0.332	3.8	66	-0.01	5.75
26	t	Nitrobenzene	0.352	0.337	4.3	65	-0.01	5.78
27	t	Quinoline	0.773	0.676	12.5	58	0.01	7.02
28	t	Isophorone	0.630	0.571	9.4	61	0.00	6.06
29	t	2-Nitrophenol	0.198	0.209	-5.6	70	0.00	6.15
30	t	2,4-Dimethylphenol	0.310	0.280	9.7	55	0.02	6.26
31	t	Benzoic acid	0.250	0.202	19.2	52	0.05	6.43
32	t	bis(2-Chloroethoxy)methan	0.416	0.363	12.7	58	0.00	6.32
33	t	2,4-Dichlorophenol	0.292	0.307	-5.1	70	0.03	6.49
34	t	2,6-Dichlorophenol	0.288	0.295	-2.4	68	0.01	6.72
35		1,3,5-Trichlorobenzene	0.332	0.326	1.8	69	0.00	6.16
36	t	1,2,4-Trichlorobenzene	0.317	0.323	-1.9	69	0.00	6.53
37		1,2,3-Trichlorobenzene	0.307	0.307	0.0	69	0.00	6.80
38	t	Naphthalene	1.192	1.125	5.6	60	0.00	6.61
39	t	4-Chloroaniline	0.469	0.349	25.6#	49#	0.01	6.70
40	t	2,3-Dichloroaniline	0.371	0.370	0.3	68	0.03	7.80
41	t	Caprolactam	0.157	0.148	5.7	67	0.00	7.12

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1189-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23350.D
Project: Sunoco - Marcus Hook Facility, PA

42	t	Hexachlorobutadiene	0.150	0.154	-2.7	71	0.00	6.77
43	t	4-Chloro-3-methylphenol	0.304	0.277	8.9	60	0.04	7.35
44	t	2-Methylnaphthalene	0.603	0.600	0.5	67	0.01	7.45
45	t	1-Methylnaphthalene	0.614	0.622	-1.3	68	0.02	7.56
46	t	Dimethylnaphthalene	0.620	0.629	-1.5	67	0.03	8.21
47	I	Acenaphthene-d10	1.000	1.000	0.0	68	0.00	8.70
48	t	Hexachlorocyclopentadiene	0.282	0.249	11.7	55	-0.02	7.64
49	t	2,4,6-Trichlorophenol	0.343	0.343	0.0	69	0.00	7.83
50	t	2,4,5-Trichlorophenol	0.367	0.367	0.0	68	0.03	7.90
51	S	2-Fluorobiphenyl	1.266	1.240	2.1	68	-0.02	7.90
52	t	2-Chloronaphthalene	1.127	1.074	4.7	66	-0.01	8.03
53	t	Biphenyl	1.487	1.409	5.2	66	-0.01	8.01
54	t	2-Nitroaniline	0.311	0.316	-1.6	71	0.00	8.18
55	t	Dimethylphthalate	1.248	1.273	-2.0	70	0.00	8.40
56	t	Acenaphthylene	1.971	2.045	-3.8	66	0.00	8.53
57	t	2,6-Dinitrotoluene	0.289	0.285	1.4	69	0.00	8.47
58	t	3-Nitroaniline	0.350	0.304	13.1	61	0.01	8.68
59	t	Acenaphthene	1.210	1.262	-4.3	68	0.00	8.74
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	50.000	49.570	0.9	67	0.03	8.83
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.149	0.157	-5.4	70	0.00	9.01
62	t	Dibenzofuran	1.622	1.552	4.3	68	0.00	8.95
63	t	2,4-Dinitrotoluene	0.386	0.386	0.0	69	0.02	8.97
64		2,3,4,6-Tetrachlorophenol	0.276	0.239	13.4	60	0.02	9.14
65	t	Diethylphthalate	1.263	1.293	-2.4	72	0.00	9.25
66	t	Fluorene	1.374	1.445	-5.2	68	0.00	9.37
67	t	4-Chlorophenyl-phenylethe	0.569	0.567	0.4	68	0.00	9.38
68	t	4-Nitroaniline	0.345	0.320	7.2	62	0.03	9.43
69	I	Phenanthrene-d10	1.000	1.000	0.0	68	0.00	10.52
		----------	True	Calc.	% Drift	----------		
70	t	4,6-Dinitro-2-methylpheno	25.000	25.527	-2.1	69	0.01	9.47
		----------	AvgRF	CCRF	% Dev	----------		
71	t	n-Nitrosodiphenylamine	0.606	0.580	4.3	68	0.00	9.53
72	t	1,2-Diphenylhydrazine	0.778	0.699	10.2	64	-0.01	9.57
73	S	2,4,6-Tribromophenol	0.110	0.092	16.4	60	0.00	9.67
74	t	4-Bromophenyl-phenylether	0.211	0.194	8.1	63	0.00	9.97
75	t	Hexachlorobenzene	0.230	0.197	14.3	60	0.00	10.05
		----------	True	Calc.	% Drift	----------		
76	t	Pentachlorophenol	50.000	46.317	7.4	65	0.02	10.33
		----------	AvgRF	CCRF	% Dev	----------		
77	t	Phenanthrene	1.246	1.247	-0.1	68	0.00	10.56
78	t	Anthracene	1.239	1.284	-3.6	67	0.00	10.62
79	t	Carbazole	1.143	1.067	6.6	67	0.00	10.86
80	t	Di-n-butylphthalate	1.313	1.404	-6.9	72	0.00	11.34
81	t	Fluoranthene	1.263	1.325	-4.9	68	0.01	12.18
82	t	Octadecane	0.480	0.444	7.5	66	0.00	10.44
83	I	Chrysene-d12	1.000	1.000	0.0	68	0.00	14.31
84	t	Pyrene	1.377	1.449	-5.2	69	-0.02	12.49
85	S	Terphenyl-d14	0.820	0.748	8.8	65	-0.02	12.75
86	t	Butylbenzylphthalate	0.591	0.650	-10.0	74	-0.02	13.51

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1189-CC1165
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23350.D
Project: Sunoco - Marcus Hook Facility, PA

87		Butyl stearate	0.324	0.331	-2.2	69	-0.02	13.65
88	t	Benzo[a]anthracene	1.210	1.227	-1.4	68	0.00	14.30
89	t	3,3'-Dichlorobenzidine	0.404	0.390	3.5	64	0.00	14.29
90	t	Chrysene	1.199	1.175	2.0	65	0.00	14.35
91	t	bis(2-Ethylhexyl)phthalat	0.824	0.906	-10.0	75	-0.02	14.42
92	I	Perylene-d12	1.000	1.000	0.0	66	0.00	16.38
93	t	Di-n-octylphthalate	1.384	1.617	-16.8	76	-0.03	15.39
94	t	Benzo[b]fluoranthene	1.167	1.313	-12.5	70	0.00	15.87
95	t	Benzo[k]fluoranthene	1.172	1.226	-4.6	64	-0.01	15.91
96	t	Benzo[a]pyrene	1.088	1.175	-8.0	66	0.00	16.31
97	t	Indeno[1,2,3-cd]pyrene	1.094	1.218	-11.3	68	-0.04	17.95
98	t	Dibenz(a,h)acridine	0.924	0.960	-3.9	68	-0.03	17.58
99	t	Dibenz[a,h]anthracene	1.125	1.231	-9.4	67	0.00	17.98
100	t	7,12-Dimethylbenz(a)anthr	0.461	0.486	-5.4	62	-0.03	15.86
101	t	Benzo[g,h,i]perylene	1.173	1.246	-6.2	66	0.00	18.39

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22791a.D M5P1165.M Wed Nov 18 15:00:48 2015 RPT1

8.7.15

8

Continuing Calibration Summary

Job Number: JC7895 **Sample:** E5P1189-CC1166
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** 5P23351.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e5p1189\5p23351.D          Vial: 3
Acq On    : 18 Nov 2015  10:18 am                    Operator: alicjap
Sample    : cc1166-50                                Inst    : MS5P
Misc      : op89030,e5p1189                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M5P1165.M (RTE Integrator)
Title        : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
Last Update  : Wed Nov 18 14:22:41 2015
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	74	0.00	5.12
103	Benzaldehyde	1.161	0.927	20.2#	63	0.00	4.64
104	Acenaphthene-d10a	1.000	1.000	0.0	78	0.00	8.70
105	1,2,4,5-Tetrachlorobenzen	0.482	0.497	-3.1	82	-0.01	7.66
106	Chrysene-d12a	1.000	1.000	0.0	79	0.00	14.31
	----------	True	Calc.	% Drift	----------		
107	Benzidine	50.000	38.259	23.5#	71	-0.02	12.39
	----------	AvgRF	CCRF	% Dev	----------		
108	Phenanthrene-d10a	1.000	1.000	0.0	81	0.00	10.52
109	Atrazine	0.107	0.104	2.8	82	0.00	10.21
110 I	Naphthalene-d8a	1.000	1.000	0.0	74	0.00	6.59
111	Hydroquinone	0.345	0.333	3.5	70	0.06	7.20

(#) = Out of Range SPCC's out = 0 CCC's out = 0
5p22792a.D M5P1165.M Wed Nov 18 14:27:44 2015 RPT1

8.7.16

8

Initial Calibration Summary

Job Number: JC7895 **Sample:** EZ5255-ICC5255
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z105283.D
Project: Sunoco - Marcus Hook Facility, PA

```
                         Response Factor Report  MSZ

  Method       : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
  Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
  Last Update  : Sat Oct 17 08:45:35 2015
  Response via : Initial Calibration

  Calibration Files
  100 =z105281.D  80  =z105282.D  50  =z105283.D  25  =z105284.D
  10  =z105285.D  5   =z105286.D  2   =z105287.D  1   =z105288.D

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



102)     1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 0.990 1.034 1.136 1.083 1.086 1.008 1.322 1.114 1.097   9.52

104)     Phenanthrene-d10a     ----------------ISTD---------------------
105) Atrazine     0.101 0.109 0.108 0.106 0.108 0.107 0.138 0.129 0.113  11.54

106)     Chrysene-d12a         ----------------ISTD---------------------
107) Benzidine    0.430 0.486 0.591 0.655 0.713 0.596 0.529 0.683 0.586  16.80

108)     Acenaphthene-d10a     ----------------ISTD---------------------
109) 1,2,4,5-Tetr 0.410 0.442 0.477 0.484 0.514 0.479 0.651 0.537 0.499  14.57

110) I   Naphthalene-d8a       ----------------ISTD---------------------
111) Hydroquinone 0.363 0.354 0.339 0.320 0.309 0.297 0.413 0.400 0.349  11.93


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

          MZ5255.M          Sat Oct 17 15:53:29 2015   RTE
```

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5255-ICV5255
Lab FileID: Z105289.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5255\z105289.D          Vial: 9
Acq On    : 16 Oct 2015   5:42 pm                   Operator: brittanp
Sample    : icv5255-50                              Inst    : MSZ
Misc      : op87826a,ez5255                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Sat Oct 17 08:45:35 2015
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.
108	Acenaphthene-d10a	1.000	1.000	0.0	93	0.00	7.28
109	1,2,4,5-Tetrachlorobenzen	0.499	0.539	-8.0	105	0.00	6.48

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5255.M Sat Oct 17 15:53:13 2015 RTE

8.7.18

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5255-ICV5255
Lab FileID: Z105290.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5255\z105290.D          Vial: 10
Acq On    : 16 Oct 2015   6:13 pm                   Operator: brittanp
Sample    : icv5255-50                              Inst    : MSZ
Misc      : op87826a,ez5255                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Sat Oct 17 08:45:35 2015
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	97	0.00	4.89
103	Benzaldehyde	1.097	1.102	-0.5	94	0.00	4.57
104	Phenanthrene-d10a	1.000	1.000	0.0	95	0.00	9.22
105	Atrazine	0.113	0.105	7.1	92	0.01	8.79

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5255.M Sat Oct 17 15:53:16 2015 RTE

8.7.19

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5255-ICV5255
Lab FileID: Z105291.D

```
                    Evaluate Continuing Calibration Report

  Data File : C:\msdchem\1\DATA\EZ5255\z105291.D          Vial: 11
  Acq On    : 16 Oct 2015   6:44 pm                   Operator: brittanp
  Sample    : icv5255-50                              Inst    : MSZ
  Misc      : op87826a,ez5255                         Multiplr: 1.00
  MS Integration Params: RTEINT.P

  Method       : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
  Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
  Last Update  : Sat Oct 17 08:45:35 2015
  Response via : Multiple Level Calibration

  Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
  Max. RRF Dev :  30%     Max. Rel. Area : 200%

         Compound                   AvgRF   CCRF      %Dev Area%  Dev(min)R.T.
  ---------------------------------------------------------------------------


106     Chrysene-d12a               1.000   1.000      0.0  148   0.00   14.55
107     Benzidine                   0.586   0.574      2.0  143   0.00   11.77

 ---------------------------------------------------------------------------
 ---------------------------------------------------------------------------

    (#) = Out of Range              SPCC's out = 0  CCC's out = 0
     z105283a.D MZ5255.M         Sat Oct 17 15:53:18 2015   RTE
```

8.7.20

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: EZ5255-ICV5255
Lab FileID: Z105292.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5255\z105292.D          Vial: 12
Acq On    : 16 Oct 2015   7:14 pm                   Operator: brittanp
Sample    : icv5255-50                              Inst    : MSZ
Misc      : op87826a,ez5255                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5255.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Sat Oct 17 08:45:35 2015
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	Naphthalene-d8a	1.000	1.000	0.0	137	0.00	5.81
111	Hydroquinone	0.349	0.426	-22.1	172	0.00	6.10

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5255.M Sat Oct 17 15:53:20 2015 RTE

8.7.21

8

Initial Calibration Summary

Job Number: JC7895 **Sample:** EZ5278-ICC5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z105714.D
Project: Sunoco - Marcus Hook Facility, PA

Response Factor Report MSZ

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Tue Nov 03 09:57:31 2015
Response via : Initial Calibration

Calibration Files
100 =z105281a.D 80 =z105282a.D 50 =z105283a.D 25 =z105284a.D
10 =z105285a.D 5 =z105286a.D 2 =z105287a.D 1 =z105288a.D

Compound	100	80	50	25	10	5	2	1	Avg	%RSD
1) I 1,4-Dichlorobenzene-d	----------ISTD----------									
2) 1,4-Dioxane	0.597	0.618	0.685	0.667	0.687	0.594	0.645	0.504	0.624	9.76
3) Pyridine	1.616	1.516	1.719	1.706	1.505	1.337	1.370	1.228	1.500	11.87
4) N-Nitrosodim	0.944	0.927	1.009	0.943	0.885	0.776	0.805	0.722	0.876	11.28
5) 2-Fluorophen	1.486	1.474	1.619	1.567	1.367	1.392	1.248	1.487	1.455	8.08
6) Indene	2.655	2.579	2.785	2.907	2.593	2.695	2.474	2.528	2.652	5.34
7) Cumene	3.997	3.976	4.327	4.082	4.025	3.820	3.841	4.043	4.014	3.92
8) Phenol-d5	1.969	1.874	2.066	2.028	1.782	1.697	1.773	1.817	1.876	7.06
9) Phenol	2.104	2.029	2.234	2.262	2.067	2.010	1.937	2.176	2.102	5.42
10) Aniline	1.977	1.902	2.605	2.629	2.318	2.258	2.440	2.409	2.317	11.48
11) bis(2-Chloro	1.304	1.261	1.377	1.400	1.346	1.349	1.189	1.200	1.303	6.10
12) 2-Chlorophen	1.422	1.361	1.518	1.543	1.458	1.363	1.524	1.747	1.492	8.37
13) Decane	0.973	0.974	1.102	1.091	1.095	1.040	0.982	1.341	1.075	11.25
14) 1,3-Dichloro	1.520	1.493	1.655	1.681	1.648	1.652	1.379	1.613	1.580	6.69
15) 1,4-Dichloro	1.532	1.487	1.691	1.684	1.546	1.487	1.611	1.984	1.628	10.12
16) Benzyl alcoh	0.976	0.921	1.006	0.979	0.859	0.941	0.723	0.858	0.908	10.17
17) 1,2-Dichloro	1.411	1.370	1.524	1.540	1.539	1.430	1.375	1.413	1.450	4.99
18) Acetophenone	2.179	2.074	2.320	2.306	2.252	2.083	2.102	2.343	2.207	5.07
19) 2-Methylphen	1.282	1.211	1.378	1.436	1.293	1.252	1.190	1.271	1.289	6.37
20) 2,2'-oxybis(	0.466	0.444	0.484	0.496	0.516	0.498	0.496	0.525	0.491	5.29
21) 3&4-Methylph	1.429	1.312	1.426	1.507	1.371	1.414	1.315	1.501	1.409	5.26
22) n-Nitroso-di	1.139	1.068	1.201	1.256	1.148	1.095	1.072	1.120	1.137	5.70
23) Hexachloroet	0.530	0.513	0.571	0.569	0.521	0.509	0.513	0.492	0.527	5.38
24) I Naphthalene-d8	----------ISTD----------									
25) Nitrobenzene	0.432	0.432	0.510	0.531	0.434	0.418	0.414	0.481	0.456	9.80
26) Nitrobenzene	0.435	0.433	0.470	0.472	0.457	0.428	0.434	0.483	0.452	4.80
27) Quinoline	0.768	0.747	0.775	0.800	0.745	0.732	0.698	0.717	0.748	4.40
28) Isophorone	0.772	0.753	0.816	0.843	0.719	0.714	0.699	0.865	0.773	8.09
29) 2-Nitropheno	0.216	0.217	0.229	0.224	0.211	0.195	0.169	0.201	0.208	9.16
30) 2,4-Dimethyl	0.420	0.408	0.461	0.486	0.352	0.356	0.358	0.395	0.404	12.35
31) Benzoic Acid	0.340	0.319	0.337	0.329	0.260	0.215			0.300	16.97
32) bis(2-Chloro	0.409	0.414	0.442	0.453	0.426	0.416	0.386	0.478	0.428	6.67
33) 2,4-Dichloro	0.316	0.302	0.323	0.333	0.303	0.280	0.300	0.304	0.308	5.29
34) 2,6-Dichloro	0.304	0.297	0.319	0.321	0.289	0.317	0.269	0.314	0.304	5.94
35) 1,3,5-Trichl	0.358	0.365	0.376	0.404	0.362	0.363	0.343	0.392	0.370	5.26
36) 1,2,4-Trichl	0.337	0.346	0.352	0.376	0.346	0.357	0.320	0.373	0.351	5.20
37) 1,2,3-Trichl	0.328	0.325	0.348	0.364	0.331	0.348	0.346	0.356	0.343	4.06
38) Naphthalene	1.079	1.075	1.163	1.172	1.124	1.081	1.065	1.119	1.110	3.74
39) 4-Chloroanil	0.427	0.413	0.478	0.489	0.450	0.431	0.422	0.446	0.444	6.09
40) 2,3-Dichloro	0.391	0.376	0.403	0.422	0.387	0.406	0.389	0.352	0.391	5.34
41) Caprolactam	0.132	0.126	0.136	0.134	0.126	0.128	0.106	0.136	0.128	7.51
42) Hexachlorobu	0.206	0.210	0.219	0.223	0.223	0.194	0.229	0.248	0.219	7.38
43) 4-Chloro-3-m	0.408	0.390	0.412	0.427	0.381	0.372	0.343	0.357	0.386	7.46
44) 2-Methylnaph	0.647	0.639	0.670	0.679	0.638	0.655	0.603	0.751	0.660	6.55
45) 1-Methylnaph	0.656	0.648	0.682	0.732	0.689	0.657	0.732	0.661	0.682	4.95

Initial Calibration Summary

Job Number: JC7895 **Sample:** EZ5278-ICC5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z105714.D
Project: Sunoco - Marcus Hook Facility, PA

```
46) Dimethylnaph 0.688 0.662 0.709 0.744 0.663 0.672 0.673 0.650 0.683   4.51

47) I   Acenaphthene-d10      ----------------ISTD---------------------
48) Hexachlorocy 0.447 0.416 0.435 0.415 0.342 0.312 0.257 0.306 0.366  19.34
49) 2,4,6-Trichl 0.445 0.382 0.400 0.403 0.352 0.380 0.373 0.374 0.389   7.15
50) 2,4,5-Trichl 0.436 0.380 0.405 0.415 0.381 0.370 0.372 0.396 0.394   5.82
51) 2-Fluorobiph 1.428 1.263 1.524 1.555 1.299 1.303 1.288 1.366 1.378   8.16
52) 2-Chloronaph 1.215 1.052 1.109 1.185 1.125 1.107 1.092 1.113 1.125   4.63
53) Biphenyl     1.686 1.482 1.557 1.584 1.516 1.515 1.530 1.557 1.553   4.01
54) 2-Nitroanili 0.456 0.398 0.407 0.415 0.395 0.306 0.326 0.339 0.380  13.47
55) Dimethylphth 1.496 1.282 1.368 1.390 1.335 1.338 1.243 1.345 1.350   5.58
56) Acenaphthyle 2.124 1.847 2.002 2.042 1.870 1.799 1.911 2.064 1.957   5.97
57) 2,6-Dinitrot 0.339 0.299 0.318 0.333 0.284 0.280 0.290 0.248 0.299  10.07
58) 3-Nitroanili 0.384 0.333 0.343 0.345 0.330 0.309 0.282 0.318 0.331   9.05
59) Acenaphthene 1.310 1.142 1.210 1.243 1.163 1.127 1.303 1.313 1.226   6.32
60) 2,4-Dinitrop 0.268 0.227 0.223 0.215 0.173 0.145 0.094       0.192  30.55
            ---- Quadratic regression ----  Coefficient =  0.9957
              Response Ratio = 0.00225 + 0.16568 *A + 0.01909 *A^2

61) 4-Nitropheno 0.301 0.262 0.270 0.265 0.244 0.201 0.194 0.257 0.249  14.41
62) Dibenzofuran 1.888 1.610 1.700 1.783 1.705 1.720 1.786 1.826 1.752   4.92
63) 2,4-Dinitrot 0.485 0.419 0.448 0.448 0.426 0.408 0.380 0.388 0.425   8.11
64) 2,3,4,6-Tetr 0.431 0.376 0.388 0.384 0.347 0.323 0.315 0.415 0.372  11.14
65) Diethylphtha 1.537 1.327 1.417 1.421 1.323 1.374 1.669 1.373 1.430   8.23
66) Fluorene     1.560 1.336 1.437 1.491 1.361 1.376 1.291 1.477 1.416   6.38
67) 4-Chlorophen 0.808 0.683 0.745 0.753 0.704 0.689 0.690 0.755 0.728   6.06
68) 4-Nitroanili 0.375 0.323 0.328 0.360 0.328 0.303 0.296 0.360 0.334   8.44

69) I   Phenanthrene-d10      ----------------ISTD---------------------
70) 4,6-Dinitro- 0.161 0.161 0.157 0.160 0.141 0.113 0.093       0.141  19.50
71) n-Nitrosodip 0.549 0.567 0.585 0.616 0.606 0.563 0.583 0.552 0.578   4.26
72) 1,2-Diphenyl 0.773 0.800 0.851 0.903 0.838 0.839 0.776 0.788 0.821   5.46
73) 2,4,6-Tribro 0.129 0.135 0.136 0.143 0.121 0.106 0.106 0.122 0.125  10.99
74) 4-Bromopheny 0.233 0.246 0.251 0.255 0.249 0.246 0.269 0.260 0.251   4.28
75) Hexachlorobe 0.252 0.262 0.279 0.276 0.260 0.259 0.278 0.258 0.265   3.94
76) Pentachlorop 0.176 0.179 0.176 0.174 0.152 0.131 0.102       0.156  18.84
77) Phenanthrene 1.021 1.057 1.114 1.133 1.139 1.086 1.122 1.085 1.095   3.71
78) Anthracene   1.052 1.079 1.144 1.187 1.113 1.126 1.109 1.137 1.118   3.69
79) Carbazole    1.045 1.062 1.110 1.161 1.090 1.036 1.000 1.110 1.077   4.74
80) Di-n-butylph 1.303 1.328 1.371 1.400 1.297 1.218 1.034 1.189 1.268   9.30
81) Fluoranthene 1.260 1.302 1.356 1.398 1.326 1.276 1.219 1.201 1.292   5.18
82) Octadecane   0.376 0.391 0.408 0.427 0.431 0.391 0.377 0.400 0.400   5.21

83) I   Chrysene-d12          ----------------ISTD---------------------
84) Pyrene       1.112 1.152 1.174 1.266 1.186 1.156 1.167 1.195 1.176   3.76
85) Butyl steara 0.236 0.248 0.263 0.271 0.225 0.192 0.177       0.230  15.16
86) Terphenyl-d1 0.793 0.819 0.933 1.004 0.887 0.875 0.948 1.146 0.926  12.12
87) Butylbenzylp 0.511 0.530 0.525 0.539 0.462 0.429 0.373 0.505 0.484  12.03
88) Benzo[a]anth 1.068 1.120 1.154 1.230 1.091 1.128 1.118 1.392 1.162   8.99
89) 3,3'-Dichlor 0.407 0.419 0.427 0.446 0.399 0.364 0.322 0.383 0.396   9.86
90) Chrysene     0.996 1.039 1.071 1.147 1.109 1.084 1.012 1.048 1.063   4.72
91) bis(2-Ethylh 0.686 0.725 0.717 0.742 0.639 0.580 0.481 0.793 0.670  14.98

92) I   Perylene-d12          ----------------ISTD---------------------
93) Di-n-octylph 1.252 1.305 1.380 1.353 1.087 0.944 0.788 1.156 1.158  18.05
94) Benzo[b]fluo 1.190 1.227 1.300 1.346 1.154 1.121 1.133 1.230 1.213   6.57
95) Benzo[k]fluo 1.004 1.024 1.181 1.263 1.130 1.082 1.054 1.228 1.121   8.54
96) Benzo[a]pyre 1.016 1.040 1.157 1.196 1.069 0.994 0.935 1.225 1.079   9.56
97) Indeno[1,2,3 0.975 1.013 1.106 1.156 1.035 0.952 0.964 1.013 1.027   6.98
98) Dibenz(a,h)a 0.939 0.971 1.064 1.072 0.979 0.884 0.887 0.980 0.972   7.24
```

Initial Calibration Summary

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: EZ5278-ICC5278
Lab FileID: Z105714.D

```
 99) Dibenz[a,h]a 0.992 1.028 1.119 1.144 1.035 0.987 0.987 1.057 1.044   5.76
100) 7,12-Dimethy 0.532 0.555 0.625 0.643 0.465 0.431 0.367       0.517  19.64
101) Benzo[g,h,i] 0.981 1.004 1.135 1.210 1.053 0.973 1.003 1.148 1.063   8.40
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

          MZ5278.M          Tue Nov 03 11:24:49 2015   RTE
```

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: EZ5278-ICV5278
Lab FileID: Z105719.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5278\z105719.D          Vial: 10
Acq On    :  3 Nov 2015   4:47 am                   Operator: saraw
Sample    : icv5278-50                              Inst    : MSZ
Misc      : op88479,ez5278,                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Tue Nov 03 09:57:31 2015
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	132	0.00	4.69
9	t	Phenol	2.102	1.682	20.0	100	0.00	4.45
12	t	2-Chlorophenol	1.492	1.273	14.7	111	0.00	4.54
19	t	2-Methylphenol	1.289	1.188	7.8	114	0.00	4.88
21	t	3&4-Methylphenol	1.409	1.281	9.1	119	0.00	4.99
24	I	Naphthalene-d8	1.000	1.000	0.0	128	0.00	5.61
29	t	2-Nitrophenol	0.208	0.190	8.7	106	0.00	5.34
30	t	2,4-Dimethylphenol	0.404	0.412	-2.0	114	0.00	5.37
31		Benzoic Acid	0.300	0.286	4.7	109	0.00	5.47
33	t	2,4-Dichlorophenol	0.308	0.282	8.4	112	0.00	5.52
34		2,6-Dichlorophenol	0.304	0.287	5.6	115	0.00	5.67
43	t	4-Chloro-3-methylphenol	0.386	0.360	6.7	112	-0.01	6.01
47	I	Acenaphthene-d10	1.000	1.000	0.0	133	0.00	7.01
49	t	2,4,6-Trichlorophenol	0.389	0.341	12.3	113	0.00	6.35
50	t	2,4,5-Trichlorophenol	0.394	0.361	8.4	118	-0.01	6.38
		----------	True	Calc.	% Drift		----------	
60	t	2,4-Dinitrophenol	50.000	40.598	18.8	90	0.00	7.07
		----------	AvgRF	CCRF	% Dev		----------	
61	t	4-Nitrophenol	0.249	0.226	9.2	111	-0.01	7.15
64		2,3,4,6-Tetrachlorophenol	0.372	0.303	18.5	104	0.00	7.35
69	I	Phenanthrene-d10	1.000	1.000	0.0	131	-0.01	8.87
70	t	4,6-Dinitro-2-methylpheno	0.141	0.118	16.3	99	-0.02	7.65
76	t	Pentachlorophenol	0.156	0.144	7.7	108	0.00	8.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5278.M Tue Nov 03 11:12:52 2015 RTE

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5278-ICV5278
Lab FileID: Z105720.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5278\z105720.D          Vial: 11
Acq On    :  3 Nov 2015   7:54 am                   Operator: saraw
Sample    : icv5278-50                              Inst    : MSZ
Misc      : op88479,ez5278,                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Tue Nov 03 09:57:31 2015
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	4.69
3	t	Pyridine	1.500	1.625	-8.3	99	0.08	2.65
10	t	Aniline	2.317	2.230	3.8	90	0.00	4.45
16	t	Benzyl alcohol	0.908	0.915	-0.8	95	0.00	4.80
24	I	Naphthalene-d8	1.000	1.000	0.0	111	0.00	5.61
39	t	4-Chloroaniline	0.444	0.395	11.0	92	0.00	5.67
44	t	2-Methylnaphthalene	0.660	0.597	9.5	99	0.00	6.13
47	I	Acenaphthene-d10	1.000	1.000	0.0	109	0.00	7.01
54	t	2-Nitroaniline	0.380	0.376	1.1	101	0.00	6.60
58	t	3-Nitroaniline	0.331	0.306	7.6	97	0.00	6.97
		----------	AvgRF	CCRF	% Dev	----------		
62	t	Dibenzofuran	1.752	1.538	12.2	99	0.00	7.22
68	t	4-Nitroaniline	0.334	0.295	11.7	98	-0.02	7.62
69	I	Phenanthrene-d10	1.000	1.000	0.0	107	-0.01	8.87
79	t	Carbazole	1.077	0.987	8.4	95	0.00	9.26
83	I	Chrysene-d12	1.000	1.000	0.0	102	-0.02	14.09
92	I	Perylene-d12	1.000	1.000	0.0	98	-0.01	17.13

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5278.M Tue Nov 03 11:12:55 2015 RTE

8.7.24

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: EZ5278-ICV5278
Lab FileID: Z105721.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5278\z105721.D Vial: 12
Acq On : 3 Nov 2015 8:25 am Operator: saraw
Sample : icv5278-50 Inst : MSZ
Misc : op88479,ez5278, Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Tue Nov 03 09:57:31 2015
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	117	0.00	4.69
4	t	N-Nitrosodimethylamine	0.876	0.840	4.1	98	0.00	2.54
11	t	bis(2-Chloroethyl)ether	1.303	1.261	3.2	107	0.00	4.49
14	t	1,3-Dichlorobenzene	1.580	1.405	11.1	100	0.00	4.65
15	t	1,4-Dichlorobenzene	1.628	1.429	12.2	99	0.00	4.70
17	t	1,2-Dichlorobenzene	1.450	1.341	7.5	103	0.00	4.82
20	t	2,2'-oxybis(1-Chloropropa	0.491	0.409	16.7	99	0.00	4.89
22	t	n-Nitroso-di-n-propylamin	1.137	1.013	10.9	99	0.00	4.98
23	t	Hexachloroethane	0.527	0.506	4.0	104	0.00	5.06
24	I	Naphthalene-d8	1.000	1.000	0.0	111	0.00	5.61
26	t	Nitrobenzene	0.452	0.437	3.3	103	0.00	5.11
28	t	Isophorone	0.773	0.746	3.5	102	0.00	5.28
32	t	bis(2-Chloroethoxy)methan	0.428	0.425	0.7	107	0.00	5.43
36	t	1,2,4-Trichlorobenzene	0.351	0.330	6.0	104	0.00	5.57
38	t	Naphthalene	1.110	1.040	6.3	99	0.00	5.63
42	t	Hexachlorobutadiene	0.219	0.207	5.5	105	0.00	5.71
47	I	Acenaphthene-d10	1.000	1.000	0.0	109	0.00	7.01
48	t	Hexachlorocyclopentadiene	0.366	0.354	3.3	90	0.00	6.25
52	t	2-Chloronaphthalene	1.125	1.088	3.3	107	0.00	6.51
55	t	Dimethylphthalate	1.350	1.248	7.6	100	0.00	6.75
56	t	Acenaphthylene	1.957	1.633	16.6	89	0.00	6.87
57	t	2,6-Dinitrotoluene	0.299	0.271	9.4	93	0.00	6.80
59	t	Acenaphthene	1.226	1.144	6.7	103	0.00	7.04
		----------	AvgRF	CCRF	% Dev	----------		
63	t	2,4-Dinitrotoluene	0.425	0.362	14.8	89	0.00	7.20
65	t	Diethylphthalate	1.430	1.266	11.5	98	-0.01	7.46
66	t	Fluorene	1.416	1.287	9.1	98	-0.01	7.59
67	t	4-Chlorophenyl-phenylethe	0.728	0.652	10.4	96	0.00	7.59
69	I	Phenanthrene-d10	1.000	1.000	0.0	107	-0.01	8.87
71	t	n-Nitrosodiphenylamine	0.578	0.488	15.6	89	-0.01	7.73
72	t	1,2-Diphenylhydrazine	0.821	0.788	4.0	99	0.00	7.79
74	t	4-Bromophenyl-phenylether	0.251	0.230	8.4	98	0.00	8.22
75	t	Hexachlorobenzene	0.265	0.245	7.5	94	0.00	8.32
77	t	Phenanthrene	1.095	1.020	6.8	98	-0.01	8.90
78	t	Anthracene	1.118	1.014	9.3	95	0.00	8.98
80	t	Di-n-butylphthalate	1.268	1.196	5.7	93	-0.01	9.94
81	t	Fluoranthene	1.292	1.199	7.2	95	-0.01	11.02

Initial Calibration Verification

Job Number: JC7895 **Sample:** EZ5278-ICV5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z105721.D
Project: Sunoco - Marcus Hook Facility, PA

83	I	Chrysene-d12	1.000	1.000	0.0	100	-0.01	14.10
84	t	Pyrene	1.176	1.128	4.1	96	0.00	11.47
87	t	Butylbenzylphthalate	0.484	0.499	-3.1	94	-0.01	13.04
88	t	Benzo[a]anthracene	1.162	1.108	4.6	96	-0.01	14.07
90	t	Chrysene	1.063	1.011	4.9	94	-0.01	14.16
91	t	bis(2-Ethylhexyl)phthalat	0.670	0.672	-0.3	93	-0.01	14.44
92	I	Perylene-d12	1.000	1.000	0.0	101	-0.01	17.13
93	t	Di-n-octylphthalate	1.158	1.243	-7.3	91	-0.01	15.88
94	t	Benzo[b]fluoranthene	1.213	1.148	5.4	90	-0.01	16.38
95	t	Benzo[k]fluoranthene	1.121	1.094	2.4	94	-0.02	16.44
96	t	Benzo[a]pyrene	1.079	1.090	-1.0	96	-0.01	17.01
97	t	Indeno[1,2,3-cd]pyrene	1.027	1.014	1.3	93	-0.01	19.06
99	t	Dibenz[a,h]anthracene	1.044	1.041	0.3	94	-0.01	19.12
101	t	Benzo[g,h,i]perylene	1.063	1.004	5.6	90	-0.02	19.49

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5278.M Tue Nov 03 11:12:57 2015 RTE

8.7.25

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA
Sample: EZ5278-ICV5278
Lab FileID: Z105722.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5278\z105722.D          Vial: 13
Acq On    :  3 Nov 2015   8:56 am                   Operator: saraw
Sample    : icv5278-50                              Inst    : MSZ
Misc      : op88479,ez5278,                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Tue Nov 03 09:57:31 2015
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	119	0.00	4.69
2		1,4-Dioxane	0.624	0.552	11.5	96	0.00	2.25
6	t	Indene	2.652	2.499	5.8	107	0.00	4.88
7	t	Cumene	4.014	3.683	8.2	102	0.00	4.10
13	t	Decane	1.075	0.968	10.0	105	0.00	4.58
18	t	Acetophenone	2.207	1.917	13.1	99	0.00	4.98
24	I	Naphthalene-d8	1.000	1.000	0.0	139	0.00	5.61
27	t	Quinoline	0.748	0.607	18.9	108	-0.01	5.86
40	t	2,3-Dichloroaniline	0.391	0.273	30.2#	94	0.00	6.34
41	t	Caprolactam	0.128	0.093	27.3	95	-0.03	5.90
45	t	1-Methylnaphthalene	0.682	0.523	23.3	106	0.00	6.20
46	t	Dimethylnaphthalene	0.683	0.545	20.2	106	0.00	6.62
47	I	Acenaphthene-d10	1.000	1.000	0.0	116	0.00	7.01
53	t	Biphenyl	1.553	1.419	8.6	106	0.00	6.49
		----------	AvgRF	CCRF	% Dev	----------		
69	I	Phenanthrene-d10	1.000	1.000	0.0	110	-0.01	8.87
82	t	Octadecane	0.400	0.392	2.0	106	-0.01	8.76
83	I	Chrysene-d12	1.000	1.000	0.0	108	-0.02	14.09
92	I	Perylene-d12	1.000	1.000	0.0	106	-0.01	17.13
100	t	7,12-Dimethylbenz(a)anthr	0.517	0.540	-4.4	92	-0.02	16.39

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5278.M Tue Nov 03 11:12:59 2015 RTE

8.7.26

8

Initial Calibration Verification

Job Number: JC7895 **Sample:** EZ5278-ICV5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z105723.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5278\z105723.D          Vial: 14
Acq On    :  3 Nov 2015   9:27 am                   Operator: saraw
Sample    : icv5278-50                              Inst    : MSZ
Misc      : op88479,ez5278,                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Tue Nov 03 09:57:31 2015
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	126	0.00	4.69
5	S	2-Fluorophenol	1.455	1.366	6.1	106	0.00	3.73
8	S	Phenol-d5	1.876	1.712	8.7	104	0.00	4.44
24	I	Naphthalene-d8	1.000	1.000	0.0	125	0.00	5.61
25	S	Nitrobenzene-d5	0.456	0.444	2.6	109	0.00	5.09
47	I	Acenaphthene-d10	1.000	1.000	0.0	123	0.00	7.01
51	S	2-Fluorobiphenyl	1.378	1.365	0.9	111	0.00	6.40
		----------	AvgRF	CCRF	% Dev	----------		
69	I	Phenanthrene-d10	1.000	1.000	0.0	119	-0.01	8.87
73	S	2,4,6-Tribromophenol	0.125	0.114	8.8	99	-0.01	7.89
83	I	Chrysene-d12	1.000	1.000	0.0	112	-0.02	14.09
86	S	Terphenyl-d14	0.926	0.850	8.2	102	-0.01	11.88
92	I	Perylene-d12	1.000	1.000	0.0	111	-0.01	17.13

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 z105283a.D MZ5278.M         Tue Nov 03 11:13:01 2015   RTE
```

8.7.27

8

Initial Calibration Verification

Job Number: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: EZ5278-ICV5278
Lab FileID: Z105724.D

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5278\z105724.D          Vial: 15
Acq On    :  3 Nov 2015  10:00 am                   Operator: saraw
Sample    : icv5278-50                              Inst    : MSZ
Misc      : op88479,ez5278,                         Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Tue Nov 03 09:57:31 2015
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.
83 I	Chrysene-d12	1.000	1.000	0.0	122	-0.02	14.09
89 t	3,3'-Dichlorobenzidine	0.396	0.552	-39.4#	158	-0.01	14.12

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z105283a.D MZ5278.M Tue Nov 03 11:15:09 2015 RTE

8.7.28

8

Continuing Calibration Summary

Job Number: JC7895 **Sample:** EZ5295-CC5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z106063.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EZ5295\z106063.D Vial: 2
Acq On : 13 Nov 2015 11:58 am Operator: brittanp
Sample : cc5278-50 Inst : MSZ
Misc : op88678,ez5295,30.7,,,1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update : Mon Nov 16 13:34:09 2015
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	84	-0.02	4.67
2		1,4-Dioxane	0.624	0.424	32.1#	52	-0.01	2.23
3	t	Pyridine	1.500	1.088	27.5#	53	-0.09	2.58
4	t	N-Nitrosodimethylamine	0.876	0.632	27.9#	52	-0.01	2.53
5	S	2-Fluorophenol	1.455	1.284	11.8	66	-0.06	3.73
6	t	Indene	2.652	2.601	1.9	78	-0.02	4.86
7	t	Cumene	4.014	3.733	7.0	72	-0.02	4.08
8	S	Phenol-d5	1.876	1.655	11.8	67	-0.06	4.45
9	t	Phenol	2.102	1.811	13.8	68	-0.06	4.46
10	t	Aniline	2.317	1.066	54.0#	34#	-0.02	4.45
11	t	bis(2-Chloroethyl)ether	1.303	1.479	-13.5	90	-0.02	4.47
12	t	2-Chlorophenol	1.492	1.503	-0.7	83	-0.06	4.53
13	t	Decane	1.075	1.293	-20.3#	98	-0.05	4.55
14	t	1,3-Dichlorobenzene	1.580	1.684	-6.6	85	-0.02	4.63
15	t	1,4-Dichlorobenzene	1.628	1.676	-2.9	83	-0.02	4.68
16	t	Benzyl alcohol	0.908	0.790	13.0	66	-0.05	4.78
17	t	1,2-Dichlorobenzene	1.450	1.618	-11.6	89	-0.02	4.80
18	t	Acetophenone	2.207	2.123	3.8	77	-0.05	4.97
19	t	2-Methylphenol	1.289	1.157	10.2	70	-0.05	4.89
20	t	2,2'-oxybis(1-Chloropropa	0.491	0.479	2.4	83	-0.05	4.87
21	t	3&4-Methylphenol	1.409	1.271	9.8	75	-0.05	4.99
22	t	n-Nitroso-di-n-propylamin	1.137	1.114	2.0	78	-0.02	4.97
23	t	Hexachloroethane	0.527	0.587	-11.4	86	-0.05	5.04
24	I	Naphthalene-d8	1.000	1.000	0.0	86	-0.02	5.59
25	S	Nitrobenzene-d5	0.456	0.479	-5.0	80	-0.02	5.08
26	t	Nitrobenzene	0.452	0.448	0.9	82	-0.02	5.09
27	t	Quinoline	0.748	0.765	-2.3	85	-0.03	5.85
28	t	Isophorone	0.773	0.721	6.7	76	-0.02	5.26
29	t	2-Nitrophenol	0.208	0.229	-10.1	86	-0.02	5.32
30	t	2,4-Dimethylphenol	0.404	0.398	1.5	74	-0.03	5.36
31		Benzoic Acid	0.300	0.280	6.7	71	-0.03	5.47
32	t	bis(2-Chloroethoxy)methan	0.428	0.365	14.7	71	-0.02	5.41
33	t	2,4-Dichlorophenol	0.308	0.330	-7.1	87	-0.03	5.51
34		2,6-Dichlorophenol	0.304	0.332	-9.2	89	-0.02	5.66
35	t	1,3,5-Trichlorobenzene	0.370	0.394	-6.5	90	-0.02	5.32
36	t	1,2,4-Trichlorobenzene	0.351	0.368	-4.8	90	-0.02	5.55
37	t	1,2,3-Trichlorobenzene	0.343	0.341	0.6	84	-0.02	5.71
38	t	Naphthalene	1.110	1.138	-2.5	84	-0.02	5.61
39	t	4-Chloroaniline	0.444	0.363	18.2	65	0.00	5.65
40	t	2,3-Dichloroaniline	0.391	0.417	-6.6	88	-0.02	6.32
41	t	Caprolactam	0.128	0.155	-21.1#	98	-0.03	5.92

Continuing Calibration Summary

Job Number: JC7895 **Sample:** EZ5295-CC5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z106063.D
Project: Sunoco - Marcus Hook Facility, PA

42	t	Hexachlorobutadiene	0.219	0.234	-6.8	92	-0.02	5.69
43	t	4-Chloro-3-methylphenol	0.386	0.384	0.5	80	0.00	6.01
44	t	2-Methylnaphthalene	0.660	0.679	-2.9	87	-0.02	6.10
45	t	1-Methylnaphthalene	0.682	0.711	-4.3	89	-0.01	6.18
46	t	Dimethylnaphthalene	0.683	0.730	-6.9	88	-0.02	6.60
47	I	Acenaphthene-d10	1.000	1.000	0.0	94	-0.03	6.99
48	t	Hexachlorocyclopentadiene	0.366	0.431	-17.8	93	-0.02	6.22
49	t	2,4,6-Trichlorophenol	0.389	0.395	-1.5	93	-0.02	6.33
50	t	2,4,5-Trichlorophenol	0.394	0.400	-1.5	93	0.00	6.38
51	S	2-Fluorobiphenyl	1.378	1.451	-5.3	89	-0.02	6.38
52	t	2-Chloronaphthalene	1.125	1.121	0.4	95	-0.02	6.49
53	t	Biphenyl	1.553	1.517	2.3	91	-0.02	6.47
54	t	2-Nitroaniline	0.380	0.423	-11.3	98	-0.02	6.58
55	t	Dimethylphthalate	1.350	1.381	-2.3	95	-0.02	6.72
56	t	Acenaphthylene	1.957	1.872	4.3	88	-0.02	6.85
57	t	2,6-Dinitrotoluene	0.299	0.320	-7.0	94	-0.02	6.78
58	t	3-Nitroaniline	0.331	0.309	6.6	84	-0.03	6.95
59	t	Acenaphthene	1.226	1.195	2.5	93	-0.03	7.02
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	100.000	99.659	0.3	90	-0.03	7.06
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.249	0.341	-36.9#	119	-0.04	7.16
62	t	Dibenzofuran	1.752	1.619	7.6	89	-0.03	7.19
63	t	2,4-Dinitrotoluene	0.425	0.476	-12.0	100	-0.03	7.18
64		2,3,4,6-Tetrachlorophenol	0.372	0.375	-0.8	91	-0.03	7.34
65	t	Diethylphthalate	1.430	1.528	-6.9	101	-0.02	7.43
66	t	Fluorene	1.416	1.429	-0.9	93	-0.02	7.57
67	t	4-Chlorophenyl-phenylethe	0.728	0.694	4.7	87	-0.03	7.56
68	t	4-Nitroaniline	0.334	0.327	2.1	93	-0.03	7.62
69	I	Phenanthrene-d10	1.000	1.000	0.0	93	-0.03	8.84
70	t	4,6-Dinitro-2-methylpheno	0.141	0.161	-14.2	95	-0.03	7.65
71	t	n-Nitrosodiphenylamine	0.578	0.585	-1.2	92	-0.03	7.71
72	t	1,2-Diphenylhydrazine	0.821	0.836	-1.8	91	-0.03	7.76
73	S	2,4,6-Tribromophenol	0.125	0.142	-13.6	96	-0.03	7.87
74	t	4-Bromophenyl-phenylether	0.251	0.260	-3.6	96	-0.03	8.19
75	t	Hexachlorobenzene	0.265	0.294	-10.9	98	-0.04	8.28
76	t	Pentachlorophenol	0.156	0.182	-16.7	96	-0.04	8.58
77	t	Phenanthrene	1.095	1.132	-3.4	94	-0.04	8.88
78	t	Anthracene	1.118	1.168	-4.5	95	-0.04	8.96
79	t	Carbazole	1.077	1.100	-2.1	92	-0.04	9.24
80	t	Di-n-butylphthalate	1.268	1.511	-19.2	102	-0.04	9.90
81	t	Fluoranthene	1.292	1.365	-5.7	93	-0.04	11.00
82	t	Octadecane	0.400	0.438	-9.5	99	-0.03	8.72
83	I	Chrysene-d12	1.000	1.000	0.0	100	-0.04	14.07
84	t	Pyrene	1.176	1.150	2.2	98	0.00	11.44
85		Butyl stearate	0.230	0.274	-19.1	105	-0.03	13.28
86	S	Terphenyl-d14	0.926	0.934	-0.9	100	-0.09	11.85
87	t	Butylbenzylphthalate	0.484	0.575	-18.8	110	-0.04	13.00
88	t	Benzo[a]anthracene	1.162	1.124	3.3	98	-0.04	14.05
89	t	3,3'-Dichlorobenzidine	0.396	0.448	-13.1	105	-0.04	14.09
90	t	Chrysene	1.063	1.040	2.2	97	-0.04	14.13
91	t	bis(2-Ethylhexyl)phthalat	0.670	0.764	-14.0	107	-0.03	14.40
92	I	Perylene-d12	1.000	1.000	0.0	102	-0.05	17.10
93	t	Di-n-octylphthalate	1.158	1.448	-25.0#	107	-0.03	15.84

Continuing Calibration Summary

Job Number: JC7895 **Sample:** EZ5295-CC5278
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z106063.D
Project: Sunoco - Marcus Hook Facility, PA

94	t	Benzo[b]fluoranthene	1.213	1.328	-9.5	104	-0.05	16.36
95	t	Benzo[k]fluoranthene	1.121	1.167	-4.1	101	-0.05	16.42
96	t	Benzo[a]pyrene	1.079	1.148	-6.4	101	-0.05	16.99
97	t	Indeno[1,2,3-cd]pyrene	1.027	1.130	-10.0	104	-0.04	19.05
98	t	Dibenz(a,h)acridine	0.972	1.070	-10.1	102	-0.05	18.68
99	t	Dibenz[a,h]anthracene	1.044	1.142	-9.4	104	-0.04	19.10
100	t	7,12-Dimethylbenz(a)anthr	0.517	0.606	-17.2	99	-0.05	16.37
101	t	Benzo[g,h,i]perylene	1.063	1.084	-2.0	97	-0.04	19.48

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z106041.D MZ5278.M Mon Nov 16 13:36:04 2015 RTE

8.7.29

8

Continuing Calibration Summary

Job Number: JC7895 **Sample:** EZ5295-CC5255
Account: SECORPAE Stantec Consulting Services Inc. **Lab FileID:** Z106064.D
Project: Sunoco - Marcus Hook Facility, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\EZ5295\z106064.D          Vial: 3
Acq On    : 13 Nov 2015  12:45 pm                   Operator: brittanp
Sample    : cc5255-50                               Inst    : MSZ
Misc      : op88678,ez5295,30.7,,,1,1               Multiplr: 1.00
MS Integration Params: RTEINT.P

Method       : C:\MSDCHEM\1\METHODS\MZ5278.M (RTE Integrator)
Title        : Semi Volatile  GC/MS, ZB-5MS 15m x .25mm x .25um
Last Update  : Mon Nov 16 08:16:11 2015
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	97	0.00	4.67
103	Benzaldehyde	1.097	0.789	28.1#	67	-0.21	4.35
104	Phenanthrene-d10a	1.000	1.000	0.0	97	0.00	8.83
105	Atrazine	0.113	0.122	-8.0	109	0.05	8.45
106	Chrysene-d12a	1.000	1.000	0.0	112	-0.01	14.06
107	Benzidine	0.586	0.422	28.0#	80	0.00	11.33
108	Acenaphthene-d10a	1.000	1.000	0.0	90	0.00	6.99
109	1,2,4,5-Tetrachlorobenzen	0.499	0.555	-11.2	105	0.04	6.23
110 I	Naphthalene-d8a	1.000	1.000	0.0	90	0.00	5.59
111	Hydroquinone	0.349	0.279	20.1#	74	0.03	5.91

(#) = Out of Range SPCC's out = 0 CCC's out = 0
z106041.D MZ5278.M Mon Nov 16 08:17:23 2015 RTE

8.7.30

8

New Jersey

ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 11/19/15 08:23

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1188\
Data File : 5p23331.D
Acq On : 17 Nov 15 10:08 pm
Operator : sarad
Sample : jc7895-1
Misc : op89030,e5p1188,18.4,,,1,2
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 18 09:44:33 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Tue Nov 17 19:14:06 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	5.118	152	173485	40.00	ppm	0.00
24) Naphthalene-d8	6.587	136	629991	40.00	ppm	0.00
47) Acenaphthene-d10	8.708	164	385269	40.00	ppm	0.02
69) Phenanthrene-d10	10.530	188	623116	40.00	ppm	0.02
83) Chrysene-d12	14.312	240	601254	40.00	ppm	0.03
92) Perylene-d12	16.395	264	583623	40.00	ppm	0.05
102) 1,4-Dichlorobenzene-d4a	5.118	152	173485	40.00	ppm	0.00
104) Acenaphthene-d10a	8.708	164	385269	40.00	ppm	0.02
106) Chrysene-d12a	14.312	240	603764	40.00	ppm	0.03
108) Phenanthrene-d10a	10.530	188	623116	40.00	ppm	0.02
110) Naphthalene-d8a	6.587	136	629991	40.00	ppm	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	3.777	112	93243	14.96	ppm	0.00
Spiked Amount 50.000			Recovery = 29.92%			
8) Phenol-d5	4.781	99	117418	15.75	ppm	0.02
Spiked Amount 50.000			Recovery = 31.50%			
25) Nitrobenzene-d5	5.748	82	104869	19.28	ppm	-0.01
Spiked Amount 50.000			Recovery = 38.56%			
51) 2-Fluorobiphenyl	7.896	172	214296	17.58	ppm	0.00
Spiked Amount 50.000			Recovery = 35.16%			
73) 2,4,6-Tribromophenol	9.680	330	28426	16.58	ppm	0.02
Spiked Amount 50.000			Recovery = 33.16%			
85) Terphenyl-d14	12.757	244	218525	17.74	ppm	0.02
Spiked Amount 50.000			Recovery = 35.48%			
Target Compounds						Qvalue
44) 2-Methylnaphthalene	7.453	141	1447942	152.37	ppm	99
59) Acenaphthene	8.745	153	357155	30.64	ppm	96
66) Fluorene	9.376	166	596338	45.05	ppm	96
77) Phenanthrene	10.567	178	2075483	106.92	ppm	99
78) Anthracene	10.626	178	369994m	19.18	ppm	
81) Fluoranthene	12.180	202	170880	8.68	ppm	94
84) Pyrene	12.501	202	1092446	52.76	ppm	95
88) Benzo[a]anthracene	14.296	228	233587	12.84	ppm	95
90) Chrysene	14.349	228	487676	27.06	ppm	82
94) Benzo[b]fluoranthene	15.877	252	111584	6.56	ppm	97
95) Benzo[k]fluoranthene	15.909	252	15695	0.92	ppm	63
96) Benzo[a]pyrene	16.315	252	250209	15.76	ppm	93
97) Indeno[1,2,3-cd]pyrene	17.961	276	44946m	2.81	ppm	
99) Dibenz[a,h]anthracene	17.987	278	51261	3.12	ppm	85
101) Benzo[g,h,i]perylene	18.415	276	206542	12.07	ppm	97

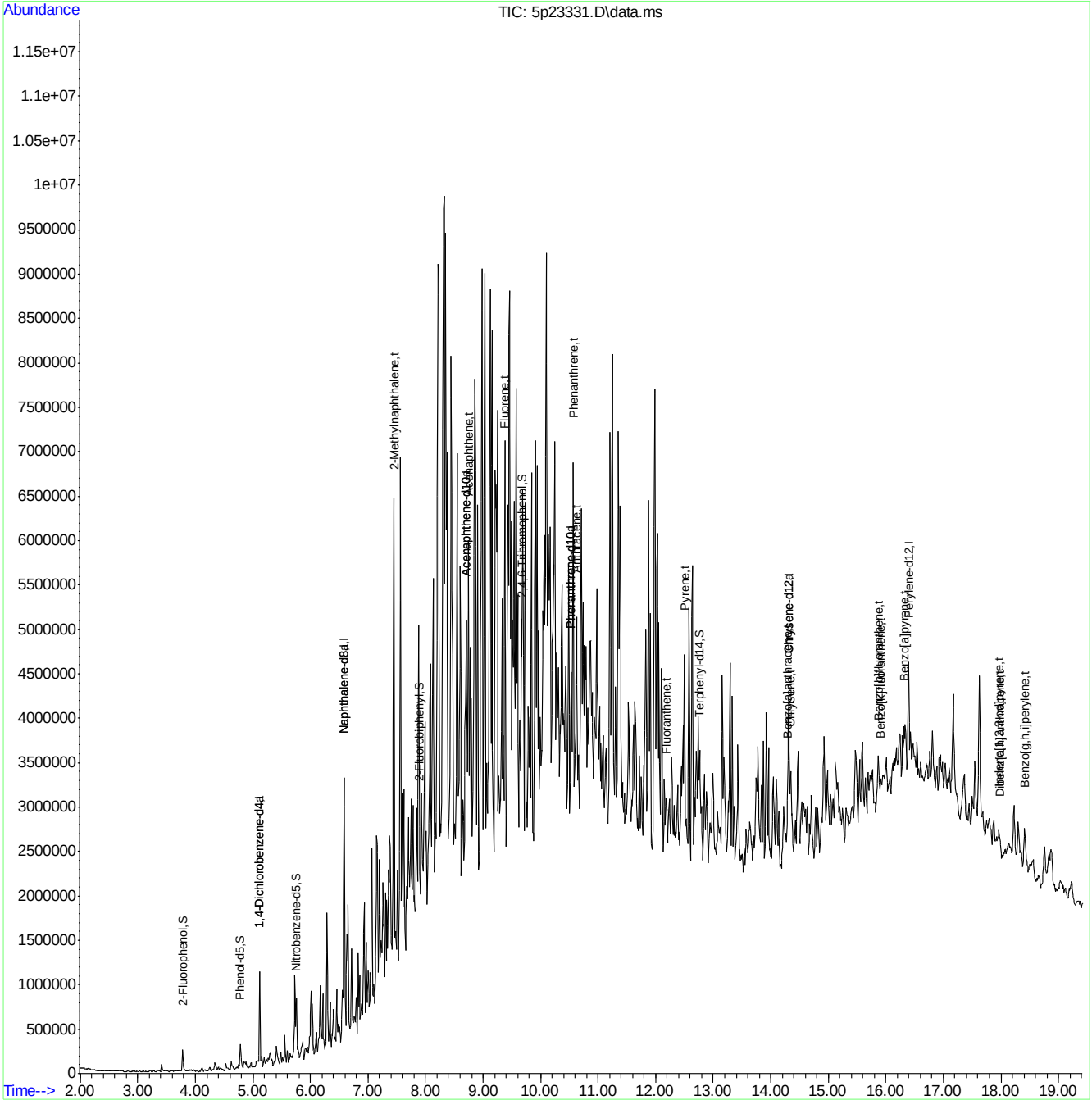
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.1
9

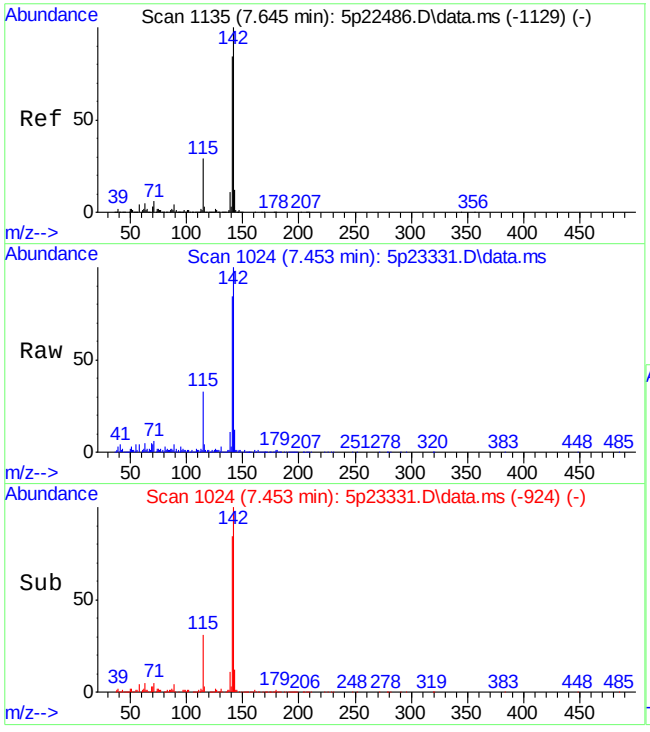
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1188\
Data File : 5p23331.D
Acq On : 17 Nov 15 10:08 pm
Operator : sarad
Sample : jc7895-1
Misc : op89030,e5p1188,18.4,,,1,2
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 18 09:44:33 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Tue Nov 17 19:14:06 2015
Response via : Initial Calibration



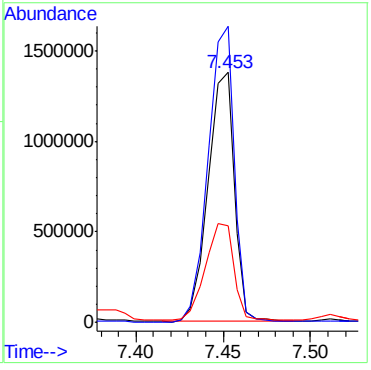
M5P1165.M Wed Nov 18 09:44:44 2015 RPT1 Page: 2

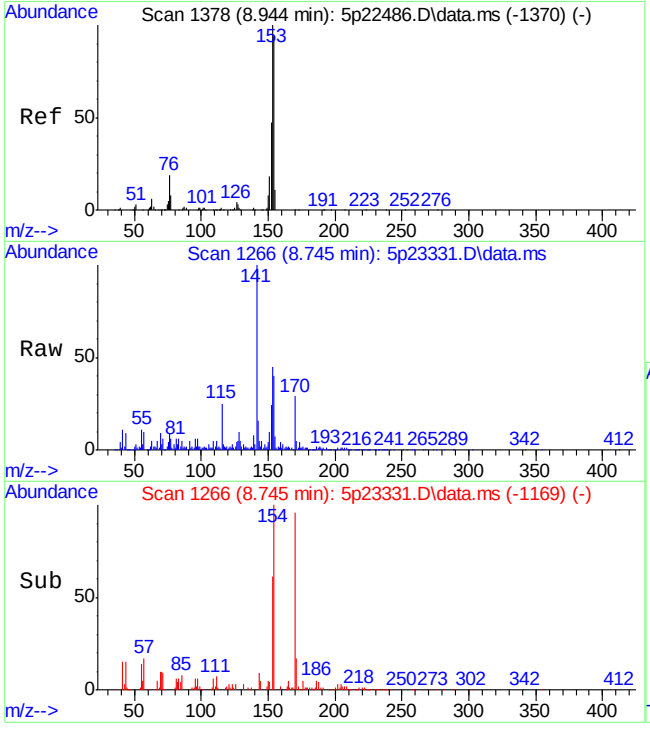


#44
2-Methylnaphthalene
Concen: 152.37 ppm
RT: 7.453 min Scan# 1024
Delta R.T. 0.032 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:141 Resp: 1447942

Ion	Ratio	Lower	Upper
141	100		
142	118.7	88.6	148.6
115	37.9	5.3	65.3

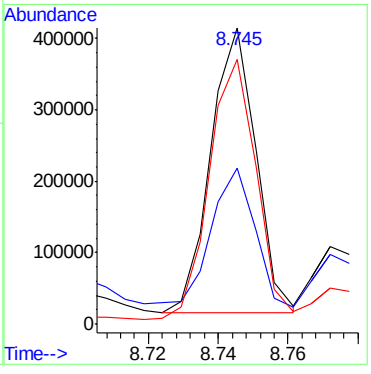




#59
Acenaphthene
Concen: 30.64 ppm
RT: 8.745 min Scan# 1266
Delta R.T. 0.017 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:153 Resp: 357155

Ion	Ratio	Lower	Upper
153	100		
152	48.7	16.1	76.1
154	91.1	57.7	117.7



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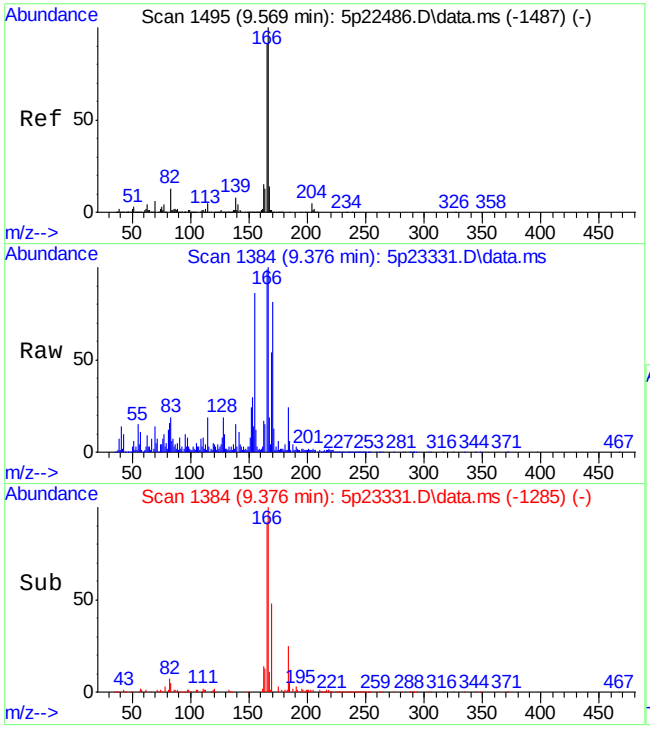
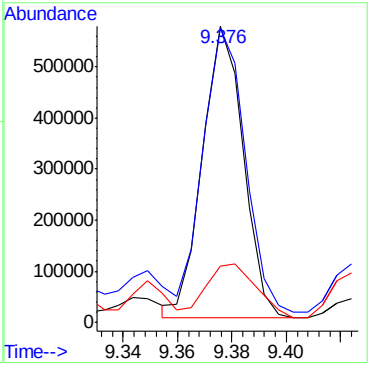
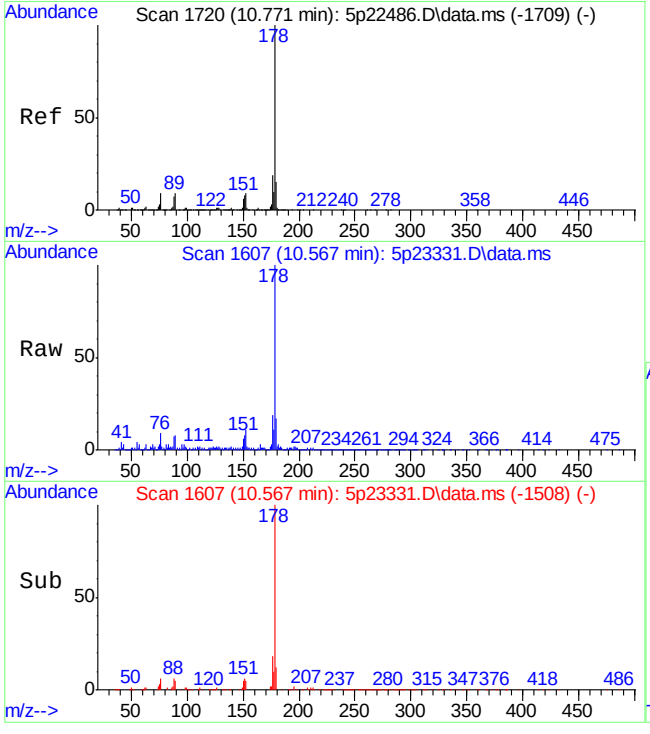


#66
Fluorene
Concen: 45.05 ppm
RT: 9.376 min Scan# 1384
Delta R.T. 0.031 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:166 Resp: 596338

Ion	Ratio	Lower	Upper
166	100		
165	95.0	60.3	120.3
167	13.7	0.0	43.3

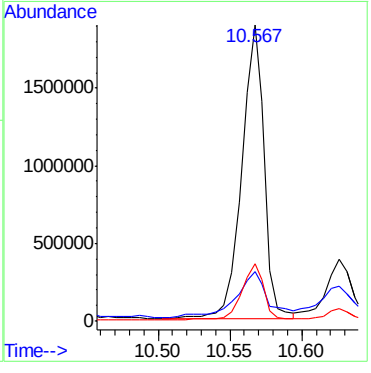




#77
Phenanthrene
Concen: 106.92 ppm
RT: 10.567 min Scan# 1607
Delta R.T. 0.027 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:178 Resp: 2075483

Ion	Ratio	Lower	Upper
178	100		
179	14.5	0.0	45.2
176	19.0	0.0	48.8



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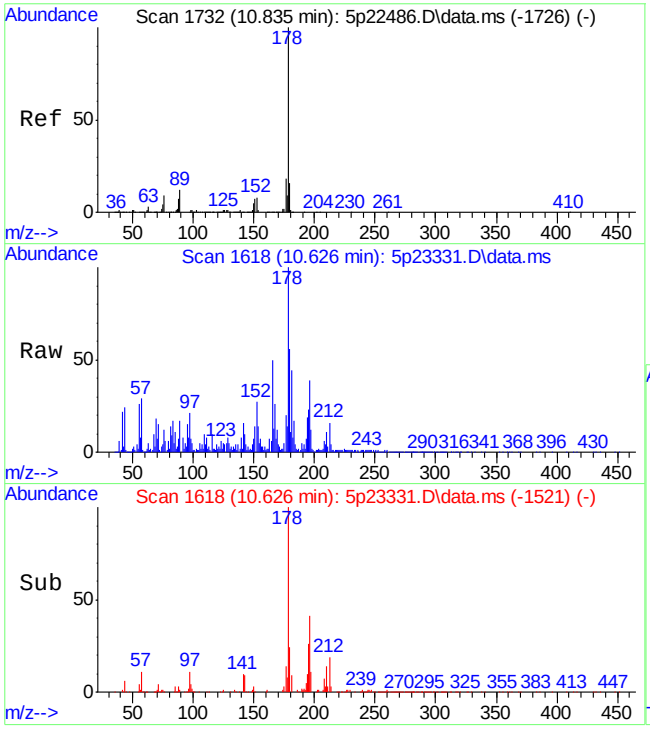
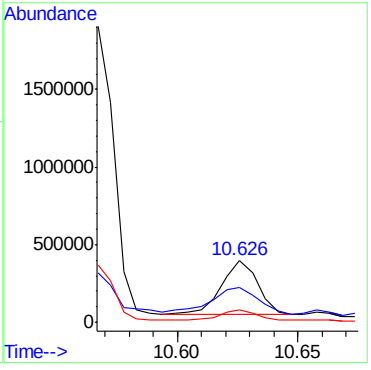
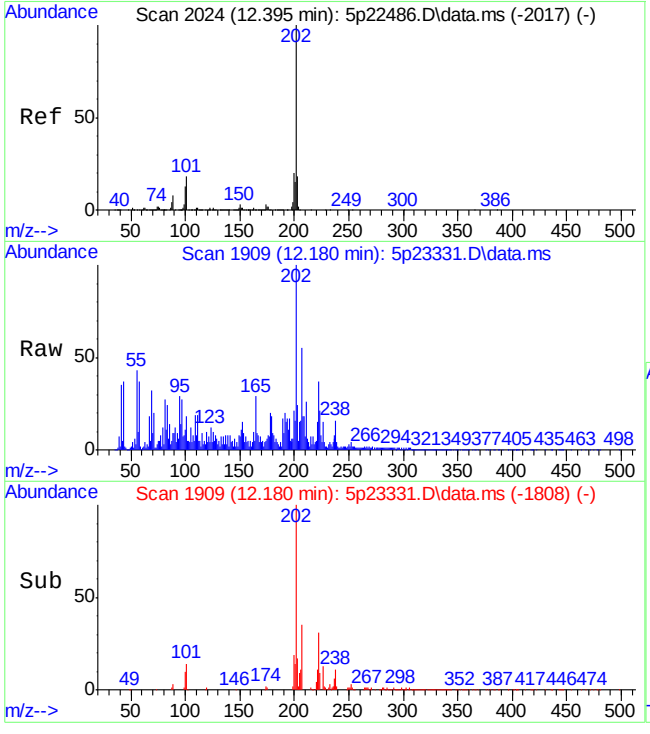


#78
Anthracene
Concen: 19.18 ppm m
RT: 10.626 min Scan# 1618
Delta R.T. 0.017 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:178 Resp: 369994

Ion	Ratio	Lower	Upper
178	100		
179	55.6	0.0	45.2#
176	20.3	0.0	47.9

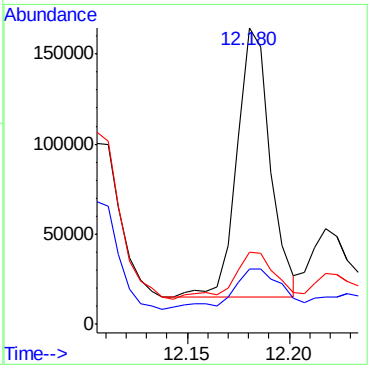




#81
Fluoranthene
Concen: 8.68 ppm
RT: 12.180 min Scan# 1909
Delta R.T. 0.038 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:202 Resp: 170880

Ion	Ratio	Lower	Upper
202	100		
101	13.2	0.0	47.7
203	16.7	0.0	47.6



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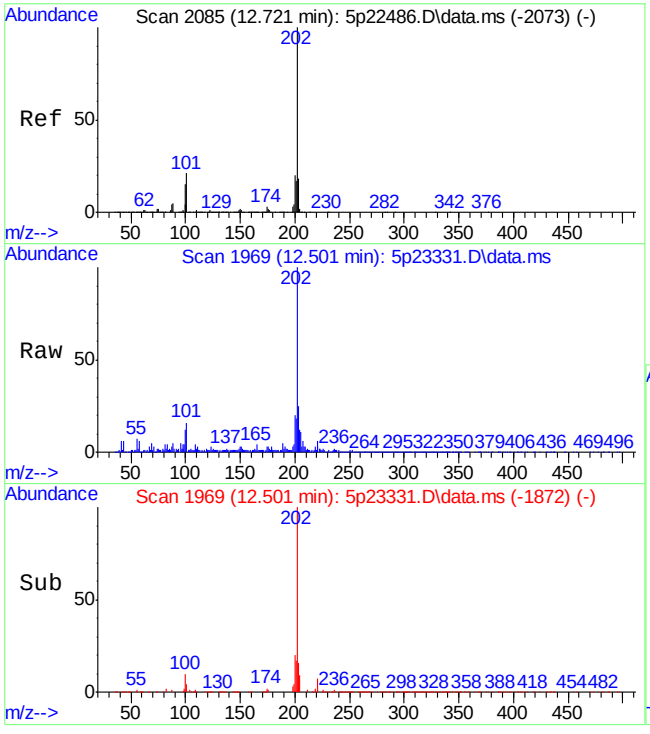
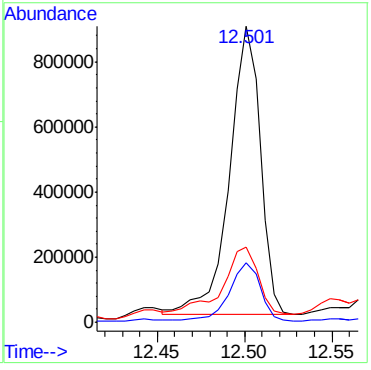
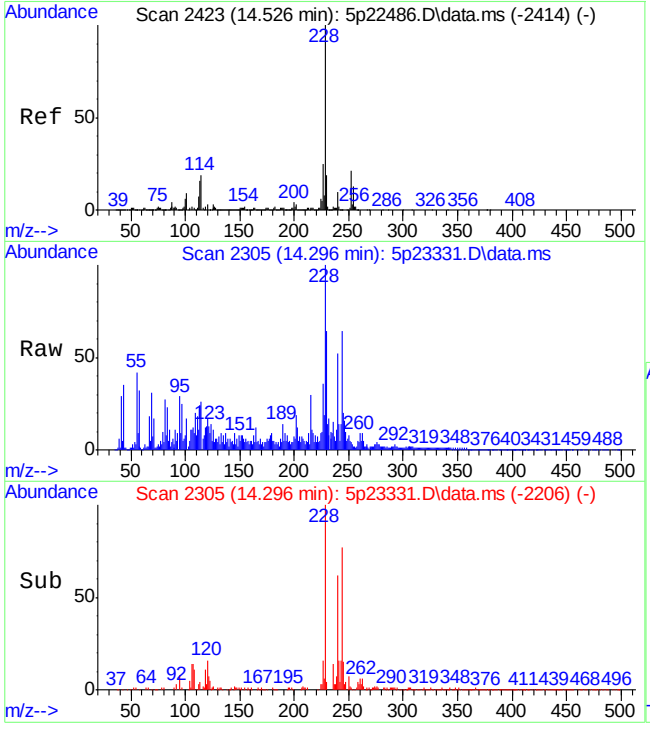


#84
Pyrene
Concen: 52.76 ppm
RT: 12.501 min Scan# 1969
Delta R.T. 0.017 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:202 Resp: 1092446

Ion	Ratio	Lower	Upper
202	100		
200	20.2	0.0	49.9
203	23.0	0.0	48.3

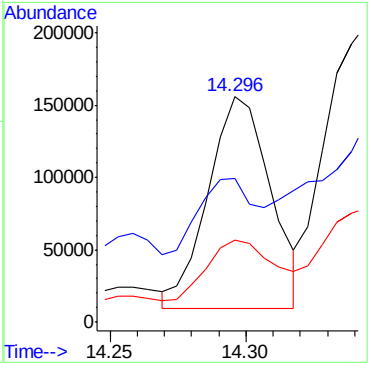




#88
Benzo[a]anthracene
Concen: 12.84 ppm
RT: 14.296 min Scan# 2305
Delta R.T. 0.026 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:228 Resp: 233587

Ion	Ratio	Lower	Upper
228	100		
229	25.3	0.0	50.3
226	26.7	0.0	56.5



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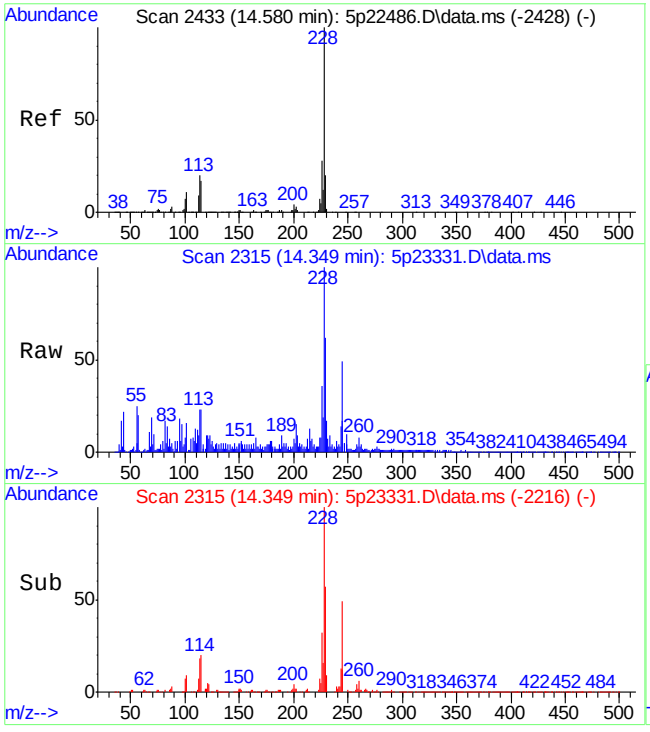
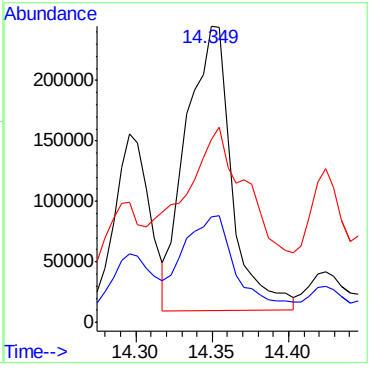
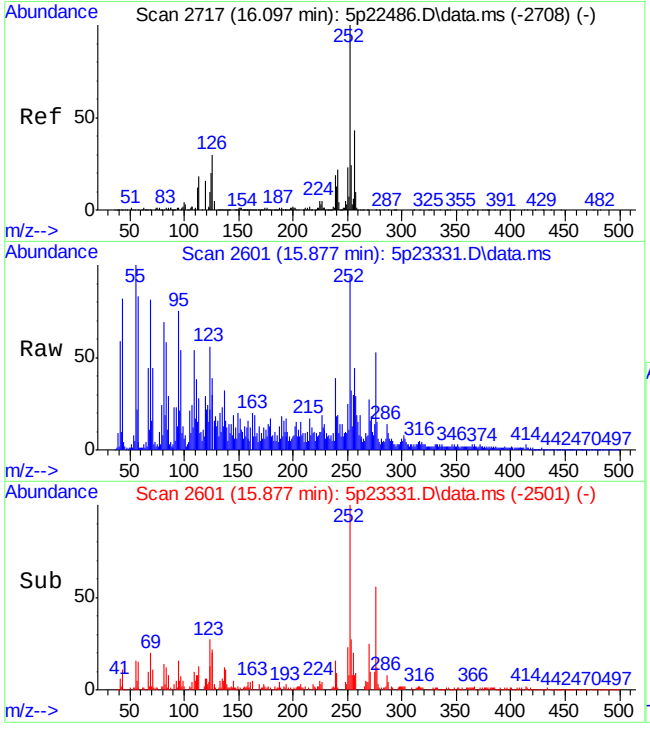


#90
Chrysene
Concen: 27.06 ppm
RT: 14.349 min Scan# 2315
Delta R.T. 0.027 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:228 Resp: 487676

Ion	Ratio	Lower	Upper
228	100		
226	29.2	0.0	57.6
229	36.9	0.0	49.4

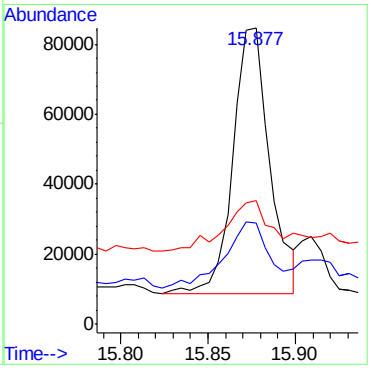




#94
Benzo[b]fluoranthene
Concen: 6.56 ppm
RT: 15.877 min Scan# 2601
Delta R.T. 0.032 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:252 Resp: 111584

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	54.3
125	17.0	0.0	48.2



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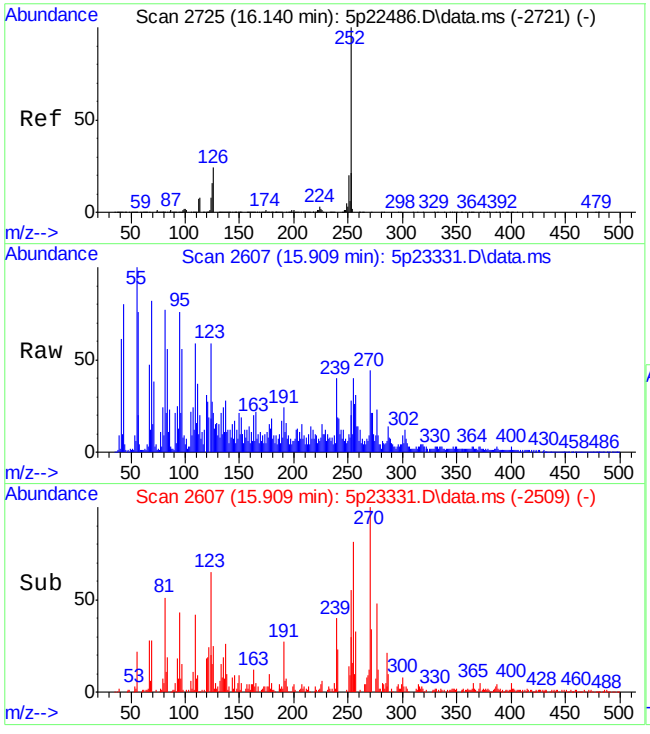
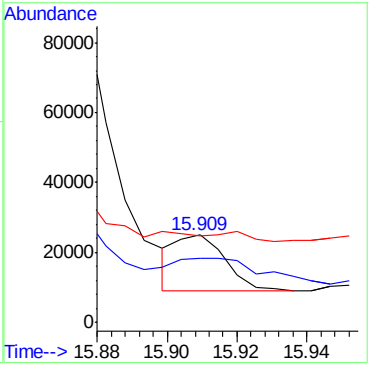
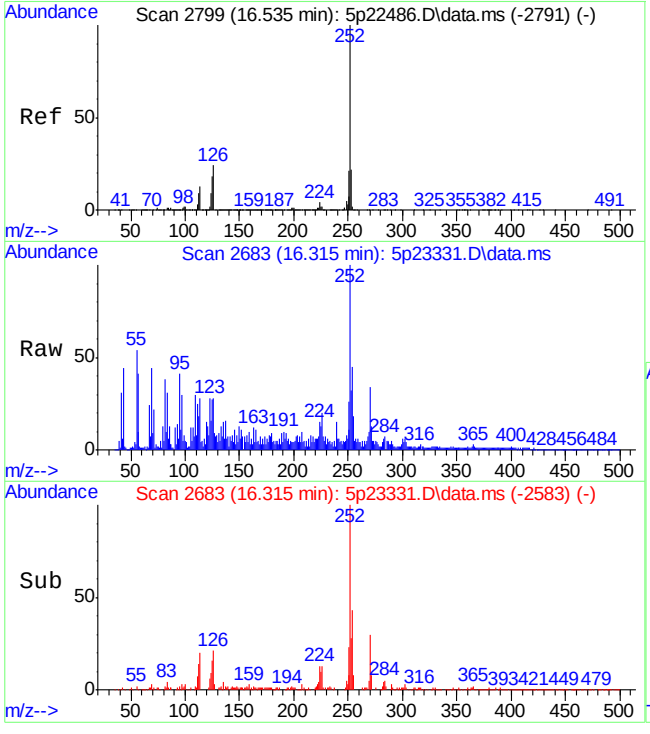


#95
Benzo[k]fluoranthene
Concen: 0.92 ppm
RT: 15.909 min Scan# 2607
Delta R.T. 0.021 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:252 Resp: 15695

Ion	Ratio	Lower	Upper
252	100		
253	39.0	0.0	51.8
125	0.0	0.0	46.7

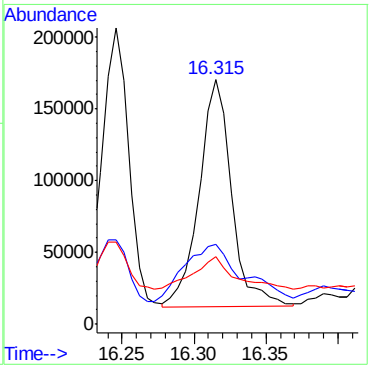




#96
Benzo[a]pyrene
Concen: 15.76 ppm
RT: 16.315 min Scan# 2683
Delta R.T. 0.036 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:252 Resp: 250209

Ion	Ratio	Lower	Upper
252	100		
253	23.6	0.0	51.9
125	14.0	0.0	49.2



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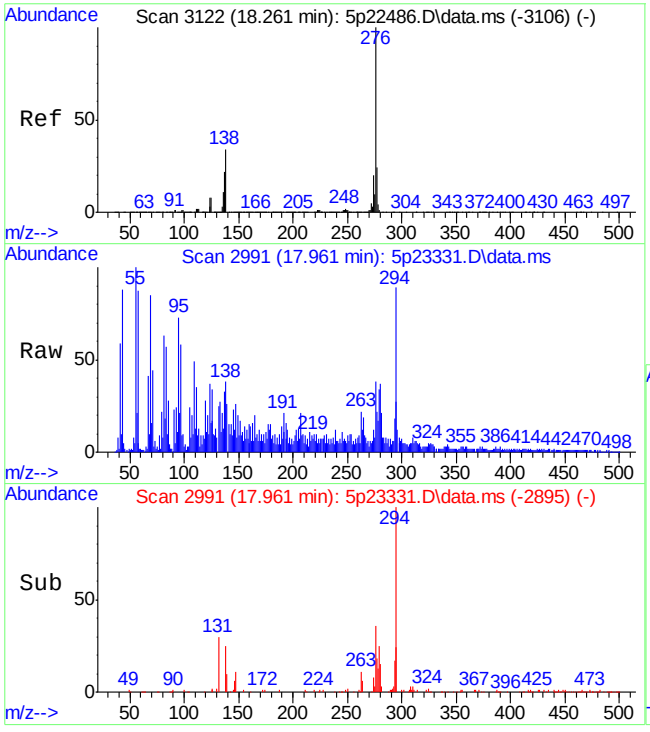
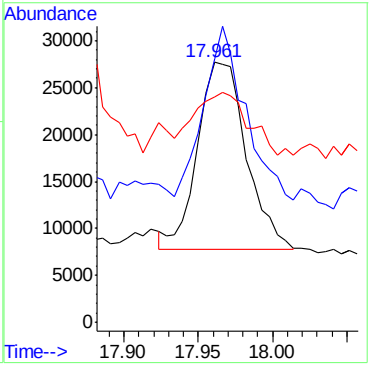
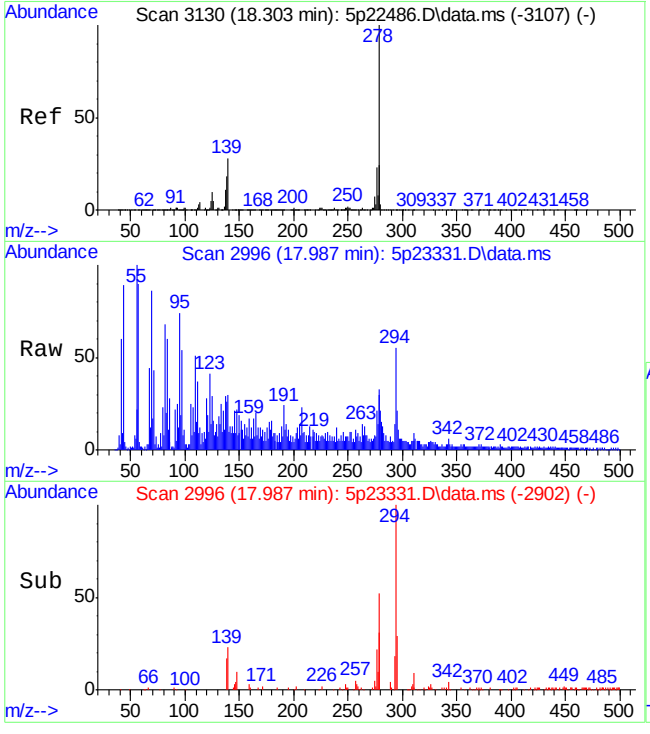


#97
Indeno[1,2,3-cd]pyrene
Concen: 2.81 ppm m
RT: 17.961 min Scan# 2991
Delta R.T. 0.015 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:276 Resp: 44946

Ion	Ratio	Lower	Upper
276	100		
138	101.1	0.0	56.7#
137	86.6	0.0	50.6#

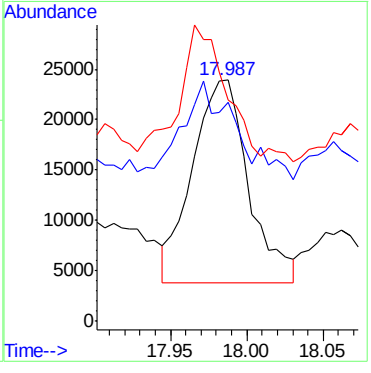




#99
Dibenz[a,h]anthracene
Concen: 3.12 ppm
RT: 17.987 min Scan# 2996
Delta R.T. 0.005 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:278 Resp: 51261

Ion	Ratio	Lower	Upper
278	100		
139	38.3	0.0	56.4
279	26.3	0.0	53.7



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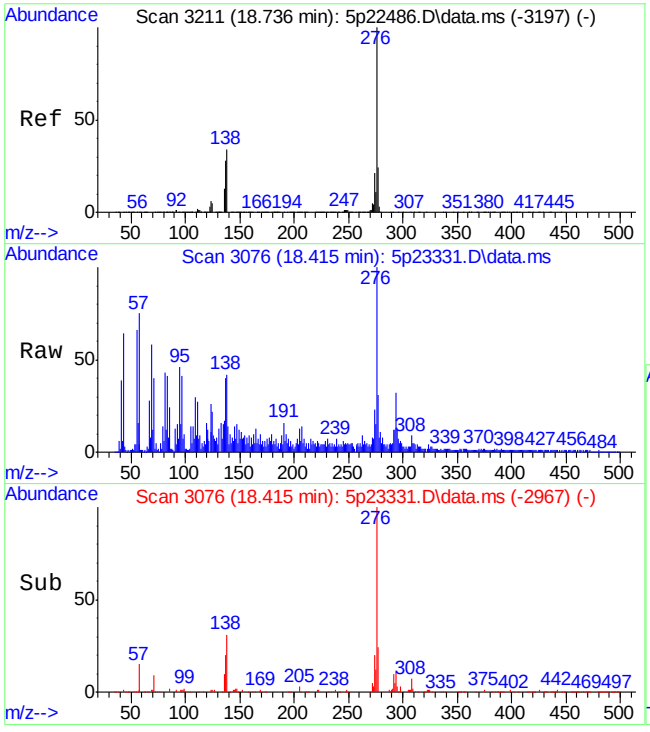
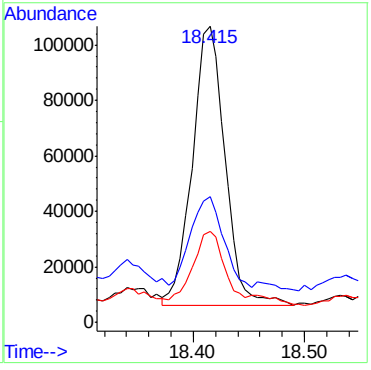


#101
Benzo[g,h,i]perylene
Concen: 12.07 ppm
RT: 18.415 min Scan# 3076
Delta R.T. 0.080 min
Lab File: 5p23331.D
Acq: 17 Nov 15 10:08 pm

Tgt Ion:276 Resp: 206542

Ion	Ratio	Lower	Upper
276	100		
138	31.8	3.4	63.4
277	25.2	0.0	53.2



9.1.1

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Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 11/19/15 08:23

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1189\
Data File : 5p23366.D
Acq On : 18 Nov 15 5:00 pm
Operator : alicjap
Sample : jc7895-1
Misc : op89030,e5p1189,18.4,,,1,10
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 18 18:15:50 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Wed Nov 18 14:22:41 2015
Response via : Initial Calibration

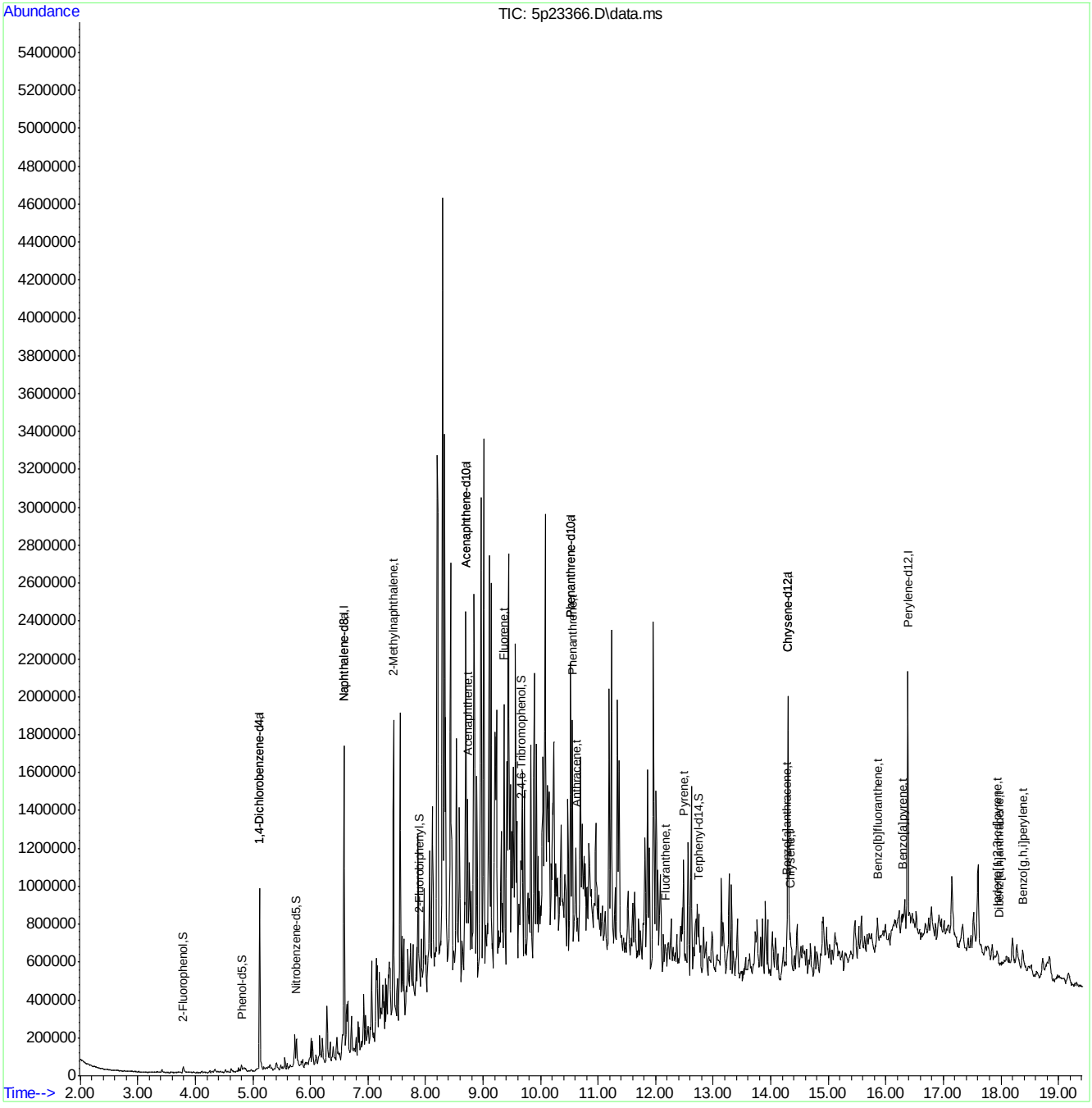
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	5.118	152	162681	40.00	ppm	0.00
24) Naphthalene-d8	6.587	136	607032	40.00	ppm	0.00
47) Acenaphthene-d10	8.697	164	364505	40.00	ppm	0.00
69) Phenanthrene-d10	10.524	188	595828	40.00	ppm	0.00
83) Chrysene-d12	14.301	240	559928	40.00	ppm	-0.01
92) Perylene-d12	16.379	264	559904	40.00	ppm	0.00
102) 1,4-Dichlorobenzene-d4a	5.118	152	162681	40.00	ppm	0.00
104) Acenaphthene-d10a	8.697	164	364505	40.00	ppm	0.00
106) Chrysene-d12a	14.301	240	559928	40.00	ppm	-0.01
108) Phenanthrene-d10a	10.524	188	595828	40.00	ppm	0.00
110) Naphthalene-d8a	6.587	136	607032	40.00	ppm	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	3.788	112	17254	2.95	ppm	0.00
Spiked Amount 50.000			Recovery	=	5.90%	
8) Phenol-d5	4.803	99	20850	2.98	ppm	0.03
Spiked Amount 50.000			Recovery	=	5.96%	
25) Nitrobenzene-d5	5.754	82	19578	3.74	ppm	-0.01
Spiked Amount 50.000			Recovery	=	7.48%	
51) 2-Fluorobiphenyl	7.891	172	47666	4.13	ppm	-0.02
Spiked Amount 50.000			Recovery	=	8.26%	
73) 2,4,6-Tribromophenol	9.670	330	5763	3.51	ppm	0.00
Spiked Amount 50.000			Recovery	=	7.02%	
85) Terphenyl-d14	12.741	244	48752	4.25	ppm	-0.03
Spiked Amount 50.000			Recovery	=	8.50%	
Target Compounds						Qvalue
44) 2-Methylnaphthalene	7.442	141	351746	38.42	ppm	97
59) Acenaphthene	8.735	153	84232	7.64	ppm	92
66) Fluorene	9.365	166	139169	11.11	ppm	91
77) Phenanthrene	10.551	178	486439	26.21	ppm	99
78) Anthracene	10.615	178	85492	4.63	ppm	71
81) Fluoranthene	12.170	202	38286	2.03	ppm	93
84) Pyrene	12.485	202	235356	12.21	ppm	93
88) Benzo[a]anthracene	14.285	228	49221	2.91	ppm	92
90) Chrysene	14.339	228	105688	6.30	ppm	80
94) Benzo[b]fluoranthene	15.861	252	22926m	1.40	ppm	
96) Benzo[a]pyrene	16.299	252	55199	3.62	ppm	90
97) Indeno[1,2,3-cd]pyrene	17.934	276	10184m	0.66	ppm	
99) Dibenz[a,h]anthracene	17.961	278	8733	0.55	ppm	74
101) Benzo[g,h,i]perylene	18.377	276	44610	2.72	ppm	90

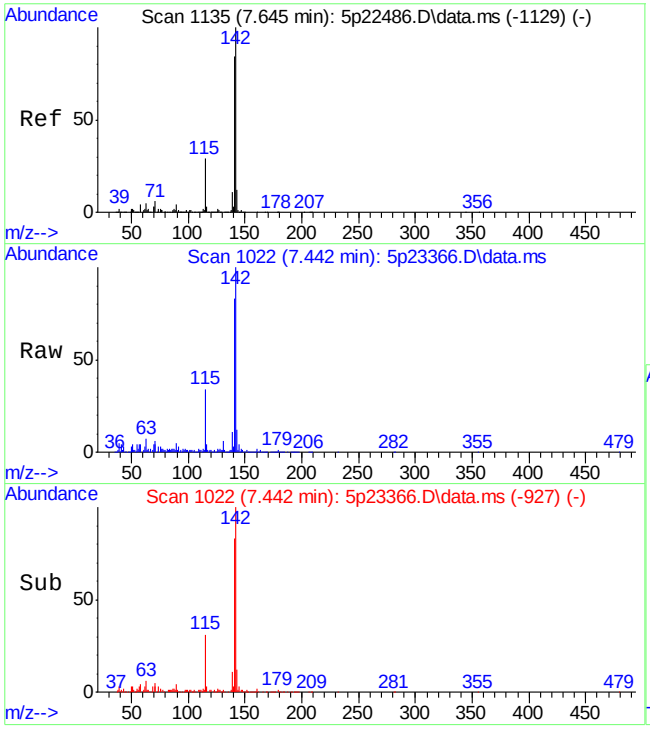
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1189\
Data File : 5p23366.D
Acq On : 18 Nov 15 5:00 pm
Operator : alicjap
Sample : jc7895-1
Misc : op89030,e5p1189,18.4,,,1,10
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 18 18:15:50 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Wed Nov 18 14:22:41 2015
Response via : Initial Calibration

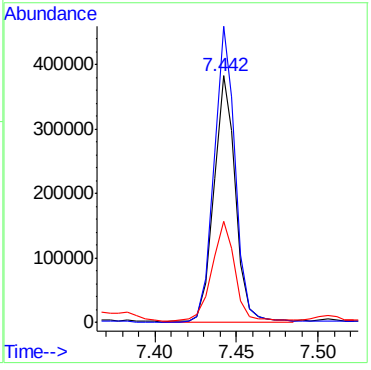


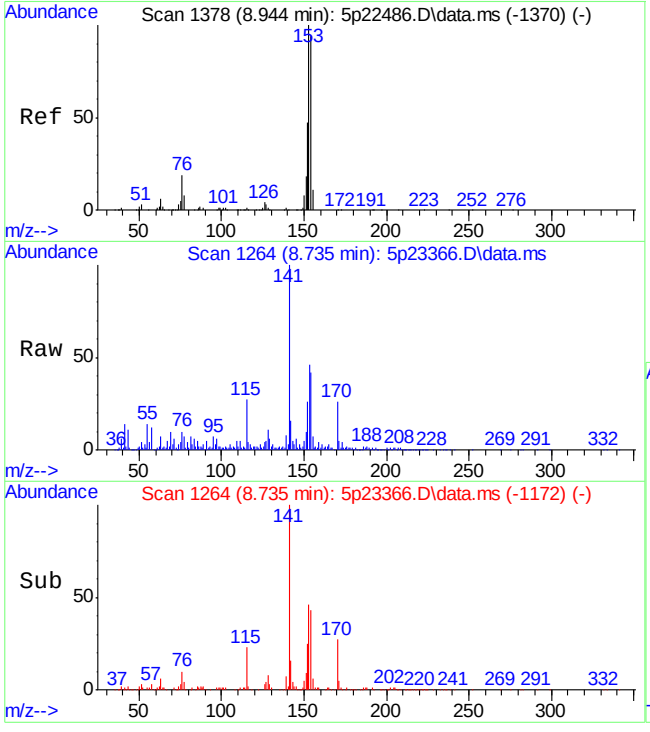


#44
2-Methylnaphthalene
Concen: 38.42 ppm
RT: 7.442 min Scan# 1022
Delta R.T. 0.010 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:141 Resp: 351746

Ion	Ratio	Lower	Upper
141	100		
142	120.4	88.6	148.6
115	40.2	5.3	65.3

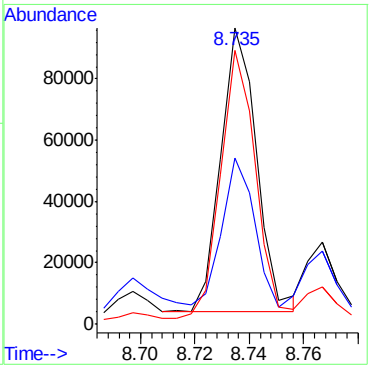




#59
Acenaphthene
Concen: 7.64 ppm
RT: 8.735 min Scan# 1264
Delta R.T. -0.010 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

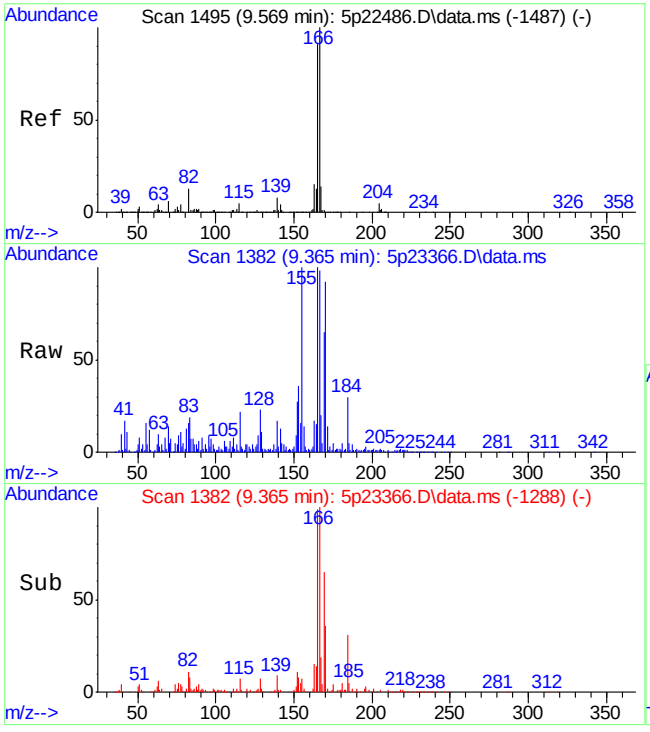
Tgt Ion:153 Resp: 84232

Ion	Ratio	Lower	Upper
153	100		
152	50.5	16.1	76.1
154	95.6	57.7	117.7



9.1.2

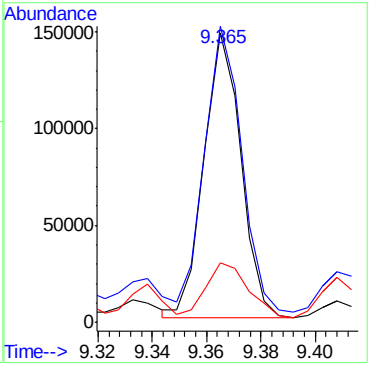
9

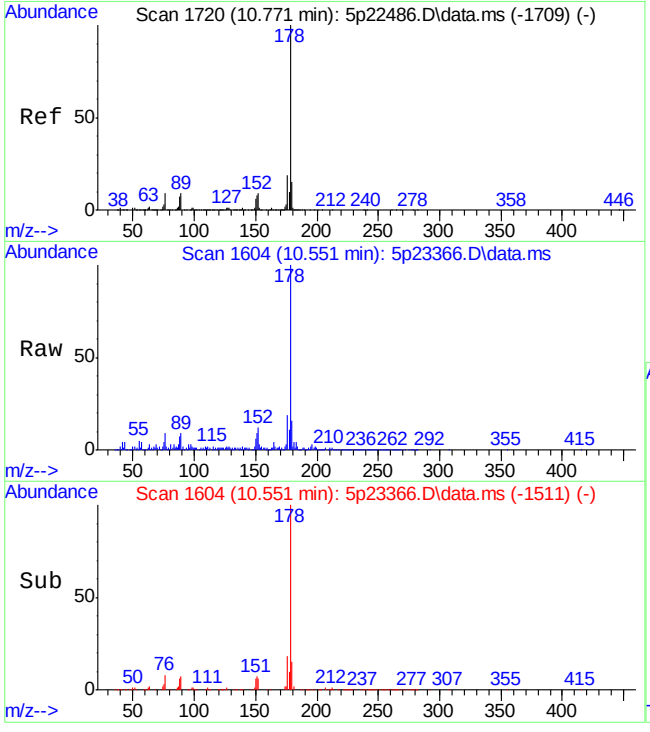


#66
Fluorene
Concen: 11.11 ppm
RT: 9.365 min Scan# 1382
Delta R.T. 0.004 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:166 Resp: 139169

Ion	Ratio	Lower	Upper
166	100		
165	99.0	60.3	120.3
167	16.5	0.0	43.3

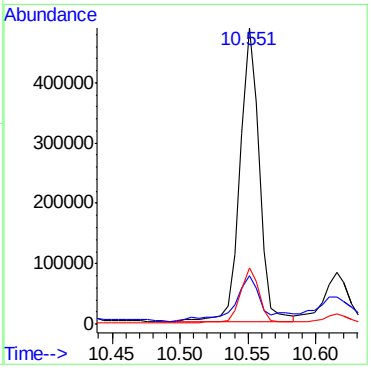


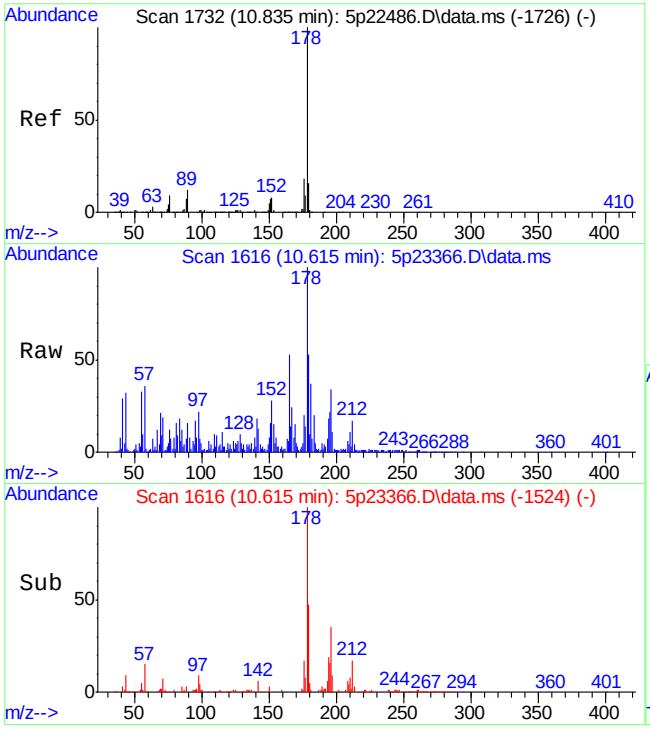


#77
Phenanthrene
Concen: 26.21 ppm
RT: 10.551 min Scan# 1604
Delta R.T. -0.005 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:178 Resp: 486439

Ion	Ratio	Lower	Upper
178	100		
179	14.2	0.0	45.2
176	18.7	0.0	48.8

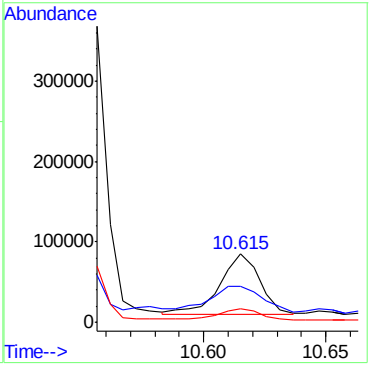


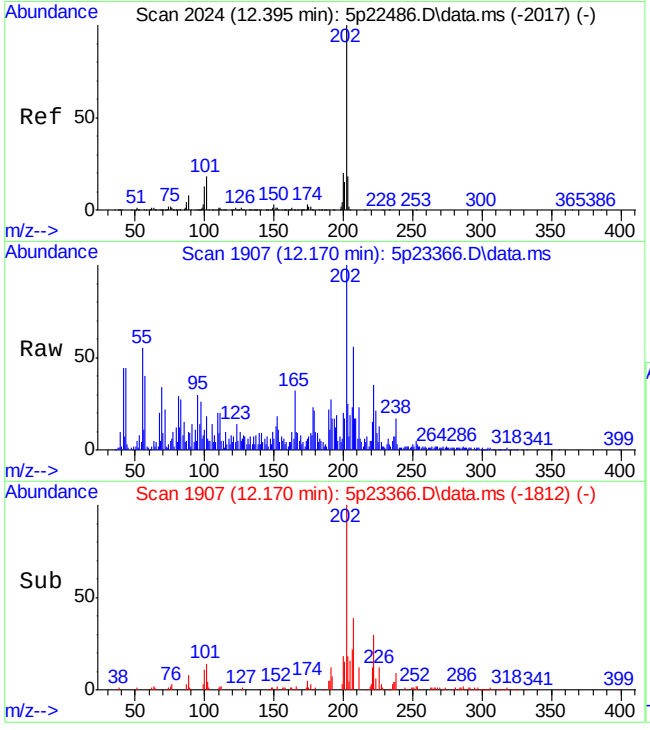


#78
Anthracene
Concen: 4.63 ppm
RT: 10.615 min Scan# 1616
Delta R.T. -0.009 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:178 Resp: 85492

Ion	Ratio	Lower	Upper
178	100		
179	41.1	0.0	45.2
176	18.3	0.0	47.9

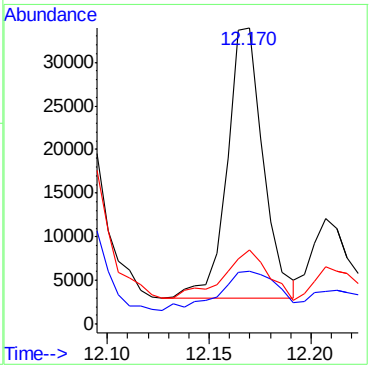


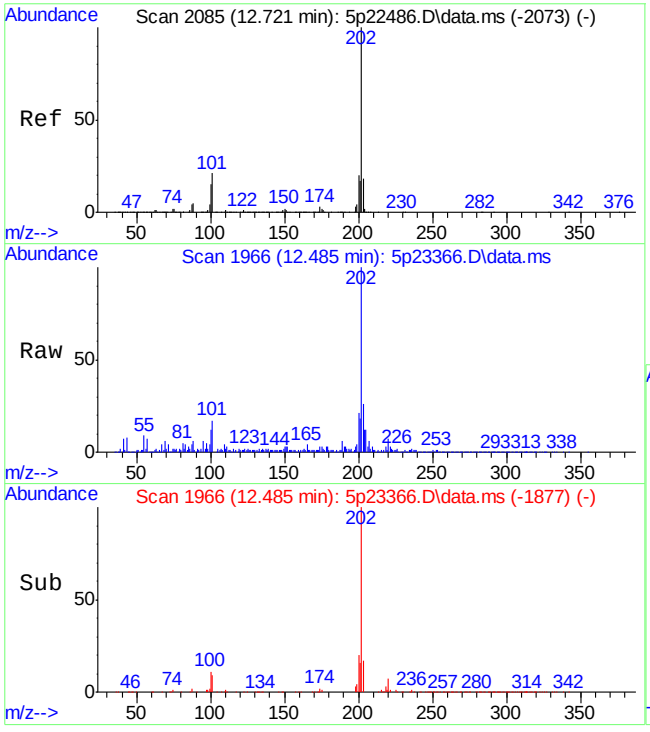


#81
Fluoranthene
Concen: 2.03 ppm
RT: 12.170 min Scan# 1907
Delta R.T. 0.009 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:202 Resp: 38286

Ion	Ratio	Lower	Upper
202	100		
101	13.4	0.0	47.7
203	19.1	0.0	47.6

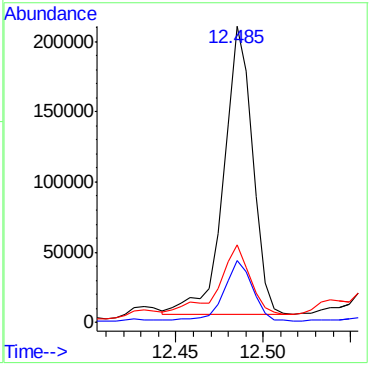


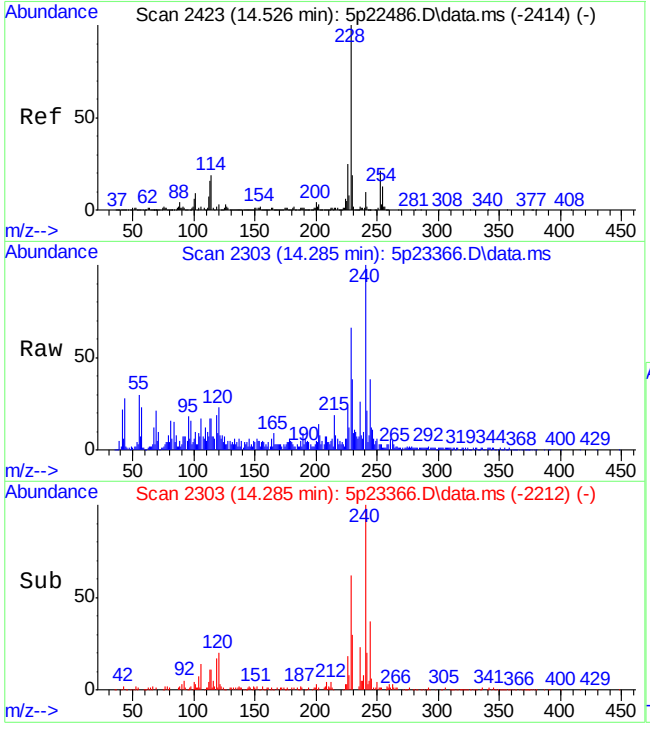


#84
Pyrene
Concen: 12.21 ppm
RT: 12.485 min Scan# 1966
Delta R.T. -0.027 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:202 Resp: 235356

Ion	Ratio	Lower	Upper
202	100		
200	21.1	0.0	49.9
203	23.7	0.0	48.3

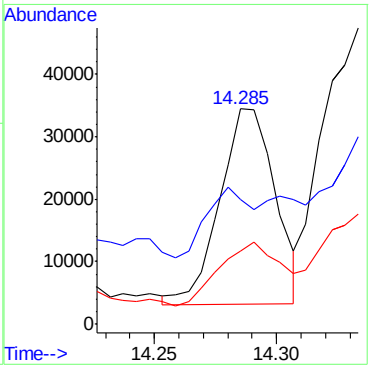


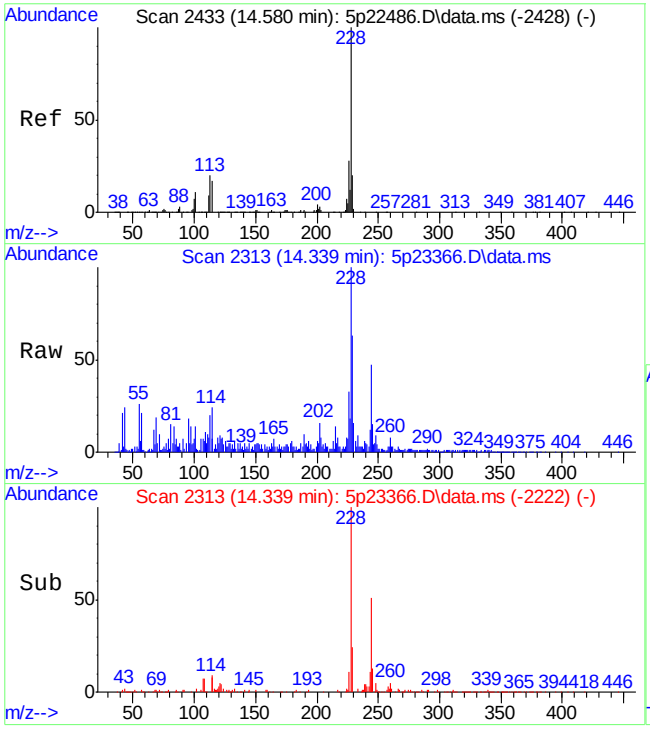


#88
Benzo[a]anthracene
Concen: 2.91 ppm
RT: 14.285 min Scan# 2303
Delta R.T. -0.016 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:228 Resp: 49221

Ion	Ratio	Lower	Upper
228	100		
229	16.2	0.0	50.3
226	22.5	0.0	56.5

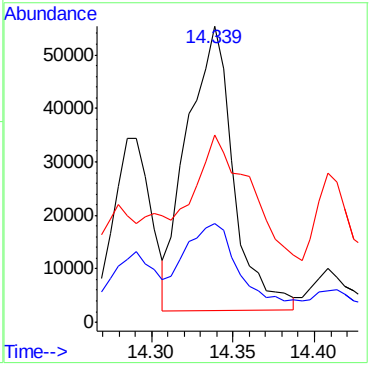


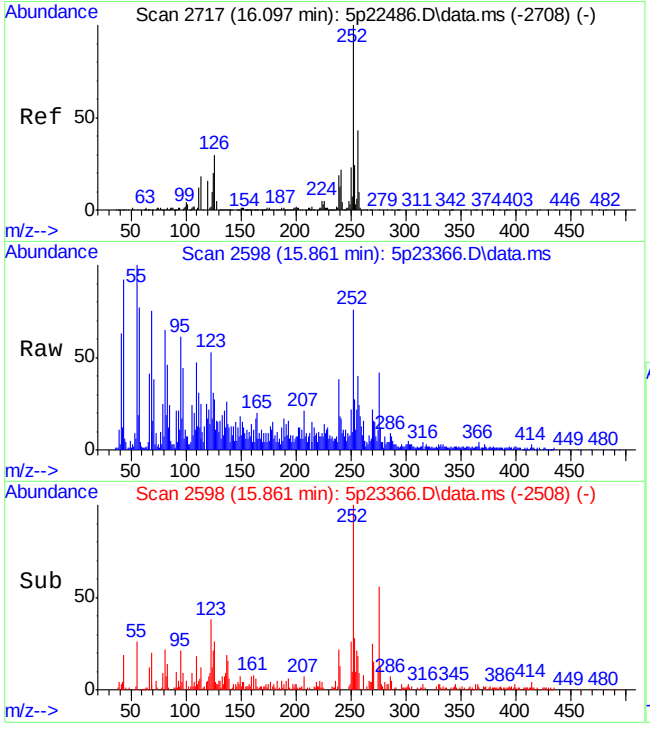


#90
Chrysene
Concen: 6.30 ppm
RT: 14.339 min Scan# 2313
Delta R.T. -0.016 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:228 Resp: 105688

Ion	Ratio	Lower	Upper
228	100		
226	26.1	0.0	57.6
229	39.5	0.0	49.4

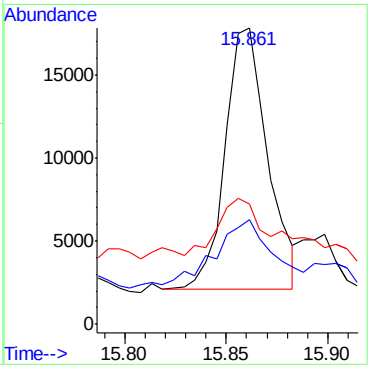




#94
Benzo[b]fluoranthene
Concen: 1.40 ppm m
RT: 15.861 min Scan# 2598
Delta R.T. -0.020 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

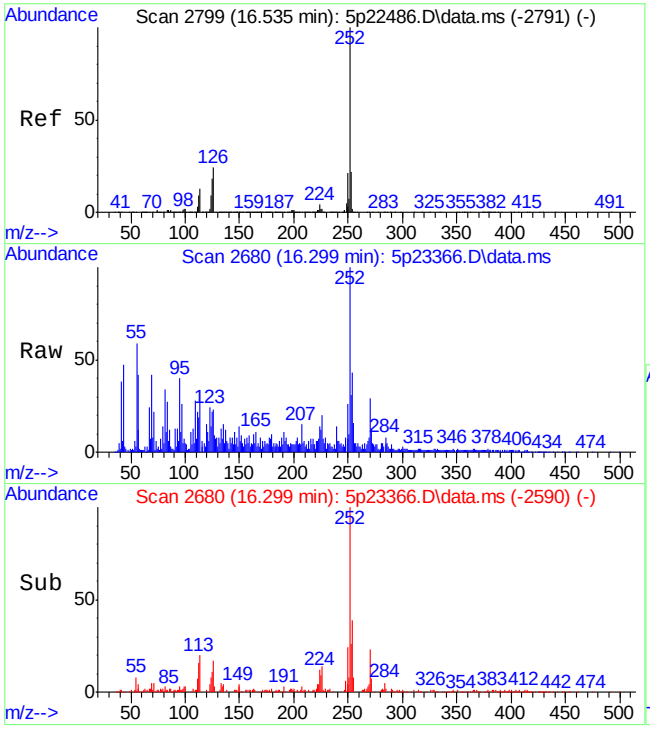
Tgt Ion:252 Resp: 22926

Ion	Ratio	Lower	Upper
252	100		
253	35.3	0.0	54.3
125	40.5	0.0	48.2



9.1.2

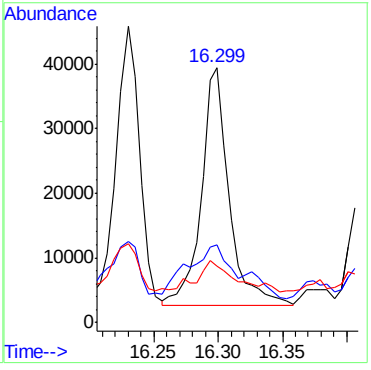
9

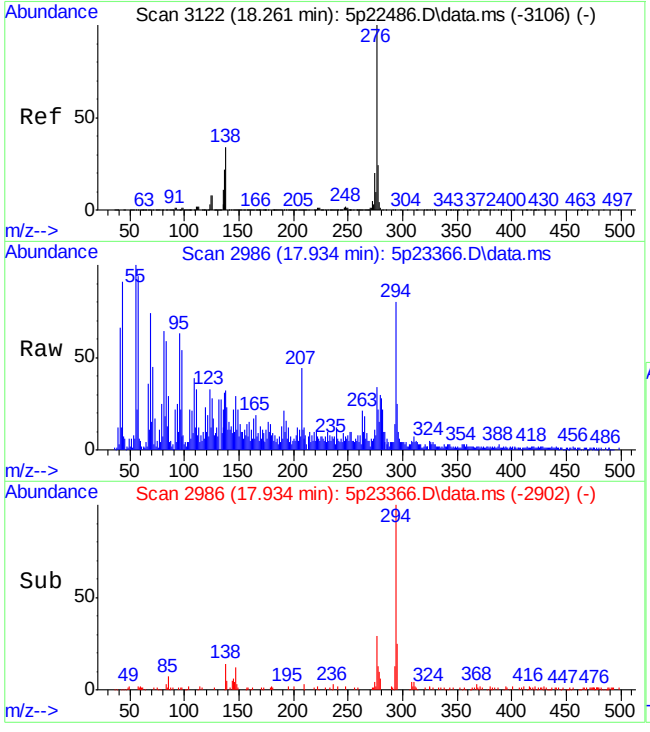


#96
Benzo[a]pyrene
Concen: 3.62 ppm
RT: 16.299 min Scan# 2680
Delta R.T. -0.017 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:252 Resp: 55199

Ion	Ratio	Lower	Upper
252	100		
253	21.6	0.0	51.9
125	10.2	0.0	49.2

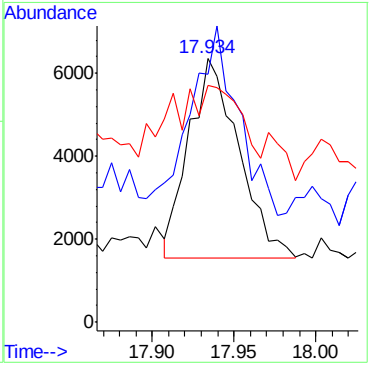




#97
Indeno[1,2,3-cd]pyrene
Concen: 0.66 ppm m
RT: 17.934 min Scan# 2986
Delta R.T. -0.053 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

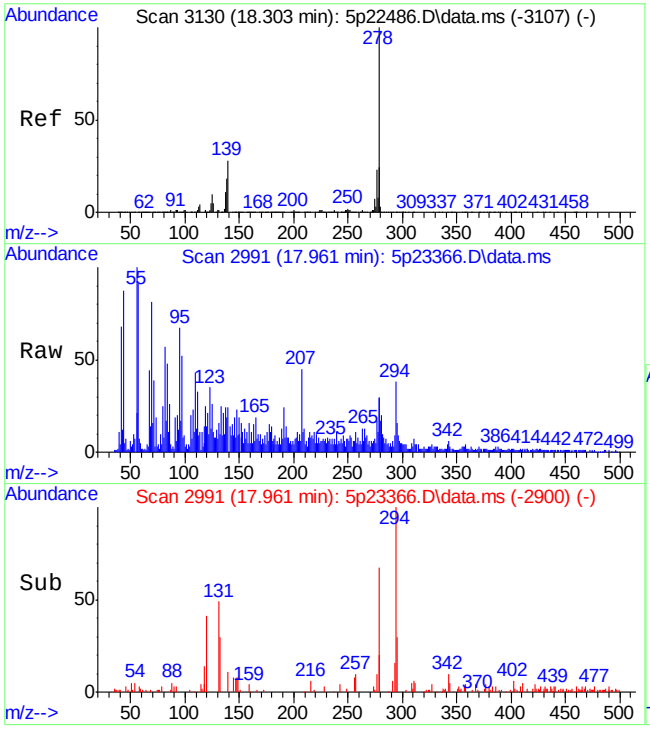
Tgt Ion:276 Resp: 10184

Ion	Ratio	Lower	Upper
276	100		
138	93.7	0.0	56.7#
137	89.7	0.0	50.6#



9.1.2

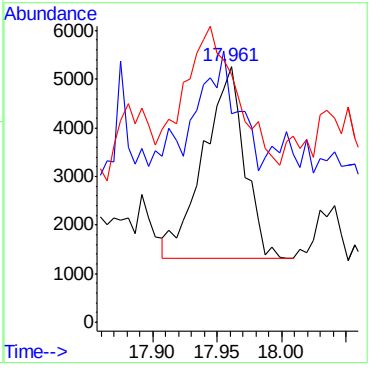
9

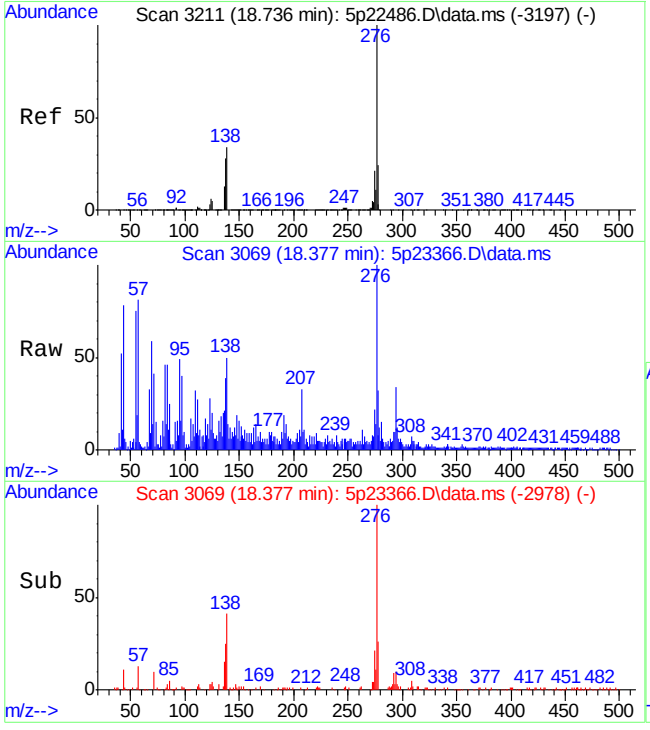


#99
Dibenz[a,h]anthracene
Concen: 0.55 ppm
RT: 17.961 min Scan# 2991
Delta R.T. -0.016 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:278 Resp: 8733

Ion	Ratio	Lower	Upper
278	100		
139	5.4	0.0	54.0
279	31.5	0.0	54.5

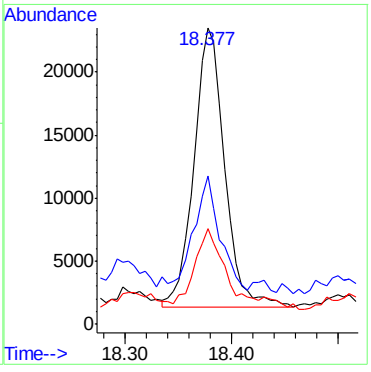




#101
Benzo[g,h,i]perylene
Concen: 2.72 ppm
RT: 18.377 min Scan# 3069
Delta R.T. -0.016 min
Lab File: 5p23366.D
Acq: 18 Nov 15 5:00 pm

Tgt Ion:276 Resp: 44610

Ion	Ratio	Lower	Upper
276	100		
138	39.7	2.4	62.4
277	27.0	0.0	54.0



Manual Integrations APPROVED (compounds with "m" flag)
Nina Pandya
11/18/15 17:48

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
Data File : z106074.D
Acq On : 13 Nov 2015 6:03 pm
Operator : brittanp
Sample : jc7895-2
Misc : op88822,ez5295,33.1,,,5,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 18 17:32:52 2015
Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Tue Nov 17 11:10:16 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.678	152	158704	40.00	ppm	0.00
24) Naphthalene-d8	5.597	136	598181	40.00	ppm	0.00
47) Acenaphthene-d10	7.007	164	345921	40.00	ppm	0.02
69) Phenanthrene-d10	8.893	188	515884	40.00	ppm	0.05
83) Chrysene-d12	14.166	240	529477	40.00	ppm	0.10
92) Perylene-d12	17.238	264	557589	40.00	ppm	0.13
102) 1,4-Dichlorobenzene-d4a	4.678	152	158704	40.00	ppm	0.00
104) Phenanthrene-d10a	8.893	188	515884	40.00	ppm	0.05
106) Chrysene-d12a	14.166	240	529477	40.00	ppm	0.10
108) Acenaphthene-d10a	7.007	164	345921	40.00	ppm	0.02
110) Naphthalene-d8a	5.597	136	598181	40.00	ppm	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	3.743	112	20934	3.63	ppm	0.01
Spiked Amount 50.000			Recovery	=	7.26%	
8) Phenol-d5	4.459	99	28652	3.85	ppm	0.01
Spiked Amount 50.000			Recovery	=	7.70%	
25) Nitrobenzene-d5	5.084	82	30205	4.42	ppm	0.00
Spiked Amount 50.000			Recovery	=	8.84%	
51) 2-Fluorobiphenyl	6.393	172	56072	4.70	ppm	0.01
Spiked Amount 50.000			Recovery	=	9.40%	
73) 2,4,6-Tribromophenol	7.915	330	9158	5.70	ppm	0.04
Spiked Amount 50.000			Recovery	=	11.40%	
86) Terphenyl-d14	11.927	244	51287	4.19	ppm	0.07
Spiked Amount 50.000			Recovery	=	8.38%	
Target Compounds						Qvalue
44) 2-Methylnaphthalene	6.115	141	218428	22.12	ppm	90
59) Acenaphthene	7.039	153	218309	20.59	ppm	96
66) Fluorene	7.606	166	299007	24.41	ppm	97
77) Phenanthrene	8.936	178	1023768	72.52	ppm	100
78) Anthracene	9.011	178	216912	15.04	ppm #	57
81) Fluoranthene	10.971	202	126201m	7.57	ppm	
84) Pyrene	11.521	202	570252	36.63	ppm	94
88) Benzo[a]anthracene	14.139	228	201997	13.13	ppm	89
90) Chrysene	14.219	228	361074	25.66	ppm	89
91) bis(2-Ethylhexyl)phtha...	14.465	149	115171m	12.98	ppm	
94) Benzo[b]fluoranthene	16.468	252	58919	3.49	ppm	87
95) Benzo[k]fluoranthene	16.516	252	11570m	0.74	ppm	
96) Benzo[a]pyrene	17.109	252	125402	8.34	ppm	87
101) Benzo[g,h,i]perylene	19.610	276	59226	4.00	ppm	91

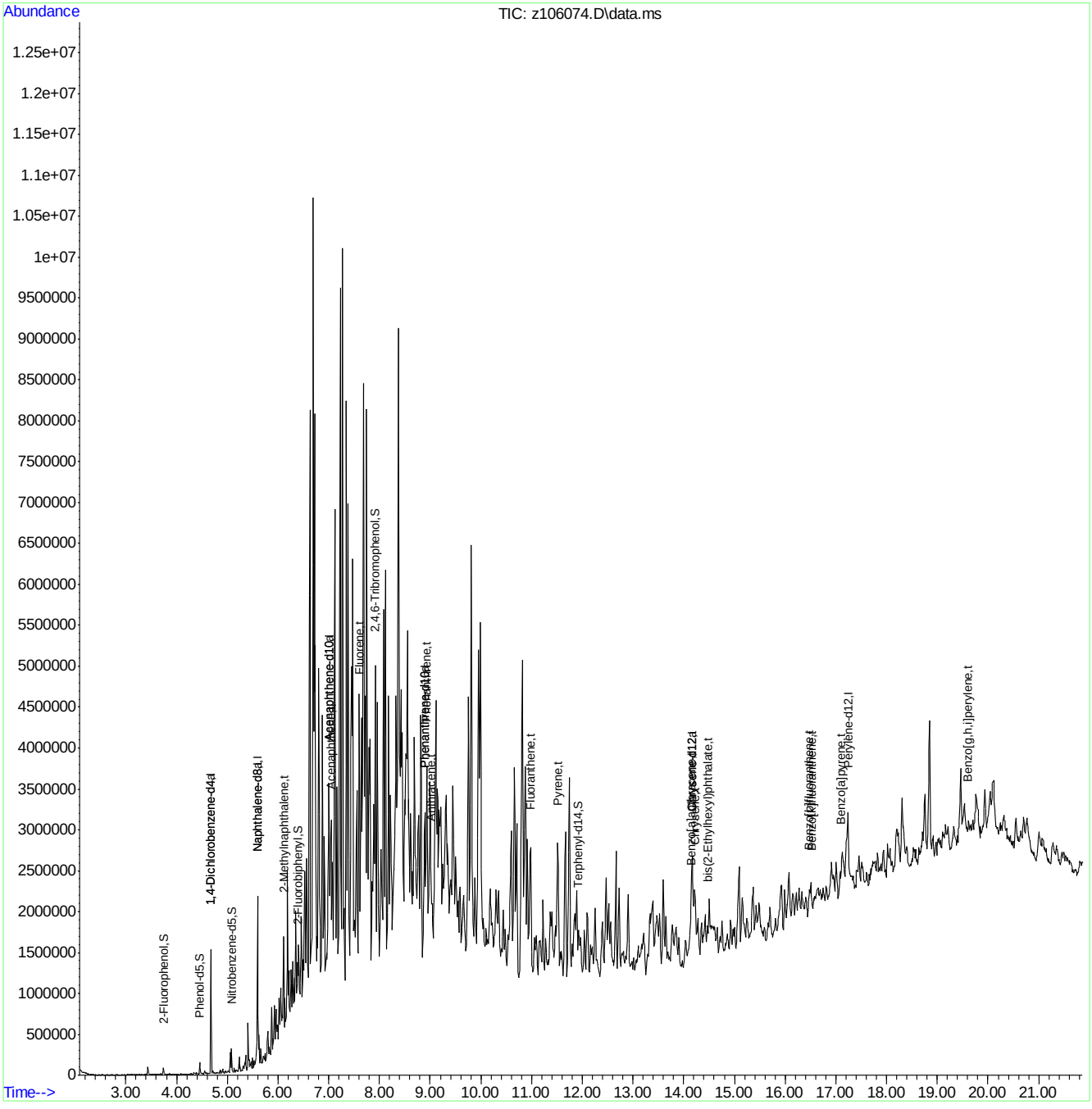
(#) = qualifier out of range (m) = manual integration (+) = signals summed

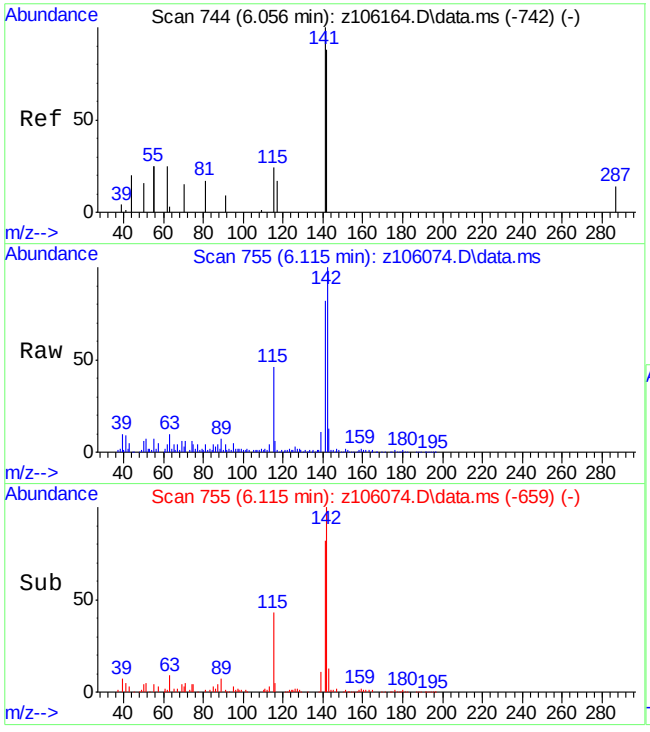
9.1.3
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
Data File : z106074.D
Acq On : 13 Nov 2015 6:03 pm
Operator : brittanp
Sample : jc7895-2
Misc : op88822,ez5295,33.1,,,5,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 18 17:32:52 2015
Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Tue Nov 17 11:10:16 2015
Response via : Initial Calibration

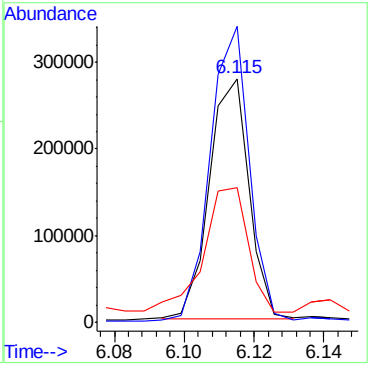


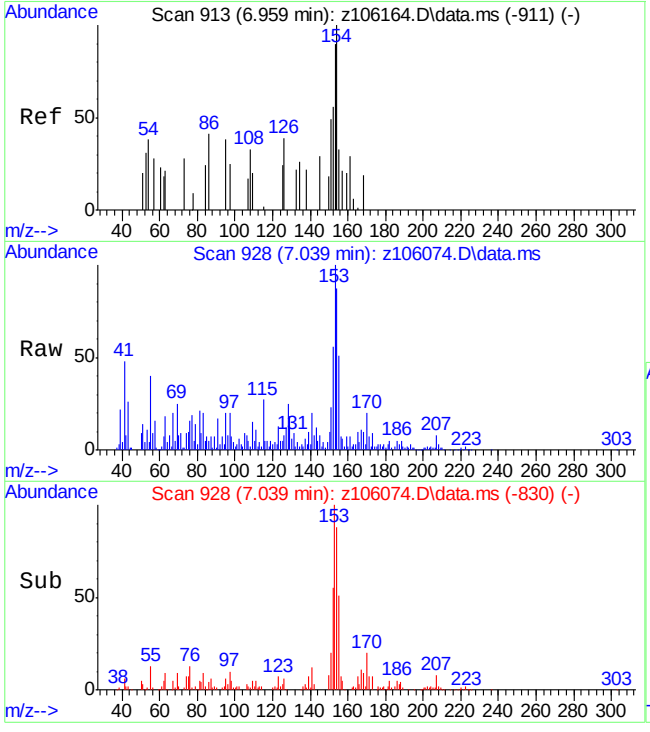


#44
2-Methylnaphthalene
Concen: 22.12 ppm
RT: 6.115 min Scan# 755
Delta R.T. 0.011 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:141 Resp: 218428

Ion	Ratio	Lower	Upper
141	100		
142	123.0	94.3	154.3
115	49.9	40.6	100.6

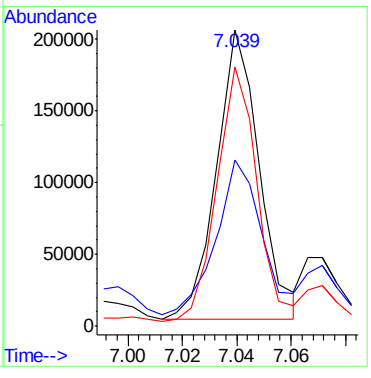


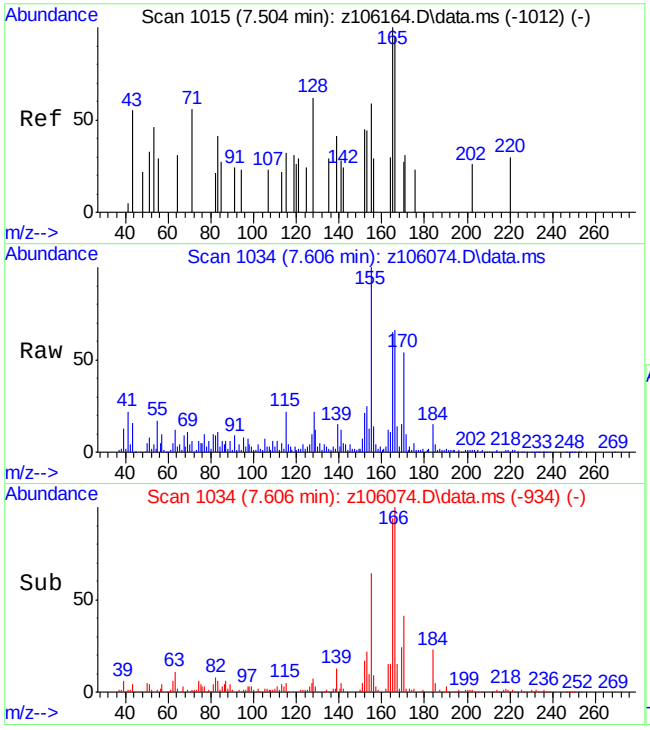


#59
Acenaphthene
Concen: 20.59 ppm
RT: 7.039 min Scan# 928
Delta R.T. 0.021 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:153 Resp: 218309

Ion	Ratio	Lower	Upper
153	100		
152	52.5	16.1	76.1
154	89.5	58.3	118.3

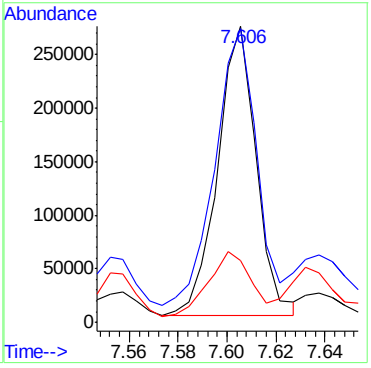


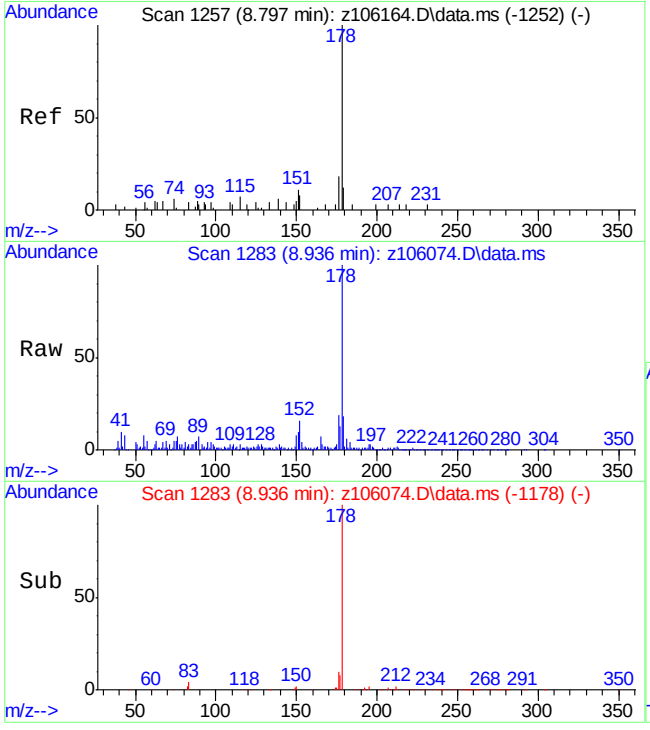


#66
Fluorene
Concen: 24.41 ppm
RT: 7.606 min Scan# 1034
Delta R.T. 0.032 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:166 Resp: 299007

Ion	Ratio	Lower	Upper
166	100		
165	92.2	59.0	119.0
167	13.4	0.0	43.2

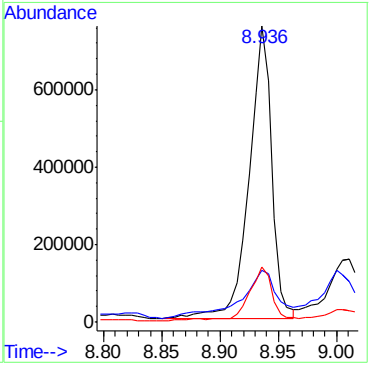




#77
Phenanthrene
Concen: 72.52 ppm
RT: 8.936 min Scan# 1283
Delta R.T. 0.059 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

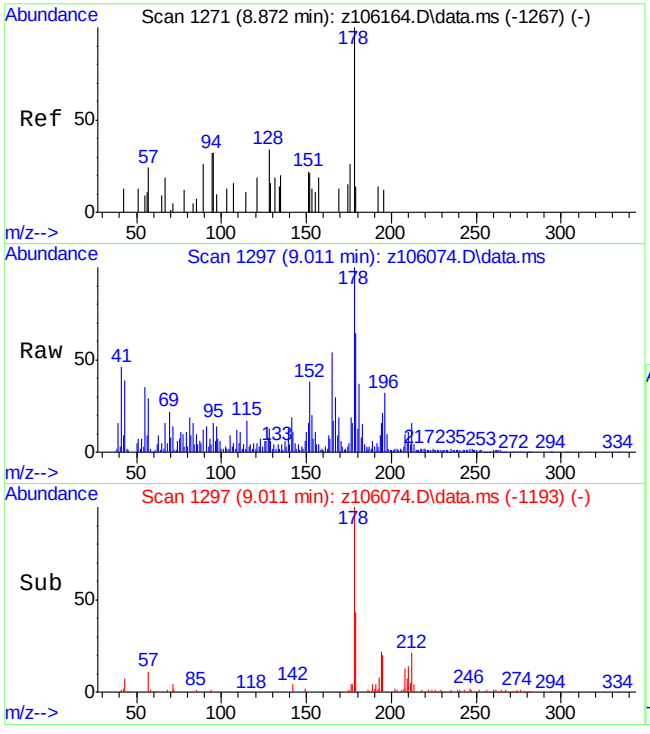
Tgt Ion:178 Resp: 1023768

Ion	Ratio	Lower	Upper
178	100		
179	14.8	0.0	44.9
176	18.3	0.0	48.5



9.1.3

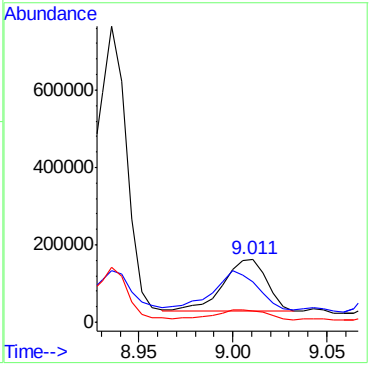
9

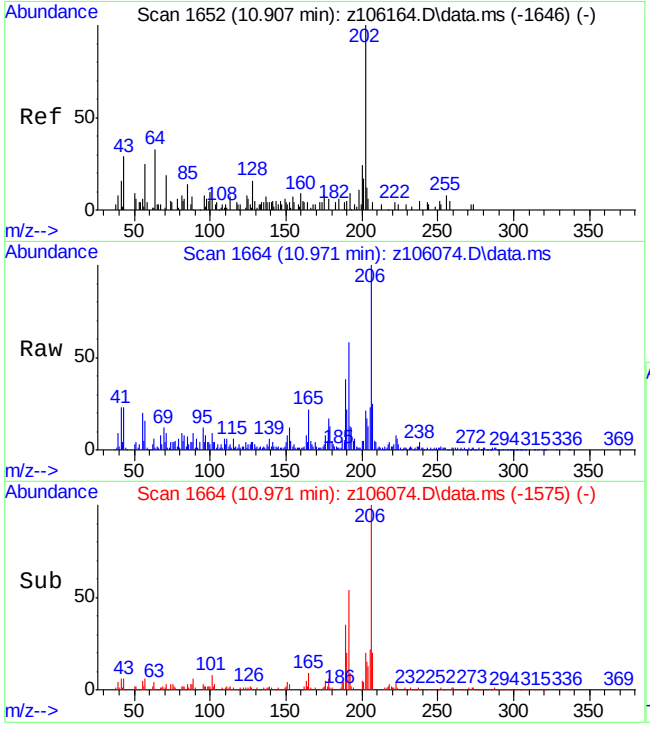


#78
Anthracene
Concen: 15.04 ppm
RT: 9.011 min Scan# 1297
Delta R.T. 0.053 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:178 Resp: 216912

Ion	Ratio	Lower	Upper
178	100		
179	52.1	0.0	44.9#
176	16.2	0.0	46.6

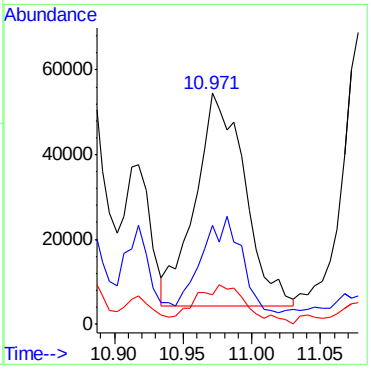


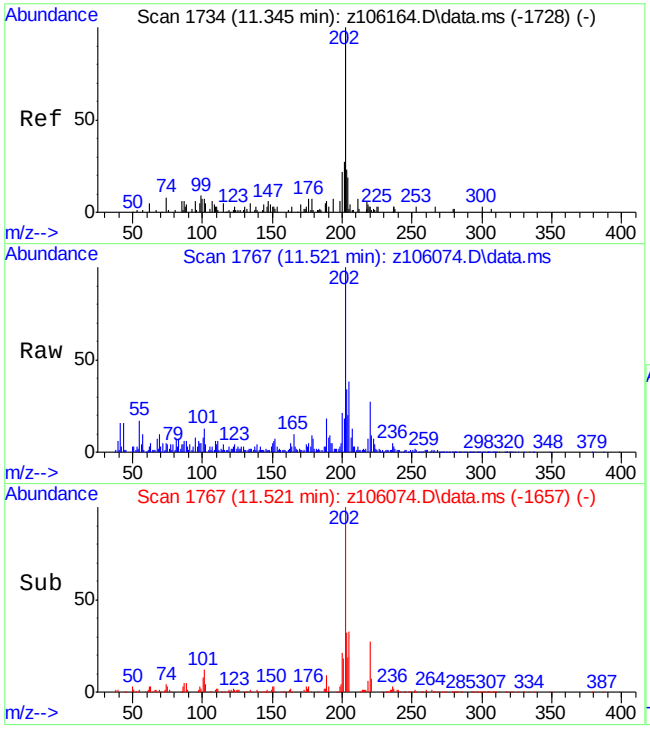


#81
Fluoranthene
Concen: 7.57 ppm m
RT: 10.971 min Scan# 1664
Delta R.T. -0.027 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:202 Resp: 126201

Ion	Ratio	Lower	Upper
202	100		
101	42.8	0.0	41.1#
100	12.7	0.0	38.1

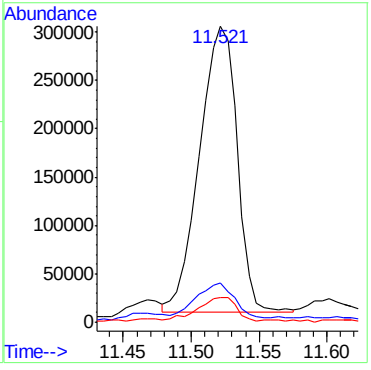


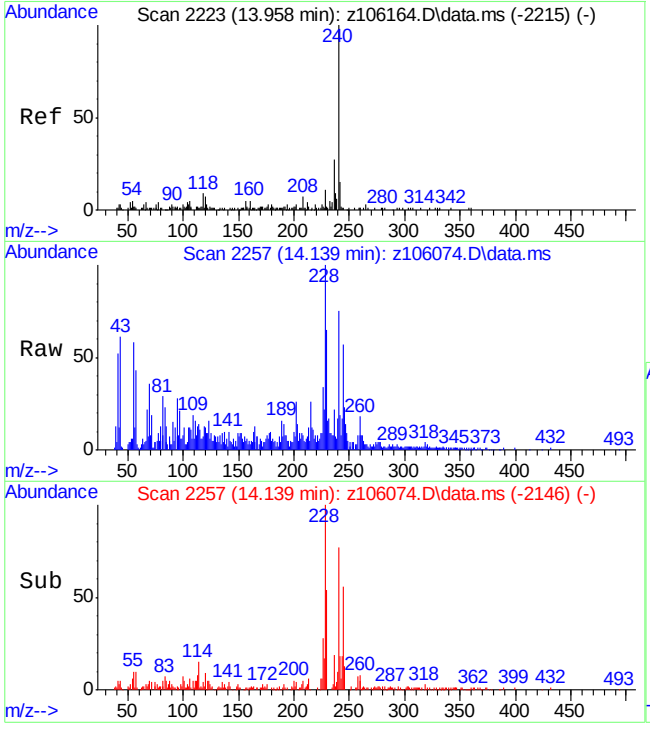


#84
Pyrene
Concen: 36.63 ppm
RT: 11.521 min Scan# 1767
Delta R.T. 0.086 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:202 Resp: 570252

Ion	Ratio	Lower	Upper
202	100		
101	15.8	0.0	43.0
100	8.1	0.0	39.5

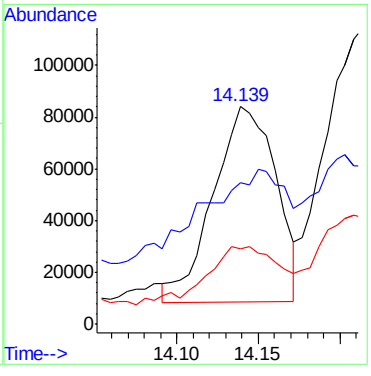




#88
Benzo[a]anthracene
Concen: 13.13 ppm
RT: 14.139 min Scan# 2257
Delta R.T. 0.091 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:228 Resp: 201997

Ion	Ratio	Lower	Upper
228	100		
229	29.9	0.0	49.9
226	23.1	0.0	53.8



9.1.3

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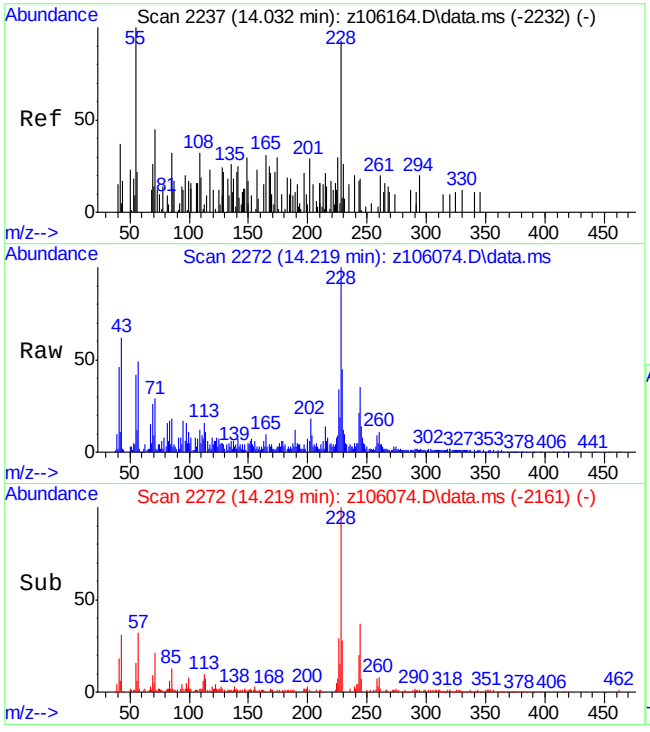
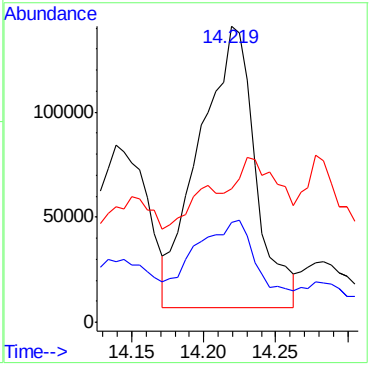
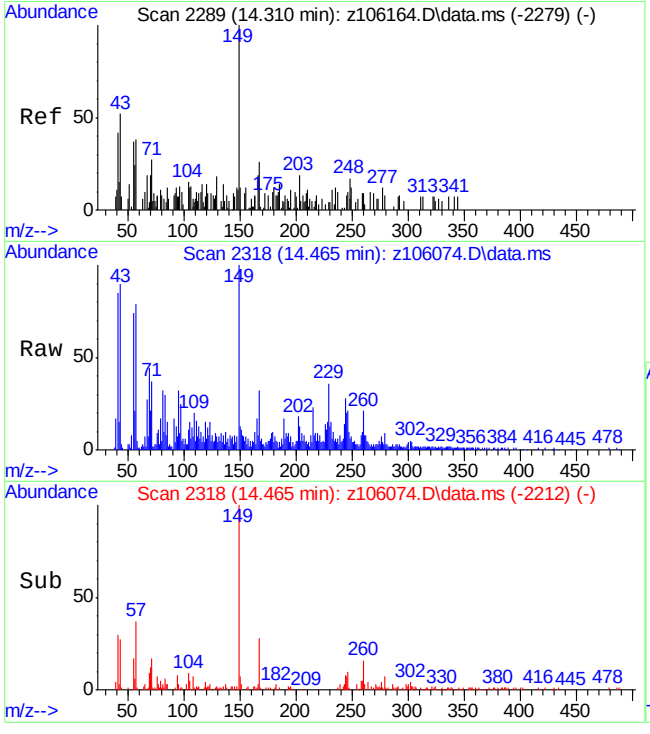


#90
Chrysene
Concen: 25.66 ppm
RT: 14.219 min Scan# 2272
Delta R.T. 0.091 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:228 Resp: 361074

Ion	Ratio	Lower	Upper
228	100		
226	26.7	0.0	58.1
229	11.9	0.0	52.2

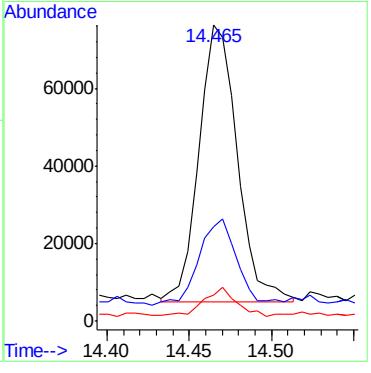




#91
bis(2-Ethylhexyl)phthalate
Concen: 12.98 ppm m
RT: 14.465 min Scan# 2318
Delta R.T. 0.064 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:149 Resp: 115171

Ion	Ratio	Lower	Upper
149	100		
167	31.8	0.0	57.9
279	8.6	0.0	36.4



9.1.3

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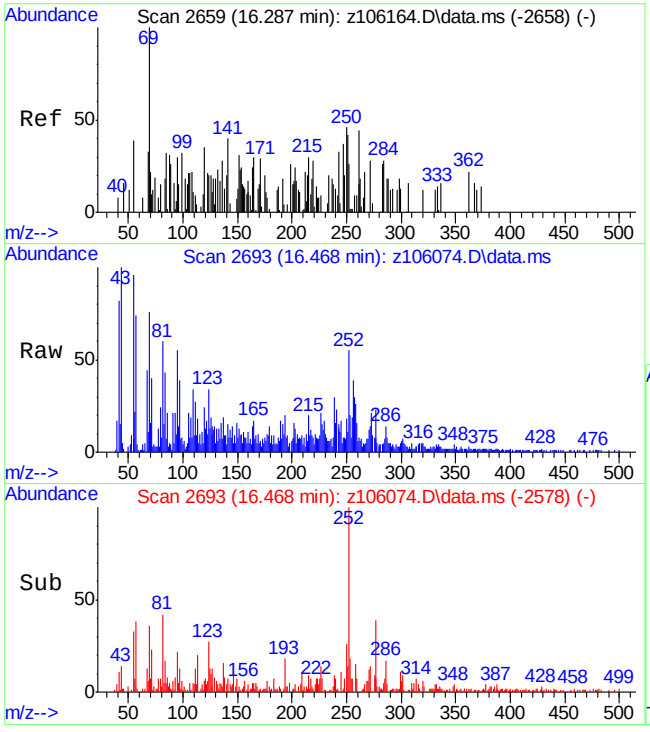
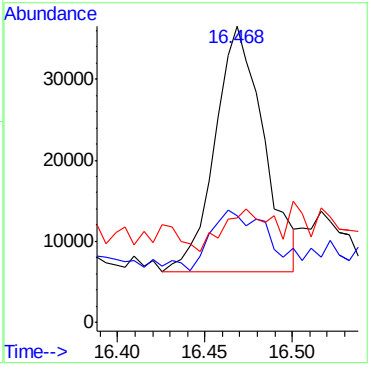
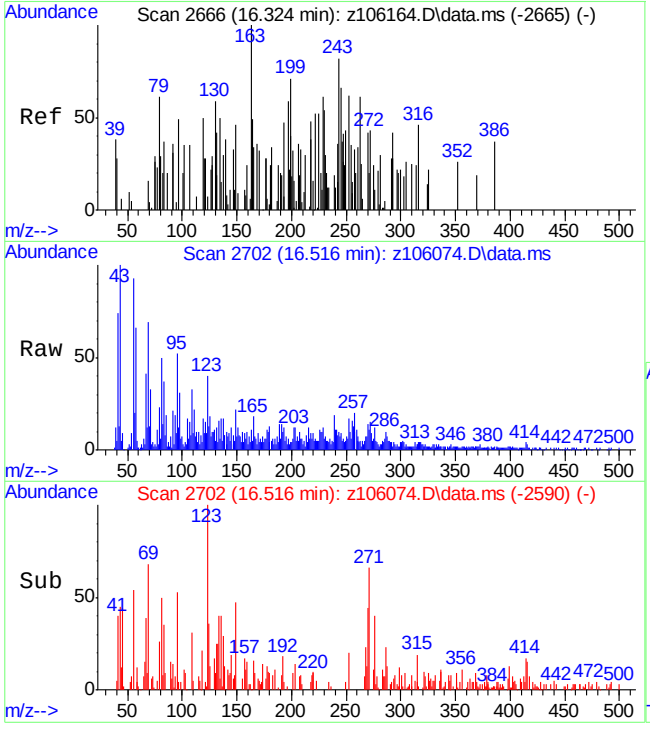


#94
Benzo[b]fluoranthene
Concen: 3.49 ppm
RT: 16.468 min Scan# 2693
Delta R.T. 0.112 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:252 Resp: 58919

Ion	Ratio	Lower	Upper
252	100		
253	18.6	0.0	53.1
125	0.0	0.0	38.5

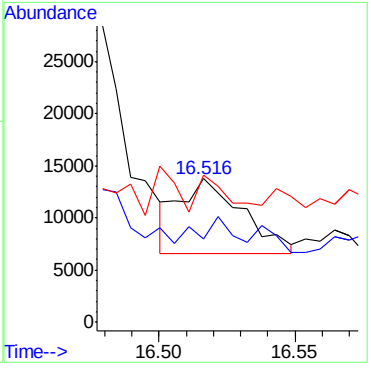




#95
Benzo[k]fluoranthene
Concen: 0.74 ppm m
RT: 16.516 min Scan# 2702
Delta R.T. 0.096 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:252 Resp: 11570

Ion	Ratio	Lower	Upper
252	100		
253	58.3	0.0	53.2#
125	102.2	0.0	39.2#



9.1.3

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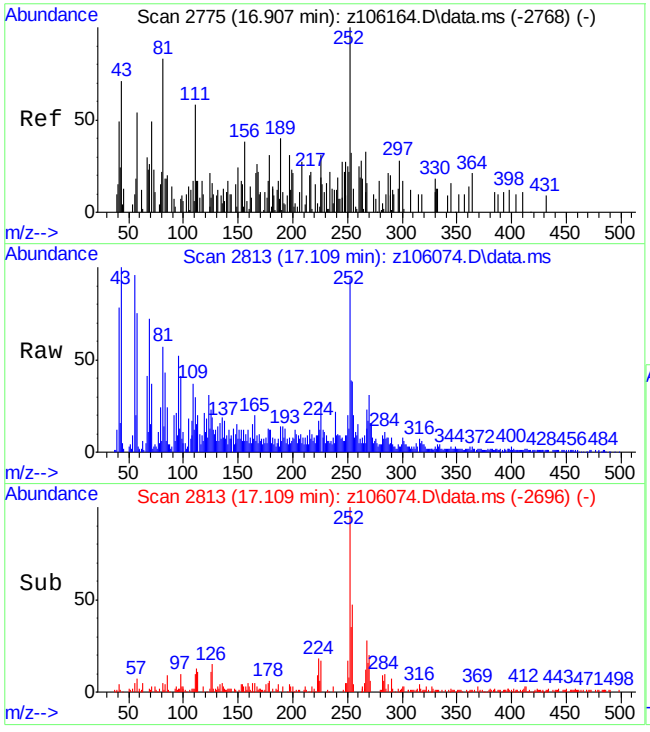
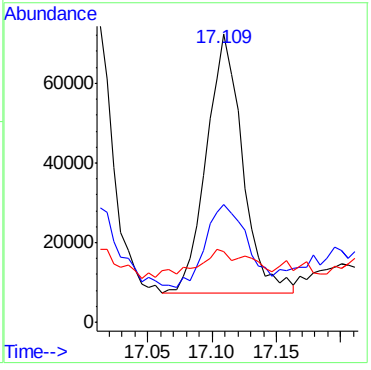
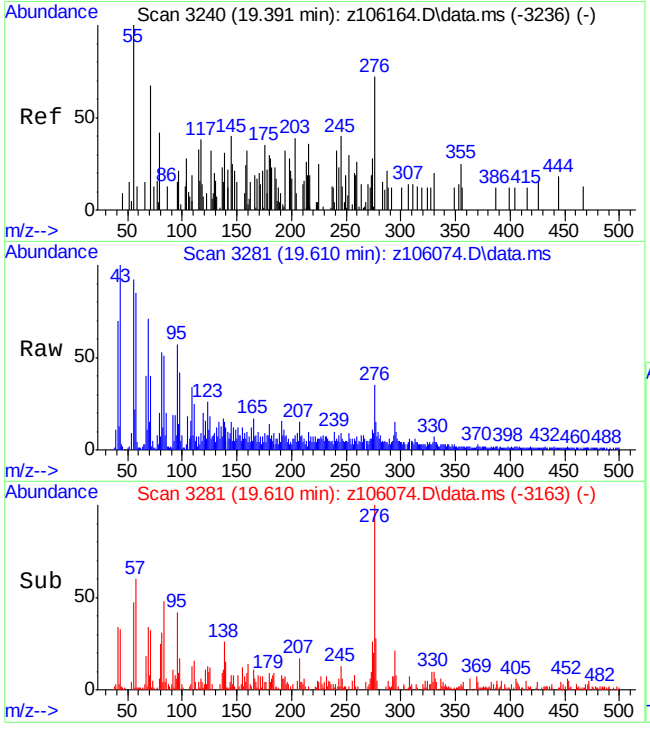


#96
Benzo[a]pyrene
Concen: 8.34 ppm
RT: 17.109 min Scan# 2813
Delta R.T. 0.123 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:252 Resp: 125402

Ion	Ratio	Lower	Upper
252	100		
253	28.6	0.0	50.6
125	7.7	0.0	39.1

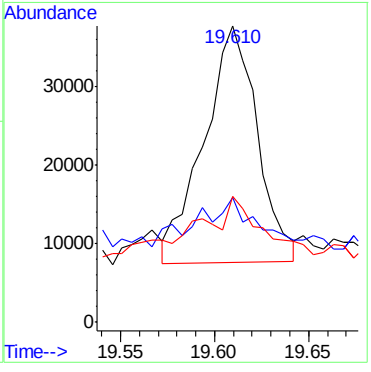




#101
Benzo[g,h,i]perylene
Concen: 4.00 ppm
RT: 19.610 min Scan# 3281
Delta R.T. 0.128 min
Lab File: z106074.D
Acq: 13 Nov 2015 6:03 pm

Tgt Ion:276 Resp: 59226

Ion	Ratio	Lower	Upper
276	100		
138	16.9	0.0	51.5
277	20.6	0.0	54.6



9.1.3

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1185\
Data File : 5p23284.D
Acq On : 16 Nov 2015 3:48 pm
Operator : alicjap
Sample : op88822-mb1
Misc : op88822,e5p1185,30.0,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 17 13:00:12 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Fri Nov 13 19:32:26 2015
Response via : Initial Calibration

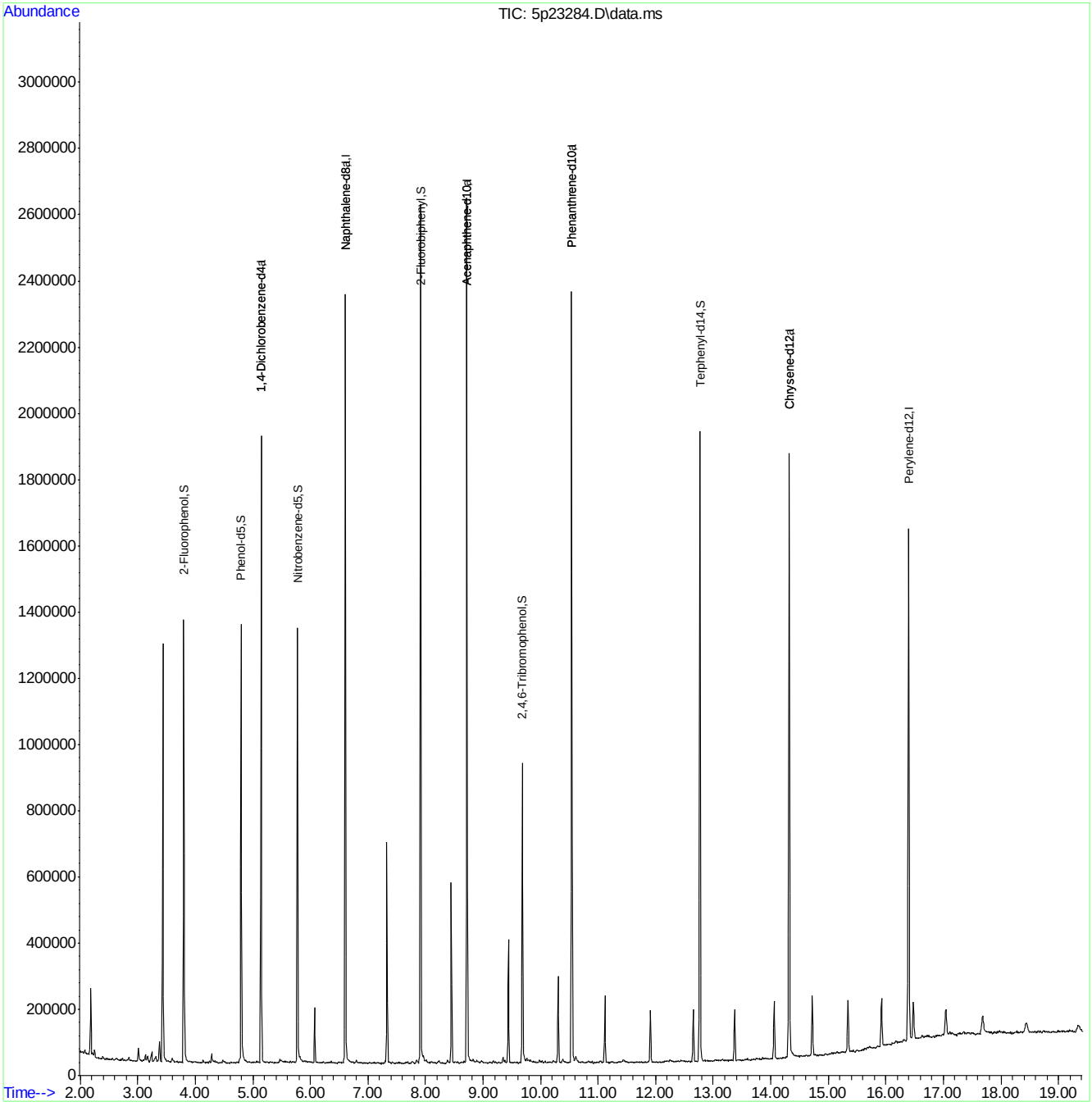
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) 1,4-Dichlorobenzene-d4	5.145	152	283547	40.00 ppm	-0.02
24) Naphthalene-d8	6.608	136	1054170	40.00 ppm	-0.04
47) Acenaphthene-d10	8.719	164	591197	40.00 ppm	-0.03
69) Phenanthrene-d10	10.540	188	914937	40.00 ppm	-0.06
83) Chrysene-d12	14.323	240	725516	40.00 ppm	-0.14
92) Perylene-d12	16.395	264	659829	40.00 ppm	-0.14
102) 1,4-Dichlorobenzene-d4a	5.145	152	283547	40.00 ppm	-0.02
104) Acenaphthene-d10a	8.719	164	591197	40.00 ppm	-0.03
106) Chrysene-d12a	14.323	240	725516	40.00 ppm	-0.14
108) Phenanthrene-d10a	10.540	188	914937	40.00 ppm	-0.06
110) Naphthalene-d8a	6.608	136	1054170	40.00 ppm	-0.04
System Monitoring Compounds					
5) 2-Fluorophenol	3.798	112	417636	40.99 ppm	-0.02
Spiked Amount 50.000			Recovery	= 81.98%	
8) Phenol-d5	4.792	99	507830	41.67 ppm	-0.01
Spiked Amount 50.000			Recovery	= 83.34%	
25) Nitrobenzene-d5	5.775	82	426638	46.88 ppm	-0.04
Spiked Amount 50.000			Recovery	= 93.76%	
51) 2-Fluorobiphenyl	7.917	172	873288	46.68 ppm	-0.03
Spiked Amount 50.000			Recovery	= 93.36%	
73) 2,4,6-Tribromophenol	9.686	330	89718	35.63 ppm	-0.06
Spiked Amount 50.000			Recovery	= 71.26%	
85) Terphenyl-d14	12.773	244	695599	46.79 ppm	-0.13
Spiked Amount 50.000			Recovery	= 93.58%	
Target Compounds					Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1185\
Data File : 5p23284.D
Acq On : 16 Nov 2015 3:48 pm
Operator : alicjap
Sample : op88822-mb1
Misc : op88822,e5p1185,30.0,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 17 13:00:12 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Fri Nov 13 19:32:26 2015
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1188\
Data File : 5p23325.D
Acq On : 17 Nov 2015 7:30 pm
Operator : sarad
Sample : op89030-mb1
Misc : op89030,e5p1188,30.0,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 17 20:20:17 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Tue Nov 17 19:14:06 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) 1,4-Dichlorobenzene-d4	5.113	152	206692	40.00 ppm	0.00
24) Naphthalene-d8	6.576	136	766679	40.00 ppm	0.00
47) Acenaphthene-d10	8.687	164	426230	40.00 ppm	0.00
69) Phenanthrene-d10	10.503	188	654985	40.00 ppm	0.00
83) Chrysene-d12	14.275	240	520264	40.00 ppm	0.00
92) Perylene-d12	16.342	264	494845	40.00 ppm	0.00
102) 1,4-Dichlorobenzene-d4a	5.113	152	206692	40.00 ppm	0.00
104) Acenaphthene-d10a	8.687	164	426230	40.00 ppm	0.00
106) Chrysene-d12a	14.275	240	520264	40.00 ppm	0.00
108) Phenanthrene-d10a	10.503	188	654985	40.00 ppm	0.00
110) Naphthalene-d8a	6.576	136	766679	40.00 ppm	0.00
System Monitoring Compounds					
5) 2-Fluorophenol	3.766	112	296037	39.86 ppm	-0.02
Spiked Amount 50.000			Recovery	= 79.72%	
8) Phenol-d5	4.760	99	351173	39.53 ppm	0.00
Spiked Amount 50.000			Recovery	= 79.06%	
25) Nitrobenzene-d5	5.743	82	301166	45.50 ppm	-0.02
Spiked Amount 50.000			Recovery	= 91.00%	
51) 2-Fluorobiphenyl	7.885	172	625256	46.36 ppm	-0.01
Spiked Amount 50.000			Recovery	= 92.72%	
73) 2,4,6-Tribromophenol	9.648	330	67655	37.53 ppm	-0.01
Spiked Amount 50.000			Recovery	= 75.06%	
85) Terphenyl-d14	12.725	244	513419	48.16 ppm	-0.02
Spiked Amount 50.000			Recovery	= 96.32%	

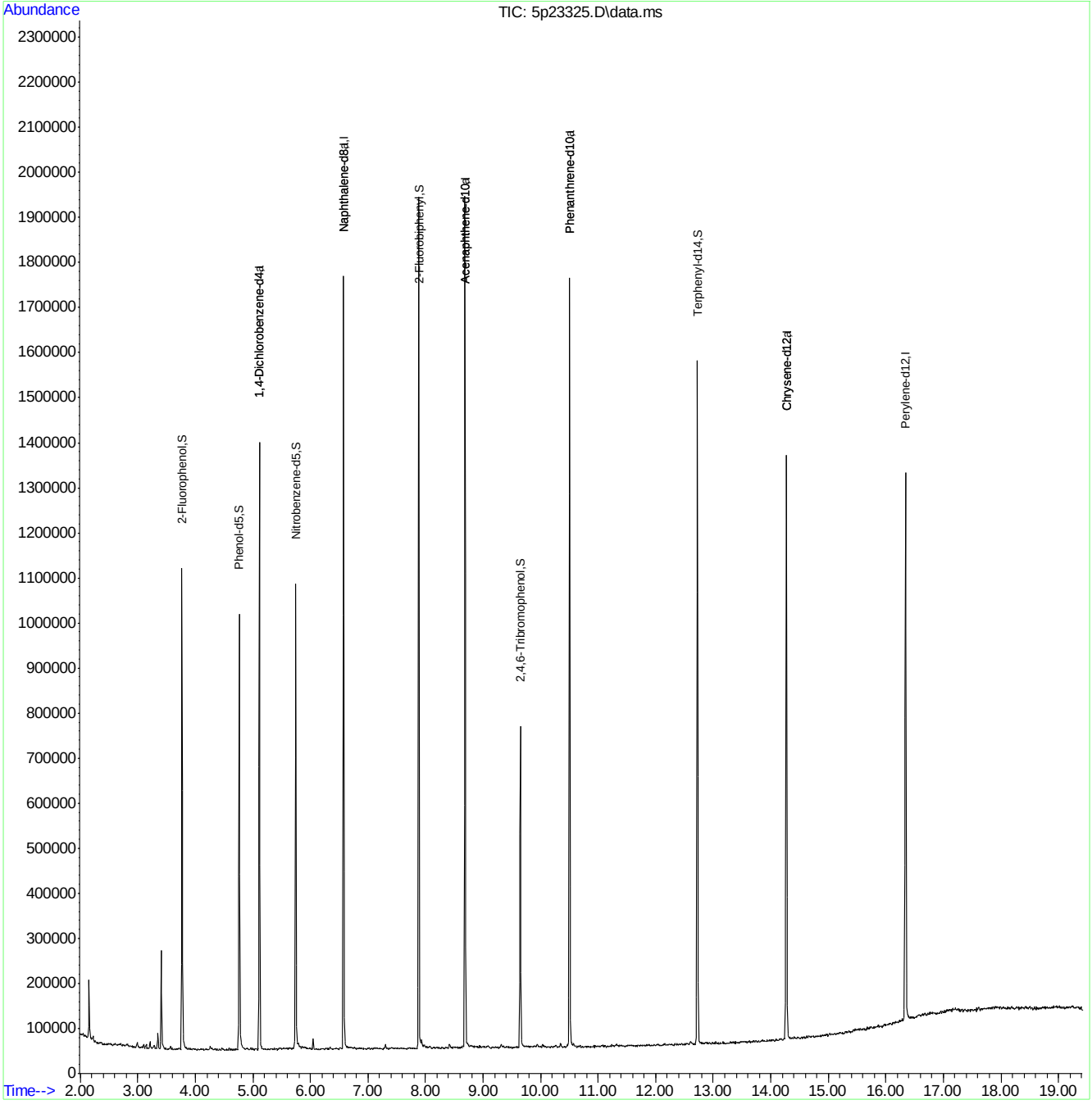
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e5p1188\
Data File : 5p23325.D
Acq On : 17 Nov 2015 7:30 pm
Operator : sarad
Sample : op89030-mb1
Misc : op89030,e5p1188,30.0,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 17 20:20:17 2015
Quant Method : C:\MSDCHEM\1\METHODS\M5P1165.M
Quant Title : Semi Volatile GC/MS, zb-5msi 30mx .25mmx .25um
QLast Update : Tue Nov 17 19:14:06 2015
Response via : Initial Calibration



ACCUTEST LABORATORIES JC7895

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
Data File : z106071.D
Acq On : 13 Nov 2015 4:27 pm
Operator : brittanp
Sample : op88822-mb1
Misc : op88822,ez5295,30.0
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 16 13:38:50 2015
Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Fri Nov 13 16:31:41 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) 1,4-Dichlorobenzene-d4	4.667	152	124590	40.00 ppm	-0.05
24) Naphthalene-d8	5.586	136	465015	40.00 ppm	-0.05
47) Acenaphthene-d10	6.986	164	290866	40.00 ppm	-0.06
69) Phenanthrene-d10	8.834	188	512732	40.00 ppm	-0.09
83) Chrysene-d12	14.054	240	567261	40.00 ppm	-0.13
92) Perylene-d12	17.099	264	551497	40.00 ppm	-0.13
102) 1,4-Dichlorobenzene-d4a	4.667	152	124590	40.00 ppm	-0.05
104) Phenanthrene-d10a	8.834	188	512732	40.00 ppm	-0.09
106) Chrysene-d12a	14.054	240	567261	40.00 ppm	-0.13
108) Acenaphthene-d10a	6.986	164	290866	40.00 ppm	-0.06
110) Naphthalene-d8a	5.586	136	465015	40.00 ppm	-0.05
System Monitoring Compounds					
5) 2-Fluorophenol	3.727	112	164828	36.37 ppm	-0.07
Spiked Amount 50.000			Recovery	= 72.74%	
8) Phenol-d5	4.443	99	202345	34.63 ppm	-0.07
Spiked Amount 50.000			Recovery	= 69.26%	
25) Nitrobenzene-d5	5.073	82	230604	43.45 ppm	-0.05
Spiked Amount 50.000			Recovery	= 86.90%	
51) 2-Fluorobiphenyl	6.382	172	452408	45.14 ppm	-0.05
Spiked Amount 50.000			Recovery	= 90.28%	
73) 2,4,6-Tribromophenol	7.862	330	76914	48.14 ppm	-0.08
Spiked Amount 50.000			Recovery	= 96.28%	
86) Terphenyl-d14	11.847	244	570264	43.45 ppm	-0.10
Spiked Amount 50.000			Recovery	= 86.90%	

Target Compounds Qvalue

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

9.2.3

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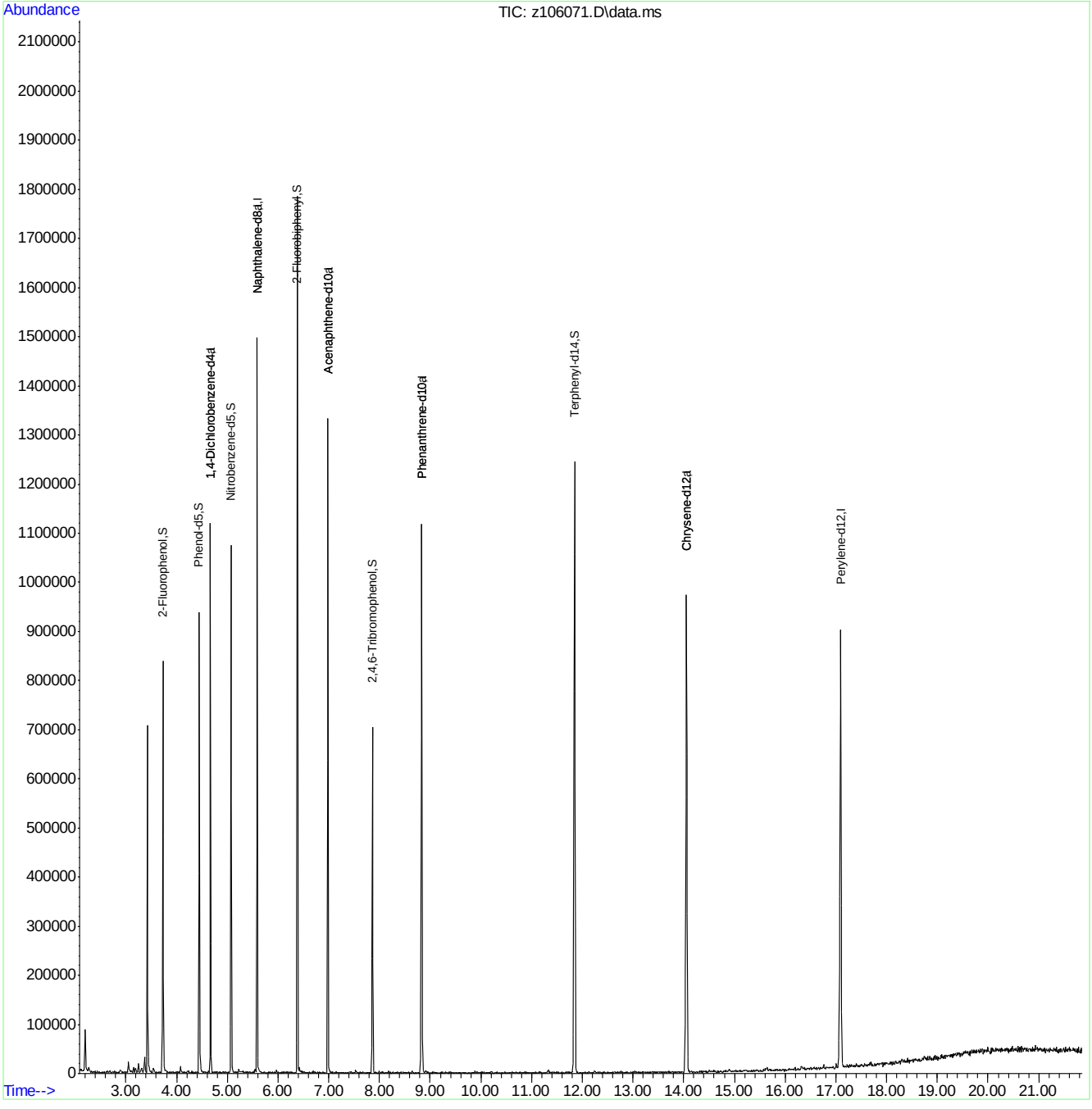
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\EZ5295\
Data File : z106071.D
Acq On : 13 Nov 2015 4:27 pm
Operator : brittanp
Sample : op88822-mb1
Misc : op88822,ez5295,30.0
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 16 13:38:50 2015
Quant Method : C:\MSDCHEM\1\METHODS\MZ5278.M
Quant Title : Semi Volatile GC/MS, ZB-5MS 15m x .25mm x .25um
QLast Update : Fri Nov 13 16:31:41 2015
Response via : Initial Calibration



MZ5278.M Mon Nov 16 13:38:54 2015 RTE

Page: 2

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: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:26	MA38045-STD1	1		STDA
16:29	MA38045-STD2	1		STDB
16:32	ZZZZZZ	1		
16:35	ZZZZZZ	1		
16:38	MA38045-ICV1	1		
16:41	MA38045-ICB1	1		
16:44	MA38045-CCV1	1		
16:46	MA38045-CCB1	1		
16:49	MA38045-CRI1	1		
16:52	MA38045-CRID1	1		
16:55	MA38045-CRIA1	1		
16:58	MA38045-ICSA1	1		
17:02	MA38045-ICSAB1	1		
17:05	MA38045-HSTD1	1		
17:08	ZZZZZZ	1		
17:11	ZZZZZZ	1		
17:13	MA38045-CCV2	1		
17:16	MA38045-CCB2	1		
17:20	MA38045-CRI2	1		
17:23	MA38045-CRID2	1		
17:26	MA38045-HSTD2	1		
17:29	ZZZZZZ	1		
17:31	ZZZZZZ	1		
17:34	ZZZZZZ	1		
17:37	ZZZZZZ	1		
17:40	ZZZZZZ	1		
17:43	ZZZZZZ	1		
17:46	ZZZZZZ	5		
17:49	ZZZZZZ	5		
17:52	MA38045-CCV3	1		
17:55	MA38045-CCB3	1		
17:58	ZZZZZZ	5		
18:01	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:04	ZZZZZZ	5		
18:07	ZZZZZZ	25		
18:10	ZZZZZZ	5		
18:13	ZZZZZZ	5		
18:16	ZZZZZZ	5		
18:19	ZZZZZZ	5		
18:22	ZZZZZZ	5		
18:25	MA38045-CCV4	1		
18:27	MA38045-CCB4	1		
18:30	ZZZZZZ	25		
18:33	ZZZZZZ	5		
18:36	ZZZZZZ	5		
18:39	ZZZZZZ	5		
18:42	ZZZZZZ	5		
18:45	ZZZZZZ	1		
18:48	ZZZZZZ	1		
18:51	ZZZZZZ	1		
18:54	ZZZZZZ	1		
18:57	MA38045-CCV5	1		
18:59	MA38045-CCB5	1		
19:02	ZZZZZZ	1		
19:05	ZZZZZZ	1		
19:08	ZZZZZZ	1		
19:11	ZZZZZZ	1		
19:14	ZZZZZZ	5		
19:16	ZZZZZZ	1		
19:19	ZZZZZZ	1		
19:22	ZZZZZZ	10		
19:26	MA38045-CCV6	1		
19:28	MA38045-CCB6	1		
19:31	ZZZZZZ	5		
19:34	ZZZZZZ	5		
19:37	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:40	ZZZZZZ	5		
19:43	ZZZZZZ	5		
19:46	ZZZZZZ	5		
19:49	ZZZZZZ	25		
19:52	ZZZZZZ	1		
19:55	ZZZZZZ	1		
19:58	MA38045-CRI3	1		
20:01	MA38045-CRIA2	1		
20:04	MA38045-ICSA2	1		
20:07	MA38045-ICSAB2	1		
20:10	MA38045-CCV7	1		
20:13	MA38045-CCB7	1		
20:16	ZZZZZZ	1		
20:19	ZZZZZZ	1		
20:22	ZZZZZZ	1		
20:25	ZZZZZZ	1		
20:28	ZZZZZZ	1		
20:31	ZZZZZZ	1		
20:34	ZZZZZZ	1		
20:37	ZZZZZZ	1		
20:40	ZZZZZZ	1		
20:43	MP90273-MB1	1		over 10 samples between CCV-s
20:46	MP90273-B1	1		over 10 samples between CCV-s
20:49	MP90273-S1	1		over 10 samples between CCV-s
20:51	MP90273-S2	1		over 10 samples between CCV-s
20:54	JC8007-1	1		(sample used for QC only; not part of login JC7895)
20:57	MP90273-SD1	5		over 10 samples between CCV-s
21:00	ZZZZZZ	1		
21:03	ZZZZZZ	1		
21:06	ZZZZZZ	1		
21:09	MA38045-CCV8	1		
21:12	MA38045-CCB8	1		
21:15	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:18	ZZZZZZ	1		
21:21	ZZZZZZ	1		
21:24	ZZZZZZ	1		
21:26	ZZZZZZ	1		
21:29	ZZZZZZ	1		
21:32	ZZZZZZ	1		
21:35	ZZZZZZ	1		
21:38	ZZZZZZ	1		
21:41	MA38045-CCV9	1		
21:44	MA38045-CCB9	1		
21:47	ZZZZZZ	1		
21:50	ZZZZZZ	1		
21:53	ZZZZZZ	1		
21:56	ZZZZZZ	1		
21:59	ZZZZZZ	1		
22:02	ZZZZZZ	1		
22:05	ZZZZZZ	1		
22:08	MP90287-B1	1		
22:11	MP90287-MB1	1		
22:14	MA38045-CCV10	1		
22:16	MA38045-CCB10	1		
22:19	MP90287-S1	1		high rsd-s
22:22	MP90287-S2	1		high rsd-s
22:25	JC7762-12	1		(sample used for QC only; not part of login JC7895)
22:28	MP90287-SD1	5		high rsd-s
22:31	JC7895-1	1		
22:34	JC7895-2	1		
---------->	Last reportable sample/prep for job JC7895			
22:36	ZZZZZZ	1		
22:39	ZZZZZZ	1		
22:42	ZZZZZZ	1		
22:45	MA38045-CCV11	1		
22:48	MA38045-CCB11	1		
22:51	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
22:54	ZZZZZZ	1		
22:57	ZZZZZZ	10		
23:00	ZZZZZZ	1		
23:02	ZZZZZZ	1		
23:05	ZZZZZZ	1		
23:08	ZZZZZZ	1		
23:11	ZZZZZZ	1		
23:14	ZZZZZZ	1		
23:17	MA38045-CCV12	1		
23:20	MA38045-CCB12	1		
23:23	MP90288-B1	1		
23:25	MP90288-MB1	1		
23:28	MP90288-LC1	1		
23:31	MP90288-S1	1		needs post spike
23:34	MP90288-S2	1		
23:37	JC7717-1	1		(sample used for QC only; not part of login JC7895)
23:39	MP90288-SD1	5		
23:42	ZZZZZZ	1		
23:45	ZZZZZZ	1		
23:48	MA38045-CCV13	1		
23:51	MA38045-CCB13	1		
23:54	ZZZZZZ	1		
23:57	ZZZZZZ	1		
00:00	ZZZZZZ	1		
00:03	ZZZZZZ	1		
00:06	ZZZZZZ	1		
00:08	ZZZZZZ	1		
00:11	ZZZZZZ	1		
00:14	ZZZZZZ	1		
00:17	ZZZZZZ	1		
00:20	MA38045-CCV14	1		
00:23	MA38045-CCB14	1		
00:26	MA38045-CRI4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	00:29	MA38045-CRID3	1		
	00:32	MA38045-CRIA3	1		
	00:35	MA38045-ICSA3	1		
	00:38	MA38045-ICSAB3	1		
	00:41	MA38045-CCV15	1		
	00:44	MA38045-CCB15	1		
---------->	Last reportable CCB for job JC7895				
	00:47	ZZZZZZ	1		
	00:50	ZZZZZZ	1		
	00:53	ZZZZZZ	1		
	00:55	ZZZZZZ	1		
	00:58	ZZZZZZ	1		
	01:01	ZZZZZZ	1		
	01:04	ZZZZZZ	1		
	01:07	ZZZZZZ	1		
	01:10	ZZZZZZ	1		
	01:13	MA38045-CCV16	1		
	01:16	MA38045-CCB16	1		
	01:19	ZZZZZZ	2		
	01:22	ZZZZZZ	3		
	01:25	ZZZZZZ	2		
	01:28	ZZZZZZ	2		
	01:30	ZZZZZZ	1		
	01:33	MP90267-S1	1		CRI out
	01:36	MP90267-S2	1		CRI out
	01:39	ZZZZZZ	1		
	01:42	ZZZZZZ	2		
	01:45	MA38045-CCV17	1		
	01:47	MA38045-CCB17	1		
	01:50	ZZZZZZ	1		
	01:53	ZZZZZZ	2		
	01:56	ZZZZZZ	1		
	01:59	ZZZZZZ	2		
	02:02	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:05	ZZZZZZ	5		
02:08	ZZZZZZ	5		
02:11	ZZZZZZ	25		
02:14	ZZZZZZ	1		
02:17	MA38045-CCV18	1		
02:20	MA38045-CCB18	1		
02:23	ZZZZZZ	10		
02:26	ZZZZZZ	1		
02:29	ZZZZZZ	10		
02:32	ZZZZZZ	5		
02:35	ZZZZZZ	5		
02:38	ZZZZZZ	1		
02:41	ZZZZZZ	5		
02:44	ZZZZZZ	25		
02:47	ZZZZZZ	25		
02:51	MA38045-CCV19	1		
02:53	MA38045-CCB19	1		
02:56	ZZZZZZ	5		
02:59	ZZZZZZ	2		
03:02	ZZZZZZ	10		
03:05	ZZZZZZ	5		
03:08	ZZZZZZ	5		
03:11	ZZZZZZ	5		
03:15	ZZZZZZ	5		
03:18	ZZZZZZ	5		
03:21	ZZZZZZ	5		
03:24	MA38045-CCV20	1		
03:27	MA38045-CCB20	1		
03:30	ZZZZZZ	5		
03:32	ZZZZZZ	5		
03:36	ZZZZZZ	5		
03:39	ZZZZZZ	5		
03:42	ZZZZZZ	5		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:45	ZZZZZZ	5		
03:48	ZZZZZZ	5		
03:51	ZZZZZZ	5		
03:54	ZZZZZZ	5		
03:57	MA38045-CCV21	1		
04:00	MA38045-CCB21	1		
04:03	ZZZZZZ	5		
04:06	ZZZZZZ	5		
04:09	ZZZZZZ	5		
04:12	ZZZZZZ	2		
04:15	MA38045-CCV22	1		
04:17	MA38045-CCB22	1		
04:20	MA38045-CRI5	1		
04:23	MA38045-CRID4	1		
04:26	MA38045-CRIA4	1		
04:29	MA38045-ICSA4	1		
04:33	MA38045-ICSAB4	1		
04:35	MA38045-CCV23	1		
04:38	MA38045-CCB23	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:26	MA38045-STD1	2866 R	71384 R	16608 R	7205 R
16:29	MA38045-STD2	2645	64231	16065	6039
16:32	ZZZZZZ	2736	66977	16364	6342
16:35	ZZZZZZ	2805	71185	16558	7042
16:38	MA38045-ICV1	2729	67058	16278	6330
16:41	MA38045-ICB1	2875	70877	16505	7174
16:44	MA38045-CCV1	2703	67416	16339	6275
16:46	MA38045-CCB1	2876	71803	16429	7234
16:49	MA38045-CRI1	No results reported for the elements associated with this internal standard.			
16:52	MA38045-CRID1	No results reported for the elements associated with this internal standard.			
16:55	MA38045-CRIA1	2868	70908	16476	7184
16:58	MA38045-ICSA1	2505	61521	15762	5539
17:02	MA38045-ICSAB1	2508	61743	15815	5539
17:05	MA38045-HSTD1	2820	69079	16597	6913
17:08	ZZZZZZ	2587	62517	16856	5647
17:11	ZZZZZZ	2762	67743	16401	6412
17:13	MA38045-CCV2	2745	67395	16414	6383
17:16	MA38045-CCB2	2896	71829	16534	7258
17:20	MA38045-CRI2	2898	71680	16718	7174
17:23	MA38045-CRID2	2919	72640	16853	7319
17:26	MA38045-HSTD2	2624	64153	16030	5763
17:29	ZZZZZZ	2932	72817	16906	7320
17:31	ZZZZZZ	7559 !	999999 !	23124 !	17619 !
17:34	ZZZZZZ	2911	71280	16894	7270
17:37	ZZZZZZ	2928	72991	16961	7389
17:40	ZZZZZZ	2954	73132	16849	7419
17:43	ZZZZZZ	2985	72962	16875	7412
17:46	ZZZZZZ	999999 !	144710 !	999999 !	999999 !
17:49	ZZZZZZ	7438 !	999999 !	999999 !	16991 !
17:52	MA38045-CCV3	2856	69343	16625	6609
17:55	MA38045-CCB3	2963	73320	16859	7453
17:58	ZZZZZZ	6584 !	999999 !	999999 !	14919 !
18:01	ZZZZZZ	7894 !	101600 !	999999 !	17966 !

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
18:04	ZZZZZZ	6616 !	999999 !	999999 !	14941 !
18:07	ZZZZZZ	2778	67926	16511	6438
18:10	ZZZZZZ	7071 !	999999 !	21786 !	16056 !
18:13	ZZZZZZ	6947 !	999999 !	21265	999999 !
18:16	ZZZZZZ	7916 !	999999 !	999999 !	999999 !
18:19	ZZZZZZ	7674 !	999999 !	999999 !	17340 !
18:22	ZZZZZZ	6460 !	999999 !	999999 !	14549 !
18:25	MA38045-CCV4	2868	69667	16502	6624
18:27	MA38045-CCB4	2980	73688	16887	7492
18:30	ZZZZZZ	7517 !	121610 !	999999 !	17428 !
18:33	ZZZZZZ	7681 !	999999 !	24220 !	17491 !
18:36	ZZZZZZ	7044 !	166820 !	999999 !	15886 !
18:39	ZZZZZZ	999999 !	999999 !	999999 !	999999 !
18:42	ZZZZZZ	2792	66860	16618	6427
18:45	ZZZZZZ	4292 !	999999 !	21588	10023 !
18:48	ZZZZZZ	2922	69767	15891	6854
18:51	ZZZZZZ	3027	74407	17060	7515
18:54	ZZZZZZ	999999 !	999999 !	999999 !	999999 !
18:57	MA38045-CCV5	2874	69930	16628	6656
18:59	MA38045-CCB5	3018	74566	16618	7545
19:02	ZZZZZZ	2975	73037	17071	7114
19:05	ZZZZZZ	2890	70208	16699	6684
19:08	ZZZZZZ	2878	69836	999999 !	6672
19:11	ZZZZZZ	7100 !	999999 !	21877 !	16305 !
19:14	ZZZZZZ	7392 !	999999 !	999999 !	17302 !
19:16	ZZZZZZ	999999 !	999999 !	999999 !	999999 !
19:19	ZZZZZZ	6776 !	129060 !	999999 !	15076 !
19:22	ZZZZZZ	7791 !	148600 !	22452 !	17835 !
19:26	MA38045-CCV6	2908	69800	16580	6707
19:28	MA38045-CCB6	3031	73823	16821	7566
19:31	ZZZZZZ	7475 !	132220 !	999999 !	999999 !
19:34	ZZZZZZ	6754 !	999999 !	999999 !	15542 !
19:37	ZZZZZZ	7152 !	999999 !	999999 !	16342 !

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
19:40	ZZZZZZ	7436 !	999999 !	999999 !	16760 !
19:43	ZZZZZZ	7401 !	184040 !	999999 !	16875 !
19:46	ZZZZZZ	7443 !	999999 !	999999 !	17002 !
19:49	ZZZZZZ	7248 !	999999 !	999999 !	999999 !
19:52	ZZZZZZ	7542 !	999999 !	999999 !	17627 !
19:55	ZZZZZZ	7899 !	999999 !	999999 !	18537 !
19:58	MA38045-CRI3	3017	73400	16745	7410
20:01	MA38045-CRIA2	3034	73399	16798	7532
20:04	MA38045-ICSA2	2666	63667	16169	5844
20:07	MA38045-ICSAB2	2690	63942	16140	5842
20:10	MA38045-CCV7	2872	70218	16026	6648
20:13	MA38045-CCB7	3030	73778	16814	7563
20:16	ZZZZZZ	2982	73453	16739	7405
20:19	ZZZZZZ	3061	74439	16812	7588
20:22	ZZZZZZ	3119	70703	17509	6655
20:25	ZZZZZZ	3025	73601	16729	7534
20:28	ZZZZZZ	3044	73725	16900	7532
20:31	ZZZZZZ	3030	73166	16817	7575
20:34	ZZZZZZ	3047	74385	16627	7617
20:37	ZZZZZZ	2731	66226	16130	6393
20:40	ZZZZZZ	2748	66137	16198	6387
20:43	MP90273-MB1	No results reported for the elements associated with this internal standard.			
20:46	MP90273-B1	No results reported for the elements associated with this internal standard.			
20:49	MP90273-S1	No results reported for the elements associated with this internal standard.			
20:51	MP90273-S2	No results reported for the elements associated with this internal standard.			
20:54	JC8007-1	No results reported for the elements associated with this internal standard.			
20:57	MP90273-SD1	No results reported for the elements associated with this internal standard.			
21:00	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:03	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:06	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:09	MA38045-CCV8	2901	70355	16776	6702
21:12	MA38045-CCB8	3058	74786	16937	7598
21:15	ZZZZZZ	2845	70512	16975	7020

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
21:18	ZZZZZZ	2921	71499	17008	7105
21:21	ZZZZZZ	2924	71628	17054	7123
21:24	ZZZZZZ	2869	69995	16864	6896
21:26	ZZZZZZ	2935	72811	17184	7196
21:29	ZZZZZZ	2964	73059	17227	7096
21:32	ZZZZZZ	2970	72335	17143	7124
21:35	ZZZZZZ	2992	73895	17191	7446
21:38	ZZZZZZ	No results reported for the elements associated with this internal standard.			
21:41	MA38045-CCV9	2919	70122	16927	6734
21:44	MA38045-CCB9	3033	73802	16808	7549
21:47	ZZZZZZ	2838	69624	16838	6836
21:50	ZZZZZZ	2900	72261	16952	7131
21:53	ZZZZZZ	2873	71711	17028	6988
21:56	ZZZZZZ	2941	71274	17059	7106
21:59	ZZZZZZ	2955	72966	17218	7369
22:02	ZZZZZZ	3030	74095	17149	7636
22:05	ZZZZZZ	2999	74345	17219	7565
22:08	MP90287-B1	2911	69753	16778	6843
22:11	MP90287-MB1	3051	73765	16878	7517
22:14	MA38045-CCV10	2931	70088	16487	6754
22:16	MA38045-CCB10	3085	74217	16861	7626
22:19	MP90287-S1	2942	71083	17171	6621
22:22	MP90287-S2	3004	72138	17156	6617
22:25	JC7762-12	3121	74582	16933	7060
22:28	MP90287-SD1	3070	74110	17023	7390
22:31	JC7895-1	2738	67463	16685	6170
22:34	JC7895-2	2879	70839	17253	6511
22:36	ZZZZZZ	3137	75662	17859	7105
22:39	ZZZZZZ	3096	75008	18016	7112
22:42	ZZZZZZ	2990	72343	17227	6895
22:45	MA38045-CCV11	2916	70305	16705	6733
22:48	MA38045-CCB11	3047	74676	16995	7617
22:51	ZZZZZZ	2981	72531	17401	7031

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
22:54	ZZZZZZ	2609	66089	16468	7465
22:57	ZZZZZZ	3003	71792	16955	7376
23:00	ZZZZZZ	3016	71398	17323	6984
23:02	ZZZZZZ	3073	74352	17677	6992
23:05	ZZZZZZ	3018	73643	17535	6889
23:08	ZZZZZZ	3013	72379	17638	6908
23:11	ZZZZZZ	3069	74854	17755	6990
23:14	ZZZZZZ	3129	74187	17470	7146
23:17	MA38045-CCV12	3007	69710	16586	6906
23:20	MA38045-CCB12	3057	74179	16950	7644
23:23	MP90288-B1	2927	70440	16869	6894
23:25	MP90288-MB1	3034	74658	16885	7586
23:28	MP90288-LC1	3091	74132	17372	7139
23:31	MP90288-S1	2990	71733	16492	6745
23:34	MP90288-S2	3011	73091	17381	6667
23:37	JC7717-1	3092	74300	17360	7062
23:39	MP90288-SD1	3105	74366	17022	7467
23:42	ZZZZZZ	2978	71676	17223	6615
23:45	ZZZZZZ	3173	76270	999999 !	7303
23:48	MA38045-CCV13	2961	70123	16519	6809
23:51	MA38045-CCB13	3096	74857	16678	7668
23:54	ZZZZZZ	3097	74364	17321	7204
23:57	ZZZZZZ	3103	74726	17536	7131
00:00	ZZZZZZ	3128	74761	17508	7198
00:03	ZZZZZZ	3174	76335	17809	7127
00:06	ZZZZZZ	3080	73942	17269	7029
00:08	ZZZZZZ	3086	74052	17372	7023
00:11	ZZZZZZ	3164	75151	17416	7246
00:14	ZZZZZZ	3066	74363	17454	6985
00:17	ZZZZZZ	3061	74167	17074	6976
00:20	MA38045-CCV14	2944	70381	16554	6779
00:23	MA38045-CCB14	3086	74473	16652	7699
00:26	MA38045-CRI4	3074	73179	16601	7449

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
00:29	MA38045-CRID3	3095	74186	16454	7656
00:32	MA38045-CRIA3	3093	74275	16580	7637
00:35	MA38045-ICSA3	2711	64143	16080	5917
00:38	MA38045-ICSAB3	2728	64700	15975	5953
00:41	MA38045-CCV15	2975	70302	16450	6842
00:44	MA38045-CCB15	3196	74879	16663	7707
00:47	ZZZZZZ	3124	75009	17465	7143
00:50	ZZZZZZ	3081	73052	17232	6912
00:53	ZZZZZZ	3012	71285	17019	6573
00:55	ZZZZZZ	3072	72107	17127	7174
00:58	ZZZZZZ	3193	76293	17792	7092
01:01	ZZZZZZ	3162	75999	17764	7185
01:04	ZZZZZZ	3113	74643	17464	7009
01:07	ZZZZZZ	3113	74093	17185	7219
01:10	ZZZZZZ	3082	74671	16840	7728
01:13	MA38045-CCV16	2927	69573	16685	6741
01:16	MA38045-CCB16	3086	75126	16794	7718
01:19	ZZZZZZ	3083	73645	17538	6967
01:22	ZZZZZZ	3074	74225	17029	7237
01:25	ZZZZZZ	3121	72537	17105	7284
01:28	ZZZZZZ	3095	73577	17225	7206
01:30	ZZZZZZ	3102	75368	17123	7746
01:33	MP90267-S1	3076	73635	17592	6738
01:36	MP90267-S2	3082	73563	17651	6788
01:39	ZZZZZZ	3122	74983	17495	6867
01:42	ZZZZZZ	3078	73869	17275	7047
01:45	MA38045-CCV17	2990	69824	16418	6846
01:47	MA38045-CCB17	3113	75080	16650	7773
01:50	ZZZZZZ	3070	74236	17619	6857
01:53	ZZZZZZ	3012	74442	16701	7012
01:56	ZZZZZZ	2917	70277	16662	6418
01:59	ZZZZZZ	2970	70819	16962	6802
02:02	ZZZZZZ	3133	75911	17041	7782

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:05	ZZZZZZ	3058	73391	16773	7462
02:08	ZZZZZZ	2666	61529	15797	5886
02:11	ZZZZZZ	2912	69022	16411	6763
02:14	ZZZZZZ	2363	55378	15285	5090
02:17	MA38045-CCV18	2993	71036	16930	6896
02:20	MA38045-CCB18	3129	75381	16852	7784
02:23	ZZZZZZ	2869	67936	16330	6630
02:26	ZZZZZZ	2350	54931	14838	5064
02:29	ZZZZZZ	2887	67693	16354	6617
02:32	ZZZZZZ	2738	63913	16109	6192
02:35	ZZZZZZ	2788	66353	16054	6378
02:38	ZZZZZZ	2500	59547	15686	5514
02:41	ZZZZZZ	2673	62163	15833	5928
02:44	ZZZZZZ	2925	69016	16457	6798
02:47	ZZZZZZ	2978	70626	16978	7014
02:51	MA38045-CCV19	3000	70869	16558	6894
02:53	MA38045-CCB19	3117	75205	16708	7770
02:56	ZZZZZZ	2851	67164	16233	6532
02:59	ZZZZZZ	2640	62639	16064	5925
03:02	ZZZZZZ	2939	69548	16579	6828
03:05	ZZZZZZ	6951 !	130650 !	999999 !	15637 !
03:08	ZZZZZZ	2877	68146	16437	6636
03:11	ZZZZZZ	2928	69674	16527	6768
03:15	ZZZZZZ	2822	67019	16436	6436
03:18	ZZZZZZ	2815	66652	16146	6421
03:21	ZZZZZZ	2832	67017	16336	6470
03:24	MA38045-CCV20	2985	70970	16531	6871
03:27	MA38045-CCB20	3113	75592	16872	7794
03:30	ZZZZZZ	7325 !	121710 !	999999 !	16548 !
03:32	ZZZZZZ	2921	68506	16342	6717
03:36	ZZZZZZ	2959	68487	16476	6763
03:39	ZZZZZZ	2973	68360	16427	6748
03:42	ZZZZZZ	2869	66424	16258	6453

INTERNAL STANDARD SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
Analyst: BS Run ID: MA38045
Parameters: Co,Pb,Ni,V,Zn

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:45	ZZZZZZ	2891	68328	16277	6537
03:48	ZZZZZZ	2953	68487	16691	6649
03:51	ZZZZZZ	2929	68450	16251	6659
03:54	ZZZZZZ	2823	68321	16237	6441
03:57	MA38045-CCV21	3010	71210	16499	6916
04:00	MA38045-CCB21	3144	75211	16561	7823
04:03	ZZZZZZ	2968	68531	16324	6632
04:06	ZZZZZZ	2926	67866	16390	6689
04:09	ZZZZZZ	2965	68455	16369	6706
04:12	ZZZZZZ	3152	74531	16959	7213
04:15	MA38045-CCV22	3030	71243	16345	6951
04:17	MA38045-CCB22	3185	75129	16711	7835
04:20	MA38045-CRI5	3117	74638	16506	7622
04:23	MA38045-CRID4	3145	75285	16723	7767
04:26	MA38045-CRIA4	2998	75048	16530	7436
04:29	MA38045-ICSA4	2821	64870	15957	6048
04:33	MA38045-ICSAB4	2817	65317	16124	6077
04:35	MA38045-CCV23	3025	71779	16051	6945
04:38	MA38045-CCB23	3167	76111	16822	7866

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: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			16:41		16:46		17:16		17:55	
Sample ID:			ICB1		CCB1		CCB2		CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7.8	anr							
Antimony	6.0	2.9	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.1	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	1.6								
Boron	100	1.1								
Cadmium	3.0	.4	anr							
Calcium	5000	52	anr							
Chromium	10	1	anr							
Cobalt	50	.6	0.10	<50	-0.10	<50	0.30	<50	0.10	<50
Copper	10	1.2	anr							
Iron	100	2.5	anr							
Lead	3.0	2	-0.50	<3.0	0.0	<3.0	-0.50	<3.0	-0.30	<3.0
Lithium	20	.4								
Magnesium	5000	21	anr							
Manganese	15	.2	anr							
Molybdenum	20	.7								
Nickel	10	.5	0.40	<10	-0.30	<10	0.20	<10	-0.10	<10
Palladium	50	2								
Potassium	10000	23	anr							
Selenium	10	3.3	anr							
Silicon	200	5.3								
Silver	10	.9	anr							
Sodium	10000	6.9	anr							
Sulfur	50	4.5								
Strontium	10	.1								
Thallium	2.0	2	anr							
Tin	10	2								
Titanium	10	1.3								
Tungsten	50	1.8								
Vanadium	50	1.1	0.20	<50	0.60	<50	0.10	<50	0.10	<50
Zinc	20	2	-0.20	<20	0.20	<20	0.20	<20	0.10	<20

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			16:41		16:46		17:16		17:55	
Sample ID:			ICB1		CCB1		CCB2		CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zirconium	10	.6								

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			18:27		18:59		19:28		20:13	
Sample ID:			CCB4		CCB5		CCB6		CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7.8	anr							
Antimony	6.0	2.9	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.1	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	1.6								
Boron	100	1.1								
Cadmium	3.0	.4	anr							
Calcium	5000	52	anr							
Chromium	10	1	anr							
Cobalt	50	.6	0.20	<50	0.30	<50	0.40	<50	0.20	<50
Copper	10	1.2	anr							
Iron	100	2.5	anr							
Lead	3.0	2	-0.80	<3.0	0.60	<3.0	0.20	<3.0	-0.40	<3.0
Lithium	20	.4								
Magnesium	5000	21	anr							
Manganese	15	.2	anr							
Molybdenum	20	.7								
Nickel	10	.5	0.10	<10	0.20	<10	-0.10	<10	0.10	<10
Palladium	50	2								
Potassium	10000	23	anr							
Selenium	10	3.3	anr							
Silicon	200	5.3								
Silver	10	.9	anr							
Sodium	10000	6.9	anr							
Sulfur	50	4.5								
Strontium	10	.1								
Thallium	2.0	2	anr							
Tin	10	2								
Titanium	10	1.3								
Tungsten	50	1.8								
Vanadium	50	1.1	0.20	<50	0.10	<50	0.10	<50	0.10	<50
Zinc	20	2	0.0	<20	0.30	<20	0.10	<20	0.10	<20

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			18:27		18:59		19:28		20:13	
Sample ID:			CCB4		CCB5		CCB6		CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zirconium	10	.6								

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			21:12		21:44		22:16		22:48	
Sample ID:			CCB8		CCB9		CCB10		CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7.8	anr							
Antimony	6.0	2.9	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.1	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	1.6								
Boron	100	1.1								
Cadmium	3.0	.4	anr							
Calcium	5000	52	anr							
Chromium	10	1	anr							
Cobalt	50	.6	0.40	<50	0.0	<50	0.20	<50	0.0	<50
Copper	10	1.2	anr							
Iron	100	2.5	anr							
Lead	3.0	2	1.1	<3.0	0.50	<3.0	-0.80	<3.0	0.40	<3.0
Lithium	20	.4								
Magnesium	5000	21	anr							
Manganese	15	.2	anr							
Molybdenum	20	.7								
Nickel	10	.5	-0.40	<10	0.20	<10	-0.10	<10	0.0	<10
Palladium	50	2								
Potassium	10000	23	anr							
Selenium	10	3.3	anr							
Silicon	200	5.3								
Silver	10	.9	anr							
Sodium	10000	6.9	anr							
Sulfur	50	4.5								
Strontium	10	.1								
Thallium	2.0	2	anr							
Tin	10	2								
Titanium	10	1.3								
Tungsten	50	1.8								
Vanadium	50	1.1	0.20	<50	0.10	<50	0.20	<50	0.0	<50
Zinc	20	2	0.10	<20	0.10	<20	0.10	<20	0.0	<20

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			21:12		21:44		22:16		22:48	
Sample ID:			CCB8		CCB9		CCB10		CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zirconium	10	.6								

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			23:20		23:51		00:23		00:44	
Sample ID:			CCB12		CCB13		CCB14		CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7.8	anr							
Antimony	6.0	2.9	anr							
Arsenic	3.0	1.3	anr							
Barium	200	.1	anr							
Beryllium	1.0	.04	anr							
Bismuth	20	1.6								
Boron	100	1.1								
Cadmium	3.0	.4	anr							
Calcium	5000	52	anr							
Chromium	10	1	anr							
Cobalt	50	.6	0.10	<50	0.10	<50	0.40	<50	0.20	<50
Copper	10	1.2	anr							
Iron	100	2.5	anr							
Lead	3.0	2	-0.30	<3.0	0.0	<3.0	0.10	<3.0	0.80	<3.0
Lithium	20	.4								
Magnesium	5000	21	anr							
Manganese	15	.2	anr							
Molybdenum	20	.7								
Nickel	10	.5	0.20	<10	0.40	<10	0.20	<10	0.30	<10
Palladium	50	2								
Potassium	10000	23	anr							
Selenium	10	3.3	anr							
Silicon	200	5.3								
Silver	10	.9	anr							
Sodium	10000	6.9	anr							
Sulfur	50	4.5								
Strontium	10	.1								
Thallium	2.0	2	anr							
Tin	10	2								
Titanium	10	1.3								
Tungsten	50	1.8								
Vanadium	50	1.1	0.10	<50	0.30	<50	0.20	<50	0.40	<50
Zinc	20	2	0.0	<20	0.0	<20	0.10	<20	0.0	<20

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA38045 Units: ug/l

Time:			23:20		23:51		00:23		00:44	
Sample ID:			CCB12		CCB13		CCB14		CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zirconium	10	.6								

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		16:38			16:44			17:13	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	2040	102.0	2000	2070	103.5	2000	2030	101.5
Copper	anr								
Iron	anr								
Lead	2000	2070	103.5	2000	2100	105.0	2000	2060	103.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	2060	103.0	2000	2090	104.5	2000	2050	102.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	2010	100.5	2000	2000	100.0	2000	2000	100.0
Zinc	2000	2080	104.0	2000	2110	105.5	2000	2080	104.0

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		16:38			16:44			17:13	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zirconium									

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

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		17:52			18:25			18:57	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	1980	99.0	2000	1980	99.0	2000	1980	99.0
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2010	100.5	2000	2010	100.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	2020	101.0	2000	2010	100.5	2000	2010	100.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	1940	97.0	2000	1950	97.5	2000	1940	97.0
Zinc	2000	2040	102.0	2000	2030	101.5	2000	2040	102.0

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		17:52			18:25			18:57	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zirconium									

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		19:26			20:10			21:09	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	1980	99.0	2000	1980	99.0	2000	1960	98.0
Copper	anr								
Iron	anr								
Lead	2000	2010	100.5	2000	2010	100.5	2000	1990	99.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	2010	100.5	2000	2000	100.0	2000	1990	99.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	1950	97.5	2000	1930	96.5	2000	1910	95.5
Zinc	2000	2050	102.5	2000	2040	102.0	2000	2020	101.0

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		19:26			20:10			21:09	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zirconium									

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

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		21:41			22:14			22:45	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	1950	97.5	2000	1970	98.5	2000	1960	98.0
Copper	anr								
Iron	anr								
Lead	2000	1990	99.5	2000	2000	100.0	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	1980	99.0	2000	1990	99.5	2000	1990	99.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	1920	96.0	2000	1940	97.0	2000	1920	96.0
Zinc	2000	2010	100.5	2000	2040	102.0	2000	2020	101.0

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		21:41			22:14			22:45	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zirconium									

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

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		23:17			23:48			00:20	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	2000	1950	97.5	2000	1950	97.5	2000	1960	98.0
Copper	anr								
Iron	anr								
Lead	2000	1990	99.5	2000	1990	99.5	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2000	1980	99.0	2000	1980	99.0	2000	1990	99.5
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	2000	1940	97.0	2000	1930	96.5	2000	1920	96.0
Zinc	2000	2040	102.0	2000	2030	101.5	2000	2040	102.0

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		23:17			23:48			00:20	
Sample ID:	CCV	CCV12		CCV	CCV13		CCV	CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zirconium									

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

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		00:41	
Sample ID:	CCV	CCV15	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	2000	1950	97.5
Copper	anr		
Iron	anr		
Lead	2000	1990	99.5
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	2000	1980	99.0
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	2000	1930	96.5
Zinc	2000	2030	101.5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		00:41	
Sample ID:	CCV	CCV15	
Metal	True	Results	% Rec
Zirconium			

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

HIGH STANDARD CHECK SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		17:05			17:26	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt	5000	5110	102.2			
Copper	anr					
Iron						
Lead	5000	5130	102.6			
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	5000	5110	102.2			
Palladium						
Potassium						
Selenium	anr					
Silicon						
Silver	anr					
Sodium						
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	5000	5170	103.4			
Zinc	5000	5300	106.0			

HIGH STANDARD CHECK SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA38045 Units: ug/l

Time:		17:05			17:26	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Zirconium						

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

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38045 Units: ug/l

Time:				16:55		17:20		17:23	
Sample ID:	CRI	CRIA	CRID	CRIA1		CRI2		CRID2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0						
Beryllium	2.0		1.0						
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0						
Calcium	5000	2000	1000	anr					
Chromium	10		2.0						
Cobalt	50		3.0			48.3	96.6	2.9	96.7
Copper	10		2.0						
Iron	100	500		anr					
Lead	3.0	20	2.5	20.9	104.5	4.4	146.7*(a	2.2	88.0
Lithium	20								
Magnesium	5000	2000	100	anr					
Manganese	15		3.0						
Molybdenum	20								
Nickel	10		4.0			9.6	96.0	3.8	95.0
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		2.0						
Sodium	5000		1000						
Sulfur	50								
Strontium	10								
Thallium	10		2.0						
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0			49.0	98.0	2.1	105.0
Zinc	20		10			20.7	103.5	10.3	103.0

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38045 Units: ug/l

Time:				16:55		17:20		17:23	
Sample ID:	CRI	CRIA	CRID	CRIA1		CRI2		CRID2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Zirconium	10								

(*) Outside of QC limits
(anr) Analyte not requested
(a) No AQ samples reported for this element in the area bracketed by this QC.

10.1.5
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38045 Units: ug/l

Time:				19:58		20:01		00:26	
Sample ID:	CRI	CRIA	CRID	CRI3		CRIA2		CRI4	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000	2000	1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	48.5	97.0			49.0	98.0
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.9	96.7	20.2	101.0	4.9	163.3*(a
Lithium	20								
Magnesium	5000	2000	100	anr					
Manganese	15		3.0	anr					
Molybdenum	20								
Nickel	10		4.0	9.6	96.0			10.1	101.0
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		2.0	anr					
Sodium	5000		1000	anr					
Sulfur	50								
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	49.0	98.0			48.0	96.0
Zinc	20		10	20.9	104.5			20.8	104.0

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38045 Units: ug/l

Time:				19:58		20:01		00:26	
Sample ID:	CRI	CRIA	CRID	CRI3		CRIA2		CRI4	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Zirconium	10								

(*) Outside of QC limits
(anr) Analyte not requested
(a) No AQ samples reported for this element in the area bracketed by this QC.

10.1.5
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38045 Units: ug/l

Time:				00:29		00:32	
Sample ID:	CRI	CRIA	CRID	CRID3		CRIA3	
Metal	True	True	True	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr			
Antimony	6.0	20	3.0				
Arsenic	8.0	20	3.0	anr			
Barium	200		4.0	anr			
Beryllium	2.0		1.0	anr			
Bismuth	20						
Boron	100		10				
Cadmium	3.0		1.0	anr			
Calcium	5000	2000	1000	anr			
Chromium	10		2.0	anr			
Cobalt	50		3.0	2.7	90.0		
Copper	10		2.0	anr			
Iron	100	500					
Lead	3.0	20	2.5	2.7	108.0	18.8	94.0
Lithium	20						
Magnesium	5000	2000	100	anr			
Manganese	15		3.0	anr			
Molybdenum	20						
Nickel	10		4.0	3.9	97.5		
Palladium	50						
Potassium	5000		2000	anr			
Selenium	10	20	5.0	anr			
Silicon	200						
Silver	5.0		2.0	anr			
Sodium	5000		1000	anr			
Sulfur	50						
Strontium	10						
Thallium	10		2.0	anr			
Tin	10						
Titanium	10						
Tungsten	50						
Vanadium	50		2.0	1.8	90.0		
Zinc	20		10	10.4	104.0		

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA38045 Units: ug/l

Time:				00:29		00:32	
Sample ID:	CRI	CRIA	CRID	CRID3		CRIA3	
Metal	True	True	True	Results	% Rec	Results	% Rec
Zirconium	10						

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

10.1.5
10

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

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38045 Units: ug/l

Time:			16:58		17:02		20:04		20:07	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	513000	102.6	507000	101.4	489000	97.8	486000	97.2
Antimony		1000	2.7		1070	107.0	0.30		1010	101.0
Arsenic		1000	4.7		1040	104.0	0.50		989	98.9
Barium		500	-0.60		495	99.0	-0.60		471	94.2
Beryllium		500	-0.10		488	97.6	-0.10		468	93.6
Bismuth		500	17.1		517	103.4	14.8		490	98.0
Boron			-5.9		-2.7		-6.4		-0.70	
Cadmium		1000	3.3		1030	103.0	3.0		976	97.6
Calcium	400000	400000	382000	95.5	368000	92.0	372000	93.0	358000	89.5
Chromium		500	0.10		478	95.6	0.10		472	94.4
Cobalt		500	0.70		491	98.2	0.70		476	95.2
Copper		500	-0.60		492	98.4	-1.2		471	94.2
Iron	200000	200000	182000	91.0	179000	89.5	174000	87.0	173000	86.5
Lead		1000	2.9		943	94.3	1.5		918	91.8
Lithium		500	9.5		496	99.2	9.8		473	94.6
Magnesium	500000	500000	506000	101.2	492000	98.4	493000	98.6	480000	96.0
Manganese		500	0.50		481	96.2	0.20		471	94.2
Molybdenum		500	1.1		494	98.8	1.6		473	94.6
Nickel		1000	4.2		981	98.1	4.5		953	95.3
Palladium		500	-59		458	91.6	-56		443	88.6
Potassium			198		197		261		216	
Selenium		1000	0.80		1030	103.0	2.0		970	97.0
Silicon			-0.80		1.7		-0.40		0.60	
Silver		1000	5.0		1020	102.0	3.0		995	99.5
Sodium			39.7		50.3		81.8		83.3	
Sulfur		500	-8.7		498	99.6	-13		476	95.2
Strontium			4.7		4.5		4.0		3.8	
Thallium		1000	-4.1*(a)		942	94.2	-1.6		911	91.1
Tin			-3.1		-3.2		-4.2		-3.1	
Titanium			1.7		2.4		1.5		2.0	
Tungsten		500	0.80		487	97.4	0.70		465	93.0
Vanadium		500	-3.3		469	93.8	-2.8		456	91.2
Zinc		1000	2.8		962	96.2	2.5		932	93.2

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

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38045 Units: ug/l

Time:			16:58		17:02		20:04		20:07	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Zirconium		500	20.3*		465	93.0	19.5		458	91.6

(*) Outside of QC limits
(anr) Analyte not requested
(a) No samples reported for TLNJ in the area bracketed by this QC.

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

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38045 Units: ug/l

Time:			00:35		00:38	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3	
Metal	True	True	Results	% Rec	Results	% Rec
Aluminum	500000	500000	486000	97.2	490000	98.0
Antimony		1000	1.7		996	99.6
Arsenic		1000	5.1		982	98.2
Barium		500	-0.40		463	92.6
Beryllium		500	0.0		457	91.4
Bismuth		500	17.0		481	96.2
Boron			-4.9		0.0	
Cadmium		1000	2.7		973	97.3
Calcium	400000	400000	368000	92.0	369000	92.3
Chromium		500	0.20		472	94.4
Cobalt		500	0.80		473	94.6
Copper		500	-1.7		461	92.2
Iron	200000	200000	172000	86.0	169000	84.5
Lead		1000	1.3		913	91.3
Lithium		500	9.3		460	92.0
Magnesium	500000	500000	491000	98.2	477000	95.4
Manganese		500	0.30		469	93.8
Molybdenum		500	1.4		467	93.4
Nickel		1000	4.6		948	94.8
Palladium		500	-55		439	87.8
Potassium			238		237	
Selenium		1000	1.8		961	96.1
Silicon			0.60		2.1	
Silver		1000	4.8		980	98.0
Sodium			27.0		36.6	
Sulfur		500	-9.9		460	92.0
Strontium			4.1		2.5	
Thallium		1000	-3.5		903	90.3
Tin			-2.9		-3.5	
Titanium			1.5		1.8	
Tungsten		500	0.90		461	92.2
Vanadium		500	-2.9		456	91.2
Zinc		1000	2.6		939	93.9

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

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

File ID: SE111315M2.ICP Date Analyzed: 11/13/15 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA38045 Units: ug/l

Time:			00:35		00:38	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3	
Metal	True	True	Results	% Rec	Results	% Rec
Zirconium		500	19.2		449	89.8

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	49	.76	3.2		
Antimony	2.0	.28	.3		
Arsenic	2.0	.13	.13		
Barium	20	.0098	.053		
Beryllium	0.20	.0039	.04		
Bismuth	2.0	.16	.37		
Boron	9.8	.11	.42		
Cadmium	0.49	.039	.05		
Calcium	490	5.1	2.7		
Chromium	0.98	.098	.097		
Cobalt	4.9	.059	.039	0.029	<4.9
Copper	2.5	.12	.14		
Iron	49	.25	3.2		
Lead	2.0	.2	.23	0.039	<2.0
Lithium	2.0	.039	.32		
Magnesium	490	2.1	8.8		
Manganese	1.5	.02	.035		
Molybdenum	2.0	.069	.15		
Nickel	3.9	.049	.094	0.0098	<3.9
Palladium	4.9	.2	.36		
Potassium	980	2.3	7.3		
Selenium	2.0	.32	.25		
Silicon	20	.52	1.6		
Silver	0.49	.088	.18		
Sodium	980	.68	1.5		
Strontium	0.98	.0098	.033		
Sulfur	4.9	.44	.68		
Thallium	0.98	.19	.19		
Tin	4.9	.2	1.1		
Titanium	0.98	.13	.2		
Tungsten	4.9	.18	.42		
Vanadium	4.9	.11	.074	0.020	<4.9
Zinc	4.9	.2	.75	0.59	<4.9

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.059	.1		

Associated samples MP90287: JC7895-1, JC7895-2

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: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	JC7762-12 Original	MS	Spikelot MPSPK1	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium	anr				
Chromium	anr				
Cobalt	5.8	210	217	94.1	75-125
Copper	anr				
Iron	anr				
Lead	10.7	210	217	91.9	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum					
Nickel	10.7	218	217	95.5	75-125
Palladium					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	21.9	223	217	92.7	75-125
Zinc	23.4	231	217	95.7	75-125

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287 | Methods: SW846 6010C
Matrix Type: SOLID | Units: mg/kg

Prep Date: 11/12/15

Metal	JC7762-12 Original MS	Spikelot MPSPK1	% Rec	QC Limits
Zirconium				

Associated samples MP90287: JC7895-1, JC7895-2

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: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	JC7762-12 Original	MSD	Spikelot MPSPK1	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	5.8	208	217	93.2	1.0	20
Copper	anr					
Iron	anr					
Lead	10.7	212	217	92.8	0.9	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	10.7	214	217	93.7	1.9	20
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Sulfur						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	21.9	217	217	89.9	2.7	20
Zinc	23.4	225	217	92.9	2.6	20

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	JC7762-12 Original MSD	Spikelot MPSPK1	% Rec	MSD RPD	QC Limit
Zirconium					

Associated samples MP90287: JC7895-1, JC7895-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	BSP Result	Spikelot MPSPK1	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	185	200	92.5	80-120
Copper	anr			
Iron	anr			
Lead	187	200	93.5	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	187	200	93.5	80-120
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	186	200	93.0	80-120
Zinc	192	200	96.0	80-120

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/12/15

Metal	BSP Result	Spikelot MPSPK1	% Rec	QC Limits
Zirconium				

Associated samples MP90287: JC7895-1, JC7895-2

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/12/15

Metal	JC7762-12 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt	53.9	55.6	3.2	0-10
Copper	anr			
Iron	anr			
Lead	98.3	106	7.8	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	98.7	105	6.7	0-10
Palladium				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	202	218	7.9	0-10
Zinc	216	234	8.7	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC7895
Account: SECORPAE - Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

QC Batch ID: MP90287
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/12/15

Metal	JC7762-12 Original SDL 1:5	%DIF	QC Limits
Zirconium			

Associated samples MP90287: JC7895-1, JC7895-2

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: JC7895
Account: SECORPAE Stantec Consulting Services Inc.
Project: Sunoco - Marcus Hook Facility, PA

Sample: JC7895-1 **Analyzed:** 09-NOV-15 by KP **Method:** SM2540 G-97
ClientID: MH10-1C-1-20151105

Wet Weight (Total)	26.19	g
Tare Weight	17.72	g
Dry Weight (Total)	25.04	g
Solids, Percent	86.4	%

Sample: JC7895-2 **Analyzed:** 09-NOV-15 by KP **Method:** SM2540 G-97
ClientID: MH10-1D-1-20151105

Wet Weight (Total)	25.96	g
Tare Weight	20.32	g
Dry Weight (Total)	25.54	g
Solids, Percent	92.6	%

New Jersey

ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

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

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

NE

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 #: JC7895

Client / Reporting Information

Company Name: Accutest Laboratories
Street Address: 2235 Route 130
City: Dayton State: NJ Zip: 08810
Project Contact: MarieM E-mail: MarieM@accutest.com
Phone #: 732-329-0200 Fax #:
Sampler(s) Name(s): DD/JD Phone:

Project Information

Project Name: Marcus Hook Industrial Complex
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

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

Requested Analysis (see TEST CODE sheet)

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	V8011EDB	LAB USE ONLY
1	H10-1C-1-20151105		11/5/15	1:45:00 PM	DD/JD	SO	1					1				X	Sub
2	MH10-1D-1-20151105		11/5/15	1:50:00 PM	DD/JD	SO	1					1				X	Sub

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

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/19/2015

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 REDT2

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

Comments / Special Instructions

2A

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 BVASSalas	11/9/15 17:00	1 Fed Ex	2		2
Relinquished by Sampler: FEDx	Date Time: 11-11-15 9:20	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # 287 [ ] Intact [ ] Not intact	Preserved where applicable [ ]	On Ice [X] Cooler Temp. 3.3 C

IngGw

12.1

12

JC7895: Chain of Custody
Page 1 of 2
Accutest Labs of New England, Inc.

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JC7895 **Client:** ACNJ **Project:**

Date / Time Received: 11/11/2015 9:20:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (3.3/5);

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

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	IRGUN1;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

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

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

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

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

Comments

Accutest Laboratories
V:(508) 481-6200
495 Technology Center West, Bldg One
F: (508) 481-7753
Marlborough, MA 01752
www/accutest.com

JC7895: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JC7895

SECORPAE: Marcus Hook Industrial Complex
Project No: MHIC MH10 Post Ex

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC7895-1	Collected: 05-NOV-15 13:45 By: DD/JD	Received: 05-NOV-15 By: BA				
MH10-1C-1-20151105						
JC7895-1	SW846 8011	13-NOV-15 22:59	NK	13-NOV-15	AC	V8011EDB
JC7895-2	Collected: 05-NOV-15 13:50 By: DD/JD	Received: 05-NOV-15 By: BA				
MH10-1D-1-20151105						
JC7895-2	SW846 8011	13-NOV-15 23:27	NK	13-NOV-15	AC	V8011EDB

Accutest Internal Chain of Custody

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex
Received: 11/05/15

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC7895-1.1	Walk In Ref #5	Aysia Wood	11/13/15 08:39	Retrieve from Storage
JC7895-1.1	Aysia Wood	Walk In Ref #5	11/16/15 10:29	Return to Storage
JC7895-2.1	Walk In Ref #5	Aysia Wood	11/13/15 08:39	Retrieve from Storage
JC7895-2.1	Aysia Wood	Walk In Ref #5	11/16/15 10:29	Return to Storage

New Jersey

ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45402-MB	BB65159.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513

The QC reported here applies to the following samples: **Method:** SW846 8011

JC7895-1, JC7895-2

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.5	0.41	ug/kg	

CAS No.	Surrogate Recoveries		Limits
460-00-4	Bromofluorobenzene (S)	84%	70-170%
460-00-4	Bromofluorobenzene (S)	88%	70-170%

Blank Spike Summary

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45402-BS	BB65160.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513

The QC reported here applies to the following samples: **Method:** SW846 8011

JC7895-1, JC7895-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-93-4	1,2-Dibromoethane	32.4	29.9	92	59-133

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	90%	70-170%
460-00-4	Bromofluorobenzene (S)	86%	70-170%

13.2.1

13

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP45402-MS	BB65161.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513
OP45402-MSD	BB65162.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513
JC7895-1	BB65163.D	1	11/13/15	NK	11/13/15	OP45402	GBB3513

The QC reported here applies to the following samples: **Method:** SW846 8011

JC7895-1, JC7895-2

CAS No.	Compound	JC7895-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	ND		38.6	36.9	98	38.4	46.2	120	22	74-147/30

CAS No.	Surrogate Recoveries	MS	MSD	JC7895-1	Limits
460-00-4	Bromofluorobenzene (S)	120%	119%	143%	70-170%
460-00-4	Bromofluorobenzene (S)	113%	107%	117%	70-170%

* = Outside of Control Limits.

Volatile Surrogate Recovery Summary

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex

Method: SW846 8011 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JC7895-1	BB65163.D	143	117
JC7895-2	BB65164.D	144	117
OP45402-BS	BB65160.D	90	86
OP45402-MB	BB65159.D	84	88
OP45402-MS	BB65161.D	120	113
OP45402-MSD	BB65162.D	119	107

Surrogate Compounds	Recovery Limits
S1 = Bromofluorobenzene (S)	70-170%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

GC Surrogate Retention Time Summary

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex

Check Std:	GBB3513-ICC3513	**Injection Date:**	11/13/15
Lab File ID:	BB65156.D	**Injection Time:**	19:42
Instrument ID:	GCBB	**Method:**	SW846 8011

	S1 [a] RT	S1 [b] RT
Check Std	6.62	6.16

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT
OP45402-MB	BB65159.D	11/13/15	21:06	6.61	6.15
OP45402-BS	BB65160.D	11/13/15	21:34	6.61	6.15
OP45402-MS	BB65161.D	11/13/15	22:02	6.61	6.14
OP45402-MSD	BB65162.D	11/13/15	22:31	6.61	6.14
JC7895-1	BB65163.D	11/13/15	22:59	6.61	6.14
JC7895-2	BB65164.D	11/13/15	23:27	6.62	6.15
ZZZZZZ	BB65165.D	11/13/15	23:56	6.62	6.16
ZZZZZZ	BB65166.D	11/14/15	00:24	6.63	6.16
ZZZZZZ	BB65167.D	11/14/15	00:52	6.63	6.16
GBB3513-ECC3513	BB65168.D	11/14/15	01:20	6.64	6.17

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

Initial Calibration Summary

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex
Sample: GBB3513-ICC3513
Lab FileID: BB65156.D

```
                         Response Factor Report  GCBB

  Method       : C:\msdchem\1\METHODS\EDS151113.M (ChemStation Integrator)
  Title        : v8011edb soil
  Last Update  : Mon Nov 16 08:26:53 2015
  Response via : Initial Calibration

  Calibration Files
  1   =BB65157.d   2   =BB65156.d   3   =BB65155.d   4   =BB65154.d
  5      =BB65153.d    6      =BB65152.d

        Compound              1     2     3     4     5     6     Avg    %RSD
  ---------------------------------------------------------------------------
  1)     1,2-Dibromoethane   1.203 1.166 1.184 1.215 1.287 1.464 1.253 E6   8.89
  2) s   4-Bromofluorobenzen 5.271 5.697 5.802 6.269 7.122 9.129 6.548 E4  21.58
          ----- Quadratic regression -----                Coefficient =  0.9998
               Response Ratio = 162485.97174 + 56903.65984 *A + -24.26756 *A^2

  3)     1,2-Dibromo-3-chlor 1.923 1.881 1.709 1.689 1.553 1.687 1.740 E6   7.92

Signal #2

  1)     1,2-Dibromoethane   8.126 7.678 7.839 7.489 7.085 6.992 7.535 E6   5.82
  2) s   4-Bromofluorobenzen 5.934 5.977 5.527 5.329 5.413 5.226 5.568 E5   5.68
  3)     1,2-Dibromo-3-chlor 1.689 1.706 1.603 1.643 1.545 1.775 1.660 E7   4.89
 ---------------------------------------------------------------------------
 (#) = Out of Range

           EDS151113.M        Mon Nov 16 08:27:54 2015
```

13.6.1

13

Initial Calibration Verification

Job Number: JC7895
Account: ALNJ Accutest New Jersey
Project: SECORPAE: Marcus Hook Industrial Complex
Sample: GBB3513-ICV3513
Lab FileID: BB65158.D

```
                    Evaluate Continuing Calibration Report

 Signal #1 : C:\msdchem\1\DATA\BB...13\BB65158.d\ECD1B.CH Vial: 97
 Signal #2 : C:\msdchem\1\DATA\BB151113\BB65158.d\ECD2A.CH
 Acq On    : 13-Nov-15, 20:38:41                      Operator: nickk
 Sample    : icv3513-20,edb                           Inst    : GCBB
 Misc      : op45402,gbb3512,30,,,50,,s               Multiplr: 1.00
 IntFile Signal #1: events.e     IntFile Signal #2: events2.e

 Method       : C:\msdchem\1\METHODS\EDS151113.M (ChemStation Integrator)
 Title        : v8011edb soil
 Last Update  : Mon Nov 16 08:26:53 2015
 Response via : Multiple Level Calibration

 Min. RRF     :   0.000  Min. Rel. Area :  85%  Max. R.T. Dev  0.50min
 Max. RRF Dev :  15%     Max. Rel. Area : 115%

        Compound                AvgRF   CCRF      %Dev Area% Dev(min)RT Window
 ---------------------------------------------------------------------------
 1     1,2-Dibromoethane        1.253   1.190 E6   5.0  102   0.00    3.18- 3.24

           ----------------------- True    Calc.   % Drift  ------------
 2 s   4-Bromofluorobenzene   100.000 102.217     -2.2  101   0.00    6.13- 6.19

           ----------------------- AvgRF   CCRF     % Dev   -------------
 3     1,2-Dibromo-3-chloropr   1.740   1.832 E6  -5.3   97   0.00   10.12-10.18

*****  Signal #2   *****

 1     1,2-Dibromoethane        7.535   7.990 E6  -6.0  104   0.00    3.80- 3.86
 2 s   4-Bromofluorobenzene   556.770 598.111 E3  -7.4  100   0.00    6.59- 6.65
 3     1,2-Dibromo-3-chloropr  16.600  16.674 E6  -0.4   98   0.00   11.17-11.23
---------------------------------------------------------------------------
---------------------------------------------------------------------------

   (#) = Out of Range              SPCC's out = 0  CCC's out = 0
    BB65156.d  EDS151113.M       Mon Nov 16 08:27:48 2015
```

13.6.2

13

Continuing Calibration Summary

Job Number: JC7895 **Sample:** GBB3513-ECC3513
Account: ALNJ Accutest New Jersey **Lab FileID:** BB65168.D
Project: SECORPAE: Marcus Hook Industrial Complex

```
                    Evaluate Continuing Calibration Report

 Signal #1 : C:\msdchem\1\DATA\BB...13\BB65168.d\ECD1B.CH Vial: 95
 Signal #2 : C:\msdchem\1\DATA\BB151113\BB65168.d\ECD2A.CH
 Acq On    : 14-Nov-15, 01:20:16                      Operator: nickk
 Sample    : ecc3513-20,edb                           Inst    : GCBB
 Misc      : op45402,gbb3512,30,,,50,,s               Multiplr: 1.00
 IntFile Signal #1: events.e     IntFile Signal #2: events2.e

 Method       : C:\msdchem\1\METHODS\EDS151113.M (ChemStation Integrator)
 Title        : v8011edb soil
 Last Update  : Mon Nov 16 08:26:53 2015
 Response via : Multiple Level Calibration

 Min. RRF     :   0.000  Min. Rel. Area :  85%  Max. R.T. Dev  0.50min
 Max. RRF Dev :  15%     Max. Rel. Area : 115%

        Compound                AvgRF   CCRF      %Dev Area% Dev(min)RT Window
 ---------------------------------------------------------------------------
 1     1,2-Dibromoethane        1.253   1.041 E6  16.9#  89   0.01    3.19- 3.25

           ----------------------- True    Calc.   % Drift  ------------
 2 s   4-Bromofluorobenzene   100.000  92.279      7.7   91   0.01    6.14- 6.20

           ----------------------- AvgRF   CCRF     % Dev   -------------
 3     1,2-Dibromo-3-chloropr   1.740   1.786 E6  -2.6   95   0.00   10.13-10.19

*****  Signal #2   *****

 1     1,2-Dibromoethane        7.535   8.309 E6 -10.3  108   0.01    3.82- 3.88
 2 s   4-Bromofluorobenzene   556.770 593.871 E3  -6.7   99   0.01    6.61- 6.67
 3     1,2-Dibromo-3-chloropr  16.600  18.975 E6 -14.3  111   0.00   11.18-11.24
---------------------------------------------------------------------------
---------------------------------------------------------------------------

   (#) = Out of Range              SPCC's out = 0  CCC's out = 0
    BB65156.d  EDS151113.M       Mon Nov 16 08:29:33 2015
```

13.6.3

13

New Jersey

ACCUTEST LABORATORIES

GC Volatiles

Raw Data

(Accutest Labs of New England, Inc.)

Quantitation Report (QT Reviewed)

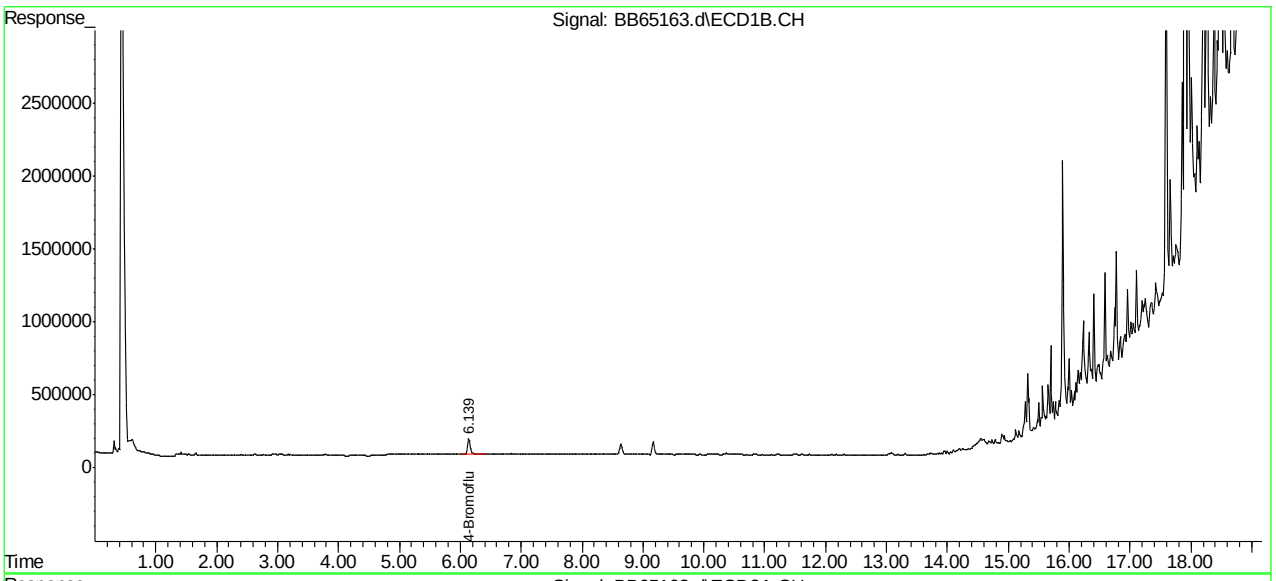
```
Data Path : C:\msdchem\1\DATA\BB151113\
Data File : BB65163.d
Signal(s) : Signal #1: ECD1B.CH  Signal #2: ECD2A.CH
Acq On    : 13-Nov-15, 22:59:34
Operator  : nickk
Sample    : jc7895-1,op45402
Misc      : op45402,gbb3513,30.24,,,50,,s
ALS Vial  : 15 (Sig #1); 0 (Sig #2)   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Nov 16 08:31:43 2015
Quant Method : C:\msdchem\1\METHODS\EDS151113.M
Quant Title  : v8011edb soil
QLast Update : Mon Nov 16 08:26:53 2015
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Small noise peaks clipped

Volume Inj.     :
Signal #1 Phase :                    Signal #2 Phase:
Signal #1 Info  :                    Signal #2 Info :

      Compound         RT#1      RT#2    Resp#1   Resp#2   ug/L    ug/L
  ---------------------------------------------------------------------------

  System Monitoring Compounds
2) s   4-Bromofl...    6.140f    6.609   3407543 39745340   58.486    71.386
 Spiked Amount     50.000 Range  60 - 140  Recovery   =  116.97%   142.77%#

  Target Compounds
1)     1,2-Dibro...    0.000     0.000         0        0    N.D. d    N.D. d
3)     1,2-Dibro...    0.000     0.000         0        0    N.D. d    N.D. d
  ---------------------------------------------------------------------------

 (f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25%  (m)=manual int.
```

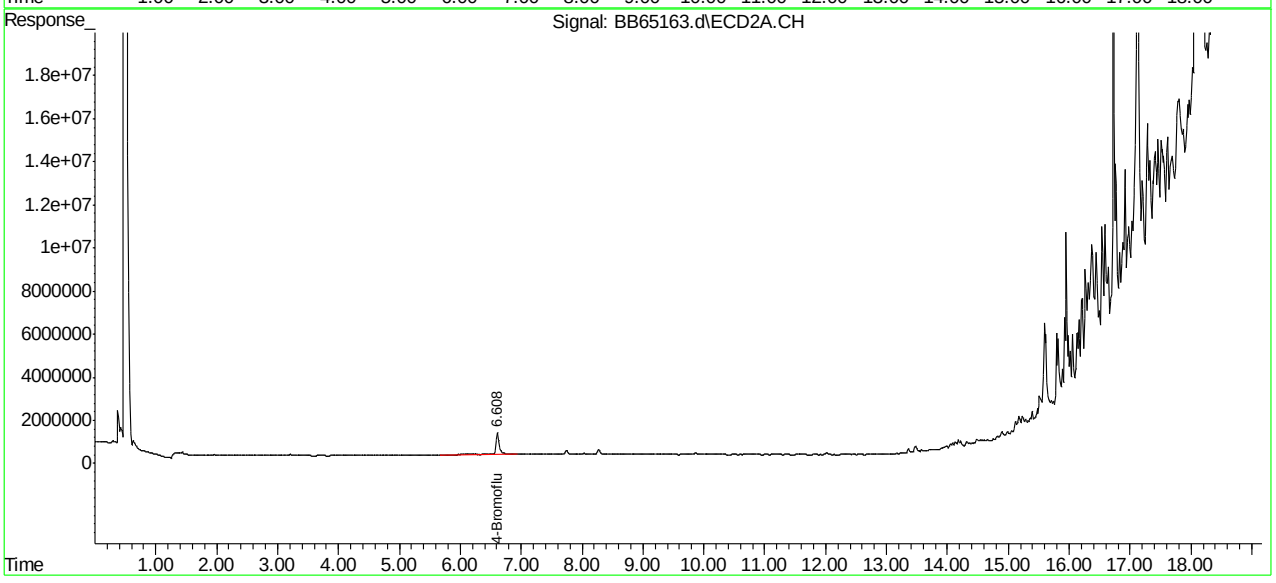
Quantitation Report (QT Reviewed)

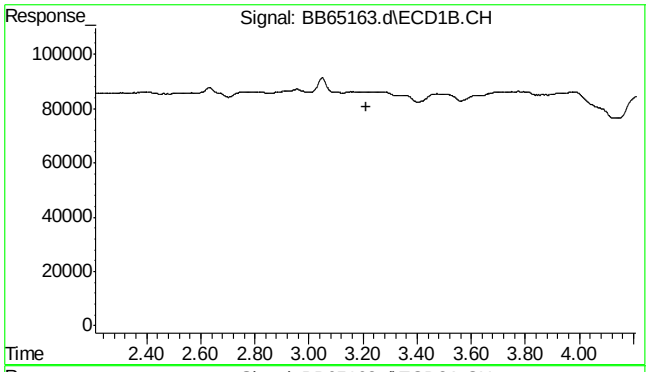
Data Path : C:\msdchem\1\DATA\BB151113\
Data File : BB65163.d
Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
Acq On : 13-Nov-15, 22:59:34
Operator : nickk
Sample : jc7895-1,op45402
Misc : op45402,gbb3513,30.24,,,50,,s
ALS Vial : 15 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Nov 16 08:31:43 2015
Quant Method : C:\msdchem\1\METHODS\EDS151113.M
Quant Title : v8011edb soil
QLast Update : Mon Nov 16 08:26:53 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

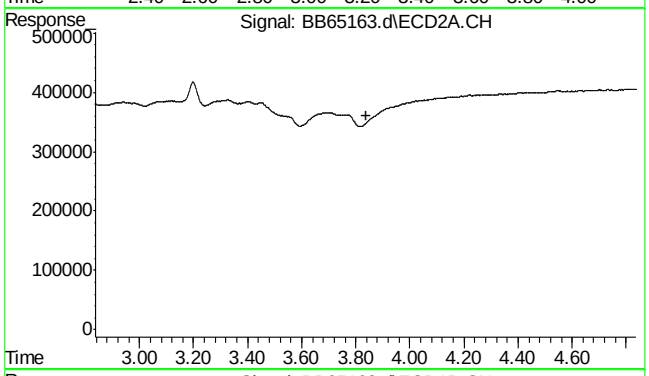






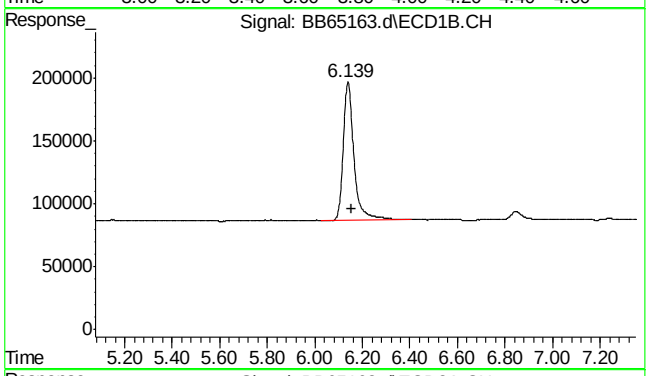
#1 1,2-Dibromoethane

R.T.: 0.000 min
Exp R.T. : 3.210 min
Response: 0
Conc: N.D.



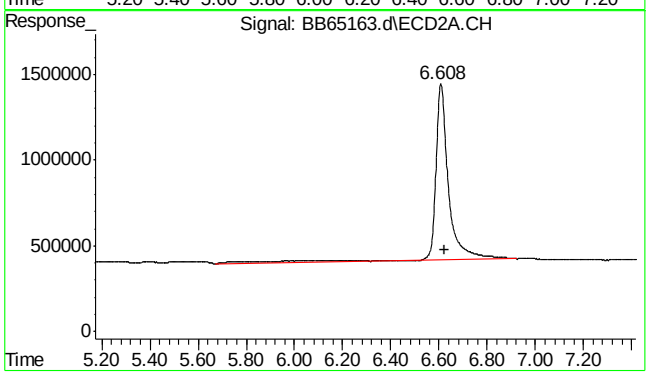
#1 1,2-Dibromoethane

R.T.: 0.000 min
Exp R.T. : 3.837 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene

R.T.: 6.140 min
Delta R.T.: -0.016 min
Response: 3407543
Conc: 58.49 ug/L

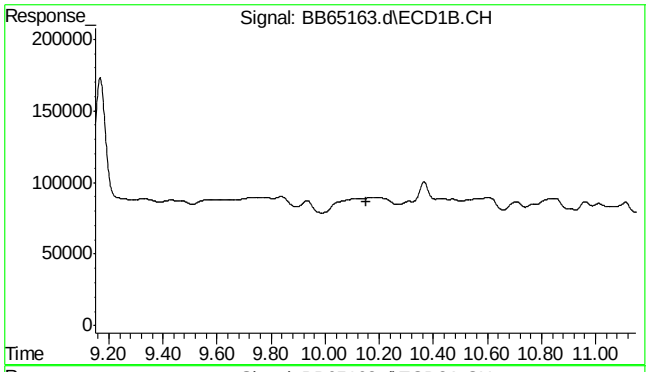


#2 4-Bromofluorobenzene

R.T.: 6.609 min
Delta R.T.: -0.014 min
Response: 39745340
Conc: 71.39 ug/L

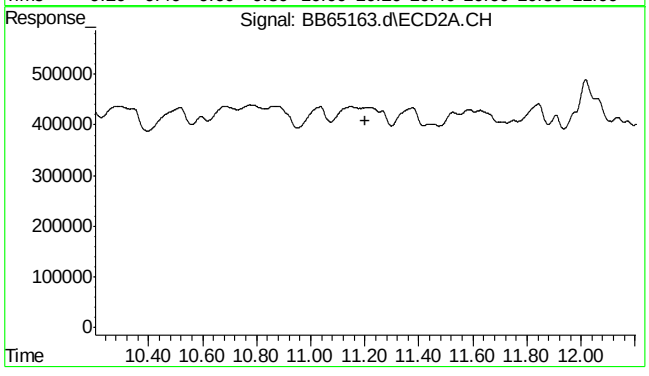
14.1.1

14



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.

14.1.1

14

Quantitation Report (QT Reviewed)

```
Data Path : C:\msdchem\1\DATA\BB151113\
Data File : BB65164.d
Signal(s) : Signal #1: ECD1B.CH  Signal #2: ECD2A.CH
Acq On    : 13-Nov-15, 23:27:43
Operator  : nickk
Sample    : jc7895-2,op45402
Misc      : op45402,gbb3513,30.52,,,50,,s
ALS Vial  : 16 (Sig #1); 0 (Sig #2)   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Nov 16 08:32:10 2015
Quant Method : C:\msdchem\1\METHODS\EDS151113.M
Quant Title  : v8011edb soil
QLast Update : Mon Nov 16 08:26:53 2015
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Small noise peaks clipped

Volume Inj.     :
Signal #1 Phase :                    Signal #2 Phase:
Signal #1 Info  :                    Signal #2 Info :
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
System Monitoring Compounds						
2) s 4-Bromofl...	6.147	6.615	3411738	40001803	58.564	71.846
Spiked Amount 50.000 Range 60 - 140 Recovery = 117.13% 143.69%#						
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D. d	N.D. d
3) 1,2-Dibro...	0.000	0.000	0	0	N.D. d	N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

14.1.2

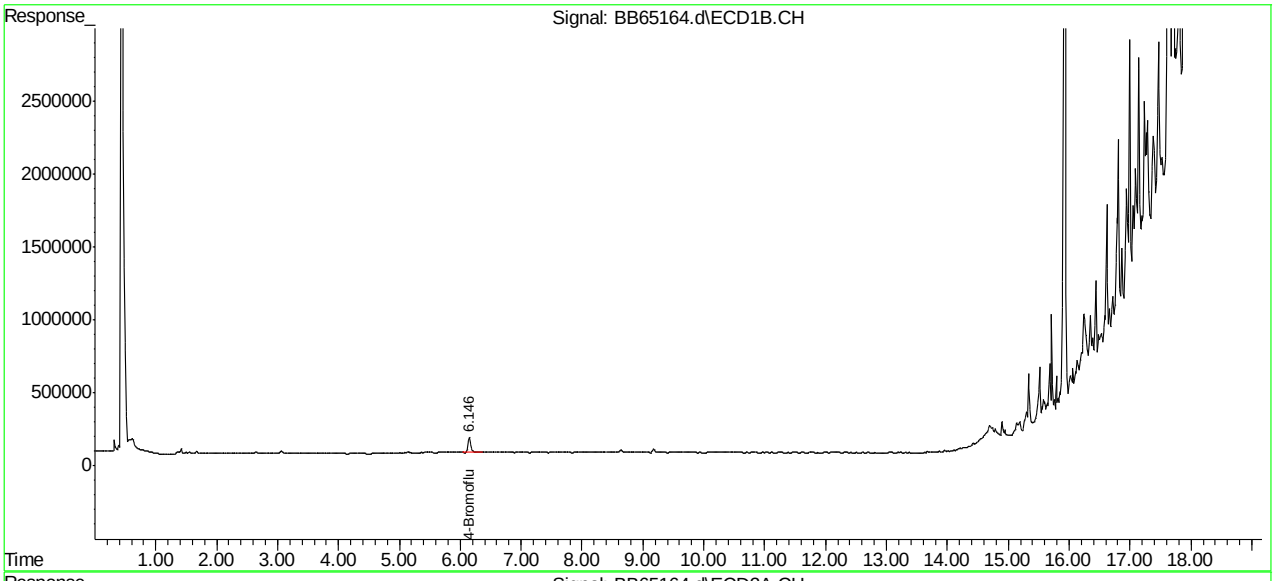
14

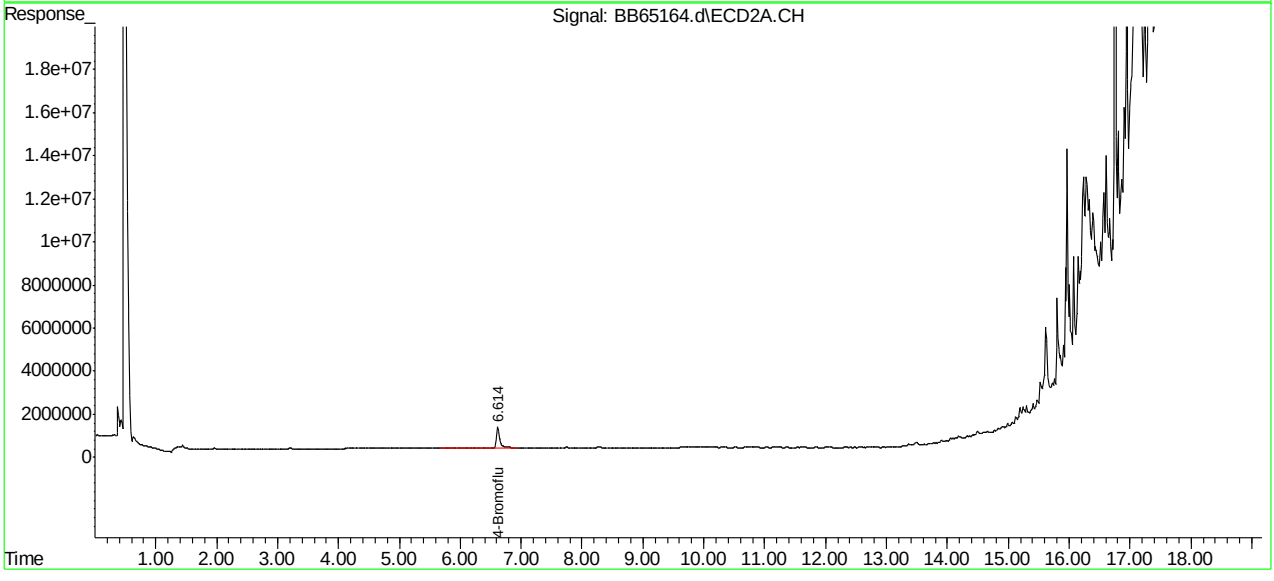
Quantitation Report (QT Reviewed)

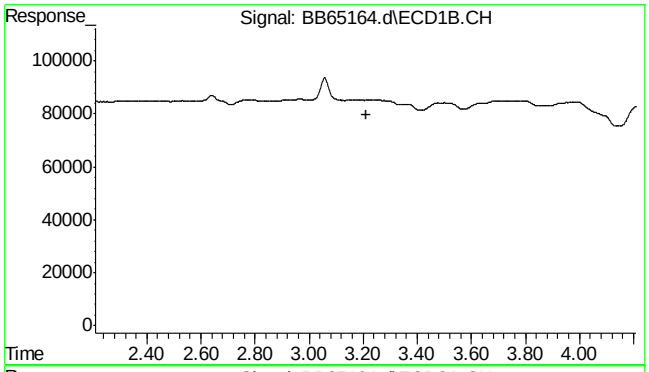
Data Path : C:\msdchem\1\DATA\BB151113\
Data File : BB65164.d
Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
Acq On : 13-Nov-15, 23:27:43
Operator : nickk
Sample : jc7895-2,op45402
Misc : op45402,gbb3513,30.52,,,50,,s
ALS Vial : 16 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Nov 16 08:32:10 2015
Quant Method : C:\msdchem\1\METHODS\EDS151113.M
Quant Title : v8011edb soil
QLast Update : Mon Nov 16 08:26:53 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

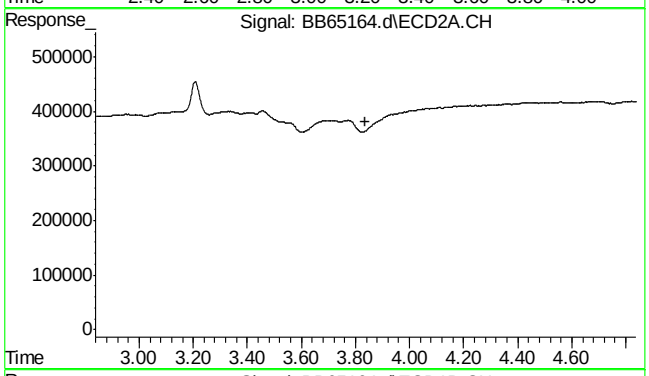






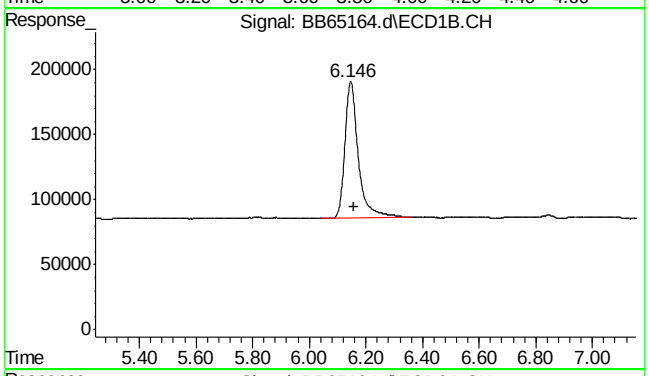
#1 1,2-Dibromoethane

R.T.: 0.000 min
Exp R.T. : 3.210 min
Response: 0
Conc: N.D.



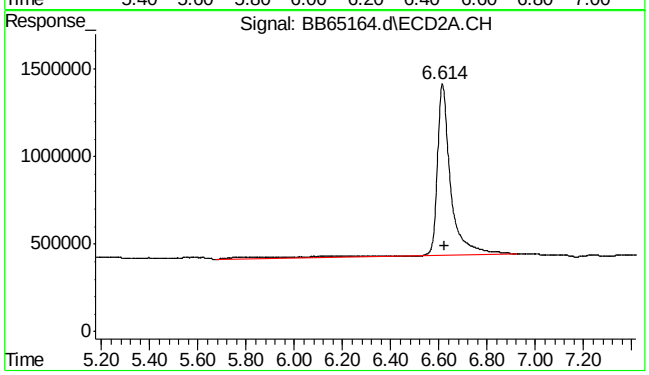
#1 1,2-Dibromoethane

R.T.: 0.000 min
Exp R.T. : 3.837 min
Response: 0
Conc: N.D.



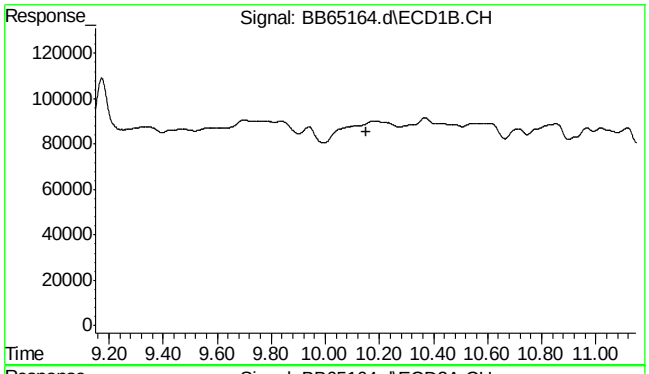
#2 4-Bromofluorobenzene

R.T.: 6.147 min
Delta R.T.: -0.009 min
Response: 3411738
Conc: 58.56 ug/L



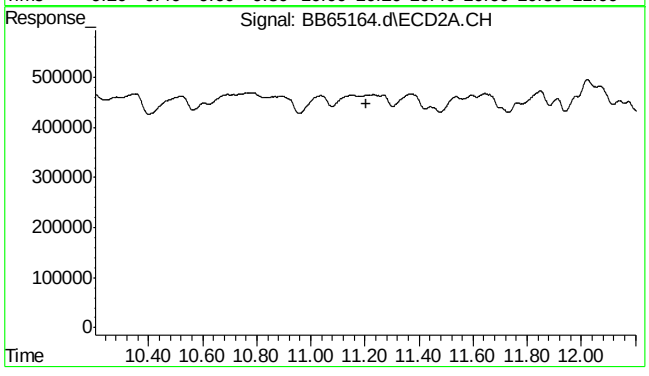
#2 4-Bromofluorobenzene

R.T.: 6.615 min
Delta R.T.: -0.008 min
Response: 40001803
Conc: 71.85 ug/L



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.

Quantitation Report (QT Reviewed)

```
Data Path : C:\msdchem\1\DATA\BB151113\
Data File : BB65159.d
Signal(s) : Signal #1: ECD1B.CH  Signal #2: ECD2A.CH
Acq On    : 13-Nov-15, 21:06:31
Operator  : nickk
Sample    : op45402-mb
Misc      : op45402,gbb3513,30.33,,,50,,s
ALS Vial  : 11 (Sig #1); 0 (Sig #2)   Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Nov 16 08:29:56 2015
Quant Method : C:\msdchem\1\METHODS\EDS151113.M
Quant Title  : v8011edb soil
QLast Update : Mon Nov 16 08:26:53 2015
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Small noise peaks clipped

Volume Inj.     :
Signal #1 Phase :                    Signal #2 Phase:
Signal #1 Info  :                    Signal #2 Info :
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
System Monitoring Compounds						
2) s 4-Bromofl...	6.146	6.611	2622681	23474900	44.062	42.163
Spiked Amount	50.000	Range	60 - 140	Recovery	= 88.12%	84.33%
Target Compounds						
1) 1,2-Dibro...	0.000	0.000	0	0	N.D. d	N.D. d
3) 1,2-Dibro...	0.000	0.000	0	0	N.D. d	N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

14.2.1

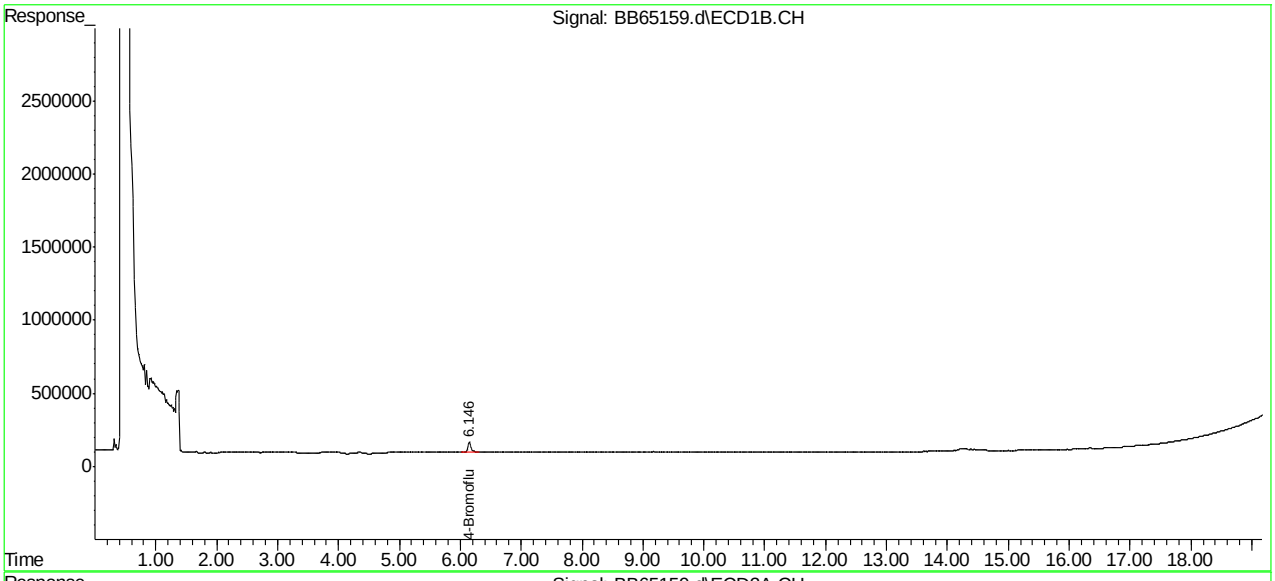
14

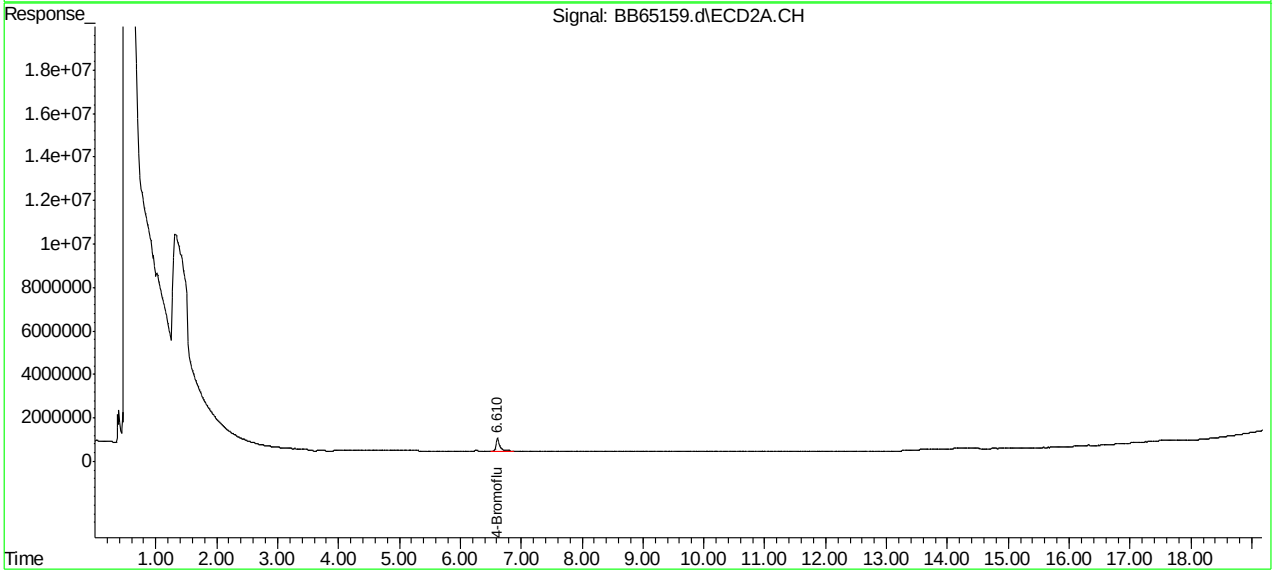
Quantitation Report (QT Reviewed)

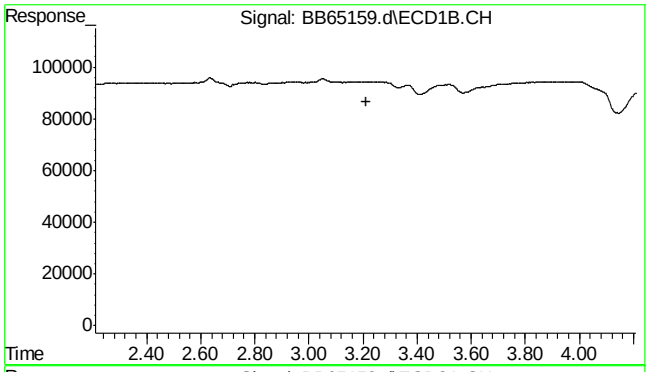
Data Path : C:\msdchem\1\DATA\BB151113\
Data File : BB65159.d
Signal(s) : Signal #1: ECD1B.CH Signal #2: ECD2A.CH
Acq On : 13-Nov-15, 21:06:31
Operator : nickk
Sample : op45402-mb
Misc : op45402,gbb3513,30.33,,,50,,s
ALS Vial : 11 (Sig #1); 0 (Sig #2) Sample Multiplier: 1

Integration File signal 1: events.e
Integration File signal 2: events2.e
Quant Time: Nov 16 08:29:56 2015
Quant Method : C:\msdchem\1\METHODS\EDS151113.M
Quant Title : v8011edb soil
QLast Update : Mon Nov 16 08:26:53 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

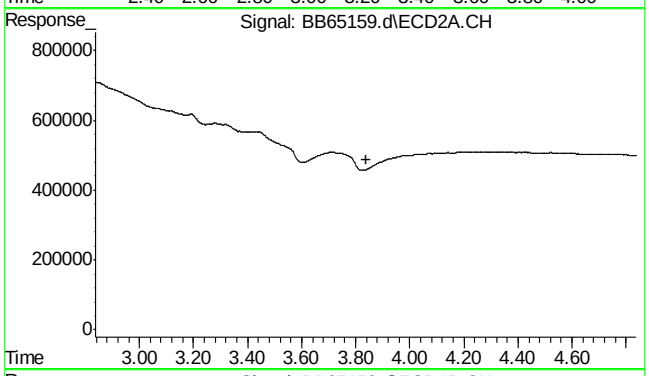






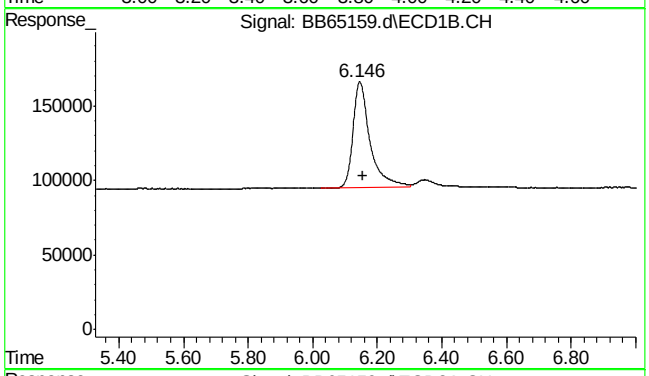
#1 1,2-Dibromoethane

R.T.: 0.000 min
Exp R.T. : 3.210 min
Response: 0
Conc: N.D.



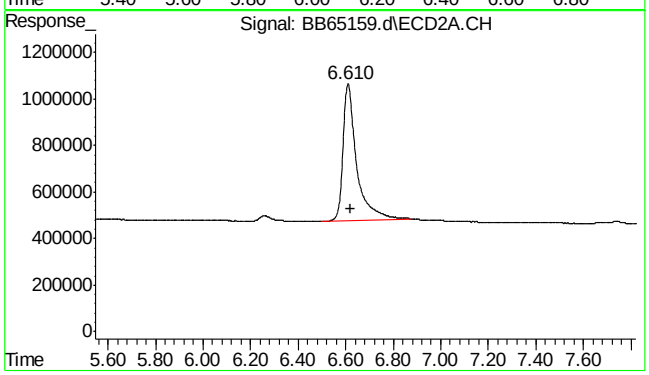
#1 1,2-Dibromoethane

R.T.: 0.000 min
Exp R.T. : 3.837 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene

R.T.: 6.146 min
Delta R.T.: -0.010 min
Response: 2622681
Conc: 44.06 ug/L

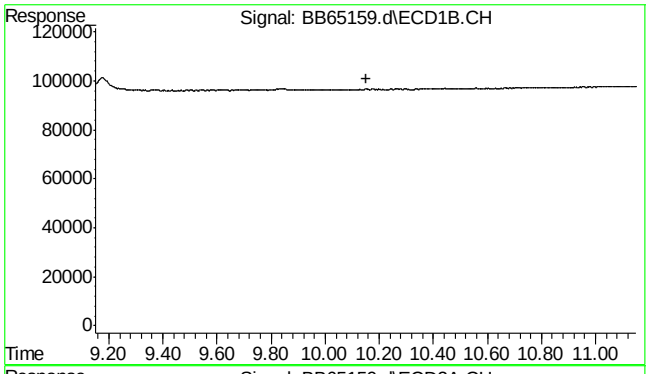


#2 4-Bromofluorobenzene

R.T.: 6.611 min
Delta R.T.: -0.012 min
Response: 23474900
Conc: 42.16 ug/L

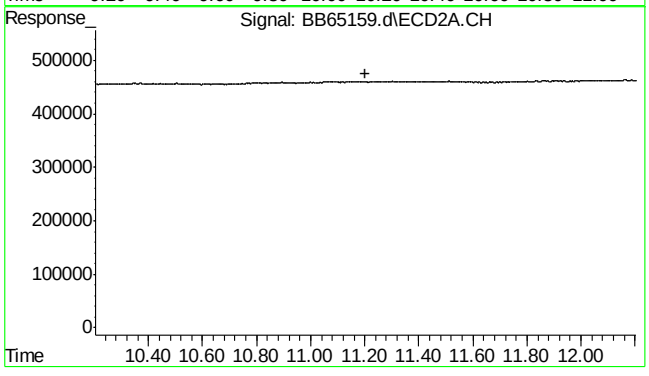
14.2.1

14



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 10.150 min
Response: 0
Conc: N.D.



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min
Exp R.T. : 11.203 min
Response: 0
Conc: N.D.

14.2.1

14