New Jersey
ACCUTEST LABORATORIES

01/07/13

Technical Report for

Aquaterra Technologies, Inc.

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

AOI-6

Accutest Job Number: JB22822

Sampling Date: 12/03/12

Report to:

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Total number of pages in report: **909**

ACCREDITED IN ACCORDANCE WITH nelac

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

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Sample Summary

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JB22822-1	12/03/12	08:45	LM	12/04/12	SO	Soil	BH-12-112_0.5-1'
JB22822-2	12/03/12	09:00	LM	12/04/12	SO	Soil	BH-12-107_1-1.5'
JB22822-4	12/03/12	09:42	LM	12/04/12	SO	Soil	BH-12-107_2.5-3'
JB22822-5	12/03/12	10:00	LM	12/04/12	SO	Soil	BH-12-110_3-3.5'
JB22822-6	12/03/12	10:15	LM	12/04/12	SO	Soil	BH-12-108_1'
JB22822-7	12/03/12	10:30	LM	12/04/12	SO	Soil	BH-12-105_2-2.5'
JB22822-8	12/03/12	10:30	LM	12/04/12	SO	Soil	BH-12-106_1-1.5'
JB22822-9	12/03/12	11:00	LM	12/04/12	SO	Soil	BH-12-106_2-2.5'
JB22822-10	12/03/12	11:00	LM	12/04/12	SO	Soil	BH-12-111_0.5-1'
JB22822-11	12/03/12	11:10	LM	12/04/12	SO	Soil	BH-12-111_1-1.5'
JB22822-12	12/03/12	11:15	LM	12/04/12	SO	Soil	BH-12-115_1-2'
JB22822-13	12/03/12	11:30	LM	12/04/12	SO	Soil	BH-12-108_2-2.5'
JB22822-14	12/03/12	11:30	LM	12/04/12	SO	Soil	BH-12-114_3-3.5'

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

Sample Summary
(continued)

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JB22822-15	12/03/12	11:45	LM	12/04/12	SO	Soil	BH-12-114_1-1.5'
JB22822-16	12/03/12	13:00	LM	12/04/12	SO	Soil	BH-12-109_3'
JB22822-17	12/03/12	13:30	LM	12/04/12	SO	Soil	BH-12-116_3.5'
JB22822-18	12/03/12	13:45	LM	12/04/12	SO	Soil	BH-12-122_1-1.5'
JB22822-19	12/03/12	13:50	LM	12/04/12	SO	Soil	BH-12-117_2-2.5'
JB22822-20	12/03/12	13:50	LM	12/04/12	SO	Soil	BH-12-122_2.5-3'
JB22822-21	12/03/12	14:15	LM	12/04/12	SO	Soil	BH-12-121_2-2.5'

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Aquaterra Technologies, Inc.	**Job No**	JB22822
Site:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, P	**Report Date**	12/21/2012 5:00:14 P

On 12/04/2012, 20 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 4.1 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB22822 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO **Batch ID:** VD8287

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB22953-1MS, JB22953-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB22822-11: Dilution required due to matrix interference.

Matrix: SO **Batch ID:** VD8290

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB22953-9MS, JB22953-9MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB22822-19: Dilution required due to matrix interference.
- JB22822-10: Dilution required due to matrix interference.
- JB22822-14: Dilution required due to matrix interference.
- JB22822-17: Dilution required due to matrix interference.
- JB22822-5: Dilution required due to matrix interference.
- JB22822-7: Dilution required due to matrix interference.
- JB22822-13 for Toluene-D8: Outside control limits due to matrix interference.
- JB22822-13 for 4-Bromofluorobenzene: Outside control limits due to matrix interference.

Matrix: SO **Batch ID:** VD8292

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB22822-20MS, JB22822-20MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB22822-16: Diluted due to high concentration of target compound.

Matrix: SO **Batch ID:** VD8293

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB23763-1MS, JB23763-1MSD were used as the QC samples indicated.
- Matrix Spike/Matrix Spike Duplicate Recovery(s) for Naphthalene are outside control limits. Diluted due to high concentration of non-target compound.

Matrix: SO **Batch ID:** VD8297

Volatiles by GCMS By Method SW846 8260B

Matrix: SO **Batch ID:** VD8297

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB23096-6MS, JB23096-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: SO **Batch ID:** VV5654

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB22312-10MS, JB22312-10MSD were used as the QC samples indicated.

Matrix: SO **Batch ID:** VV5655

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

Matrix: SO **Batch ID:** VV5660

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB22876-3MS, JB22876-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for MS/MSD for 1,2-Dibromoethane are outside control limits. Outside control limits due to matrix interference.

Extractables by GCMS By Method SW846 8270D

Matrix: SO **Batch ID:** OP62037

- All samples were extracted within the recommended method holding time.
- Sample(s) JB22822-1MS, JB22822-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB22822-11: Dilution required due to viscosity of extract matrix
- JB22822-8: Dilution required due to viscosity of extract matrix
- JB22822-16: Dilution required due to viscosity of extract matrix
- JB22822-10: Elevated detection limit due to high final volume of viscous extract.
- JB22822-1: Confirmation run for internal standard areas.
- JB22822-2: Dilution required due to viscosity of extract matrix

Metals By Method SW846 6010C

Matrix: SO **Batch ID:** MP68466

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB22822-1MS, JB22822-1MSD, JB22822-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lead are outside control limits. Serial dilution indicates possible matrix interference.
- JB22822-1 for Lead: Elevated detection limit due to dilution required for high interfering element.
- JB22822-5 for Lead: Elevated detection limit due to dilution required for high interfering element.
- JB22822-9 for Lead: Elevated detection limit due to dilution required for high interfering element.
- JB22822-12 for Lead: Elevated detection limit due to dilution required for high interfering element.
- JB22822-15 for Lead: Elevated detection limit due to dilution required for high interfering element.

Wet Chemistry By Method SM2540 G-97

Matrix: SO	**Batch ID:** GN76799

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

Matrix: SO	**Batch ID:** GN76800

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

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

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

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB22822-1	**BH-12-112_0.5-1'**					
Benzene		0.0016	0.00095		mg/kg	SW846 8260B
Toluene		0.0022	0.00095		mg/kg	SW846 8260B
Anthracene		0.151	0.034		mg/kg	SW846 8270D
Benzo(a)anthracene		0.411	0.034		mg/kg	SW846 8270D
Benzo(a)pyrene		0.484	0.034		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.626	0.034		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.335	0.034		mg/kg	SW846 8270D
Chrysene		0.557	0.034		mg/kg	SW846 8270D
Fluorene		0.206	0.034		mg/kg	SW846 8270D
Phenanthrene		0.510	0.034		mg/kg	SW846 8270D
Pyrene		0.718	0.034		mg/kg	SW846 8270D
Lead [a]		427	4.6		mg/kg	SW846 6010C
JB22822-2	**BH-12-107_1-1.5'**					
Benzene		0.0124	0.00092		mg/kg	SW846 8260B
Toluene		0.0017	0.00092		mg/kg	SW846 8260B
Xylene (total)		0.00094	0.00092		mg/kg	SW846 8260B
Anthracene [b]		0.715	0.069		mg/kg	SW846 8270D
Benzo(a)anthracene [b]		2.32	0.069		mg/kg	SW846 8270D
Benzo(a)pyrene [b]		2.61	0.069		mg/kg	SW846 8270D
Benzo(b)fluoranthene [b]		2.32	0.069		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]		1.81	0.069		mg/kg	SW846 8270D
Chrysene [b]		2.37	0.069		mg/kg	SW846 8270D
Fluorene [b]		0.439	0.069		mg/kg	SW846 8270D
Phenanthrene [b]		3.02	0.069		mg/kg	SW846 8270D
Pyrene [b]		5.05	0.069		mg/kg	SW846 8270D
Lead		221	2.2		mg/kg	SW846 6010C
JB22822-4	**BH-12-107_2.5-3'**					
Anthracene		1.97	0.035		mg/kg	SW846 8270D
Benzo(a)anthracene		4.21	0.35		mg/kg	SW846 8270D
Benzo(a)pyrene		3.59	0.35		mg/kg	SW846 8270D
Benzo(b)fluoranthene		3.49	0.35		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		2.53	0.035		mg/kg	SW846 8270D
Chrysene		3.92	0.35		mg/kg	SW846 8270D
Fluorene		0.848	0.035		mg/kg	SW846 8270D
Phenanthrene		7.48	0.35		mg/kg	SW846 8270D
Pyrene		7.59	0.35		mg/kg	SW846 8270D
Lead		546	2.3		mg/kg	SW846 6010C

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JB22822-5	**BH-12-110_3-3.5'**					
Benzene [c]		4.09	0.35		mg/kg	SW846 8260B
Toluene [c]		0.889	0.35		mg/kg	SW846 8260B
Ethylbenzene [c]		0.712	0.35		mg/kg	SW846 8260B
Xylene (total) [c]		2.72	0.35		mg/kg	SW846 8260B
Naphthalene [c]		2.49	1.8		mg/kg	SW846 8260B
Isopropylbenzene [c]		23.1	1.8		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene [c]		4.23	1.8		mg/kg	SW846 8260B
Anthracene		8.81	1.5		mg/kg	SW846 8270D
Benzo(a)anthracene		22.3	1.5		mg/kg	SW846 8270D
Benzo(a)pyrene		20.6	1.5		mg/kg	SW846 8270D
Benzo(b)fluoranthene		24.3	1.5		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		11.9	1.5		mg/kg	SW846 8270D
Chrysene		22.0	1.5		mg/kg	SW846 8270D
Fluorene		11.4	1.5		mg/kg	SW846 8270D
Phenanthrene		44.4	1.5		mg/kg	SW846 8270D
Pyrene		41.9	1.5		mg/kg	SW846 8270D
Lead [a]		2930	5.0		mg/kg	SW846 6010C
JB22822-6	**BH-12-108_1'**					
Benzene		23.6	0.25		mg/kg	SW846 8260B
Toluene		10.3	0.25		mg/kg	SW846 8260B
Ethylbenzene		57.1	5.0		mg/kg	SW846 8260B
Xylene (total)		314	5.0		mg/kg	SW846 8260B
Naphthalene		25.9	1.3		mg/kg	SW846 8260B
Isopropylbenzene		25.2	1.3		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene		306	25		mg/kg	SW846 8260B
1,3,5-Trimethylbenzene		119	25		mg/kg	SW846 8260B
Anthracene		1.70	0.032		mg/kg	SW846 8270D
Benzo(a)anthracene		4.55	0.65		mg/kg	SW846 8270D
Benzo(a)pyrene		4.83	0.65		mg/kg	SW846 8270D
Benzo(b)fluoranthene		2.89	0.032		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		3.54	0.65		mg/kg	SW846 8270D
Chrysene		5.36	0.65		mg/kg	SW846 8270D
Fluorene		15.2	0.65		mg/kg	SW846 8270D
Phenanthrene		14.9	0.65		mg/kg	SW846 8270D
Pyrene		7.95	0.65		mg/kg	SW846 8270D
Lead		380	2.4		mg/kg	SW846 6010C
JB22822-7	**BH-12-105_2-2.5'**					
Benzene [c]		5.21	0.36		mg/kg	SW846 8260B
Ethylbenzene [c]		0.976	0.36		mg/kg	SW846 8260B

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Xylene (total) [c]		4.24	0.36		mg/kg	SW846 8260B
Isopropylbenzene [c]		5.76	1.8		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene [c]		3.11	1.8		mg/kg	SW846 8260B
Anthracene		0.746	0.035		mg/kg	SW846 8270D
Benzo(a)anthracene		1.85	0.035		mg/kg	SW846 8270D
Benzo(a)pyrene		1.55	0.035		mg/kg	SW846 8270D
Benzo(b)fluoranthene		1.48	0.035		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		1.15	0.035		mg/kg	SW846 8270D
Chrysene		1.82	0.035		mg/kg	SW846 8270D
Fluorene		2.30	0.035		mg/kg	SW846 8270D
Phenanthrene		3.34	0.035		mg/kg	SW846 8270D
Pyrene		2.89	0.035		mg/kg	SW846 8270D
Lead		341	2.4		mg/kg	SW846 6010C
JB22822-8	**BH-12-106_1-1.5'**					
Benzene		88.2	0.64		mg/kg	SW846 8260B
Toluene		5.34	0.064		mg/kg	SW846 8260B
Ethylbenzene		0.452	0.064		mg/kg	SW846 8260B
Xylene (total)		1.14	0.064		mg/kg	SW846 8260B
Naphthalene		0.994	0.32		mg/kg	SW846 8260B
Isopropylbenzene		31.2	3.2		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene		0.717	0.32		mg/kg	SW846 8260B
Anthracene [b]		1.24	0.17		mg/kg	SW846 8270D
Benzo(a)anthracene [b]		3.68	0.17		mg/kg	SW846 8270D
Benzo(a)pyrene [b]		4.06	0.17		mg/kg	SW846 8270D
Benzo(b)fluoranthene [b]		4.41	0.17		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]		2.17	0.17		mg/kg	SW846 8270D
Chrysene [b]		3.49	0.17		mg/kg	SW846 8270D
Fluorene [b]		1.02	0.17		mg/kg	SW846 8270D
Phenanthrene [b]		5.80	0.17		mg/kg	SW846 8270D
Pyrene [b]		6.80	0.17		mg/kg	SW846 8270D
Lead		897	2.3		mg/kg	SW846 6010C
JB22822-9	**BH-12-106_2-2.5'**					
Benzene		0.0011	0.00094		mg/kg	SW846 8260B
Anthracene		2.34	0.035		mg/kg	SW846 8270D
Benzo(a)anthracene		10.9	0.71		mg/kg	SW846 8270D
Benzo(a)pyrene		11.6	0.71		mg/kg	SW846 8270D
Benzo(b)fluoranthene		14.0	0.71		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		7.06	0.71		mg/kg	SW846 8270D
Chrysene		11.1	0.71		mg/kg	SW846 8270D
Fluorene		0.818	0.035		mg/kg	SW846 8270D
Phenanthrene		10.7	0.71		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Pyrene		18.7	0.71		mg/kg	SW846 8270D
Lead [a]		960	4.5		mg/kg	SW846 6010C
JB22822-10	**BH-12-111_0.5-1'**					
Xylene (total) [c]		0.638	0.25		mg/kg	SW846 8260B
Anthracene [d]		0.472	0.17		mg/kg	SW846 8270D
Benzo(a)anthracene [d]		1.10	0.17		mg/kg	SW846 8270D
Benzo(a)pyrene [d]		1.43	0.17		mg/kg	SW846 8270D
Benzo(b)fluoranthene [d]		0.924	0.17		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [d]		1.44	0.17		mg/kg	SW846 8270D
Chrysene [d]		2.93	0.17		mg/kg	SW846 8270D
Fluorene [d]		1.23	0.17		mg/kg	SW846 8270D
Phenanthrene [d]		1.74	0.17		mg/kg	SW846 8270D
Pyrene [d]		3.64	0.17		mg/kg	SW846 8270D
Lead		163	2.2		mg/kg	SW846 6010C
JB22822-11	**BH-12-111_1-1.5'**					
Benzene [c]		0.404	0.23		mg/kg	SW846 8260B
Xylene (total) [c]		0.652	0.23		mg/kg	SW846 8260B
Benzo(a)anthracene [b]		0.171	0.16		mg/kg	SW846 8270D
Chrysene [b]		0.258	0.16		mg/kg	SW846 8270D
Fluorene [b]		0.641	0.16		mg/kg	SW846 8270D
Phenanthrene [b]		0.680	0.16		mg/kg	SW846 8270D
Pyrene [b]		0.588	0.16		mg/kg	SW846 8270D
Lead		34.6	2.0		mg/kg	SW846 6010C
JB22822-12	**BH-12-115_1-2'**					
Benzene		0.0013	0.00094		mg/kg	SW846 8260B
Anthracene		0.224	0.036		mg/kg	SW846 8270D
Benzo(a)anthracene		0.499	0.036		mg/kg	SW846 8270D
Benzo(a)pyrene		0.783	0.036		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.333	0.036		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.766	0.036		mg/kg	SW846 8270D
Chrysene		1.03	0.036		mg/kg	SW846 8270D
Fluorene		0.0803	0.036		mg/kg	SW846 8270D
Phenanthrene		0.200	0.036		mg/kg	SW846 8270D
Pyrene		1.57	0.036		mg/kg	SW846 8270D
Lead [a]		126	4.9		mg/kg	SW846 6010C
JB22822-13	**BH-12-108_2-2.5'**					
Benzene		11.2	0.23		mg/kg	SW846 8260B

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Toluene		5.26	0.23		mg/kg	SW846 8260B
Ethylbenzene		109	2.3		mg/kg	SW846 8260B
Xylene (total)		675	2.3		mg/kg	SW846 8260B
Naphthalene		65.2	12		mg/kg	SW846 8260B
Isopropylbenzene		58.7	12		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene		455	47		mg/kg	SW846 8260B
1,3,5-Trimethylbenzene		191	12		mg/kg	SW846 8260B
Anthracene		2.23	0.032		mg/kg	SW846 8270D
Benzo(a)anthracene		6.04	0.32		mg/kg	SW846 8270D
Benzo(a)pyrene		5.93	0.32		mg/kg	SW846 8270D
Benzo(b)fluoranthene		8.41	0.32		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		4.07	0.32		mg/kg	SW846 8270D
Chrysene		7.37	0.32		mg/kg	SW846 8270D
Fluorene		15.8	0.32		mg/kg	SW846 8270D
Phenanthrene		18.5	0.32		mg/kg	SW846 8270D
Pyrene		11.3	0.32		mg/kg	SW846 8270D
Lead		383	2.3		mg/kg	SW846 6010C
JB22822-14	**BH-12-114_3-3.5'**					
Benzene [c]		0.245	0.059		mg/kg	SW846 8260B
Toluene [c]		0.224	0.059		mg/kg	SW846 8260B
Ethylbenzene [c]		0.107	0.059		mg/kg	SW846 8260B
Xylene (total) [c]		0.612	0.059		mg/kg	SW846 8260B
Isopropylbenzene [c]		0.387	0.29		mg/kg	SW846 8260B
Anthracene		0.310	0.038		mg/kg	SW846 8270D
Benzo(a)anthracene		0.699	0.038		mg/kg	SW846 8270D
Benzo(a)pyrene		0.653	0.038		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.615	0.038		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.537	0.038		mg/kg	SW846 8270D
Chrysene		0.872	0.038		mg/kg	SW846 8270D
Fluorene		0.177	0.038		mg/kg	SW846 8270D
Phenanthrene		0.751	0.038		mg/kg	SW846 8270D
Pyrene		1.24	0.038		mg/kg	SW846 8270D
Lead		34.7	2.4		mg/kg	SW846 6010C
JB22822-15	**BH-12-114_1-1.5'**					
Benzo(a)anthracene		0.0569	0.035		mg/kg	SW846 8270D
Benzo(a)pyrene		0.0748	0.035		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.0956	0.035		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.100	0.035		mg/kg	SW846 8270D
Chrysene		0.0876	0.035		mg/kg	SW846 8270D
Phenanthrene		0.0550	0.035		mg/kg	SW846 8270D
Pyrene		0.103	0.035		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Lead [a]		49.1	4.3		mg/kg	SW846 6010C
JB22822-16	**BH-12-109_3'**					
Benzene [e]		0.476	0.061		mg/kg	SW846 8260B
Toluene [e]		0.0993	0.061		mg/kg	SW846 8260B
Ethylbenzene [e]		0.153	0.061		mg/kg	SW846 8260B
Xylene (total) [e]		0.170	0.061		mg/kg	SW846 8260B
Naphthalene [e]		0.512	0.31		mg/kg	SW846 8260B
Isopropylbenzene [e]		1.55	0.31		mg/kg	SW846 8260B
Anthracene [b]		3.49	0.071		mg/kg	SW846 8270D
Benzo(a)anthracene		10.9	0.71		mg/kg	SW846 8270D
Benzo(a)pyrene		10.5	0.71		mg/kg	SW846 8270D
Benzo(b)fluoranthene		13.9	0.71		mg/kg	SW846 8270D
Benzo(g,h,i)perylene [b]		6.29	0.071		mg/kg	SW846 8270D
Chrysene		13.7	0.71		mg/kg	SW846 8270D
Fluorene [b]		6.98	0.071		mg/kg	SW846 8270D
Phenanthrene		24.9	0.71		mg/kg	SW846 8270D
Pyrene		19.7	0.71		mg/kg	SW846 8270D
Lead		954	2.3		mg/kg	SW846 6010C
JB22822-17	**BH-12-116_3.5'**					
Benzene [c]		0.0680	0.056		mg/kg	SW846 8260B
Toluene [c]		0.100	0.056		mg/kg	SW846 8260B
Ethylbenzene [c]		0.0714	0.056		mg/kg	SW846 8260B
Xylene (total) [c]		0.245	0.056		mg/kg	SW846 8260B
Isopropylbenzene [c]		0.524	0.28		mg/kg	SW846 8260B
Anthracene		0.142	0.035		mg/kg	SW846 8270D
Benzo(a)anthracene		0.233	0.035		mg/kg	SW846 8270D
Benzo(a)pyrene		0.269	0.035		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.328	0.035		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.302	0.035		mg/kg	SW846 8270D
Chrysene		0.290	0.035		mg/kg	SW846 8270D
Fluorene		0.120	0.035		mg/kg	SW846 8270D
Phenanthrene		0.318	0.035		mg/kg	SW846 8270D
Pyrene		0.446	0.035		mg/kg	SW846 8270D
Lead		1070	2.3		mg/kg	SW846 6010C
JB22822-18	**BH-12-122_1-1.5'**					
Benzene		0.0034	0.00088		mg/kg	SW846 8260B
Toluene		0.0033	0.00088		mg/kg	SW846 8260B
Ethylbenzene		0.0021	0.00088		mg/kg	SW846 8260B
Xylene (total)		0.0080	0.00088		mg/kg	SW846 8260B

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Naphthalene		0.0051	0.0044		mg/kg	SW846 8260B
Isopropylbenzene		0.0082	0.0044		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene		0.0079	0.0044		mg/kg	SW846 8260B
1,3,5-Trimethylbenzene		0.0049	0.0044		mg/kg	SW846 8260B
Anthracene		0.210	0.032		mg/kg	SW846 8270D
Benzo(a)anthracene		0.589	0.032		mg/kg	SW846 8270D
Benzo(a)pyrene		0.816	0.032		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.874	0.032		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.915	0.032		mg/kg	SW846 8270D
Chrysene		0.730	0.032		mg/kg	SW846 8270D
Fluorene		0.0605	0.032		mg/kg	SW846 8270D
Phenanthrene		0.456	0.032		mg/kg	SW846 8270D
Pyrene		0.937	0.032		mg/kg	SW846 8270D
Lead		75.2	2.0		mg/kg	SW846 6010C
JB22822-19	**BH-12-117_2-2.5'**					
Benzene [c]		0.157	0.069		mg/kg	SW846 8260B
Toluene [c]		0.0813	0.069		mg/kg	SW846 8260B
Isopropylbenzene [c]		0.797	0.35		mg/kg	SW846 8260B
Anthracene		0.262	0.039		mg/kg	SW846 8270D
Benzo(a)anthracene		0.436	0.039		mg/kg	SW846 8270D
Benzo(a)pyrene		0.534	0.039		mg/kg	SW846 8270D
Benzo(b)fluoranthene		0.446	0.039		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.488	0.039		mg/kg	SW846 8270D
Chrysene		0.664	0.039		mg/kg	SW846 8270D
Fluorene		0.0701	0.039		mg/kg	SW846 8270D
Phenanthrene		0.374	0.039		mg/kg	SW846 8270D
Pyrene		0.984	0.039		mg/kg	SW846 8270D
Lead		350	2.4		mg/kg	SW846 6010C
JB22822-20	**BH-12-122_2.5-3'**					
Benzene		1.83	0.056		mg/kg	SW846 8260B
Toluene		0.261	0.056		mg/kg	SW846 8260B
Ethylbenzene		0.191	0.056		mg/kg	SW846 8260B
Xylene (total)		0.407	0.056		mg/kg	SW846 8260B
Naphthalene		0.500	0.28		mg/kg	SW846 8260B
Isopropylbenzene		0.720	0.28		mg/kg	SW846 8260B
1,2,4-Trimethylbenzene		0.291	0.28		mg/kg	SW846 8260B
Anthracene		0.625	0.032		mg/kg	SW846 8270D
Benzo(a)anthracene		1.05	0.032		mg/kg	SW846 8270D
Benzo(a)pyrene		1.06	0.032		mg/kg	SW846 8270D
Benzo(b)fluoranthene		1.21	0.032		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		0.764	0.032		mg/kg	SW846 8270D

Summary of Hits

Job Number: JB22822
Account: Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Collected: 12/03/12

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Chrysene		1.28	0.032		mg/kg	SW846 8270D
Fluorene		1.30	0.032		mg/kg	SW846 8270D
Phenanthrene		2.03	0.032		mg/kg	SW846 8270D
Pyrene		1.95	0.032		mg/kg	SW846 8270D
Lead		173	2.3		mg/kg	SW846 6010C
JB22822-21	**BH-12-121_2-2.5'**					
Benzene		0.0100	0.00084		mg/kg	SW846 8260B
Toluene		0.0020	0.00084		mg/kg	SW846 8260B
Xylene (total)		0.00097	0.00084		mg/kg	SW846 8260B
Anthracene		3.43	0.32		mg/kg	SW846 8270D
Benzo(a)anthracene		9.60	0.32		mg/kg	SW846 8270D
Benzo(a)pyrene		9.39	0.32		mg/kg	SW846 8270D
Benzo(b)fluoranthene		9.66	0.32		mg/kg	SW846 8270D
Benzo(g,h,i)perylene		5.39	0.32		mg/kg	SW846 8270D
Chrysene		10.5	0.32		mg/kg	SW846 8270D
Fluorene		2.89	0.032		mg/kg	SW846 8270D
Phenanthrene		22.9	0.32		mg/kg	SW846 8270D
Pyrene		23.1	0.32		mg/kg	SW846 8270D
Lead		199	2.1		mg/kg	SW846 6010C

(a) Elevated detection limit due to dilution required for high interfering element.
(b) Dilution required due to viscosity of extract matrix
(c) Dilution required due to matrix interference.
(d) Elevated detection limit due to high final volume of viscous extract.
(e) Diluted due to high concentration of target compound.

New Jersey

ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-112_0.5-1'		
Lab Sample ID:	JB22822-1	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131159.D	1	12/07/12	TDN	12/05/12 08:00	n/a	VV5654
Run #2							

	Initial Weight
Run #1	6.3 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0016	0.00095	mg/kg	
108-88-3	Toluene	0.0022	0.00095	mg/kg	
100-41-4	Ethylbenzene	ND	0.00095	mg/kg	
1330-20-7	Xylene (total)	ND	0.00095	mg/kg	
91-20-3	Naphthalene	ND	0.0048	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00095	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00095	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0048	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00095	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0048	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0048	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		70-130%
17060-07-0	1,2-Dichloroethane-D4	102%		70-122%
2037-26-5	Toluene-D8	116%		81-127%
460-00-4	4-Bromofluorobenzene	100%		66-132%

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

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-112_0.5-1'		
Lab Sample ID:	JB22822-1	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48565.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2 [a]	2M48583.D	2	12/18/12	OYA	12/14/12	OP62037	E2M2081

	Initial Weight	Final Volume
Run #1	34.8 g	1.0 ml
Run #2	34.8 g	1.0 ml

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.151	0.034	mg/kg	
56-55-3	Benzo(a)anthracene	0.411	0.034	mg/kg	
50-32-8	Benzo(a)pyrene	0.484	0.034	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.626	0.034	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.335	0.034	mg/kg	
218-01-9	Chrysene	0.557	0.034	mg/kg	
86-73-7	Fluorene	0.206	0.034	mg/kg	
85-01-8	Phenanthrene	0.510	0.034	mg/kg	
129-00-0	Pyrene	0.718	0.034	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	40%	38%	21-122%
321-60-8	2-Fluorobiphenyl	54%	52%	30-117%
1718-51-0	Terphenyl-d14	97%	83%	31-129%

(a) Confirmation run for internal standard areas.

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

Report of Analysis

Client Sample ID:	BH-12-112_0.5-1'		
Lab Sample ID:	JB22822-1	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	427	4.6	mg/kg	2	12/12/12	12/17/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30075
(2) Prep QC Batch: MP68466

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

RL = Reporting Limit

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-107_1-1.5'		
Lab Sample ID:	JB22822-2	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	87.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131160.D	1	12/07/12	TDN	12/05/12 08:00	n/a	VV5654
Run #2							

	Initial Weight
Run #1	6.2 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0124	0.00092	mg/kg	
108-88-3	Toluene	0.0017	0.00092	mg/kg	
100-41-4	Ethylbenzene	ND	0.00092	mg/kg	
1330-20-7	Xylene (total)	0.00094	0.00092	mg/kg	
91-20-3	Naphthalene	ND	0.0046	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00092	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00092	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0046	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00092	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0046	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0046	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	118%		70-130%
17060-07-0	1,2-Dichloroethane-D4	110%		70-122%
2037-26-5	Toluene-D8	115%		81-127%
460-00-4	4-Bromofluorobenzene	101%		66-132%

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

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-107_1-1.5'		
Lab Sample ID:	JB22822-2	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	87.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2M48584.D	2	12/18/12	OYA	12/14/12	OP62037	E2M2081
Run #2							

	Initial Weight	Final Volume
Run #1	33.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.715	0.069	mg/kg	
56-55-3	Benzo(a)anthracene	2.32	0.069	mg/kg	
50-32-8	Benzo(a)pyrene	2.61	0.069	mg/kg	
205-99-2	Benzo(b)fluoranthene	2.32	0.069	mg/kg	
191-24-2	Benzo(g,h,i)perylene	1.81	0.069	mg/kg	
218-01-9	Chrysene	2.37	0.069	mg/kg	
86-73-7	Fluorene	0.439	0.069	mg/kg	
85-01-8	Phenanthrene	3.02	0.069	mg/kg	
129-00-0	Pyrene	5.05	0.069	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	43%		21-122%
321-60-8	2-Fluorobiphenyl	58%		30-117%
1718-51-0	Terphenyl-d14	87%		31-129%

(a) Dilution required due to viscosity of extract matrix

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

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

Report of Analysis

Client Sample ID:	BH-12-107_1-1.5'		
Lab Sample ID:	JB22822-2	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	87.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	221	2.2	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-107_2.5-3'		
Lab Sample ID:	JB22822-4	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131188.D	1	12/08/12	TDN	12/05/12 08:00	n/a	VV5655
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.0011	mg/kg	
108-88-3	Toluene	ND	0.0011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0011	mg/kg	
1330-20-7	Xylene (total)	ND	0.0011	mg/kg	
91-20-3	Naphthalene	ND	0.0053	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.0011	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0011	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0053	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0011	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0053	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0053	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		70-130%
17060-07-0	1,2-Dichloroethane-D4	104%		70-122%
2037-26-5	Toluene-D8	115%		81-127%
460-00-4	4-Bromofluorobenzene	101%		66-132%

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

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-107_2.5-3'		
Lab Sample ID:	JB22822-4	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48569.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2	2M48585.D	10	12/18/12	OYA	12/14/12	OP62037	E2M2081

	Initial Weight	Final Volume
Run #1	34.1 g	1.0 ml
Run #2	34.1 g	1.0 ml

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	1.97	0.035	mg/kg	
56-55-3	Benzo(a)anthracene	4.21 [a]	0.35	mg/kg	
50-32-8	Benzo(a)pyrene	3.59 [a]	0.35	mg/kg	
205-99-2	Benzo(b)fluoranthene	3.49 [a]	0.35	mg/kg	
191-24-2	Benzo(g,h,i)perylene	2.53	0.035	mg/kg	
218-01-9	Chrysene	3.92 [a]	0.35	mg/kg	
86-73-7	Fluorene	0.848	0.035	mg/kg	
85-01-8	Phenanthrene	7.48 [a]	0.35	mg/kg	
129-00-0	Pyrene	7.59 [a]	0.35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	38%	30%	21-122%
321-60-8	2-Fluorobiphenyl	51%	48%	30-117%
1718-51-0	Terphenyl-d14	86%	81%	31-129%

(a) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-107_2.5-3'		
Lab Sample ID:	JB22822-4	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	546	2.3	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-110_3-3.5'		
Lab Sample ID:	JB22822-5	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	78.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203317.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.6 g	5.0 ml	20.0 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	4.09	0.35	mg/kg	
108-88-3	Toluene	0.889	0.35	mg/kg	
100-41-4	Ethylbenzene	0.712	0.35	mg/kg	
1330-20-7	Xylene (total)	2.72	0.35	mg/kg	
91-20-3	Naphthalene	2.49	1.8	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.35	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.35	mg/kg	
98-82-8	Isopropylbenzene	23.1	1.8	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.35	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	4.23	1.8	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	1.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	119%		70-122%
2037-26-5	Toluene-D8	111%		81-127%
460-00-4	4-Bromofluorobenzene	108%		66-132%

(a) Dilution required due to matrix interference.

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

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

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Report of Analysis

Client Sample ID:	BH-12-110_3-3.5'		
Lab Sample ID:	JB22822-5	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	78.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48570.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2	2M48601.D	40	12/18/12	OYA	12/14/12	OP62037	E2M2081

	Initial Weight	Final Volume
Run #1	34.7 g	1.0 ml
Run #2	34.7 g	1.0 ml

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	8.81 [a]	1.5	mg/kg	
56-55-3	Benzo(a)anthracene	22.3 [a]	1.5	mg/kg	
50-32-8	Benzo(a)pyrene	20.6 [a]	1.5	mg/kg	
205-99-2	Benzo(b)fluoranthene	24.3 [a]	1.5	mg/kg	
191-24-2	Benzo(g,h,i)perylene	11.9 [a]	1.5	mg/kg	
218-01-9	Chrysene	22.0 [a]	1.5	mg/kg	
86-73-7	Fluorene	11.4 [a]	1.5	mg/kg	
85-01-8	Phenanthrene	44.4 [a]	1.5	mg/kg	
129-00-0	Pyrene	41.9 [a]	1.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	115%	27%	21-122%
321-60-8	2-Fluorobiphenyl	58%	62%	30-117%
1718-51-0	Terphenyl-d14	64%	90%	31-129%

(a) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-110_3-3.5'		
Lab Sample ID:	JB22822-5	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	78.3
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	2930	5.0	mg/kg	2	12/12/12	12/17/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30075
(2) Prep QC Batch: MP68466

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

RL = Reporting Limit

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Report of Analysis

Client Sample ID: BH-12-108_1'
Lab Sample ID: JB22822-6 **Date Sampled:** 12/03/12
Matrix: SO - Soil **Date Received:** 12/04/12
Method: SW846 8260B SW846 5035 **Percent Solids:** 87.2
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D203318.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2	D203361.D	1	12/14/12	ET	12/05/12 08:00	n/a	VD8292

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.7 g	5.0 ml	20.0 ul
Run #2	6.7 g	5.0 ml	1.0 ul

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	23.6	0.25	mg/kg	
108-88-3	Toluene	10.3	0.25	mg/kg	
100-41-4	Ethylbenzene	57.1 [a]	5.0	mg/kg	
1330-20-7	Xylene (total)	314 [a]	5.0	mg/kg	
91-20-3	Naphthalene	25.9	1.3	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.25	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.25	mg/kg	
98-82-8	Isopropylbenzene	25.2	1.3	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.25	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	306 [a]	25	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	119 [a]	25	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	117%	117%	70-122%
2037-26-5	Toluene-D8	115%	99%	81-127%
460-00-4	4-Bromofluorobenzene	123%	103%	66-132%

(a) Result is from Run# 2

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

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Report of Analysis

Client Sample ID:	BH-12-108_1'		
Lab Sample ID:	JB22822-6	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	87.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48571.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2	2M48587.D	20	12/18/12	OYA	12/14/12	OP62037	E2M2081

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

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	1.70	0.032	mg/kg	
56-55-3	Benzo(a)anthracene	4.55 [a]	0.65	mg/kg	
50-32-8	Benzo(a)pyrene	4.83 [a]	0.65	mg/kg	
205-99-2	Benzo(b)fluoranthene	2.89	0.032	mg/kg	
191-24-2	Benzo(g,h,i)perylene	3.54 [a]	0.65	mg/kg	
218-01-9	Chrysene	5.36 [a]	0.65	mg/kg	
86-73-7	Fluorene	15.2 [a]	0.65	mg/kg	
85-01-8	Phenanthrene	14.9 [a]	0.65	mg/kg	
129-00-0	Pyrene	7.95 [a]	0.65	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	79%	73%	21-122%
321-60-8	2-Fluorobiphenyl	43%	75%	30-117%
1718-51-0	Terphenyl-d14	92%	119%	31-129%

(a) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-108_1'		
Lab Sample ID:	JB22822-6	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	87.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	380	2.4	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-105_2-2.5'		
Lab Sample ID:	JB22822-7	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	79.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203319.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.4 g	5.0 ml	20.0 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	5.21	0.36	mg/kg	
108-88-3	Toluene	ND	0.36	mg/kg	
100-41-4	Ethylbenzene	0.976	0.36	mg/kg	
1330-20-7	Xylene (total)	4.24	0.36	mg/kg	
91-20-3	Naphthalene	ND	1.8	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.36	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.36	mg/kg	
98-82-8	Isopropylbenzene	5.76	1.8	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.36	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	3.11	1.8	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	1.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
17060-07-0	1,2-Dichloroethane-D4	117%		70-122%
2037-26-5	Toluene-D8	108%		81-127%
460-00-4	4-Bromofluorobenzene	125%		66-132%

(a) Dilution required due to matrix interference.

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

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Report of Analysis

Client Sample ID:	BH-12-105_2-2.5'		
Lab Sample ID:	JB22822-7	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	79.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48572.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2							

	Initial Weight	Final Volume
Run #1	36.0 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.746	0.035	mg/kg	
56-55-3	Benzo(a)anthracene	1.85	0.035	mg/kg	
50-32-8	Benzo(a)pyrene	1.55	0.035	mg/kg	
205-99-2	Benzo(b)fluoranthene	1.48	0.035	mg/kg	
191-24-2	Benzo(g,h,i)perylene	1.15	0.035	mg/kg	
218-01-9	Chrysene	1.82	0.035	mg/kg	
86-73-7	Fluorene	2.30	0.035	mg/kg	
85-01-8	Phenanthrene	3.34	0.035	mg/kg	
129-00-0	Pyrene	2.89	0.035	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%		21-122%
321-60-8	2-Fluorobiphenyl	69%		30-117%
1718-51-0	Terphenyl-d14	83%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-105_2-2.5'		
Lab Sample ID:	JB22822-7	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	79.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	341	2.4	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-106_1-1.5'		
Lab Sample ID:	JB22822-8	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.0
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D203245.D	1	12/11/12	ET	12/05/12 08:00	n/a	VD8287
Run #2	D203367.D	1	12/14/12	ET	12/05/12 08:00	n/a	VD8292

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.6 g	5.0 ml	100 ul
Run #2	5.6 g	5.0 ml	10.0 ul

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	88.2 [a]	0.64	mg/kg	
108-88-3	Toluene	5.34	0.064	mg/kg	
100-41-4	Ethylbenzene	0.452	0.064	mg/kg	
1330-20-7	Xylene (total)	1.14	0.064	mg/kg	
91-20-3	Naphthalene	0.994	0.32	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.064	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.064	mg/kg	
98-82-8	Isopropylbenzene	31.2 [a]	3.2	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.064	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.717	0.32	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.32	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%	94%	70-130%
17060-07-0	1,2-Dichloroethane-D4	112%	120%	70-122%
2037-26-5	Toluene-D8	99%	98%	81-127%
460-00-4	4-Bromofluorobenzene	102%	104%	66-132%

(a) Result is from Run# 2

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

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-106_1-1.5'		
Lab Sample ID:	JB22822-8	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.0
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2M48588.D	5	12/18/12	OYA	12/14/12	OP62037	E2M2081
Run #2							

	Initial Weight	Final Volume
Run #1	35.1 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	1.24	0.17	mg/kg	
56-55-3	Benzo(a)anthracene	3.68	0.17	mg/kg	
50-32-8	Benzo(a)pyrene	4.06	0.17	mg/kg	
205-99-2	Benzo(b)fluoranthene	4.41	0.17	mg/kg	
191-24-2	Benzo(g,h,i)perylene	2.17	0.17	mg/kg	
218-01-9	Chrysene	3.49	0.17	mg/kg	
86-73-7	Fluorene	1.02	0.17	mg/kg	
85-01-8	Phenanthrene	5.80	0.17	mg/kg	
129-00-0	Pyrene	6.80	0.17	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	34%		21-122%
321-60-8	2-Fluorobiphenyl	59%		30-117%
1718-51-0	Terphenyl-d14	79%		31-129%

(a) Dilution required due to viscosity of extract matrix

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

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

Report of Analysis

Client Sample ID:	BH-12-106_1-1.5'		
Lab Sample ID:	JB22822-8	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.0
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	897	2.3	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-106_2-2.5'		
Lab Sample ID:	JB22822-9	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131189.D	1	12/08/12	TDN	12/05/12 08:00	n/a	VV5655
Run #2							

	Initial Weight
Run #1	6.4 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0011	0.00094	mg/kg	
108-88-3	Toluene	ND	0.00094	mg/kg	
100-41-4	Ethylbenzene	ND	0.00094	mg/kg	
1330-20-7	Xylene (total)	ND	0.00094	mg/kg	
91-20-3	Naphthalene	ND	0.0047	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00094	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00094	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0047	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00094	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0047	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0047	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	118%		70-130%
17060-07-0	1,2-Dichloroethane-D4	107%		70-122%
2037-26-5	Toluene-D8	116%		81-127%
460-00-4	4-Bromofluorobenzene	100%		66-132%

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

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

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Report of Analysis

Client Sample ID:	BH-12-106_2-2.5'		
Lab Sample ID:	JB22822-9	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48574.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2	2M48589.D	20	12/18/12	OYA	12/14/12	OP62037	E2M2081

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

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	2.34	0.035	mg/kg	
56-55-3	Benzo(a)anthracene	10.9 [a]	0.71	mg/kg	
50-32-8	Benzo(a)pyrene	11.6 [a]	0.71	mg/kg	
205-99-2	Benzo(b)fluoranthene	14.0 [a]	0.71	mg/kg	
191-24-2	Benzo(g,h,i)perylene	7.06 [a]	0.71	mg/kg	
218-01-9	Chrysene	11.1 [a]	0.71	mg/kg	
86-73-7	Fluorene	0.818	0.035	mg/kg	
85-01-8	Phenanthrene	10.7 [a]	0.71	mg/kg	
129-00-0	Pyrene	18.7 [a]	0.71	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	45%	32%	21-122%
321-60-8	2-Fluorobiphenyl	58%	60%	30-117%
1718-51-0	Terphenyl-d14	66%	90%	31-129%

(a) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-106_2-2.5'		
Lab Sample ID:	JB22822-9	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	960	4.5	mg/kg	2	12/12/12	12/17/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30075
(2) Prep QC Batch: MP68466

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

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-111_0.5-1'		
Lab Sample ID:	JB22822-10	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	89.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203321.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.4 g	5.0 ml	20.0 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.25	mg/kg	
108-88-3	Toluene	ND	0.25	mg/kg	
100-41-4	Ethylbenzene	ND	0.25	mg/kg	
1330-20-7	Xylene (total)	0.638	0.25	mg/kg	
91-20-3	Naphthalene	ND	1.2	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.25	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.25	mg/kg	
98-82-8	Isopropylbenzene	ND	1.2	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.25	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	1.2	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	1.2	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	116%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	120%		66-132%

(a) Dilution required due to matrix interference.

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

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Report of Analysis

Client Sample ID:	BH-12-111_0.5-1'		
Lab Sample ID:	JB22822-10	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	89.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2M48575.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2							

	Initial Weight	Final Volume
Run #1	32.2 g	5.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.472	0.17	mg/kg	
56-55-3	Benzo(a)anthracene	1.10	0.17	mg/kg	
50-32-8	Benzo(a)pyrene	1.43	0.17	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.924	0.17	mg/kg	
191-24-2	Benzo(g,h,i)perylene	1.44	0.17	mg/kg	
218-01-9	Chrysene	2.93	0.17	mg/kg	
86-73-7	Fluorene	1.23	0.17	mg/kg	
85-01-8	Phenanthrene	1.74	0.17	mg/kg	
129-00-0	Pyrene	3.64	0.17	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	32%		21-122%
321-60-8	2-Fluorobiphenyl	83%		30-117%
1718-51-0	Terphenyl-d14	82%		31-129%

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

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

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

Report of Analysis

Client Sample ID:	BH-12-111_0.5-1'		
Lab Sample ID:	JB22822-10	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	89.4
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	163	2.2	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-111_1-1.5'		
Lab Sample ID:	JB22822-11	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	93.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203247.D	1	12/11/12	ET	12/05/12 08:00	n/a	VD8287
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.2 g	5.0 ml	20.0 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.404	0.23	mg/kg	
108-88-3	Toluene	ND	0.23	mg/kg	
100-41-4	Ethylbenzene	ND	0.23	mg/kg	
1330-20-7	Xylene (total)	0.652	0.23	mg/kg	
91-20-3	Naphthalene	ND	1.2	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.23	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.23	mg/kg	
98-82-8	Isopropylbenzene	ND	1.2	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.23	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	1.2	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	1.2	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	115%		70-122%
2037-26-5	Toluene-D8	99%		81-127%
460-00-4	4-Bromofluorobenzene	118%		66-132%

(a) Dilution required due to matrix interference.

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

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Report of Analysis

Client Sample ID:	BH-12-111_1-1.5'		
Lab Sample ID:	JB22822-11	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	93.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2M48590.D	5	12/18/12	OYA	12/14/12	OP62037	E2M2081
Run #2							

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

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.16	mg/kg	
56-55-3	Benzo(a)anthracene	0.171	0.16	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.16	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.16	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.16	mg/kg	
218-01-9	Chrysene	0.258	0.16	mg/kg	
86-73-7	Fluorene	0.641	0.16	mg/kg	
85-01-8	Phenanthrene	0.680	0.16	mg/kg	
129-00-0	Pyrene	0.588	0.16	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	60%		21-122%
321-60-8	2-Fluorobiphenyl	85%		30-117%
1718-51-0	Terphenyl-d14	91%		31-129%

(a) Dilution required due to viscosity of extract matrix

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

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

Report of Analysis

Client Sample ID:	BH-12-111_1-1.5'		
Lab Sample ID:	JB22822-11	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	93.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	34.6	2.0	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-115_1-2'		
Lab Sample ID:	JB22822-12	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	81.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131191.D	1	12/08/12	TDN	12/05/12 08:00	n/a	VV5655
Run #2							

	Initial Weight
Run #1	6.5 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0013	0.00094	mg/kg	
108-88-3	Toluene	ND	0.00094	mg/kg	
100-41-4	Ethylbenzene	ND	0.00094	mg/kg	
1330-20-7	Xylene (total)	ND	0.00094	mg/kg	
91-20-3	Naphthalene	ND	0.0047	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00094	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00094	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0047	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00094	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0047	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0047	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	121%		70-130%
17060-07-0	1,2-Dichloroethane-D4	109%		70-122%
2037-26-5	Toluene-D8	115%		81-127%
460-00-4	4-Bromofluorobenzene	98%		66-132%

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

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

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Report of Analysis

Client Sample ID:	BH-12-115_1-2'		
Lab Sample ID:	JB22822-12	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	81.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90325.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	33.9 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.224	0.036	mg/kg	
56-55-3	Benzo(a)anthracene	0.499	0.036	mg/kg	
50-32-8	Benzo(a)pyrene	0.783	0.036	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.333	0.036	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.766	0.036	mg/kg	
218-01-9	Chrysene	1.03	0.036	mg/kg	
86-73-7	Fluorene	0.0803	0.036	mg/kg	
85-01-8	Phenanthrene	0.200	0.036	mg/kg	
129-00-0	Pyrene	1.57	0.036	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	73%		21-122%
321-60-8	2-Fluorobiphenyl	61%		30-117%
1718-51-0	Terphenyl-d14	71%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-115_1-2'		
Lab Sample ID:	JB22822-12	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	81.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	126	4.9	mg/kg	2	12/12/12	12/17/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30075
(2) Prep QC Batch: MP68466

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

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-108_2-2.5'		
Lab Sample ID:	JB22822-13	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	90.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D203323.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2	D203392.D	1	12/14/12	ET	12/05/12 08:00	n/a	VD8293
Run #3	D203478.D	2	12/17/12	ET	12/05/12 08:00	n/a	VD8297

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.6 g	5.0 ml	20.0 ul
Run #2	6.6 g	5.0 ml	2.0 ul
Run #3	6.6 g	5.0 ml	1.0 ul

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	11.2	0.23	mg/kg	
108-88-3	Toluene	5.26	0.23	mg/kg	
100-41-4	Ethylbenzene	109 [a]	2.3	mg/kg	
1330-20-7	Xylene (total)	675 [a]	2.3	mg/kg	
91-20-3	Naphthalene	65.2 [a]	12	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.23	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.23	mg/kg	
98-82-8	Isopropylbenzene	58.7 [a]	12	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.23	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	455 [b]	47	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	191 [a]	12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	94%	93%	92%	70-130%
17060-07-0	1,2-Dichloroethane-D4	115%	108%	110%	70-122%
2037-26-5	Toluene-D8	130% [c]	100%	98%	81-127%
460-00-4	4-Bromofluorobenzene	147% [c]	97%	99%	66-132%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits due to matrix interference.

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

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

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Report of Analysis

Client Sample ID:	BH-12-108_2-2.5'		
Lab Sample ID:	JB22822-13	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	90.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90326.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2	M90339.D	10	12/18/12	OYA	12/14/12	OP62037	EM3660

	Initial Weight	Final Volume
Run #1	34.7 g	1.0 ml
Run #2	34.7 g	1.0 ml

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	2.23	0.032	mg/kg	
56-55-3	Benzo(a)anthracene	6.04 [a]	0.32	mg/kg	
50-32-8	Benzo(a)pyrene	5.93 [a]	0.32	mg/kg	
205-99-2	Benzo(b)fluoranthene	8.41 [a]	0.32	mg/kg	
191-24-2	Benzo(g,h,i)perylene	4.07 [a]	0.32	mg/kg	
218-01-9	Chrysene	7.37 [a]	0.32	mg/kg	
86-73-7	Fluorene	15.8 [a]	0.32	mg/kg	
85-01-8	Phenanthrene	18.5 [a]	0.32	mg/kg	
129-00-0	Pyrene	11.3 [a]	0.32	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	49%	91%	21-122%
321-60-8	2-Fluorobiphenyl	69%	83%	30-117%
1718-51-0	Terphenyl-d14	107%	127%	31-129%

(a) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-108_2-2.5'		
Lab Sample ID:	JB22822-13	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	90.9
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	383	2.3	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-114_3-3.5'		
Lab Sample ID:	JB22822-14	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203322.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.1 g	5.0 ml	100 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.245	0.059	mg/kg	
108-88-3	Toluene	0.224	0.059	mg/kg	
100-41-4	Ethylbenzene	0.107	0.059	mg/kg	
1330-20-7	Xylene (total)	0.612	0.059	mg/kg	
91-20-3	Naphthalene	ND	0.29	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.059	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.059	mg/kg	
98-82-8	Isopropylbenzene	0.387	0.29	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.059	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.29	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.29	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	116%		70-122%
2037-26-5	Toluene-D8	108%		81-127%
460-00-4	4-Bromofluorobenzene	113%		66-132%

(a) Dilution required due to matrix interference.

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

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Report of Analysis

Client Sample ID:	BH-12-114_3-3.5'		
Lab Sample ID:	JB22822-14	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90327.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.310	0.038	mg/kg	
56-55-3	Benzo(a)anthracene	0.699	0.038	mg/kg	
50-32-8	Benzo(a)pyrene	0.653	0.038	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.615	0.038	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.537	0.038	mg/kg	
218-01-9	Chrysene	0.872	0.038	mg/kg	
86-73-7	Fluorene	0.177	0.038	mg/kg	
85-01-8	Phenanthrene	0.751	0.038	mg/kg	
129-00-0	Pyrene	1.24	0.038	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	34%		21-122%
321-60-8	2-Fluorobiphenyl	50%		30-117%
1718-51-0	Terphenyl-d14	65%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-114_3-3.5'		
Lab Sample ID:	JB22822-14	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	34.7	2.4	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-114_1-1.5'		
Lab Sample ID:	JB22822-15	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	88.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131350.D	1	12/13/12	TDN	12/05/12 08:00	n/a	VV5660
Run #2							

	Initial Weight
Run #1	6.0 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.00094	mg/kg	
108-88-3	Toluene	ND	0.00094	mg/kg	
100-41-4	Ethylbenzene	ND	0.00094	mg/kg	
1330-20-7	Xylene (total)	ND	0.00094	mg/kg	
91-20-3	Naphthalene	ND	0.0047	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00094	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00094	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0047	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00094	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0047	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0047	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		70-130%
17060-07-0	1,2-Dichloroethane-D4	99%		70-122%
2037-26-5	Toluene-D8	109%		81-127%
460-00-4	4-Bromofluorobenzene	99%		66-132%

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

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

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Report of Analysis

Client Sample ID:	BH-12-114_1-1.5'		
Lab Sample ID:	JB22822-15	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	88.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90328.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	32.2 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	0.035	mg/kg	
56-55-3	Benzo(a)anthracene	0.0569	0.035	mg/kg	
50-32-8	Benzo(a)pyrene	0.0748	0.035	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0956	0.035	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.100	0.035	mg/kg	
218-01-9	Chrysene	0.0876	0.035	mg/kg	
86-73-7	Fluorene	ND	0.035	mg/kg	
85-01-8	Phenanthrene	0.0550	0.035	mg/kg	
129-00-0	Pyrene	0.103	0.035	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	44%		21-122%
321-60-8	2-Fluorobiphenyl	62%		30-117%
1718-51-0	Terphenyl-d14	85%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-114_1-1.5'		
Lab Sample ID:	JB22822-15	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	88.5
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead [a]	49.1	4.3	mg/kg	2	12/12/12	12/17/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30075
(2) Prep QC Batch: MP68466

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

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-109_3'		
Lab Sample ID:	JB22822-16	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203368.D	1	12/14/12	ET	12/05/12 08:00	n/a	VD8292
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.9 g	5.0 ml	100 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.476	0.061	mg/kg	
108-88-3	Toluene	0.0993	0.061	mg/kg	
100-41-4	Ethylbenzene	0.153	0.061	mg/kg	
1330-20-7	Xylene (total)	0.170	0.061	mg/kg	
91-20-3	Naphthalene	0.512	0.31	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.061	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.061	mg/kg	
98-82-8	Isopropylbenzene	1.55	0.31	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.061	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.31	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.31	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	120%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	105%		66-132%

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

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

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

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Report of Analysis

Client Sample ID:	BH-12-109_3'		
Lab Sample ID:	JB22822-16	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M90330.D	2	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2	M90340.D	20	12/18/12	OYA	12/14/12	OP62037	EM3660

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

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	3.49	0.071	mg/kg	
56-55-3	Benzo(a)anthracene	10.9 [b]	0.71	mg/kg	
50-32-8	Benzo(a)pyrene	10.5 [b]	0.71	mg/kg	
205-99-2	Benzo(b)fluoranthene	13.9 [b]	0.71	mg/kg	
191-24-2	Benzo(g,h,i)perylene	6.29	0.071	mg/kg	
218-01-9	Chrysene	13.7 [b]	0.71	mg/kg	
86-73-7	Fluorene	6.98	0.071	mg/kg	
85-01-8	Phenanthrene	24.9 [b]	0.71	mg/kg	
129-00-0	Pyrene	19.7 [b]	0.71	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	43%	49%	21-122%
321-60-8	2-Fluorobiphenyl	54%	51%	30-117%
1718-51-0	Terphenyl-d14	75%	81%	31-129%

(a) Dilution required due to viscosity of extract matrix
(b) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-109_3'		
Lab Sample ID:	JB22822-16	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	954	2.3	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-116_3.5'		
Lab Sample ID:	JB22822-17	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	83.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203325.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.5 g	5.0 ml	100 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0680	0.056	mg/kg	
108-88-3	Toluene	0.100	0.056	mg/kg	
100-41-4	Ethylbenzene	0.0714	0.056	mg/kg	
1330-20-7	Xylene (total)	0.245	0.056	mg/kg	
91-20-3	Naphthalene	ND	0.28	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.056	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.056	mg/kg	
98-82-8	Isopropylbenzene	0.524	0.28	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.056	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.28	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.28	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		70-130%
17060-07-0	1,2-Dichloroethane-D4	118%		70-122%
2037-26-5	Toluene-D8	111%		81-127%
460-00-4	4-Bromofluorobenzene	111%		66-132%

(a) Dilution required due to matrix interference.

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

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Report of Analysis

Client Sample ID:	BH-12-116_3.5'		
Lab Sample ID:	JB22822-17	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	83.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90329.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	34.3 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.142	0.035	mg/kg	
56-55-3	Benzo(a)anthracene	0.233	0.035	mg/kg	
50-32-8	Benzo(a)pyrene	0.269	0.035	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.328	0.035	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.302	0.035	mg/kg	
218-01-9	Chrysene	0.290	0.035	mg/kg	
86-73-7	Fluorene	0.120	0.035	mg/kg	
85-01-8	Phenanthrene	0.318	0.035	mg/kg	
129-00-0	Pyrene	0.446	0.035	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	38%		21-122%
321-60-8	2-Fluorobiphenyl	43%		30-117%
1718-51-0	Terphenyl-d14	54%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-116_3.5'		
Lab Sample ID:	JB22822-17	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	83.7
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	1070	2.3	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	BH-12-122_1-1.5'		
Lab Sample ID:	JB22822-18	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	91.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131351.D	1	12/13/12	TDN	12/05/12 08:00	n/a	VV5660
Run #2							

	Initial Weight
Run #1	6.2 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0034	0.00088	mg/kg	
108-88-3	Toluene	0.0033	0.00088	mg/kg	
100-41-4	Ethylbenzene	0.0021	0.00088	mg/kg	
1330-20-7	Xylene (total)	0.0080	0.00088	mg/kg	
91-20-3	Naphthalene	0.0051	0.0044	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00088	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00088	mg/kg	
98-82-8	Isopropylbenzene	0.0082	0.0044	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00088	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.0079	0.0044	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0049	0.0044	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		70-130%
17060-07-0	1,2-Dichloroethane-D4	103%		70-122%
2037-26-5	Toluene-D8	110%		81-127%
460-00-4	4-Bromofluorobenzene	97%		66-132%

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

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

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Report of Analysis

Client Sample ID:	BH-12-122_1-1.5'		
Lab Sample ID:	JB22822-18	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	91.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90331.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	34.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.210	0.032	mg/kg	
56-55-3	Benzo(a)anthracene	0.589	0.032	mg/kg	
50-32-8	Benzo(a)pyrene	0.816	0.032	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.874	0.032	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.915	0.032	mg/kg	
218-01-9	Chrysene	0.730	0.032	mg/kg	
86-73-7	Fluorene	0.0605	0.032	mg/kg	
85-01-8	Phenanthrene	0.456	0.032	mg/kg	
129-00-0	Pyrene	0.937	0.032	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	31%		21-122%
321-60-8	2-Fluorobiphenyl	55%		30-117%
1718-51-0	Terphenyl-d14	87%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-122_1-1.5'		
Lab Sample ID:	JB22822-18	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	91.2
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	75.2	2.0	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-117_2-2.5'		
Lab Sample ID:	JB22822-19	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	77.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D203326.D	1	12/13/12	ET	12/05/12 08:00	n/a	VD8290
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.9 g	5.0 ml	100 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.157	0.069	mg/kg	
108-88-3	Toluene	0.0813	0.069	mg/kg	
100-41-4	Ethylbenzene	ND	0.069	mg/kg	
1330-20-7	Xylene (total)	ND	0.069	mg/kg	
91-20-3	Naphthalene	ND	0.35	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.069	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.069	mg/kg	
98-82-8	Isopropylbenzene	0.797	0.35	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.069	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.35	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		70-130%
17060-07-0	1,2-Dichloroethane-D4	117%		70-122%
2037-26-5	Toluene-D8	102%		81-127%
460-00-4	4-Bromofluorobenzene	102%		66-132%

(a) Dilution required due to matrix interference.

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-117_2-2.5'		
Lab Sample ID:	JB22822-19	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	77.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90332.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	33.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.262	0.039	mg/kg	
56-55-3	Benzo(a)anthracene	0.436	0.039	mg/kg	
50-32-8	Benzo(a)pyrene	0.534	0.039	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.446	0.039	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.488	0.039	mg/kg	
218-01-9	Chrysene	0.664	0.039	mg/kg	
86-73-7	Fluorene	0.0701	0.039	mg/kg	
85-01-8	Phenanthrene	0.374	0.039	mg/kg	
129-00-0	Pyrene	0.984	0.039	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	33%		21-122%
321-60-8	2-Fluorobiphenyl	51%		30-117%
1718-51-0	Terphenyl-d14	78%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-117_2-2.5'		
Lab Sample ID:	JB22822-19	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	77.6
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	350	2.4	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-122_2.5-3'		
Lab Sample ID:	JB22822-20	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	88.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D203360.D	1	12/14/12	ET	12/05/12 08:00	n/a	VD8292
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.8 g	5.0 ml	100 ul
Run #2			

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	1.83	0.056	mg/kg	
108-88-3	Toluene	0.261	0.056	mg/kg	
100-41-4	Ethylbenzene	0.191	0.056	mg/kg	
1330-20-7	Xylene (total)	0.407	0.056	mg/kg	
91-20-3	Naphthalene	0.500	0.28	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.056	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.056	mg/kg	
98-82-8	Isopropylbenzene	0.720	0.28	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.056	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.291	0.28	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.28	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		70-130%
17060-07-0	1,2-Dichloroethane-D4	118%		70-122%
2037-26-5	Toluene-D8	100%		81-127%
460-00-4	4-Bromofluorobenzene	104%		66-132%

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

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-122_2.5-3'		
Lab Sample ID:	JB22822-20	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	88.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M90333.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659
Run #2							

	Initial Weight	Final Volume
Run #1	35.7 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	0.625	0.032	mg/kg	
56-55-3	Benzo(a)anthracene	1.05	0.032	mg/kg	
50-32-8	Benzo(a)pyrene	1.06	0.032	mg/kg	
205-99-2	Benzo(b)fluoranthene	1.21	0.032	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.764	0.032	mg/kg	
218-01-9	Chrysene	1.28	0.032	mg/kg	
86-73-7	Fluorene	1.30	0.032	mg/kg	
85-01-8	Phenanthrene	2.03	0.032	mg/kg	
129-00-0	Pyrene	1.95	0.032	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	54%		21-122%
321-60-8	2-Fluorobiphenyl	68%		30-117%
1718-51-0	Terphenyl-d14	82%		31-129%

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

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

Report of Analysis

Client Sample ID:	BH-12-122_2.5-3'		
Lab Sample ID:	JB22822-20	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	88.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	173	2.3	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-121_2-2.5'		
Lab Sample ID:	JB22822-21	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8260B SW846 5035	**Percent Solids:**	90.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	V131193.D	1	12/08/12	TDN	12/05/12 08:00	n/a	VV5655
Run #2							

	Initial Weight
Run #1	6.6 g
Run #2	

PA Leaded Gasoline and Aviation Gas list

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	0.0100	0.00084	mg/kg	
108-88-3	Toluene	0.0020	0.00084	mg/kg	
100-41-4	Ethylbenzene	ND	0.00084	mg/kg	
1330-20-7	Xylene (total)	0.00097	0.00084	mg/kg	
91-20-3	Naphthalene	ND	0.0042	mg/kg	
106-93-4	1,2-Dibromoethane	ND	0.00084	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.00084	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0042	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.00084	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0042	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0042	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		70-130%
17060-07-0	1,2-Dichloroethane-D4	102%		70-122%
2037-26-5	Toluene-D8	116%		81-127%
460-00-4	4-Bromofluorobenzene	104%		66-132%

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

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

Accutest LabLink@706202 11:21 07-Jan-2013

Report of Analysis

Client Sample ID:	BH-12-121_2-2.5'		
Lab Sample ID:	JB22822-21	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
Method:	SW846 8270D SW846 3550C	**Percent Solids:**	90.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M48577.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
Run #2	2M48591.D	10	12/18/12	OYA	12/14/12	OP62037	E2M2081

	Initial Weight	Final Volume
Run #1	34.7 g	1.0 ml
Run #2	34.7 g	1.0 ml

BN Special List

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	3.43 [a]	0.32	mg/kg	
56-55-3	Benzo(a)anthracene	9.60 [a]	0.32	mg/kg	
50-32-8	Benzo(a)pyrene	9.39 [a]	0.32	mg/kg	
205-99-2	Benzo(b)fluoranthene	9.66 [a]	0.32	mg/kg	
191-24-2	Benzo(g,h,i)perylene	5.39 [a]	0.32	mg/kg	
218-01-9	Chrysene	10.5 [a]	0.32	mg/kg	
86-73-7	Fluorene	2.89	0.032	mg/kg	
85-01-8	Phenanthrene	22.9 [a]	0.32	mg/kg	
129-00-0	Pyrene	23.1 [a]	0.32	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%	47%	21-122%
321-60-8	2-Fluorobiphenyl	61%	61%	30-117%
1718-51-0	Terphenyl-d14	64%	82%	31-129%

(a) Result is from Run# 2

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

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

Report of Analysis

Client Sample ID:	BH-12-121_2-2.5'		
Lab Sample ID:	JB22822-21	**Date Sampled:**	12/03/12
Matrix:	SO - Soil	**Date Received:**	12/04/12
		Percent Solids:	90.1
Project:	Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	199	2.1	mg/kg	1	12/12/12	12/15/12	ND	SW846 6010C [1]	SW846 3050B [2]

(1) Instrument QC Batch: MA30065
(2) Prep QC Batch: MP68466

RL = Reporting Limit

New Jersey

ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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

ACCUTEST LABORATORIES SCL

CHAIN OF CUSTODY

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

PAGE 1 OF 2

FED-EX Tracking #:
Bottle Order Control #:
Accutest Quote #:
Accutest Job #: JB22822

Client / Reporting Information

Company Name: Aquaterra Technologies, Inc
Street Address: 122 Church Street S
City: West Chester State: PA Zip: 19382
Project Contact: TD E-mail:
Phone #: Fax #:
Sampler(s) Name(s): LM Phone #:

Project Information

Project Name: PHILA REFINERY SOIL SAMPLES A07-6
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

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

Requested Analysis (see TEST CODE sheet)

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

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Lead	8260B: 1,2-Dichloroethane, 1,2,4 & 1,3,5 Trimethylbenzene	Benzene, Cumene, Ethylbenzene	Ethylene dibromide, MTBE	Toluene, Xylenes (total)	8270C: Anthracene, Benzo(a)anthracene	Benzo(g,h,i) perylene, Benzo(a)pyrene	Benzo(b)fluoranthene, Chrysene	Fluorene, Naphthalene, Phenanthrene	Pyrene	LAB USE ONLY
-	~~BH-12-113 - 0.5-1'~~		12/3/12		LM	SO	4					1			3	X	X	X	X	X	X	X	X	X	X	ME 39
-1	BH-12-112 - 0.5-1'			845																						14A5
-2	BH-12-107 - 1-1.5'			900																						4003
-3	BH-12-110 - 0.5-1'			915																						
-4	BH-12-107 - 2.5-3'			942																						
-5	BH-12-110 - 3-3.5'			1000																						
-6	BH-12-108 - 1'			1015																						
-7	BH-12-105 - 2-2.5'			1030																						
-8	BH-12-106 - 1-1.5'			1030																						
-9	BH-12-106 - 2-2.5'			1100																						
-10	BH-12-111 - 0.5-1'			1100																						
-11	BH-12-111 - 1-1.5'			1110																						

Turnaround Time (Business days)

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

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Rec'd at Exton Service Center 12/4/12

Data Deliverable Information

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

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

Comments / Special Instructions

* - 3 Encores per sample

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 [signature] AQUATERRA	12/3/12 1600	1 Aquaterra Fridge	2 [signature]	12/4/12 1400	2 [signature]
Relinquished By: 3 [signature]	Date Time: 12/4/12 1530	Received By: 3 [signature]	Relinquished By: 4 [signature]	Date Time: 12/4/12 1800	Received By: 4 [signature]
Relinquished by: 5 [signature]	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp. 4.1°C

MB

JB22822: Chain of Custody
Page 1 of 5

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

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

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: JB22822

Client / Reporting Information

Company Name: Aquaterra Technologies Inc
Street Address: 122 So. Church St
City / State / Zip: West Chester PA 19382
Project Contact: Tiffany Doer | E-mail:
Phone #: | Fax #:
Client Purchase Order #:
Sampler(s) Name(s): Luke Mokrycki | Phone #:

Project Information

Project Name: Phila Refinery AOI-6 Soil Samples
Street:
City / State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

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

Requested Analysis (see TEST CODE sheet)

Matrix Codes

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

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Lead	1,2-Dichloroethane 8260B & 1,2,4-1,3,5-Trimethylbenzene	Benzene, Cumene, Ethylbenzene	Ethylene dibromide, MTBE	Toluene, Xylenes (total)	8270C: Anthracene, Benzo(a)anthracene	Benzo(g,h,i) perylene, Benzo(k)pyrene	Benzo(a) Pyrene, Chrysene	Fluoranthene, Naphthalene, Phenanthrene	Pyrene	LAB USE ONLY
-12	BH-12-115_1-2'		12/3/12	1115	LM	SO	4					1			3	X	X	X	X	X	X	X	X	X	X	
-13	BH-12-108_2-2.5'			1130		SO	4					1			3											
-14	BH-12-114_3-3.5'			1130		SO	4					1			3											
-15	BH-12-114_1-1.5'			1145		SO	4					1			3											
-16	BH-12-109_3'			1300		SO	4					1			3											
-17	BH-12-116_3.5'			1330		SO	4					1			3											
-18	BH-12-122_1-1.5'			1345		SO	4					1			3											
-19	BH-12-117_2-2.5'			1350		SO	4					1			3											
-20	BH-12-122_2.5-3'			1350		SO	4					1			3											
-21	BH-12-121_2-2.5'			1415		SO	4					1			3											

Turnaround Time (Business days)

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

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Rec'd at Exton Service Center 12/4/12

Data Deliverable Information

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

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

Comments / Special Instructions

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

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Luke Mokrycki / Aquaterra	12/3/12 1600	1 Aquaterra Fridge	2	12/4/12 1400	2
Relinquished by Sampler: 3	Date Time: 12/4/12 1530	Received By: 3	Relinquished By: 4	Date Time: 12/4/12 1530	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable	On Ice: X	Cooler Temp. 4.1°C

☐ Intact ☑ Not intact

JB22822: Chain of Custody
Page 2 of 5

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB22822 **Client:** **Project:**

Date / Time Received: 12/4/2012 **Delivery Method:** **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (4.1/4.1); 0

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

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

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

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

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

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

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JB22822: Chain of Custody
Page 3 of 5

Job Change Order: JB22822_12/7/2012

Requested Date:	12/7/2012	**Received Date:**	12/4/2012
Account Name:	Aquaterra Technologies, Inc.	**Due Date:**	12/18/2012
Project	Sun-Philadelphia Refinery, 3144 Passyunk	**Deliverable:**	COMMB
CSR:	MV	**TAT (Days):**	14

Sample #:
JB22822-3

Change: Cancel this sample and all associated analyses

BH-12-110_0.5-1'

Above Changes Per: Tiffani Doerr

Date: 12/7/2012

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

Page 1 of 1

Job Change Order: JB22822_12/12/2012

Requested Date:	12/12/2012	**Received Date:**	12/4/2012
Account Name:	Aquaterra Technologies, Inc.	**Due Date:**	12/18/2012
Project	Sun-Philadelphia Refinery, 3144 Passyunk	**Deliverable:**	COMMB
CSR:	KB	**TAT (Days):**	14

Sample #:
JB22822-ALL

Change: Please upgrade deliverable to REDT2

Above Changes Per: Client / Kristen Ward

Date: 12/12/2012

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

Page 1 of 1

5.1 5

JB22822: Chain of Custody
Page 5 of 5

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22822-1 Collected: 03-DEC-12 08:45 By: LM Received: 04-DEC-12 By: AS BH-12-112_0.5-1'						
JB22822-1	SW846 8260B	07-DEC-12 02:35	TDN			V8260PALGTMB
JB22822-1	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-1	SW846 8270D	17-DEC-12 16:23	OYA	14-DEC-12	MP	B8270PALO
JB22822-1	SW846 6010C	17-DEC-12 16:49	ND	12-DEC-12	NS	PB
JB22822-1	SW846 8270D	18-DEC-12 13:09	OYA	14-DEC-12	MP	B8270PALO
JB22822-2 Collected: 03-DEC-12 09:00 By: LM Received: 04-DEC-12 By: AS BH-12-107_1-1.5'						
JB22822-2	SW846 8260B	07-DEC-12 03:05	TDN			V8260PALGTMB
JB22822-2	SW846 6010C	15-DEC-12 01:09	ND	12-DEC-12	NS	PB
JB22822-2	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-2	SW846 8270D	18-DEC-12 13:32	OYA	14-DEC-12	MP	B8270PALO
JB22822-4 Collected: 03-DEC-12 09:42 By: LM Received: 04-DEC-12 By: AS BH-12-107_2.5-3'						
JB22822-4	SW846 8260B	08-DEC-12 00:06	TDN			V8260PALGTMB
JB22822-4	SW846 6010C	15-DEC-12 01:15	ND	12-DEC-12	NS	PB
JB22822-4	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-4	SW846 8270D	17-DEC-12 17:55	OYA	14-DEC-12	MP	B8270PALO
JB22822-4	SW846 8270D	18-DEC-12 13:56	OYA	14-DEC-12	MP	B8270PALO
JB22822-5 Collected: 03-DEC-12 10:00 By: LM Received: 04-DEC-12 By: AS BH-12-110_3-3.5'						
JB22822-5	SW846 8260B	13-DEC-12 03:55	ET			V8260PALGTMB
JB22822-5	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-5	SW846 6010C	17-DEC-12 17:01	ND	12-DEC-12	NS	PB
JB22822-5	SW846 8270D	17-DEC-12 18:19	OYA	14-DEC-12	MP	B8270PALO
JB22822-5	SW846 8270D	18-DEC-12 20:08	OYA	14-DEC-12	MP	B8270PALO
JB22822-6 Collected: 03-DEC-12 10:15 By: LM Received: 04-DEC-12 By: AS BH-12-108_1'						
JB22822-6	SW846 8260B	13-DEC-12 04:24	ET			V8260PALGTMB
JB22822-6	SW846 8260B	14-DEC-12 02:06	ET			V8260PALGTMB

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22822-6	SW846 6010C	15-DEC-12 01:26	ND	12-DEC-12	NS	PB
JB22822-6	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-6	SW846 8270D	17-DEC-12 18:42	OYA	14-DEC-12	MP	B8270PALO
JB22822-6	SW846 8270D	18-DEC-12 14:42	OYA	14-DEC-12	MP	B8270PALO
JB22822-7 Collected: 03-DEC-12 10:30 By: LM Received: 04-DEC-12 By: AS BH-12-105_2-2.5'						
JB22822-7	SW846 8260B	13-DEC-12 04:53	ET			V8260PALGTMB
JB22822-7	SW846 6010C	15-DEC-12 01:43	ND	12-DEC-12	NS	PB
JB22822-7	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-7	SW846 8270D	17-DEC-12 19:05	OYA	14-DEC-12	MP	B8270PALO
JB22822-8 Collected: 03-DEC-12 10:30 By: LM Received: 04-DEC-12 By: AS BH-12-106_1-1.5'						
JB22822-8	SW846 8260B	11-DEC-12 15:44	ET			V8260PALGTMB
JB22822-8	SW846 8260B	14-DEC-12 05:01	ET			V8260PALGTMB
JB22822-8	SW846 6010C	15-DEC-12 01:49	ND	12-DEC-12	NS	PB
JB22822-8	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-8	SW846 8270D	18-DEC-12 15:06	OYA	14-DEC-12	MP	B8270PALO
JB22822-9 Collected: 03-DEC-12 11:00 By: LM Received: 04-DEC-12 By: AS BH-12-106_2-2.5'						
JB22822-9	SW846 8260B	08-DEC-12 00:37	TDN			V8260PALGTMB
JB22822-9	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-9	SW846 6010C	17-DEC-12 17:06	ND	12-DEC-12	NS	PB
JB22822-9	SW846 8270D	17-DEC-12 19:51	OYA	14-DEC-12	MP	B8270PALO
JB22822-9	SW846 8270D	18-DEC-12 15:29	OYA	14-DEC-12	MP	B8270PALO
JB22822-10 Collected: 03-DEC-12 11:00 By: LM Received: 04-DEC-12 By: AS BH-12-111_0.5-1'						
JB22822-10	SW846 8260B	13-DEC-12 05:52	ET			V8260PALGTMB
JB22822-10	SW846 6010C	15-DEC-12 02:01	ND	12-DEC-12	NS	PB
JB22822-10	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-10	SW846 8270D	17-DEC-12 20:14	OYA	14-DEC-12	MP	B8270PALO

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22822-11 Collected: 03-DEC-12 11:10 By: LM BH-12-111_1-1.5'			Received: 04-DEC-12 By: AS			
JB22822-11	SW846 8260B	11-DEC-12 16:43	ET			V8260PALGTMB
JB22822-11	SW846 6010C	15-DEC-12 02:07	ND	12-DEC-12	NS	PB
JB22822-11	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-11	SW846 8270D	18-DEC-12 15:53	OYA	14-DEC-12	MP	B8270PALO
JB22822-12 Collected: 03-DEC-12 11:15 By: LM BH-12-115_1-2'			Received: 04-DEC-12 By: AS			
JB22822-12	SW846 8260B	08-DEC-12 01:38	TDN			V8260PALGTMB
JB22822-12	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-12	SW846 6010C	17-DEC-12 17:12	ND	12-DEC-12	NS	PB
JB22822-12	SW846 8270D	17-DEC-12 18:07	OYA	14-DEC-12	MP	B8270PALO
JB22822-13 Collected: 03-DEC-12 11:30 By: LM BH-12-108_2-2.5'			Received: 04-DEC-12 By: AS			
JB22822-13	SW846 8260B	13-DEC-12 06:50	ET			V8260PALGTMB
JB22822-13	SW846 8260B	14-DEC-12 21:37	ET			V8260PALGTMB
JB22822-13	SW846 6010C	15-DEC-12 02:18	ND	12-DEC-12	NS	PB
JB22822-13	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-13	SW846 8260B	17-DEC-12 12:15	ET			V8260PALGTMB
JB22822-13	SW846 8270D	17-DEC-12 18:36	OYA	14-DEC-12	MP	B8270PALO
JB22822-13	SW846 8270D	18-DEC-12 11:30	OYA	14-DEC-12	MP	B8270PALO
JB22822-14 Collected: 03-DEC-12 11:30 By: LM BH-12-114_3-3.5'			Received: 04-DEC-12 By: AS			
JB22822-14	SW846 8260B	13-DEC-12 06:21	ET			V8260PALGTMB
JB22822-14	SW846 6010C	15-DEC-12 02:24	ND	12-DEC-12	NS	PB
JB22822-14	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-14	SW846 8270D	17-DEC-12 19:06	OYA	14-DEC-12	MP	B8270PALO
JB22822-15 Collected: 03-DEC-12 11:45 By: LM BH-12-114_1-1.5'			Received: 04-DEC-12 By: AS			
JB22822-15	SW846 8260B	13-DEC-12 17:26	TDN			V8260PALGTMB

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22822-15	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-15	SW846 6010C	17-DEC-12 17:18	ND	12-DEC-12	NS	PB
JB22822-15	SW846 8270D	17-DEC-12 19:35	OYA	14-DEC-12	MP	B8270PALO
JB22822-16	Collected: 03-DEC-12 13:00 By: LM		Received: 04-DEC-12 By: AS			
BH-12-109_3'						
JB22822-16	SW846 8260B	14-DEC-12 05:30	ET			V8260PALGTMB
JB22822-16	SW846 6010C	15-DEC-12 02:48	ND	12-DEC-12	NS	PB
JB22822-16	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-16	SW846 8270D	17-DEC-12 20:34	OYA	14-DEC-12	MP	B8270PALO
JB22822-16	SW846 8270D	18-DEC-12 11:56	OYA	14-DEC-12	MP	B8270PALO
JB22822-17	Collected: 03-DEC-12 13:30 By: LM		Received: 04-DEC-12 By: AS			
BH-12-116_3.5'						
JB22822-17	SW846 8260B	13-DEC-12 07:49	ET			V8260PALGTMB
JB22822-17	SW846 6010C	15-DEC-12 02:54	ND	12-DEC-12	NS	PB
JB22822-17	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-17	SW846 8270D	17-DEC-12 20:05	OYA	14-DEC-12	MP	B8270PALO
JB22822-18	Collected: 03-DEC-12 13:45 By: LM		Received: 04-DEC-12 By: AS			
BH-12-122_1-1.5'						
JB22822-18	SW846 8260B	13-DEC-12 18:05	TDN			V8260PALGTMB
JB22822-18	SW846 6010C	15-DEC-12 02:59	ND	12-DEC-12	NS	PB
JB22822-18	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-18	SW846 8270D	17-DEC-12 20:49	OYA	14-DEC-12	MP	B8270PALO
JB22822-19	Collected: 03-DEC-12 13:50 By: LM		Received: 04-DEC-12 By: AS			
BH-12-117_2-2.5'						
JB22822-19	SW846 8260B	13-DEC-12 08:18	ET			V8260PALGTMB
JB22822-19	SW846 6010C	15-DEC-12 03:05	ND	12-DEC-12	NS	PB
JB22822-19	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-19	SW846 8270D	17-DEC-12 21:19	OYA	14-DEC-12	MP	B8270PALO
JB22822-20	Collected: 03-DEC-12 13:50 By: LM		Received: 04-DEC-12 By: AS			
BH-12-122_2.5-3'						

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB22822

Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Project No: AOI-6

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB22822-20	SW846 8260B	14-DEC-12 01:36	ET			V8260PALGTMB
JB22822-20	SW846 6010C	15-DEC-12 03:11	ND	12-DEC-12	NS	PB
JB22822-20	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-20	SW846 8270D	17-DEC-12 21:48	OYA	14-DEC-12	MP	B8270PALO
JB22822-21	Collected: 03-DEC-12 14:15 By: LM		Received: 04-DEC-12 By: AS			
BH-12-121_2-2.5'						
JB22822-21	SW846 8260B	08-DEC-12 02:40	TDN			V8260PALGTMB
JB22822-21	SW846 6010C	15-DEC-12 03:17	ND	12-DEC-12	NS	PB
JB22822-21	SM2540 G-97	16-DEC-12 11:55	KP			%SOL
JB22822-21	SW846 8270D	17-DEC-12 21:00	OYA	14-DEC-12	MP	B8270PALO
JB22822-21	SW846 8270D	18-DEC-12 16:16	OYA	14-DEC-12	MP	B8270PALO

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-1.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-1.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-1.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-1.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-1.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-1.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-1.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-1.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-1.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-1.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-1.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-1.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-1.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-1.1
JB22822-1.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-1.1
JB22822-1.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-1.1
JB22822-1.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-1.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-1.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-1.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-1.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-1.3	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-1.3	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-1.4	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-1.4	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-1.4	Secured Storage	Thien Nguyen	12/06/12 13:08	Retrieve from Storage
JB22822-1.4	Thien Nguyen	GCMSV	12/06/12 13:09	Load on Instrument
JB22822-1.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-1.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-1.5	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-1.5	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-2.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-2.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-2.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-2.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-2.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-2.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-2.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-2.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-2.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-2.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-2.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-2.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-2.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-2.1
JB22822-2.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-2.1
JB22822-2.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-2.1
JB22822-2.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-2.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-2.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-2.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-2.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-2.3	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-2.3	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-2.4	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-2.4	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-2.4	Secured Storage	Thien Nguyen	12/06/12 13:08	Retrieve from Storage
JB22822-2.4	Thien Nguyen	GCMSV	12/06/12 13:09	Load on Instrument
JB22822-2.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-2.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-2.5	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-2.5	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-4.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-4.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-4.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-4.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-4.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-4.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-4.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-4.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-4.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-4.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-4.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-4.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-4.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-4.1
JB22822-4.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-4.1

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-4.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-4.1
JB22822-4.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-4.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-4.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-4.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-4.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-4.3	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-4.3	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-4.4	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-4.4	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-4.4	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22822-4.4	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22822-4.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-4.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-4.5	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-4.5	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-5.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-5.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-5.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-5.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-5.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-5.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-5.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-5.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-5.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-5.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-5.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-5.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-5.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-5.1
JB22822-5.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-5.1
JB22822-5.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-5.1
JB22822-5.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-5.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-5.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-5.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-5.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-5.3	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-5.3	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-5.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-5.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-5.4	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-5.4	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-5.5	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-5.5	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-6.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-6.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-6.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-6.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-6.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-6.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-6.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-6.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-6.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-6.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-6.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-6.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-6.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-6.1
JB22822-6.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-6.1
JB22822-6.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-6.1
JB22822-6.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-6.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-6.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-6.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-6.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-6.3	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-6.3	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-6.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-6.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-6.3	Secured Storage	Emily Tran	12/13/12 11:06	Retrieve from Storage
JB22822-6.3	Emily Tran	Secured Storage	12/13/12 16:47	Return to Storage
JB22822-6.4	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-6.4	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-6.5	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-6.5	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-7.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-7.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-7.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-7.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-7.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-7.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-7.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-7.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-7.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-7.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-7.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-7.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-7.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-7.1
JB22822-7.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-7.1
JB22822-7.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-7.1
JB22822-7.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-7.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-7.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-7.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-7.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-7.3	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-7.3	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-7.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-7.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-7.4	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-7.4	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-7.5	Secured Storage	Jayna Patel	12/05/12 08:35	Retrieve from Storage
JB22822-7.5	Jayna Patel	Secured Storage	12/05/12 08:39	Return to Storage
JB22822-8.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-8.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-8.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-8.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-8.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-8.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-8.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-8.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-8.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-8.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-8.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-8.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-8.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-8.1
JB22822-8.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-8.1
JB22822-8.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-8.1
JB22822-8.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-8.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-8.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-8.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-8.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-8.3	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-8.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-8.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-8.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-8.3	Secured Storage	Emily Tran	12/12/12 11:54	Retrieve from Storage
JB22822-8.3	Emily Tran	Secured Storage	12/12/12 17:07	Return to Storage
JB22822-8.3	Secured Storage	Emily Tran	12/13/12 11:06	Retrieve from Storage
JB22822-8.3	Emily Tran	Secured Storage	12/13/12 16:47	Return to Storage
JB22822-8.3	Secured Storage	Emily Tran	12/14/12 11:45	Retrieve from Storage
JB22822-8.3	Emily Tran	Secured Storage	12/15/12 08:27	Return to Storage
JB22822-8.4	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-8.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-8.5	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-8.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-9.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-9.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-9.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-9.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-9.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-9.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-9.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-9.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-9.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-9.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-9.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-9.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-9.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-9.1
JB22822-9.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-9.1
JB22822-9.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-9.1
JB22822-9.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-9.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-9.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-9.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-9.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-9.3	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-9.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-9.4	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-9.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-9.4	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22822-9.4	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22822-9.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-9.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-9.5	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-9.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-10.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-10.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-10.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-10.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-10.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-10.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-10.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-10.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-10.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-10.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-10.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-10.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-10.1.1	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-10.1
JB22822-10.1.1	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-10.1
JB22822-10.1.1	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-10.1.1	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-10.1.1	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-10.1.1	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-10.1.1	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-10.3	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-10.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-10.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-10.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-10.4	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-10.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-10.5	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-10.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-11.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-11.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-11.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-11.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-11.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-11.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-11.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-11.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-11.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-11.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-11.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-11.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-11.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-11.1
JB22822-11.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-11.1
JB22822-11.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-11.1
JB22822-11.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-11.1.2	Extract Storage	Olga Azarihn	12/17/12 13:04	Retrieve from Storage
JB22822-11.1.2	Olga Azarihn	GCMS2M	12/17/12 13:04	Load on Instrument
JB22822-11.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-11.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-11.3	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-11.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-11.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-11.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-11.4	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-11.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-11.5	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-11.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-12.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-12.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-12.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-12.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-12.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-12.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-12.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-12.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-12.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-12.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-12.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-12.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-12.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-12.1
JB22822-12.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-12.1
JB22822-12.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-12.1
JB22822-12.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-12.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-12.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-12.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-12.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-12.3	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-12.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-12.4	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-12.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-12.4	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22822-12.4	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22822-12.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-12.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-12.5	Secured Storage	Jayna Patel	12/05/12 09:12	Retrieve from Storage
JB22822-12.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-13.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-13.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-13.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-13.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-13.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-13.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-13.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-13.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-13.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-13.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-13.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-13.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-13.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-13.1
JB22822-13.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-13.1
JB22822-13.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-13.1
JB22822-13.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-13.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-13.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-13.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-13.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-13.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-13.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-13.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-13.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-13.3	Secured Storage	Emily Tran	12/13/12 11:06	Retrieve from Storage
JB22822-13.3	Emily Tran	Secured Storage	12/13/12 16:47	Return to Storage
JB22822-13.3	Secured Storage	Emily Tran	12/14/12 11:45	Retrieve from Storage
JB22822-13.3	Emily Tran	Secured Storage	12/15/12 08:27	Return to Storage
JB22822-13.3	Secured Storage	Emily Tran	12/17/12 12:26	Retrieve from Storage
JB22822-13.3	Emily Tran	Secured Storage	12/17/12 17:04	Return to Storage
JB22822-13.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-13.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-13.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-13.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-14.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-14.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-14.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-14.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-14.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-14.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-14.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-14.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-14.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-14.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-14.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-14.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-14.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-14.1
JB22822-14.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-14.1
JB22822-14.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-14.1
JB22822-14.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-14.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-14.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-14.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-14.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-14.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-14.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-14.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-14.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-14.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-14.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-14.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-14.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-15.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-15.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-15.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-15.1	Secured Storage	Alfredo Crespo	12/13/12 11:37	Retrieve from Storage
JB22822-15.1	Alfredo Crespo	Hueanh Tran	12/13/12 11:40	Custody Transfer
JB22822-15.1	Hueanh Tran	Secured Storage	12/13/12 12:27	Return to Storage
JB22822-15.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-15.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-15.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-15.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-15.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-15.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-15.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-15.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-15.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-15.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-15.1
JB22822-15.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-15.1
JB22822-15.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-15.1

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-15.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-15.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-15.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-15.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-15.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-15.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-15.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-15.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-15.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-15.4	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22822-15.4	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22822-15.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-15.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-15.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-15.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-15.5	Secured Storage	Thien Nguyen	12/10/12 18:40	Retrieve from Storage
JB22822-15.5	Thien Nguyen	GCMSV	12/10/12 18:40	Load on Instrument
JB22822-15.5	GCMSV	Thien Nguyen	12/12/12 12:25	Unload from Instrument
JB22822-15.5	Thien Nguyen	Secured Storage	12/12/12 12:25	Return to Storage
JB22822-16.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-16.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-16.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-16.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-16.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-16.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-16.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-16.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-16.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-16.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-16.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-16.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-16.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-16.1
JB22822-16.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-16.1
JB22822-16.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-16.1
JB22822-16.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-16.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-16.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-16.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-16.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-16.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-16.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-16.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-16.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-16.3	Secured Storage	Emily Tran	12/13/12 11:06	Retrieve from Storage
JB22822-16.3	Emily Tran	Secured Storage	12/13/12 16:47	Return to Storage
JB22822-16.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-16.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-16.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-16.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-17.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-17.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-17.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-17.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-17.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-17.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-17.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-17.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-17.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-17.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-17.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-17.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-17.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-17.1
JB22822-17.1.2	Khusbu Shah	Organics Prep	12/14/12 09:09	Extract from JB22822-17.1
JB22822-17.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-17.1
JB22822-17.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-17.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-17.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-17.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-17.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-17.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-17.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-17.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-17.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-17.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
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Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-17.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-17.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-17.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-18.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-18.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-18.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-18.1	Secured Storage	Alfredo Crespo	12/13/12 11:37	Retrieve from Storage
JB22822-18.1	Alfredo Crespo	Hueanh Tran	12/13/12 11:40	Custody Transfer
JB22822-18.1	Hueanh Tran	Secured Storage	12/13/12 12:27	Return to Storage
JB22822-18.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-18.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-18.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-18.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-18.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-18.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-18.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-18.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-18.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-18.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-18.1
JB22822-18.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-18.1
JB22822-18.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-18.1
JB22822-18.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-18.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-18.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-18.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-18.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-18.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-18.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-18.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-18.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-18.4	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22822-18.4	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22822-18.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-18.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-18.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-18.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-18.5	Secured Storage	Thien Nguyen	12/10/12 18:40	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-18.5	Thien Nguyen	GCMSV	12/10/12 18:40	Load on Instrument
JB22822-18.5	GCMSV	Thien Nguyen	12/12/12 12:25	Unload from Instrument
JB22822-18.5	Thien Nguyen	Secured Storage	12/12/12 12:25	Return to Storage
JB22822-19.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-19.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-19.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-19.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-19.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-19.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-19.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-19.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-19.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-19.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-19.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-19.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-19.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-19.1
JB22822-19.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-19.1
JB22822-19.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-19.1
JB22822-19.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-19.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-19.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-19.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-19.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-19.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-19.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-19.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-19.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-19.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-19.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-19.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-19.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-20.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-20.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-20.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-20.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-20.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-20.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-20.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-20.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-20.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-20.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-20.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-20.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-20.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-20.1
JB22822-20.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-20.1
JB22822-20.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-20.1
JB22822-20.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-20.1.2	Extract Storage	Olga Azarihn	12/17/12 13:20	Retrieve from Storage
JB22822-20.1.2	Olga Azarihn	GCMSM	12/17/12 13:20	Load on Instrument
JB22822-20.1.2	GCMSM	Olga Azarihn	12/19/12 09:56	Unload from Instrument
JB22822-20.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:56	Return to Storage
JB22822-20.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-20.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-20.3	Secured Storage	Emily Tran	12/10/12 10:36	Retrieve from Storage
JB22822-20.3	Emily Tran	Secured Storage	12/10/12 17:39	Return to Storage
JB22822-20.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-20.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-20.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-20.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-21.1	Secured Storage	Nida Saleem	12/12/12 08:37	Retrieve from Storage
JB22822-21.1	Nida Saleem	Gina Montenegro	12/12/12 15:19	Custody Transfer
JB22822-21.1	Gina Montenegro	Secured Storage	12/12/12 18:35	Return to Storage
JB22822-21.1	Secured Storage	Alfredo Crespo	12/14/12 07:26	Retrieve from Storage
JB22822-21.1	Alfredo Crespo	Secured Staging Area	12/14/12 07:27	Return to Storage
JB22822-21.1	Secured Staging Area	Khusbu Shah	12/14/12 08:06	Retrieve from Storage
JB22822-21.1	Khusbu Shah	Max Ponce	12/14/12 17:08	Custody Transfer
JB22822-21.1	Max Ponce	Secured Storage	12/15/12 00:18	Return to Storage
JB22822-21.1	Secured Storage	Brian Racin	12/16/12 08:44	Retrieve from Storage
JB22822-21.1	Brian Racin	Secured Staging Area	12/16/12 08:45	Return to Storage
JB22822-21.1	Secured Staging Area	Krimesh Patel	12/16/12 09:08	Retrieve from Storage
JB22822-21.1	Krimesh Patel	Secured Storage	12/16/12 11:56	Return to Storage
JB22822-21.1.1	Gina Montenegro	Metals Digestion	12/12/12 15:52	Digestate from JB22822-21.1
JB22822-21.1.2	Khusbu Shah	Organics Prep	12/14/12 08:08	Extract from JB22822-21.1

Accutest Internal Chain of Custody

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA
Received: 12/04/12

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB22822-21.1.2	Organics Prep	Miti Patel	12/14/12 17:05	Extract from JB22822-21.1
JB22822-21.1.2	Miti Patel	Extract Storage	12/14/12 17:05	Return to Storage
JB22822-21.1.2	Extract Storage	Olga Azarihn	12/17/12 13:09	Retrieve from Storage
JB22822-21.1.2	Olga Azarihn	GCMS2M	12/17/12 13:09	Load on Instrument
JB22822-21.1.2	GCMS2M	Olga Azarihn	12/19/12 09:55	Unload from Instrument
JB22822-21.1.2	Olga Azarihn	Extract Freezer	12/19/12 09:55	Return to Storage
JB22822-21.3	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-21.3	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-21.4	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-21.4	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage
JB22822-21.4	Secured Storage	Thien Nguyen	12/07/12 16:54	Retrieve from Storage
JB22822-21.4	Thien Nguyen	GCMSV	12/07/12 16:54	Load on Instrument
JB22822-21.4	GCMSV	Thien Nguyen	12/08/12 12:49	Unload from Instrument
JB22822-21.4	Thien Nguyen	Secured Storage	12/08/12 12:49	Return to Storage
JB22822-21.5	Secured Storage	Jayna Patel	12/05/12 09:37	Retrieve from Storage
JB22822-21.5	Jayna Patel	Secured Storage	12/05/12 10:55	Return to Storage

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: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5654-MB2	V131151.D	1	12/07/12	TDN	n/a	n/a	VV5654

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

JB22822-1, JB22822-2

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	111%	70-130%
17060-07-0	1,2-Dichloroethane-D4	98%	70-122%
2037-26-5	Toluene-D8	116%	81-127%
460-00-4	4-Bromofluorobenzene	102%	66-132%

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5655-MB2	V131187.D	1	12/07/12	TDN	n/a	n/a	VV5655

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

JB22822-4, JB22822-9, JB22822-12, JB22822-21

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	113%	70-130%
17060-07-0	1,2-Dichloroethane-D4	105%	70-122%
2037-26-5	Toluene-D8	117%	81-127%
460-00-4	4-Bromofluorobenzene	101%	66-132%

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8287-MB	D203236.D	1	12/11/12	ET	n/a	n/a	VD8287

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

JB22822-8, JB22822-11

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
17060-07-0	1,2-Dichloroethane-D4	113%	70-122%
2037-26-5	Toluene-D8	98%	81-127%
460-00-4	4-Bromofluorobenzene	101%	66-132%

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8290-MB	D203309.D	1	12/13/12	ET	n/a	n/a	VD8290

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

JB22822-5, JB22822-6, JB22822-7, JB22822-10, JB22822-13, JB22822-14, JB22822-17, JB22822-19

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	115%	70-122%
2037-26-5	Toluene-D8	97%	81-127%
460-00-4	4-Bromofluorobenzene	100%	66-132%

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5660-MB1	V131338.D	1	12/13/12	TDN	n/a	n/a	VV5660

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

JB22822-15, JB22822-18

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	70-122%
2037-26-5	Toluene-D8	109%	81-127%
460-00-4	4-Bromofluorobenzene	99%	66-132%

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8292-MB	D203355.D	1	12/13/12	ET	n/a	n/a	VD8292

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

JB22822-6, JB22822-8, JB22822-16, JB22822-20

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	70-130%
17060-07-0	1,2-Dichloroethane-D4	120%	70-122%
2037-26-5	Toluene-D8	99%	81-127%
460-00-4	4-Bromofluorobenzene	102%	66-132%

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8293-MB	D203378.D	1	12/14/12	ET	n/a	n/a	VD8293

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

JB22822-13

CAS No.	Compound	Result	RL	Units	Q
100-41-4	Ethylbenzene	ND	50	ug/kg	
98-82-8	Isopropylbenzene	ND	250	ug/kg	
91-20-3	Naphthalene	ND	250	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	250	ug/kg	
1330-20-7	Xylene (total)	ND	50	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	90%	70-130%
17060-07-0	1,2-Dichloroethane-D4	107%	70-122%
2037-26-5	Toluene-D8	97%	81-127%
460-00-4	4-Bromofluorobenzene	96%	66-132%

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8297-MB	D203476.D	1	12/17/12	ET	n/a	n/a	VD8297

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

JB22822-13

CAS No.	Compound	Result	RL	Units	Q
95-63-6	1,2,4-Trimethylbenzene	ND	250	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	90%	70-130%
17060-07-0	1,2-Dichloroethane-D4	107%	70-122%
2037-26-5	Toluene-D8	96%	81-127%
460-00-4	4-Bromofluorobenzene	97%	66-132%

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5654-MB1	V131131.D	1	12/06/12	TDN	n/a	n/a	VV5654

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

VV5654-BS, JB22312-10MS, JB22312-10MSD

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	111%	70-130%
17060-07-0	1,2-Dichloroethane-D4	102%	70-122%
2037-26-5	Toluene-D8	116%	81-127%
460-00-4	4-Bromofluorobenzene	100%	66-132%

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

VV5655-BS, JB22940-4MS, JB22940-4MSD

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

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

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

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5660-MB2	V131372.D	1	12/14/12	TDN	n/a	n/a	VV5660

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

JB22876-3MS, JB22876-3MSD

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

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	89%	70-122%
2037-26-5	Toluene-D8	109%	81-127%
460-00-4	4-Bromofluorobenzene	95%	66-132%

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5654-BS	V131132.D	1	12/06/12	TDN	n/a	n/a	VV5654

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

JB22822-1, JB22822-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.8	100	76-117
106-93-4	1,2-Dibromoethane	50	44.6	89	77-122
107-06-2	1,2-Dichloroethane	50	49.6	99	68-134
100-41-4	Ethylbenzene	50	47.3	95	74-119
98-82-8	Isopropylbenzene	50	48.2	96	71-119
1634-04-4	Methyl Tert Butyl Ether	100	100	100	72-124
91-20-3	Naphthalene	50	45.2	90	60-127
108-88-3	Toluene	50	48.6	97	77-121
95-63-6	1,2,4-Trimethylbenzene	50	46.3	93	72-118
108-67-8	1,3,5-Trimethylbenzene	50	45.8	92	69-118
1330-20-7	Xylene (total)	150	139	93	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	113%	70-130%
17060-07-0	1,2-Dichloroethane-D4	103%	70-122%
2037-26-5	Toluene-D8	116%	81-127%
460-00-4	4-Bromofluorobenzene	104%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

JB22822-4, JB22822-9, JB22822-12, JB22822-21

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

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

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8287-BS	D203237.D	1	12/11/12	ET	n/a	n/a	VD8287

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

JB22822-8, JB22822-11

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2560	102	76-117
106-93-4	1,2-Dibromoethane	2500	2530	101	77-122
107-06-2	1,2-Dichloroethane	2500	2930	117	68-134
100-41-4	Ethylbenzene	2500	2590	104	74-119
98-82-8	Isopropylbenzene	2500	2570	103	71-119
1634-04-4	Methyl Tert Butyl Ether	5000	4920	98	72-124
91-20-3	Naphthalene	2500	2280	91	60-127
108-88-3	Toluene	2500	2440	98	77-121
95-63-6	1,2,4-Trimethylbenzene	2500	2590	104	72-118
108-67-8	1,3,5-Trimethylbenzene	2500	2570	103	69-118
1330-20-7	Xylene (total)	7500	7490	100	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	113%	70-122%
2037-26-5	Toluene-D8	100%	81-127%
460-00-4	4-Bromofluorobenzene	99%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8290-BS	D203310.D	1	12/13/12	ET	n/a	n/a	VD8290

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

JB22822-5, JB22822-6, JB22822-7, JB22822-10, JB22822-13, JB22822-14, JB22822-17, JB22822-19

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2480	99	76-117
106-93-4	1,2-Dibromoethane	2500	2490	100	77-122
107-06-2	1,2-Dichloroethane	2500	2880	115	68-134
100-41-4	Ethylbenzene	2500	2520	101	74-119
98-82-8	Isopropylbenzene	2500	2510	100	71-119
1634-04-4	Methyl Tert Butyl Ether	5000	5000	100	72-124
91-20-3	Naphthalene	2500	2670	107	60-127
108-88-3	Toluene	2500	2390	96	77-121
95-63-6	1,2,4-Trimethylbenzene	2500	2500	100	72-118
108-67-8	1,3,5-Trimethylbenzene	2500	2500	100	69-118
1330-20-7	Xylene (total)	7500	7290	97	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	70-130%
17060-07-0	1,2-Dichloroethane-D4	116%	70-122%
2037-26-5	Toluene-D8	99%	81-127%
460-00-4	4-Bromofluorobenzene	100%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VV5660-BS	V131339.D	1	12/13/12	TDN	n/a	n/a	VV5660

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

JB22822-15, JB22822-18

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.1	100	76-117
106-93-4	1,2-Dibromoethane	50	49.7	99	77-122
107-06-2	1,2-Dichloroethane	50	50.5	101	68-134
100-41-4	Ethylbenzene	50	49.1	98	74-119
98-82-8	Isopropylbenzene	50	49.6	99	71-119
1634-04-4	Methyl Tert Butyl Ether	100	96.3	96	72-124
91-20-3	Naphthalene	50	51.1	102	60-127
108-88-3	Toluene	50	50.0	100	77-121
95-63-6	1,2,4-Trimethylbenzene	50	49.2	98	72-118
108-67-8	1,3,5-Trimethylbenzene	50	48.5	97	69-118
1330-20-7	Xylene (total)	150	145	97	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	105%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-122%
2037-26-5	Toluene-D8	110%	81-127%
460-00-4	4-Bromofluorobenzene	102%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8292-BS	D203356.D	1	12/13/12	ET	n/a	n/a	VD8292

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

JB22822-6, JB22822-8, JB22822-16, JB22822-20

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2590	104	76-117
106-93-4	1,2-Dibromoethane	2500	2550	102	77-122
107-06-2	1,2-Dichloroethane	2500	2980	119	68-134
100-41-4	Ethylbenzene	2500	2640	106	74-119
98-82-8	Isopropylbenzene	2500	2560	102	71-119
1634-04-4	Methyl Tert Butyl Ether	5000	5100	102	72-124
91-20-3	Naphthalene	2500	2700	108	60-127
108-88-3	Toluene	2500	2510	100	77-121
95-63-6	1,2,4-Trimethylbenzene	2500	2560	102	72-118
108-67-8	1,3,5-Trimethylbenzene	2500	2540	102	69-118
1330-20-7	Xylene (total)	7500	7570	101	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	117%	70-122%
2037-26-5	Toluene-D8	100%	81-127%
460-00-4	4-Bromofluorobenzene	100%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8293-BS	D203379.D	1	12/14/12	ET	n/a	n/a	VD8293

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

JB22822-13

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
100-41-4	Ethylbenzene	2500	2640	106	74-119
98-82-8	Isopropylbenzene	2500	2620	105	71-119
91-20-3	Naphthalene	2500	2390	96	60-127
108-67-8	1,3,5-Trimethylbenzene	2500	2570	103	69-118
1330-20-7	Xylene (total)	7500	7690	103	76-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	70-130%
17060-07-0	1,2-Dichloroethane-D4	106%	70-122%
2037-26-5	Toluene-D8	97%	81-127%
460-00-4	4-Bromofluorobenzene	96%	66-132%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8297-BS	D203477.D	1	12/17/12	ET	n/a	n/a	VD8297

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

JB22822-13

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
95-63-6	1,2,4-Trimethylbenzene	2500	2620	105	72-118

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	93%	70-130%
17060-07-0	1,2-Dichloroethane-D4	109%	70-122%
2037-26-5	Toluene-D8	99%	81-127%
460-00-4	4-Bromofluorobenzene	98%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22312-10MS	V131145.D	1	12/06/12	TDN	n/a	n/a	VV5654
JB22312-10MSD	V131146.D	1	12/06/12	TDN	n/a	n/a	VV5654
JB22312-10	V131139.D	1	12/06/12	TDN	n/a	n/a	VV5654

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

JB22822-1, JB22822-2

CAS No.	Compound	JB22312-10 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		56.2	67.6	120	63.6	113	6	44-130/21
106-93-4	1,2-Dibromoethane	ND		56.2	50.2	89	46.8	83	7	41-139/21
107-06-2	1,2-Dichloroethane	ND		56.2	57.7	103	54.4	97	6	43-139/19
100-41-4	Ethylbenzene	ND		56.2	67.3	120	64.2	114	5	29-137/25
98-82-8	Isopropylbenzene	ND		56.2	68.8	122	67.4	120	2	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		56.2	54.9	98	52.3	93	5	51-128/20
91-20-3	Naphthalene	ND		56.2	45.1	80	47.6	85	5	10-152/31
108-88-3	Toluene	ND		56.2	67.2	120	64.4	115	4	40-135/22
95-63-6	1,2,4-Trimethylbenzene	ND		56.2	66.0	117	64.3	114	3	17-142/28
108-67-8	1,3,5-Trimethylbenzene	ND		56.2	66.8	119	65.6	117	2	20-140/27
1330-20-7	Xylene (total)	ND		169	201	119	190	113	6	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22312-10	Limits
1868-53-7	Dibromofluoromethane	104%	103%	114%	70-130%
17060-07-0	1,2-Dichloroethane-D4	85%	87%	102%	70-122%
2037-26-5	Toluene-D8	117%	117%	115%	81-127%
460-00-4	4-Bromofluorobenzene	104%	101%	101%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

JB22822-4, JB22822-9, JB22822-12, JB22822-21

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

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22953-1MS	D203248.D	1	12/11/12	ET	n/a	n/a	VD8287
JB22953-1MSD	D203249.D	1	12/11/12	ET	n/a	n/a	VD8287
JB22953-1	D203251.D	1	12/11/12	ET	n/a	n/a	VD8287

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

JB22822-8, JB22822-11

CAS No.	Compound	JB22953-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3220	3000	93	3100	96	3	44-130/21
106-93-4	1,2-Dibromoethane	ND		3220	2950	92	3030	94	3	41-139/21
107-06-2	1,2-Dichloroethane	ND		3220	3370	105	3460	108	3	43-139/19
100-41-4	Ethylbenzene	ND		3220	3070	95	3150	98	3	29-137/25
98-82-8	Isopropylbenzene	ND		3220	3140	98	3250	101	3	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		3220	2970	92	2960	92	0	51-128/20
91-20-3	Naphthalene	ND		3220	2830	88	3090	96	9	10-152/31
108-88-3	Toluene	ND		3220	2880	90	3000	93	4	40-135/22
95-63-6	1,2,4-Trimethylbenzene	ND		3220	3120	97	3240	101	4	17-142/28
108-67-8	1,3,5-Trimethylbenzene	ND		3220	3140	98	3240	101	3	20-140/27
1330-20-7	Xylene (total)	ND		9650	8880	92	9130	95	3	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22953-1	Limits
1868-53-7	Dibromofluoromethane	96%	94%	95%	70-130%
17060-07-0	1,2-Dichloroethane-D4	112%	111%	114%	70-122%
2037-26-5	Toluene-D8	98%	98%	98%	81-127%
460-00-4	4-Bromofluorobenzene	99%	101%	101%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22953-9MS	D203311.D	1	12/13/12	ET	n/a	n/a	VD8290
JB22953-9MSD	D203312.D	1	12/13/12	ET	n/a	n/a	VD8290
JB22953-9	D203314.D	1	12/13/12	ET	n/a	n/a	VD8290

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

JB22822-5, JB22822-6, JB22822-7, JB22822-10, JB22822-13, JB22822-14, JB22822-17, JB22822-19

CAS No.	Compound	JB22953-9 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3340	3440	103	3360	101	2	44-130/21
106-93-4	1,2-Dibromoethane	ND		3340	3410	102	3350	100	2	41-139/21
107-06-2	1,2-Dichloroethane	ND		3340	3870	116	3790	113	2	43-139/19
100-41-4	Ethylbenzene	ND		3340	3510	105	3400	102	3	29-137/25
98-82-8	Isopropylbenzene	ND		3340	3480	104	3430	103	1	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		3340	3400	102	3340	100	2	51-128/20
91-20-3	Naphthalene	ND		3340	3590	107	3530	106	2	10-152/31
108-88-3	Toluene	ND		3340	3340	100	3250	97	3	40-135/22
95-63-6	1,2,4-Trimethylbenzene	ND		3340	3370	101	3330	100	1	17-142/28
108-67-8	1,3,5-Trimethylbenzene	ND		3340	3470	104	3400	102	2	20-140/27
1330-20-7	Xylene (total)	ND		10000	10200	102	9870	98	3	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22953-9	Limits
1868-53-7	Dibromofluoromethane	97%	96%	96%	70-130%
17060-07-0	1,2-Dichloroethane-D4	114%	115%	117%	70-122%
2037-26-5	Toluene-D8	98%	99%	98%	81-127%
460-00-4	4-Bromofluorobenzene	99%	100%	101%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22822-20MS	D203357.D	1	12/14/12	ET	n/a	n/a	VD8292
JB22822-20MSD	D203358.D	1	12/14/12	ET	n/a	n/a	VD8292
JB22822-20	D203360.D	1	12/14/12	ET	n/a	n/a	VD8292

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

JB22822-6, JB22822-8, JB22822-16, JB22822-20

CAS No.	Compound	JB22822-20 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1830		2780	4230	86	4190	85	1	44-130/21
106-93-4	1,2-Dibromoethane	ND		2780	2690	97	2680	96	0	41-139/21
107-06-2	1,2-Dichloroethane	ND		2780	3140	113	3150	113	0	43-139/19
100-41-4	Ethylbenzene	191		2780	2980	100	2890	97	3	29-137/25
98-82-8	Isopropylbenzene	720		2780	3190	89	3170	88	1	27-138/26
1634-04-4	Methyl Tert Butyl Ether	ND		2780	2750	99	2730	98	1	51-128/20
91-20-3	Naphthalene	500		2780	2980	89	2990	89	0	10-152/31
108-88-3	Toluene	261		2780	2900	95	2810	92	3	40-135/22
95-63-6	1,2,4-Trimethylbenzene	291		2780	2860	92	2820	91	1	17-142/28
108-67-8	1,3,5-Trimethylbenzene	105		2780	2730	94	2710	94	1	20-140/27
1330-20-7	Xylene (total)	407		8350	8390	96	8200	93	2	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22822-20	Limits
1868-53-7	Dibromofluoromethane	96%	96%	96%	70-130%
17060-07-0	1,2-Dichloroethane-D4	116%	116%	118%	70-122%
2037-26-5	Toluene-D8	100%	100%	100%	81-127%
460-00-4	4-Bromofluorobenzene	97%	99%	104%	66-132%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB22876-3MS	V131373.D	1	12/14/12	TDN	n/a	n/a	VV5660
JB22876-3MSD	V131374.D	1	12/14/12	TDN	n/a	n/a	VV5660
JB22876-3	V131353.D	1	12/13/12	TDN	n/a	n/a	VV5660

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

JB22822-15, JB22822-18

CAS No.	Compound	JB22876-3 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		52.9	52.9	100	44.0	83	18	44-130/21
106-93-4	1,2-Dibromoethane	ND		52.9	52.0	98	41.5	79	22* [a]	41-139/21
107-06-2	1,2-Dichloroethane	ND		52.9	51.7	98	42.9	81	19	43-139/19
100-41-4	Ethylbenzene	ND		52.9	53.8	102	45.2	86	17	29-137/25
98-82-8	Isopropylbenzene	ND		52.9	54.3	103	47.3	89	14	27-138/26
1634-04-4	Methyl Tert Butyl Ether	14.6		52.9	55.0	76	46.1	60	18	51-128/20
91-20-3	Naphthalene	2.8		52.9	51.1	91	47.1	84	8	10-152/31
108-88-3	Toluene	0.74		52.9	53.3	99	46.3	86	14	40-135/22
95-63-6	1,2,4-Trimethylbenzene	0.95		52.9	56.3	105	49.9	93	12	17-142/28
108-67-8	1,3,5-Trimethylbenzene	0.24		52.9	55.3	104	48.6	91	13	20-140/27
1330-20-7	Xylene (total)	0.49		159	163	102	139	87	16	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB22876-3	Limits
1868-53-7	Dibromofluoromethane	98%	99%	104%	70-130%
17060-07-0	1,2-Dichloroethane-D4	86%	82%	91%	70-122%
2037-26-5	Toluene-D8	108%	110%	108%	81-127%
460-00-4	4-Bromofluorobenzene	101%	98%	98%	66-132%

(a) Outside control limits due to matrix interference.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB23763-1MS	D203388.D	1	12/14/12	ET	n/a	n/a	VD8293
JB23763-1MSD	D203389.D	1	12/14/12	ET	n/a	n/a	VD8293
JB23763-1 [a]	D203383.D	1	12/14/12	ET	n/a	n/a	VD8293

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

JB22822-13

CAS No.	Compound	JB23763-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
100-41-4	Ethylbenzene	39800		60100	84900	75	82400	71	3	29-137/25
98-82-8	Isopropylbenzene	6790		60100	57700	85	57200	84	1	27-138/26
91-20-3	Naphthalene	ND		60100	350000	583*	335000	558*	4	10-152/31
108-67-8	1,3,5-Trimethylbenzene	ND		60100	61800	103	61600	103	0	20-140/27
1330-20-7	Xylene (total)	21000		180000	178000	87	174000	85	2	28-139/25

CAS No.	Surrogate Recoveries	MS	MSD	JB23763-1	Limits
1868-53-7	Dibromofluoromethane	94%	93%	92%	70-130%
17060-07-0	1,2-Dichloroethane-D4	108%	105%	107%	70-122%
2037-26-5	Toluene-D8	98%	98%	98%	81-127%
460-00-4	4-Bromofluorobenzene	94%	94%	95%	66-132%

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB23096-6MS	D203484.D	1	12/17/12	ET	n/a	n/a	VD8297
JB23096-6MSD	D203485.D	1	12/17/12	ET	n/a	n/a	VD8297
JB23096-6	D203487.D	1	12/17/12	ET	n/a	n/a	VD8297

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

JB22822-13

CAS No.	Compound	JB23096-6 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
95-63-6	1,2,4-Trimethylbenzene	945		4230	4560	86	4810	91	5	17-142/28

CAS No.	Surrogate Recoveries	MS	MSD	JB23096-6	Limits
1868-53-7	Dibromofluoromethane	93%	94%	91%	70-130%
17060-07-0	1,2-Dichloroethane-D4	106%	106%	107%	70-122%
2037-26-5	Toluene-D8	98%	97%	98%	81-127%
460-00-4	4-Bromofluorobenzene	94%	95%	95%	66-132%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

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

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

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

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8287-BFB
Lab File ID: D203233.D
Instrument ID: GCMSD
Injection Date: 12/11/12
Injection Time: 09:43

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10885	21.9		Pass
75	30.0 - 60.0% of mass 95	26336	52.9		Pass
95	Base peak, 100% relative abundance	49752	100.0		Pass
96	5.0 - 9.0% of mass 95	3407	6.85		Pass
173	Less than 2.0% of mass 174	242	0.49	(0.59) [a]	Pass
174	50.0 - 120.0% of mass 95	40960	82.3		Pass
175	5.0 - 9.0% of mass 174	3155	6.34	(7.70) [a]	Pass
176	95.0 - 101.0% of mass 174	39605	79.6	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	2613	5.25	(6.60) [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
VD8287-CC8248	D203234.D	12/11/12	10:13	00:30	Continuing cal 20
VD8287-MB	D203236.D	12/11/12	11:19	01:36	Method Blank
VD8287-BS	D203237.D	12/11/12	11:48	02:05	Blank Spike
ZZZZZZ	D203240.D	12/11/12	13:16	03:33	(unrelated sample)
ZZZZZZ	D203241.D	12/11/12	13:45	04:02	(unrelated sample)
ZZZZZZ	D203242.D	12/11/12	14:15	04:32	(unrelated sample)
ZZZZZZ	D203243.D	12/11/12	14:44	05:01	(unrelated sample)
ZZZZZZ	D203244.D	12/11/12	15:14	05:31	(unrelated sample)
JB22822-8	D203245.D	12/11/12	15:44	06:01	BH-12-106_1-1.5'
ZZZZZZ	D203246.D	12/11/12	16:13	06:30	(unrelated sample)
JB22822-11	D203247.D	12/11/12	16:43	07:00	BH-12-111_1-1.5'
JB22953-1MS	D203248.D	12/11/12	17:12	07:29	Matrix Spike
JB22953-1MSD	D203249.D	12/11/12	17:41	07:58	Matrix Spike Duplicate
JB22953-1	D203251.D	12/11/12	18:40	08:57	(used for QC only; not part of job JB22822)
ZZZZZZ	D203252.D	12/11/12	19:09	09:26	(unrelated sample)
ZZZZZZ	D203253.D	12/11/12	19:38	09:55	(unrelated sample)
ZZZZZZ	D203254.D	12/11/12	20:08	10:25	(unrelated sample)
ZZZZZZ	D203255.D	12/11/12	20:37	10:54	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8290-BFB
Lab File ID: D203306.D
Instrument ID: GCMSD
Injection Date: 12/12/12
Injection Time: 22:34

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10994	21.7		Pass
75	30.0 - 60.0% of mass 95	26840	52.9		Pass
95	Base peak, 100% relative abundance	50770	100.0		Pass
96	5.0 - 9.0% of mass 95	3647	7.18		Pass
173	Less than 2.0% of mass 174	263	0.52	(0.62) [a]	Pass
174	50.0 - 120.0% of mass 95	42330	83.4		Pass
175	5.0 - 9.0% of mass 174	3179	6.26	(7.51) [a]	Pass
176	95.0 - 101.0% of mass 174	41453	81.6	(97.9) [a]	Pass
177	5.0 - 9.0% of mass 176	2648	5.22	(6.39) [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
VD8290-CC8248	D203307.D	12/12/12	23:03	00:29	Continuing cal 50
VD8290-MB	D203309.D	12/13/12	00:01	01:27	Method Blank
VD8290-BS	D203310.D	12/13/12	00:30	01:56	Blank Spike
JB22953-9MS	D203311.D	12/13/12	01:00	02:26	Matrix Spike
JB22953-9MSD	D203312.D	12/13/12	01:29	02:55	Matrix Spike Duplicate
JB22953-9	D203314.D	12/13/12	02:27	03:53	(used for QC only; not part of job JB22822)
ZZZZZZ	D203315.D	12/13/12	02:57	04:23	(unrelated sample)
ZZZZZZ	D203316.D	12/13/12	03:26	04:52	(unrelated sample)
JB22822-5	D203317.D	12/13/12	03:55	05:21	BH-12-110_3-3.5'
JB22822-6	D203318.D	12/13/12	04:24	05:50	BH-12-108_1'
JB22822-7	D203319.D	12/13/12	04:53	06:19	BH-12-105_2-2.5'
JB22822-10	D203321.D	12/13/12	05:52	07:18	BH-12-111_0.5-1'
JB22822-14	D203322.D	12/13/12	06:21	07:47	BH-12-114_3-3.5'
JB22822-13	D203323.D	12/13/12	06:50	08:16	BH-12-108_2-2.5'
JB22822-17	D203325.D	12/13/12	07:49	09:15	BH-12-116_3.5'
JB22822-19	D203326.D	12/13/12	08:18	09:44	BH-12-117_2-2.5'

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8292-BFB
Lab File ID: D203352.D
Instrument ID: GCMSD
Injection Date: 12/13/12
Injection Time: 21:42

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10656	22.0		Pass
75	30.0 - 60.0% of mass 95	25336	52.3		Pass
95	Base peak, 100% relative abundance	48418	100.0		Pass
96	5.0 - 9.0% of mass 95	3455	7.14		Pass
173	Less than 2.0% of mass 174	253	0.52	(0.67) [a]	Pass
174	50.0 - 120.0% of mass 95	37760	78.0		Pass
175	5.0 - 9.0% of mass 174	2806	5.80	(7.43) [a]	Pass
176	95.0 - 101.0% of mass 174	36898	76.2	(97.7) [a]	Pass
177	5.0 - 9.0% of mass 176	2387	4.93	(6.47) [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
VD8292-CC8248	D203353.D	12/13/12	22:11	00:29	Continuing cal 50
VD8292-MB	D203355.D	12/13/12	23:10	01:28	Method Blank
VD8292-BS	D203356.D	12/13/12	23:39	01:57	Blank Spike
JB22822-20MS	D203357.D	12/14/12	00:08	02:26	Matrix Spike
JB22822-20MSD	D203358.D	12/14/12	00:38	02:56	Matrix Spike Duplicate
JB22822-20	D203360.D	12/14/12	01:36	03:54	BH-12-122_2.5-3'
JB22822-6	D203361.D	12/14/12	02:06	04:24	BH-12-108_1'
ZZZZZZ	D203363.D	12/14/12	03:04	05:22	(unrelated sample)
ZZZZZZ	D203364.D	12/14/12	03:33	05:51	(unrelated sample)
ZZZZZZ	D203365.D	12/14/12	04:03	06:21	(unrelated sample)
ZZZZZZ	D203366.D	12/14/12	04:32	06:50	(unrelated sample)
JB22822-8	D203367.D	12/14/12	05:01	07:19	BH-12-106_1-1.5'
JB22822-16	D203368.D	12/14/12	05:30	07:48	BH-12-109_3'
ZZZZZZ	D203369.D	12/14/12	06:00	08:18	(unrelated sample)
ZZZZZZ	D203370.D	12/14/12	06:29	08:47	(unrelated sample)
ZZZZZZ	D203373.D	12/14/12	07:57	10:15	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8293-BFB
Lab File ID: D203374.D
Instrument ID: GCMSD
Injection Date: 12/14/12
Injection Time: 11:04

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	9698	21.8		Pass
75	30.0 - 60.0% of mass 95	23776	53.4		Pass
95	Base peak, 100% relative abundance	44504	100.0		Pass
96	5.0 - 9.0% of mass 95	2967	6.67		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	36858	82.8		Pass
175	5.0 - 9.0% of mass 174	2740	6.16	(7.43) [a]	Pass
176	95.0 - 101.0% of mass 174	36301	81.6	(98.5) [a]	Pass
177	5.0 - 9.0% of mass 176	2284	5.13	(6.29) [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
VD8293-CC8248	D203376.D	12/14/12	12:29	01:25	Continuing cal 20
VD8293-MB	D203378.D	12/14/12	13:33	02:29	Method Blank
VD8293-BS	D203379.D	12/14/12	14:02	02:58	Blank Spike
ZZZZZZ	D203381.D	12/14/12	15:12	04:08	(unrelated sample)
ZZZZZZ	D203382.D	12/14/12	15:45	04:41	(unrelated sample)
JB23763-1	D203383.D	12/14/12	16:14	05:10	(used for QC only; not part of job JB22822)
ZZZZZZ	D203384.D	12/14/12	16:44	05:40	(unrelated sample)
ZZZZZZ	D203385.D	12/14/12	17:13	06:09	(unrelated sample)
ZZZZZZ	D203386.D	12/14/12	17:42	06:38	(unrelated sample)
ZZZZZZ	D203387.D	12/14/12	19:10	08:06	(unrelated sample)
JB23763-1MS	D203388.D	12/14/12	19:39	08:35	Matrix Spike
JB23763-1MSD	D203389.D	12/14/12	20:09	09:05	Matrix Spike Duplicate
ZZZZZZ	D203391.D	12/14/12	21:08	10:04	(unrelated sample)
JB22822-13	D203392.D	12/14/12	21:37	10:33	BH-12-108_2-2.5'
ZZZZZZ	D203394.D	12/14/12	22:36	11:32	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VD8297-BFB
Lab File ID: D203472.D
Instrument ID: GCMSD
Injection Date: 12/17/12
Injection Time: 08:35

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	16867	21.8		Pass
75	30.0 - 60.0% of mass 95	40208	52.1		Pass
95	Base peak, 100% relative abundance	77226	100.0		Pass
96	5.0 - 9.0% of mass 95	5131	6.64		Pass
173	Less than 2.0% of mass 174	415	0.54	(0.62) [a]	Pass
174	50.0 - 120.0% of mass 95	67418	87.3		Pass
175	5.0 - 9.0% of mass 174	4993	6.47	(7.41) [a]	Pass
176	95.0 - 101.0% of mass 174	65778	85.2	(97.6) [a]	Pass
177	5.0 - 9.0% of mass 176	4289	5.55	(6.52) [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
VD8297-CC8248	D203474.D	12/17/12	09:43	01:08	Continuing cal 20
VD8297-MB	D203476.D	12/17/12	10:59	02:24	Method Blank
VD8297-BS	D203477.D	12/17/12	11:38	03:03	Blank Spike
JB22822-13	D203478.D	12/17/12	12:15	03:40	BH-12-108_2-2.5'
ZZZZZZ	D203479.D	12/17/12	12:44	04:09	(unrelated sample)
ZZZZZZ	D203480.D	12/17/12	13:13	04:38	(unrelated sample)
ZZZZZZ	D203481.D	12/17/12	13:43	05:08	(unrelated sample)
ZZZZZZ	D203482.D	12/17/12	14:12	05:37	(unrelated sample)
ZZZZZZ	D203483.D	12/17/12	14:41	06:06	(unrelated sample)
JB23096-6MS	D203484.D	12/17/12	15:11	06:36	Matrix Spike
JB23096-6MSD	D203485.D	12/17/12	15:40	07:05	Matrix Spike Duplicate
JB23096-6	D203487.D	12/17/12	16:39	08:04	(used for QC only; not part of job JB22822)
ZZZZZZ	D203488.D	12/17/12	17:08	08:33	(unrelated sample)
ZZZZZZ	D203489.D	12/17/12	17:38	09:03	(unrelated sample)
ZZZZZZ	D203490.D	12/17/12	18:07	09:32	(unrelated sample)
ZZZZZZ	D203491.D	12/17/12	18:36	10:01	(unrelated sample)
ZZZZZZ	D203492.D	12/17/12	19:06	10:31	(unrelated sample)
ZZZZZZ	D203493.D	12/17/12	19:35	11:00	(unrelated sample)
ZZZZZZ	D203494.D	12/17/12	20:05	11:30	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

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

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

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

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5654-BFB
Lab File ID: V131127.D
Instrument ID: GCMSV
Injection Date: 12/06/12
Injection Time: 08:36

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6918	18.5		Pass
75	30.0 - 60.0% of mass 95	17925	47.9		Pass
95	Base peak, 100% relative abundance	37424	100.0		Pass
96	5.0 - 9.0% of mass 95	2510	6.71		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	32352	86.4		Pass
175	5.0 - 9.0% of mass 174	2473	6.61	(7.64) [a]	Pass
176	95.0 - 101.0% of mass 174	31341	83.7	(96.9) [a]	Pass
177	5.0 - 9.0% of mass 176	2316	6.19	(7.39) [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
VV5654-CC5649	V131129.D	12/06/12	10:46	02:10	Continuing cal 20
VV5654-MB1	V131131.D	12/06/12	11:50	03:14	Method Blank
VV5654-BS	V131132.D	12/06/12	12:28	03:52	Blank Spike
ZZZZZZ	V131134.D	12/06/12	14:13	05:37	(unrelated sample)
ZZZZZZ	V131135.D	12/06/12	14:44	06:08	(unrelated sample)
ZZZZZZ	V131136.D	12/06/12	15:15	06:39	(unrelated sample)
ZZZZZZ	V131137.D	12/06/12	15:46	07:10	(unrelated sample)
ZZZZZZ	V131138.D	12/06/12	16:17	07:41	(unrelated sample)
JB22312-10	V131139.D	12/06/12	16:48	08:12	(used for QC only; not part of job JB22822)
ZZZZZZ	V131140.D	12/06/12	17:19	08:43	(unrelated sample)
ZZZZZZ	V131141.D	12/06/12	17:50	09:14	(unrelated sample)
ZZZZZZ	V131142.D	12/06/12	18:21	09:45	(unrelated sample)
ZZZZZZ	V131143.D	12/06/12	18:52	10:16	(unrelated sample)
ZZZZZZ	V131144.D	12/06/12	19:23	10:47	(unrelated sample)
JB22312-10MS	V131145.D	12/06/12	19:53	11:17	Matrix Spike
JB22312-10MSD	V131146.D	12/06/12	20:24	11:48	Matrix Spike Duplicate

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5654-BFB2 **Injection Date:** 12/06/12
Lab File ID: V131148.D **Injection Time:** 21:26
Instrument ID: GCMSV

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8481	19.0		Pass
75	30.0 - 60.0% of mass 95	21709	48.7		Pass
95	Base peak, 100% relative abundance	44578	100.0		Pass
96	5.0 - 9.0% of mass 95	2768	6.21		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	38965	87.4		Pass
175	5.0 - 9.0% of mass 174	2971	6.66	(7.62) [a]	Pass
176	95.0 - 101.0% of mass 174	37330	83.7	(95.8) [a]	Pass
177	5.0 - 9.0% of mass 176	2475	5.55	(6.63) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV5654-CC5649	V131149.D	12/06/12	21:57	00:31	Continuing cal 50
VV5654-MB2	V131151.D	12/07/12	00:00	02:34	Method Blank
ZZZZZZ	V131153.D	12/07/12	01:02	03:36	(unrelated sample)
ZZZZZZ	V131154.D	12/07/12	01:33	04:07	(unrelated sample)
ZZZZZZ	V131155.D	12/07/12	02:04	04:38	(unrelated sample)
JB22822-1	V131159.D	12/07/12	02:35	05:09	BH-12-112_0.5-1'
JB22822-2	V131160.D	12/07/12	03:05	05:39	BH-12-107_1-1.5'
ZZZZZZ	V131161.D	12/07/12	03:36	06:10	(unrelated sample)
ZZZZZZ	V131163.D	12/07/12	04:38	07:12	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV5655-CC5649	V131166.D	12/07/12	09:29	01:14	Continuing cal 20
VV5655-MB1	V131168.D	12/07/12	10:43	02:28	Method Blank
VV5655-BS	V131169.D	12/07/12	12:02	03:47	Blank Spike
ZZZZZZ	V131171.D	12/07/12	13:34	05:19	(unrelated sample)
ZZZZZZ	V131172.D	12/07/12	14:05	05:50	(unrelated sample)
ZZZZZZ	V131173.D	12/07/12	14:36	06:21	(unrelated sample)
ZZZZZZ	V131174.D	12/07/12	15:06	06:51	(unrelated sample)
JB22940-4	V131175.D	12/07/12	15:37	07:22	(used for QC only; not part of job JB22822)
ZZZZZZ	V131177.D	12/07/12	17:12	08:57	(unrelated sample)
ZZZZZZ	V131179.D	12/07/12	18:27	10:12	(unrelated sample)
ZZZZZZ	V131180.D	12/07/12	18:58	10:43	(unrelated sample)
JB22940-4MS	V131181.D	12/07/12	19:29	11:14	Matrix Spike
JB22940-4MSD	V131182.D	12/07/12	19:59	11:44	Matrix Spike Duplicate

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5655-BFB2 **Injection Date:** 12/07/12
Lab File ID: V131184.D **Injection Time:** 21:01
Instrument ID: GCMSV

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8217	18.7		Pass
75	30.0 - 60.0% of mass 95	21040	48.0		Pass
95	Base peak, 100% relative abundance	43834	100.0		Pass
96	5.0 - 9.0% of mass 95	2977	6.79		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	38421	87.7		Pass
175	5.0 - 9.0% of mass 174	2945	6.72	(7.67) [a]	Pass
176	95.0 - 101.0% of mass 174	36714	83.8	(95.6) [a]	Pass
177	5.0 - 9.0% of mass 176	2581	5.89	(7.03) [b]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VV5655-CC5649	V131185.D	12/07/12	21:32	00:31	Continuing cal 50
VV5655-MB2	V131187.D	12/07/12	23:35	02:34	Method Blank
JB22822-4	V131188.D	12/08/12	00:06	03:05	BH-12-107_2.5-3'
JB22822-9	V131189.D	12/08/12	00:37	03:36	BH-12-106_2-2.5'
JB22822-12	V131191.D	12/08/12	01:38	04:37	BH-12-115_1-2'
JB22822-21	V131193.D	12/08/12	02:40	05:39	BH-12-121_2-2.5'

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5660-BFB
Lab File ID: V131334.D
Instrument ID: GCMSV
Injection Date: 12/13/12
Injection Time: 08:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	6314	16.4		Pass
75	30.0 - 60.0% of mass 95	17813	46.3		Pass
95	Base peak, 100% relative abundance	38480	100.0		Pass
96	5.0 - 9.0% of mass 95	2563	6.66		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	35160	91.4		Pass
175	5.0 - 9.0% of mass 174	2558	6.65	(7.28) [a]	Pass
176	95.0 - 101.0% of mass 174	34610	89.9	(98.4) [a]	Pass
177	5.0 - 9.0% of mass 176	2344	6.09	(6.77) [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
VV5660-CC5649	V131336.D	12/13/12	09:47	01:17	Continuing cal 20
VV5660-MB1	V131338.D	12/13/12	10:58	02:28	Method Blank
VV5660-BS	V131339.D	12/13/12	11:30	03:00	Blank Spike
ZZZZZZ	V131341.D	12/13/12	12:38	04:08	(unrelated sample)
ZZZZZZ	V131342.D	12/13/12	13:09	04:39	(unrelated sample)
ZZZZZZ	V131343.D	12/13/12	13:40	05:10	(unrelated sample)
ZZZZZZ	V131344.D	12/13/12	14:11	05:41	(unrelated sample)
ZZZZZZ	V131345.D	12/13/12	14:42	06:12	(unrelated sample)
ZZZZZZ	V131346.D	12/13/12	15:13	06:43	(unrelated sample)
ZZZZZZ	V131347.D	12/13/12	15:44	07:14	(unrelated sample)
ZZZZZZ	V131348.D	12/13/12	16:14	07:44	(unrelated sample)
ZZZZZZ	V131349.D	12/13/12	16:55	08:25	(unrelated sample)
JB22822-15	V131350.D	12/13/12	17:26	08:56	BH-12-114_1-1.5'
JB22822-18	V131351.D	12/13/12	18:05	09:35	BH-12-122_1-1.5'
JB22876-3	V131353.D	12/13/12	19:06	10:36	(used for QC only; not part of job JB22822)
ZZZZZZ	V131354.D	12/13/12	19:37	11:07	(unrelated sample)

Instrument Performance Check (BFB)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: VV5660-BFB
Lab File ID: V131368.D
Instrument ID: GCMSV
Injection Date: 12/14/12
Injection Time: 08:16

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	5132	16.3		Pass
75	30.0 - 60.0% of mass 95	14808	47.2		Pass
95	Base peak, 100% relative abundance	31400	100.0		Pass
96	5.0 - 9.0% of mass 95	2228	7.10		Pass
173	Less than 2.0% of mass 174	135	0.43	(0.50) [a]	Pass
174	50.0 - 120.0% of mass 95	26864	85.6		Pass
175	5.0 - 9.0% of mass 174	2193	6.98	(8.16) [a]	Pass
176	95.0 - 101.0% of mass 174	26021	82.9	(96.9) [a]	Pass
177	5.0 - 9.0% of mass 176	1763	5.61	(6.78) [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
VV5660-CC5649	V131370.D	12/14/12	09:41	01:25	Continuing cal 20
VV5660-MB2	V131372.D	12/14/12	11:05	02:49	Method Blank
JB22876-3MS	V131373.D	12/14/12	11:57	03:41	Matrix Spike
JB22876-3MSD	V131374.D	12/14/12	12:28	04:12	Matrix Spike Duplicate
VV5661-MB1	V131376.D	12/14/12	14:22	06:06	Method Blank
VV5661-BS	V131377.D	12/14/12	14:59	06:43	Blank Spike
JB23724-2	V131379.D	12/14/12	16:02	07:46	(used for QC only; not part of job JB22822)
JB23724-3	V131380.D	12/14/12	16:33	08:17	(used for QC only; not part of job JB22822)
ZZZZZZ	V131381.D	12/14/12	17:04	08:48	(unrelated sample)
JB23724-2MS	V131382.D	12/14/12	17:35	09:19	Matrix Spike
JB23724-3DUP	V131384.D	12/14/12	18:36	10:20	Duplicate
ZZZZZZ	V131385.D	12/14/12	19:07	10:51	(unrelated sample)
ZZZZZZ	V131386.D	12/14/12	19:38	11:22	(unrelated sample)

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8287-CC8248	**Injection Date:**	12/11/12
Lab File ID:	D203234.D	**Injection Time:**	10:13
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	74366	8.02	130866	10.26	193839	11.18	182262	14.52	110010	17.10
Upper Limit [a]	148732	8.52	261732	10.76	387678	11.68	364524	15.02	220020	17.60
Lower Limit [b]	37183	7.52	65433	9.76	96920	10.68	91131	14.02	55005	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
VD8287-MB	73897	8.04	126785	10.26	189524	11.18	178938	14.52	105736	17.10
VD8287-BS	70382	8.02	129792	10.26	194134	11.18	183027	14.52	111073	17.10
ZZZZZZ	65391	8.04	124525	10.26	182812	11.17	167535	14.52	112204	17.10
ZZZZZZ	73887	8.03	132265	10.26	198876	11.18	185924	14.52	117475	17.10
ZZZZZZ	77122	8.02	139204	10.26	208594	11.18	194494	14.52	114336	17.10
ZZZZZZ	63102	8.03	135660	10.26	204234	11.18	193467	14.52	113684	17.10
ZZZZZZ	68756	8.02	133750	10.26	202863	11.17	190622	14.52	111413	17.10
JB22822-8	78833	8.03	134053	10.26	201454	11.18	185516	14.52	111204	17.10
ZZZZZZ	75833	8.02	136704	10.26	206643	11.17	194712	14.52	112926	17.10
JB22822-11 [c]	82559	8.03	134391	10.26	202960	11.18	188716	14.52	119186	17.10
JB22953-1MS	68358	8.04	133997	10.26	203630	11.17	190596	14.52	114385	17.10
JB22953-1MSD	73437	8.03	135968	10.26	204488	11.18	190421	14.52	112158	17.10
JB22953-1	70761	8.03	129111	10.26	194161	11.17	181416	14.52	107187	17.10
ZZZZZZ	71250	8.03	125696	10.26	190149	11.17	178676	14.52	106265	17.10
ZZZZZZ	65725	8.04	122245	10.26	183738	11.18	174449	14.52	102986	17.10
ZZZZZZ	69914	8.03	122573	10.26	183488	11.17	174531	14.52	102672	17.10
ZZZZZZ	67811	8.03	118990	10.26	181439	11.18	171080	14.52	101425	17.10

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8290-CC8248	**Injection Date:**	12/12/12
Lab File ID:	D203307.D	**Injection Time:**	23:03
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	63983	8.03	125643	10.26	189814	11.18	181713	14.51	112739	17.10
Upper Limit [a]	127966	8.53	251286	10.76	379628	11.68	363426	15.01	225478	17.60
Lower Limit [b]	31992	7.53	62822	9.76	94907	10.68	90857	14.01	56370	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
VD8290-MB	66975	8.03	120493	10.25	182432	11.17	173030	14.51	103791	17.10
VD8290-BS	78017	8.02	122668	10.26	188314	11.18	178578	14.51	108433	17.10
JB22953-9MS	73499	8.02	124006	10.26	189758	11.18	177010	14.52	108794	17.10
JB22953-9MSD	72194	8.03	123536	10.26	189168	11.17	177467	14.52	106570	17.10
JB22953-9	62705	8.03	117987	10.26	179780	11.18	169541	14.51	99763	17.10
ZZZZZZ	62633	8.03	119040	10.26	179979	11.18	170235	14.51	99380	17.10
ZZZZZZ	68057	8.03	116784	10.26	176751	11.17	168638	14.52	98964	17.10
JB22822-5 [c]	68287	8.02	116008	10.26	178131	11.18	168848	14.52	109747	17.10
JB22822-6	76914	8.02	126728	10.26	193121	11.17	183025	14.51	115908	17.10
JB22822-7 [c]	76264	8.02	128764	10.26	192902	11.18	176587	14.52	120130	17.10
JB22822-10 [c]	78940	8.02	126251	10.26	192241	11.18	182138	14.51	113947	17.10
JB22822-14 [c]	80028	8.03	126906	10.26	192647	11.17	180120	14.51	107761	17.10
JB22822-13	74046	8.03	131500	10.26	198297	11.17	196174	14.52	117533	17.11
JB22822-17 [c]	78285	8.03	125171	10.26	192324	11.17	179629	14.51	109765	17.10
JB22822-19 [c]	78894	8.03	124734	10.26	190912	11.17	182611	14.51	108039	17.10

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8292-CC8248	**Injection Date:**	12/13/12
Lab File ID:	D203353.D	**Injection Time:**	22:11
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	79999	8.03	118537	10.26	182019	11.18	172614	14.52	103802	17.10
Upper Limit [a]	159998	8.53	237074	10.76	364038	11.68	345228	15.02	207604	17.60
Lower Limit [b]	40000	7.53	59269	9.76	91010	10.68	86307	14.02	51901	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
VD8292-MB	69863	8.04	111035	10.26	169364	11.17	160703	14.51	95546	17.10
VD8292-BS	80425	8.02	115866	10.26	175856	11.17	167490	14.52	103190	17.10
JB22822-20MS	79632	8.04	114431	10.26	175474	11.18	165649	14.51	108764	17.10
JB22822-20MSD	80096	8.04	121358	10.26	185663	11.17	175647	14.51	112777	17.10
JB22822-20	77020	8.03	118081	10.26	180890	11.18	172138	14.52	106674	17.10
JB22822-6	77581	8.02	123304	10.26	187729	11.17	176391	14.52	103008	17.10
ZZZZZZ	75018	8.03	119161	10.26	181010	11.17	170075	14.51	100920	17.10
ZZZZZZ	64634	8.03	114778	10.26	174413	11.17	165785	14.51	97474	17.10
ZZZZZZ	68116	8.03	112980	10.26	173514	11.17	162302	14.51	95844	17.10
ZZZZZZ	64069	8.04	109994	10.26	169547	11.18	159206	14.51	93483	17.10
JB22822-8	72910	8.02	110694	10.26	169147	11.18	159325	14.52	92129	17.10
JB22822-16 [c]	71475	8.03	107823	10.26	164914	11.17	156961	14.51	91924	17.10
ZZZZZZ	68631	8.04	107343	10.26	165759	11.17	157702	14.52	101256	17.10
ZZZZZZ	80853	8.02	121330	10.26	186152	11.17	178290	14.52	106326	17.10
ZZZZZZ	67800	8.04	117116	10.26	182552	11.17	176253	14.52	102726	17.10

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8293-CC8248	**Injection Date:**	12/14/12
Lab File ID:	D203376.D	**Injection Time:**	12:29
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	72128	8.02	119098	10.26	171406	11.17	157605	14.51	92938	17.10
Upper Limit [a]	144256	8.52	238196	10.76	342812	11.67	315210	15.01	185876	17.60
Lower Limit [b]	36064	7.52	59549	9.76	85703	10.67	78803	14.01	46469	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
VD8293-MB	59172	8.05	124018	10.26	177730	11.17	163649	14.51	98082	17.10
VD8293-BS	72896	8.03	125633	10.26	182427	11.18	166156	14.52	101123	17.10
ZZZZZZ	77519	8.02	122656	10.26	175781	11.18	163869	14.52	92249	17.10
ZZZZZZ	62030	8.03	120381	10.26	172544	11.17	160212	14.51	98041	17.10
JB23763-1	72148	8.02	122787	10.26	175989	11.18	165288	14.52	102483	17.10
ZZZZZZ	70703	8.04	127037	10.26	184013	11.17	174321	14.51	112545	17.10
ZZZZZZ	75218	8.02	131120	10.26	188430	11.17	173298	14.52	106899	17.10
ZZZZZZ	75531	8.03	129348	10.26	185549	11.17	172031	14.52	111927	17.10
ZZZZZZ	76376	8.03	127224	10.26	183364	11.18	171278	14.52	114887	17.10
JB23763-1MS	79148	8.02	131656	10.26	189105	11.18	173948	14.51	109555	17.10
JB23763-1MSD	79952	8.03	131487	10.26	189678	11.17	177571	14.52	110200	17.10
ZZZZZZ	73242	8.03	127913	10.26	183416	11.17	172656	14.51	103249	17.10
JB22822-13	73916	8.02	126729	10.26	183577	11.18	171559	14.51	107763	17.10
ZZZZZZ	76819	8.02	126977	10.26	183396	11.18	172547	14.52	109137	17.10

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VD8297-CC8248	**Injection Date:**	12/17/12
Lab File ID:	D203474.D	**Injection Time:**	09:43
Instrument ID:	GCMSD	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	80453	8.02	129507	10.26	186879	11.17	175821	14.51	104991	17.10
Upper Limit [a]	160906	8.52	259014	10.76	373758	11.67	351642	15.01	209982	17.60
Lower Limit [b]	40227	7.52	64754	9.76	93440	10.67	87911	14.01	52496	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
VD8297-MB	64493	8.07	127224	10.25	184213	11.17	169598	14.51	104057	17.10
VD8297-BS	79098	8.02	123677	10.26	182607	11.17	173609	14.52	105739	17.10
JB22822-13	76406	8.02	123701	10.26	179282	11.17	167480	14.52	98314	17.10
ZZZZZZ	73127	8.02	125994	10.26	182742	11.17	171328	14.52	100931	17.10
ZZZZZZ	69491	8.02	122363	10.26	176986	11.18	164761	14.52	98104	17.10
ZZZZZZ	70259	8.02	121680	10.26	175514	11.18	166542	14.52	96996	17.10
ZZZZZZ	65126	8.02	117941	10.26	171077	11.17	167472	14.52	105030	17.10
ZZZZZZ	72947	8.03	130834	10.26	190349	11.17	180277	14.52	116447	17.10
JB23096-6MS	83891	8.03	135018	10.26	196207	11.18	183243	14.52	114530	17.10
JB23096-6MSD	83946	8.04	135095	10.26	195518	11.18	181112	14.52	111944	17.10
JB23096-6	77639	8.03	134212	10.26	193902	11.18	181174	14.52	109172	17.10
ZZZZZZ	82101	8.02	132641	10.26	192480	11.18	181102	14.52	107585	17.10
ZZZZZZ	79499	8.02	129447	10.26	189971	11.18	178700	14.52	104059	17.10
ZZZZZZ	57266	8.02	126368	10.26	183765	11.18	171757	14.52	101581	17.10
ZZZZZZ	59470	8.02	124437	10.26	179889	11.17	171414	14.52	99483	17.10
ZZZZZZ	64867	8.03	122523	10.26	178021	11.17	165147	14.52	99067	17.10
ZZZZZZ	72523	8.03	120779	10.26	177777	11.18	164836	14.52	97145	17.10
ZZZZZZ	69679	8.02	119218	10.26	173107	11.17	163063	14.52	97831	17.10

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5654-CC5649	**Injection Date:**	12/06/12
Lab File ID:	V131129.D	**Injection Time:**	10:46
Instrument ID:	GCMSV	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	44083	7.63	159750	9.85	239238	10.80	212851	14.21	118444	16.82
Upper Limit [a]	88166	8.13	319500	10.35	478476	11.30	425702	14.71	236888	17.32
Lower Limit [b]	22042	7.13	79875	9.35	119619	10.30	106426	13.71	59222	16.32

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5654-MB1	35462	7.64	161331	9.85	249787	10.80	227785	14.21	124056	16.82
VV5654-BS	45245	7.63	160377	9.85	242335	10.80	217082	14.21	128377	16.82
ZZZZZZ	40858	7.63	161768	9.85	251566	10.80	233328	14.21	128345	16.82
ZZZZZZ	40408	7.63	162346	9.85	245701	10.80	224915	14.21	126693	16.82
ZZZZZZ	37896	7.64	152236	9.85	230981	10.80	213949	14.21	117920	16.82
ZZZZZZ	38501	7.63	151193	9.85	228117	10.80	212461	14.21	118891	16.82
ZZZZZZ	39213	7.64	162225	9.85	245023	10.80	225716	14.21	124873	16.82
JB22312-10	33537	7.64	148853	9.85	226346	10.80	206509	14.21	115078	16.82
ZZZZZZ	37863	7.64	139300	9.85	217346	10.80	202770	14.21	115070	16.82
ZZZZZZ	37165	7.64	152491	9.85	231118	10.80	212756	14.21	119364	16.82
ZZZZZZ	37328	7.64	138436	9.85	212705	10.80	197834	14.21	109106	16.82
ZZZZZZ	38193	7.63	152720	9.85	230181	10.80	213975	14.21	119324	16.82
ZZZZZZ	36249	7.63	161812	9.85	241819	10.80	218442	14.21	117699	16.82
JB22312-10MS	22174	7.63	141817	9.85	207985	10.80	180506	14.21	106376	16.82
JB22312-10MSD	22122	7.63	147344	9.85	218211	10.80	189108	14.21	109041	16.81

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5654-CC5649	**Injection Date:**	12/06/12
Lab File ID:	V131149.D	**Injection Time:**	21:57
Instrument ID:	GCMSV	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	42606	7.63	161728	9.85	250782	10.80	234764	14.21	142451	16.82
Upper Limit [a]	85212	8.13	323456	10.35	501564	11.30	469528	14.71	284902	17.32
Lower Limit [b]	21303	7.13	80864	9.35	125391	10.30	117382	13.71	71226	16.32

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5654-MB2	35211	7.63	163453	9.85	249059	10.80	226635	14.21	126523	16.82
ZZZZZZ	38101	7.64	164664	9.85	248845	10.80	225245	14.21	126082	16.82
ZZZZZZ	36737	7.63	152279	9.85	236783	10.80	215460	14.21	118770	16.82
ZZZZZZ	36885	7.63	153522	9.85	235838	10.80	217825	14.21	121748	16.82
JB22822-1	35403	7.63	155706	9.85	237372	10.80	215762	14.21	116841	16.82
JB22822-2	37472	7.63	146236	9.85	229780	10.80	208922	14.21	115024	16.82
ZZZZZZ	44122	7.64	169951	9.85	265369	10.80	244752	14.21	143205	16.82
ZZZZZZ	36315	7.63	161171	9.85	248514	10.80	223934	14.21	126921	16.82

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

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

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5655-CC5649	**Injection Date:**	12/07/12
Lab File ID:	V131185.D	**Injection Time:**	21:32
Instrument ID:	GCMSV	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	43012	7.64	150282	9.85	230293	10.80	212337	14.21	123635	16.82
Upper Limit [a]	86024	8.14	300564	10.35	460586	11.30	424674	14.71	247270	17.32
Lower Limit [b]	21506	7.14	75141	9.35	115147	10.30	106169	13.71	61818	16.32

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5655-MB2	37151	7.64	140145	9.85	214845	10.80	199104	14.21	115597	16.82
JB22822-4	34284	7.64	138098	9.85	211158	10.80	193514	14.21	110073	16.82
JB22822-9	40960	7.64	161734	9.85	254356	10.80	238632	14.21	127900	16.82
JB22822-12	37381	7.64	150963	9.85	237635	10.80	217499	14.21	116754	16.82
JB22822-21	45390	7.63	162818	9.85	253521	10.80	235239	14.21	130949	16.82

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5660-CC5649	**Injection Date:**	12/13/12
Lab File ID:	V131336.D	**Injection Time:**	09:47
Instrument ID:	GCMSV	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	43640	7.63	164459	9.85	235384	10.80	208690	14.21	119918	16.82
Upper Limit [a]	87280	8.13	328918	10.35	470768	11.30	417380	14.71	239836	17.32
Lower Limit [b]	21820	7.13	82230	9.35	117692	10.30	104345	13.71	59959	16.32

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5660-MB1	38869	7.63	169182	9.85	239647	10.80	213796	14.21	116211	16.82
VV5660-BS	36884	7.64	157701	9.85	224557	10.80	200570	14.21	119175	16.81
ZZZZZZ	44009	7.64	182427	9.85	254904	10.80	223826	14.21	124034	16.81
ZZZZZZ	41110	7.63	193020	9.85	276058	10.80	249073	14.21	132828	16.82
ZZZZZZ	39395	7.63	182030	9.85	258883	10.80	225123	14.21	123993	16.82
ZZZZZZ	42671	7.64	179900	9.85	259856	10.80	229307	14.21	124570	16.82
ZZZZZZ	39169	7.63	188952	9.85	276375	10.80	244255	14.21	134447	16.81
ZZZZZZ	38071	7.64	181255	9.85	260655	10.80	224297	14.21	124059	16.82
ZZZZZZ	33803	7.63	177731	9.85	249315	10.80	218650	14.21	117489	16.81
ZZZZZZ	34857	7.63	181374	9.85	263517	10.80	239193	14.21	127490	16.82
ZZZZZZ	42422	7.63	173511	9.85	250467	10.80	223850	14.21	122800	16.82
JB22822-15	38665	7.63	182090	9.85	261648	10.80	232147	14.21	131893	16.82
JB22822-18	44406	7.63	163454	9.85	233936	10.80	213391	14.21	119701	16.82
JB22876-3	37291	7.64	199137	9.85	286876	10.80	251978	14.21	140169	16.81
ZZZZZZ	35586	7.63	176002	9.85	250684	10.80	222051	14.21	121153	16.82

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

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

Volatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	VV5660-CC5649	**Injection Date:**	12/14/12
Lab File ID:	V131370.D	**Injection Time:**	09:41
Instrument ID:	GCMSV	**Method:**	SW846 8260B

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	34732	7.63	159120	9.85	227420	10.80	202939	14.21	117678	16.81
Upper Limit [a]	69464	8.13	318240	10.35	454840	11.30	405878	14.71	235356	17.31
Lower Limit [b]	17366	7.13	79560	9.35	113710	10.30	101470	13.71	58839	16.31

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VV5660-MB2	27274	7.64	157047	9.85	221315	10.80	194768	14.21	104141	16.81
JB22876-3MS	26201	7.64	153381	9.85	211527	10.80	178923	14.21	102674	16.81
JB22876-3MSD	23094	7.63	176656	9.85	245839	10.80	210352	14.21	117143	16.81
VV5661-MB1	28136	7.63	164125	9.85	231108	10.80	200634	14.21	112142	16.82
VV5661-BS	36634	7.63	157976	9.85	218994	10.80	194100	14.21	118166	16.81
JB23724-2	37201	7.63	154606	9.85	218381	10.80	190682	14.21	93982	16.81
JB23724-3	41857	7.64	164883	9.85	233756	10.80	211061	14.21	116926	16.82
ZZZZZZ	43402	7.63	165501	9.85	236732	10.80	212603	14.21	117425	16.81
JB23724-2MS	20923	7.63	155257	9.85	209879	10.80	174568	14.21	90790	16.82
JB23724-3DUP	40094	7.63	165381	9.85	234401	10.80	212126	14.21	118722	16.82
ZZZZZZ	32217	7.63	159297	9.85	224789	10.80	200753	14.21	110114	16.82
ZZZZZZ	36925	7.64	173122	9.85	249773	10.80	225643	14.21	131727	16.81

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: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB22822-1	V131159.D	106.0	102.0	116.0	100.0
JB22822-2	V131160.D	118.0	110.0	115.0	101.0
JB22822-4	V131188.D	113.0	104.0	115.0	101.0
JB22822-5	D203317.D	95.0	119.0	111.0	108.0
JB22822-6	D203361.D	95.0	117.0	99.0	103.0
JB22822-6	D203318.D	95.0	117.0	115.0	123.0
JB22822-7	D203319.D	94.0	117.0	108.0	125.0
JB22822-8	D203367.D	94.0	120.0	98.0	104.0
JB22822-8	D203245.D	94.0	112.0	99.0	102.0
JB22822-9	V131189.D	118.0	107.0	116.0	100.0
JB22822-10	D203321.D	95.0	116.0	100.0	120.0
JB22822-11	D203247.D	95.0	115.0	99.0	118.0
JB22822-12	V131191.D	121.0	109.0	115.0	98.0
JB22822-13	D203392.D	93.0	108.0	100.0	97.0
JB22822-13	D203478.D	92.0	110.0	98.0	99.0
JB22822-13	D203323.D	94.0	115.0	130.0* [a]	147.0* [a]
JB22822-14	D203322.D	95.0	116.0	108.0	113.0
JB22822-15	V131350.D	106.0	99.0	109.0	99.0
JB22822-16	D203368.D	95.0	120.0	100.0	105.0
JB22822-17	D203325.D	94.0	118.0	111.0	111.0
JB22822-18	V131351.D	113.0	103.0	110.0	97.0
JB22822-19	D203326.D	95.0	117.0	102.0	102.0
JB22822-20	D203360.D	96.0	118.0	100.0	104.0
JB22822-21	V131193.D	115.0	102.0	116.0	104.0
JB22312-10MS	V131145.D	104.0	85.0	117.0	104.0
JB22312-10MSD	V131146.D	103.0	87.0	117.0	101.0
JB22822-20MS	D203357.D	96.0	116.0	100.0	97.0
JB22822-20MSD	D203358.D	96.0	116.0	100.0	99.0
JB22876-3MS	V131373.D	98.0	86.0	108.0	101.0
JB22876-3MSD	V131374.D	99.0	82.0	110.0	98.0
JB22940-4MS	V131181.D	80.0	92.0	116.0	103.0
JB22940-4MSD	V131182.D	84.0	90.0	116.0	102.0
JB22953-1MS	D203248.D	96.0	112.0	98.0	99.0
JB22953-1MSD	D203249.D	94.0	111.0	98.0	101.0
JB22953-9MS	D203311.D	97.0	114.0	98.0	99.0
JB22953-9MSD	D203312.D	96.0	115.0	99.0	100.0
JB23096-6MS	D203484.D	93.0	106.0	98.0	94.0
JB23096-6MSD	D203485.D	94.0	106.0	97.0	95.0
JB23763-1MS	D203388.D	94.0	108.0	98.0	94.0
JB23763-1MSD	D203389.D	93.0	105.0	98.0	94.0

Volatile Surrogate Recovery Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
VD8287-BS	D203237.D	95.0	113.0	100.0	99.0
VD8287-MB	D203236.D	93.0	113.0	98.0	101.0
VD8290-BS	D203310.D	97.0	116.0	99.0	100.0
VD8290-MB	D203309.D	95.0	115.0	97.0	100.0
VD8292-BS	D203356.D	95.0	117.0	100.0	100.0
VD8292-MB	D203355.D	96.0	120.0	99.0	102.0
VD8293-BS	D203379.D	92.0	106.0	97.0	96.0
VD8293-MB	D203378.D	90.0	107.0	97.0	96.0
VD8297-BS	D203477.D	93.0	109.0	99.0	98.0
VD8297-MB	D203476.D	90.0	107.0	96.0	97.0
VV5654-BS	V131132.D	113.0	103.0	116.0	104.0
VV5654-MB2	V131151.D	111.0	98.0	116.0	102.0
VV5655-BS	V131169.D	114.0	106.0	117.0	104.0
VV5655-MB2	V131187.D	113.0	105.0	117.0	101.0
VV5660-BS	V131339.D	105.0	100.0	110.0	102.0
VV5660-MB1	V131338.D	107.0	96.0	109.0	99.0
VV5654-MB1	V131131.D	111.0	102.0	116.0	100.0
VV5655-MB1	V131168.D	112.0	95.0	114.0	101.0
VV5660-MB2	V131372.D	101.0	89.0	109.0	95.0

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

(a) Outside control limits due to matrix interference.

Initial Calibration Summary

Job Number: JB22822 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSD

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

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

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

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

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

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

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

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VD8248-ICC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202323.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

Initial Calibration Verification

Job Number: JB22822 **Sample:** VD8248-ICV8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202327.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

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

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

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

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

Initial Calibration Verification

Job Number: JB22822 **Sample:** VD8248-ICV8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202327.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Initial Calibration Verification

Job Number: JB22822 **Sample:** VD8248-ICV8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D202327.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8287-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203234.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203234.D                    Vial: 2
Acq On    : 11 Dec 2012  10:13 am                     Operator: EmilyT
Sample    : CC8248-20                                 Inst    : MSD
Misc      : ms40003,vd8287,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	71	-0.02	8.02
2	M	1,4-dioxane	0.095	0.086	9.5	72	-0.02	11.89
3	M	tertiary butyl alcohol	1.170	1.213	-3.7	79	-0.02	8.13
4	I	pentafluorobenzene	1.000	1.000	0.0	84	0.00	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.642	-28.4#	110	0.00	4.57
7	M	dichlorodifluoromethane	0.734	0.737	-0.4	84	0.00	4.56
8	M	chloromethane	0.718	0.780	-8.6	102	-0.01	4.91
9	M	vinyl chloride	0.805	0.918	-14.0	100	-0.01	5.19
10	M	bromomethane	0.432	0.455	-5.3	90	0.00	5.87
11	M	chloroethane	0.416	0.470	-13.0	99	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.996	-23.1#	104	0.00	6.58
14		pentane		----------NA----------				
15	M	ethyl ether	0.367	0.342	6.8	92	-0.01	6.97
16	M	acrolein	0.140	0.121	13.6	88	-0.01	7.19
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.212	-29.8#	116	0.00	7.16
19	M	1,1-dichloroethene	0.535	0.500	6.5	90	-0.01	7.39
		----------	True	Calc.	% Drift	----------		
20	M	acetone	20.000	20.898	-4.5	102	-0.02	7.40
		----------	AvgRF	CCRF	% Dev	----------		
21	M	allyl chloride	1.312	1.228	6.4	89	0.00	7.91
22	M	acetonitrile	0.061	0.058	4.9	86	-0.02	7.82
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.887	2.3	89	0.00	7.67
25	M	iso-butyl alcohol	0.000	0.003#	0.0	0#	0.00	10.51
26	M	carbon disulfide	1.767	1.867	-5.7	98	0.00	7.80
27	M	methylene chloride	0.622	0.581	6.6	92	0.00	8.08
28	M	1-chloropropane	0.964	1.155	-19.8	116	0.00	8.14
29	M	methyl acetate	0.516	0.596	-15.5	105	-0.01	7.88
30	M	methyl tert butyl ether	1.860	1.857	0.2	97	0.00	8.44
31	M	trans-1,2-dichloroethene	0.571	0.527	7.7	88	0.00	8.47
32	M	di-isopropyl ether	1.740	2.162	-24.3#	108	-0.01	9.03
33	M	ethyl tert-butyl ether	1.749	2.011	-15.0	99	-0.01	9.49
34	M	2-butanone	0.067	0.069	-3.0	95	-0.01	9.70
35	M	1,1-dichloroethane	0.948	1.002	-5.7	97	0.00	9.02
36	M	chloroprene	0.760	0.947	-24.6#	110	0.00	9.14
37	M	acrylonitrile	0.244	0.246	-0.8	94	0.00	8.38

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8287-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203234.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.098	3.0	80	0.00	9.01
39	M	ethyl acetate	0.082	0.096	-17.1	98	-0.02	9.73
40	M	2,2-dichloropropane	0.820	0.781	4.8	90	0.00	9.77
41	M	cis-1,2-dichloroethene	0.639	0.566	11.4	88	0.00	9.74
42	M	propionitrile	0.098	0.093	5.1	91	-0.01	9.78
43	M	bromochloromethane	0.289	0.277	4.2	88	0.00	10.05
44	M	tetrahydrofuran	0.083	0.080	3.6	90	-0.02	10.10
45	M	chloroform	0.921	0.944	-2.5	95	0.00	10.10
46	S	dibromofluoromethane (s)	0.495	0.470	5.1	90	0.00	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.633	-11.2	100	0.00	10.72
48	M	freon 113	0.392	0.404	-3.1	86	0.00	7.39
49	M	methacrylonitrile	0.388	0.433	-11.6	104	0.00	9.98
50	m	t-butyl formate	0.589	0.680	-15.4	98	-0.01	10.17
51	M	1,1,1-trichloroethane	0.825	0.902	-9.3	100	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.937	-9.2	96	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	81	0.00	11.18
54	M	cyclohexane	0.541	0.592	-9.4	94	0.00	10.49
55		tert amyl alcohol	0.016	0.017	-6.3	94	-0.01	10.66
56	M	2,2,4-trimethylpentane	1.325	1.460	-10.2	88	0.00	10.87
57	M	epichlorohydrin	0.046	0.047	-2.2	85	0.00	12.44
58	M	n-butyl alcohol	0.014	0.013	7.1	81	-0.02	11.25
59	M	carbon tetrachloride	0.469	0.533	-13.6	101	0.00	10.60
60	M	1,1-dichloropropene	0.469	0.505	-7.7	98	0.00	10.56
61	M	hexane	0.404	0.417	-3.2	85	0.00	8.80
62	M	benzene	1.429	1.440	-0.8	93	0.00	10.82
63	M	heptane	0.252	0.247	2.0	80	0.00	11.02
64	M	isopropyl acetate	0.718	0.899	-25.2#	106	0.00	10.73
65	M	1,2-dichloroethane	0.471	0.538	-14.2	104	-0.01	10.80
66		Ethyl Acrylate	0.487	0.548	-12.5	100	0.00	11.52
67	M	trichloroethene	0.346	0.353	-2.0	92	0.00	11.53
68	M	2-nitropropane	1.004	1.211	-20.6#	104	0.00	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.282	-11.9	93	0.00	12.32
70	M	methyl methacrylate	0.106	0.103	2.8	84	-0.01	11.79
71	M	tert-amyl ethyl ether	0.585	0.527	9.9	81	0.00	11.72
72	M	1,2-dichloropropane	0.370	0.393	-6.2	95	0.00	11.79
73	M	methylcyclohexane	0.598	0.640	-7.0	88	0.00	11.79
74	M	dibromomethane	0.226	0.227	-0.4	91	0.00	11.93
75	M	bromodichloromethane	0.463	0.504	-8.9	98	0.00	12.07
76	M	cis-1,3-dichloropropene	0.623	0.615	1.3	90	0.00	12.55
77	S	toluene-d8 (s)	1.268	1.260	0.6	88	0.00	12.89
78	M	4-methyl-2-pentanone	0.165	0.180	-9.1	97	-0.01	12.66
79	M	toluene	0.918	0.896	2.4	88	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.013	7.1	79	0.00	12.65
81	M	trans-1,3-dichloropropene	0.598	0.588	1.7	91	0.00	13.14
82	M	ethyl methacrylate	0.513	0.533	-3.9	92	0.00	13.15
83	M	1,1,2-trichloroethane	0.282	0.278	1.4	87	0.00	13.37
84	M	2-hexanone	0.146	0.161	-10.3	97	0.00	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	78	0.00	14.52
86	M	tetrachloroethene	0.420	0.410	2.4	83	0.00	13.59
87	M	1,3-dichloropropane	0.608	0.621	-2.1	89	0.00	13.57
88	M	butyl acetate	0.275	0.327	-18.9	95	0.00	13.65
89	m	3,3-dimethyl-1-butanol	0.050	0.051	-2.0	86	-0.01	13.74
90	M	dibromochloromethane	0.403	0.407	-1.0	87	0.00	13.85
91	M	1,2-dibromoethane	0.372	0.367	1.3	84	0.00	14.03
92	M	chlorobenzene	1.055	1.040	1.4	86	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.390	1.3	88	0.00	14.61
94	M	ethylbenzene	1.828	1.872	-2.4	90	0.00	14.62
95	M	m,p-xylene	0.714	0.708	0.8	86	0.00	14.74

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8287-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203234.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.704	1.0	86	0.00	15.20
97	M	styrene	1.173	1.160	1.1	86	0.00	15.21
98	M	bromoform	0.323	0.302	6.5	82	0.00	15.48
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	77	0.00	17.10
100	M	isopropylbenzene	3.075	3.167	-3.0	88	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.893	1.1	87	0.00	15.80
102	M	bromobenzene	0.852	0.796	6.6	82	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	200.000	268.707	-34.4#	134	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.883	-1.4	88	0.00	15.89
105	M	trans-1,4-dichloro-2-bute	0.267	0.280	-4.9	93	0.00	15.94
106	M	1,2,3-trichloropropane	0.262	0.261	0.4	86	0.00	15.98
107	M	n-propylbenzene	3.555	3.664	-3.1	90	0.00	16.05
108	M	p-ethyltoluene	2.979	3.220	-8.1	94	0.00	16.16
109	M	2-chlorotoluene	0.748	0.722	3.5	83	0.00	16.20
110	M	4-chlorotoluene	2.360	2.341	0.8	90	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.757	-2.2	89	0.00	16.21
112	M	tert-butylbenzene	2.369	2.403	-1.4	87	0.00	16.61
113	M	pentachloroethane	0.530	0.534	-0.8	88	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.778	0.5	88	0.00	16.65
115	M	sec-butylbenzene	3.487	3.576	-2.6	88	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.536	5.7	83	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.912	2.0	86	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.592	6.5	83	0.00	17.13
119		Benzyl Chloride	2.020	1.559	22.8#	65	0.00	17.25
120	M	p-diethylbenzene	1.824	1.988	-9.0	97	0.00	17.40
121	M	1,2-dichlorobenzene	1.636	1.550	5.3	83	0.00	17.57
122	M	n-butylbenzene	1.557	1.598	-2.6	90	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen	2.866	3.152	-10.0	92	0.00	18.27
124	M	1,2-dibromo-3-chloropropa	0.177	0.172	2.8	83	0.00	18.41
125	M	1,3,5-trichlorobenzene	1.321	1.284	2.8	82	0.00	18.64
126	M	1,2,4-trichlorobenzene	1.003	1.024	-2.1	79	0.00	19.38
127	M	hexachlorobutadiene	0.620	0.625	-0.8	82	0.00	19.52
128	M	naphthalene	2.322	2.093	9.9	70	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.733	11.8	67	0.00	19.98
130	M	hexachloroethane	0.581	0.568	2.2	88	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202322.D MD8248.M Tue Dec 11 15:07:21 2012

6.7.3

6

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8290-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203307.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203307.D                    Vial: 25
Acq On    : 12 Dec 2012  11:03 pm                     Operator: EmilyT
Sample    : cc8248-50                                 Inst    : MSD
Misc      : ms40077,vd8290,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	59	-0.01	8.03
2	M	1,4-dioxane	0.095	0.087	8.4	52	-0.01	11.90
3	M	tertiary butyl alcohol	1.170	1.225	-4.7	61	-0.01	8.14
4	I	pentafluorobenzene	1.000	1.000	0.0	79	0.00	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.719	-43.8#	106	0.00	4.58
7	M	dichlorodifluoromethane	0.734	0.591	19.5	60	0.00	4.56
8	M	chloromethane	0.718	0.709	1.3	78	0.00	4.91
9	M	vinyl chloride	0.805	0.814	-1.1	77	0.00	5.21
10	M	bromomethane	0.432	0.407	5.8	70	0.00	5.87
11	M	chloroethane	0.416	0.424	-1.9	78	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.862	-6.6	80	0.00	6.57
14		pentane		----------NA----------				
15	M	ethyl ether	0.367	0.356	3.0	82	-0.02	6.96
16	M	acrolein	0.140	0.114	18.6	66	0.00	7.19
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.259	-34.8#	106	0.00	7.16
19	M	1,1-dichloroethene	0.535	0.518	3.2	81	0.00	7.39
		----------	True	Calc.	% Drift	----------		
20	M	acetone	50.000	47.320	5.4	73	-0.02	7.40
		----------	AvgRF	CCRF	% Dev	----------		
21	M	allyl chloride	1.312	1.312	0.0	79	0.00	7.91
22	M	acetonitrile	0.061	0.055	9.8	72	-0.02	7.82
23	M	acetaldehyde	0.000	0.000#	0.0	0#	-0.06	5.61
24	M	iodomethane	0.908	0.915	-0.8	78	-0.01	7.66
25	M	iso-butyl alcohol	0.000	0.003#	0.0	0#	-0.01	10.51
26	M	carbon disulfide	1.767	1.947	-10.2	88	0.00	7.80
27	M	methylene chloride	0.622	0.598	3.9	80	-0.01	8.07
28	M	1-chloropropane	0.964	1.194	-23.9#	105	0.00	8.14
29	M	methyl acetate	0.516	0.598	-15.9	90	-0.01	7.87
30	M	methyl tert butyl ether	1.860	1.916	-3.0	85	0.00	8.44
31	M	trans-1,2-dichloroethene	0.571	0.552	3.3	79	0.00	8.47
32	M	di-isopropyl ether	1.740	2.233	-28.3#	95	0.00	9.04
33	M	ethyl tert-butyl ether	1.749	2.085	-19.2	87	0.00	9.50
34	M	2-butanone	0.067	0.075	-11.9	84	-0.01	9.70
35	M	1,1-dichloroethane	0.948	1.047	-10.4	87	0.00	9.02
36	M	chloroprene	0.760	0.998	-31.3#	96	0.00	9.14
37	M	acrylonitrile	0.244	0.255	-4.5	82	-0.01	8.38

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8290-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203307.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.107	-5.9	76	-0.01	9.00
39	M	ethyl acetate	0.082	0.092	-12.2	82	-0.02	9.73
40	M	2,2-dichloropropane	0.820	0.834	-1.7	85	0.00	9.77
41	M	cis-1,2-dichloroethene	0.639	0.582	8.9	77	0.00	9.74
42	M	propionitrile	0.098	0.094	4.1	77	-0.01	9.78
43	M	bromochloromethane	0.289	0.284	1.7	77	0.00	10.04
44	M	tetrahydrofuran	0.083	0.082	1.2	76	-0.02	10.10
45	M	chloroform	0.921	0.985	-6.9	85	0.00	10.10
46	S	dibromofluoromethane (s)	0.495	0.477	3.6	77	0.00	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.649	-14.1	87	0.00	10.71
48	M	freon 113	0.392	0.428	-9.2	80	0.00	7.38
49	M	methacrylonitrile	0.388	0.430	-10.8	89	0.00	9.98
50	m	t-butyl formate	0.589	0.702	-19.2	85	-0.01	10.17
51	M	1,1,1-trichloroethane	0.825	0.940	-13.9	89	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.962	-10.6	82	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	80	0.00	11.18
54	M	cyclohexane	0.541	0.601	-11.1	85	0.00	10.48
55		tert amyl alcohol	0.016	0.014	12.5	67	-0.02	10.65
56	M	2,2,4-trimethylpentane	1.325	1.606	-21.2#	86	0.00	10.87
57	M	epichlorohydrin	0.046	0.047	-2.2	77	0.00	12.44
58	M	n-butyl alcohol	0.014	0.011	21.4#	62	-0.02	11.25
59	M	carbon tetrachloride	0.469	0.540	-15.1	89	0.00	10.59
60	M	1,1-dichloropropene	0.469	0.508	-8.3	86	0.00	10.56
61	M	hexane	0.404	0.488	-20.8#	89	0.00	8.80
62	M	benzene	1.429	1.461	-2.2	81	0.00	10.82
63	M	heptane	0.252	0.285	-13.1	83	0.00	11.02
64	M	isopropyl acetate	0.718	0.886	-23.4#	92	0.00	10.73
65	M	1,2-dichloroethane	0.471	0.544	-15.5	90	-0.01	10.80
66		Ethyl Acrylate	0.487	0.521	-7.0	81	0.00	11.52
67	M	trichloroethene	0.346	0.360	-4.0	80	0.00	11.53
68	M	2-nitropropane	1.004	1.154	-14.9	86	0.00	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.267	-6.0	77	0.00	12.32
70	M	methyl methacrylate	0.106	0.104	1.9	71	0.00	11.79
71	M	tert-amyl ethyl ether	0.585	0.508	13.2	67	0.00	11.72
72	M	1,2-dichloropropane	0.370	0.401	-8.4	84	0.00	11.79
73	M	methylcyclohexane	0.598	0.664	-11.0	81	0.00	11.79
74	M	dibromomethane	0.226	0.234	-3.5	79	0.00	11.93
75	M	bromodichloromethane	0.463	0.512	-10.6	83	0.00	12.06
76	M	cis-1,3-dichloropropene	0.623	0.628	-0.8	80	0.00	12.55
77	S	toluene-d8 (s)	1.268	1.261	0.6	78	0.00	12.88
78	M	4-methyl-2-pentanone	0.165	0.177	-7.3	82	-0.01	12.66
79	M	toluene	0.918	0.900	2.0	78	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.011	21.4#	62	-0.01	12.64
81	M	trans-1,3-dichloropropene	0.598	0.605	-1.2	80	0.00	13.14
82	M	ethyl methacrylate	0.513	0.562	-9.6	82	0.00	13.15
83	M	1,1,2-trichloroethane	0.282	0.287	-1.8	80	0.00	13.37
84	M	2-hexanone	0.146	0.165	-13.0	85	0.00	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	79	0.00	14.51
86	M	tetrachloroethene	0.420	0.410	2.4	75	0.00	13.59
87	M	1,3-dichloropropane	0.608	0.634	-4.3	81	0.00	13.57
88	M	butyl acetate	0.275	0.321	-16.7	85	0.00	13.65
89	m	3,3-dimethyl-1-butanol	0.050	0.045	10.0	69	-0.01	13.74
90	M	dibromochloromethane	0.403	0.425	-5.5	78	0.00	13.85
91	M	1,2-dibromoethane	0.372	0.377	-1.3	77	0.00	14.03
92	M	chlorobenzene	1.055	1.039	1.5	78	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.397	-0.5	78	0.00	14.61
94	M	ethylbenzene	1.828	1.875	-2.6	82	0.00	14.62
95	M	m,p-xylene	0.714	0.706	1.1	77	0.00	14.74

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8290-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203307.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.701	1.4	77	0.00	15.20
97	M	styrene	1.173	1.197	-2.0	77	0.00	15.21
98	M	bromoform	0.323	0.319	1.2	74	0.00	15.47
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	78	0.00	17.10
100	M	isopropylbenzene	3.075	3.076	-0.0	80	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.883	2.2	79	-0.01	15.79
102	M	bromobenzene	0.852	0.798	6.3	75	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	500.000	502.050	-0.4	65	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.861	1.1	78	0.00	15.88
105	M	trans-1,4-dichloro-2-bute	0.267	0.287	-7.5	83	0.00	15.94
106	M	1,2,3-trichloropropane	0.262	0.254	3.1	77	0.00	15.98
107	M	n-propylbenzene	3.555	3.629	-2.1	82	0.00	16.04
108	M	p-ethyltoluene	2.979	2.946	1.1	81	0.00	16.16
109	M	2-chlorotoluene	0.748	0.698	6.7	75	0.00	16.20
110	M	4-chlorotoluene	2.360	2.354	0.3	82	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.680	0.6	80	0.00	16.21
112	M	tert-butylbenzene	2.369	2.339	1.3	78	0.00	16.61
113	M	pentachloroethane	0.530	0.534	-0.8	81	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.767	0.9	80	0.00	16.65
115	M	sec-butylbenzene	3.487	3.488	-0.0	80	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.542	5.3	76	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.881	3.0	79	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.591	6.5	75	0.00	17.13
119		Benzyl Chloride	2.020	1.649	18.4	64	0.00	17.25
120	M	p-diethylbenzene	1.824	1.821	0.2	83	0.00	17.40
121	M	1,2-dichlorobenzene	1.636	1.539	5.9	76	-0.01	17.56
122	M	n-butylbenzene	1.557	1.600	-2.8	81	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen	2.866	2.877	-0.4	81	-0.01	18.27
124	M	1,2-dibromo-3-chloropropa	0.177	0.180	-1.7	85	0.00	18.41
125	M	1,3,5-trichlorobenzene	1.321	1.280	3.1	78	0.00	18.64
126	M	1,2,4-trichlorobenzene	1.003	1.076	-7.3	79	0.00	19.38
127	M	hexachlorobutadiene	0.620	0.620	0.0	81	0.00	19.52
128	M	naphthalene	2.322	2.371	-2.1	78	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.853	-2.6	78	-0.01	19.97
130	M	hexachloroethane	0.581	0.575	1.0	82	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202323.D MD8248.M Thu Dec 13 09:00:56 2012

6.7.4

6

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8292-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203353.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203353.D                    Vial: 27
Acq On    : 13 Dec 2012  10:11 pm                     Operator: EmilyT
Sample    : CC8248-50                                 Inst    : MSD
Misc      : ms39878,vd8292,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	74	-0.01	8.03
2	M	1,4-dioxane	0.095	0.087	8.4	65	-0.02	11.89
3	M	tertiary butyl alcohol	1.170	1.227	-4.9	76	-0.01	8.14
4	I	pentafluorobenzene	1.000	1.000	0.0	75	0.00	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.710	-42.0#	99	0.00	4.58
7	M	dichlorodifluoromethane	0.734	0.584	20.4#	56	0.00	4.57
8	M	chloromethane	0.718	0.697	2.9	72	0.00	4.92
9	M	vinyl chloride	0.805	0.795	1.2	71	0.00	5.21
10	M	bromomethane	0.432	0.386	10.6	63	0.00	5.87
11	M	chloroethane	0.416	0.410	1.4	71	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.837	-3.5	73	0.00	6.58
14		pentane		----------NA----------				
15	M	ethyl ether	0.367	0.335	8.7	73	-0.01	6.97
16	M	acrolein	0.140	0.130	7.1	72	-0.01	7.18
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.207	-29.2#	96	0.00	7.16
19	M	1,1-dichloroethene	0.535	0.479	10.5	71	0.00	7.39
		----------	True	Calc.	% Drift	----------		
20	M	acetone	50.000	51.807	-3.6	76	-0.01	7.41
		----------	AvgRF	CCRF	% Dev	----------		
21	M	allyl chloride	1.312	1.255	4.3	72	0.00	7.91
22	M	acetonitrile	0.061	0.067	-9.8	83	0.00	7.83
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.842	7.3	68	-0.01	7.66
25	M	iso-butyl alcohol	0.000	0.004#	0.0	0#	-0.01	10.51
26	M	carbon disulfide	1.767	1.813	-2.6	77	0.00	7.80
27	M	methylene chloride	0.622	0.566	9.0	72	0.00	8.08
28	M	1-chloropropane	0.964	1.135	-17.7	94	0.00	8.14
29	M	methyl acetate	0.516	0.627	-21.5#	89	0.00	7.88
30	M	methyl tert butyl ether	1.860	1.832	1.5	77	0.00	8.44
31	M	trans-1,2-dichloroethene	0.571	0.513	10.2	70	0.00	8.47
32	M	di-isopropyl ether	1.740	2.194	-26.1#	88	-0.01	9.03
33	M	ethyl tert-butyl ether	1.749	2.059	-17.7	81	-0.01	9.49
34	M	2-butanone	0.067	0.075	-11.9	79	-0.01	9.70
35	M	1,1-dichloroethane	0.948	1.006	-6.1	79	0.00	9.02
36	M	chloroprene	0.760	0.985	-29.6#	90	0.00	9.14
37	M	acrylonitrile	0.244	0.253	-3.7	77	-0.01	8.38

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8292-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203353.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.107	-5.9	72	0.00	9.00
39	M	ethyl acetate	0.082	0.103	-25.6#	86	-0.01	9.73
40	M	2,2-dichloropropane	0.820	0.807	1.6	77	0.00	9.77
41	M	cis-1,2-dichloroethene	0.639	0.553	13.5	69	0.00	9.74
42	M	propionitrile	0.098	0.100	-2.0	77	-0.01	9.78
43	M	bromochloromethane	0.289	0.269	6.9	68	0.00	10.05
44	M	tetrahydrofuran	0.083	0.082	1.2	72	-0.01	10.10
45	M	chloroform	0.921	0.936	-1.6	76	0.00	10.10
46	S	dibromofluoromethane (s)	0.495	0.475	4.0	72	0.00	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.665	-16.9	84	0.00	10.72
48	M	freon 113	0.392	0.388	1.0	69	0.00	7.38
49	M	methacrylonitrile	0.388	0.440	-13.4	86	0.00	9.98
50	m	t-butyl formate	0.589	0.712	-20.9#	82	-0.01	10.17
51	M	1,1,1-trichloroethane	0.825	0.888	-7.6	80	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.952	-10.0	77	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	76	0.00	11.18
54	M	cyclohexane	0.541	0.532	1.7	72	0.00	10.49
55		tert amyl alcohol		----------NA----------				
56	M	2,2,4-trimethylpentane	1.325	1.424	-7.5	73	0.00	10.87
57	M	epichlorohydrin	0.046	0.052	-13.0	81	0.00	12.44
58	M	n-butyl alcohol	0.014	0.014	0.0	76	-0.01	11.26
59	M	carbon tetrachloride	0.469	0.500	-6.6	79	0.00	10.59
60	M	1,1-dichloropropene	0.469	0.471	-0.4	76	0.00	10.56
61	M	hexane	0.404	0.453	-12.1	79	0.00	8.80
62	M	benzene	1.429	1.378	3.6	73	0.00	10.82
63	M	heptane	0.252	0.268	-6.3	75	0.00	11.02
64	M	isopropyl acetate	0.718	0.893	-24.4#	89	0.00	10.73
65	M	1,2-dichloroethane	0.471	0.527	-11.9	83	-0.01	10.80
66		Ethyl Acrylate		----------NA----------				
67	M	trichloroethene	0.346	0.335	3.2	72	0.00	11.53
68	M	2-nitropropane	1.004	1.245	-24.0#	89	0.00	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.286	-13.5	79	0.00	12.32
70	M	methyl methacrylate	0.106	0.104	1.9	69	0.00	11.79
71	M	tert-amyl ethyl ether		----------NA----------				
72	M	1,2-dichloropropane	0.370	0.387	-4.6	77	0.00	11.79
73	M	methylcyclohexane	0.598	0.588	1.7	69	0.00	11.79
74	M	dibromomethane	0.226	0.225	0.4	73	0.00	11.93
75	M	bromodichloromethane	0.463	0.492	-6.3	76	0.00	12.06
76	M	cis-1,3-dichloropropene	0.623	0.603	3.2	73	0.00	12.55
77	S	toluene-d8 (s)	1.268	1.266	0.2	75	0.00	12.88
78	M	4-methyl-2-pentanone	0.165	0.179	-8.5	80	-0.01	12.66
79	M	toluene	0.918	0.853	7.1	71	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.013	7.1	71	-0.01	12.65
81	M	trans-1,3-dichloropropene	0.598	0.587	1.8	74	0.00	13.14
82	M	ethyl methacrylate	0.513	0.537	-4.7	75	0.00	13.15
83	M	1,1,2-trichloroethane	0.282	0.278	1.4	74	0.00	13.37
84	M	2-hexanone	0.146	0.166	-13.7	82	0.00	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	75	0.00	14.52
86	M	tetrachloroethene	0.420	0.384	8.6	67	0.00	13.59
87	M	1,3-dichloropropane	0.608	0.614	-1.0	75	0.00	13.57
88	M	butyl acetate	0.275	0.329	-19.6	83	0.00	13.65
89	m	3,3-dimethyl-1-butanol	0.050	0.054	-8.0	78	-0.01	13.74
90	M	dibromochloromethane	0.403	0.406	-0.7	71	0.00	13.85
91	M	1,2-dibromoethane	0.372	0.357	4.0	69	0.00	14.03
92	M	chlorobenzene	1.055	0.982	6.9	70	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.373	5.6	69	0.00	14.61
94	M	ethylbenzene	1.828	1.750	4.3	72	0.00	14.62
95	M	m,p-xylene	0.714	0.652	8.7	68	0.00	14.74

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8292-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203353.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.667	6.2	70	0.00	15.20
97	M	styrene	1.173	1.116	4.9	68	0.00	15.20
98	M	bromoform	0.323	0.301	6.8	67	0.00	15.47
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	72	0.00	17.10
100	M	isopropylbenzene	3.075	2.939	4.4	70	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.904	-0.1	74	-0.01	15.79
102	M	bromobenzene	0.852	0.753	11.6	65	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	500.000	682.881	-36.6#	81	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.867	0.5	72	0.00	15.88
105	M	trans-1,4-dichloro-2-bute	0.267	0.295	-10.5	79	-0.01	15.93
106	M	1,2,3-trichloropropane	0.262	0.248	5.3	69	0.00	15.98
107	M	n-propylbenzene	3.555	3.403	4.3	71	0.00	16.04
108	M	p-ethyltoluene		----------NA----------				
109	M	2-chlorotoluene	0.748	0.700	6.4	69	0.10	16.31
110	M	4-chlorotoluene	2.360	2.235	5.3	72	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.567	4.8	71	0.00	16.21
112	M	tert-butylbenzene	2.369	2.208	6.8	68	0.00	16.61
113	M	pentachloroethane	0.530	0.510	3.8	71	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.591	7.2	69	0.00	16.65
115	M	sec-butylbenzene	3.487	3.232	7.3	68	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.431	12.1	65	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.653	10.7	67	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.488	12.6	65	0.00	17.13
119		Benzyl Chloride	2.020	1.681	16.8	60	0.00	17.25
120	M	p-diethylbenzene		----------NA----------				
121	M	1,2-dichlorobenzene	1.636	1.458	10.9	66	0.00	17.57
122	M	n-butylbenzene	1.557	1.406	9.7	66	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen		----------NA----------				
124	M	1,2-dibromo-3-chloropropa	0.177	0.189	-6.8	82	-0.01	18.40
125	M	1,3,5-trichlorobenzene	1.321	1.169	11.5	66	0.00	18.64
126	M	1,2,4-trichlorobenzene	1.003	1.015	-1.2	69	0.00	19.38
127	M	hexachlorobutadiene	0.620	0.533	14.0	64	0.00	19.52
128	M	naphthalene	2.322	2.426	-4.5	73	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.825	0.7	70	-0.01	19.97
130	M	hexachloroethane	0.581	0.523	10.0	68	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202323.D MD8248.M Fri Dec 14 07:55:33 2012

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8293-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203376.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203376.D                    Vial: 3
Acq On    : 14 Dec 2012  12:29 pm                     Operator: EmilyT
Sample    : cc8248-20                                 Inst    : MSD
Misc      : ms39893,vd8293,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	69	-0.02	8.02
2	M	1,4-dioxane	0.095	0.089	6.3	73	-0.02	11.89
3	M	tertiary butyl alcohol	1.170	1.223	-4.5	77	-0.02	8.14
4	I	pentafluorobenzene	1.000	1.000	0.0	77	-0.01	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.538	-7.6	84	0.00	4.58
7	M	dichlorodifluoromethane	0.734	0.541	26.3#	56	0.00	4.57
8	M	chloromethane	0.718	0.574	20.1#	68	-0.01	4.91
9	M	vinyl chloride	0.805	0.672	16.5	67	-0.01	5.19
10	M	bromomethane	0.432	0.363	16.0	65	0.00	5.87
11	M	chloroethane	0.416	0.371	10.8	71	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.858	-6.1	81	0.00	6.58
14		pentane		----------NA----------				
15	M	ethyl ether	0.367	0.304	17.2	74	-0.02	6.96
16	M	acrolein	0.140	0.126	10.0	83	-0.01	7.19
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.062	-13.7	93	-0.01	7.16
19	M	1,1-dichloroethene	0.535	0.453	15.3	75	-0.02	7.39
		----------	True	Calc.	% Drift		----------	
20	M	acetone	20.000	18.820	5.9	83	-0.02	7.40
		----------	AvgRF	CCRF	% Dev		----------	
21	M	allyl chloride	1.312	1.182	9.9	78	0.00	7.90
22	M	acetonitrile	0.061	0.064	-4.9	86	0.00	7.84
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.824	9.3	76	-0.02	7.66
25	M	iso-butyl alcohol	0.000	0.003#	0.0	0#	-0.02	10.50
26	M	carbon disulfide	1.767	1.625	8.0	78	-0.01	7.79
27	M	methylene chloride	0.622	0.503	19.1	72	-0.02	8.07
28	M	1-chloropropane	0.964	1.026	-6.4	94	-0.01	8.13
29	M	methyl acetate	0.516	0.559	-8.3	90	-0.01	7.88
30	M	methyl tert butyl ether	1.860	1.632	12.3	77	-0.01	8.44
31	M	trans-1,2-dichloroethene	0.571	0.481	15.8	73	-0.01	8.46
32	M	di-isopropyl ether	1.740	1.954	-12.3	89	-0.01	9.03
33	M	ethyl tert-butyl ether	1.749	1.820	-4.1	82	-0.01	9.49
34	M	2-butanone	0.067	0.062	7.5	77	-0.02	9.70
35	M	1,1-dichloroethane	0.948	0.901	5.0	80	-0.01	9.02
36	M	chloroprene	0.760	0.885	-16.4	93	-0.01	9.13
37	M	acrylonitrile	0.244	0.217	11.1	75	-0.01	8.38

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8293-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203376.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.092	8.9	69	-0.02	9.00
39	M	ethyl acetate	0.082	0.085	-3.7	79	-0.02	9.73
40	M	2,2-dichloropropane	0.820	0.774	5.6	81	0.00	9.78
41	M	cis-1,2-dichloroethene	0.639	0.514	19.6	73	-0.01	9.74
42	M	propionitrile	0.098	0.088	10.2	78	-0.02	9.78
43	M	bromochloromethane	0.289	0.253	12.5	74	0.00	10.04
44	M	tetrahydrofuran	0.083	0.073	12.0	75	-0.02	10.10
45	M	chloroform	0.921	0.857	6.9	79	-0.02	10.09
46	S	dibromofluoromethane (s)	0.495	0.457	7.7	80	-0.01	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.603	-6.0	87	0.00	10.72
48	M	freon 113	0.392	0.437	-11.5	85	0.00	7.39
49	M	methacrylonitrile	0.388	0.389	-0.3	85	-0.01	9.97
50	m	t-butyl formate	0.589	0.619	-5.1	81	-0.02	10.16
51	M	1,1,1-trichloroethane	0.825	0.829	-0.5	84	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.726	2.7	78	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	72	-0.01	11.17
54	M	cyclohexane	0.541	0.564	-4.3	79	0.00	10.49
55		tert amyl alcohol		----------NA----------				
56	M	2,2,4-trimethylpentane	1.325	1.587	-19.8	85	-0.01	10.86
57	M	epichlorohydrin	0.046	0.047	-2.2	76	-0.01	12.43
58	M	n-butyl alcohol	0.014	0.013	7.1	69	-0.02	11.26
59	M	carbon tetrachloride	0.469	0.508	-8.3	85	0.00	10.60
60	M	1,1-dichloropropene	0.469	0.466	0.6	80	-0.01	10.55
61	M	hexane	0.404	0.497	-23.0#	90	-0.01	8.80
62	M	benzene	1.429	1.296	9.3	74	-0.01	10.82
63	M	heptane	0.252	0.283	-12.3	82	-0.01	11.02
64	M	isopropyl acetate	0.718	0.829	-15.5	86	-0.01	10.73
65	M	1,2-dichloroethane	0.471	0.500	-6.2	85	-0.01	10.81
66		Ethyl Acrylate		----------NA----------				
67	M	trichloroethene	0.346	0.330	4.6	76	-0.01	11.52
68	M	2-nitropropane	1.004	1.095	-9.1	84	-0.01	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.255	-1.2	75	-0.01	12.32
70	M	methyl methacrylate	0.106	0.090	15.1	65	-0.01	11.79
71	M	tert-amyl ethyl ether		----------NA----------				
72	M	1,2-dichloropropane	0.370	0.350	5.4	75	-0.01	11.79
73	M	methylcyclohexane	0.598	0.657	-9.9	80	0.00	11.79
74	M	dibromomethane	0.226	0.211	6.6	75	-0.01	11.93
75	M	bromodichloromethane	0.463	0.461	0.4	80	-0.01	12.06
76	M	cis-1,3-dichloropropene	0.623	0.564	9.5	73	-0.01	12.55
77	S	toluene-d8 (s)	1.268	1.220	3.8	75	0.00	12.88
78	M	4-methyl-2-pentanone	0.165	0.155	6.1	74	-0.01	12.66
79	M	toluene	0.918	0.802	12.6	70	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.012	14.3	67	-0.01	12.65
81	M	trans-1,3-dichloropropene	0.598	0.541	9.5	74	-0.01	13.13
82	M	ethyl methacrylate	0.513	0.465	9.4	71	-0.01	13.15
83	M	1,1,2-trichloroethane	0.282	0.252	10.6	70	0.00	13.37
84	M	2-hexanone	0.146	0.146	0.0	78	-0.01	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	67	0.00	14.51
86	M	tetrachloroethene	0.420	0.399	5.0	70	0.00	13.59
87	M	1,3-dichloropropane	0.608	0.577	5.1	71	0.00	13.57
88	M	butyl acetate	0.275	0.289	-5.1	73	-0.01	13.65
89	m	3,3-dimethyl-1-butanol	0.050	0.053	-6.0	77	-0.01	13.74
90	M	dibromochloromethane	0.403	0.396	1.7	73	0.00	13.85
91	M	1,2-dibromoethane	0.372	0.347	6.7	69	-0.01	14.03
92	M	chlorobenzene	1.055	0.986	6.5	70	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.375	5.1	73	0.00	14.61
94	M	ethylbenzene	1.828	1.713	6.3	71	-0.01	14.62
95	M	m,p-xylene	0.714	0.651	8.8	68	0.00	14.74

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8293-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203376.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.648	8.9	69	0.00	15.20
97	M	styrene	1.173	1.041	11.3	67	0.00	15.20
98	M	bromoform	0.323	0.292	9.6	69	0.00	15.48
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	65	0.00	17.10
100	M	isopropylbenzene	3.075	3.018	1.9	71	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.886	1.9	73	-0.01	15.80
102	M	bromobenzene	0.852	0.767	10.0	67	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	200.000	279.903	-40.0#	118	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.830	4.7	70	0.00	15.88
105	M	trans-1,4-dichloro-2-bute	0.267	0.273	-2.2	77	-0.01	15.94
106	M	1,2,3-trichloropropane	0.262	0.246	6.1	69	-0.01	15.97
107	M	n-propylbenzene	3.555	3.448	3.0	71	0.00	16.05
108	M	p-ethyltoluene		----------NA----------				
109	M	2-chlorotoluene	0.748	0.697	6.8	68	0.00	16.20
110	M	4-chlorotoluene	2.360	2.190	7.2	71	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.549	5.5	70	0.00	16.21
112	M	tert-butylbenzene	2.369	2.247	5.1	69	0.00	16.61
113	M	pentachloroethane	0.530	0.530	0.0	73	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.556	8.5	69	0.00	16.65
115	M	sec-butylbenzene	3.487	3.303	5.3	69	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.439	11.6	66	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.708	8.8	67	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.479	13.1	66	0.00	17.13
119		Benzyl Chloride	2.020	1.733	14.2	61	-0.01	17.25
120	M	p-diethylbenzene		----------NA----------				
121	M	1,2-dichlorobenzene	1.636	1.432	12.5	65	-0.01	17.56
122	M	n-butylbenzene	1.557	1.395	10.4	66	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen		----------NA----------				
124	M	1,2-dibromo-3-chloropropa	0.177	0.170	4.0	69	-0.01	18.41
125	M	1,3,5-trichlorobenzene	1.321	1.167	11.7	63	0.00	18.65
126	M	1,2,4-trichlorobenzene	1.003	0.960	4.3	62	-0.01	19.37
127	M	hexachlorobutadiene	0.620	0.609	1.8	67	0.00	19.52
128	M	naphthalene	2.322	2.132	8.2	60	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.812	2.3	62	-0.01	19.97
130	M	hexachloroethane	0.581	0.545	6.2	71	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202322.D MD8248.M Fri Dec 14 12:55:23 2012

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8297-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203474.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\d203474.D                    Vial: 55
Acq On    : 17 Dec 2012   9:43 am                     Operator: EmilyT
Sample    : cc8248-20                                 Inst    : MSD
Misc      : ms39999,vd8297,5,,100,5,1                 Multiplr: 1.00
MS Integration Params: LSCINT.P

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	77	-0.02	8.02
2	M	1,4-dioxane	0.095	0.089	6.3	81	-0.02	11.89
3	M	tertiary butyl alcohol	1.170	1.310	-12.0	92	-0.02	8.14
4	I	pentafluorobenzene	1.000	1.000	0.0	83	0.00	10.26
5	M	1,2-dichloro-1,2,2-triflu		----------NA----------				
6	M	chlorodifluoromethane	0.500	0.613	-22.6#	104	0.00	4.59
7	M	dichlorodifluoromethane	0.734	0.845	-15.1	95	0.00	4.57
8	M	chloromethane	0.718	0.753	-4.9	97	-0.01	4.91
9	M	vinyl chloride	0.805	0.725	9.9	78	0.00	5.20
10	M	bromomethane	0.432	0.336	22.2#	66	0.00	5.87
11	M	chloroethane	0.416	0.407	2.2	85	0.00	6.06
12	M	vinyl bromide		----------NA----------				
13	M	trichlorofluoromethane	0.809	0.903	-11.6	93	0.00	6.58
14		pentane		----------NA----------				
15	M	ethyl ether	0.367	0.338	7.9	90	-0.01	6.97
16	M	acrolein	0.140	0.139	0.7	100	0.00	7.19
17	M	chlorotrifluoroethene		----------NA----------				
18	M	2-chloropropane	0.934	1.154	-23.6#	110	-0.01	7.16
19	M	1,1-dichloroethene	0.535	0.471	12.0	84	-0.01	7.39
		----------	True	Calc.	% Drift	----------		
20	M	acetone	20.000	20.274	-1.4	98	-0.02	7.41
		----------	AvgRF	CCRF	% Dev	----------		
21	M	allyl chloride	1.312	1.331	-1.4	96	0.00	7.90
22	M	acetonitrile	0.061	0.073	-19.7	108	-0.01	7.83
23	M	acetaldehyde		----------NA----------				
24	M	iodomethane	0.908	0.868	4.4	87	-0.01	7.66
25	M	iso-butyl alcohol	0.000	0.004#	0.0	0#	-0.01	10.51
26	M	carbon disulfide	1.767	1.715	2.9	89	-0.01	7.79
27	M	methylene chloride	0.622	0.560	10.0	88	-0.01	8.07
28	M	1-chloropropane	0.964	1.137	-17.9	113	0.00	8.14
29	M	methyl acetate	0.516	0.631	-22.3#	110	0.00	7.88
30	M	methyl tert butyl ether	1.860	1.847	0.7	95	-0.01	8.44
31	M	trans-1,2-dichloroethene	0.571	0.512	10.3	85	0.00	8.47
32	M	di-isopropyl ether	1.740	2.106	-21.0#	104	-0.01	9.03
33	M	ethyl tert-butyl ether	1.749	1.951	-11.5	95	-0.01	9.49
34	M	2-butanone	0.067	0.076	-13.4	103	-0.01	9.70
35	M	1,1-dichloroethane	0.948	0.973	-2.6	94	-0.01	9.02
36	M	chloroprene	0.760	0.894	-17.6	102	0.00	9.14
37	M	acrylonitrile	0.244	0.261	-7.0	99	-0.01	8.38

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8297-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203474.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

38	M	vinyl acetate	0.101	0.102	-1.0	83	0.00	9.01
39	M	ethyl acetate	0.082	0.097	-18.3	99	-0.01	9.73
40	M	2,2-dichloropropane	0.820	0.883	-7.7	101	0.00	9.77
41	M	cis-1,2-dichloroethene	0.639	0.551	13.8	85	-0.01	9.74
42	M	propionitrile	0.098	0.102	-4.1	99	-0.01	9.78
43	M	bromochloromethane	0.289	0.280	3.1	89	0.00	10.04
44	M	tetrahydrofuran	0.083	0.083	0.0	93	-0.02	10.10
45	M	chloroform	0.921	0.931	-1.1	93	-0.01	10.09
46	S	dibromofluoromethane (s)	0.495	0.457	7.7	86	-0.01	10.29
47	S	1,2-dichloroethane-d4 (s)	0.569	0.606	-6.5	95	0.00	10.72
48	M	freon 113	0.392	0.407	-3.8	86	0.00	7.39
49	M	methacrylonitrile	0.388	0.459	-18.3	109	0.00	9.98
50	m	t-butyl formate	0.589	0.675	-14.6	96	-0.01	10.17
51	M	1,1,1-trichloroethane	0.825	0.873	-5.8	96	0.00	10.39
52	M	tert-amyl methyl ether	1.774	1.846	-4.1	90	0.00	10.87
53	I	1,4-difluorobenzene	1.000	1.000	0.0	78	-0.01	11.17
54	M	cyclohexane	0.541	0.590	-9.1	90	0.00	10.49
55		tert amyl alcohol	0.016	0.018	-12.5	95	-0.01	10.66
56	M	2,2,4-trimethylpentane	1.325	1.600	-20.8#	93	0.00	10.87
57	M	epichlorohydrin	0.046	0.054	-17.4	95	0.00	12.44
58	M	n-butyl alcohol	0.014	0.015	-7.1	87	-0.02	11.25
59	M	carbon tetrachloride	0.469	0.529	-12.8	97	0.00	10.60
60	M	1,1-dichloropropene	0.469	0.499	-6.4	93	0.00	10.56
61	M	hexane	0.404	0.513	-27.0#	101	0.00	8.80
62	M	benzene	1.429	1.421	0.6	88	0.00	10.82
63	M	heptane	0.252	0.304	-20.6#	95	0.00	11.02
64	M	isopropyl acetate	0.718	0.929	-29.4#	106	-0.01	10.73
65	M	1,2-dichloroethane	0.471	0.550	-16.8	102	-0.01	10.80
66		Ethyl Acrylate	0.487	0.543	-11.5	96	0.00	11.52
67	M	trichloroethene	0.346	0.353	-2.0	89	0.00	11.53
68	M	2-nitropropane	1.004	1.263	-25.8#	105	-0.01	12.32
69	M	2-chloroethyl vinyl ether	0.252	0.287	-13.9	91	0.00	12.32
70	M	methyl methacrylate	0.106	0.107	-0.9	85	-0.01	11.79
71	M	tert-amyl ethyl ether	0.585	0.487	16.8	72	-0.01	11.71
72	M	1,2-dichloropropane	0.370	0.398	-7.6	93	-0.01	11.79
73	M	methylcyclohexane	0.598	0.652	-9.0	86	0.00	11.79
74	M	dibromomethane	0.226	0.240	-6.2	93	-0.01	11.93
75	M	bromodichloromethane	0.463	0.510	-10.2	96	0.00	12.07
76	M	cis-1,3-dichloropropene	0.623	0.651	-4.5	92	0.00	12.55
77	S	toluene-d8 (s)	1.268	1.255	1.0	84	0.00	12.88
78	M	4-methyl-2-pentanone	0.165	0.186	-12.7	97	-0.01	12.66
79	M	toluene	0.918	0.898	2.2	85	0.00	12.96
80	M	3-methyl-1-butanol	0.014	0.013	7.1	79	-0.01	12.65
81	M	trans-1,3-dichloropropene	0.598	0.620	-3.7	92	0.00	13.14
82	M	ethyl methacrylate	0.513	0.550	-7.2	91	-0.01	13.15
83	M	1,1,2-trichloroethane	0.282	0.288	-2.1	87	0.00	13.37
84	M	2-hexanone	0.146	0.171	-17.1	99	0.00	13.57
85	I	chlorobenzene-d5	1.000	1.000	0.0	75	0.00	14.51
86	M	tetrachloroethene	0.420	0.435	-3.6	85	0.00	13.59
87	M	1,3-dichloropropane	0.608	0.655	-7.7	90	0.00	13.57
88	M	butyl acetate	0.275	0.330	-20.0	93	0.00	13.66
89	m	3,3-dimethyl-1-butanol	0.050	0.054	-8.0	89	-0.01	13.74
90	M	dibromochloromethane	0.403	0.436	-8.2	90	0.00	13.85
91	M	1,2-dibromoethane	0.372	0.385	-3.5	85	-0.01	14.03
92	M	chlorobenzene	1.055	1.066	-1.0	85	0.00	14.55
93	M	1,1,1,2-tetrachloroethane	0.395	0.407	-3.0	88	0.00	14.61
94	M	ethylbenzene	1.828	1.865	-2.0	87	0.00	14.62
95	M	m,p-xylene	0.714	0.716	-0.3	84	0.00	14.74

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VD8297-CC8248
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** D203474.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

96	M	o-xylene	0.711	0.695	2.3	82	0.00	15.20
97	M	styrene	1.173	1.174	-0.1	84	0.00	15.20
98	M	bromoform	0.323	0.328	-1.5	86	0.00	15.48
99	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	73	0.00	17.10
100	M	isopropylbenzene	3.075	3.158	-2.7	84	0.00	15.59
101	S	4-bromofluorobenzene (s)	0.903	0.877	2.9	81	-0.01	15.79
102	M	bromobenzene	0.852	0.834	2.1	82	0.00	16.02
		----------	True	Calc.	% Drift	----------		
103	M	cyclohexanone	200.000	298.941	-49.5#	143	0.00	15.75
		----------	AvgRF	CCRF	% Dev	----------		
104	M	1,1,2,2-tetrachloroethane	0.871	0.925	-6.2	88	0.00	15.88
105	M	trans-1,4-dichloro-2-bute	0.267	0.317	-18.7	101	-0.01	15.94
106	M	1,2,3-trichloropropane	0.262	0.278	-6.1	88	0.00	15.98
107	M	n-propylbenzene	3.555	3.688	-3.7	86	0.00	16.05
108	M	p-ethyltoluene	2.979	2.900	2.7	81	0.00	16.16
109	M	2-chlorotoluene	0.748	0.729	2.5	80	0.00	16.20
110	M	4-chlorotoluene	2.360	2.328	1.4	86	0.00	16.31
111	M	1,3,5-trimethylbenzene	2.697	2.717	-0.7	84	0.00	16.21
112	M	tert-butylbenzene	2.369	2.369	0.0	82	0.00	16.61
113	M	pentachloroethane	0.530	0.553	-4.3	87	0.00	16.68
114	M	1,2,4-trimethylbenzene	2.793	2.780	0.5	84	0.00	16.65
115	M	sec-butylbenzene	3.487	3.564	-2.2	84	0.00	16.85
116	M	1,3-dichlorobenzene	1.628	1.555	4.5	80	0.00	17.04
117	M	p-isopropyltoluene	2.970	2.947	0.8	83	0.00	16.98
118	M	1,4-dichlorobenzene	1.702	1.617	5.0	81	0.00	17.13
119		Benzyl Chloride	2.020	2.005	0.7	79	0.00	17.25
120	M	p-diethylbenzene	1.824	1.761	3.5	82	0.00	17.40
121	M	1,2-dichlorobenzene	1.636	1.551	5.2	80	0.00	17.57
122	M	n-butylbenzene	1.557	1.592	-2.2	86	0.00	17.44
123	M	1,2,4,5-tetramethylbenzen	2.866	2.811	1.9	79	0.00	18.27
124	M	1,2-dibromo-3-chloropropa	0.177	0.187	-5.6	86	0.00	18.41
125	M	1,3,5-trichlorobenzene	1.321	1.287	2.6	79	0.00	18.64
126	M	1,2,4-trichlorobenzene	1.003	1.143	-14.0	84	0.00	19.38
127	M	hexachlorobutadiene	0.620	0.645	-4.0	81	0.00	19.53
128	M	naphthalene	2.322	2.601	-12.0	83	0.00	19.70
129	M	1,2,3-trichlorobenzene	0.831	0.966	-16.2	84	0.00	19.98
130	M	hexachloroethane	0.581	0.567	2.4	84	0.00	17.87

(#) = Out of Range SPCC's out = 0 CCC's out = 0
d202322.D MD8248.M Mon Dec 17 16:34:41 2012

6.7.7

6

Initial Calibration Summary

Job Number: JB22822 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSV

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

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

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

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

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

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

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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


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

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

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

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

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


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

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

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

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

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

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** VV5649-ICC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131010.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

6.7.8

6

Initial Calibration Verification

Job Number: JB22822 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

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

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

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

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

Initial Calibration Verification

Job Number: JB22822 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Initial Calibration Verification

Job Number: JB22822 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Initial Calibration Verification

Job Number: JB22822 **Sample:** VV5649-ICV5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131018.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131129.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-CORE\vv5654\V131129.D    Vial: 3
Acq On    :  6 Dec 2012  10:46 am                    Operator: THIENN
Sample    : cc5649-20                                Inst    : MSV
Misc      : MS39542,VV5654,5,,,,1                    Multiplr: 1.00
MS Integration Params: rteint.p

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	129	0.00	7.63
2		tertiary butyl alcohol	1.121	1.085	3.2	115	0.00	7.75
3		1,4-dioxane	0.094	0.086	8.5	102	0.00	11.56
4	I	pentafluorobenzene	1.000	1.000	0.0	111	0.00	9.85
5		Propylene		----------NA----------				
6		Freon 115		----------NA----------				
7		Freon 23		----------NA----------				
8		Freon 143A		----------NA----------				
9		Freon 152A		----------NA----------				
10		Freon 114		----------NA----------				
11		Freon 142B		----------NA----------				
12		Chlorotrifluoroethene		----------NA----------				
13		1,3-Butadiene		----------NA----------				
14		chlorodifluoromethane	0.449	0.585	-30.3#	131	-0.01	4.32
15		dichlorodifluoromethane	0.538	0.622	-15.6	116	0.00	4.30
16		chloromethane	0.529	0.563	-6.4	111	-0.01	4.64
17		vinyl chloride	0.569	0.652	-14.6	120	0.00	4.89
18		bromomethane	0.315	0.354	-12.4	112	0.00	5.55
19		chloroethane	0.273	0.318	-16.5	116	0.00	5.72
20		trichlorofluoromethane	0.576	0.711	-23.4#	122	0.00	6.13
21		Vinyl Bromide		----------NA----------				
22		ethyl ether	0.170	0.173	-1.8	102	0.00	6.54
		----------	True	Calc.	% Drift	----------		
23		Acetaldehyde	200.000	156.535	21.7#	75	0.00	5.12
		----------	AvgRF	CCRF	% Dev	----------		
24		Pentane		----------NA----------				
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
		----------	True	Calc.	% Drift	----------		
28		acrolein	200.000	187.972	6.0	101	0.00	6.83
		----------	AvgRF	CCRF	% Dev	----------		
29		freon 113	0.266	0.332	-24.8#	119	0.00	6.93
30		1,1-dichloroethene	0.341	0.390	-14.4	112	0.00	6.98
31		acetone	0.017	0.016	5.9	84	0.01	7.05
32		iso-butyl alcohol	0.010	0.012	-20.0	106	0.00	10.43
33		allyl chloride	0.190	0.245	-28.9#	120	0.00	7.50

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131129.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.094	-20.5#	116	0.00	7.50
35		iodomethane	0.637	0.729	-14.4	109	0.00	7.27
36		carbon disulfide	1.250	1.488	-19.0	115	0.00	7.40
37		methylene chloride	0.366	0.403	-10.1	103	0.00	7.69
38		methyl acetate	0.153	0.185	-20.9#	117	0.00	7.48
39		methyl tert butyl ether	0.880	0.931	-5.8	102	-0.01	7.99
40		trans-1,2-dichloroethene	0.364	0.414	-13.7	107	0.00	8.05
41		di-isopropyl ether	1.077	1.180	-9.6	106	0.00	8.56
42		2-butanone	0.023	0.028	-21.7#	117	0.00	9.35
43		1,1-dichloroethane	0.648	0.748	-15.4	109	0.00	8.62
44		chloroprene	0.508	0.641	-26.2#	121	0.00	8.72
45		acrylonitrile	0.070	0.079	-12.9	105	0.00	8.02
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	20.000	21.332	-6.7	102	0.00	8.59
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	1.116	-13.5	107	0.00	9.03
48		ethyl acetate	0.029	0.028	3.4	99	0.01	9.34
49		2,2-dichloropropane	0.553	0.675	-22.1#	120	0.00	9.36
50		cis-1,2-dichloroethene	0.389	0.411	-5.7	102	0.00	9.37
51		propionitrile	0.026	0.031	-19.2	109	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	20.000	20.002	-0.0	92	0.00	9.42
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.093	-20.8#	106	0.00	9.62
54		bromochloromethane	0.160	0.168	-5.0	101	0.00	9.68
55		tetrahydrofuran	0.068	0.080	-17.6	114	0.00	9.73
56		chloroform	0.617	0.694	-12.5	107	0.00	9.73
57		tert-Butyl Formate	0.209	0.229	-9.6	104	0.00	9.76
58	S	dibromofluoromethane (s)	0.305	0.339	-11.1	115	0.00	9.93
59	S	1,2-dichloroethane-d4 (s)	0.298	0.307	-3.0	106	0.00	10.37
60		1,1,1-trichloroethane	0.560	0.680	-21.4#	117	0.00	9.98
61		Cyclohexane	0.510	0.589	-15.5	110	0.00	10.04
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	118	0.00	10.80
64		methylcyclohexane	0.399	0.449	-12.5	114	0.00	11.37
65		epichlorohydrin	0.012	0.013	-8.3	108	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	1000.000	1160.412	-16.0	121	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.403	-17.5	119	0.00	10.19
68		1,1-dichloropropene	0.335	0.369	-10.1	111	0.00	10.16
69		hexane	0.287	0.326	-13.6	114	0.00	8.32
70		2,2,4-Trimethylpentane	0.924	0.995	-7.7	109	0.00	10.39
71		benzene	0.986	1.032	-4.7	104	0.00	10.43
72		tert-amyl methyl ether	0.632	0.653	-3.3	109	0.00	10.43
73		heptane	0.170	0.188	-10.6	106	0.00	10.56
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	20.000	21.648	-8.2	100	0.00	10.32

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131129.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.276	-5.3	104	0.00	10.46
76		trichloroethene	0.246	0.275	-11.8	111	0.00	11.16
77		Ethyl Acrylate		----------NA----------				
78		tert-Amyl Ethyl Ether		----------NA----------				
79		2-chloroethyl vinyl ether	0.043	0.060	-39.5#	143	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	20.000	18.591	7.0	95	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.249	-1.6	104	-0.01	11.43
82		dibromomethane	0.109	0.121	-11.0	105	0.00	11.61
83		bromodichloromethane	0.311	0.327	-5.1	105	0.00	11.74
84		2-nitropropane	0.044	0.054	-22.7#	122	0.01	11.99
85		cis-1,3-dichloropropene	0.376	0.387	-2.9	102	0.00	12.22
86	S	toluene-d8 (s)	0.837	0.962	-14.9	121	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.065	-10.2	109	0.00	12.32
88		toluene	0.645	0.671	-4.0	105	0.00	12.61
89		isoamyl alcohol	0.006	0.007	-16.7	114	0.00	12.34
90		trans-1,3-dichloropropene	0.312	0.325	-4.2	101	0.00	12.83
91		ethyl methacrylate	0.229	0.225	1.7	101	0.00	12.80
92		1,1,2-trichloroethane	0.141	0.150	-6.4	103	0.00	13.07
			True	Calc.	% Drift			
93		2-hexanone	20.000	20.571	-2.9	98	0.00	13.25
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	120	0.00	14.21
95		tetrachloroethene	0.320	0.339	-5.9	111	0.00	13.25
96		1,3-dichloropropane	0.337	0.337	0.0	103	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	20.000	18.717	6.4	99	0.00	13.32
98		3,3-Dimethyl-1-Butanol	200.000	214.286	-7.1	118	0.00	13.43
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.253	2.3	98	0.00	13.57
100		1,2-dibromoethane	0.200	0.192	4.0	102	0.00	13.74
101		chlorobenzene	0.836	0.815	2.5	104	0.00	14.24
102		1,1,1,2-tetrachloroethane	0.291	0.287	1.4	104	0.00	14.31
103		ethylbenzene	1.452	1.497	-3.1	108	0.00	14.29
104		m,p-xylene	0.566	0.565	0.2	106	0.00	14.40
105		o-xylene	0.552	0.547	0.9	103	0.00	14.88
106		styrene	0.927	0.900	2.9	104	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.165	0.6	102	0.00	15.21
			True	Calc.	% Drift			
109		cyclohexanone	200.000	58.734	70.6#	43	0.00	15.48
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.399	-2.3	115	0.00	15.50
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	116	0.00	16.82
112		isopropylbenzene	2.535	2.772	-9.3	107	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.481	-5.3	102	0.00	15.63
114		trans-1,4-dichloro-2-bute	0.110	0.138	-25.5#	115	0.00	15.67

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131129.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.120	-13.2	109	0.00	15.71
116	bromobenzene	0.604	0.633	-4.8	103	0.00	15.73
117	n-propylbenzene	3.041	3.326	-9.4	107	0.00	15.72
118	4-Ethyltoluene		----------NA----------				
119	2-chlorotoluene	0.596	0.654	-9.7	106	0.00	15.90
120	4-chlorotoluene	1.881	1.947	-3.5	101	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	2.342	-3.8	104	0.00	15.88
122	tert-butylbenzene	1.918	2.070	-7.9	107	0.00	16.28
123	pentachloroethane	0.407	0.425	-4.4	105	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.379	-3.0	103	0.00	16.33
125	sec-butylbenzene	2.988	3.204	-7.2	105	0.00	16.52
126	p-isopropyltoluene	2.493	2.652	-6.4	104	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.304	-3.7	101	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.278	-1.0	101	0.00	16.85
129	1,2,3-trimethylbenzene		----------NA----------				
130	1,2-dichlorobenzene	1.189	1.201	-1.0	101	0.00	17.29
131	Benzyl Chloride	0.856	0.903	-5.5	108	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene		----------NA----------				
134	n-butylbenzene	1.402	1.431	-2.1	101	0.00	17.11
135	hexachloroethane	0.432	0.460	-6.5	107	0.00	17.57
136	1,2,4,5-tetramethylbenzen		----------NA----------				
137	1,2-dibromo-3-chloropropa	0.085	0.093	-9.4	110	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	1.105	-2.7	101	0.00	18.34
139	1,2,4-trichlorobenzene	0.873	0.889	-1.8	101	0.00	19.08
140	hexachlorobutadiene	0.587	0.611	-4.1	105	0.00	19.19
141	naphthalene	1.399	1.380	1.4	98	0.00	19.42
142	1,2,3-trichlorobenzene	0.741	0.748	-0.9	101	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131009.D MVS5649.M Thu Dec 06 16:34:22 2012 VOA-05

6.7.10

6

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131149.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\V-CORE\vv5654\V131149.D Vial: 23
Acq On : 6 Dec 2012 9:57 pm Operator: THIENN
Sample : cc5649-50 Inst : MSV
Misc : MS39542,VV5654,5,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	108	0.00	7.63
2		tertiary butyl alcohol	1.121	1.030	8.1	104	0.01	7.76
3		1,4-dioxane	0.094	0.083	11.7	104	0.00	11.56
4	I	pentafluorobenzene	1.000	1.000	0.0	93	0.00	9.85
5		Propylene		----------NA----------				
6		Freon 115		----------NA----------				
7		Freon 23		----------NA----------				
8		Freon 143A		----------NA----------				
9		Freon 152A		----------NA----------				
10		Freon 114		----------NA----------				
11		Freon 142B		----------NA----------				
12		Chlorotrifluoroethene		----------NA----------				
13		1,3-Butadiene		----------NA----------				
14		chlorodifluoromethane	0.449	0.453	-0.9	99	0.00	4.33
15		dichlorodifluoromethane	0.538	0.523	2.8	99	0.00	4.32
16		chloromethane	0.529	0.473	10.6	91	0.00	4.65
17		vinyl chloride	0.569	0.548	3.7	97	0.00	4.89
18		bromomethane	0.315	0.300	4.8	98	0.00	5.55
19		chloroethane	0.273	0.278	-1.8	104	0.00	5.71
20		trichlorofluoromethane	0.576	0.589	-2.3	107	0.00	6.13
21		Vinyl Bromide		----------NA----------				
22		ethyl ether	0.170	0.176	-3.5	106	0.00	6.55
		----------	True	Calc.	% Drift	----------		
23		Acetaldehyde	500.000	362.227	27.6#	71	0.00	5.13
		----------	AvgRF	CCRF	% Dev	----------		
24		Pentane		----------NA----------				
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
		----------	True	Calc.	% Drift	----------		
28		acrolein	500.000	326.019	34.8#	75	0.00	6.83
		----------	AvgRF	CCRF	% Dev	----------		
29		freon 113	0.266	0.268	-0.8	98	0.00	6.92
30		1,1-dichloroethene	0.341	0.341	0.0	103	0.00	6.98
31		acetone	0.017	0.017	0.0	96	0.00	7.04
32		iso-butyl alcohol	0.010	0.011	-10.0	109	0.00	10.43
33		allyl chloride	0.190	0.239	-25.8#	132	0.00	7.50

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131149.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.087	-11.5	115	0.00	7.50
35		iodomethane	0.637	0.699	-9.7	109	0.00	7.28
36		carbon disulfide	1.250	1.319	-5.5	106	0.00	7.40
37		methylene chloride	0.366	0.400	-9.3	108	0.00	7.69
38		methyl acetate	0.153	0.175	-14.4	106	0.00	7.48
39		methyl tert butyl ether	0.880	1.021	-16.0	114	0.00	7.99
40		trans-1,2-dichloroethene	0.364	0.383	-5.2	109	0.00	8.05
41		di-isopropyl ether	1.077	1.156	-7.3	104	0.00	8.56
42		2-butanone	0.023	0.026	-13.0	106	-0.01	9.33
43		1,1-dichloroethane	0.648	0.722	-11.4	110	0.00	8.62
44		chloroprene	0.508	0.539	-6.1	103	0.00	8.72
45		acrylonitrile	0.070	0.080	-14.3	109	0.00	8.03
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	50.000	56.503	-13.0	108	0.00	8.59
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	1.091	-11.0	106	0.00	9.03
48		ethyl acetate	0.029	0.029	0.0	87	0.00	9.33
49		2,2-dichloropropane	0.553	0.600	-8.5	110	0.00	9.36
50		cis-1,2-dichloroethene	0.389	0.411	-5.7	108	0.00	9.36
51		propionitrile	0.026	0.031	-19.2	111	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	50.000	58.966	-17.9	109	0.00	9.42
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.090	-16.9	105	0.00	9.62
54		bromochloromethane	0.160	0.175	-9.4	107	0.00	9.69
55		tetrahydrofuran	0.068	0.078	-14.7	106	0.00	9.73
56		chloroform	0.617	0.692	-12.2	113	0.00	9.73
57		tert-Butyl Formate	0.209	0.239	-14.4	104	0.00	9.75
58	S	dibromofluoromethane (s)	0.305	0.351	-15.1	115	0.00	9.94
59	S	1,2-dichloroethane-d4 (s)	0.298	0.313	-5.0	106	0.00	10.37
60		1,1,1-trichloroethane	0.560	0.614	-9.6	111	0.00	9.98
61		Cyclohexane	0.510	0.535	-4.9	104	0.00	10.05
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	101	0.00	10.80
64		methylcyclohexane	0.399	0.356	10.8	98	0.00	11.38
65		epichlorohydrin	0.012	0.012	0.0	105	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	2500.000	2537.673	-1.5	104	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.349	-1.7	111	0.00	10.19
68		1,1-dichloropropene	0.335	0.318	5.1	104	0.00	10.16
69		hexane	0.287	0.258	10.1	96	0.00	8.32
70		2,2,4-Trimethylpentane	0.924	0.817	11.6	97	0.00	10.39
71		benzene	0.986	0.976	1.0	110	0.00	10.43
72		tert-amyl methyl ether	0.632	0.617	2.4	106	0.00	10.44
73		heptane	0.170	0.151	11.2	96	0.00	10.57
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	50.000	50.568	-1.1	100	0.00	10.32

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131149.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.278	-6.1	115	0.00	10.46
76		trichloroethene	0.246	0.244	0.8	111	0.00	11.16
77		Ethyl Acrylate		----------NA----------				
78		tert-Amyl Ethyl Ether		----------NA----------				
79		2-chloroethyl vinyl ether	0.043	0.066	-53.5#	162	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	50.000	51.712	-3.4	103	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.252	-2.9	113	0.00	11.44
82		dibromomethane	0.109	0.124	-13.8	115	0.00	11.62
83		bromodichloromethane	0.311	0.333	-7.1	115	0.00	11.74
84		2-nitropropane	0.044	0.053	-20.5#	130	0.00	11.98
85		cis-1,3-dichloropropene	0.376	0.391	-4.0	112	0.00	12.22
86	S	toluene-d8 (s)	0.837	0.985	-17.7	128	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.062	-5.1	110	0.00	12.31
88		toluene	0.645	0.640	0.8	113	0.00	12.61
89		isoamyl alcohol	0.006	0.007	-16.7	106	0.00	12.33
90		trans-1,3-dichloropropene	0.312	0.335	-7.4	114	0.00	12.84
91		ethyl methacrylate	0.229	0.237	-3.5	110	0.00	12.79
92		1,1,2-trichloroethane	0.141	0.151	-7.1	113	0.00	13.07
			True	Calc.	% Drift			
93		2-hexanone	50.000	54.023	-8.0	104	0.00	13.25
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	110	0.00	14.21
95		tetrachloroethene	0.320	0.286	10.6	109	0.00	13.25
96		1,3-dichloropropane	0.337	0.328	2.7	114	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	50.000	50.710	-1.4	104	0.00	13.31
98		3,3-Dimethyl-1-Butanol	500.000	454.210	9.2	106	0.00	13.43
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.258	0.4	117	0.00	13.57
100		1,2-dibromoethane	0.200	0.188	6.0	113	0.00	13.75
101		chlorobenzene	0.836	0.759	9.2	112	0.00	14.24
102		1,1,1,2-tetrachloroethane	0.291	0.279	4.1	114	0.00	14.31
103		ethylbenzene	1.452	1.330	8.4	112	0.00	14.29
104		m,p-xylene	0.566	0.509	10.1	111	0.00	14.41
105		o-xylene	0.552	0.508	8.0	111	0.00	14.88
106		styrene	0.927	0.858	7.4	115	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.164	1.2	114	0.00	15.21
			True	Calc.	% Drift			
109		cyclohexanone	500.000	400.064	20.0	102	0.00	15.48
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.420	-7.7	132	0.00	15.51
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	115	0.00	16.82
112		isopropylbenzene	2.535	2.250	11.2	110	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.426	6.8	113	0.00	15.63
114		trans-1,4-dichloro-2-bute	0.110	0.112	-1.8	118	0.00	15.67

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5654-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131149.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.102	3.8	115	0.00	15.72
116	bromobenzene	0.604	0.555	8.1	115	0.00	15.73
117	n-propylbenzene	3.041	2.678	11.9	110	0.00	15.72
118	4-Ethyltoluene		----------NA----------				
119	2-chlorotoluene	0.596	0.539	9.6	111	0.00	15.90
120	4-chlorotoluene	1.881	1.669	11.3	113	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	1.964	13.0	110	0.00	15.88
122	tert-butylbenzene	1.918	1.702	11.3	109	0.00	16.28
123	pentachloroethane	0.407	0.385	5.4	115	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.056	11.0	112	0.00	16.33
125	sec-butylbenzene	2.988	2.640	11.6	109	0.00	16.52
126	p-isopropyltoluene	2.493	2.198	11.8	108	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.133	9.9	113	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.121	11.4	113	0.00	16.84
129	1,2,3-trimethylbenzene		----------NA----------				
130	1,2-dichlorobenzene	1.189	1.066	10.3	114	0.00	17.29
131	Benzyl Chloride	0.856	0.730	14.7	106	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene		----------NA----------				
134	n-butylbenzene	1.402	1.152	17.8	102	0.00	17.11
135	hexachloroethane	0.432	0.403	6.7	112	0.00	17.57
136	1,2,4,5-tetramethylbenzen		----------NA----------				
137	1,2-dibromo-3-chloropropa	0.085	0.081	4.7	112	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	0.908	15.6	105	0.00	18.34
139	1,2,4-trichlorobenzene	0.873	0.719	17.6	102	0.00	19.07
140	hexachlorobutadiene	0.587	0.500	14.8	103	0.00	19.19
141	naphthalene	1.399	1.220	12.8	103	0.00	19.42
142	1,2,3-trichlorobenzene	0.741	0.643	13.2	104	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131010.D MVS5649.M Fri Dec 07 10:33:50 2012 VOA-05

6.7.11
6

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

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

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

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

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

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131166.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

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

6.7.12
6

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131185.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-CORE\vv5655\V131185.D    Vial: 22
Acq On    :  7 Dec 2012   9:32 pm                     Operator: THIENN
Sample    : cc5649-50                                 Inst    : MSV
Misc      : MS39786,VV5655,5,,,,1                     Multiplr: 1.00
MS Integration Params: rteint.p

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	110	0.00	7.64
2		tertiary butyl alcohol	1.121	1.024	8.7	104	0.00	7.75
3		1,4-dioxane	0.094	0.083	11.7	105	0.00	11.56
4	I	pentafluorobenzene	1.000	1.000	0.0	86	0.00	9.85
5		Propylene		----------NA----------				
6		Freon 115		----------NA----------				
7		Freon 23		----------NA----------				
8		Freon 143A		----------NA----------				
9		Freon 152A		----------NA----------				
10		Freon 114		----------NA----------				
11		Freon 142B		----------NA----------				
12		Chlorotrifluoroethene		----------NA----------				
13		1,3-Butadiene		----------NA----------				
14		chlorodifluoromethane	0.449	0.449	0.0	91	0.00	4.33
15		dichlorodifluoromethane	0.538	0.498	7.4	88	0.00	4.30
16		chloromethane	0.529	0.462	12.7	83	0.00	4.65
17		vinyl chloride	0.569	0.513	9.8	85	0.00	4.89
18		bromomethane	0.315	0.293	7.0	89	0.00	5.54
19		chloroethane	0.273	0.264	3.3	92	0.00	5.72
20		trichlorofluoromethane	0.576	0.578	-0.3	98	-0.01	6.12
21		Vinyl Bromide		----------NA----------				
22		ethyl ether	0.170	0.187	-10.0	104	0.00	6.54
		----------	True	Calc.	% Drift	----------		
23		Acetaldehyde	500.000	221.494	55.7#	43	0.00	5.13
		----------	AvgRF	CCRF	% Dev	----------		
24		Pentane		----------NA----------				
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
		----------	True	Calc.	% Drift	----------		
28		acrolein	500.000	307.658	38.5#	66	0.00	6.83
		----------	AvgRF	CCRF	% Dev	----------		
29		freon 113	0.266	0.281	-5.6	96	0.00	6.92
30		1,1-dichloroethene	0.341	0.356	-4.4	100	0.00	6.98
31		acetone	0.017	0.020	-17.6	101	0.01	7.05
32		iso-butyl alcohol	0.010	0.012	-20.0	106	0.00	10.44
33		allyl chloride	0.190	0.250	-31.6#	128	0.00	7.50

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131185.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.091	-16.7	112	0.00	7.50
35		iodomethane	0.637	0.717	-12.6	104	0.00	7.28
36		carbon disulfide	1.250	1.378	-10.2	103	0.00	7.40
37		methylene chloride	0.366	0.418	-14.2	105	0.00	7.69
38		methyl acetate	0.153	0.181	-18.3	101	0.00	7.48
39		methyl tert butyl ether	0.880	1.071	-21.7#	111	0.00	8.00
40		trans-1,2-dichloroethene	0.364	0.402	-10.4	106	0.00	8.05
41		di-isopropyl ether	1.077	1.173	-8.9	98	0.00	8.56
42		2-butanone	0.023	0.028	-21.7#	104	0.00	9.34
43		1,1-dichloroethane	0.648	0.744	-14.8	106	0.00	8.63
44		chloroprene	0.508	0.559	-10.0	99	0.00	8.72
45		acrylonitrile	0.070	0.084	-20.0	106	0.00	8.03
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	50.000	55.906	-11.8	99	0.00	8.59
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	1.097	-11.6	99	0.00	9.03
48		ethyl acetate	0.029	0.029	0.0	82	0.00	9.33
49		2,2-dichloropropane	0.553	0.616	-11.4	105	0.00	9.36
50		cis-1,2-dichloroethene	0.389	0.427	-9.8	104	0.00	9.36
51		propionitrile	0.026	0.032	-23.1#	107	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	50.000	58.256	-16.5	100	0.00	9.41
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.099	-28.6#	107	0.00	9.62
54		bromochloromethane	0.160	0.186	-16.2	106	0.00	9.68
55		tetrahydrofuran	0.068	0.084	-23.5#	106	0.00	9.73
56		chloroform	0.617	0.708	-14.7	108	0.00	9.73
57		tert-Butyl Formate	0.209	0.256	-22.5#	103	0.00	9.75
58	S	dibromofluoromethane (s)	0.305	0.347	-13.8	106	0.00	9.93
59	S	1,2-dichloroethane-d4 (s)	0.298	0.307	-3.0	97	0.00	10.37
60		1,1,1-trichloroethane	0.560	0.634	-13.2	107	0.00	9.98
61		Cyclohexane	0.510	0.556	-9.0	100	0.00	10.05
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	93	0.00	10.80
64		methylcyclohexane	0.399	0.384	3.8	97	0.00	11.38
65		epichlorohydrin	0.012	0.013	-8.3	104	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	2500.000	2876.245	-15.0	108	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.362	-5.5	106	0.00	10.19
68		1,1-dichloropropene	0.335	0.365	-9.0	109	0.00	10.16
69		hexane	0.287	0.282	1.7	96	0.00	8.33
70		2,2,4-Trimethylpentane	0.924	0.859	7.0	93	0.00	10.40
71		benzene	0.986	1.015	-2.9	105	0.00	10.43
72		tert-amyl methyl ether	0.632	0.641	-1.4	101	0.00	10.44
73		heptane	0.170	0.173	-1.8	101	0.00	10.57
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	50.000	50.838	-1.7	93	0.00	10.32

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131185.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.291	-11.1	111	0.00	10.46
76		trichloroethene	0.246	0.267	-8.5	111	0.00	11.16
77		Ethyl Acrylate		----------NA----------				
78		tert-Amyl Ethyl Ether		----------NA----------				
79		2-chloroethyl vinyl ether	0.043	0.085	-97.7#	192	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	50.000	53.845	-7.7	99	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.254	-3.7	104	0.00	11.44
82		dibromomethane	0.109	0.129	-18.3	110	0.00	11.61
83		bromodichloromethane	0.311	0.338	-8.7	107	0.00	11.74
84		2-nitropropane	0.044	0.057	-29.5#	129	0.00	11.98
85		cis-1,3-dichloropropene	0.376	0.407	-8.2	107	0.00	12.22
86	S	toluene-d8 (s)	0.837	0.976	-16.6	117	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.064	-8.5	104	0.00	12.32
88		toluene	0.645	0.686	-6.4	111	0.00	12.61
89		isoamyl alcohol	0.006	0.007	-16.7	107	0.00	12.34
90		trans-1,3-dichloropropene	0.312	0.348	-11.5	108	0.00	12.83
91		ethyl methacrylate	0.229	0.236	-3.1	100	0.00	12.80
92		1,1,2-trichloroethane	0.141	0.155	-9.9	106	0.00	13.07
			True	Calc.	% Drift			
93		2-hexanone	50.000	56.830	-13.7	101	0.00	13.25
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	100	0.00	14.21
95		tetrachloroethene	0.320	0.344	-7.5	118	0.00	13.25
96		1,3-dichloropropane	0.337	0.339	-0.6	106	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	50.000	49.123	1.8	91	0.00	13.31
98		3,3-Dimethyl-1-Butanol	500.000	483.996	3.2	102	0.00	13.43
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.263	-1.5	108	0.00	13.57
100		1,2-dibromoethane	0.200	0.199	0.5	107	0.00	13.74
101		chlorobenzene	0.836	0.816	2.4	109	0.00	14.24
102		1,1,1,2-tetrachloroethane	0.291	0.287	1.4	106	0.00	14.31
103		ethylbenzene	1.452	1.443	0.6	110	0.00	14.29
104		m,p-xylene	0.566	0.575	-1.6	113	0.00	14.41
105		o-xylene	0.552	0.553	-0.2	110	0.00	14.89
106		styrene	0.927	0.907	2.2	110	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.170	-2.4	107	0.00	15.22
			True	Calc.	% Drift			
109		cyclohexanone	500.000	246.511	50.7#	61	0.00	15.48
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.410	-5.1	116	0.00	15.51
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	16.82
112		isopropylbenzene	2.535	2.625	-3.6	111	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.463	-1.3	107	0.00	15.63
114		trans-1,4-dichloro-2-bute	0.110	0.120	-9.1	109	0.00	15.67

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5655-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131185.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.114	-7.5	111	0.00	15.71
116	bromobenzene	0.604	0.608	-0.7	109	0.00	15.73
117	n-propylbenzene	3.041	3.379	-11.1	120	0.00	15.72
118	4-Ethyltoluene		----------NA----------				
119	2-chlorotoluene	0.596	0.627	-5.2	112	0.00	15.90
120	4-chlorotoluene	1.881	2.022	-7.5	119	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	2.410	-6.8	117	0.00	15.88
122	tert-butylbenzene	1.918	2.002	-4.4	111	0.00	16.28
123	pentachloroethane	0.407	0.417	-2.5	108	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.485	-7.6	117	0.00	16.33
125	sec-butylbenzene	2.988	3.325	-11.3	119	0.00	16.52
126	p-isopropyltoluene	2.493	2.934	-17.7	125	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.357	-8.0	118	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.364	-7.8	119	0.00	16.84
129	1,2,3-trimethylbenzene		----------NA----------				
130	1,2-dichlorobenzene	1.189	1.224	-2.9	113	0.00	17.29
131	Benzyl Chloride	0.856	0.818	4.4	103	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene		----------NA----------				
134	n-butylbenzene	1.402	1.768	-26.1#	135	0.00	17.11
135	hexachloroethane	0.432	0.456	-5.6	110	0.00	17.57
136	1,2,4,5-tetramethylbenzen		----------NA----------				
137	1,2-dibromo-3-chloropropa	0.085	0.091	-7.1	109	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	1.351	-25.6#	136	0.00	18.34
139	1,2,4-trichlorobenzene	0.873	1.055	-20.8#	130	0.00	19.08
140	hexachlorobutadiene	0.587	0.823	-40.2#	148	0.00	19.20
141	naphthalene	1.399	1.489	-6.4	109	0.00	19.42
142	1,2,3-trichlorobenzene	0.741	0.824	-11.2	116	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131010.D MVS5649.M Tue Dec 11 08:34:30 2012 VOA-05

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131336.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-CORE\vv5660\V131336.D    Vial: 3
Acq On    : 13 Dec 2012   9:47 am                    Operator: THIENN
Sample    : cc5649-20                                Inst    : MSV
Misc      : MS39770,VV5660,5,,,,1                    Multiplr: 1.00
MS Integration Params: rteint.p

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	128	0.00	7.63
2		tertiary butyl alcohol	1.121	1.037	7.5	108	0.00	7.75
3		1,4-dioxane	0.094	0.083	11.7	98	0.00	11.56
4	I	pentafluorobenzene	1.000	1.000	0.0	114	0.00	9.85
5		Propylene		----------NA----------				
6		Freon 115		----------NA----------				
7		Freon 23		----------NA----------				
8		Freon 143A		----------NA----------				
9		Freon 152A		----------NA----------				
10		Freon 114		----------NA----------				
11		Freon 142B		----------NA----------				
12		Chlorotrifluoroethene		----------NA----------				
13		1,3-Butadiene		----------NA----------				
14		chlorodifluoromethane	0.449	0.391	12.9	90	0.00	4.34
15		dichlorodifluoromethane	0.538	0.576	-7.1	111	0.00	4.31
16		chloromethane	0.529	0.518	2.1	105	0.00	4.66
17		vinyl chloride	0.569	0.586	-3.0	111	0.00	4.90
18		bromomethane	0.315	0.342	-8.6	111	0.00	5.55
19		chloroethane	0.273	0.290	-6.2	109	0.00	5.72
20		trichlorofluoromethane	0.576	0.625	-8.5	111	0.00	6.13
21		Vinyl Bromide		----------NA----------				
22		ethyl ether	0.170	0.168	1.2	102	0.00	6.54
		----------	True	Calc.	% Drift	----------		
23		Acetaldehyde		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
24		Pentane		----------NA----------				
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
		----------	True	Calc.	% Drift	----------		
28		acrolein	200.000	223.511	-11.8	125	0.00	6.82
		----------	AvgRF	CCRF	% Dev	----------		
29		freon 113	0.266	0.292	-9.8	108	0.00	6.92
30		1,1-dichloroethene	0.341	0.349	-2.3	103	0.00	6.98
31		acetone	0.017	0.015	11.8	83	0.00	7.04
32		iso-butyl alcohol	0.010	0.010	0.0	94	0.00	10.43
33		allyl chloride	0.190	0.225	-18.4	113	0.00	7.50

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131336.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.075	3.8	95	0.00	7.50
35		iodomethane	0.637	0.677	-6.3	104	0.00	7.28
36		carbon disulfide	1.250	1.264	-1.1	101	0.00	7.40
37		methylene chloride	0.366	0.374	-2.2	99	-0.01	7.69
38		methyl acetate	0.153	0.172	-12.4	112	0.00	7.48
39		methyl tert butyl ether	0.880	0.914	-3.9	103	-0.01	7.99
40		trans-1,2-dichloroethene	0.364	0.370	-1.6	99	0.00	8.05
41		di-isopropyl ether	1.077	0.974	9.6	90	0.00	8.56
42		2-butanone		----------NA----------				
43		1,1-dichloroethane	0.648	0.613	5.4	92	0.00	8.62
44		chloroprene	0.508	0.499	1.8	97	0.00	8.72
45		acrylonitrile	0.070	0.079	-12.9	109	0.00	8.03
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	20.000	19.587	2.1	96	0.00	8.59
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	0.987	-0.4	98	0.00	9.03
48		ethyl acetate	0.029	0.026	10.3	93	0.00	9.33
49		2,2-dichloropropane	0.553	0.562	-1.6	103	-0.01	9.35
50		cis-1,2-dichloroethene	0.389	0.376	3.3	96	0.00	9.37
51		propionitrile	0.026	0.029	-11.5	107	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	20.000	19.367	3.2	92	0.00	9.42
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.088	-14.3	103	0.00	9.62
54		bromochloromethane	0.160	0.166	-3.8	102	0.00	9.68
55		tetrahydrofuran	0.068	0.075	-10.3	110	0.00	9.73
56		chloroform	0.617	0.633	-2.6	100	0.00	9.73
57		tert-Butyl Formate	0.209	0.219	-4.8	102	0.00	9.75
58	S	dibromofluoromethane (s)	0.305	0.331	-8.5	115	0.00	9.93
59	S	1,2-dichloroethane-d4 (s)	0.298	0.307	-3.0	109	0.00	10.37
60		1,1,1-trichloroethane	0.560	0.578	-3.2	102	0.00	9.98
61		Cyclohexane	0.510	0.485	4.9	93	0.00	10.05
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	116	0.00	10.80
64		methylcyclohexane	0.399	0.373	6.5	94	0.00	11.38
65		epichlorohydrin	0.012	0.014	-16.7	115	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	1000.000	1041.505	-4.2	107	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.352	-2.6	103	0.00	10.18
68		1,1-dichloropropene	0.335	0.323	3.6	95	0.00	10.16
69		hexane	0.287	0.256	10.8	88	0.00	8.32
70		2,2,4-Trimethylpentane	0.924	0.775	16.1	84	0.00	10.39
71		benzene	0.986	0.975	1.1	97	0.00	10.43
72		tert-amyl methyl ether	0.632	0.638	-0.9	104	0.00	10.44
73		heptane	0.170	0.145	14.7	80	0.00	10.56
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	20.000	23.480	-17.4	106	0.00	10.32

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131336.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.270	-3.1	100	0.00	10.46
76		trichloroethene	0.246	0.252	-2.4	101	0.00	11.15
77		Ethyl Acrylate		----------NA----------				
78		tert-Amyl Ethyl Ether		----------NA----------				
79		2-chloroethyl vinyl ether	0.043	0.065	-51.2#	153	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	20.000	20.992	-5.0	103	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.230	6.1	94	0.00	11.44
82		dibromomethane	0.109	0.128	-17.4	109	0.00	11.62
83		bromodichloromethane	0.311	0.323	-3.9	101	0.00	11.74
84		2-nitropropane	0.044	0.053	-20.5#	118	0.00	11.97
85		cis-1,3-dichloropropene	0.376	0.374	0.5	98	0.00	12.22
86	S	toluene-d8 (s)	0.837	0.919	-9.8	113	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.065	-10.2	108	0.00	12.32
88		toluene	0.645	0.624	3.3	96	-0.01	12.60
89		isoamyl alcohol	0.006	0.007	-16.7	113	0.00	12.34
90		trans-1,3-dichloropropene	0.312	0.320	-2.6	98	0.00	12.83
91		ethyl methacrylate	0.229	0.236	-3.1	104	0.00	12.80
92		1,1,2-trichloroethane	0.141	0.151	-7.1	102	0.00	13.07
			True	Calc.	% Drift			
93		2-hexanone	20.000	20.970	-4.8	99	0.00	13.25
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	118	0.00	14.21
95		tetrachloroethene	0.320	0.312	2.5	100	0.00	13.25
96		1,3-dichloropropane	0.337	0.335	0.6	101	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	20.000	19.380	3.1	100	0.00	13.32
98		3,3-Dimethyl-1-Butanol	200.000	211.633	-5.8	115	0.00	13.44
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.272	-5.0	103	0.00	13.57
100		1,2-dibromoethane	0.200	0.208	-4.0	109	0.00	13.75
101		chlorobenzene	0.836	0.784	6.2	98	0.00	14.24
102		1,1,1,2-tetrachloroethane	0.291	0.282	3.1	100	0.00	14.30
103		ethylbenzene	1.452	1.382	4.8	98	0.00	14.29
104		m,p-xylene	0.566	0.537	5.1	99	0.00	14.40
105		o-xylene	0.552	0.529	4.2	98	0.00	14.88
106		styrene	0.927	0.877	5.4	99	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.182	-9.6	111	0.00	15.22
			True	Calc.	% Drift			
109		cyclohexanone	200.000	33.181	83.4#	30	0.00	15.48
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.396	-1.5	112	0.00	15.51
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	118	0.00	16.82
112		isopropylbenzene	2.535	2.470	2.6	97	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.503	-10.1	108	0.00	15.63
114		trans-1,4-dichloro-2-bute	0.110	0.134	-21.8#	113	0.00	15.66

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131336.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.133	-25.5#	122	0.00	15.71
116	bromobenzene	0.604	0.639	-5.8	106	0.00	15.73
117	n-propylbenzene	3.041	2.947	3.1	96	0.00	15.72
118	4-Ethyltoluene		----------NA----------				
119	2-chlorotoluene	0.596	0.609	-2.2	100	0.00	15.89
120	4-chlorotoluene	1.881	1.870	0.6	99	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	2.162	4.2	97	0.00	15.88
122	tert-butylbenzene	1.918	1.873	2.3	98	0.00	16.28
123	pentachloroethane	0.407	0.416	-2.2	104	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.239	3.1	98	0.00	16.33
125	sec-butylbenzene	2.988	2.895	3.1	96	0.00	16.52
126	p-isopropyltoluene	2.493	2.428	2.6	97	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.287	-2.4	101	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.290	-2.0	103	0.00	16.84
129	1,2,3-trimethylbenzene		----------NA----------				
130	1,2-dichlorobenzene	1.189	1.188	0.1	101	0.00	17.29
131	Benzyl Chloride	0.856	0.947	-10.6	115	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene		----------NA----------				
134	n-butylbenzene	1.402	1.257	10.3	90	0.00	17.11
135	hexachloroethane	0.432	0.449	-3.9	106	0.00	17.57
136	1,2,4,5-tetramethylbenzen		----------NA----------				
137	1,2-dibromo-3-chloropropa	0.085	0.098	-15.3	118	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	1.086	-0.9	100	0.00	18.34
139	1,2,4-trichlorobenzene	0.873	0.865	0.9	100	0.00	19.08
140	hexachlorobutadiene	0.587	0.567	3.4	98	0.00	19.19
141	naphthalene	1.399	1.470	-5.1	106	0.00	19.41
142	1,2,3-trichlorobenzene	0.741	0.764	-3.1	104	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131009.D MVS5649.M Thu Dec 13 15:01:05 2012 VOA-CLN-04

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131370.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\V-CORE\vv5661\V131370.D    Vial: 3
Acq On    : 14 Dec 2012   9:41 am                    Operator: THIENN
Sample    : cc5649-20                                Inst    : MSV
Misc      : MS39894,VV5661,5,,,,1                    Multiplr: 1.00
MS Integration Params: rteint.p

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

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	102	0.00	7.63
2		tertiary butyl alcohol	1.121	1.014	9.5	84	0.00	7.75
3		1,4-dioxane	0.094	0.092	2.1	86	0.00	11.56
4	I	pentafluorobenzene	1.000	1.000	0.0	110	0.00	9.85
5		Propylene		----------NA----------				
6		Freon 115		----------NA----------				
7		Freon 23		----------NA----------				
8		Freon 143A		----------NA----------				
9		Freon 152A		----------NA----------				
10		Freon 114		----------NA----------				
11		Freon 142B		----------NA----------				
12		Chlorotrifluoroethene		----------NA----------				
13		1,3-Butadiene		----------NA----------				
14		chlorodifluoromethane	0.449	0.378	15.8	85	0.01	4.34
15		dichlorodifluoromethane	0.538	0.552	-2.6	103	0.00	4.32
16		chloromethane	0.529	0.476	10.0	93	0.00	4.66
17		vinyl chloride	0.569	0.555	2.5	102	0.00	4.90
18		bromomethane	0.315	0.331	-5.1	104	0.00	5.55
19		chloroethane	0.273	0.271	0.7	99	0.00	5.72
20		trichlorofluoromethane	0.576	0.623	-8.2	107	0.00	6.13
21		Vinyl Bromide		----------NA----------				
22		ethyl ether	0.170	0.147	13.5	86	0.00	6.54
		----------	True	Calc.	% Drift	----------		
23		Acetaldehyde		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
24		Pentane		----------NA----------				
25		Freon 123A		----------NA----------				
26		Freon 141B		----------NA----------				
27		Freon 123		----------NA----------				
		----------	True	Calc.	% Drift	----------		
28		acrolein	200.000	181.189	9.4	96	0.00	6.83
		----------	AvgRF	CCRF	% Dev	----------		
29		freon 113	0.266	0.275	-3.4	98	-0.01	6.91
30		1,1-dichloroethene	0.341	0.325	4.7	93	0.00	6.98
31		acetone	0.017	0.015	11.8	77	0.00	7.05
32		iso-butyl alcohol	0.010	0.010	0.0	89	0.00	10.43
33		allyl chloride	0.190	0.200	-5.3	98	0.00	7.50

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131370.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

34		acetonitrile	0.078	0.065	16.7	80	0.00	7.50
35		iodomethane	0.637	0.634	0.5	95	0.00	7.27
36		carbon disulfide	1.250	1.172	6.2	91	0.00	7.40
37		methylene chloride	0.366	0.352	3.8	90	-0.01	7.69
38		methyl acetate	0.153	0.127	17.0	80	0.00	7.48
39		methyl tert butyl ether	0.880	0.773	12.2	84	0.00	7.99
40		trans-1,2-dichloroethene	0.364	0.351	3.6	91	0.00	8.05
41		di-isopropyl ether	1.077	0.818	24.0#	73	0.00	8.56
42		2-butanone	0.023	0.023	0.0	95	0.00	9.34
43		1,1-dichloroethane	0.648	0.569	12.2	83	0.00	8.62
44		chloroprene	0.508	0.472	7.1	89	0.00	8.72
45		acrylonitrile	0.070	0.061	12.9	80	0.00	8.03
		----------	True	Calc.	% Drift	----------		
46		vinyl acetate	20.000	19.044	4.8	90	0.00	8.60
		----------	AvgRF	CCRF	% Dev	----------		
47		ethyl tert-butyl ether	0.983	0.830	15.6	79	0.00	9.03
48		ethyl acetate	0.029	0.020	31.0#	68	0.00	9.34
49		2,2-dichloropropane	0.553	0.546	1.3	97	0.00	9.36
50		cis-1,2-dichloroethene	0.389	0.357	8.2	88	0.00	9.36
51		propionitrile	0.026	0.023	11.5	81	0.00	9.45
		----------	True	Calc.	% Drift	----------		
52		methyl acrylate	20.000	18.136	9.3	83	0.00	9.41
		----------	AvgRF	CCRF	% Dev	----------		
53		methacrylonitrile	0.077	0.074	3.9	84	0.00	9.63
54		bromochloromethane	0.160	0.154	3.8	91	0.00	9.69
55		tetrahydrofuran	0.068	0.058	14.7	83	0.00	9.73
56		chloroform	0.617	0.591	4.2	91	0.00	9.73
57		tert-Butyl Formate	0.209	0.183	12.4	83	0.00	9.75
58	S	dibromofluoromethane (s)	0.305	0.325	-6.6	109	0.00	9.94
59	S	1,2-dichloroethane-d4 (s)	0.298	0.297	0.3	102	0.00	10.37
60		1,1,1-trichloroethane	0.560	0.564	-0.7	96	0.00	9.98
61		Cyclohexane	0.510	0.475	6.9	89	0.00	10.05
		----------	True	Calc.	% Drift	----------		
62		Tert Amyl Alcohol		----------NA----------				
		----------	AvgRF	CCRF	% Dev	----------		
63	I	1,4-difluorobenzene	1.000	1.000	0.0	112	0.00	10.80
64		methylcyclohexane	0.399	0.350	12.3	85	0.00	11.37
65		epichlorohydrin	0.012	0.010	16.7	84	0.00	12.13
		----------	True	Calc.	% Drift	----------		
66		n-butyl alcohol	1000.000	860.573	13.9	85	0.00	10.93
		----------	AvgRF	CCRF	% Dev	----------		
67		carbon tetrachloride	0.343	0.342	0.3	97	-0.01	10.18
68		1,1-dichloropropene	0.335	0.312	6.9	89	0.00	10.16
69		hexane	0.287	0.235	18.1	78	-0.01	8.32
70		2,2,4-Trimethylpentane	0.924	0.730	21.0#	76	0.00	10.40
71		benzene	0.986	0.904	8.3	87	0.00	10.43
72		tert-amyl methyl ether	0.632	0.532	15.8	84	0.00	10.44
73		heptane	0.170	0.139	18.2	74	0.00	10.56
		----------	True	Calc.	% Drift	----------		
74		isopropyl acetate	20.000	18.413	7.9	82	0.00	10.32

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131370.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

			AvgRF	CCRF	% Dev			
75		1,2-dichloroethane	0.262	0.250	4.6	90	0.00	10.46
76		trichloroethene	0.246	0.242	1.6	93	0.00	11.16
77		Ethyl Acrylate		----------NA----------				
78		tert-Amyl Ethyl Ether		----------NA----------				
79		2-chloroethyl vinyl ether	0.043	0.055	-27.9#	126	0.00	11.98
			True	Calc.	% Drift			
80		methyl methacrylate	20.000	16.044	19.8	80	0.00	11.42
			AvgRF	CCRF	% Dev			
81		1,2-dichloropropane	0.245	0.204	16.7	81	0.00	11.44
82		dibromomethane	0.109	0.112	-2.8	92	0.00	11.62
83		bromodichloromethane	0.311	0.299	3.9	91	0.00	11.75
84		2-nitropropane	0.044	0.044	0.0	94	0.00	11.98
85		cis-1,3-dichloropropene	0.376	0.346	8.0	87	0.00	12.22
86	S	toluene-d8 (s)	0.837	0.918	-9.7	109	0.00	12.53
87		4-methyl-2-pentanone	0.059	0.051	13.6	82	0.00	12.32
88		toluene	0.645	0.611	5.3	91	0.00	12.61
89		isoamyl alcohol	0.006	0.005	16.7	82	0.00	12.34
90		trans-1,3-dichloropropene	0.312	0.287	8.0	84	0.00	12.83
91		ethyl methacrylate	0.229	0.204	10.9	87	0.00	12.79
92		1,1,2-trichloroethane	0.141	0.128	9.2	84	0.00	13.07
			True	Calc.	% Drift			
93		2-hexanone	20.000	15.053	24.7#	72	0.00	13.25
			AvgRF	CCRF	% Dev			
94	I	chlorobenzene-d5	1.000	1.000	0.0	115	0.00	14.21
95		tetrachloroethene	0.320	0.309	3.4	96	0.00	13.25
96		1,3-dichloropropane	0.337	0.291	13.6	85	0.00	13.27
			True	Calc.	% Drift			
97		butyl acetate	20.000	15.602	22.0#	83	0.00	13.32
98		3,3-Dimethyl-1-Butanol	200.000	171.855	14.1	90	0.00	13.43
			AvgRF	CCRF	% Dev			
99		dibromochloromethane	0.259	0.255	1.5	94	0.00	13.57
100		1,2-dibromoethane	0.200	0.177	11.5	89	0.00	13.75
101		chlorobenzene	0.836	0.739	11.6	89	0.00	14.24
102		1,1,1,2-tetrachloroethane	0.291	0.274	5.8	94	0.00	14.31
103		ethylbenzene	1.452	1.333	8.2	92	0.00	14.29
104		m,p-xylene	0.566	0.520	8.1	93	0.00	14.40
105		o-xylene	0.552	0.498	9.8	90	0.00	14.88
106		styrene	0.927	0.814	12.2	90	0.00	14.90
107		Butyl Acrylate		----------NA----------				
108		bromoform	0.166	0.158	4.8	93	0.00	15.22
			True	Calc.	% Drift			
109		cyclohexanone	200.000	27.084	86.5#	27	0.00	15.49
			AvgRF	CCRF	% Dev			
110	S	4-bromofluorobenzene (s)	0.390	0.392	-0.5	108	0.00	15.51
111	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	116	0.00	16.81
112		isopropylbenzene	2.535	2.378	6.2	91	0.00	15.26
113		1,1,2,2-tetrachloroethane	0.457	0.398	12.9	84	0.00	15.63
114		trans-1,4-dichloro-2-bute	0.110	0.111	-0.9	92	0.00	15.68

Continuing Calibration Summary

Job Number: JB22822 **Sample:** VV5660-CC5649
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** V131370.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

115	1,2,3-trichloropropane	0.106	0.106	0.0	95	0.00	15.71
116	bromobenzene	0.604	0.583	3.5	94	0.00	15.73
117	n-propylbenzene	3.041	2.786	8.4	89	0.00	15.72
118	4-Ethyltoluene		----------NA----------				
119	2-chlorotoluene	0.596	0.575	3.5	92	0.00	15.90
120	4-chlorotoluene	1.881	1.716	8.8	89	0.00	16.01
121	1,3,5-trimethylbenzene	2.257	2.057	8.9	91	0.00	15.88
122	tert-butylbenzene	1.918	1.781	7.1	92	0.00	16.28
123	pentachloroethane	0.407	0.394	3.2	97	0.00	16.39
124	1,2,4-trimethylbenzene	2.310	2.174	5.9	94	0.00	16.33
125	sec-butylbenzene	2.988	2.761	7.6	90	0.00	16.52
126	p-isopropyltoluene	2.493	2.310	7.3	90	0.00	16.65
127	1,3-dichlorobenzene	1.257	1.171	6.8	90	0.00	16.75
128	1,4-dichlorobenzene	1.265	1.170	7.5	91	0.00	16.84
129	1,2,3-trimethylbenzene		----------NA----------				
130	1,2-dichlorobenzene	1.189	1.118	6.0	93	0.00	17.28
131	Benzyl Chloride	0.856	0.791	7.6	94	0.00	16.97
132	Vinyl Toluene		----------NA----------				
133	1,4-Diethylbenzene		----------NA----------				
134	n-butylbenzene	1.402	1.186	15.4	83	0.00	17.11
135	hexachloroethane	0.432	0.414	4.2	96	0.00	17.56
136	1,2,4,5-tetramethylbenzen		----------NA----------				
137	1,2-dibromo-3-chloropropa	0.085	0.084	1.2	99	0.00	18.15
138	1,3,5-trichlorobenzene	1.076	1.038	3.5	94	0.00	18.33
139	1,2,4-trichlorobenzene	0.873	0.803	8.0	91	0.00	19.08
140	hexachlorobutadiene	0.587	0.585	0.3	100	0.00	19.19
141	naphthalene	1.399	1.249	10.7	88	0.00	19.42
142	1,2,3-trichlorobenzene	0.741	0.656	11.5	88	0.00	19.72

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V131009.D MVS5649.M Fri Dec 14 14:22:29 2012 VOA-CLN-04

New Jersey

ACCUTEST LABORATORIES

GC/MS Volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/12 03:12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5654\
Data File : V131159.D
Acq On : 7 Dec 2012 2:35 am
Operator : THIENN
Sample : jb22822-1
Misc : MS39773,VV5654,6.3,,,,1
ALS Vial : 33 Sample Multiplier: 1

Quant Time: Dec 07 10:40:36 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.631	65	35403	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	155706	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	237372	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	215762	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.816	152	116841	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.938	113	50251	52.87	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 105.74%			
59) 1,2-dichloroethane-d4 (s)	10.372	65	47469	51.14	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 102.28%			
86) toluene-d8 (s)	12.532	98	229759	57.82	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 115.64%			
110) 4-bromofluorobenzene (s)	15.508	95	83906	49.91	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 99.82%			
Target Compounds						Qvalue
31) acetone	7.045	58	1922	36.11	ug/L	78
36) carbon disulfide	7.401	76	4557	1.17	ug/L	89
61) Cyclohexane	10.048	84	1445m	0.91	ug/L	
64) methylcyclohexane	11.376	83	2547	1.35	ug/L #	74
71) benzene	10.440	78	7993	1.71	ug/L	91
88) toluene	12.616	92	6945	2.27	ug/L	99
103) ethylbenzene	14.289	91	2872	0.46	ug/L	91
104) m,p-xylene	14.415	106	1594	0.65	ug/L	66

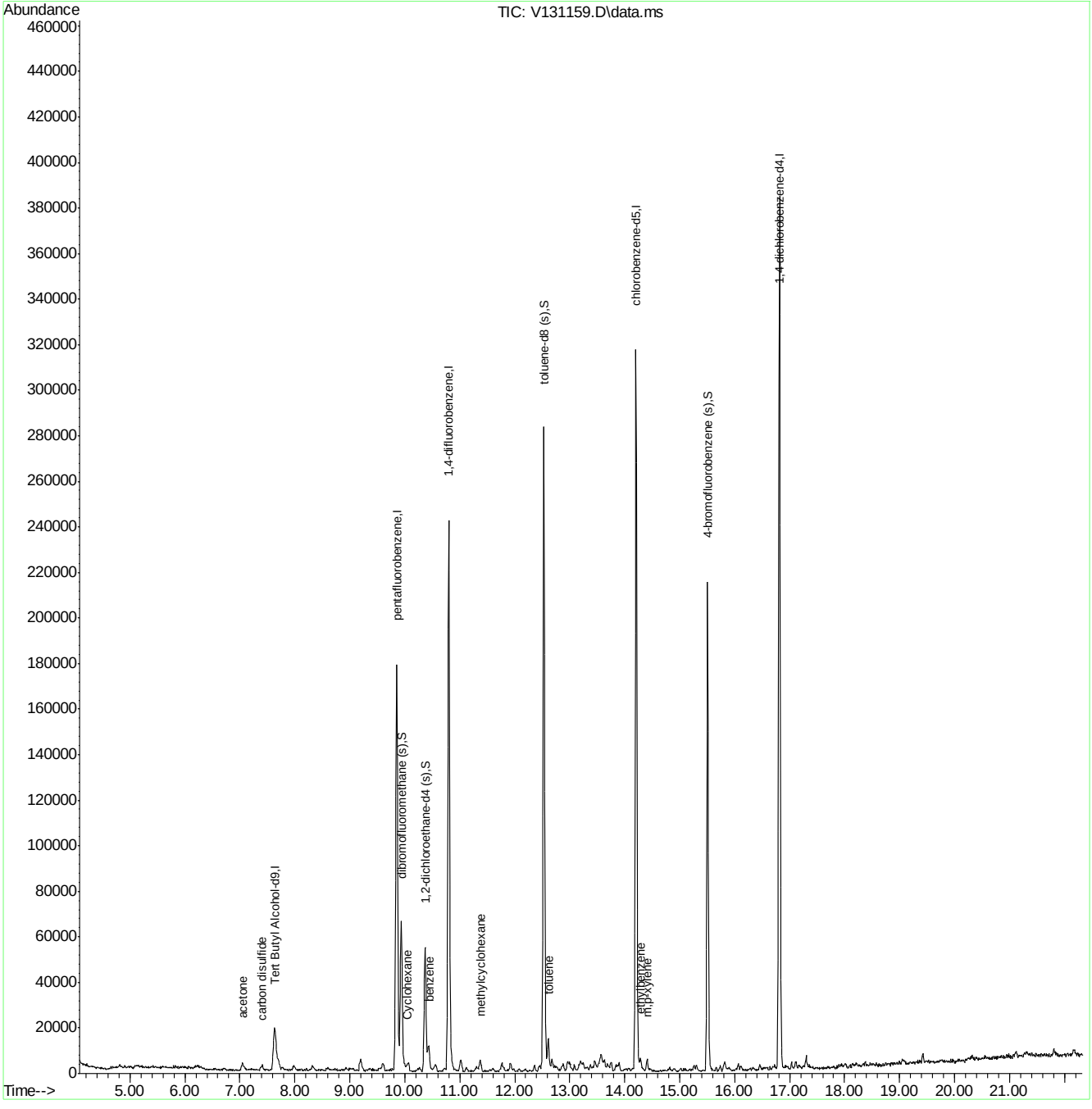
(#) = qualifier out of range (m) = manual integration (+) = signals summed

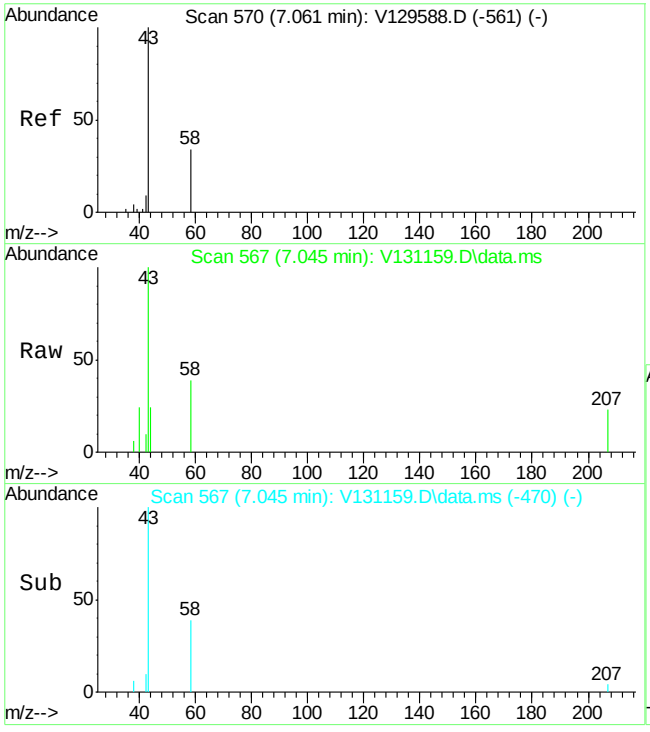
7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5654\
Data File : V131159.D
Acq On : 7 Dec 2012 2:35 am
Operator : THIENN
Sample : jb22822-1
Misc : MS39773,VV5654,6.3,,,,1
ALS Vial : 33 Sample Multiplier: 1

Quant Time: Dec 07 10:40:36 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

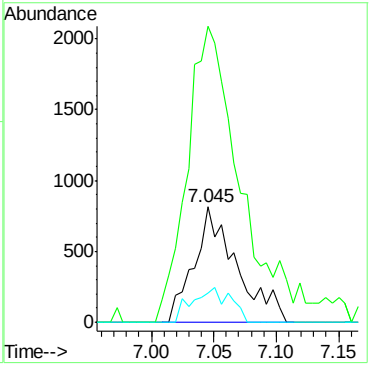


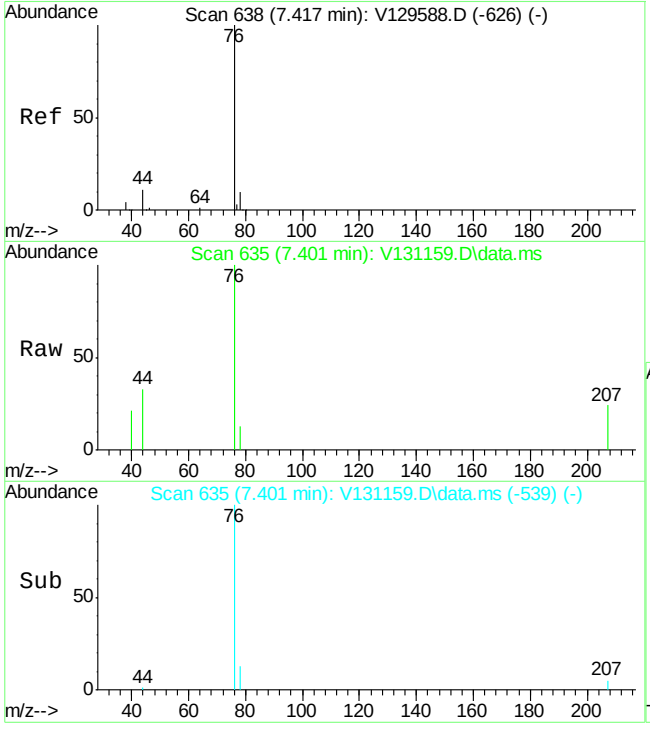


#31
acetone
Concen: 36.11 ug/L
RT: 7.045 min Scan# 567
Delta R.T. 0.005 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 58 Resp: 1922

Ion	Ratio	Lower	Upper
58	100		
43	239.9	198.4	368.4
42	25.5	21.1	39.1

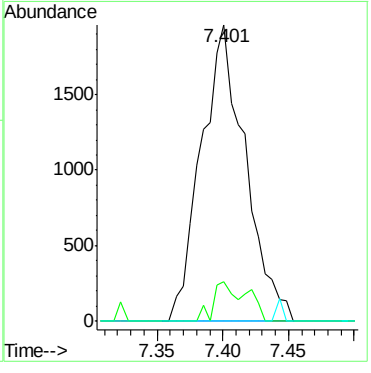


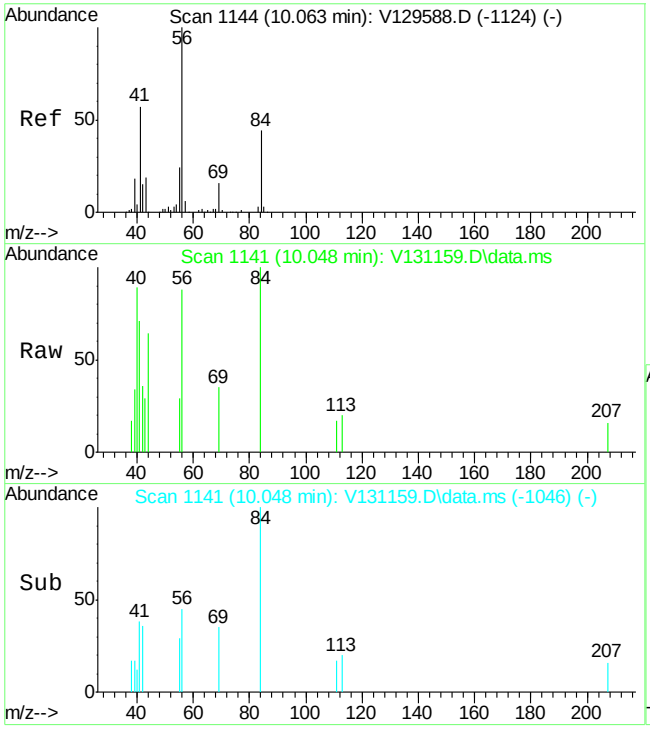


#36
carbon disulfide
Concen: 1.17 ug/L
RT: 7.401 min Scan# 635
Delta R.T. -0.000 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 76 Resp: 4557

Ion	Ratio	Lower	Upper
76	100		
78	13.4	0.0	39.3
38	0.0	0.0	33.1

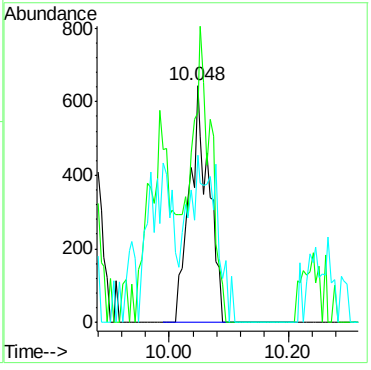


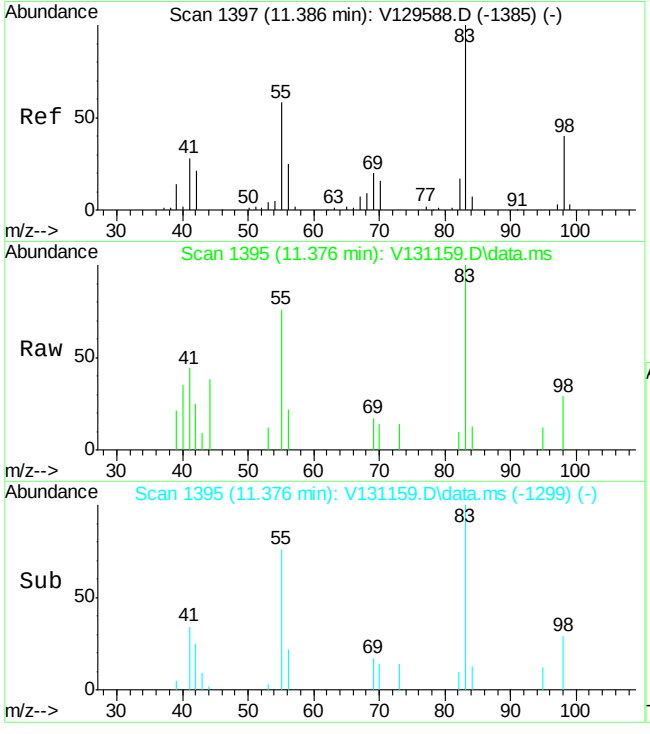


#61
Cyclohexane
Concen: 0.91 ug/L m
RT: 10.048 min Scan# 1141
Delta R.T. -0.004 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 84 Resp: 1445

Ion	Ratio	Lower	Upper
84	100		
56	88.4	168.8	313.6#
41	70.5	100.2	186.2#

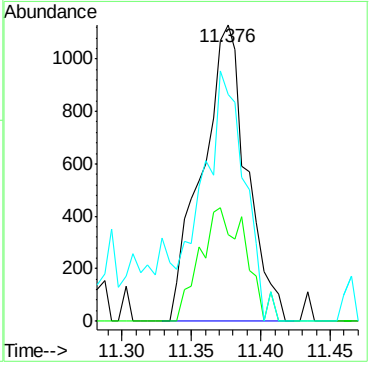


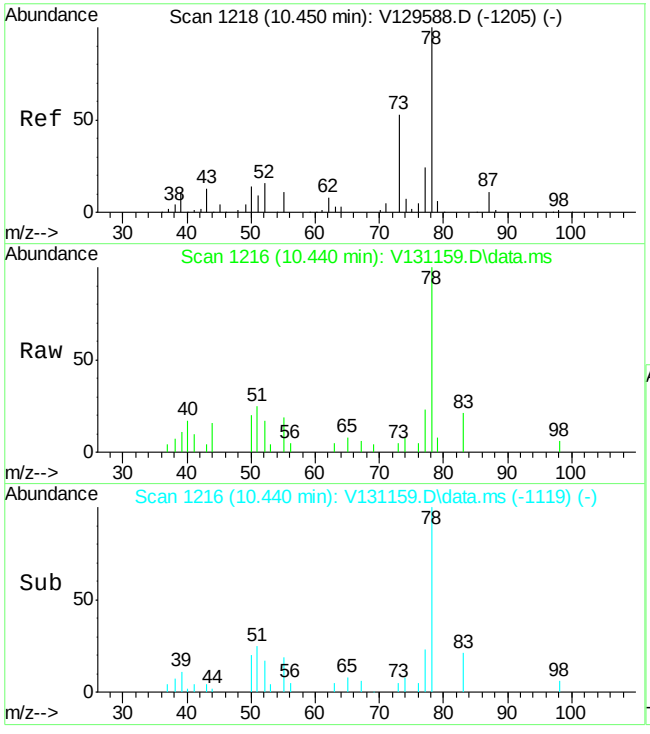


#64
methylcyclohexane
Concen: 1.35 ug/L
RT: 11.376 min Scan# 1395
Delta R.T. -0.000 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 83 Resp: 2547

Ion	Ratio	Lower	Upper
83	100		
98	0.0	29.8	55.4#
55	78.7	58.4	108.6

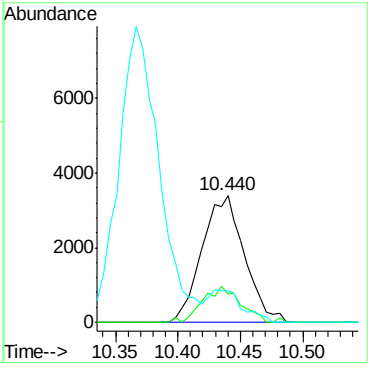


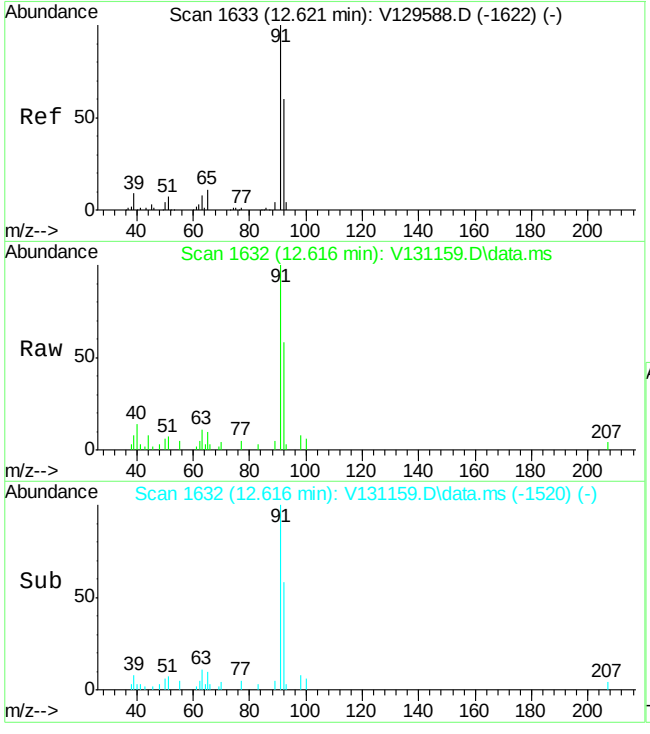


#71
benzene
Concen: 1.71 ug/L
RT: 10.440 min Scan# 1216
Delta R.T. 0.006 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 78 Resp: 7993

Ion	Ratio	Lower	Upper
78	100		
77	22.5	0.0	53.4
51	24.6	0.0	46.9

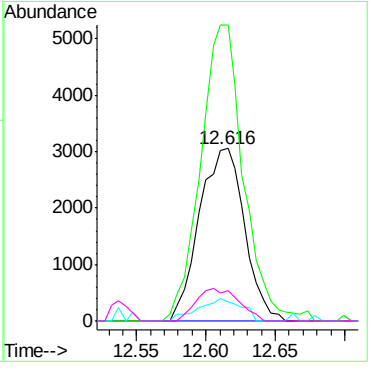


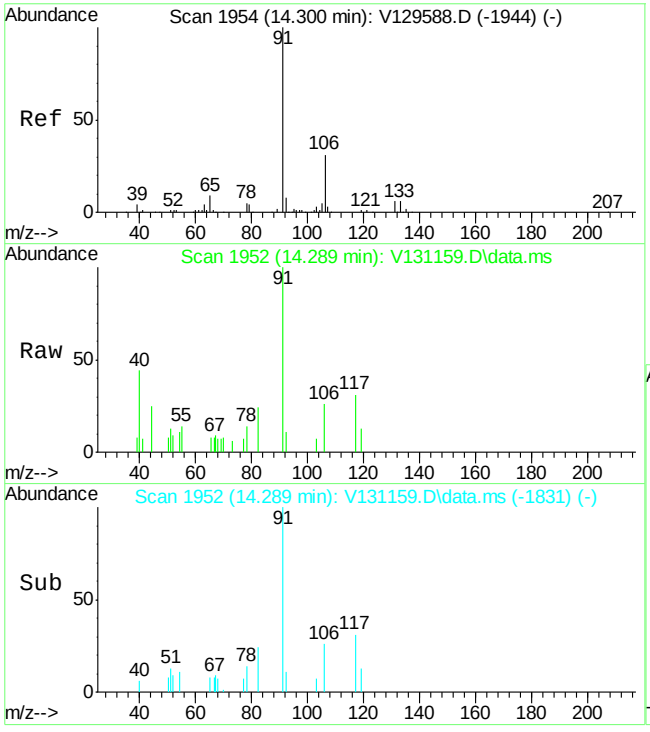


#88
toluene
Concen: 2.27 ug/L
RT: 12.616 min Scan# 1632
Delta R.T. 0.006 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 92 Resp: 6945

Ion	Ratio	Lower	Upper
92	100		
91	171.3	120.5	223.7
51	11.3	7.9	14.7
65	17.7	13.4	24.8

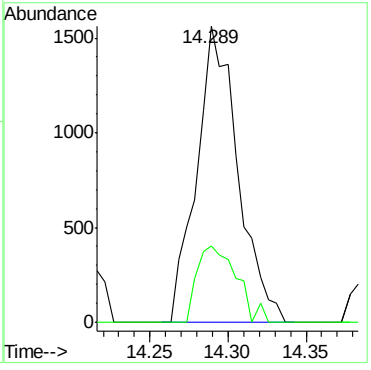


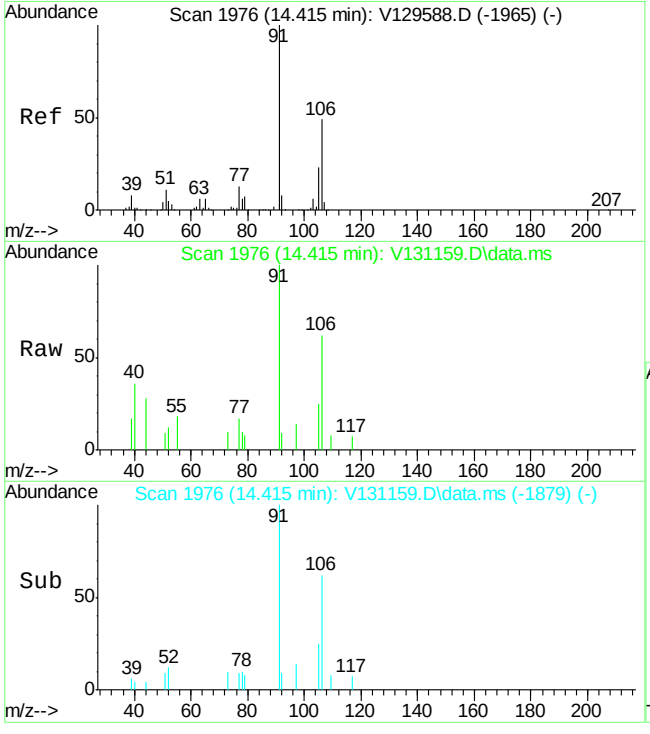


#103
ethylbenzene
Concen: 0.46 ug/L
RT: 14.289 min Scan# 1952
Delta R.T. 0.000 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion: 91 Resp: 2872

Ion	Ratio	Lower	Upper
91	100		
106	25.9	0.7	60.7

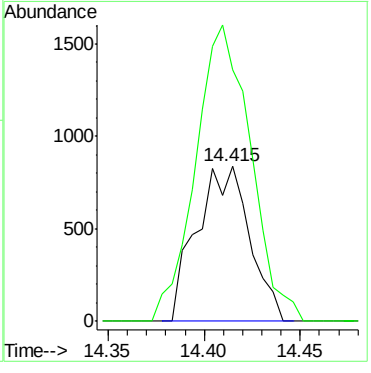




#104
m,p-xylene
Concen: 0.65 ug/L
RT: 14.415 min Scan# 1976
Delta R.T. 0.005 min
Lab File: V131159.D
Acq: 7 Dec 2012 2:35 am

Tgt Ion:106 Resp: 1594

Ion	Ratio	Lower	Upper
106	100		
91	149.8	140.7	261.3



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/12 03:21

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5654\
Data File : V131160.D
Acq On : 7 Dec 2012 3:05 am
Operator : THIENN
Sample : jb22822-2
Misc : MS39773,VV5654,6.2,,,,1
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Dec 07 10:39:53 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

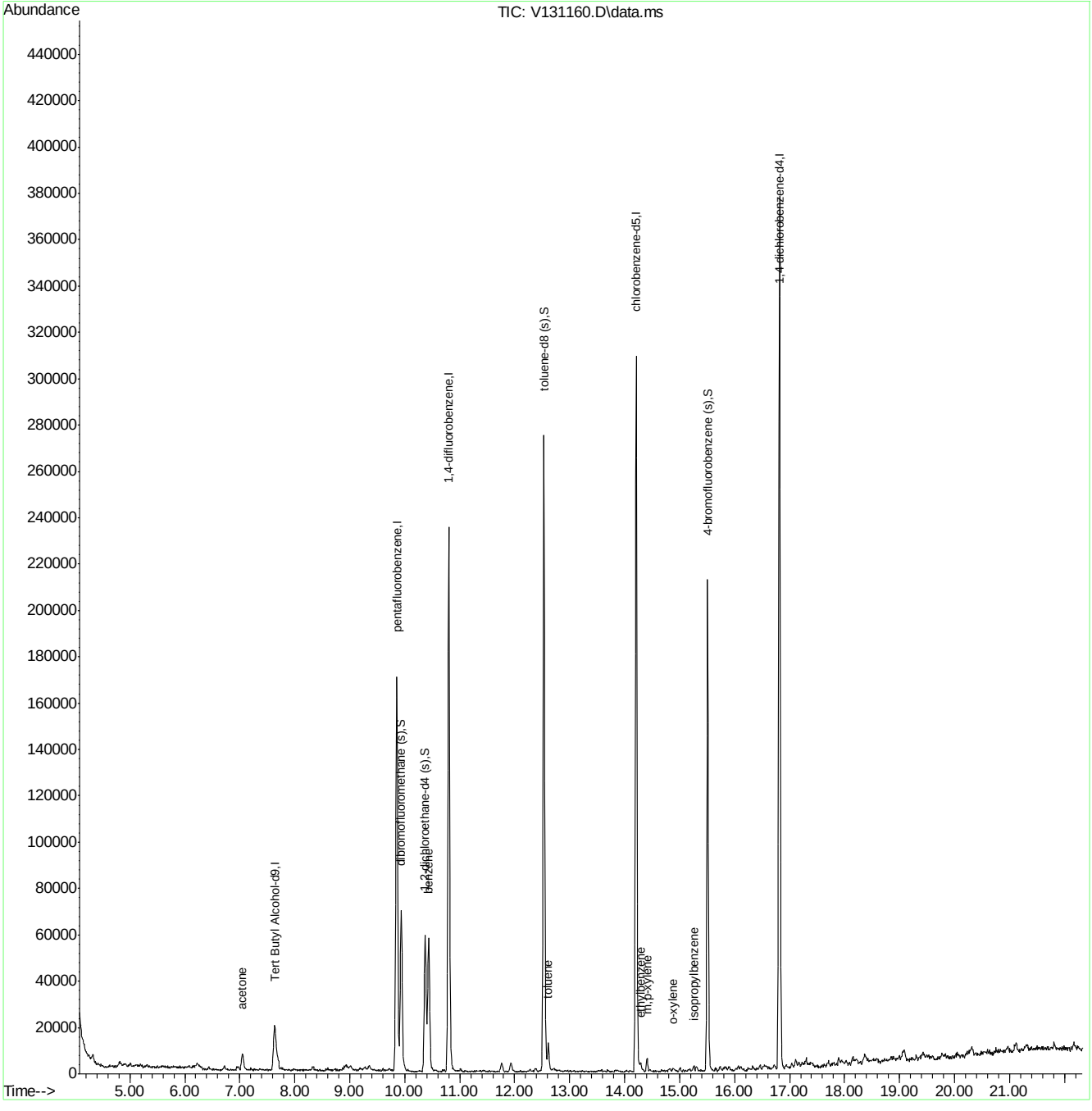
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.631	65	37472	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	146236	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	229780	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	208922	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	115024	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.932	113	52828	59.18	ug/L	0.00
Spiked Amount 50.000 Range 70 - 130 Recovery = 118.36%						
59) 1,2-dichloroethane-d4 (s)	10.367	65	48104	55.18	ug/L	0.00
Spiked Amount 50.000 Range 70 - 122 Recovery = 110.36%						
86) toluene-d8 (s)	12.532	98	221547	57.59	ug/L	0.00
Spiked Amount 50.000 Range 81 - 127 Recovery = 115.18%						
110) 4-bromofluorobenzene (s)	15.508	95	82003	50.38	ug/L	0.00
Spiked Amount 50.000 Range 66 - 132 Recovery = 100.76%						
Target Compounds						Qvalue
31) acetone	7.040	58	3825	76.51	ug/L	75
71) benzene	10.435	78	60681	13.39	ug/L	100
88) toluene	12.610	92	5368	1.81	ug/L	92
103) ethylbenzene	14.294	91	2559	0.42	ug/L	82
104) m,p-xylene	14.410	106	1867	0.79	ug/L	93
105) o-xylene	14.875	106	516m	0.22	ug/L	
112) isopropylbenzene	15.262	105	1620	0.28	ug/L	89

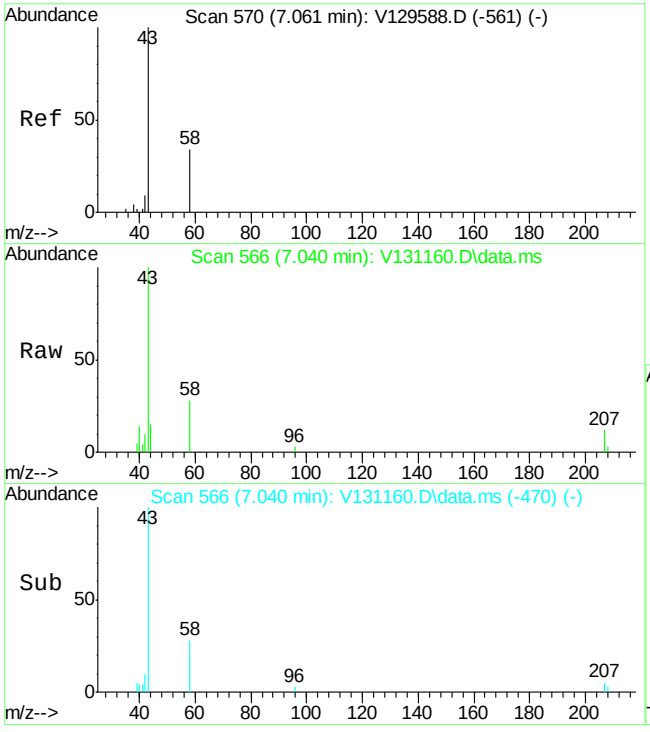
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5654\
Data File : V131160.D
Acq On : 7 Dec 2012 3:05 am
Operator : THIENN
Sample : jb22822-2
Misc : MS39773,VV5654,6.2,,,,1
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Dec 07 10:39:53 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

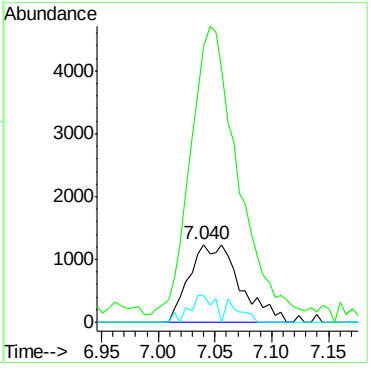


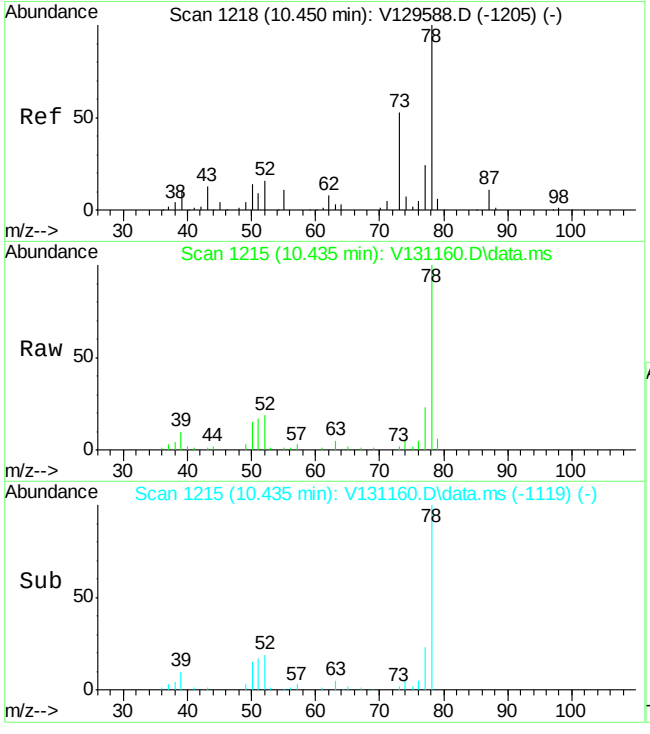


#31
acetone
Concen: 76.51 ug/L
RT: 7.040 min Scan# 566
Delta R.T. -0.000 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion: 58 Resp: 3825

Ion	Ratio	Lower	Upper
58	100		
43	334.7	198.4	368.4
42	35.1	21.1	39.1

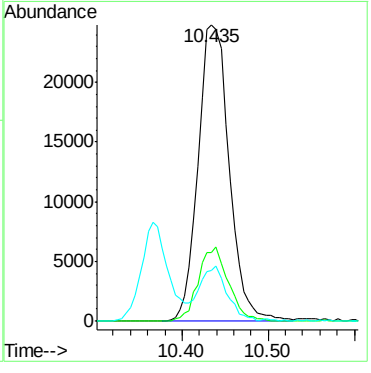


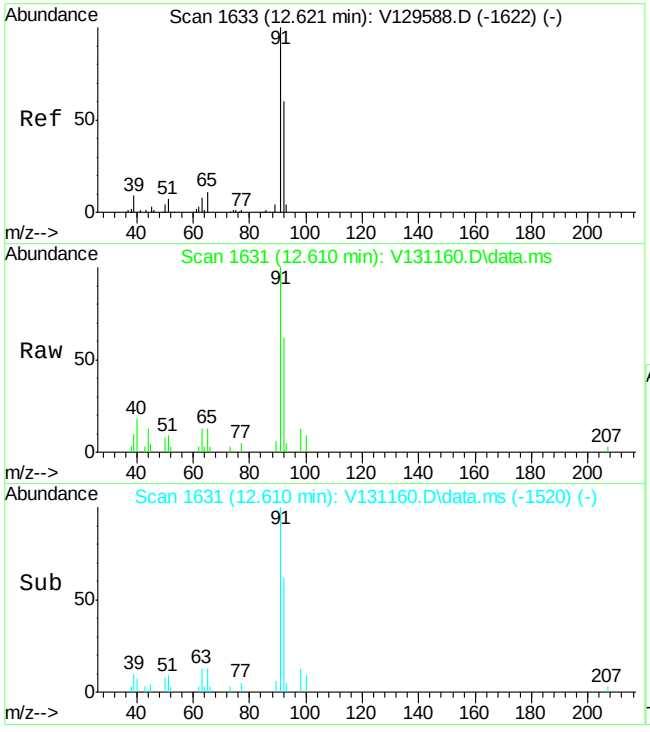


#71
benzene
Concen: 13.39 ug/L
RT: 10.435 min Scan# 1215
Delta R.T. 0.001 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion: 78 Resp: 60681

Ion	Ratio	Lower	Upper
78	100		
77	23.2	0.0	53.4
51	17.1	0.0	46.9

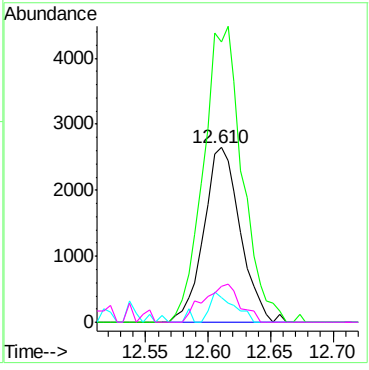


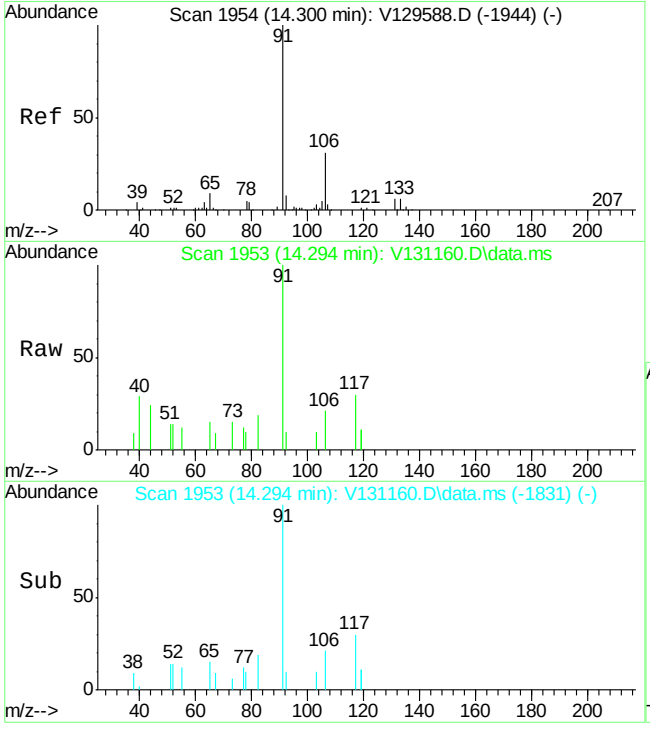


#88
toluene
Concen: 1.81 ug/L
RT: 12.610 min Scan# 1631
Delta R.T. 0.000 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion: 92 Resp: 5368

Ion	Ratio	Lower	Upper
92	100		
91	160.1	120.5	223.7
51	14.2	7.9	14.7
65	20.6	13.4	24.8

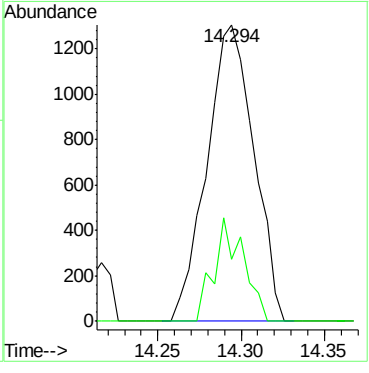


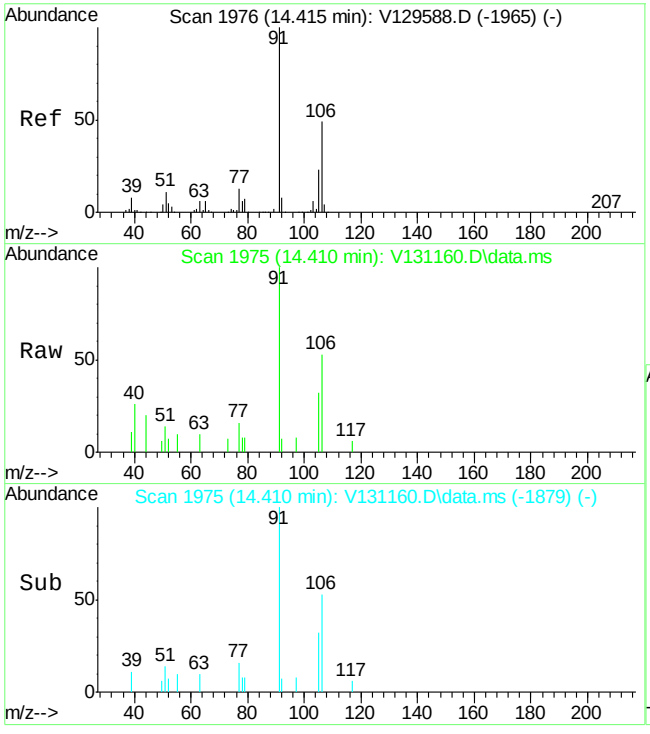


#103
ethylbenzene
Concen: 0.42 ug/L
RT: 14.294 min Scan# 1953
Delta R.T. 0.005 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion: 91 Resp: 2559

Ion	Ratio	Lower	Upper
91	100		
106	20.8	0.7	60.7

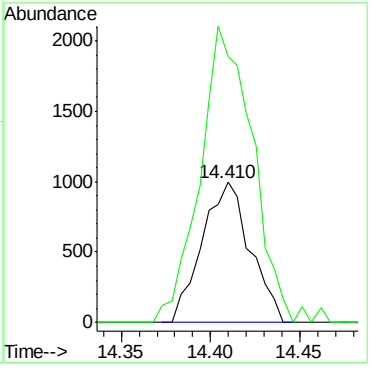


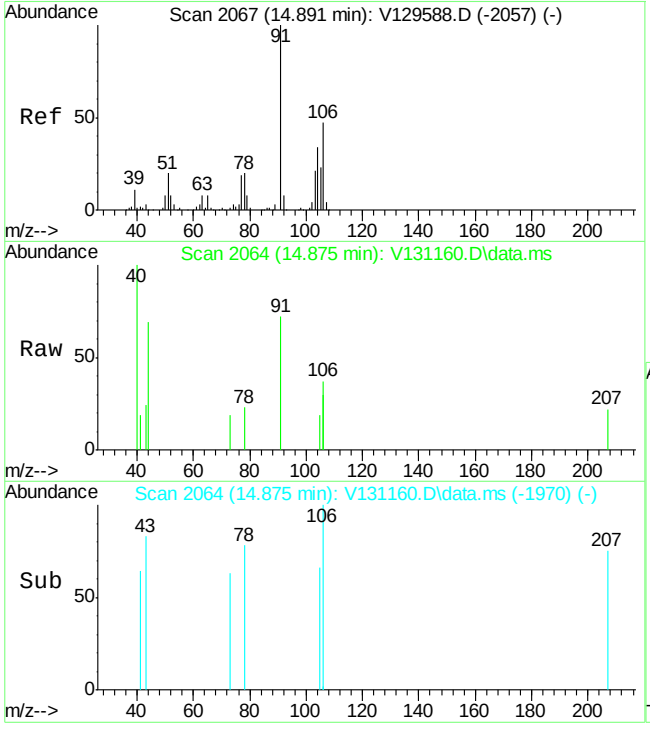


#104
m,p-xylene
Concen: 0.79 ug/L
RT: 14.410 min Scan# 1975
Delta R.T. -0.000 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion:106 Resp: 1867

Ion	Ratio	Lower	Upper
106	100		
91	189.8	140.7	261.3

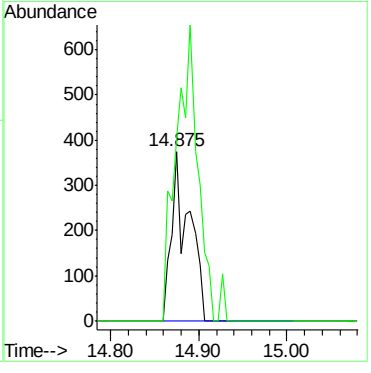


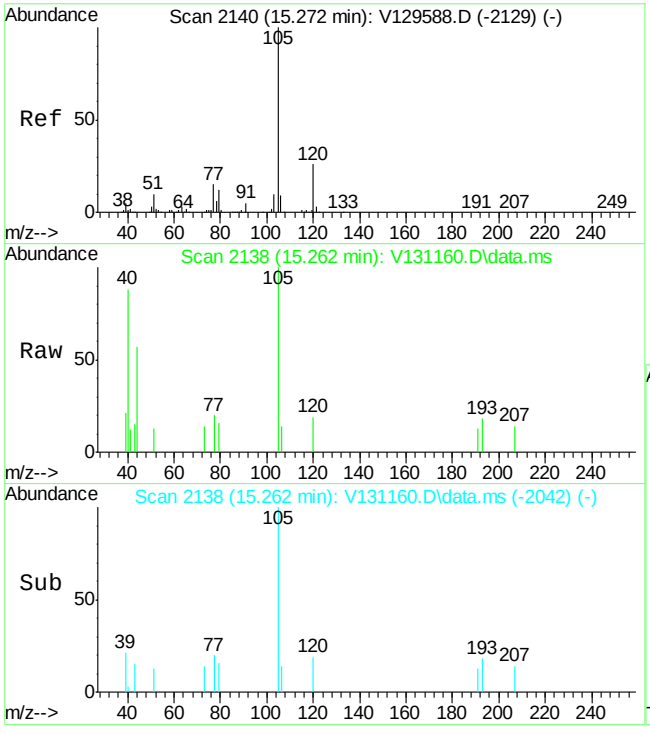


#105
o-xylene
Concen: 0.22 ug/L m
RT: 14.875 min Scan# 2064
Delta R.T. -0.010 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion:106 Resp: 516

Ion	Ratio	Lower	Upper
106	100		
91	194.7	144.3	267.9

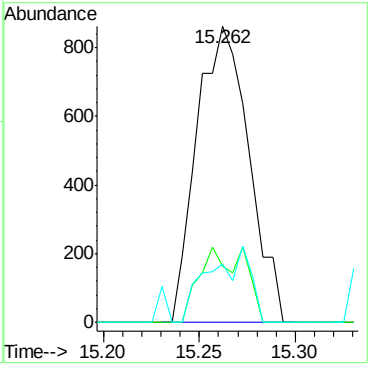




#112
isopropylbenzene
Concen: 0.28 ug/L
RT: 15.262 min Scan# 2138
Delta R.T. -0.000 min
Lab File: V131160.D
Acq: 7 Dec 2012 3:05 am

Tgt Ion:105 Resp: 1620

Ion	Ratio	Lower	Upper
105	100		
120	18.9	0.0	55.0
77	19.8	0.0	45.8



7.1.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131188.D
Acq On : 8 Dec 2012 12:06 am
Operator : THIENN
Sample : jb22822-4
Misc : MS39773,VV5655,5.6,,,,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 11 08:37:16 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

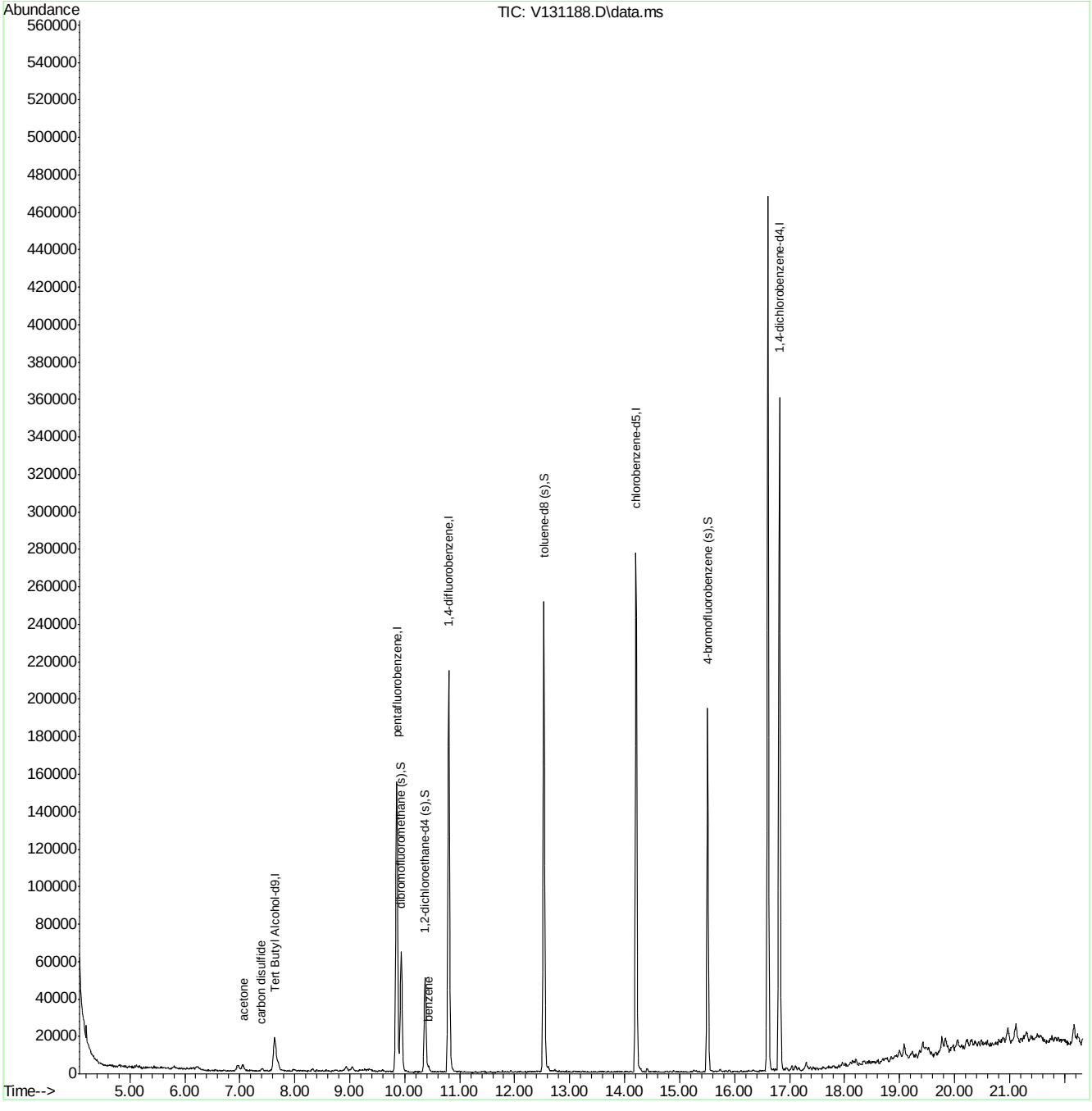
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.636	65	34284	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	138098	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	211158	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	193514	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.816	152	110073	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.933	113	47722	56.61	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 113.22%			
59) 1,2-dichloroethane-d4 (s)	10.367	65	42661	51.82	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 103.64%			
86) toluene-d8 (s)	12.532	98	203656	57.61	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 115.22%			
110) 4-bromofluorobenzene (s)	15.508	95	76160	50.52	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 101.04%			
Target Compounds						Qvalue
31) acetone	7.061	58	1806	38.25	ug/L	66
36) carbon disulfide	7.396	76	2494	0.72	ug/L	91
71) benzene	10.435	78	2563	0.62	ug/L	89

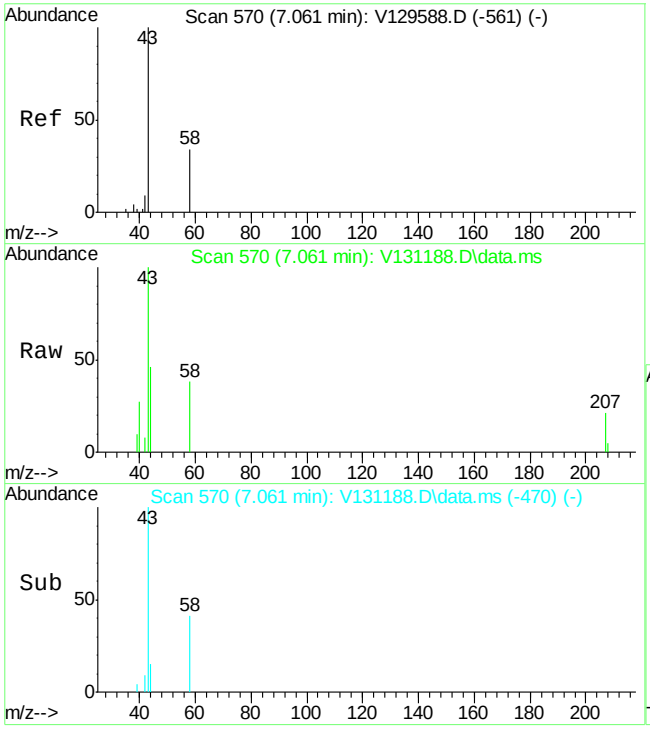
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131188.D
Acq On : 8 Dec 2012 12:06 am
Operator : THIENN
Sample : jb22822-4
Misc : MS39773,VV5655,5.6,,,,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 11 08:37:16 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

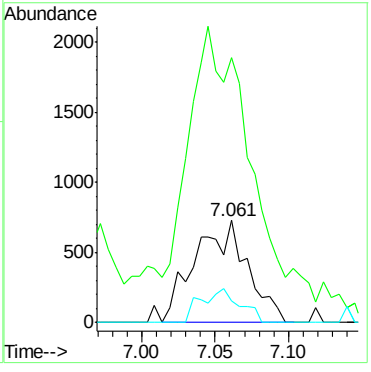


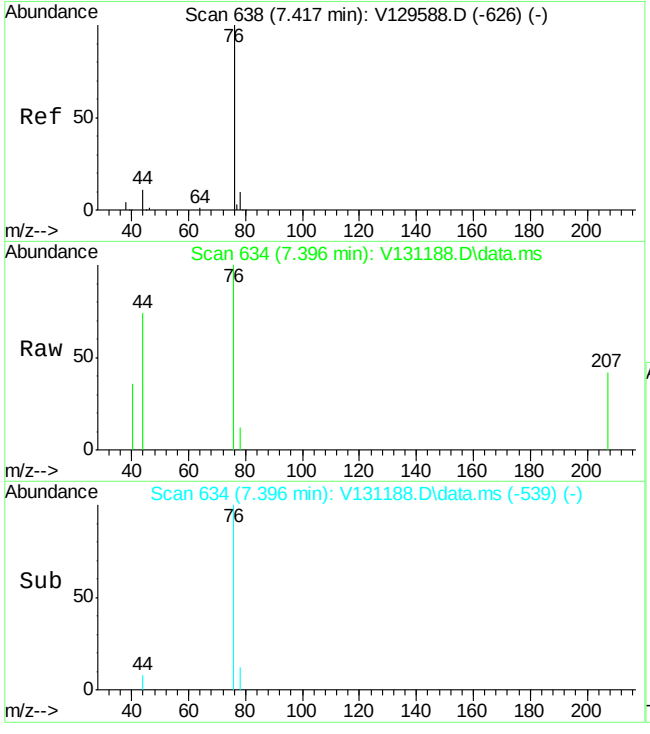


#31
acetone
Concen: 38.25 ug/L
RT: 7.061 min Scan# 570
Delta R.T. 0.021 min
Lab File: V131188.D
Acq: 8 Dec 2012 12:06 am

Tgt Ion: 58 Resp: 1806

Ion	Ratio	Lower	Upper
58	100		
43	215.5	198.4	368.4
42	21.6	21.1	39.1

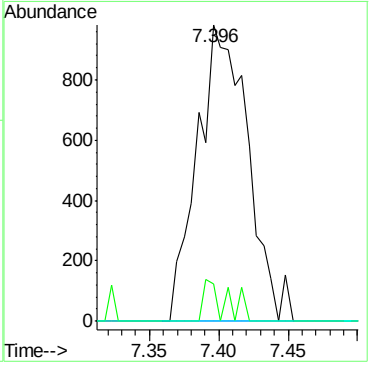


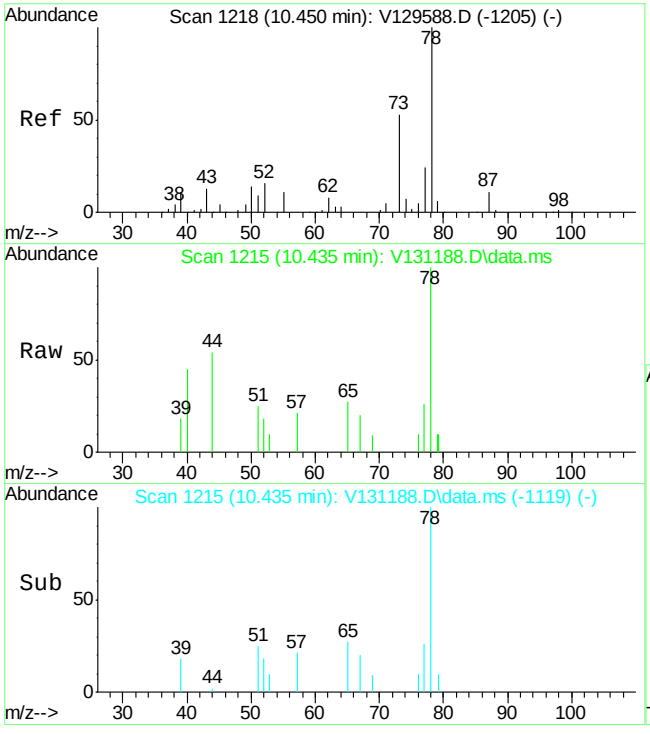


#36
carbon disulfide
Concen: 0.72 ug/L
RT: 7.396 min Scan# 634
Delta R.T. -0.005 min
Lab File: V131188.D
Acq: 8 Dec 2012 12:06 am

Tgt Ion: 76 Resp: 2494

Ion	Ratio	Lower	Upper
76	100		
78	12.4	0.0	39.3
38	0.0	0.0	33.1

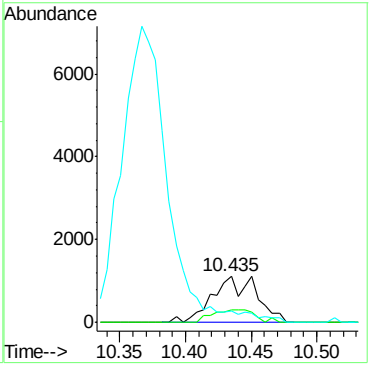




#71
benzene
Concen: 0.62 ug/L
RT: 10.435 min Scan# 1215
Delta R.T. 0.001 min
Lab File: V131188.D
Acq: 8 Dec 2012 12:06 am

Tgt Ion: 78 Resp: 2563

Ion	Ratio	Lower	Upper
78	100		
77	26.0	0.0	53.4
51	25.1	0.0	46.9



7.1.3

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203317.D
Acq On : 13 Dec 2012 3:55 am
Operator : EmilyT
Sample : jb22822-5
Misc : ms39773,vd8290,5.6,,20,5,1
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Dec 13 09:43:26 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.022	65	68287	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	116008	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	178131	50.00 ug/L	0.00
85) chlorobenzene-d5	14.517	117	168848	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	109747	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.291	113	54794	47.73 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.46%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	78243	59.25 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 118.50%		
77) toluene-d8 (s)	12.886	98	250895	55.55 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 111.10%		
101) 4-bromofluorobenzene (s)	15.794	95	106890	53.95 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 107.90%		

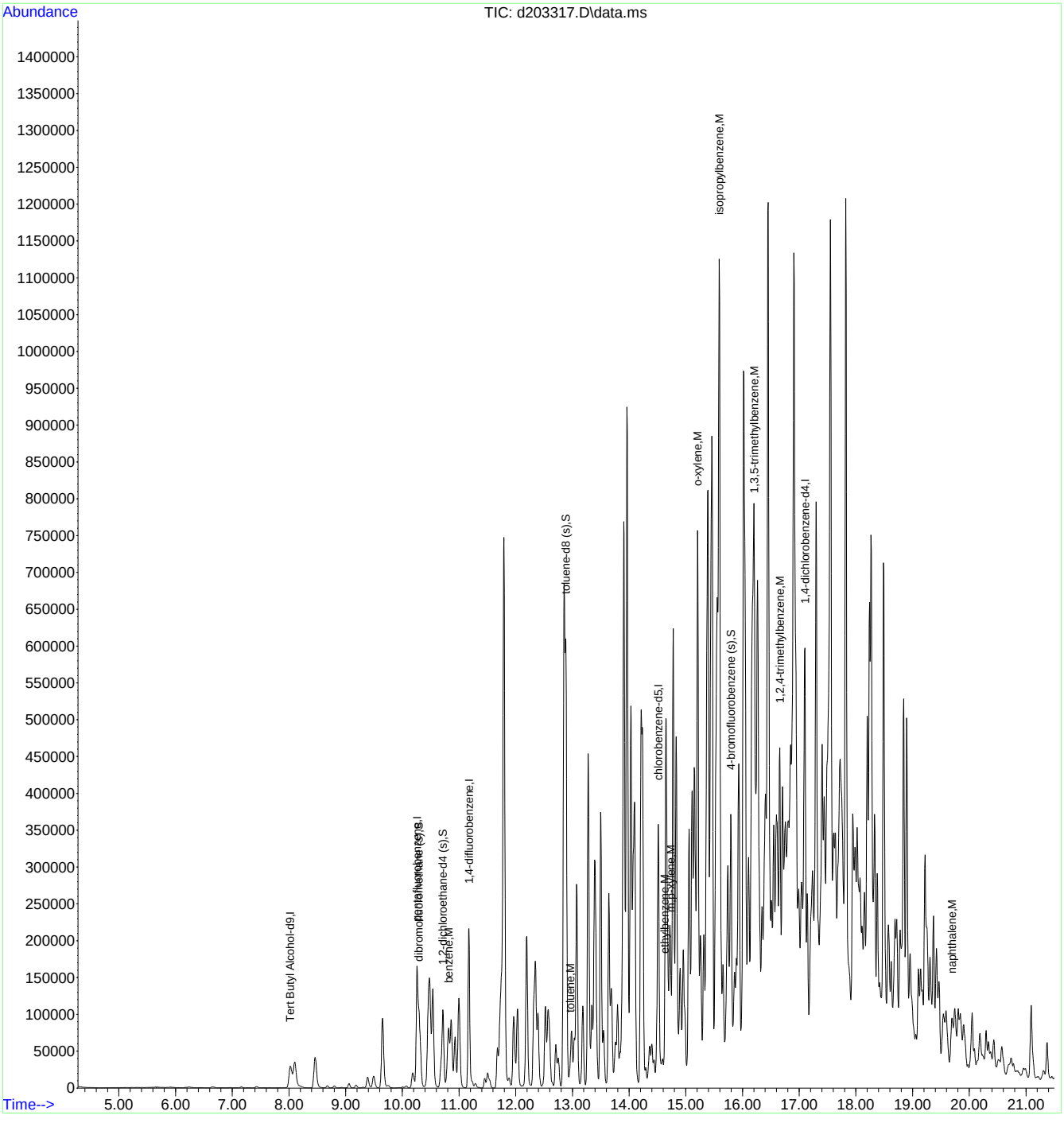
Target Compounds					Qvalue
62) benzene	10.820	78	58755	11.54 ug/L	98
79) toluene	12.959	92	8197	2.51 ug/L	97
94) ethylbenzene	14.622	91	12404	2.01 ug/L	95
95) m,p-xylene	14.737	106	16032	6.65 ug/L	98
96) o-xylene	15.203	106	2451	1.02 ug/L	76
100) isopropylbenzene	15.590	105	439551	65.11 ug/L	97
111) 1,3,5-trimethylbenzene	16.212	105	18944	3.20 ug/L	97
114) 1,2,4-trimethylbenzene	16.651	105	73154	11.93 ug/L	96
128) naphthalene	19.695	128	35799	7.02 ug/L	98

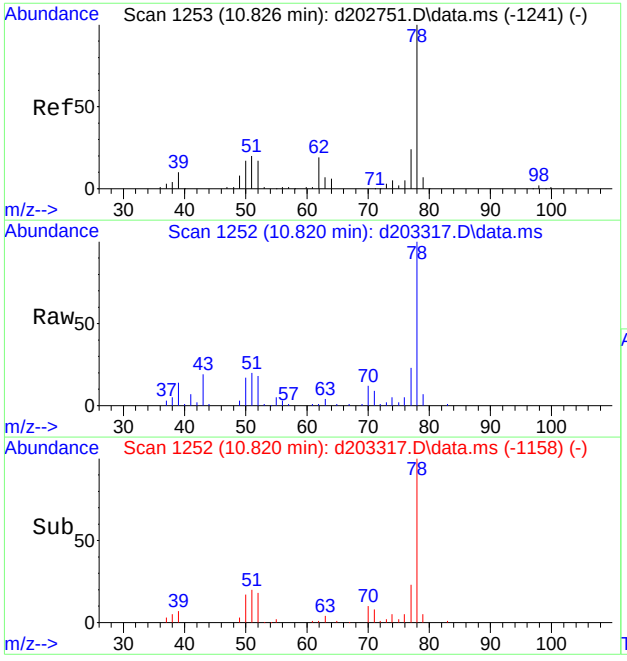
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203317.D
Acq On : 13 Dec 2012 3:55 am
Operator : EmilyT
Sample : jb22822-5
Misc : ms39773,vd8290,5.6,,20,5,1
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Dec 13 09:43:26 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

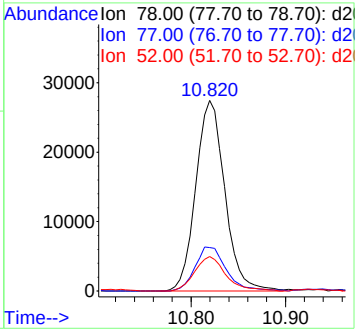


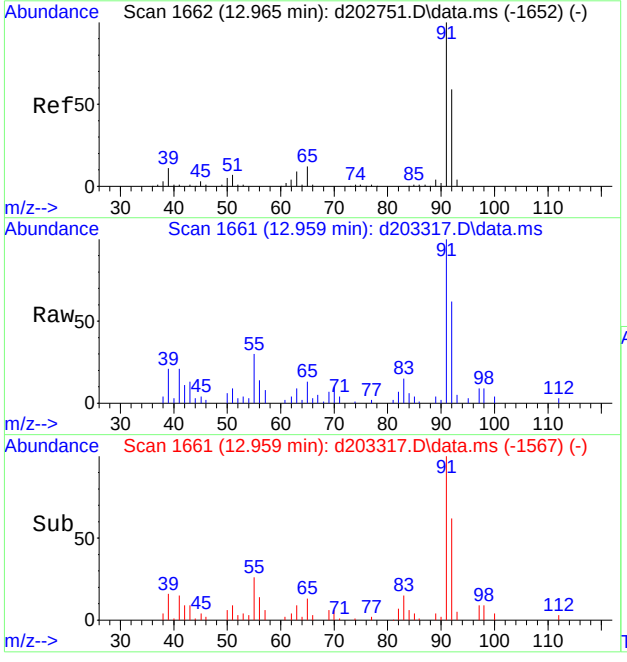


#62
benzene
Concen: 11.54 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion: 78 Resp: 58755

Ion	Ratio	Lower	Upper
78	100		
77	22.8	0.0	53.8
52	18.1	0.0	46.8

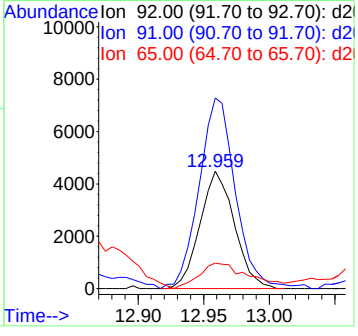


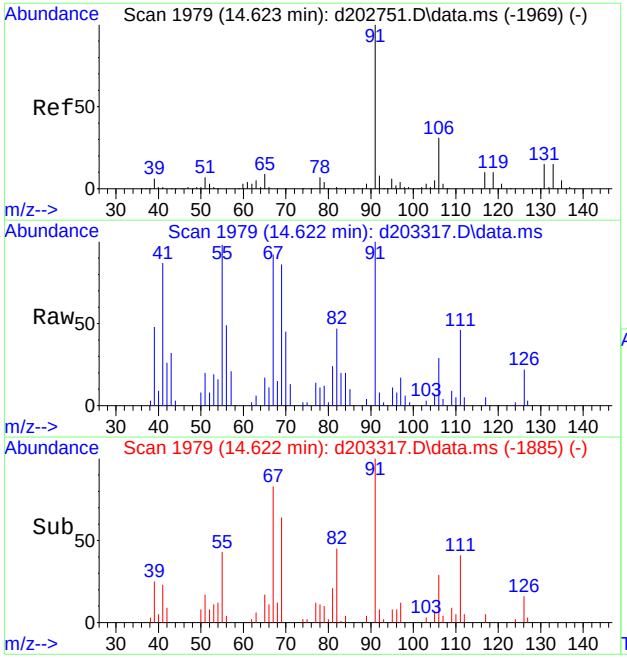


#79
toluene
Concen: 2.51 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion: 92 Resp: 8197

Ion	Ratio	Lower	Upper
92	100		
91	162.2	136.4	196.4
65	17.2	0.0	49.2

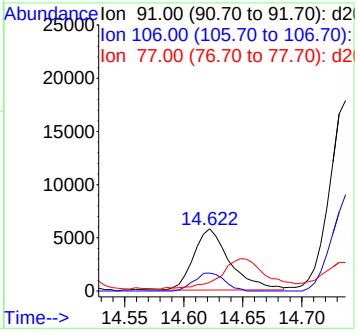


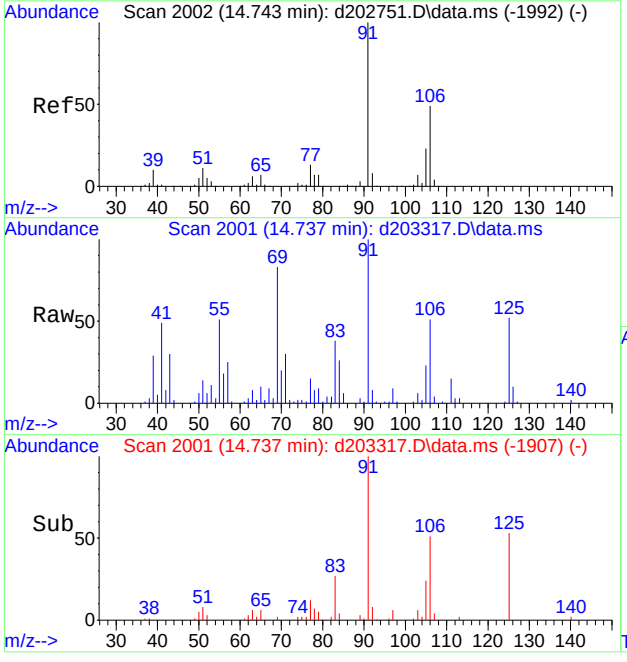


#94
ethylbenzene
Concen: 2.01 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion: 91 Resp: 12404

Ion	Ratio	Lower	Upper
91	100		
106	29.5	2.1	62.1
77	11.0	0.0	38.6

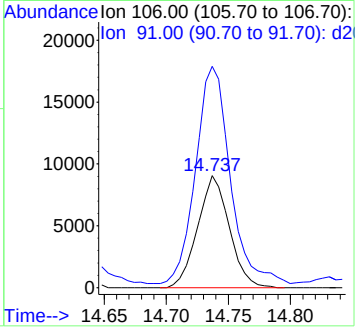




#95
m,p-xylene
Concen: 6.65 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion:106 Resp: 16032

Ion	Ratio	Lower	Upper
106	100		
91	194.0	137.7	255.7



7.1.4

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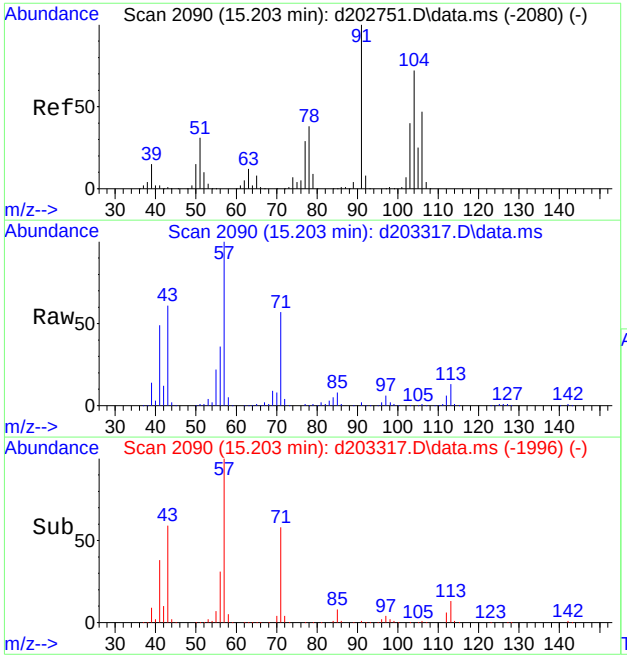
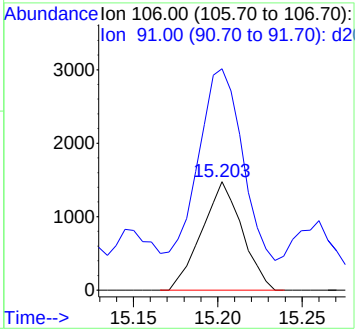
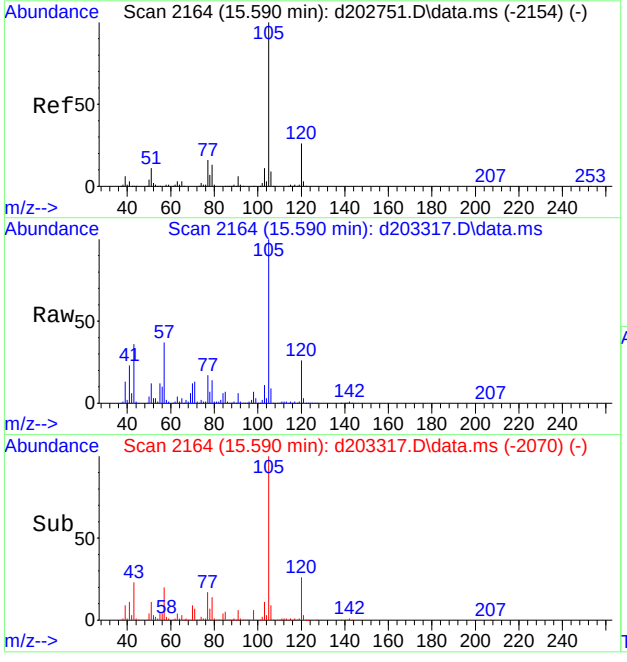


#96
o-xylene
Concen: 1.02 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion:106 Resp: 2451

Ion	Ratio	Lower	Upper
106	100		
91	173.1	147.4	273.8

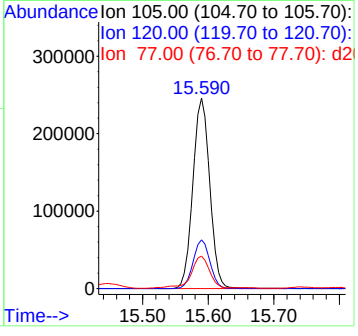




#100
isopropylbenzene
Concen: 65.11 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion:105 Resp: 439551

Ion	Ratio	Lower	Upper
105	100		
120	25.7	0.0	56.7
77	16.8	0.0	44.9



7.1.4

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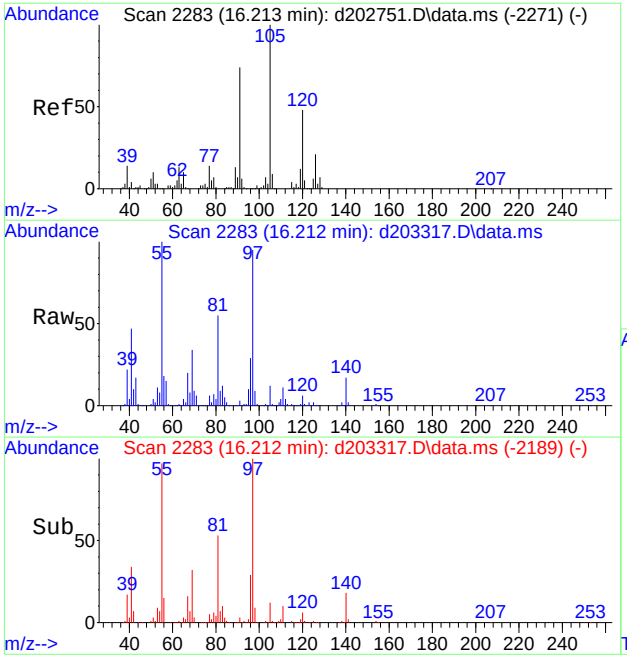
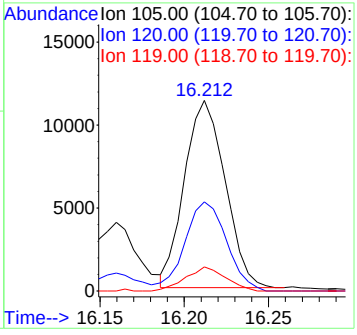
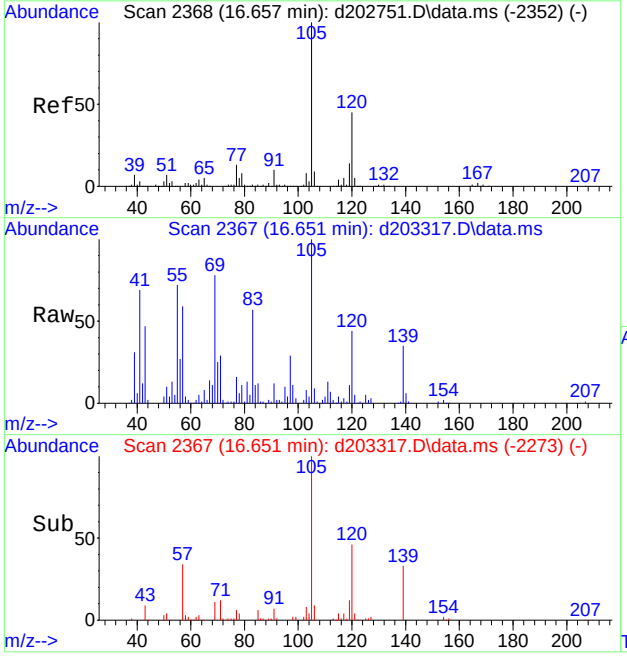


#111
1,3,5-trimethylbenzene
Concen: 3.20 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion:105 Resp: 18944

Ion	Ratio	Lower	Upper
105	100		
120	47.7	19.9	79.9
119	12.9	0.0	42.6

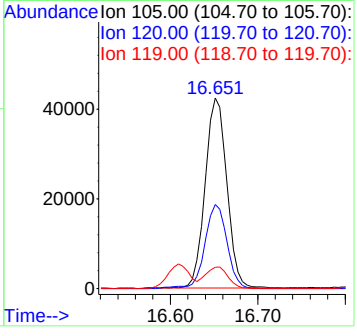




#114
1,2,4-trimethylbenzene
Concen: 11.93 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion:105 Resp: 73154

Ion	Ratio	Lower	Upper
105	100		
120	44.3	16.5	76.5
119	11.3	0.0	43.8



7.1.4

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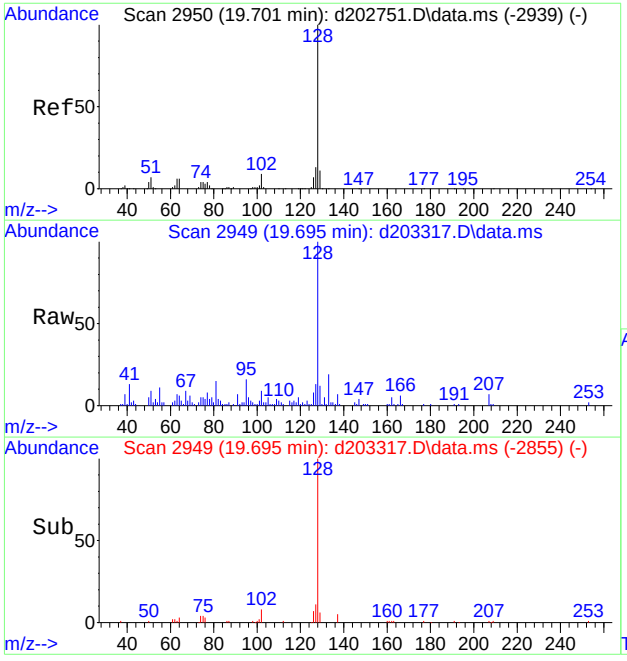
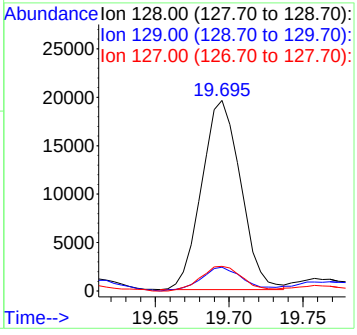


#128
naphthalene
Concen: 7.02 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203317.D
Acq: 13 Dec 2012 3:55 am

Tgt Ion:128 Resp: 35799

Ion	Ratio	Lower	Upper
128	100		
129	12.6	0.0	41.0
127	13.0	0.0	42.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203318.D
Acq On : 13 Dec 2012 4:24 am
Operator : EmilyT
Sample : jb22822-6
Misc : ms39773,vd8290,6.7,,20,5,1
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Dec 13 09:45:26 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.024	65	76914	500.00 ug/L	-0.02
4) pentafluorobenzene	10.257	168	126728	50.00 ug/L	-0.01
53) 1,4-difluorobenzene	11.172	114	193121	50.00 ug/L	-0.01
85) chlorobenzene-d5	14.514	117	183025	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.103	152	115908	50.00 ug/L	0.00
System Monitoring Compounds					
46) dibromofluoromethane (s)	10.288	113	59842	47.72 ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.44%		
47) 1,2-dichloroethane-d4 (s)	10.717	65	84065	58.27 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 116.54%		
77) toluene-d8 (s)	12.882	98	281586	57.51 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 115.02%		
101) 4-bromofluorobenzene (s)	15.796	95	128506	61.42 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 122.84%		

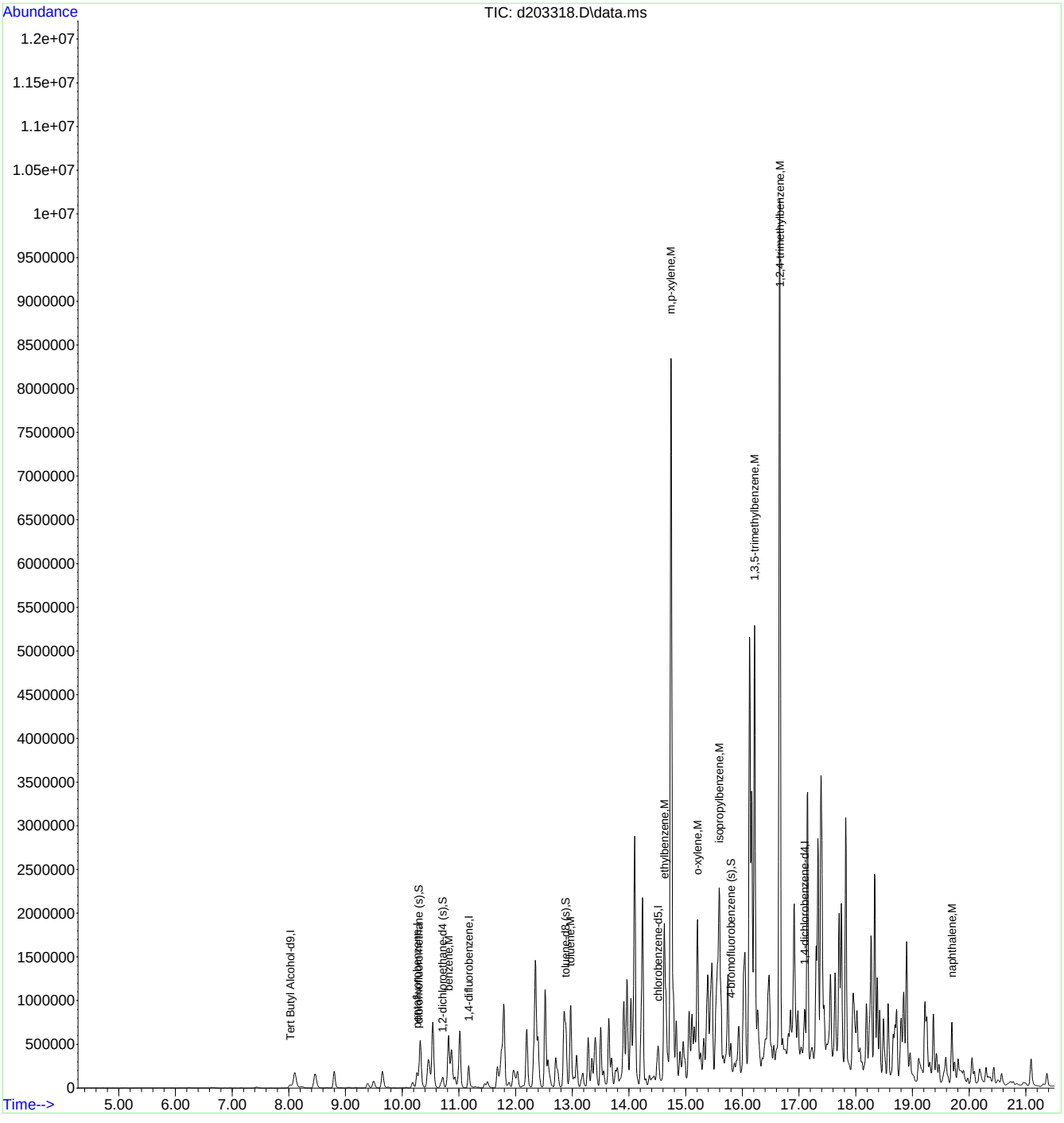
Target Compounds					Qvalue
62) benzene	10.822	78	519642	94.12 ug/L	98
79) toluene	12.961	92	146020	41.20 ug/L	99
94) ethylbenzene	14.624	91	1356132	202.62 ug/L	97
95) m,p-xylene	14.744	106	2454944	938.75 ug/L	97
96) o-xylene	15.205	106	184056	70.72 ug/L	92
100) isopropylbenzene	15.592	105	716671	100.52 ug/L	97
111) 1,3,5-trimethylbenzene	16.214	105	2479611	396.62 ug/L	96
114) 1,2,4-trimethylbenzene	16.659	105	5373213	830.01 ug/L	97
128) naphthalene	19.697	128	556531	103.39 ug/L	99

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

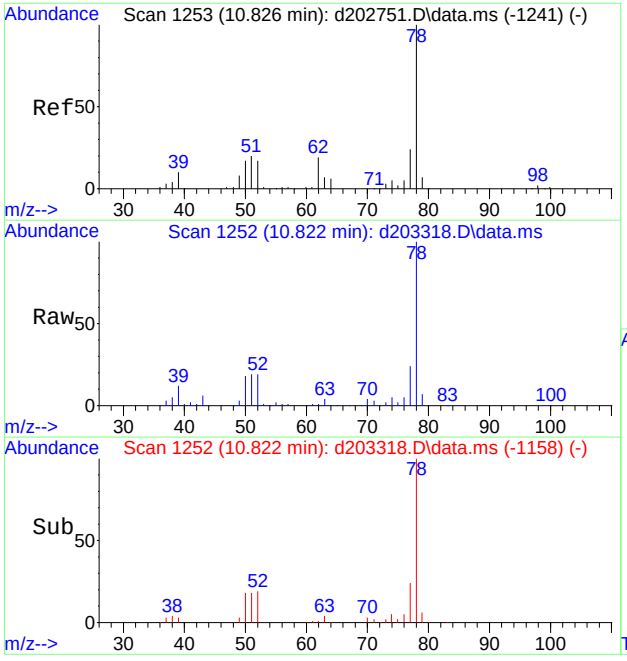
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203318.D
Acq On : 13 Dec 2012 4:24 am
Operator : EmilyT
Sample : jb22822-6
Misc : ms39773,vd8290,6.7,,20,5,1
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Dec 13 09:45:26 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



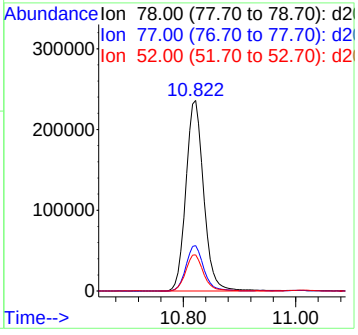
MD8248.M Thu Dec 13 09:50:25 2012 Page: 2

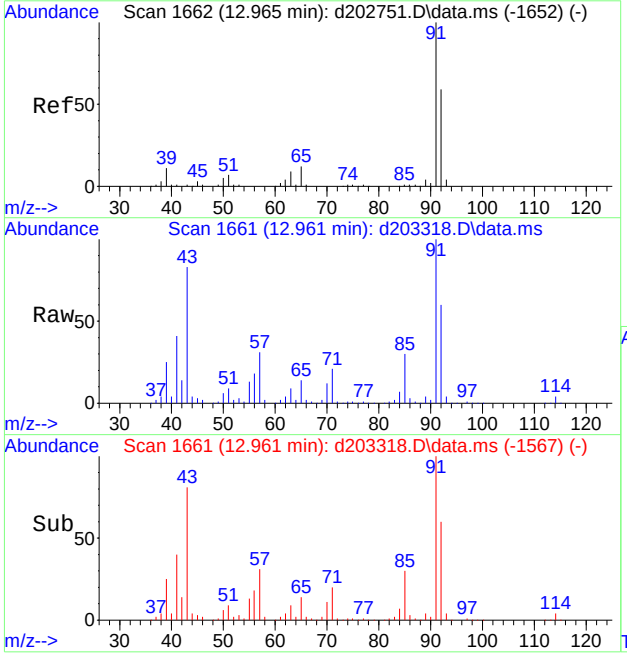


#62
benzene
Concen: 94.12 ug/L
RT: 10.822 min Scan# 1252
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

Tgt Ion: 78 Resp: 519642

Ion	Ratio	Lower	Upper
78	100		
77	23.9	0.0	53.8
52	19.0	0.0	46.8

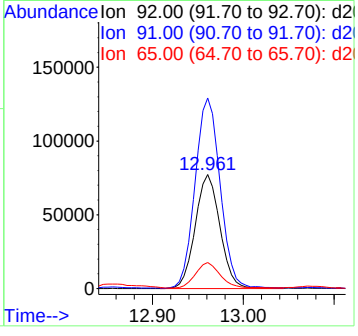


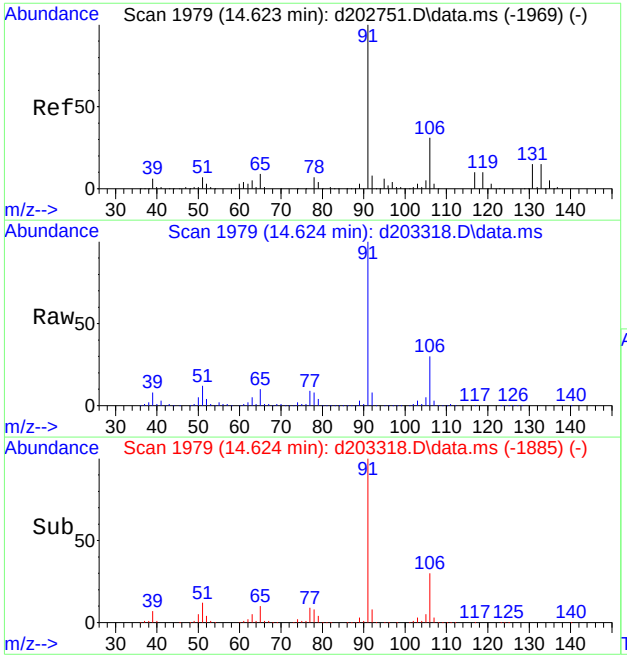


#79
toluene
Concen: 41.20 ug/L
RT: 12.961 min Scan# 1661
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

Tgt Ion: 92 Resp: 146020

Ion	Ratio	Lower	Upper
92	100		
91	166.5	136.4	196.4
65	22.1	0.0	49.2

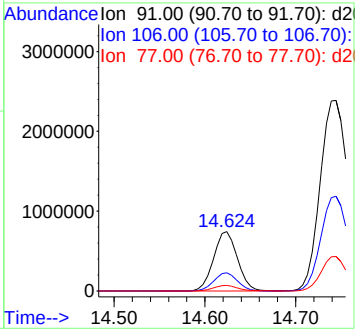


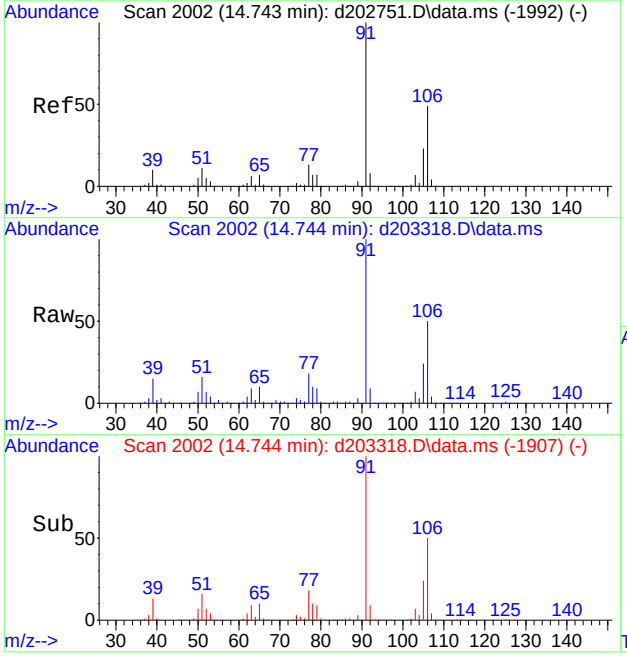


#94
ethylbenzene
Concen: 202.62 ug/L
RT: 14.624 min Scan# 1979
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

Tgt Ion: 91 Resp: 1356132

Ion	Ratio	Lower	Upper
91	100		
106	30.5	2.1	62.1
77	9.4	0.0	38.6

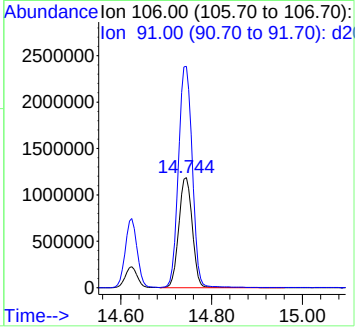




#95
m,p-xylene
Concen: 938.75 ug/L
RT: 14.744 min Scan# 2002
Delta R.T. -0.001 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

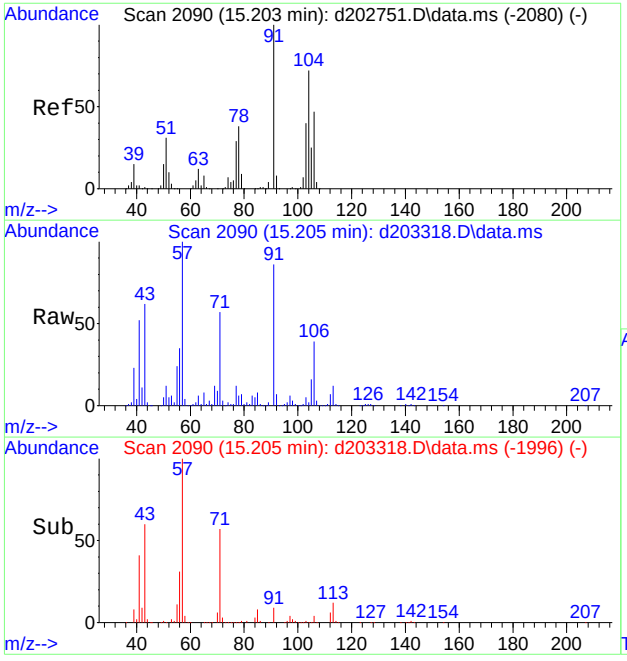
Tgt Ion:106 Resp: 2454944

Ion	Ratio	Lower	Upper
106	100		
91	201.1	137.7	255.7



7.1.5

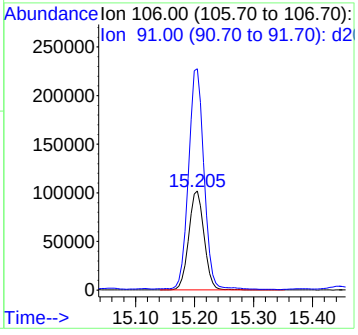
7

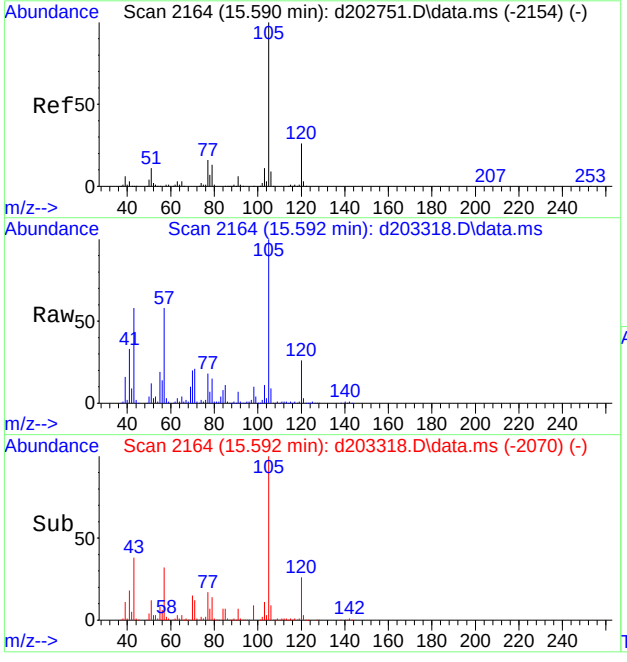


#96
o-xylene
Concen: 70.72 ug/L
RT: 15.205 min Scan# 2090
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

Tgt Ion:106 Resp: 184056

Ion	Ratio	Lower	Upper
106	100		
91	222.9	147.4	273.8

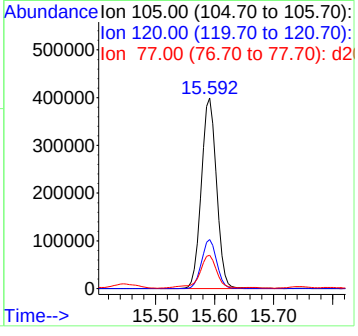




#100
isopropylbenzene
Concen: 100.52 ug/L
RT: 15.592 min Scan# 2164
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

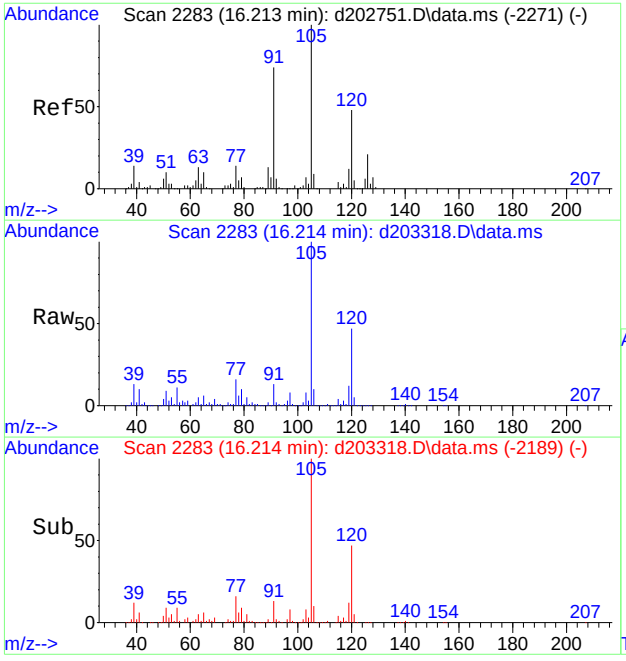
Tgt Ion:105 Resp: 716671

Ion	Ratio	Lower	Upper
105	100		
120	25.7	0.0	56.7
77	17.2	0.0	44.9



7.1.5

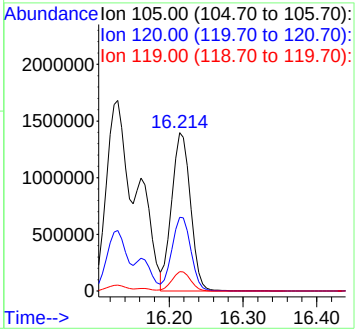
7

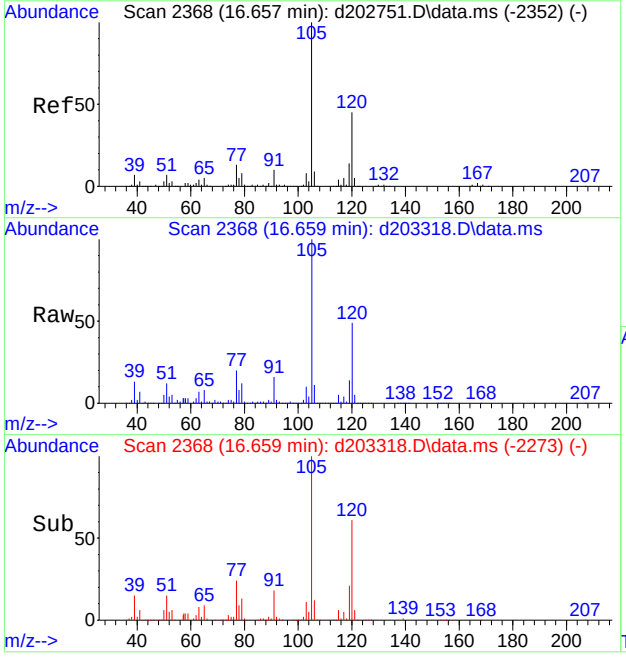


#111
1,3,5-trimethylbenzene
Concen: 396.62 ug/L
RT: 16.214 min Scan# 2283
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

Tgt Ion:105 Resp: 2479611

Ion	Ratio	Lower	Upper
105	100		
120	46.6	19.9	79.9
119	12.3	0.0	42.6

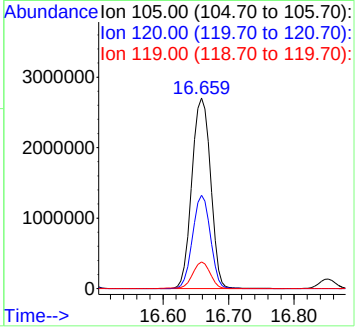




#114
1,2,4-trimethylbenzene
Concen: 830.01 ug/L
RT: 16.659 min Scan# 2368
Delta R.T. -0.001 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

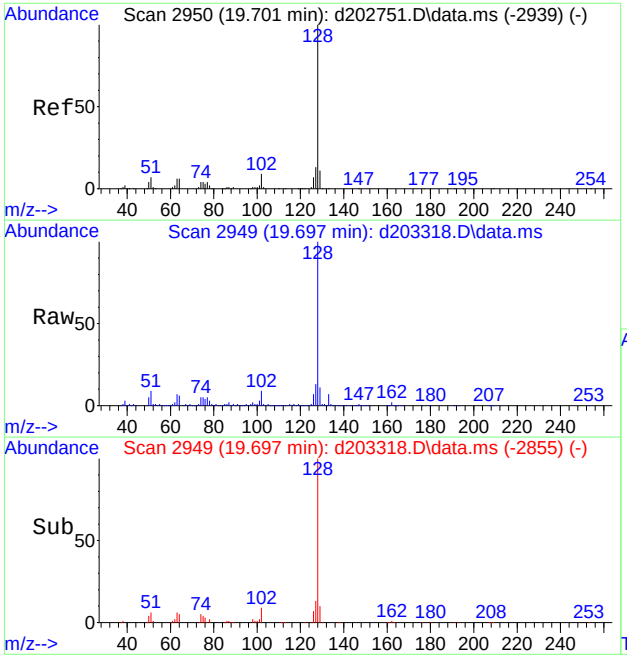
Tgt Ion:105 Resp: 5373213

Ion	Ratio	Lower	Upper
105	100		
120	49.0	16.5	76.5
119	14.0	0.0	43.8



7.1.5

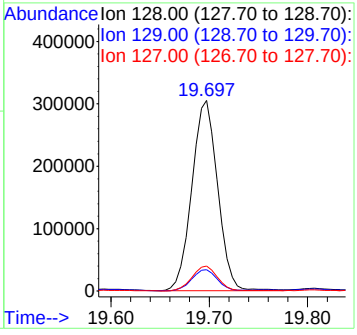
7



#128
naphthalene
Concen: 103.39 ug/L
RT: 19.697 min Scan# 2949
Delta R.T. -0.006 min
Lab File: d203318.D
Acq: 13 Dec 2012 4:24 am

Tgt Ion:128 Resp: 556531

Ion	Ratio	Lower	Upper
128	100		
129	11.1	0.0	41.0
127	13.1	0.0	42.7



7.1.5

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203361.D
Acq On : 14 Dec 2012 2:06 am
Operator : EmilyT
Sample : JB22822-6
Misc : ms39773,vd8292,6.7,,1,5,1
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Dec 14 08:02:36 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.016	65	77581	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	123304	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	187729	50.00 ug/L	0.00
85) chlorobenzene-d5	14.517	117	176391	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	103008	50.00 ug/L	0.00
System Monitoring Compounds					
46) dibromofluoromethane (s)	10.291	113	57772	47.35 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.70%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	81978	58.41 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 116.82%		
77) toluene-d8 (s)	12.880	98	236374	49.66 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.32%		
101) 4-bromofluorobenzene (s)	15.793	95	96046	51.65 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 103.30%		

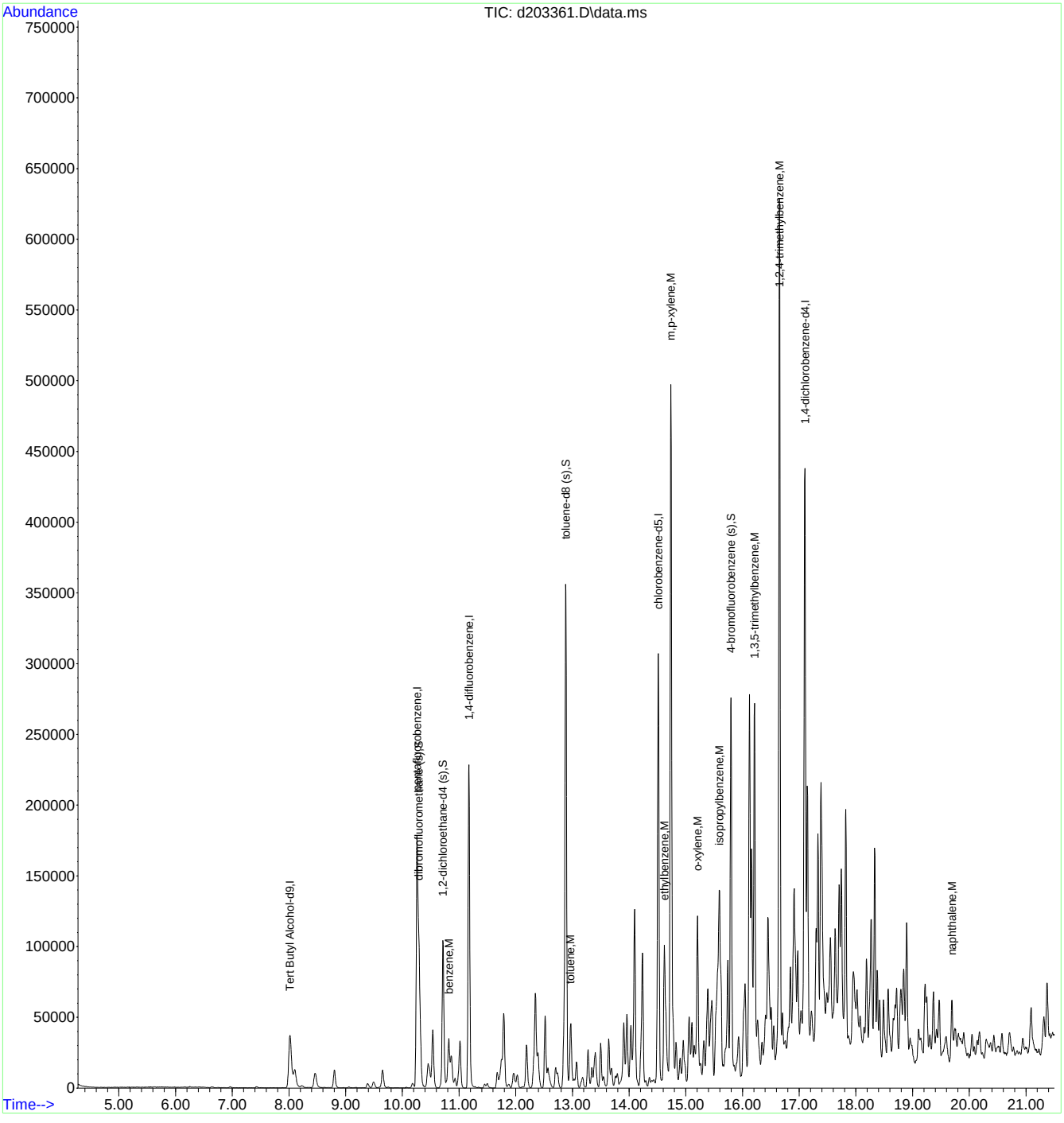
Target Compounds					Qvalue
62) benzene	10.819	78	30121	5.61 ug/L	97
79) toluene	12.958	92	8258	2.40 ug/L	96
94) ethylbenzene	14.622	91	73532	11.40 ug/L	98
95) m,p-xylene	14.737	106	147913	58.69 ug/L	91
96) o-xylene	15.202	106	9704	3.87 ug/L	91
100) isopropylbenzene	15.589	105	37128	5.86 ug/L	97
111) 1,3,5-trimethylbenzene	16.212	105	131432	23.66 ug/L	97
114) 1,2,4-trimethylbenzene	16.651	105	350820	60.98 ug/L	97
128) naphthalene	19.695	128	35676	7.46 ug/L	99

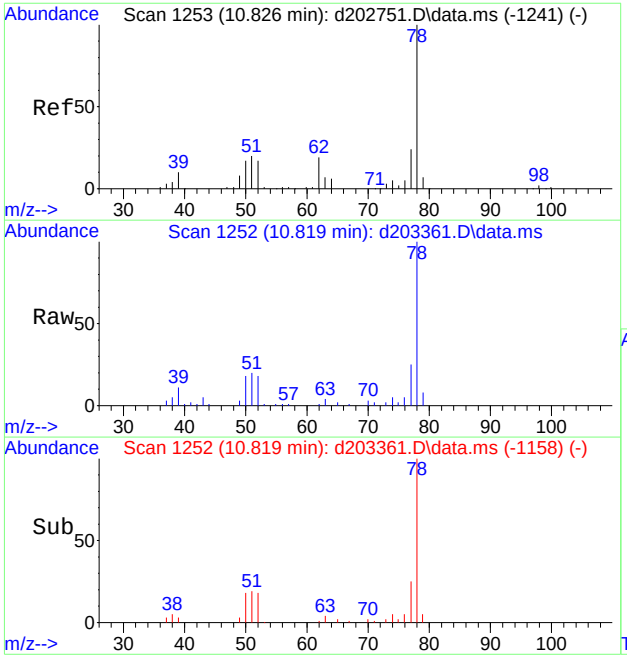
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203361.D
Acq On : 14 Dec 2012 2:06 am
Operator : EmilyT
Sample : JB22822-6
Misc : ms39773,vd8292,6.7,,1,5,1
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Dec 14 08:02:36 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

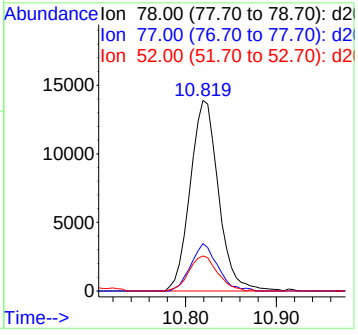


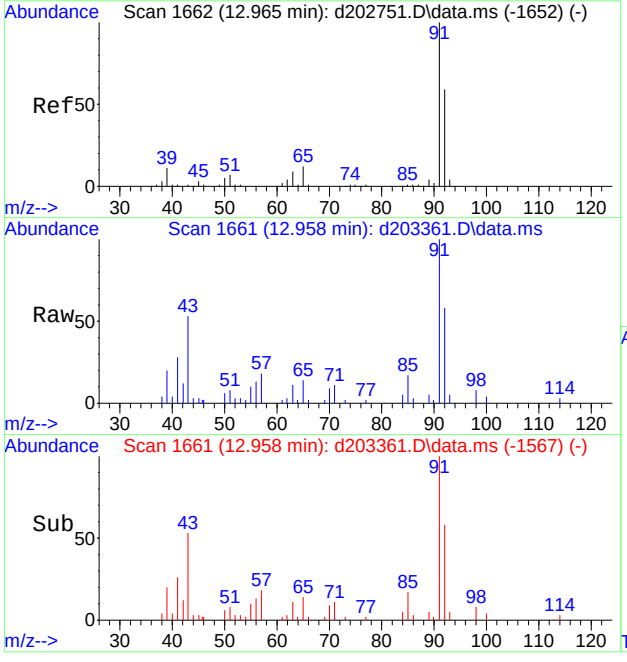


#62
benzene
Concen: 5.61 ug/L
RT: 10.819 min Scan# 1252
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion: 78 Resp: 30121

Ion	Ratio	Lower	Upper
78	100		
77	24.8	0.0	53.8
52	18.4	0.0	46.8

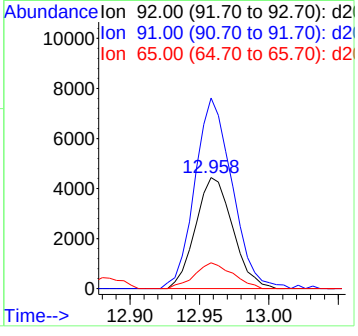


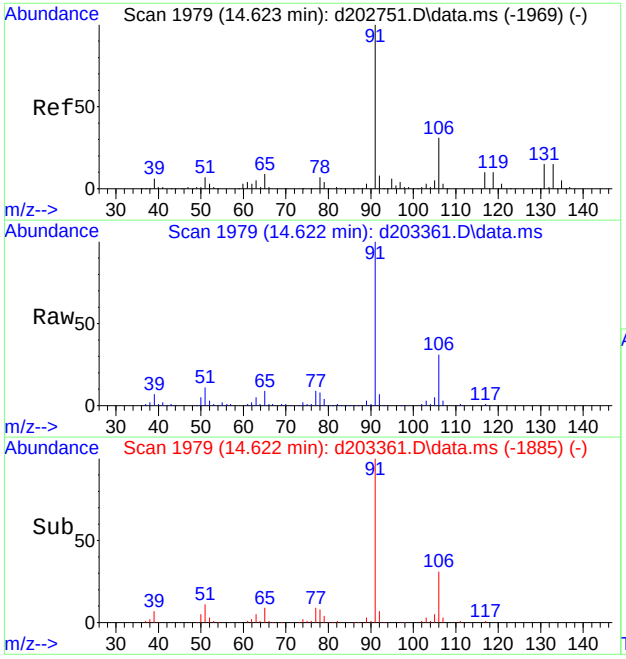


#79
toluene
Concen: 2.40 ug/L
RT: 12.958 min Scan# 1661
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion: 92 Resp: 8258

Ion	Ratio	Lower	Upper
92	100		
91	171.4	136.4	196.4
65	23.4	0.0	49.2

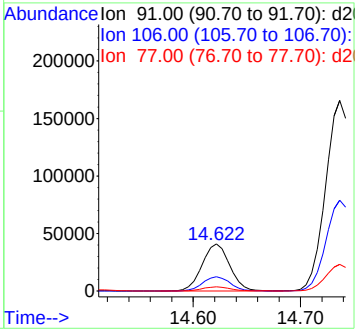


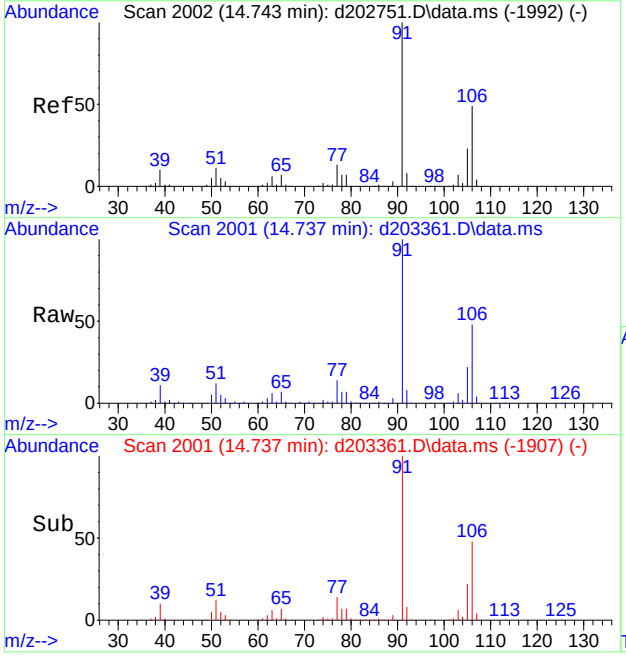


#94
ethylbenzene
Concen: 11.40 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion: 91 Resp: 73532

Ion	Ratio	Lower	Upper
91	100		
106	30.6	2.1	62.1
77	9.0	0.0	38.6

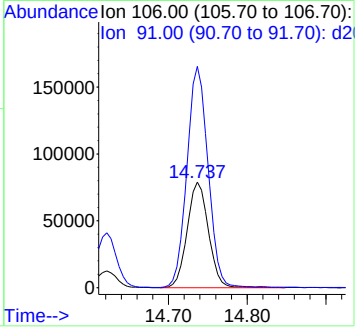


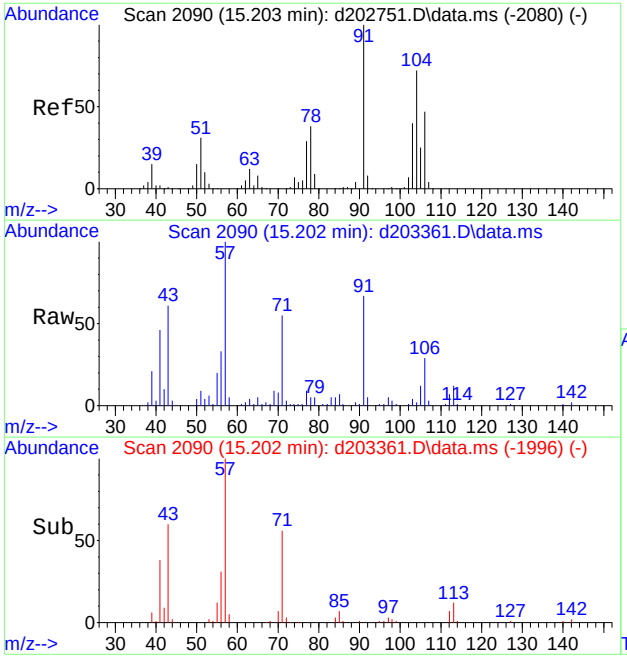


#95
m,p-xylene
Concen: 58.69 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion:106 Resp: 147913

Ion	Ratio	Lower	Upper
106	100		
91	209.5	137.7	255.7

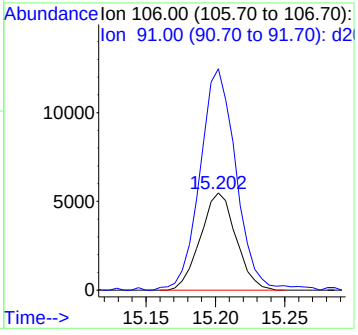


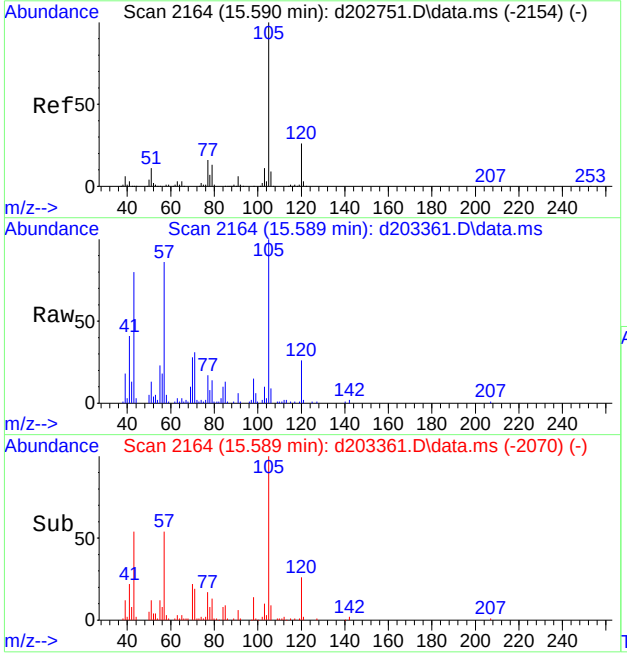


#96
o-xylene
Concen: 3.87 ug/L
RT: 15.202 min Scan# 2090
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion:106 Resp: 9704

Ion	Ratio	Lower	Upper
106	100		
91	224.9	147.4	273.8

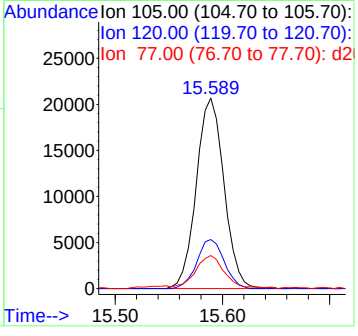


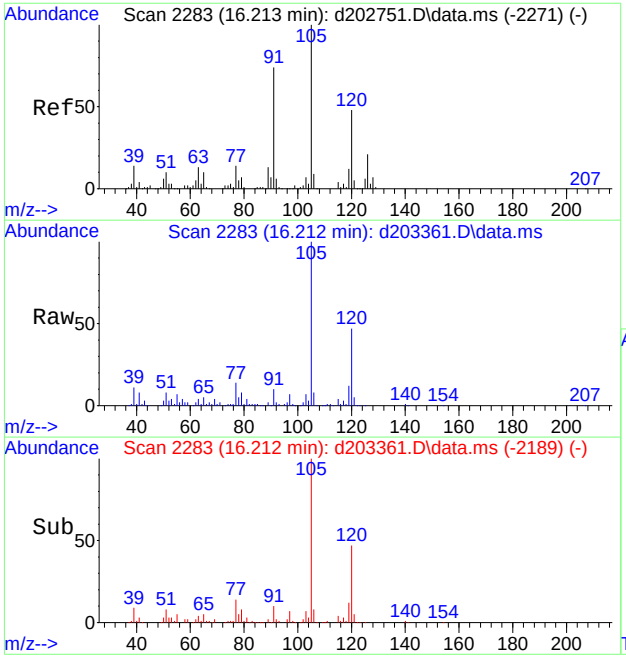


#100
isopropylbenzene
Concen: 5.86 ug/L
RT: 15.589 min Scan# 2164
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion:105 Resp: 37128

Ion	Ratio	Lower	Upper
105	100		
120	25.8	0.0	56.7
77	16.8	0.0	44.9

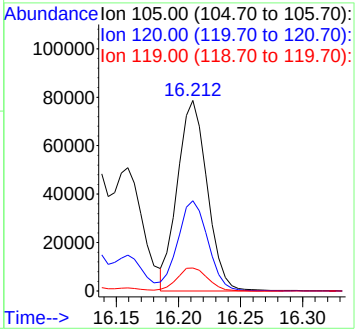


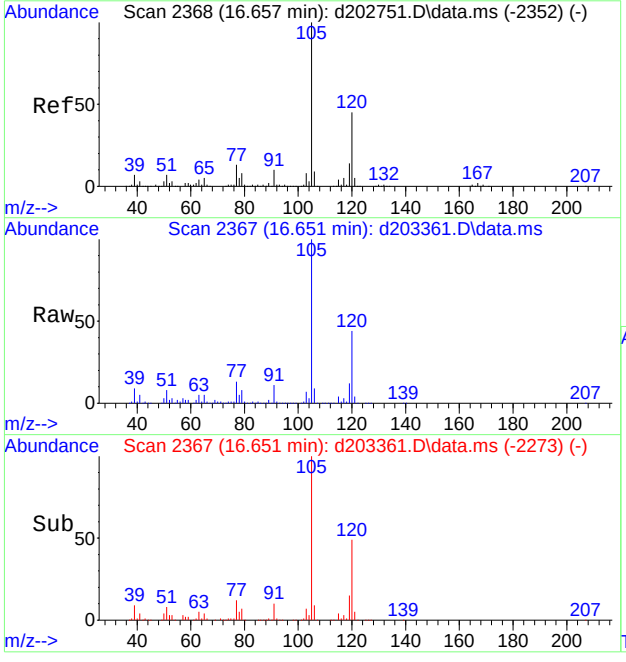


#111
1,3,5-trimethylbenzene
Concen: 23.66 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion:105 Resp: 131432

Ion	Ratio	Lower	Upper
105	100		
120	47.6	19.9	79.9
119	12.1	0.0	42.6

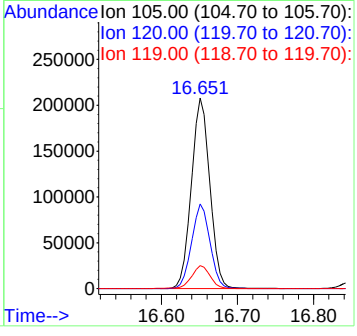




#114
1,2,4-trimethylbenzene
Concen: 60.98 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

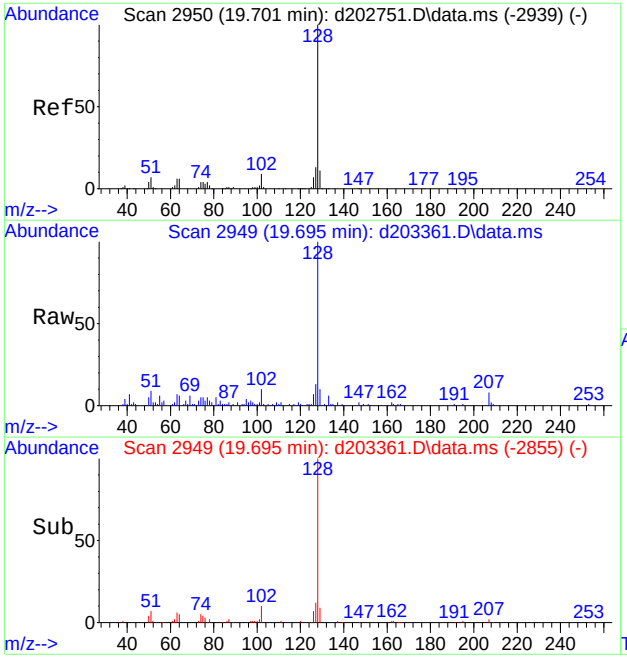
Tgt Ion:105 Resp: 350820

Ion	Ratio	Lower	Upper
105	100		
120	44.5	16.5	76.5
119	12.0	0.0	43.8



7.T.6

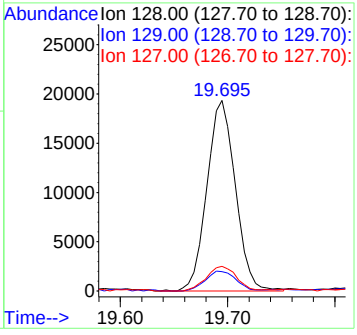
7



#128
naphthalene
Concen: 7.46 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.009 min
Lab File: d203361.D
Acq: 14 Dec 2012 2:06 am

Tgt Ion:128 Resp: 35676

Ion	Ratio	Lower	Upper
128	100		
129	10.2	0.0	41.0
127	13.0	0.0	42.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203319.D
Acq On : 13 Dec 2012 4:53 am
Operator : EmilyT
Sample : jb22822-7
Misc : ms39773,vd8290,5.4,,20,5,1
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Dec 13 09:52:59 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.022	65	76264	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	128764	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	192902	50.00 ug/L	0.00
85) chlorobenzene-d5	14.517	117	176587	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	120130	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.292	113	60159	47.21 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.42%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	85541	58.36 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 116.72%		
77) toluene-d8 (s)	12.886	98	263439	53.86 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 107.72%		
101) 4-bromofluorobenzene (s)	15.799	95	135500	62.48 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 124.96%		

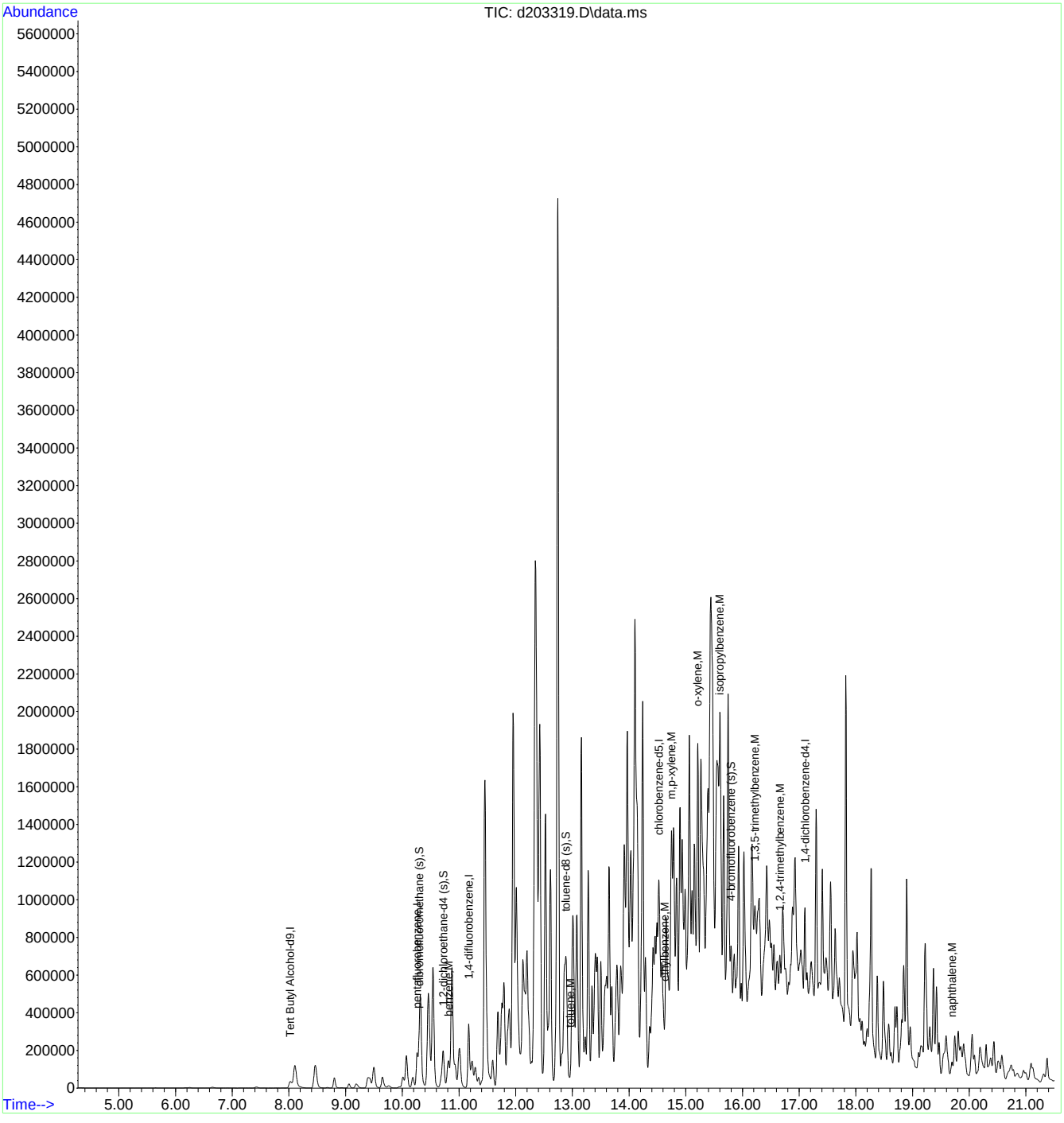
Target Compounds					Qvalue
62) benzene	10.820	78	80674	14.63 ug/L	98
79) toluene	12.959	92	3280	0.93 ug/L	90
94) ethylbenzene	14.622	91	17680	2.74 ug/L	95
95) m,p-xylene	14.737	106	24969	9.90 ug/L	92
96) o-xylene	15.203	106	4995	1.99 ug/L	81
100) isopropylbenzene	15.590	105	119513	16.17 ug/L	94
111) 1,3,5-trimethylbenzene	16.212	105	18371	2.84 ug/L	95
114) 1,2,4-trimethylbenzene	16.651	105	58581	8.73 ug/L	96
128) naphthalene	19.695	128	15121	2.71 ug/L	95

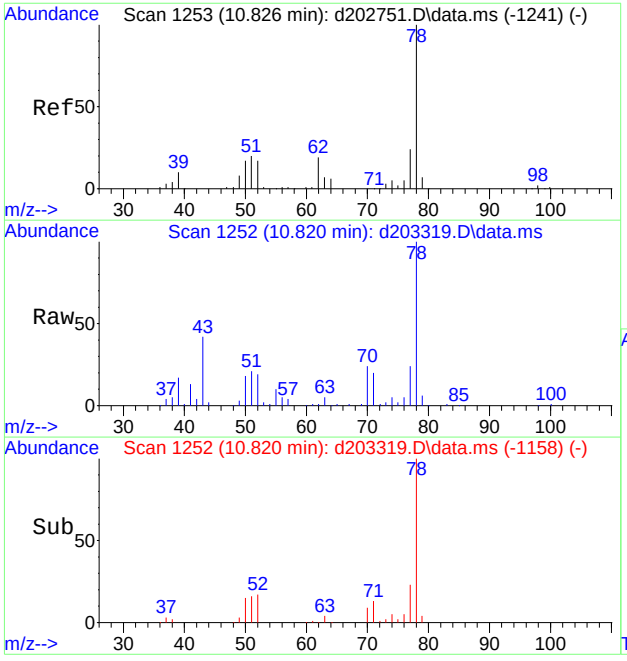
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203319.D
Acq On : 13 Dec 2012 4:53 am
Operator : EmilyT
Sample : jb22822-7
Misc : ms39773,vd8290,5.4,,20,5,1
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Dec 13 09:52:59 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

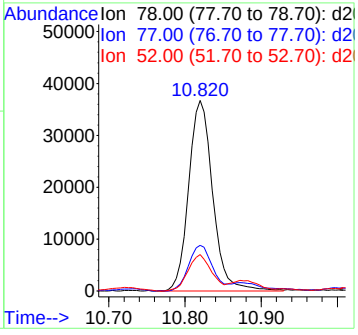


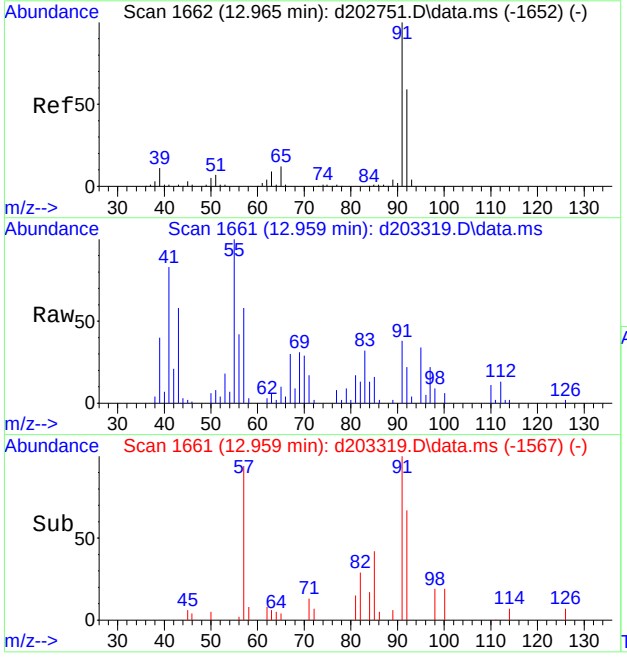


#62
benzene
Concen: 14.63 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion: 78 Resp: 80674

Ion	Ratio	Lower	Upper
78	100		
77	23.7	0.0	53.8
52	19.2	0.0	46.8

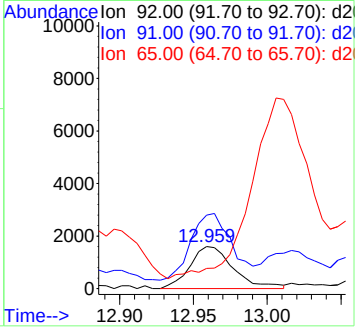


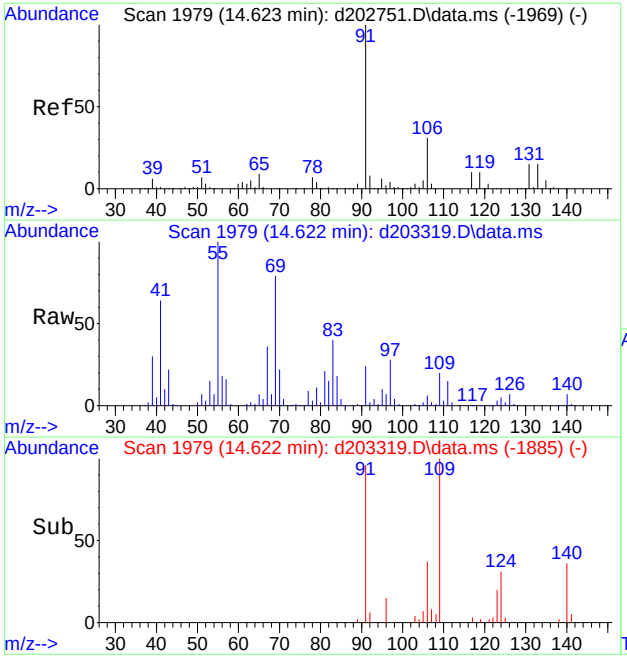


#79
toluene
Concen: 0.93 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion: 92 Resp: 3280

Ion	Ratio	Lower	Upper
92	100		
91	154.0	136.4	196.4
65	13.2	0.0	49.2

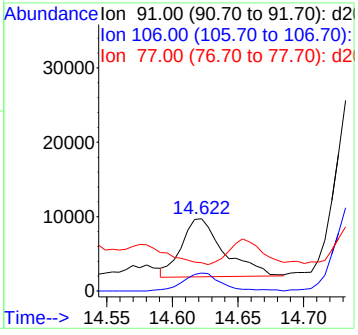


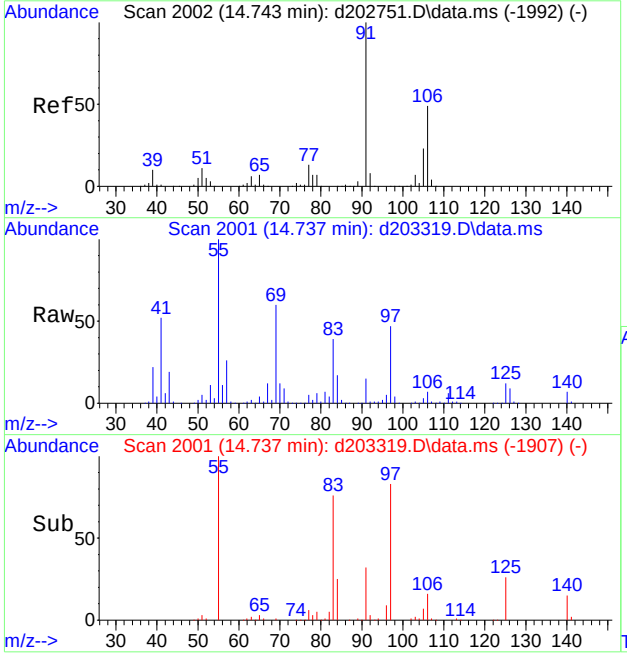


#94
ethylbenzene
Concen: 2.74 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion: 91 Resp: 17680

Ion	Ratio	Lower	Upper
91	100		
106	32.0	2.1	62.1
77	0.0	0.0	38.6

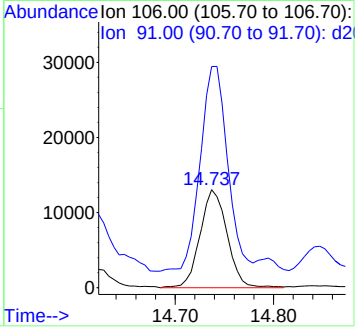


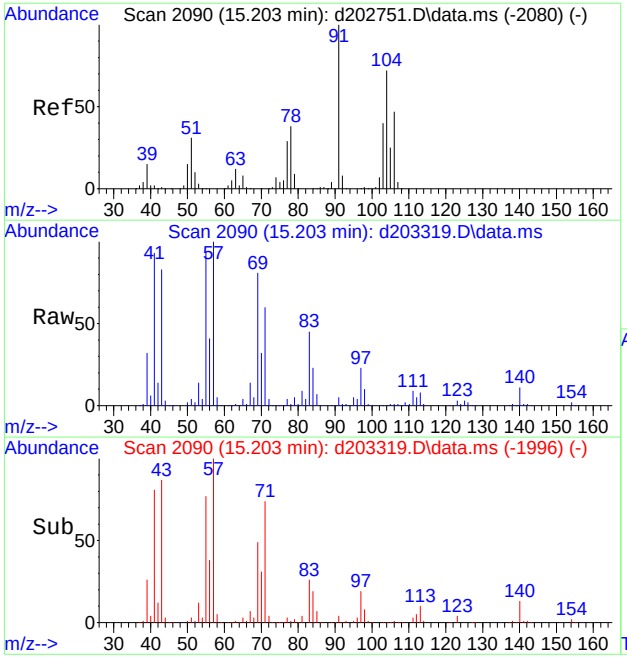


#95
m,p-xylene
Concen: 9.90 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion:106 Resp: 24969

Ion	Ratio	Lower	Upper
106	100		
91	208.8	137.7	255.7

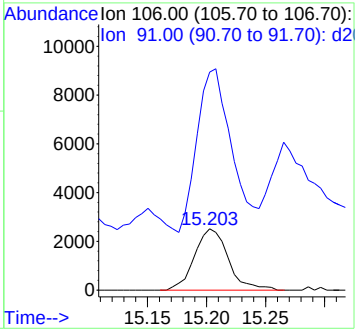


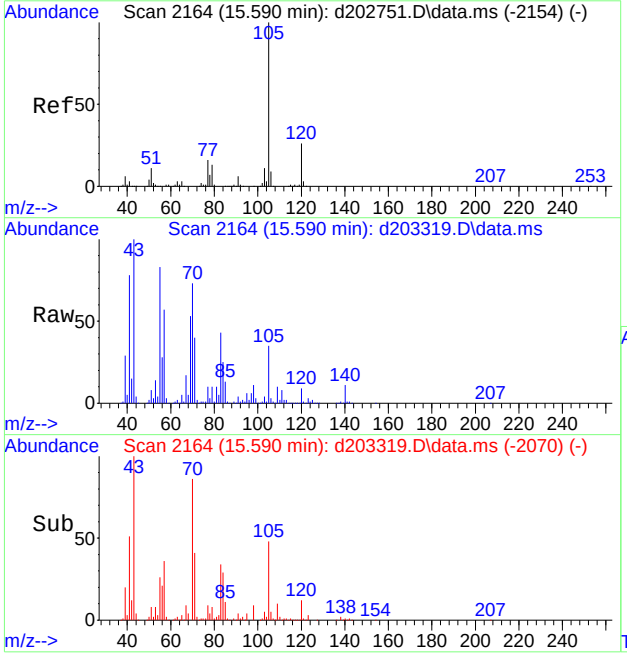


#96
o-xylene
Concen: 1.99 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion:106 Resp: 4995

Ion	Ratio	Lower	Upper
106	100		
91	239.7	147.4	273.8

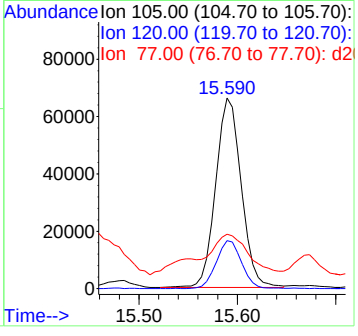




#100
isopropylbenzene
Concen: 16.17 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion:105 Resp: 119513

Ion	Ratio	Lower	Upper
105	100		
120	25.3	0.0	56.7
77	19.5	0.0	44.9



7.1.7

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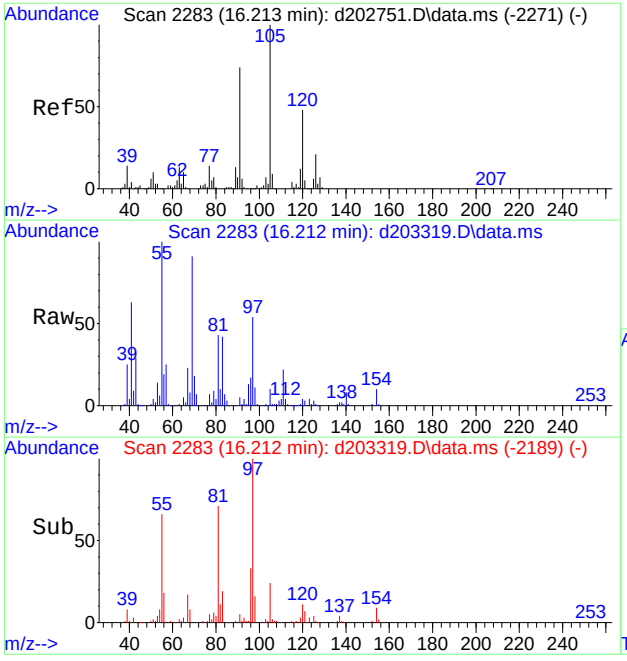
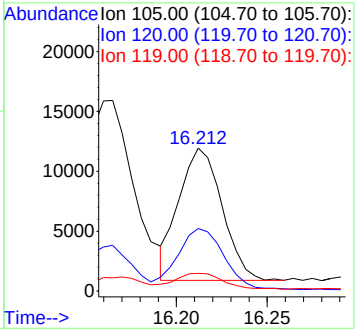
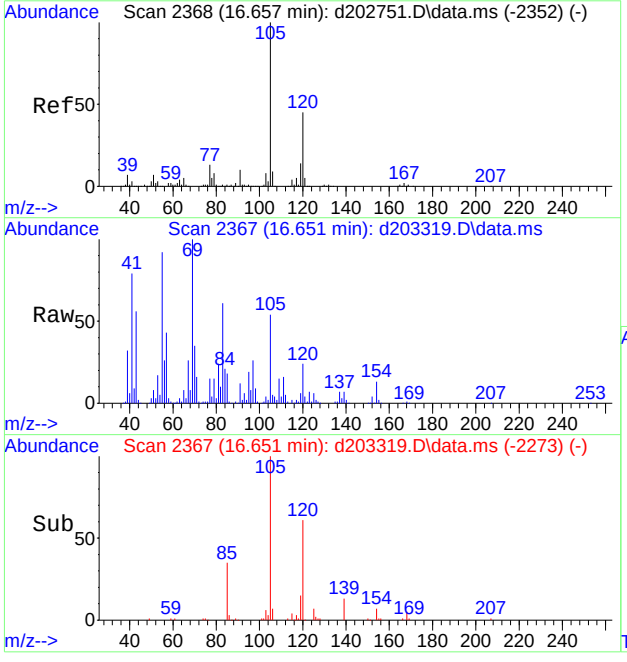


#111
1,3,5-trimethylbenzene
Concen: 2.84 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion:105 Resp: 18371

Ion	Ratio	Lower	Upper
105	100		
120	45.5	19.9	79.9
119	12.0	0.0	42.6

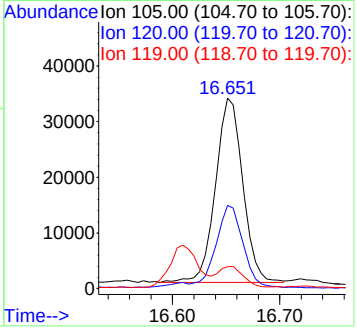




#114
1,2,4-trimethylbenzene
Concen: 8.73 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion:105 Resp: 58581

Ion	Ratio	Lower	Upper
105	100		
120	44.5	16.5	76.5
119	11.1	0.0	43.8



7.1.7

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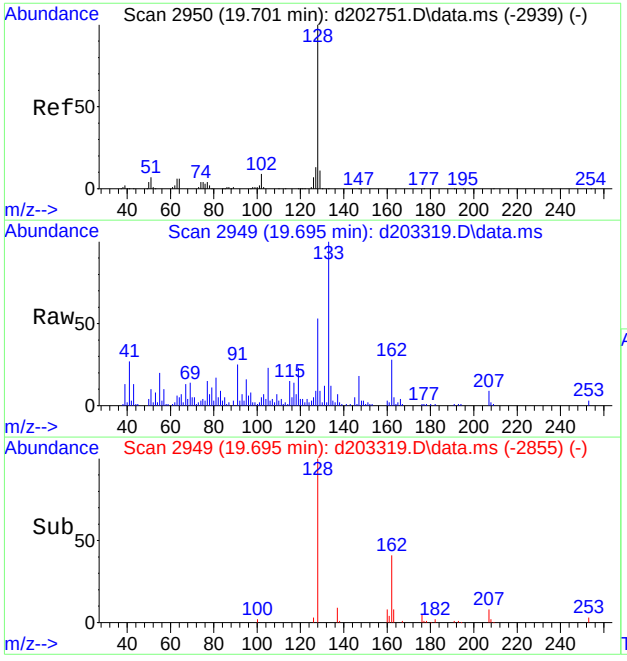
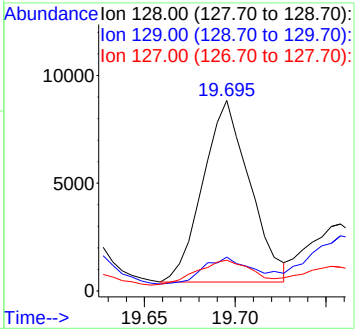


#128
naphthalene
Concen: 2.71 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203319.D
Acq: 13 Dec 2012 4:53 am

Tgt Ion:128 Resp: 15121

Ion	Ratio	Lower	Upper
128	100		
129	14.8	0.0	41.0
127	13.3	0.0	42.7



7.1.7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203245.D
Acq On : 11 Dec 2012 3:44 pm
Operator : EmilyT
Sample : JB22822-8
Misc : ms39773,vd8287,5.6,,100,5,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 11 16:14:28 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.032	65	78833	500.00 ug/L	0.00
4) pentafluorobenzene	10.260	168	134053	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	201454	50.00 ug/L	0.00
85) chlorobenzene-d5	14.517	117	185516	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	111204	50.00 ug/L	0.00

System Monitoring Compounds					
46) dibromofluoromethane (s)	10.291	113	62323	46.98 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 93.96%		
47) 1,2-dichloroethane-d4 (s)	10.720	65	85699	56.16 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 112.32%		
77) toluene-d8 (s)	12.885	98	252812	49.50 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.00%		
101) 4-bromofluorobenzene (s)	15.799	95	102146	50.88 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 101.76%		

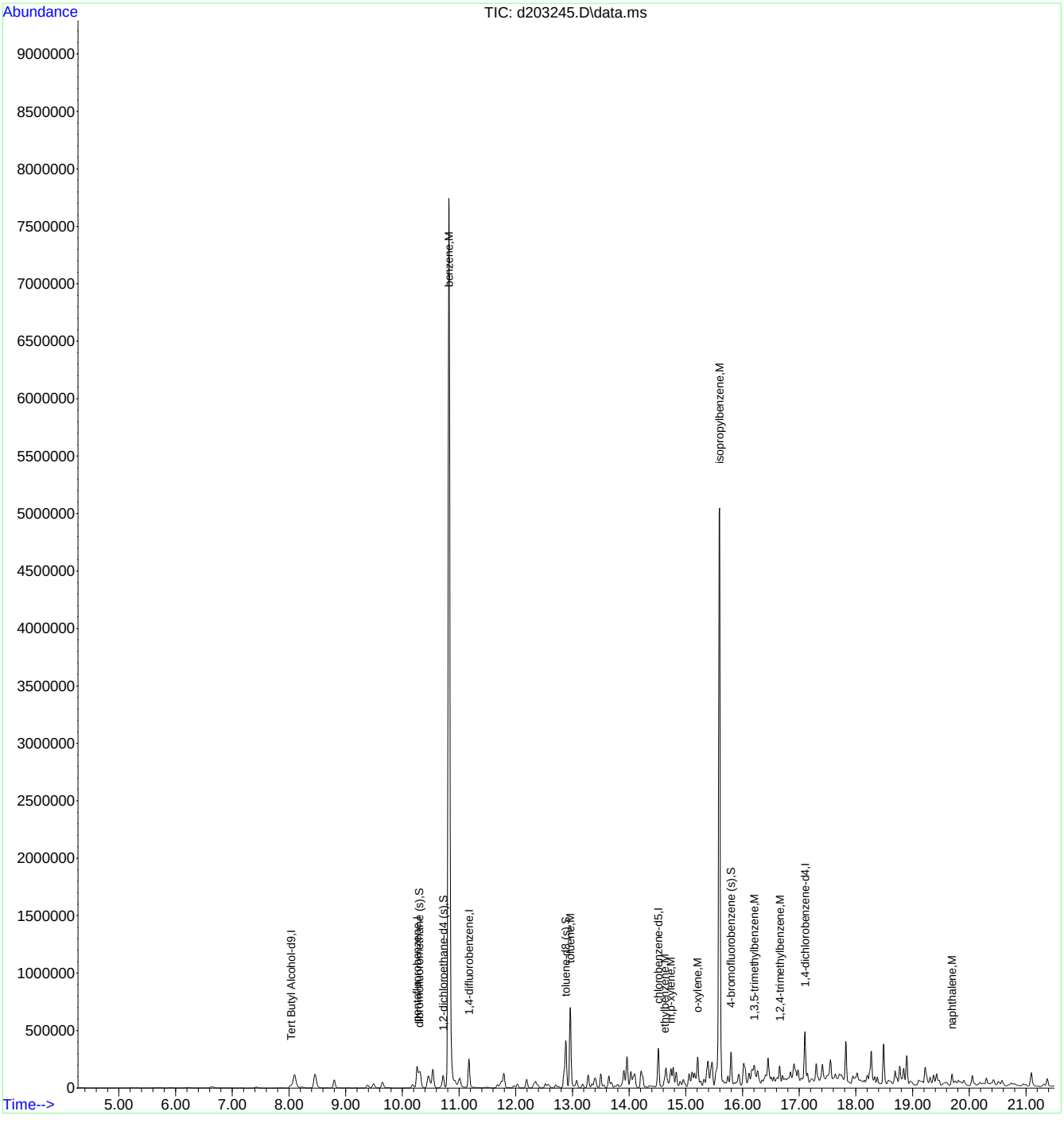
Target Compounds					Qvalue
62) benzene	10.820	78	6876233	1193.92 ug/L	83
79) toluene	12.964	92	308362	83.40 ug/L	98
94) ethylbenzene	14.622	91	47911	7.06 ug/L	94
95) m,p-xylene	14.737	106	40865	15.42 ug/L	92
96) o-xylene	15.202	106	6364	2.41 ug/L	98
100) isopropylbenzene	15.595	105	3385238	494.92 ug/L	94
111) 1,3,5-trimethylbenzene	16.212	105	25435	4.24 ug/L	97
114) 1,2,4-trimethylbenzene	16.651	105	69569	11.20 ug/L	95
128) naphthalene	19.695	128	80201	15.53 ug/L	100

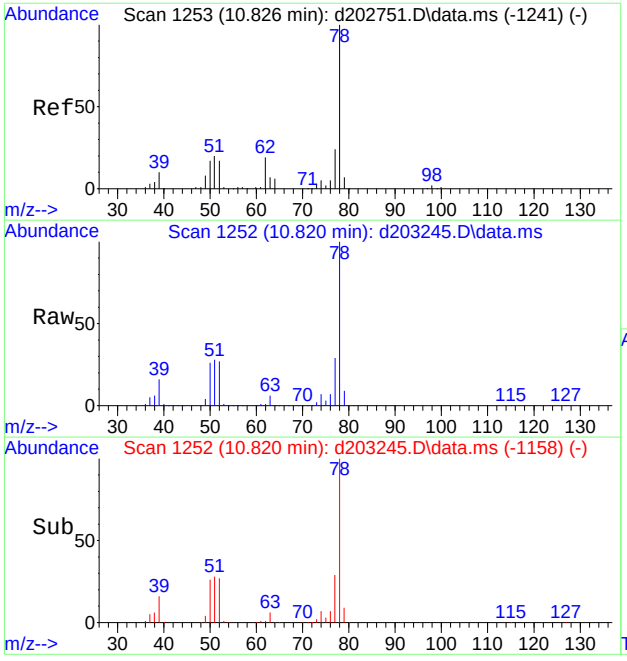
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203245.D
Acq On : 11 Dec 2012 3:44 pm
Operator : EmilyT
Sample : JB22822-8
Misc : ms39773,vd8287,5.6,,100,5,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 11 16:14:28 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

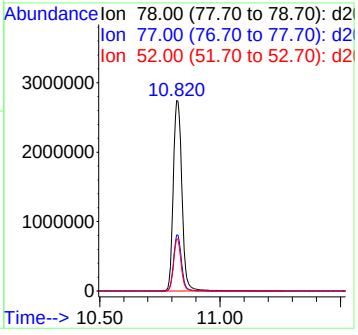


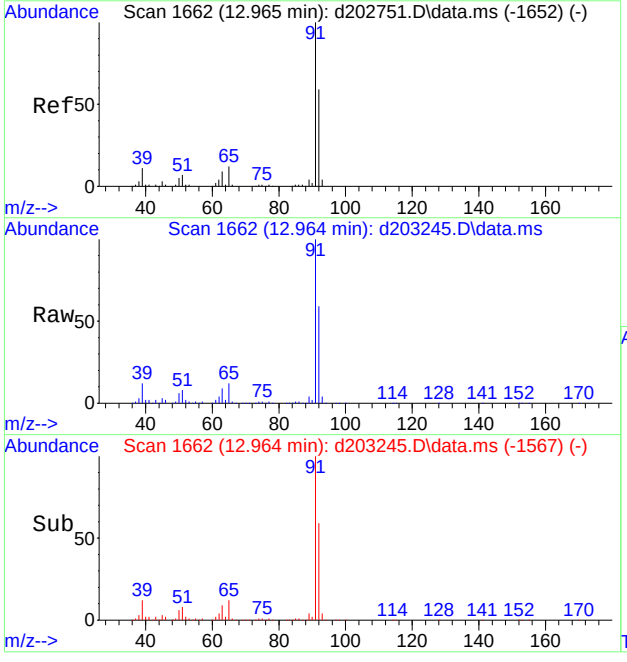


#62
benzene
Concen: 1193.92 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion: 78 Resp: 6876233

Ion	Ratio	Lower	Upper
78	100		
77	29.4	0.0	53.8
52	27.3	0.0	46.8

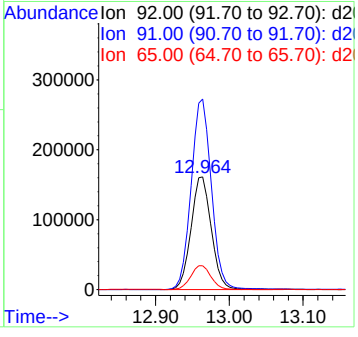




#79
toluene
Concen: 83.40 ug/L
RT: 12.964 min Scan# 1662
Delta R.T. -0.003 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion: 92 Resp: 308362

Ion	Ratio	Lower	Upper
92	100		
91	169.0	136.4	196.4
65	20.9	0.0	49.2



7.1.8

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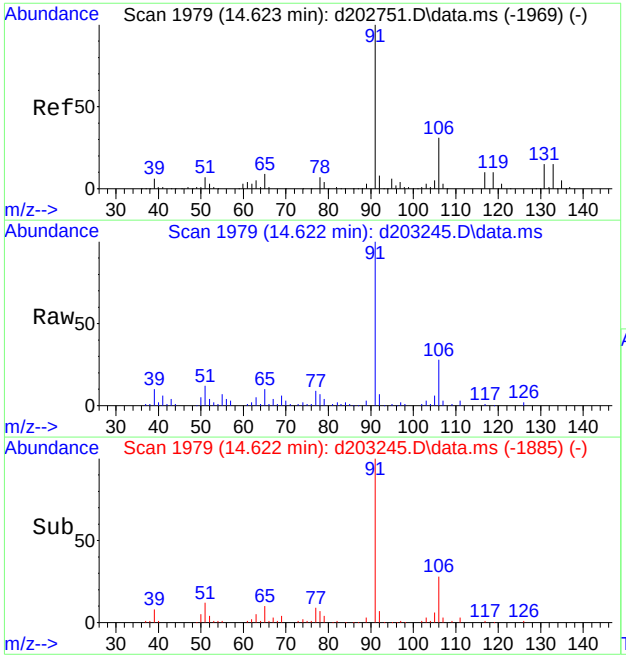
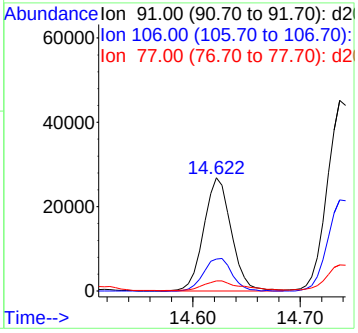
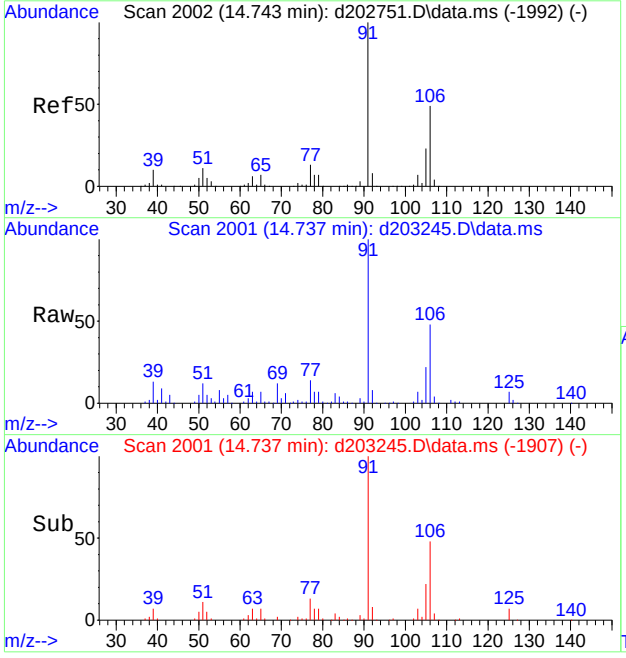


#94
ethylbenzene
Concen: 7.06 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion: 91 Resp: 47911

Ion	Ratio	Lower	Upper
91	100		
106	28.2	2.1	62.1
77	8.6	0.0	38.6

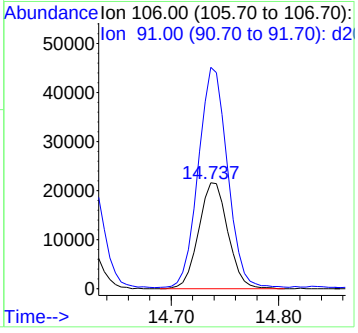




#95
m,p-xylene
Concen: 15.42 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion:106 Resp: 40865

Ion	Ratio	Lower	Upper
106	100		
91	208.0	137.7	255.7



7.1.8

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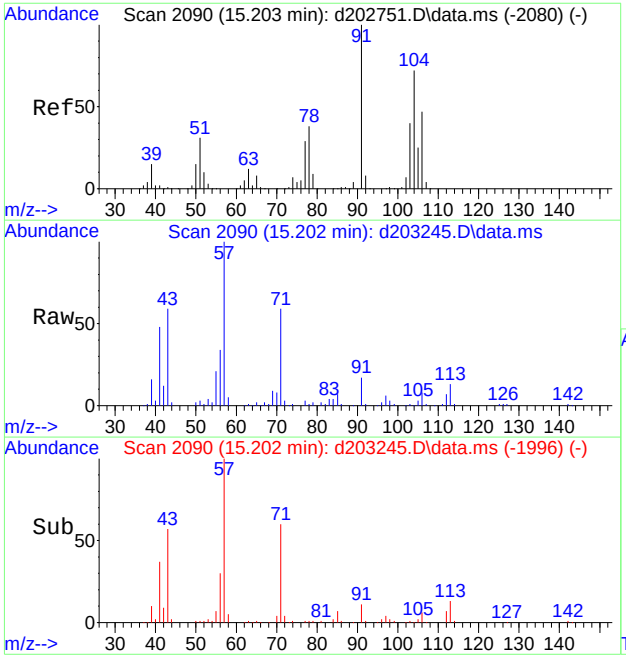
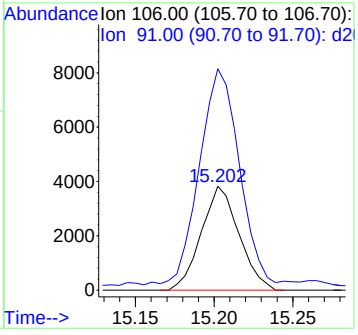
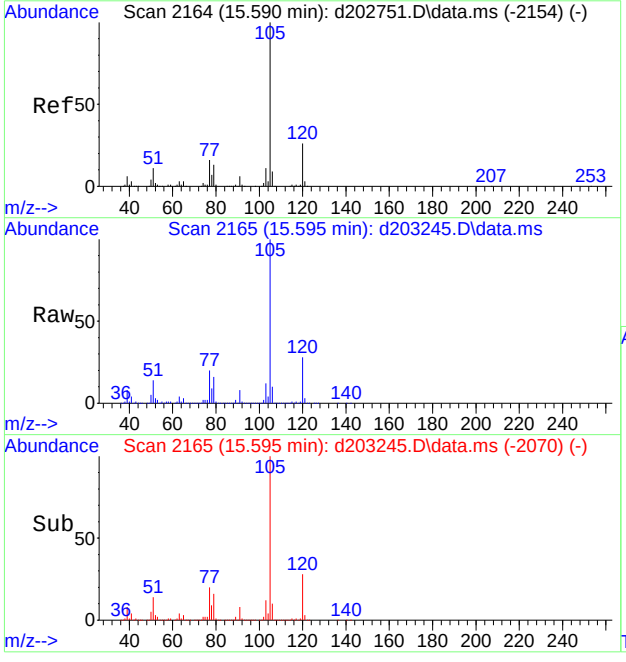


#96
o-xylene
Concen: 2.41 ug/L
RT: 15.202 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion:106 Resp: 6364

Ion	Ratio	Lower	Upper
106	100		
91	206.7	147.4	273.8

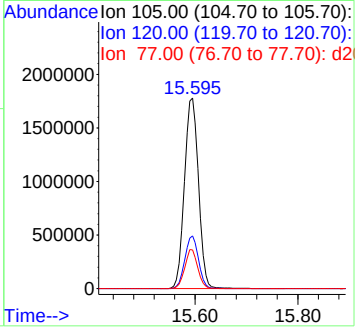




#100
isopropylbenzene
Concen: 494.92 ug/L
RT: 15.595 min Scan# 2165
Delta R.T. -0.003 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion:105 Resp: 3385238

Ion	Ratio	Lower	Upper
105	100		
120	27.6	0.0	56.7
77	20.3	0.0	44.9



7.1.8

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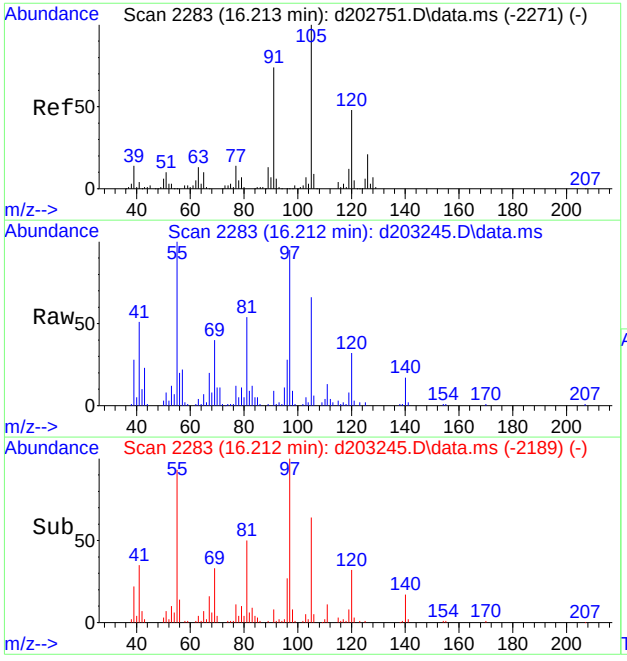
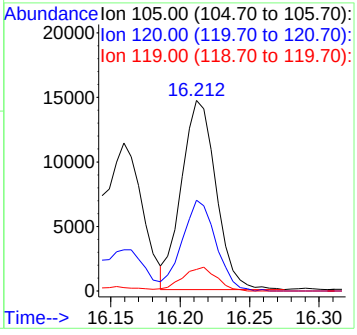
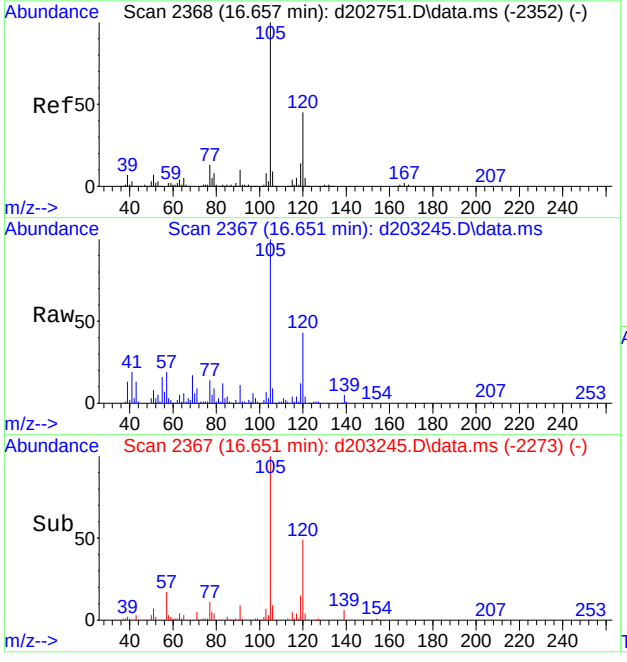


#111
1,3,5-trimethylbenzene
Concen: 4.24 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion:105 Resp: 25435

Ion	Ratio	Lower	Upper
105	100		
120	48.1	19.9	79.9
119	11.5	0.0	42.6

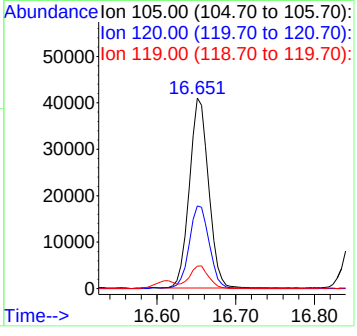




#114
1,2,4-trimethylbenzene
Concen: 11.20 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion:105 Resp: 69569

Ion	Ratio	Lower	Upper
105	100		
120	43.5	16.5	76.5
119	11.8	0.0	43.8



7.1.8

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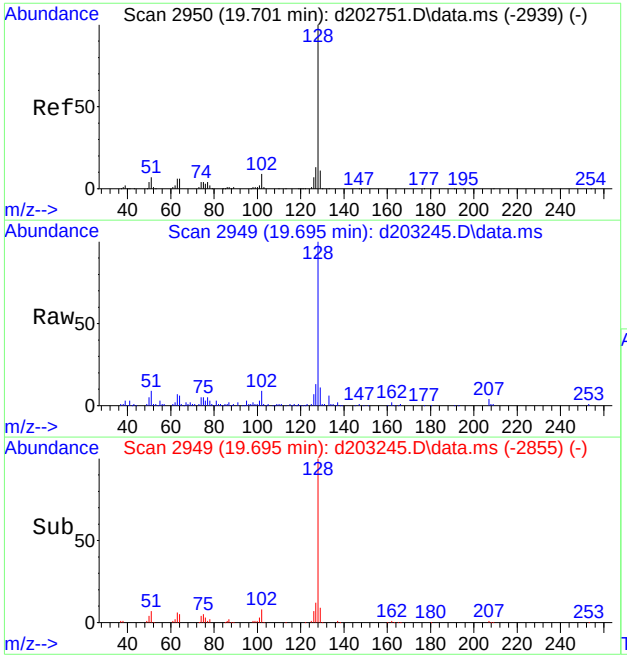
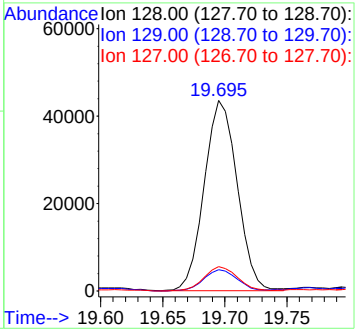


#128
naphthalene
Concen: 15.53 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203245.D
Acq: 11 Dec 2012 3:44 pm

Tgt Ion:128 Resp: 80201

Ion	Ratio	Lower	Upper
128	100		
129	11.2	0.0	41.0
127	12.8	0.0	42.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203367.D
Acq On : 14 Dec 2012 5:01 am
Operator : EmilyT
Sample : JB22822-8
Misc : ms39773,vd8292,5.6,,10,5,1
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Dec 14 08:14:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.021	65	72910	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	110694	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	169147	50.00 ug/L	0.00
85) chlorobenzene-d5	14.517	117	159325	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	92129	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.286	113	51519	47.03 ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.06%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	75744	60.11 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 120.22%		
77) toluene-d8 (s)	12.880	98	210799	49.15 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 98.30%		
101) 4-bromofluorobenzene (s)	15.793	95	86737	52.15 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 104.30%		

Target Compounds

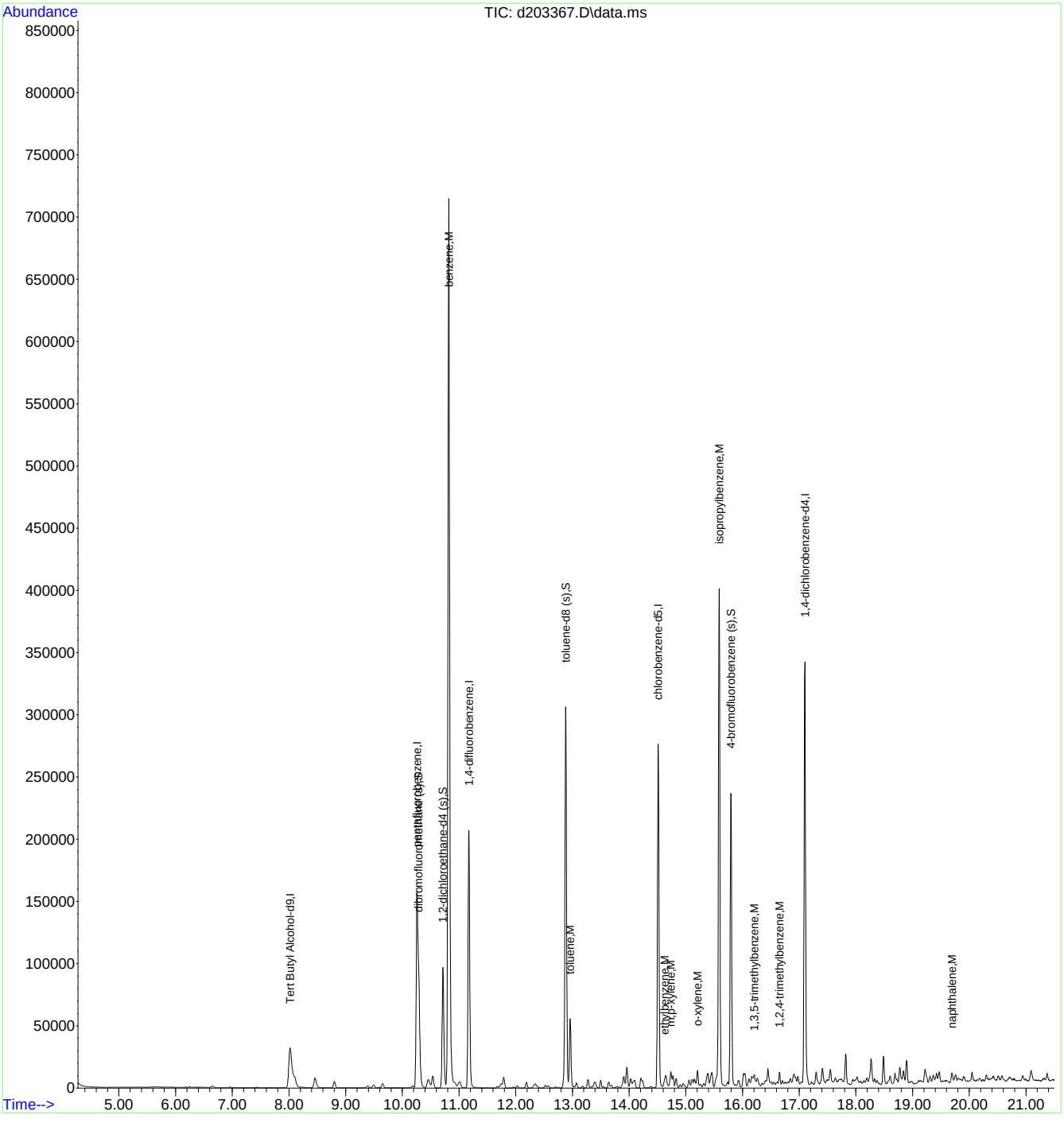
					Qvalue
62) benzene	10.820	78	666442	137.82 ug/L	97
79) toluene	12.959	92	23932	7.71 ug/L	92
94) ethylbenzene	14.622	91	4081	0.70 ug/L	97
95) m,p-xylene	14.737	106	3458	1.52 ug/L	86
96) o-xylene	15.208	106	486	0.21 ug/L	85
100) isopropylbenzene	15.589	105	275778	48.67 ug/L	97
111) 1,3,5-trimethylbenzene	16.212	105	1970	0.40 ug/L	94
114) 1,2,4-trimethylbenzene	16.651	105	5195	1.01 ug/L	95
128) naphthalene	19.695	128	6709	1.57 ug/L	97

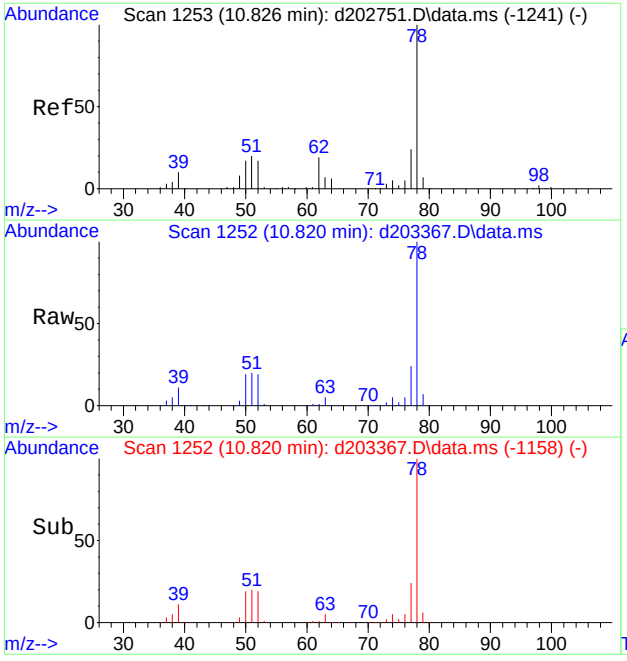
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203367.D
Acq On : 14 Dec 2012 5:01 am
Operator : EmilyT
Sample : JB22822-8
Misc : ms39773,vd8292,5.6,,10,5,1
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Dec 14 08:14:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

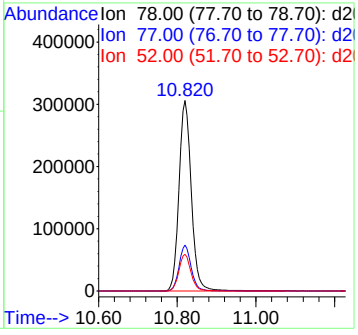


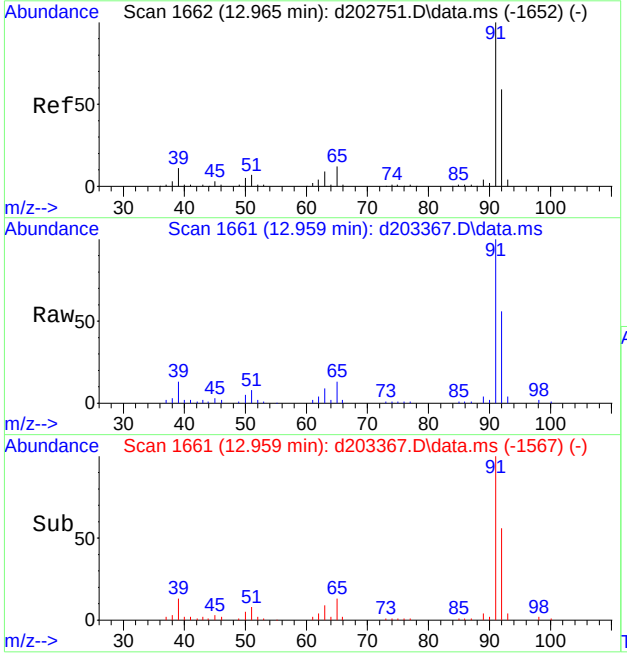


#62
benzene
Concen: 137.82 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion: 78 Resp: 666442

Ion	Ratio	Lower	Upper
78	100		
77	24.1	0.0	53.8
52	19.3	0.0	46.8

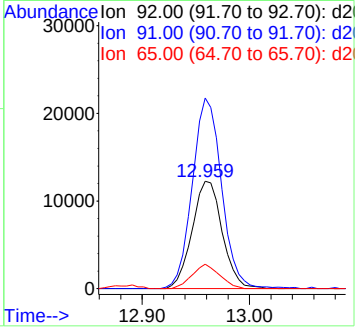


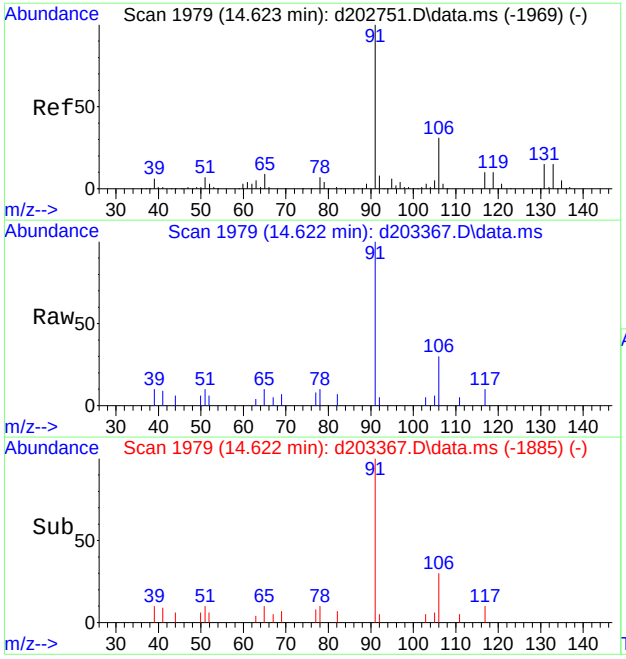


#79
toluene
Concen: 7.71 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion: 92 Resp: 23932

Ion	Ratio	Lower	Upper
92	100		
91	177.3	136.4	196.4
65	22.7	0.0	49.2

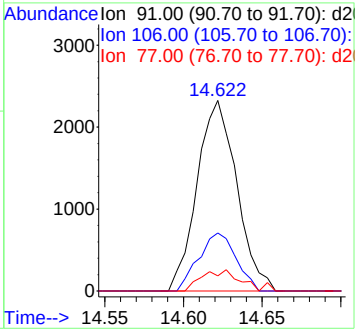


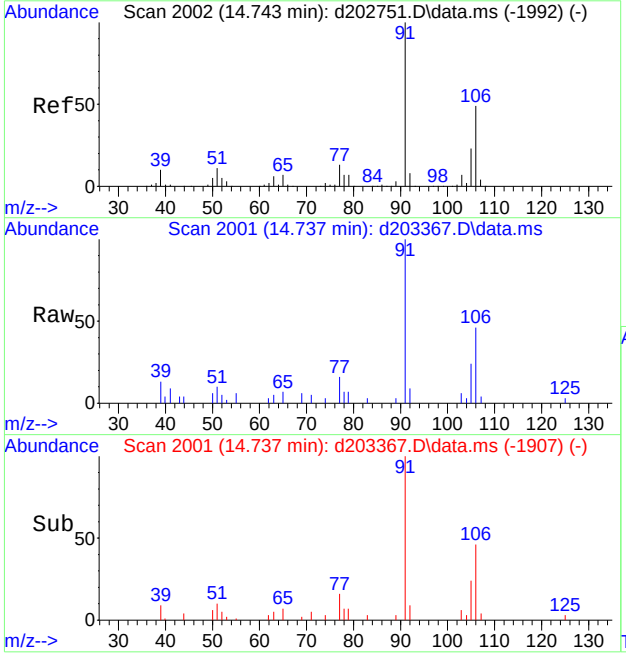


#94
ethylbenzene
Concen: 0.70 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion: 91 Resp: 4081

Ion	Ratio	Lower	Upper
91	100		
106	30.5	2.1	62.1
77	8.0	0.0	38.6

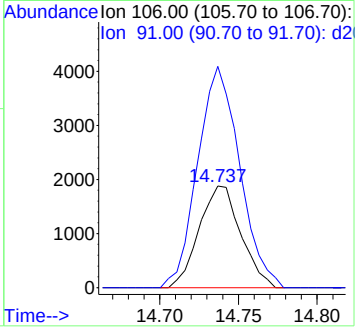




#95
m,p-xylene
Concen: 1.52 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion:106 Resp: 3458

Ion	Ratio	Lower	Upper
106	100		
91	217.9	137.7	255.7



7.1.9

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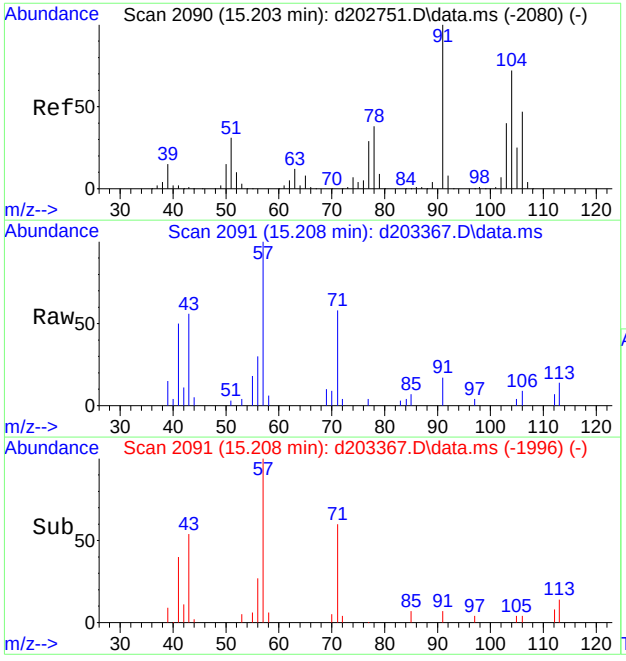
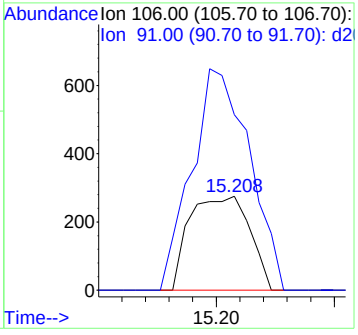
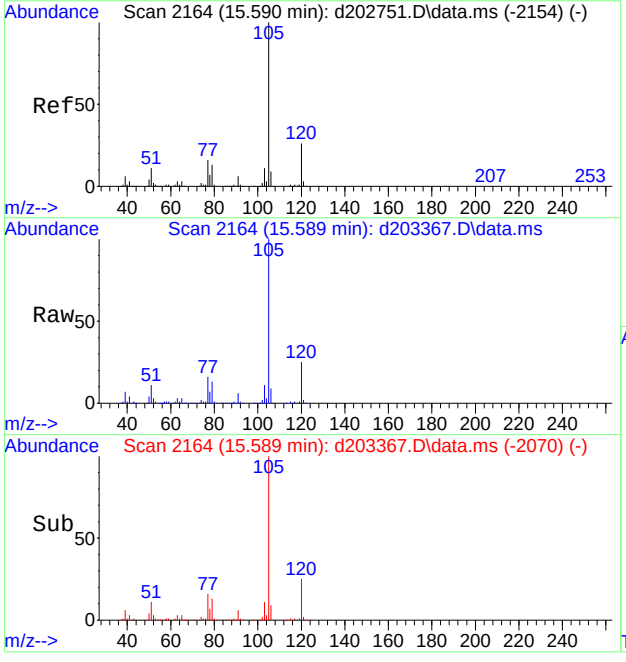


#96
o-xylene
Concen: 0.21 ug/L
RT: 15.208 min Scan# 2091
Delta R.T. -0.003 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion:106 Resp: 486

Ion	Ratio	Lower	Upper
106	100		
91	186.9	147.4	273.8

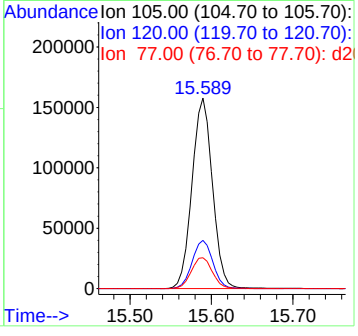




#100
isopropylbenzene
Concen: 48.67 ug/L
RT: 15.589 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion:105 Resp: 275778

Ion	Ratio	Lower	Upper
105	100		
120	25.3	0.0	56.7
77	16.2	0.0	44.9



7.1.9

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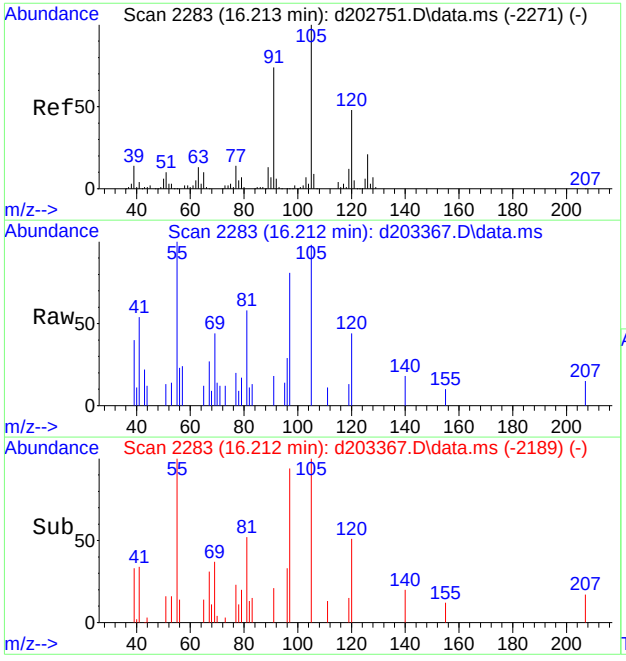
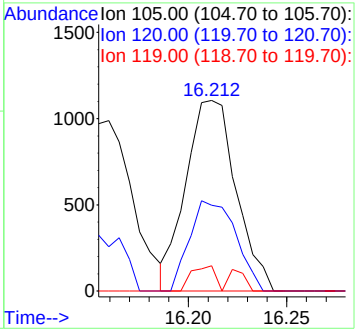
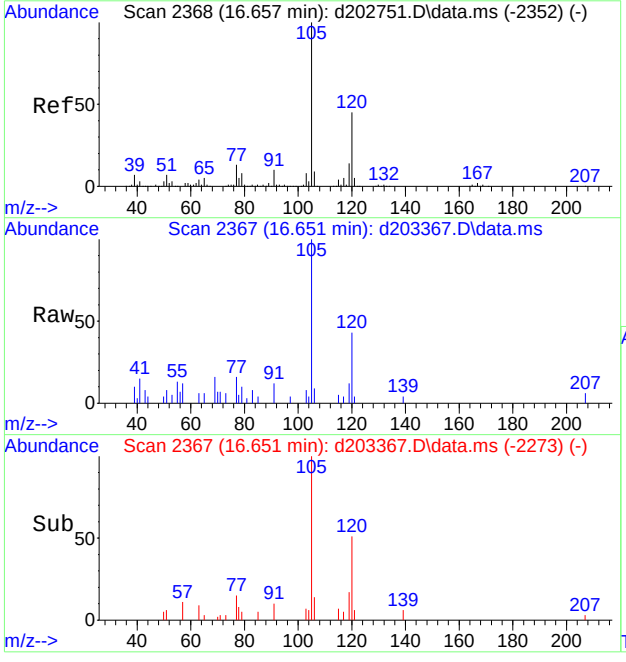


#111
1,3,5-trimethylbenzene
Concen: 0.40 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion:105 Resp: 1970

Ion	Ratio	Lower	Upper
105	100		
120	45.0	19.9	79.9
119	13.3	0.0	42.6

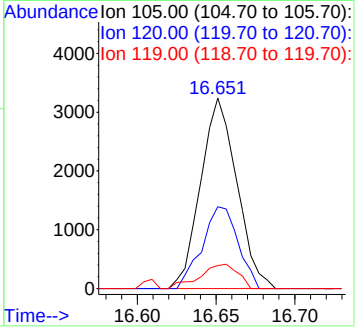




#114
1,2,4-trimethylbenzene
Concen: 1.01 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

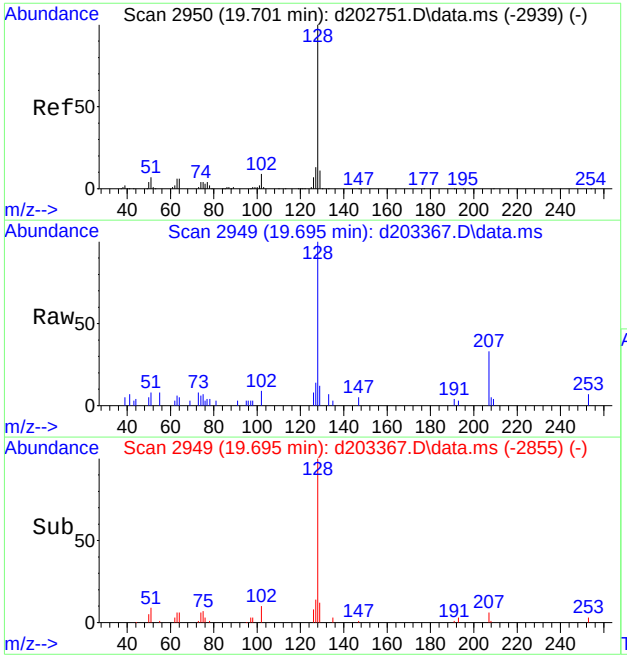
Tgt Ion:105 Resp: 5195

Ion	Ratio	Lower	Upper
105	100		
120	43.0	16.5	76.5
119	12.1	0.0	43.8



7.1.9

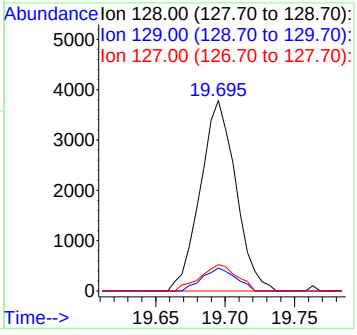
7



#128
naphthalene
Concen: 1.57 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203367.D
Acq: 14 Dec 2012 5:01 am

Tgt Ion:128 Resp: 6709

Ion	Ratio	Lower	Upper
128	100		
129	12.0	0.0	41.0
127	13.9	0.0	42.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131189.D
Acq On : 8 Dec 2012 12:37 am
Operator : THIENN
Sample : jb22822-9
Misc : MS39773,VV5655,6.4,,,,1
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Dec 11 08:37:59 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

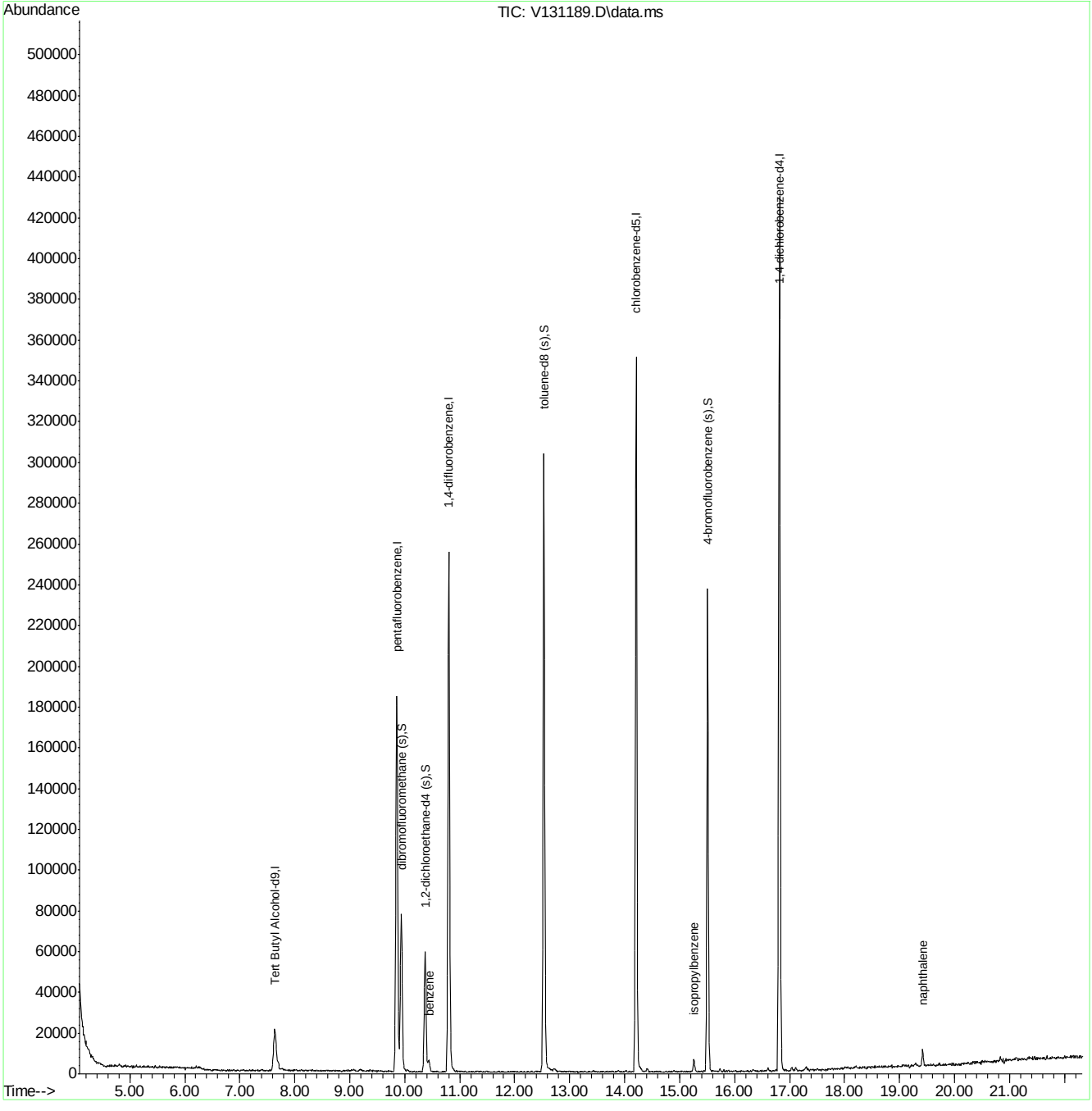
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.636	65	40960	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	161734	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	254356	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	238632	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	127900	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.938	113	58489	59.24	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 118.48%			
59) 1,2-dichloroethane-d4 (s)	10.372	65	51347	53.25	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 106.50%			
86) toluene-d8 (s)	12.532	98	246249	57.83	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 115.66%			
110) 4-bromofluorobenzene (s)	15.508	95	93280	50.17	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 100.34%			
Target Compounds						Qvalue
71) benzene	10.440	78	5801	1.16	ug/L	90
112) isopropylbenzene	15.262	105	4676	0.72	ug/L	91
141) naphthalene	19.425	128	7808	2.18	ug/L	98

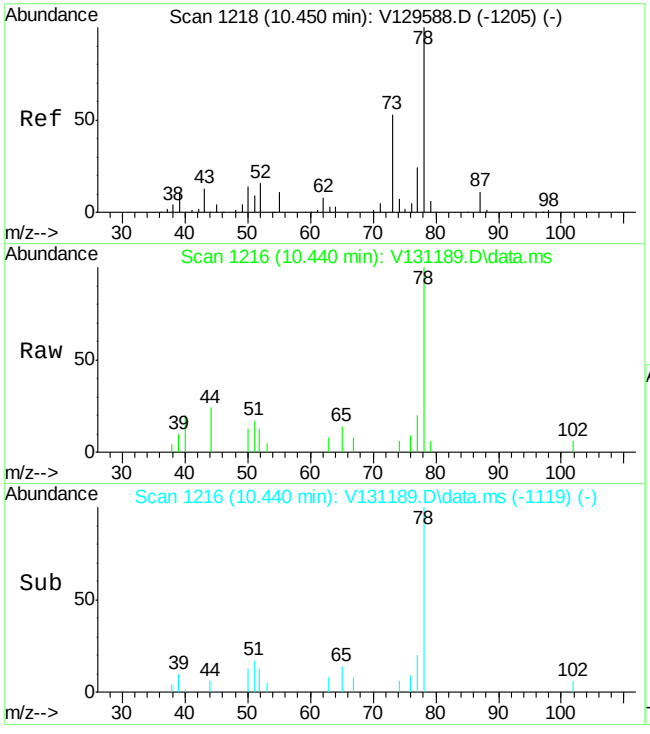
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131189.D
Acq On : 8 Dec 2012 12:37 am
Operator : THIENN
Sample : jb22822-9
Misc : MS39773,VV5655,6.4,,,,1
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Dec 11 08:37:59 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

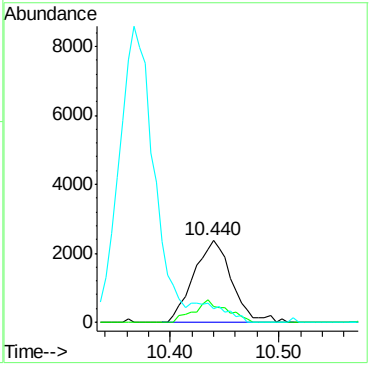


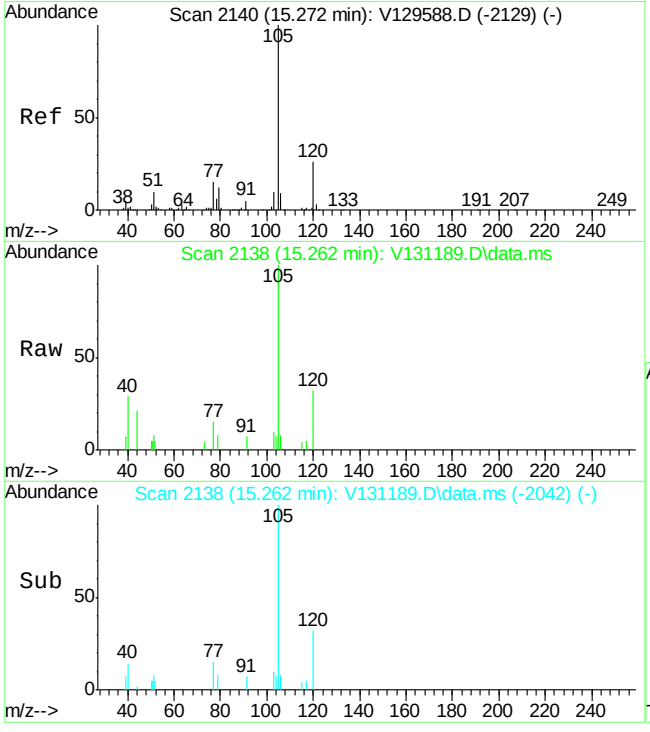


#71
benzene
Concen: 1.16 ug/L
RT: 10.440 min Scan# 1216
Delta R.T. 0.006 min
Lab File: V131189.D
Acq: 8 Dec 2012 12:37 am

Tgt Ion: 78 Resp: 5801

Ion	Ratio	Lower	Upper
78	100		
77	19.5	0.0	53.4
51	11.5	0.0	46.9

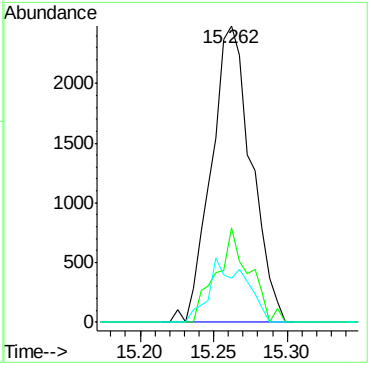


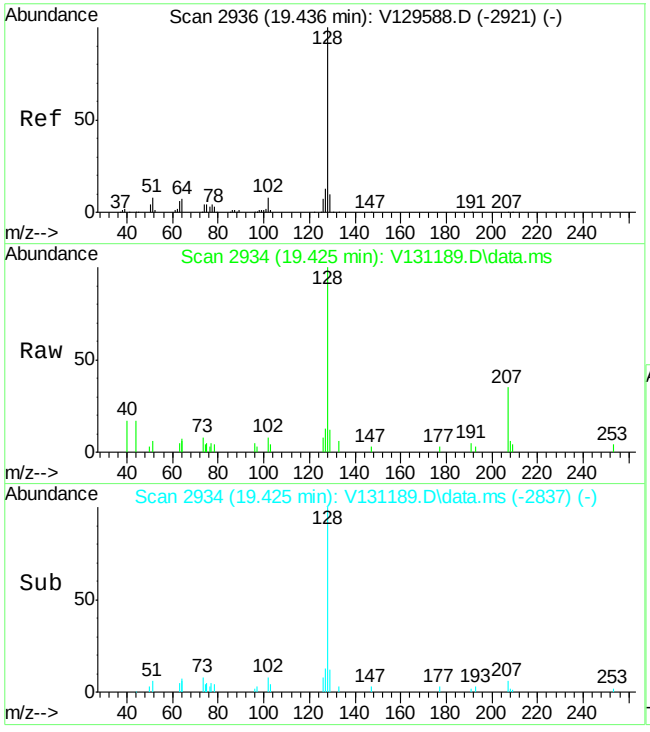


#112
isopropylbenzene
Concen: 0.72 ug/L
RT: 15.262 min Scan# 2138
Delta R.T. -0.000 min
Lab File: V131189.D
Acq: 8 Dec 2012 12:37 am

Tgt Ion:105 Resp: 4676

Ion	Ratio	Lower	Upper
105	100		
120	31.8	0.0	55.0
77	14.7	0.0	45.8

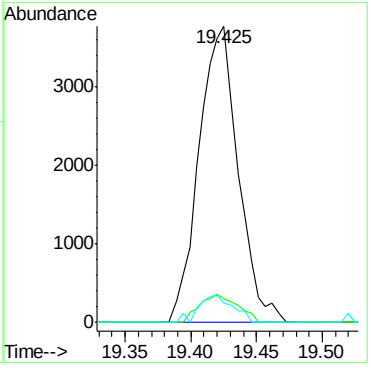




#141
naphthalene
Concen: 2.18 ug/L
RT: 19.425 min Scan# 2934
Delta R.T. 0.005 min
Lab File: V131189.D
Acq: 8 Dec 2012 12:37 am

Tgt Ion:128 Resp: 7808

Ion	Ratio	Lower	Upper
128	100		
102	8.0	0.0	38.1
51	6.3	0.0	37.6



7.1.10

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Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203321.D
Acq On : 13 Dec 2012 5:52 am
Operator : EmilyT
Sample : jb22822-10
Misc : ms39773,vd8290,6.4,,20,5,1
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Dec 13 09:56:00 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.022	65	78940	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	126251	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	192241	50.00 ug/L	0.00
85) chlorobenzene-d5	14.512	117	182138	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	113947	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.291	113	59078	47.29 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.58%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	83353	58.00 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 116.00%		
77) toluene-d8 (s)	12.880	98	243121	49.88 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.76%		
101) 4-bromofluorobenzene (s)	15.794	95	123006	59.80 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 119.60%		

Target Compounds

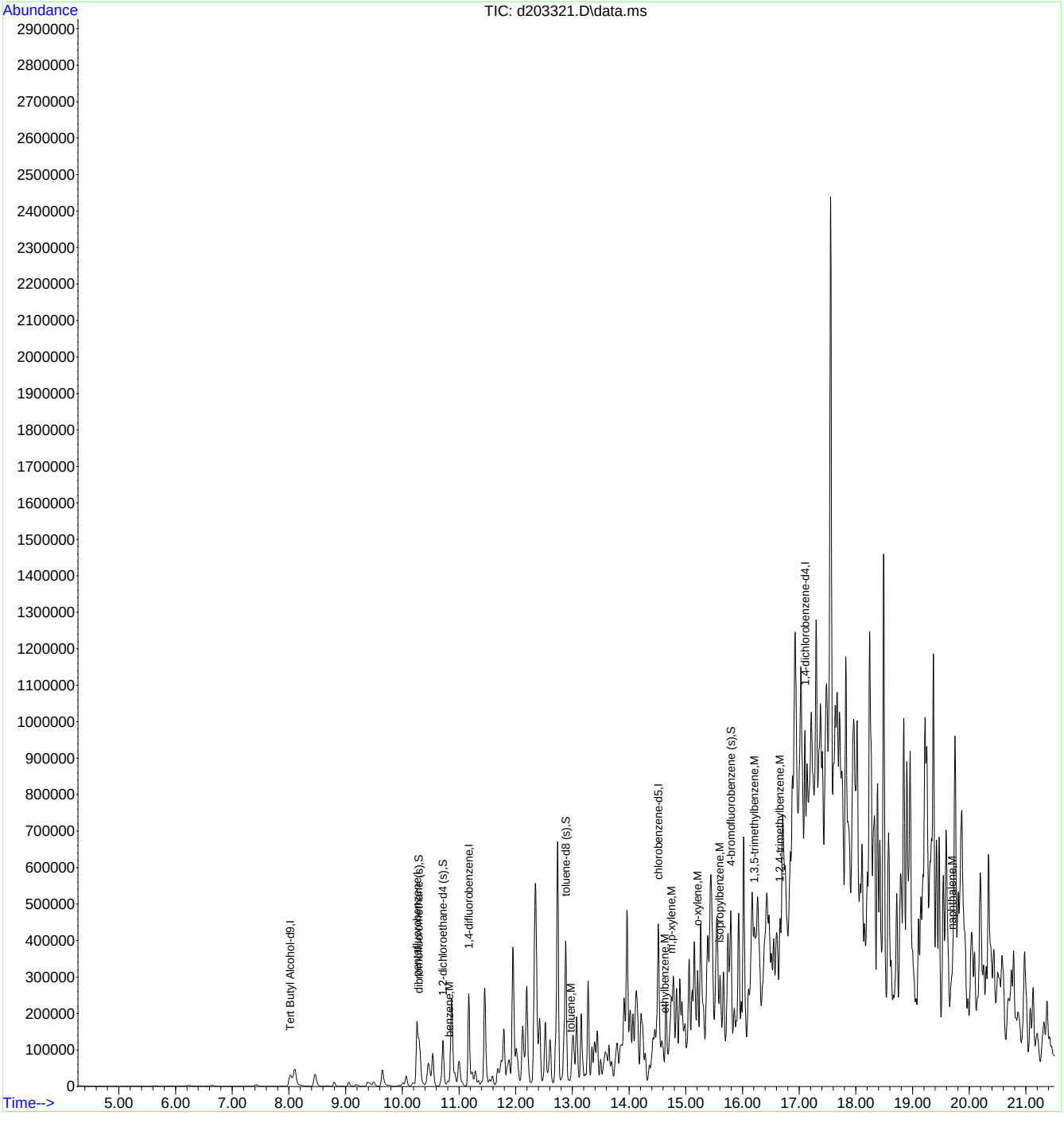
					Qvalue
62) benzene	10.820	78	4578	0.83 ug/L	95
79) toluene	12.964	92	2444	0.69 ug/L #	78
94) ethylbenzene	14.622	91	2663	0.40 ug/L	92
95) m,p-xylene	14.737	106	4540	1.74 ug/L	95
96) o-xylene	15.203	106	2137	0.83 ug/L	96
100) isopropylbenzene	15.590	105	8346	1.19 ug/L	80
111) 1,3,5-trimethylbenzene	16.212	105	15463	2.52 ug/L	98
114) 1,2,4-trimethylbenzene	16.651	105	7723	1.21 ug/L	97
128) naphthalene	19.690	128	6022	1.14 ug/L #	23

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

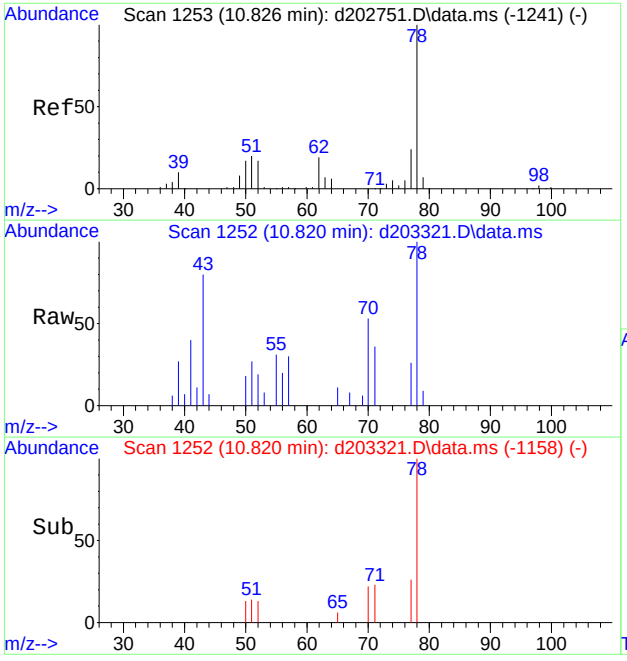
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203321.D
Acq On : 13 Dec 2012 5:52 am
Operator : EmilyT
Sample : jb22822-10
Misc : ms39773,vd8290,6.4,,20,5,1
ALS Vial : 39 Sample Multiplier: 1

Quant Time: Dec 13 09:56:00 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



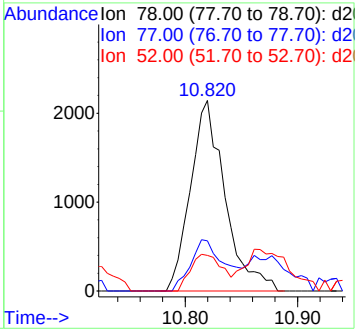
MD8248.M Thu Dec 13 09:56:31 2012 Page: 2

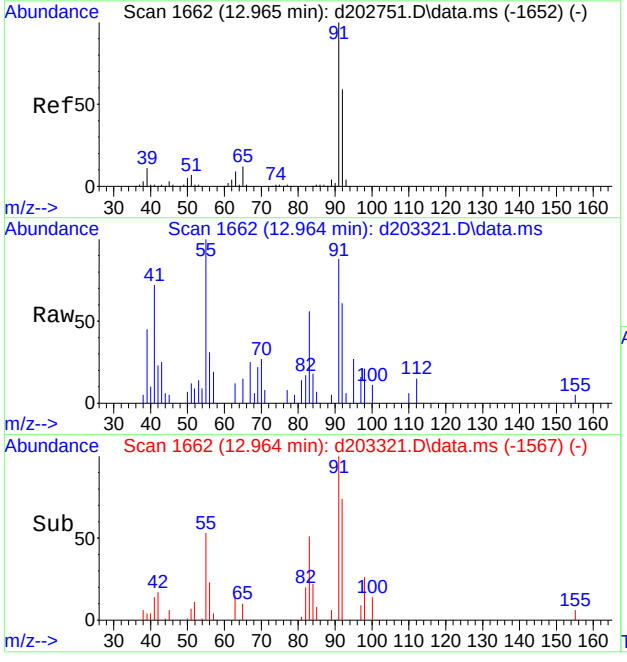


#62
benzene
Concen: 0.83 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion: 78 Resp: 4578

Ion	Ratio	Lower	Upper
78	100		
77	26.3	0.0	53.8
52	18.7	0.0	46.8

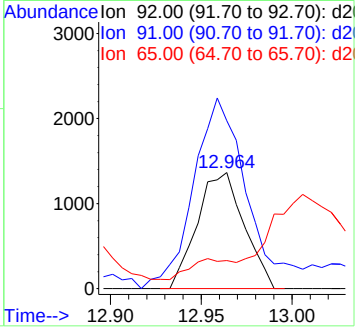


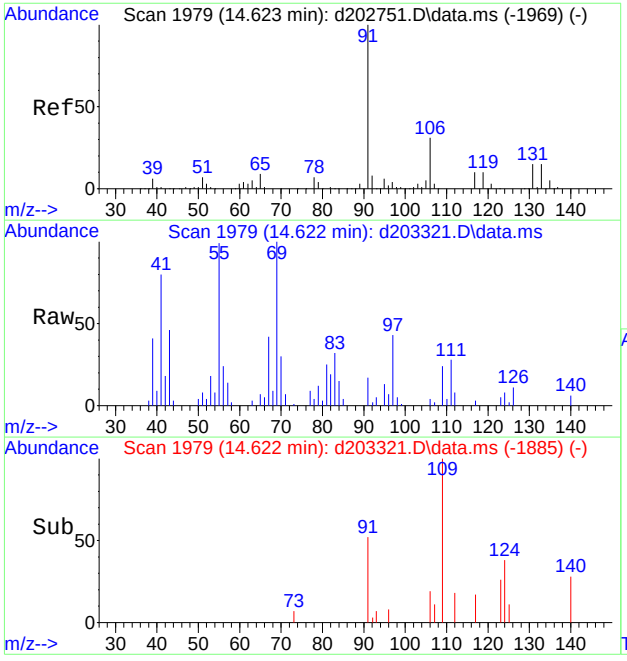


#79
toluene
Concen: 0.69 ug/L
RT: 12.964 min Scan# 1662
Delta R.T. -0.003 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion: 92 Resp: 2444

Ion	Ratio	Lower	Upper
92	100		
91	134.5	136.4	196.4#
65	16.3	0.0	49.2

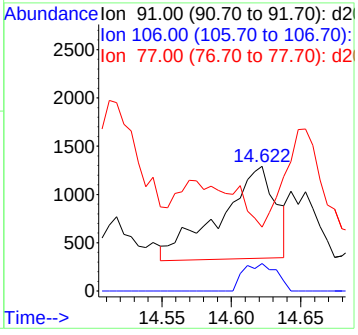


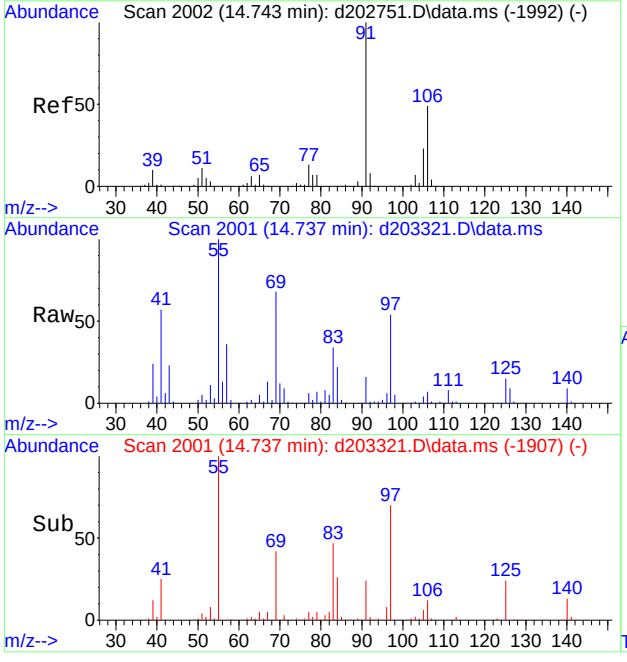


#94
ethylbenzene
Concen: 0.40 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion: 91 Resp: 2663

Ion	Ratio	Lower	Upper
91	100		
106	34.3	2.1	62.1
77	0.0	0.0	38.6

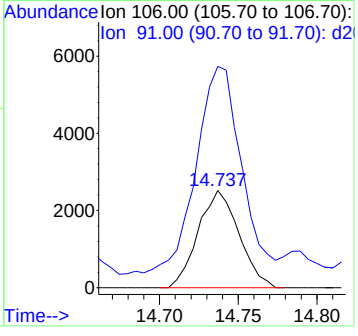




#95
m,p-xylene
Concen: 1.74 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion:106 Resp: 4540

Ion	Ratio	Lower	Upper
106	100		
91	204.1	137.7	255.7



7.1.11

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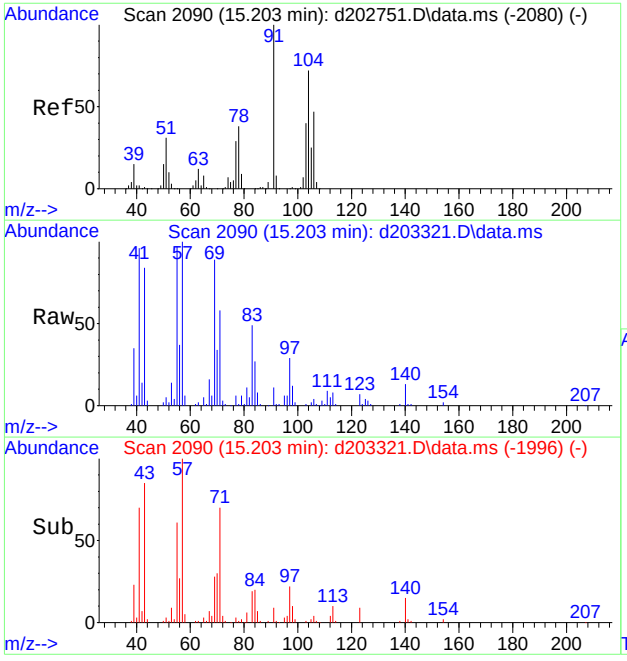
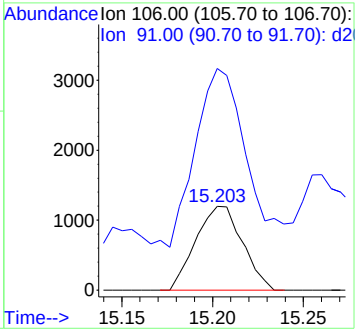
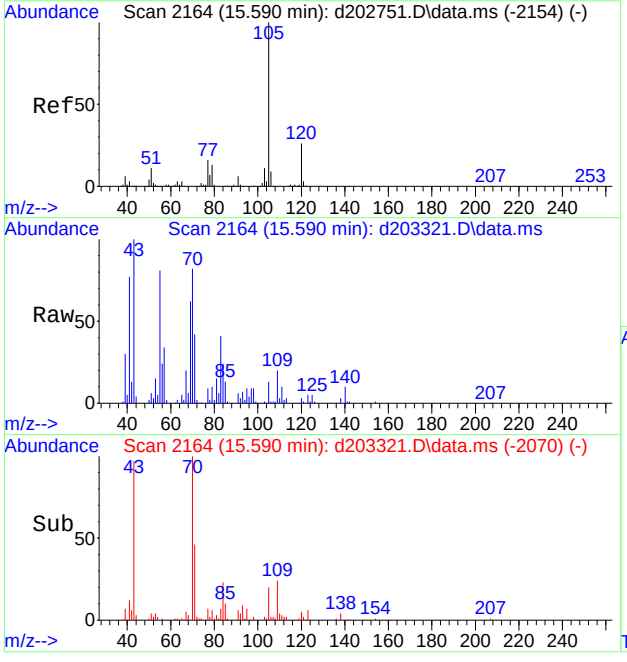


#96
o-xylene
Concen: 0.83 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion:106 Resp: 2137

Ion	Ratio	Lower	Upper
106	100		
91	204.9	147.4	273.8

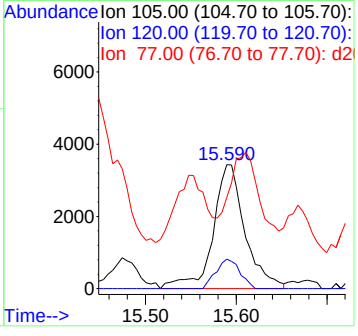


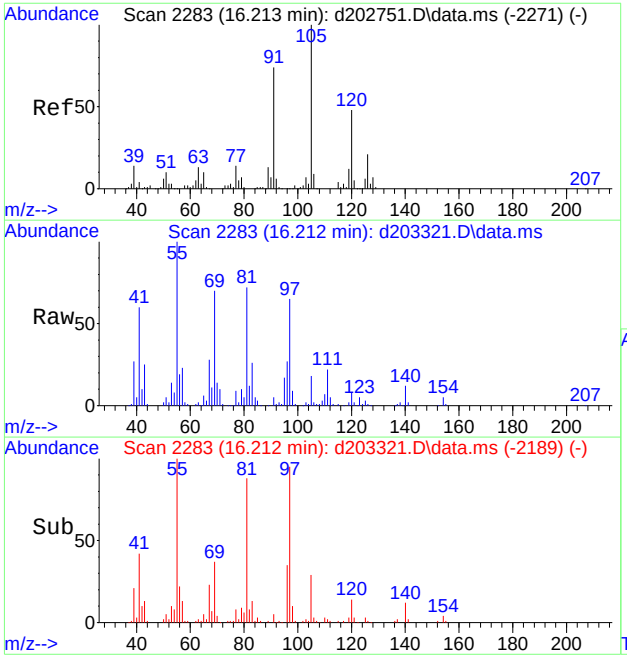


#100
isopropylbenzene
Concen: 1.19 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion:105 Resp: 8346

Ion	Ratio	Lower	Upper
105	100		
120	23.7	0.0	56.7
77	33.8	0.0	44.9

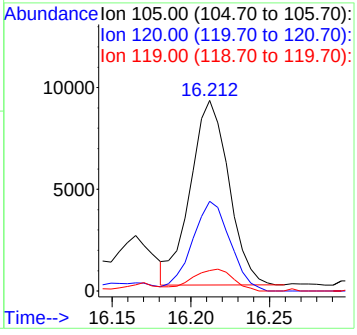


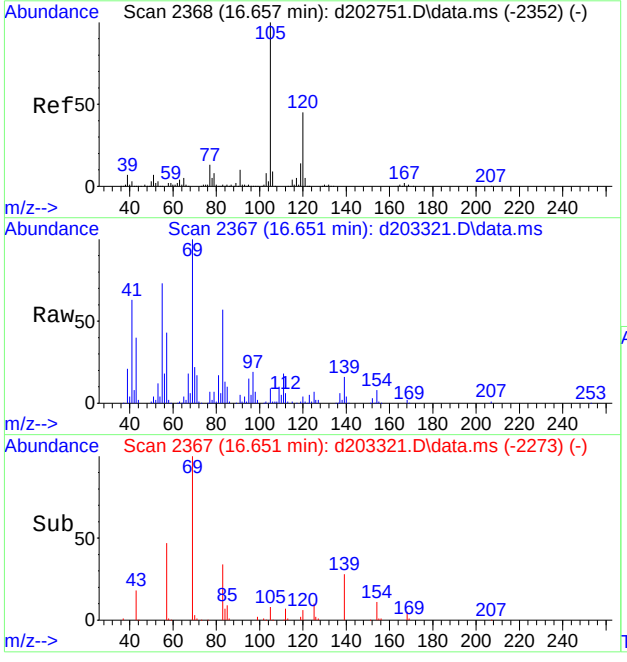


#111
1,3,5-trimethylbenzene
Concen: 2.52 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion:105 Resp: 15463

Ion	Ratio	Lower	Upper
105	100		
120	48.6	19.9	79.9
119	11.1	0.0	42.6

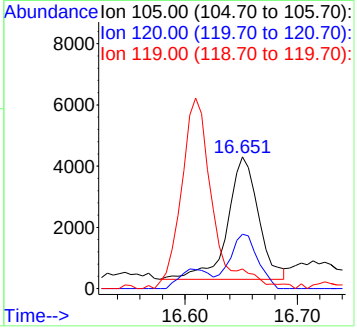




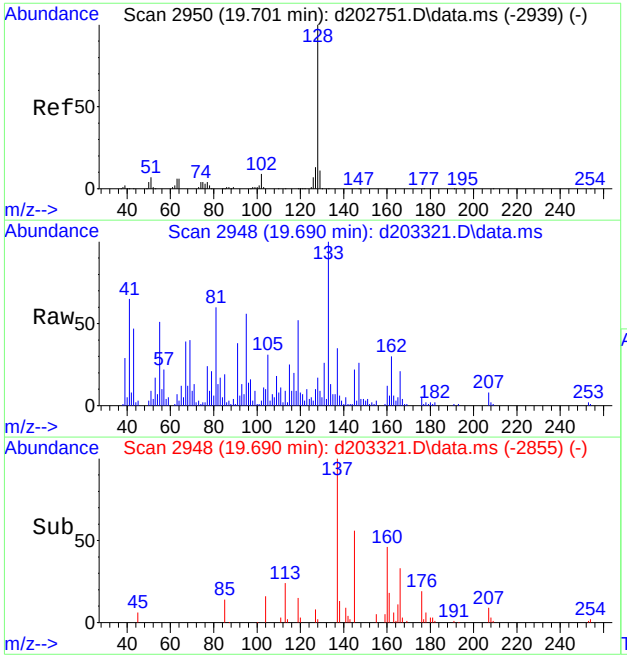
#114
1,2,4-trimethylbenzene
Concen: 1.21 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion:105 Resp: 7723

Ion	Ratio	Lower	Upper
105	100		
120	44.4	16.5	76.5
119	12.3	0.0	43.8



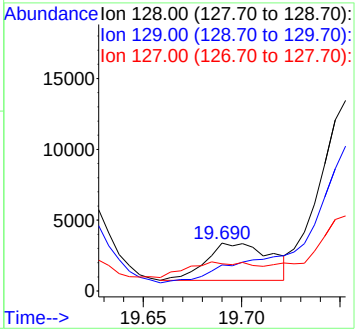
7.1.11



#128
naphthalene
Concen: 1.14 ug/L
RT: 19.690 min Scan# 2948
Delta R.T. -0.013 min
Lab File: d203321.D
Acq: 13 Dec 2012 5:52 am

Tgt Ion:128 Resp: 6022

Ion	Ratio	Lower	Upper
128	100		
129	47.9	0.0	41.0#
127	36.4	0.0	42.7



7.1.11

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203247.D
Acq On : 11 Dec 2012 4:43 pm
Operator : EmilyT
Sample : JB22822-11
Misc : ms39773,vd8287,6.2,,20,5,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 11 17:57:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.027	65	82559	500.00 ug/L	-0.01
4) pentafluorobenzene	10.260	168	134391	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.176	114	202960	50.00 ug/L	0.00
85) chlorobenzene-d5	14.518	117	188716	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	119186	50.00 ug/L	0.00

System Monitoring Compounds					
46) dibromofluoromethane (s)	10.292	113	63167	47.50 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.00%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	87585	57.25 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 114.50%		
77) toluene-d8 (s)	12.886	98	255107	49.58 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.16%		
101) 4-bromofluorobenzene (s)	15.799	95	126748	58.91 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 117.82%		

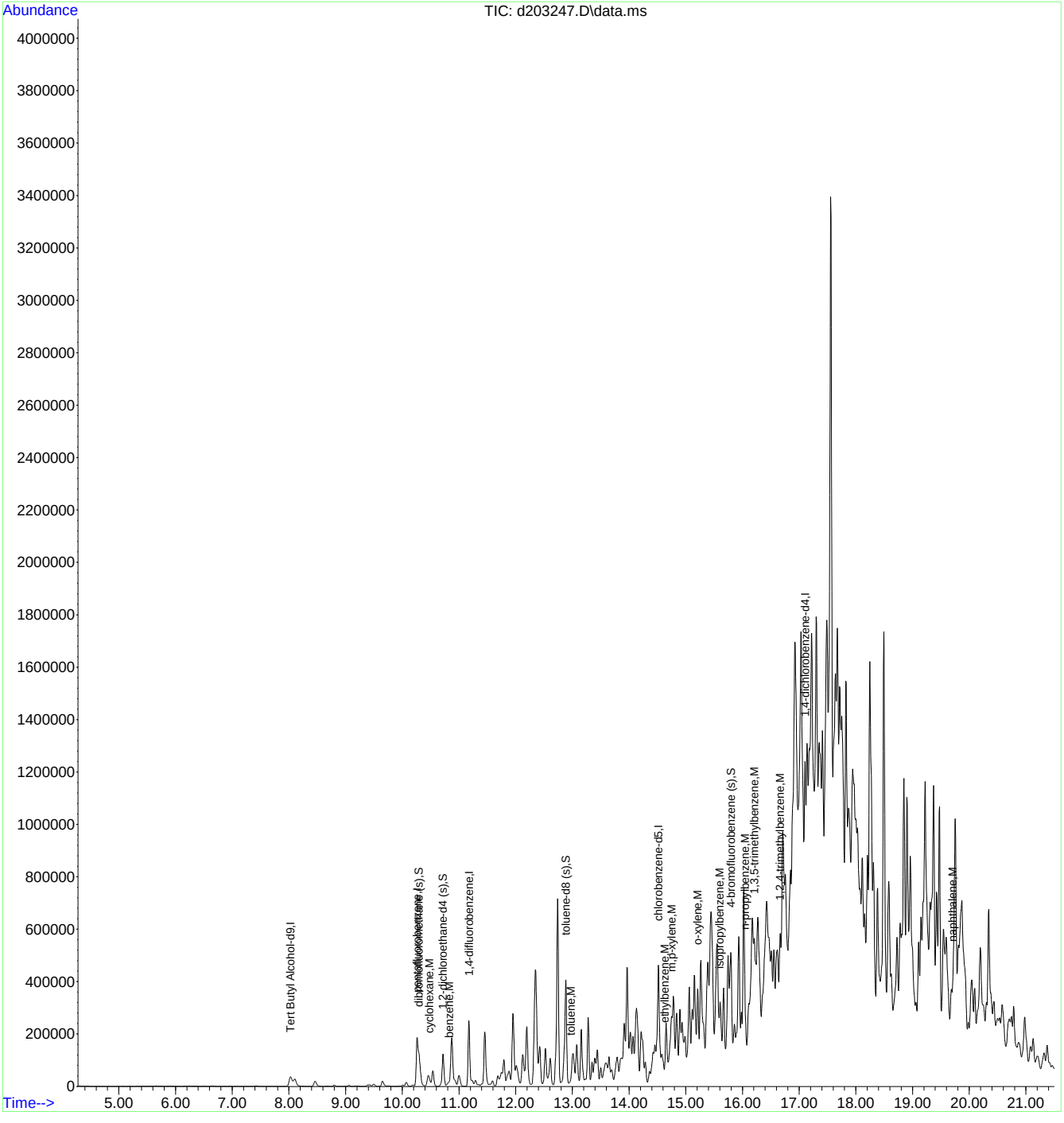
Target Compounds					Qvalue
54) cyclohexane	10.480	84	7022	3.20 ug/L #	13
62) benzene	10.820	78	10142	1.75 ug/L	99
79) toluene	12.964	92	3507	0.94 ug/L	99
94) ethylbenzene	14.622	91	3469	0.50 ug/L	93
95) m,p-xylene	14.743	106	5693	2.11 ug/L	99
96) o-xylene	15.203	106	1906	0.71 ug/L	88
100) isopropylbenzene	15.590	105	6338	0.86 ug/L	92
107) n-propylbenzene	16.045	91	10185	1.20 ug/L	92
111) 1,3,5-trimethylbenzene	16.212	105	2626	0.41 ug/L	100
114) 1,2,4-trimethylbenzene	16.651	105	7975	1.20 ug/L	93
128) naphthalene	19.701	128	6820	1.23 ug/L #	47

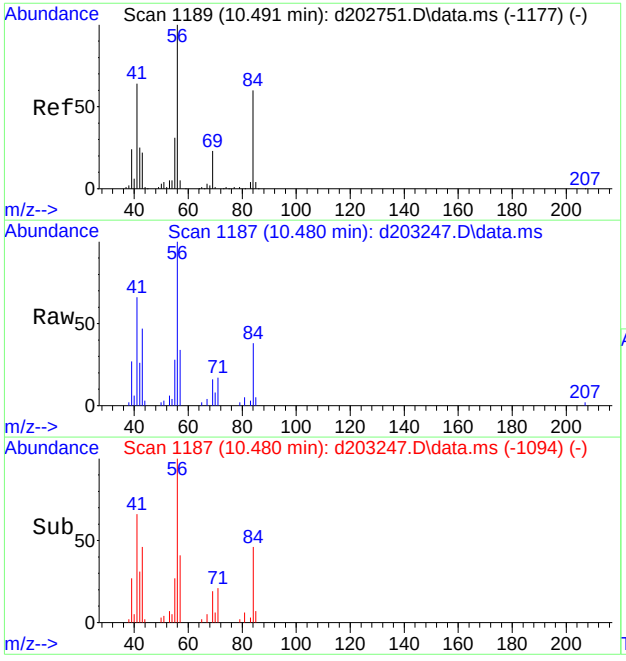
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203247.D
Acq On : 11 Dec 2012 4:43 pm
Operator : EmilyT
Sample : JB22822-11
Misc : ms39773,vd8287,6.2,,20,5,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 11 17:57:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

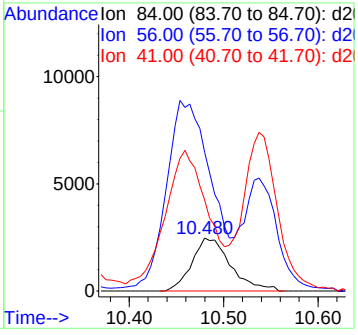


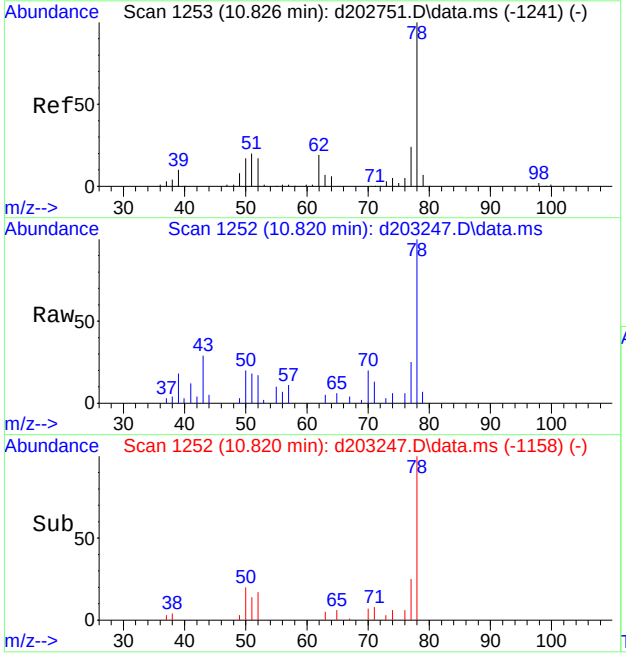


#54
cyclohexane
Concen: 3.20 ug/L
RT: 10.480 min Scan# 1187
Delta R.T. -0.013 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion: 84 Resp: 7022

Ion	Ratio	Lower	Upper
84	100		
56	406.1	172.3	320.1#
41	269.5	115.4	214.4#

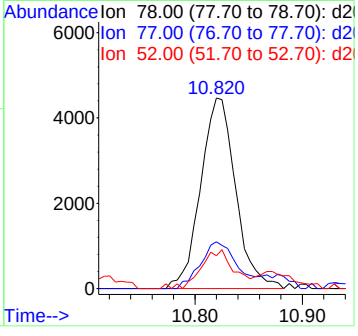




#62
benzene
Concen: 1.75 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion: 78 Resp: 10142

Ion	Ratio	Lower	Upper
78	100		
77	24.5	0.0	53.8
52	17.2	0.0	46.8



7.1.12

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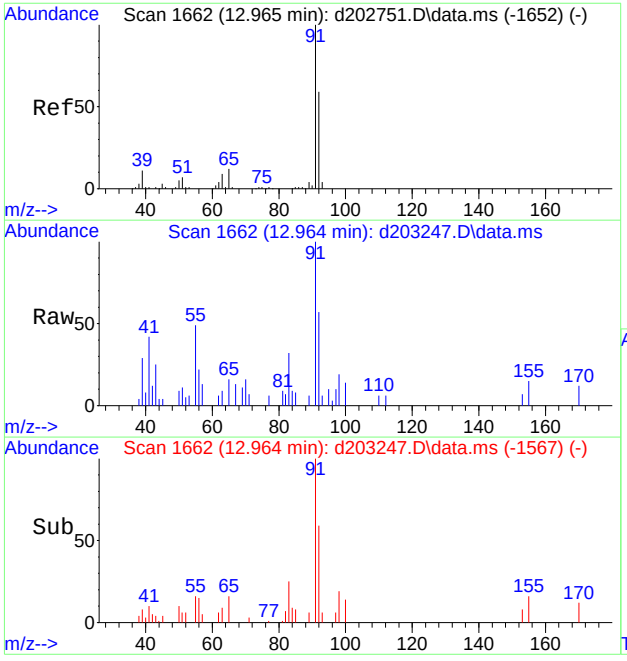
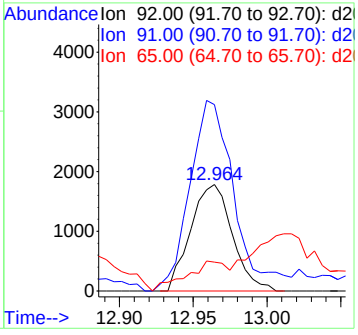
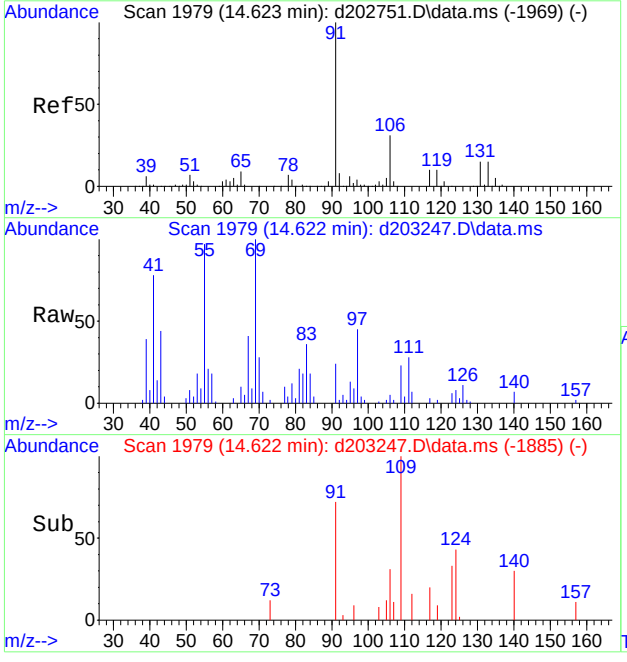


#79
toluene
Concen: 0.94 ug/L
RT: 12.964 min Scan# 1662
Delta R.T. -0.003 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion: 92 Resp: 3507

Ion	Ratio	Lower	Upper
92	100		
91	168.1	136.4	196.4
65	19.4	0.0	49.2

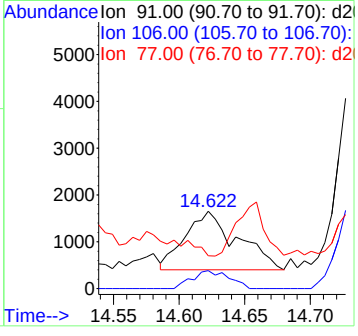




#94
ethylbenzene
Concen: 0.50 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion: 91 Resp: 3469

Ion	Ratio	Lower	Upper
91	100		
106	30.5	2.1	62.1
77	0.0	0.0	38.6



7.1.12

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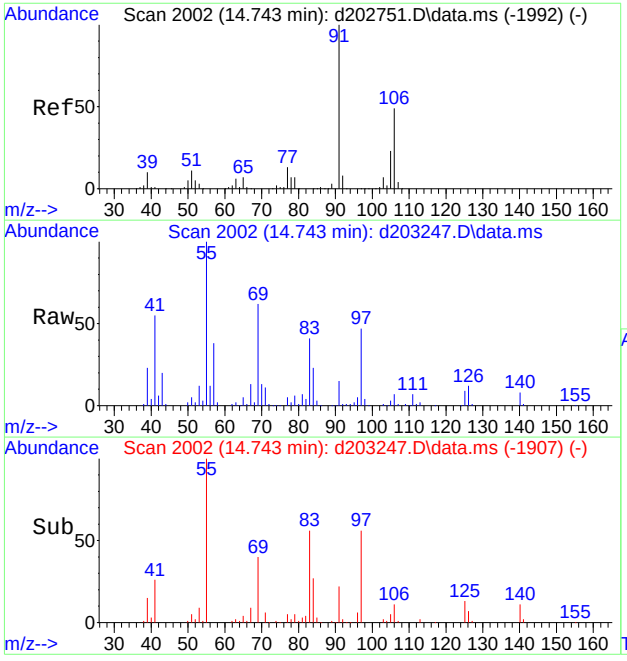
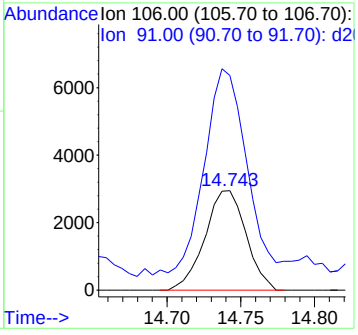
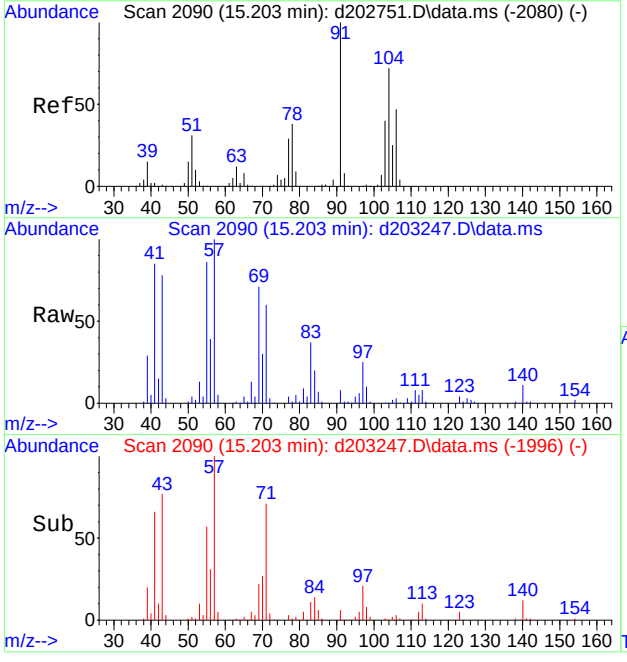


#95
m,p-xylene
Concen: 2.11 ug/L
RT: 14.743 min Scan# 2002
Delta R.T. -0.003 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion:106 Resp: 5693

Ion	Ratio	Lower	Upper
106	100		
91	195.9	137.7	255.7

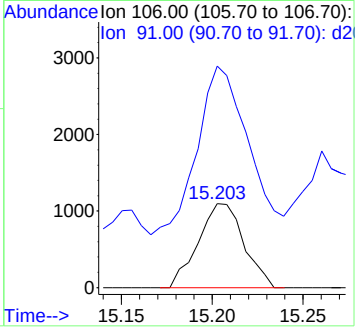




#96
o-xylene
Concen: 0.71 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion:106 Resp: 1906

Ion	Ratio	Lower	Upper
106	100		
91	191.9	147.4	273.8



7.1.12

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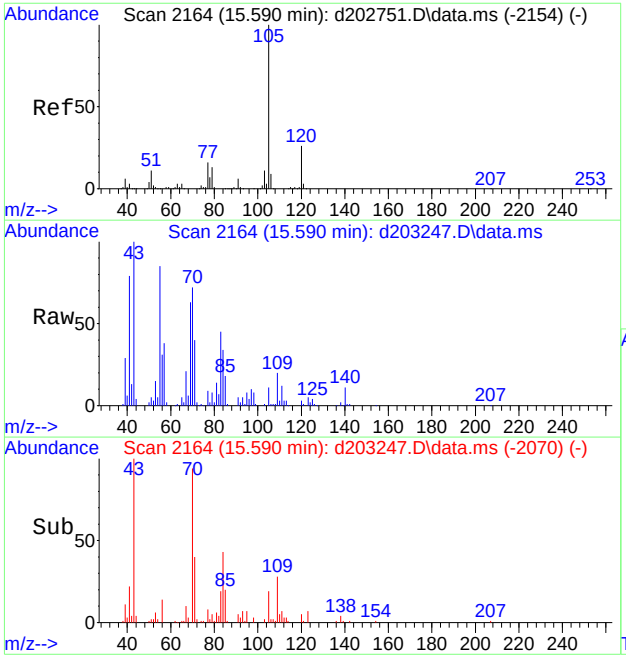
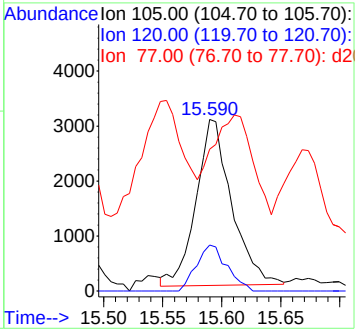
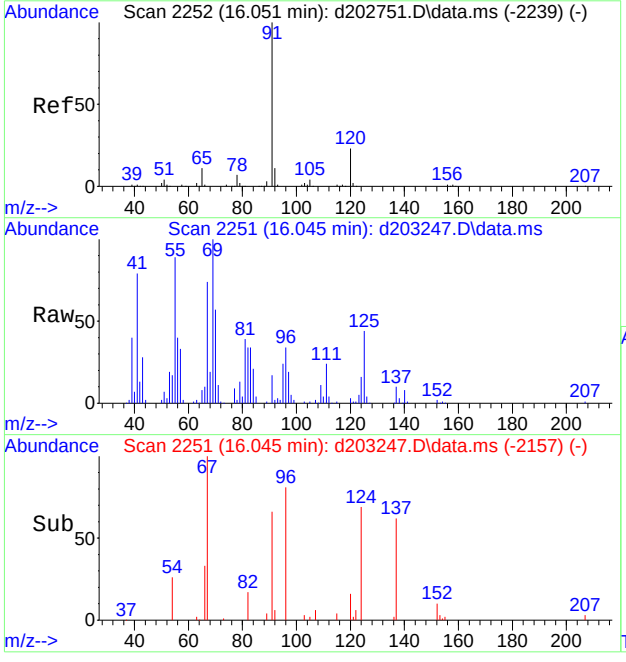


#100
isopropylbenzene
Concen: 0.86 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion:105 Resp: 6338

Ion	Ratio	Lower	Upper
105	100		
120	28.2	0.0	56.7
77	21.4	0.0	44.9

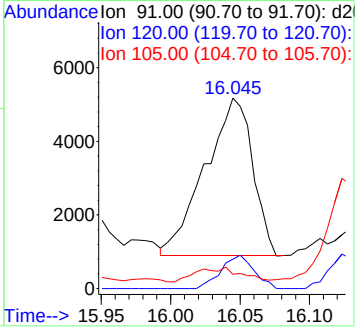


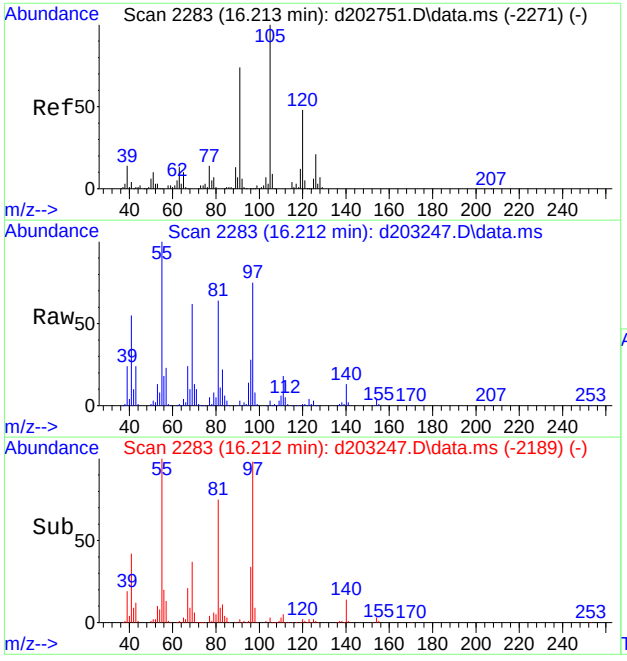


#107
n-propylbenzene
Concen: 1.20 ug/L
RT: 16.045 min Scan# 2251
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion: 91 Resp: 10185

Ion	Ratio	Lower	Upper
91	100		
120	18.7	0.0	53.2
105	3.6	0.0	33.8

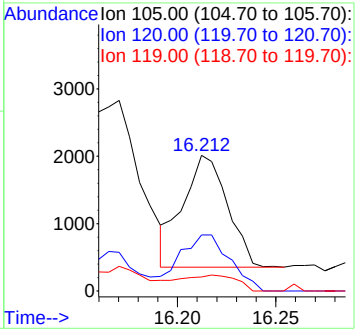


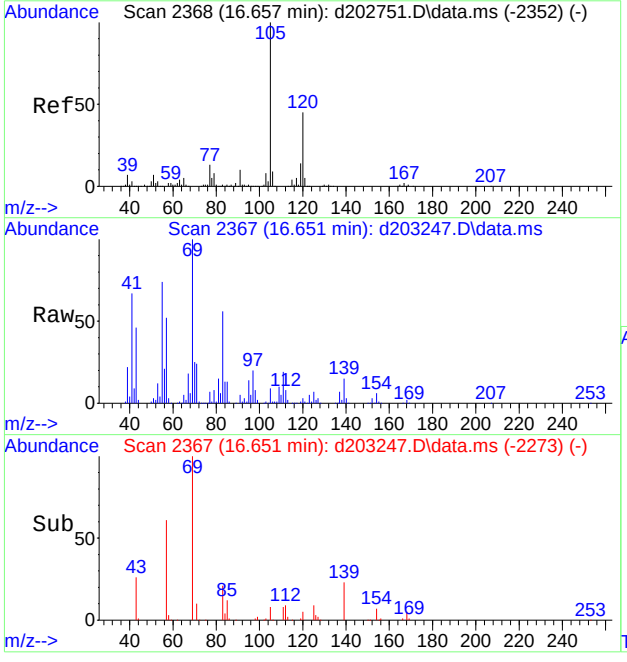


#111
1,3,5-trimethylbenzene
Concen: 0.41 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion:105 Resp: 2626

Ion	Ratio	Lower	Upper
105	100		
120	50.1	19.9	79.9
119	12.7	0.0	42.6

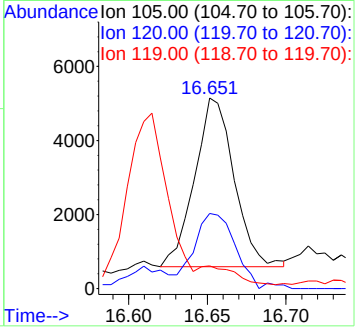


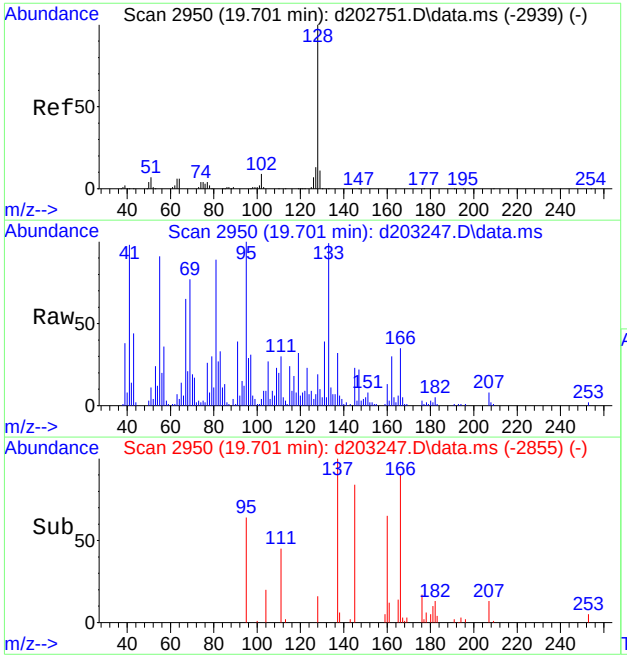


#114
1,2,4-trimethylbenzene
Concen: 1.20 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion:105 Resp: 7975

Ion	Ratio	Lower	Upper
105	100		
120	42.4	16.5	76.5
119	10.6	0.0	43.8

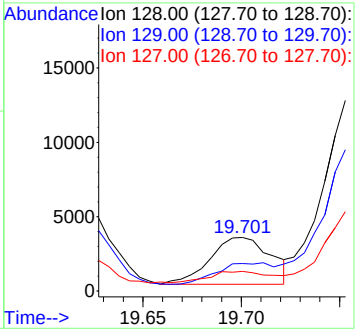




#128
naphthalene
Concen: 1.23 ug/L
RT: 19.701 min Scan# 2950
Delta R.T. -0.003 min
Lab File: d203247.D
Acq: 11 Dec 2012 4:43 pm

Tgt Ion:128 Resp: 6820

Ion	Ratio	Lower	Upper
128	100		
129	43.8	0.0	41.0#
127	22.6	0.0	42.7



7.1.12

7

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/12 03:12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131191.D
Acq On : 8 Dec 2012 1:38 am
Operator : THIENN
Sample : jb22822-12
Misc : MS39773,VV5655,6.5,,,,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 11 08:40:18 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.636	65	37381	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	150963	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	237635	50.00	ug/L	0.00
94) chlorobenzene-d5	14.206	117	217499	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	116754	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.932	113	55605	60.34	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 120.68%			
59) 1,2-dichloroethane-d4 (s)	10.367	65	49147	54.61	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 109.22%			
86) toluene-d8 (s)	12.532	98	228125	57.34	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 114.68%			
110) 4-bromofluorobenzene (s)	15.508	95	83153	49.07	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 98.14%			
Target Compounds						Qvalue
31) acetone	7.045	58	498	9.65	ug/L #	72
71) benzene	10.440	78	6557	1.40	ug/L	96
88) toluene	12.616	92	1465m	0.48	ug/L	
103) ethylbenzene	14.294	91	1358m	0.22	ug/L	
104) m,p-xylene	14.410	106	1362m	0.55	ug/L	

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

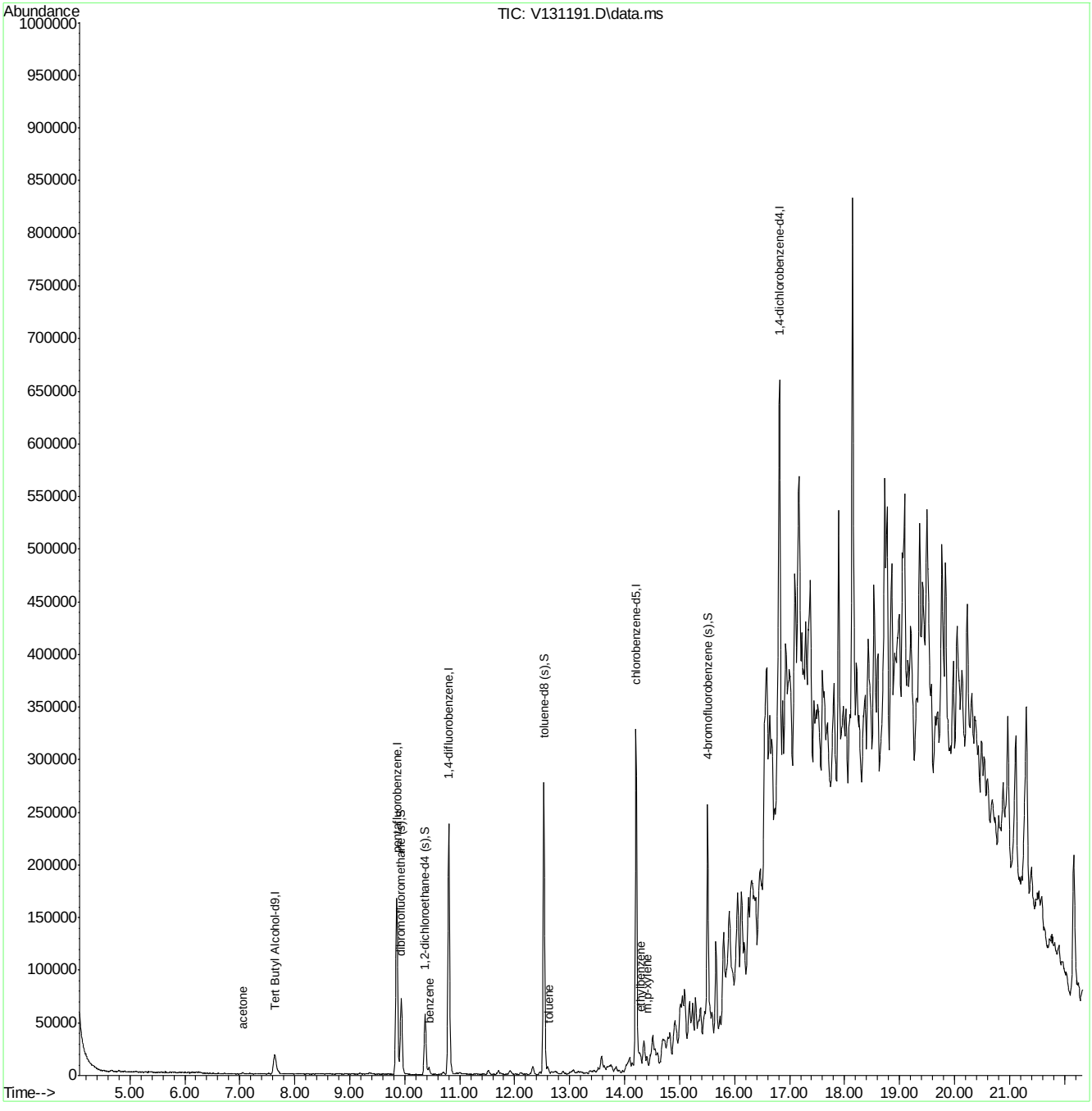
7.1.13

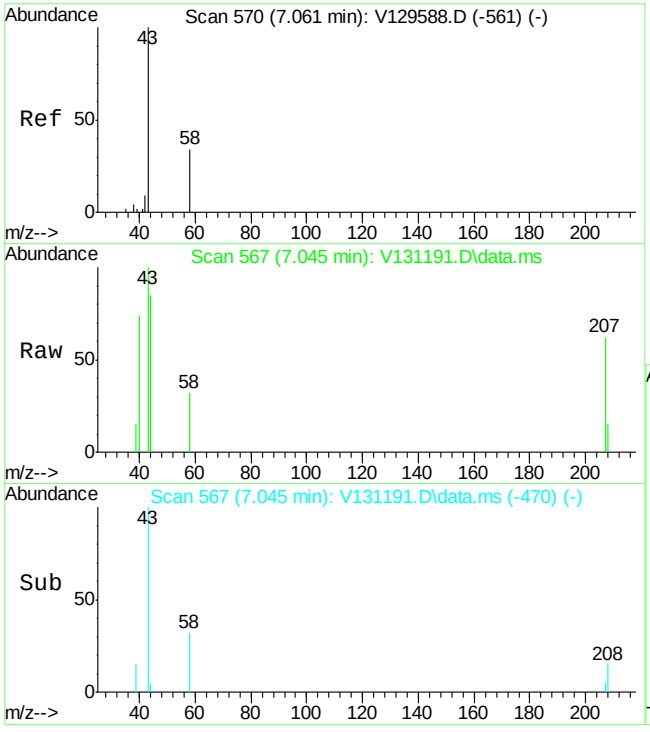
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131191.D
Acq On : 8 Dec 2012 1:38 am
Operator : THIENN
Sample : jb22822-12
Misc : MS39773,VV5655,6.5,,,,1
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 11 08:40:18 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

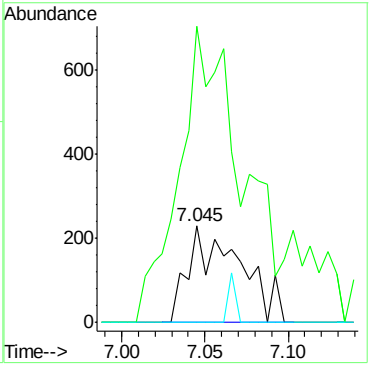


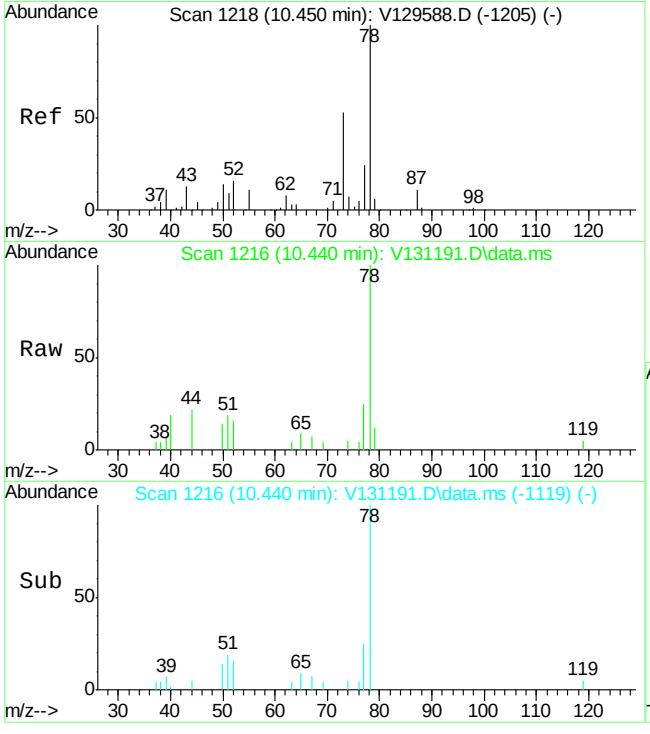


#31
acetone
Concen: 9.65 ug/L
RT: 7.045 min Scan# 567
Delta R.T. 0.005 min
Lab File: V131191.D
Acq: 8 Dec 2012 1:38 am

Tgt Ion: 58 Resp: 498

Ion	Ratio	Lower	Upper
58	100		
43	236.2	198.4	368.4
42	0.0	21.1	39.1#

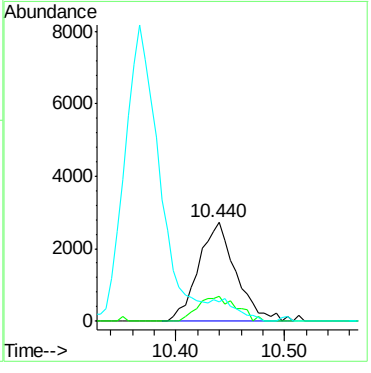


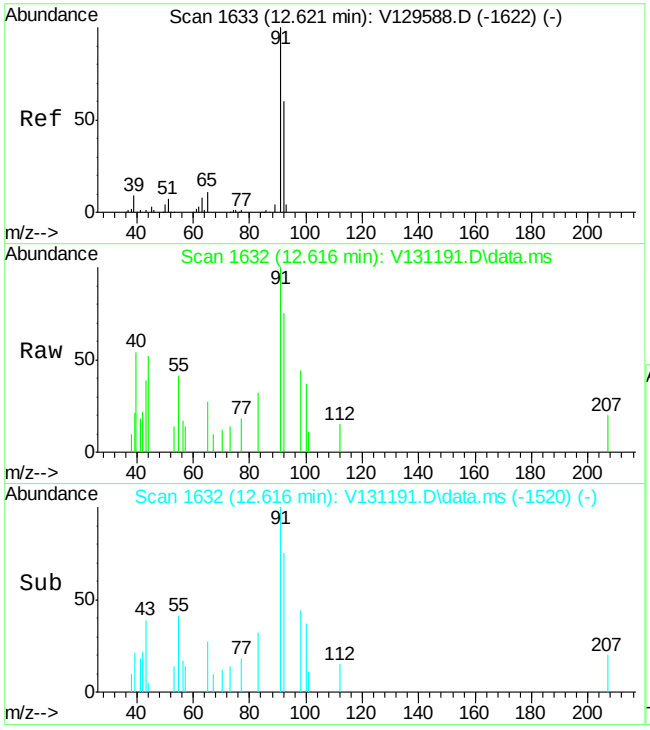


#71
benzene
Concen: 1.40 ug/L
RT: 10.440 min Scan# 1216
Delta R.T. 0.006 min
Lab File: V131191.D
Acq: 8 Dec 2012 1:38 am

Tgt Ion: 78 Resp: 6557

Ion	Ratio	Lower	Upper
78	100		
77	24.9	0.0	53.4
51	18.9	0.0	46.9

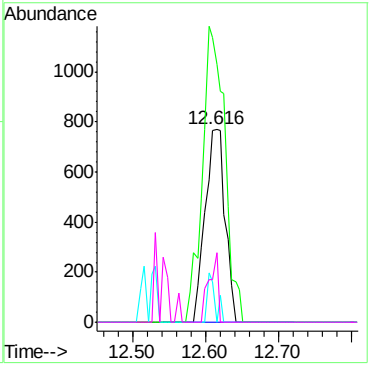


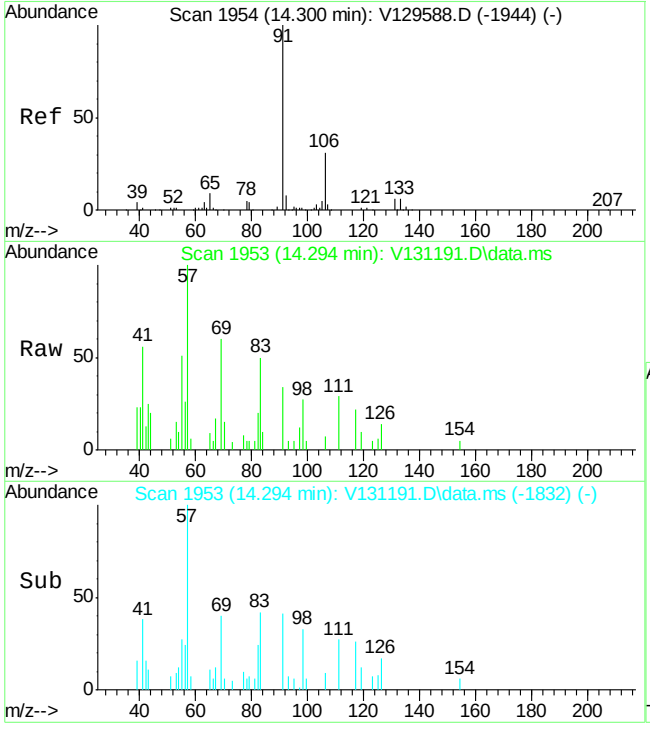


#88
toluene
Concen: 0.48 ug/L m
RT: 12.616 min Scan# 1632
Delta R.T. 0.006 min
Lab File: V131191.D
Acq: 8 Dec 2012 1:38 am

Tgt Ion: 92 Resp: 1465

Ion	Ratio	Lower	Upper
92	100		
91	133.3	120.5	223.7
51	0.0	7.9	14.7#
65	35.8	13.4	24.8#

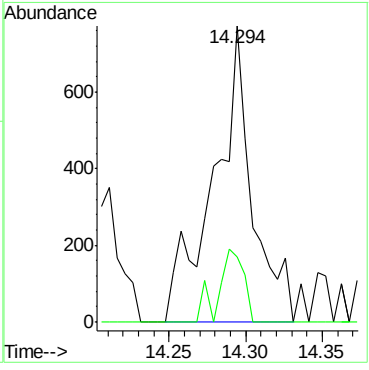


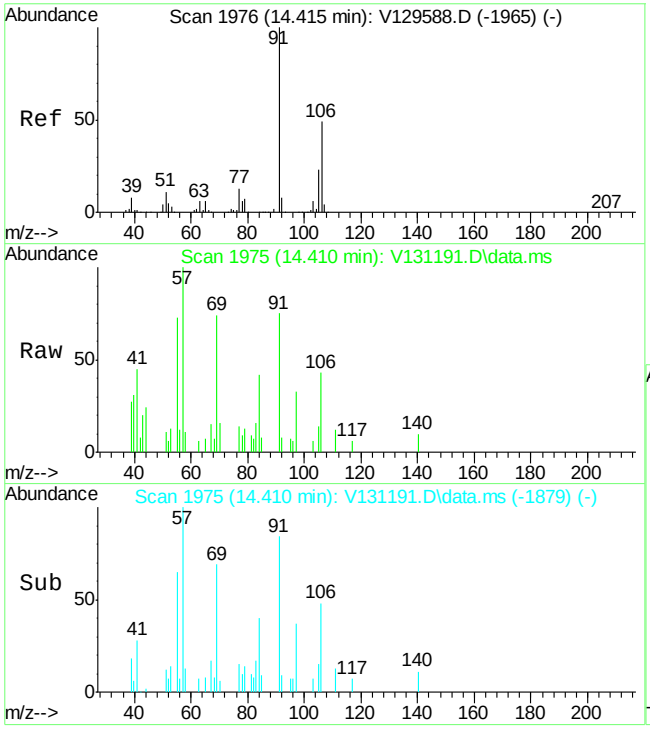


#103
ethylbenzene
Concen: 0.22 ug/L m
RT: 14.294 min Scan# 1953
Delta R.T. 0.005 min
Lab File: V131191.D
Acq: 8 Dec 2012 1:38 am

Tgt Ion: 91 Resp: 1358

Ion	Ratio	Lower	Upper
91	100		
106	21.9	0.7	60.7

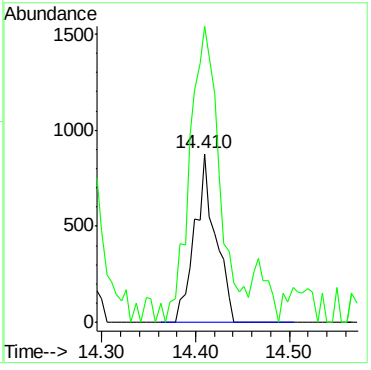




#104
m,p-xylene
Concen: 0.55 ug/L m
RT: 14.410 min Scan# 1975
Delta R.T. -0.000 min
Lab File: V131191.D
Acq: 8 Dec 2012 1:38 am

Tgt Ion:106 Resp: 1362

Ion	Ratio	Lower	Upper
106	100		
91	175.5	140.7	261.3



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203323.D
Acq On : 13 Dec 2012 6:50 am
Operator : EmilyT
Sample : jb22822-13
Misc : ms39773,vd8290,6.6,,20,5,1
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Dec 13 10:00:01 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.026	65	74046	500.00	ug/L	-0.01
4) pentafluorobenzene	10.260	168	131500	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	198297	50.00	ug/L	0.00
85) chlorobenzene-d5	14.517	117	196174	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.106	152	117533	50.00	ug/L	0.00

System Monitoring Compounds						
46) dibromofluoromethane (s)	10.291	113	60989	46.87	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 93.74%			
47) 1,2-dichloroethane-d4 (s)	10.715	65	86053	57.49	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 114.98%			
77) toluene-d8 (s)	12.885	98	327721	65.19	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 130.38%#			
101) 4-bromofluorobenzene (s)	15.798	95	155654	73.36	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 146.72%#			

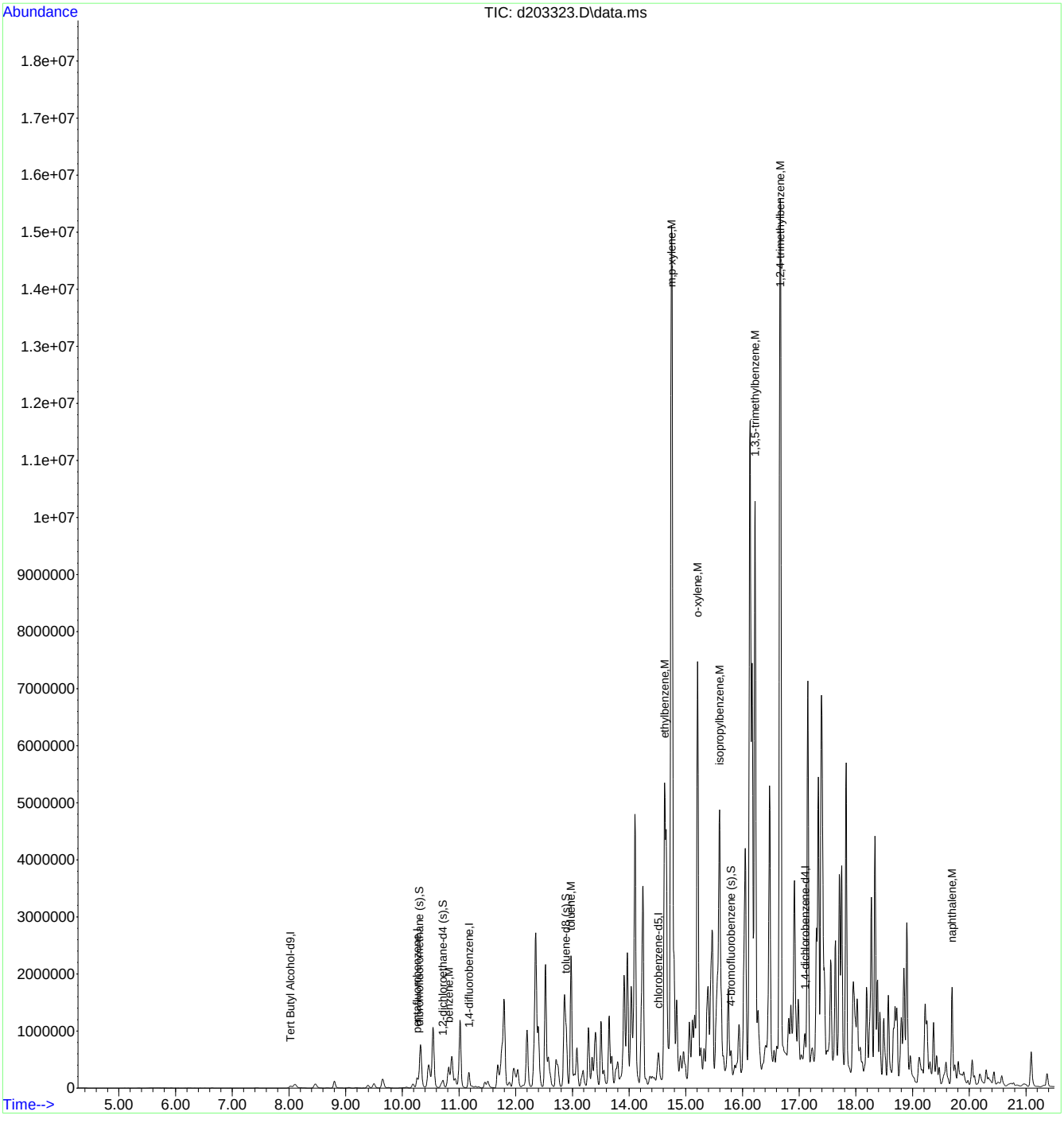
Target Compounds						Qvalue
62) benzene	10.819	78	271530	47.90	ug/L	98
79) toluene	12.964	92	82005	22.53	ug/L	99
94) ethylbenzene	14.627	91	3784974	527.62	ug/L	98
95) m,p-xylene	14.752	106	5419022	1933.30	ug/L	75
96) o-xylene	15.207	106	1595834	572.07	ug/L	94
100) isopropylbenzene	15.594	105	2209440	305.62	ug/L	96
111) 1,3,5-trimethylbenzene	16.222	105	4902750	773.36	ug/L	98
114) 1,2,4-trimethylbenzene	16.667	105	9188218	1399.70	ug/L	80
128) naphthalene	19.695	128	1406577	257.70	ug/L	99

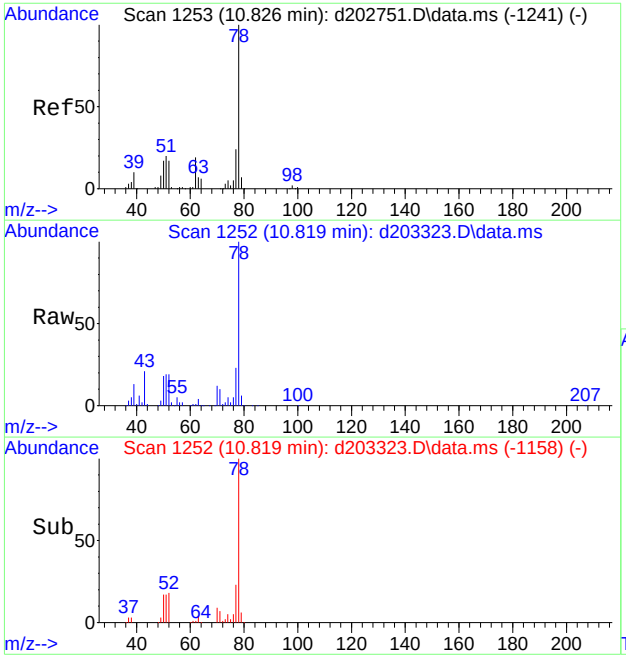
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203323.D
Acq On : 13 Dec 2012 6:50 am
Operator : EmilyT
Sample : jb22822-13
Misc : ms39773,vd8290,6.6,,20,5,1
ALS Vial : 41 Sample Multiplier: 1

Quant Time: Dec 13 10:00:01 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

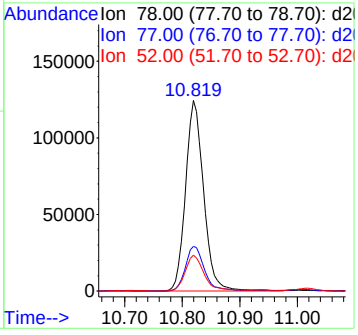


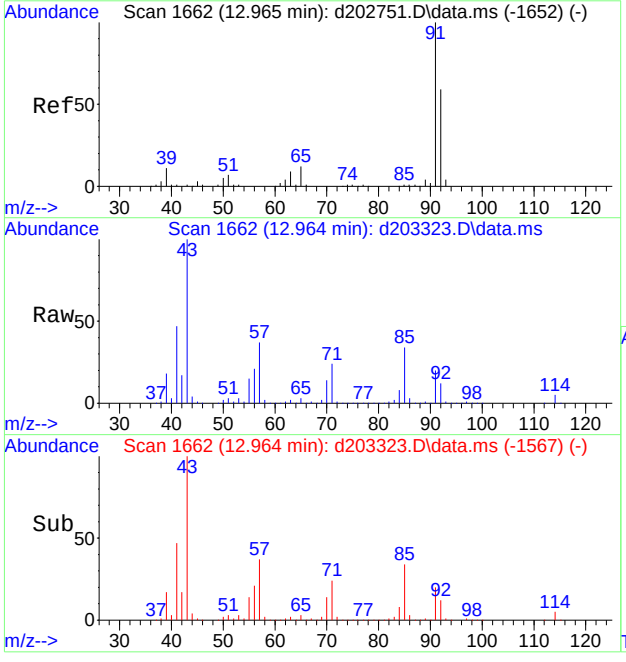


#62
benzene
Concen: 47.90 ug/L
RT: 10.819 min Scan# 1252
Delta R.T. -0.009 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

Tgt Ion: 78 Resp: 271530

Ion	Ratio	Lower	Upper
78	100		
77	23.5	0.0	53.8
52	18.9	0.0	46.8

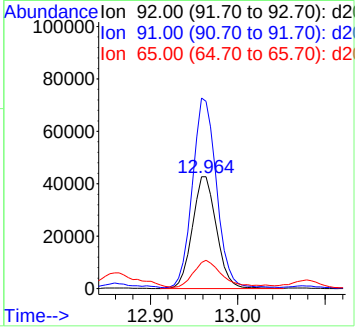


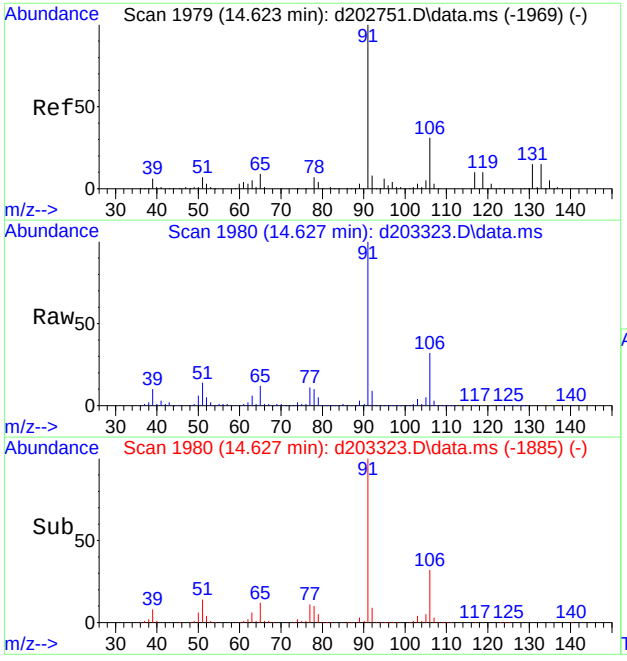


#79
toluene
Concen: 22.53 ug/L
RT: 12.964 min Scan# 1662
Delta R.T. -0.003 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

Tgt Ion: 92 Resp: 82005

Ion	Ratio	Lower	Upper
92	100		
91	166.1	136.4	196.4
65	22.1	0.0	49.2

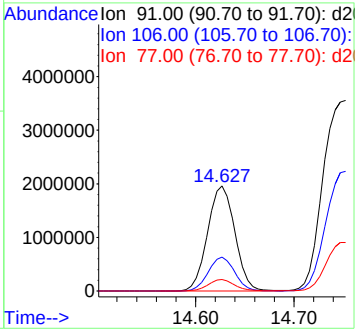


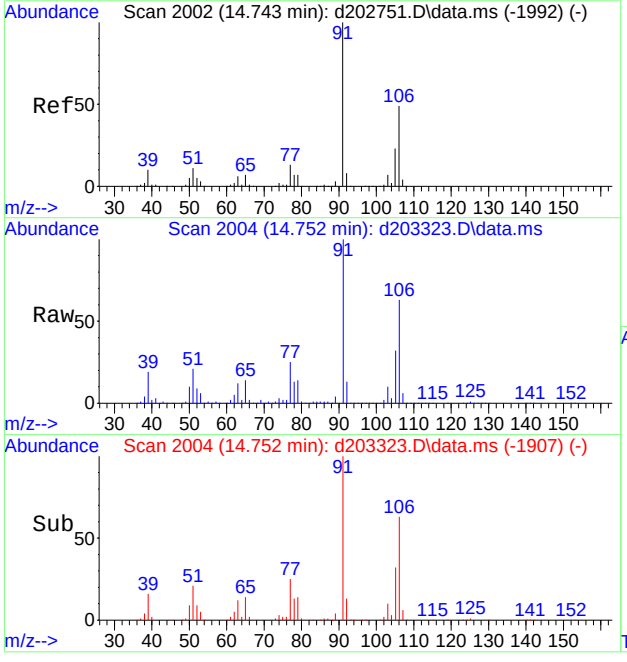


#94
ethylbenzene
Concen: 527.62 ug/L
RT: 14.627 min Scan# 1980
Delta R.T. -0.003 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

Tgt Ion: 91 Resp: 3784974

Ion	Ratio	Lower	Upper
91	100		
106	32.3	2.1	62.1
77	10.9	0.0	38.6

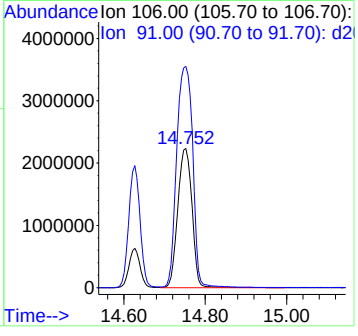




#95
m,p-xylene
Concen: 1933.30 ug/L
RT: 14.752 min Scan# 2004
Delta R.T. 0.007 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

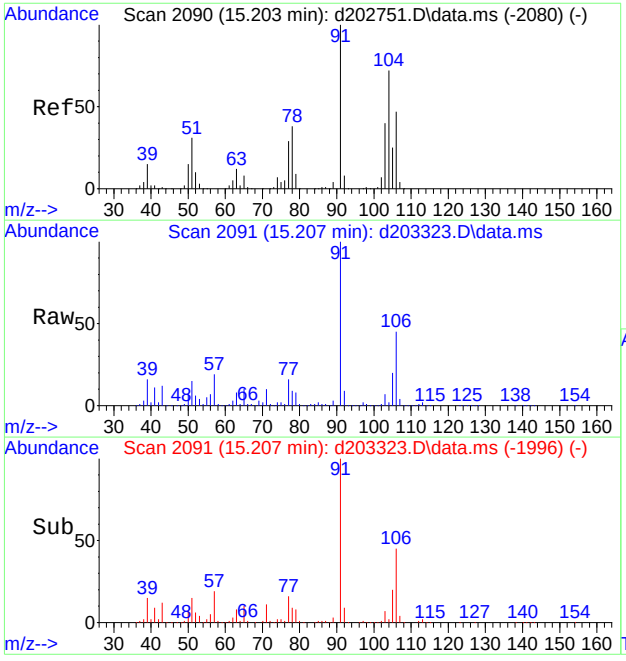
Tgt Ion:106 Resp: 5419022

Ion	Ratio	Lower	Upper
106	100		
91	158.9	137.7	255.7



7.1.14

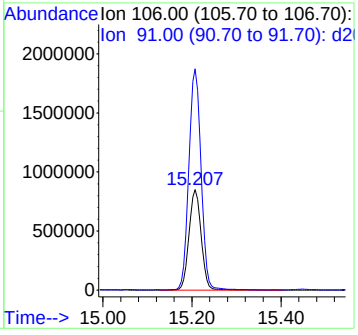
7

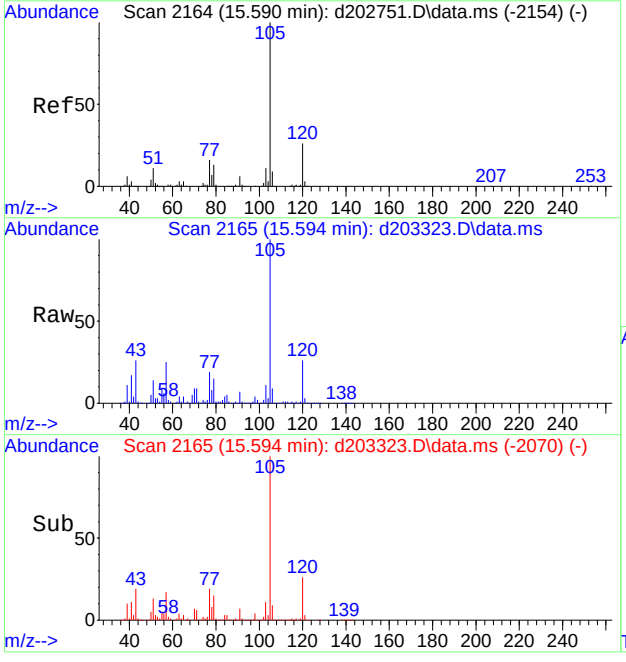


#96
o-xylene
Concen: 572.07 ug/L
RT: 15.207 min Scan# 2091
Delta R.T. -0.003 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

Tgt Ion:106 Resp: 1595834

Ion	Ratio	Lower	Upper
106	100		
91	220.3	147.4	273.8

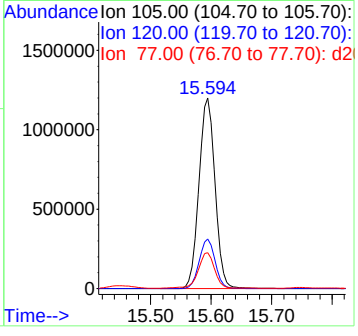




#100
isopropylbenzene
Concen: 305.62 ug/L
RT: 15.594 min Scan# 2165
Delta R.T. -0.003 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

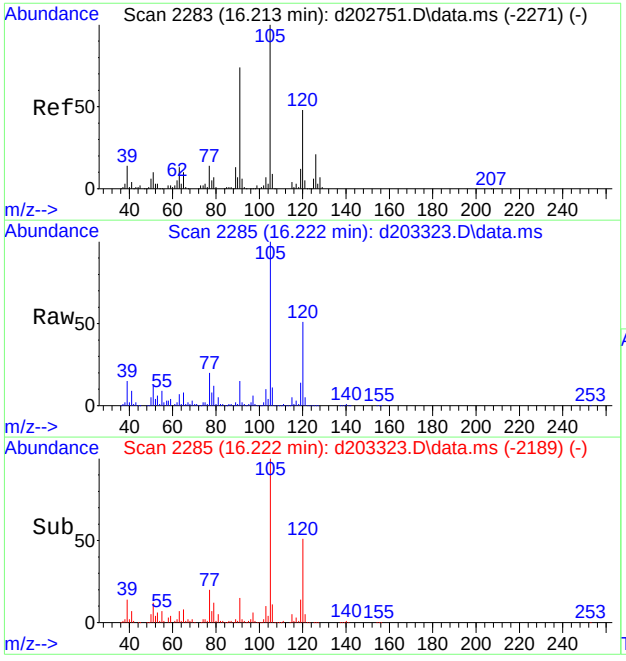
Tgt Ion:105 Resp: 2209440

Ion	Ratio	Lower	Upper
105	100		
120	26.1	0.0	56.7
77	18.7	0.0	44.9



7.1.14

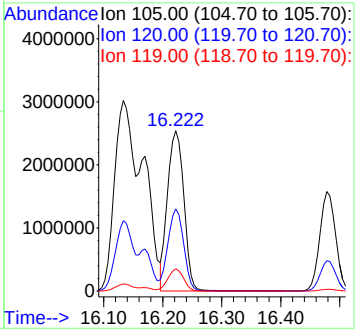
7

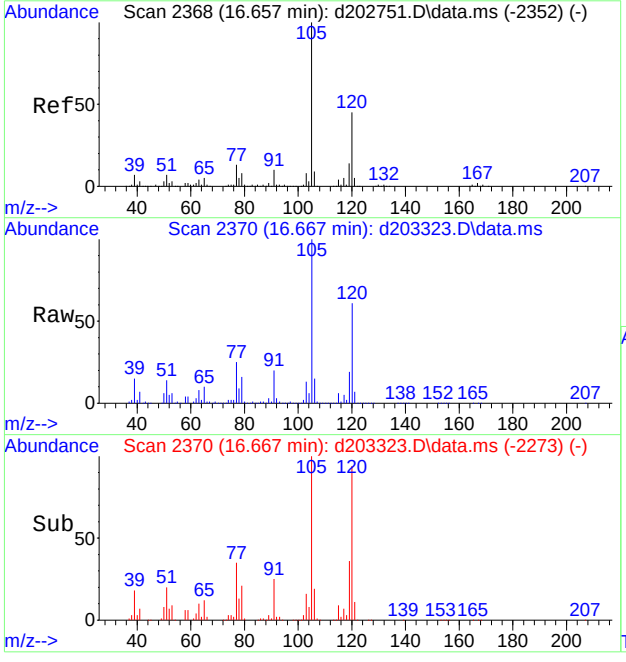


#111
1,3,5-trimethylbenzene
Concen: 773.36 ug/L
RT: 16.222 min Scan# 2285
Delta R.T. 0.002 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

Tgt Ion:105 Resp: 4902750

Ion	Ratio	Lower	Upper
105	100		
120	51.2	19.9	79.9
119	13.8	0.0	42.6

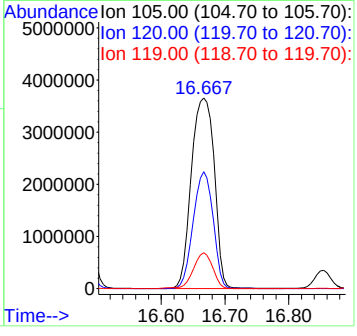




#114
1,2,4-trimethylbenzene
Concen: 1399.70 ug/L
RT: 16.667 min Scan# 2370
Delta R.T. 0.007 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

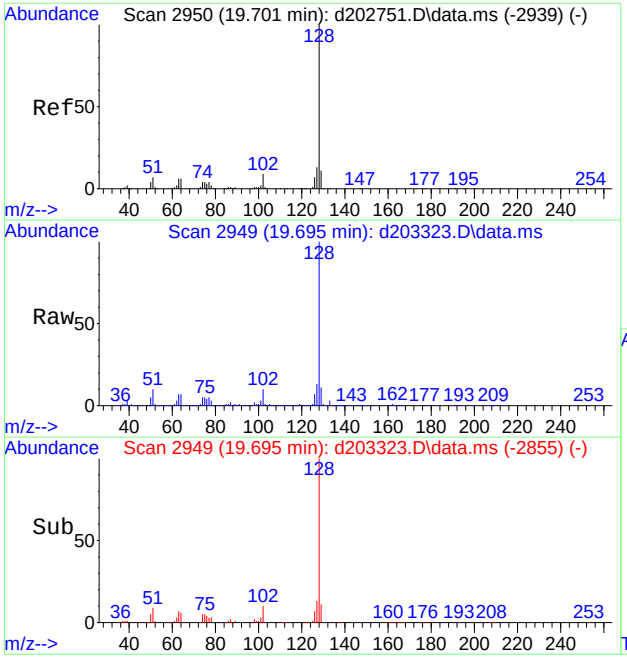
Tgt Ion:105 Resp: 9188218

Ion	Ratio	Lower	Upper
105	100		
120	61.4	16.5	76.5
119	18.8	0.0	43.8



7.1.14

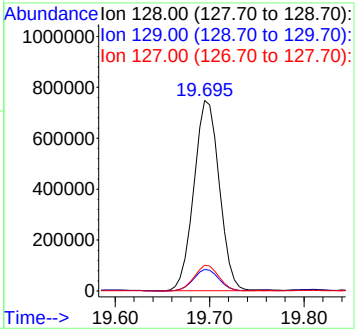
7



#128
naphthalene
Concen: 257.70 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.009 min
Lab File: d203323.D
Acq: 13 Dec 2012 6:50 am

Tgt Ion:128 Resp: 1406577

Ion	Ratio	Lower	Upper
128	100		
129	11.3	0.0	41.0
127	13.5	0.0	42.7



7.1.14

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203392.D
Acq On : 14 Dec 2012 9:37 pm
Operator : EmilyT
Sample : JB22822-13
Misc : ms39773,vd8293,6.6,,2,5,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 17 08:02:16 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.021	65	73916	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	126729	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	183577	50.00 ug/L	0.00
85) chlorobenzene-d5	14.512	117	171559	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	107763	50.00 ug/L	0.00
System Monitoring Compounds					
46) dibromofluoromethane (s)	10.291	113	58131	46.35 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 92.70%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	78126	54.16 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 108.32%		
77) toluene-d8 (s)	12.886	98	232174	49.88 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.76%		
101) 4-bromofluorobenzene (s)	15.793	95	94539	48.60 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 97.20%		

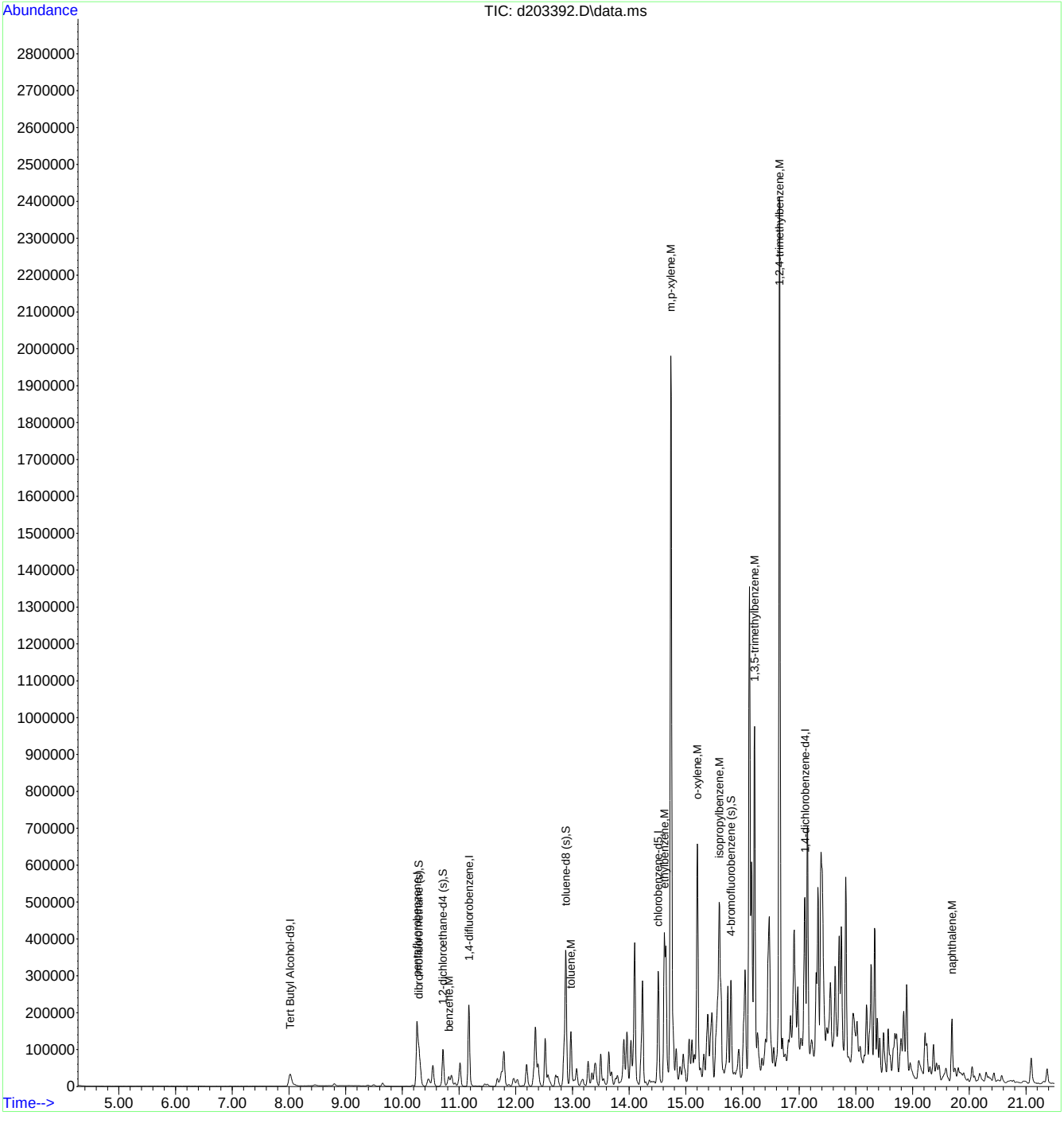
Target Compounds					Qvalue
62) benzene	10.820	78	21469	4.09 ug/L	99
79) toluene	12.964	92	7097	2.11 ug/L	91
94) ethylbenzene	14.622	91	293936	46.85 ug/L	98
95) m,p-xylene	14.737	106	583446	238.02 ug/L	94
96) o-xylene	15.202	106	124853	51.18 ug/L	95
100) isopropylbenzene	15.589	105	166645	25.14 ug/L	99
111) 1,3,5-trimethylbenzene	16.212	105	476595	81.99 ug/L	98
114) 1,2,4-trimethylbenzene	16.651	105	1335679	221.92 ug/L	97
128) naphthalene	19.695	128	139801	27.94 ug/L	100

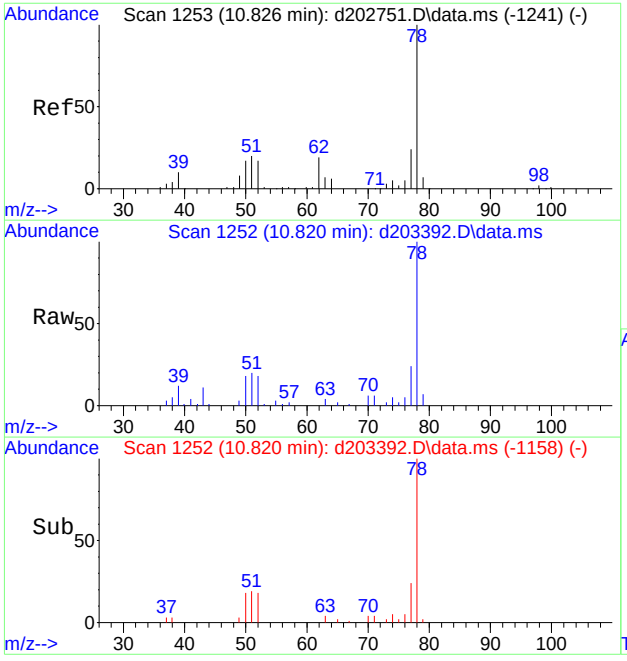
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203392.D
Acq On : 14 Dec 2012 9:37 pm
Operator : EmilyT
Sample : JB22822-13
Misc : ms39773,vd8293,6.6,,2,5,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 17 08:02:16 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

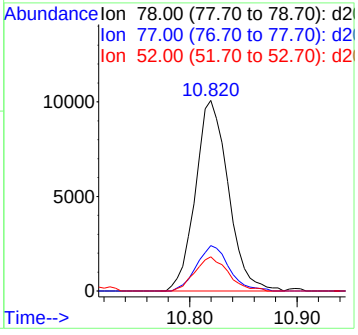


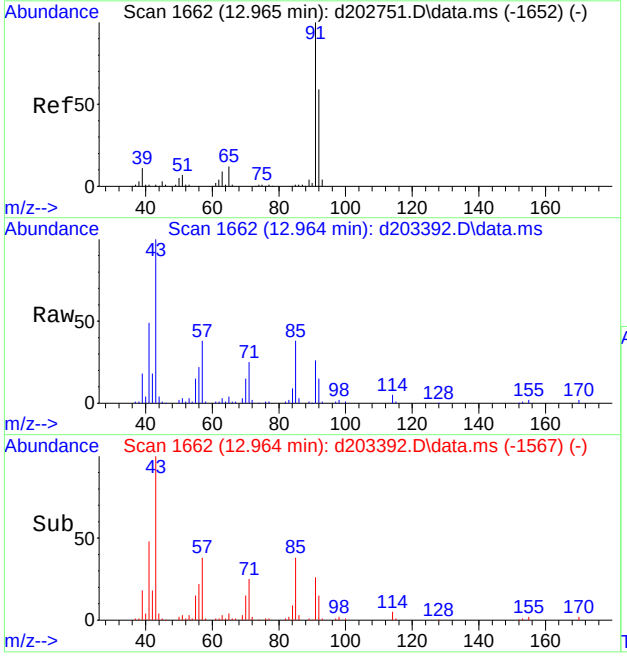


#62
benzene
Concen: 4.09 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion: 78 Resp: 21469

Ion	Ratio	Lower	Upper
78	100		
77	23.9	0.0	53.8
52	18.0	0.0	46.8

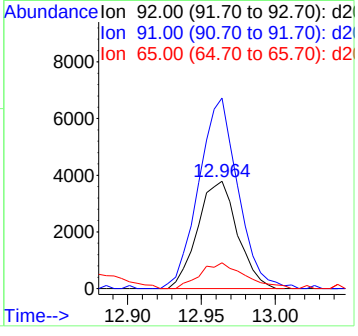




#79
toluene
Concen: 2.11 ug/L
RT: 12.964 min Scan# 1662
Delta R.T. -0.003 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion: 92 Resp: 7097

Ion	Ratio	Lower	Upper
92	100		
91	177.5	136.4	196.4
65	24.1	0.0	49.2



7.1.15

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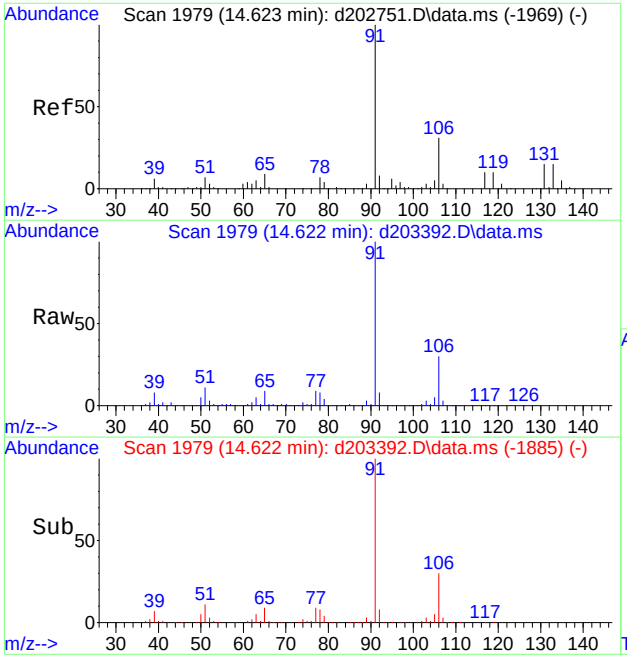
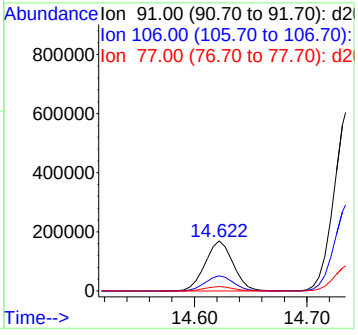
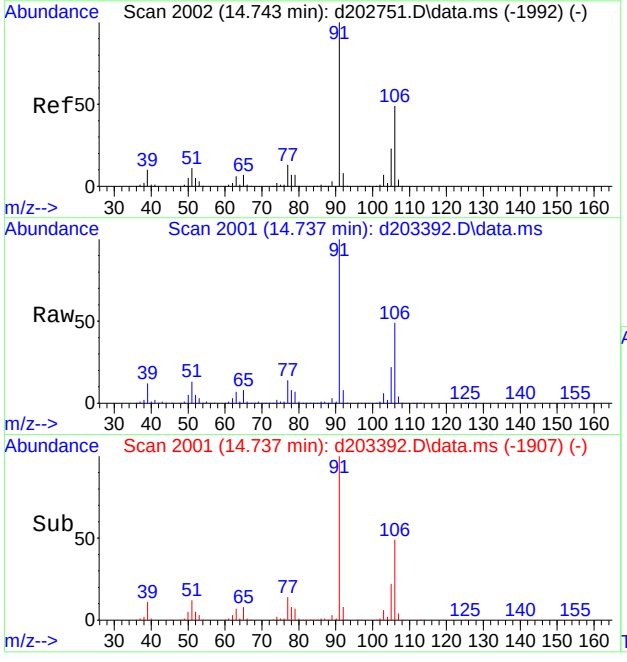


#94
ethylbenzene
Concen: 46.85 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion: 91 Resp: 293936

Ion	Ratio	Lower	Upper
91	100		
106	30.4	2.1	62.1
77	8.8	0.0	38.6

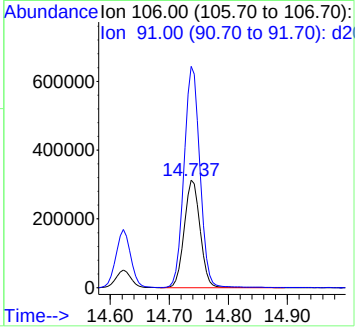




#95
m,p-xylene
Concen: 238.02 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion:106 Resp: 583446

Ion	Ratio	Lower	Upper
106	100		
91	205.7	137.7	255.7



7.1.15

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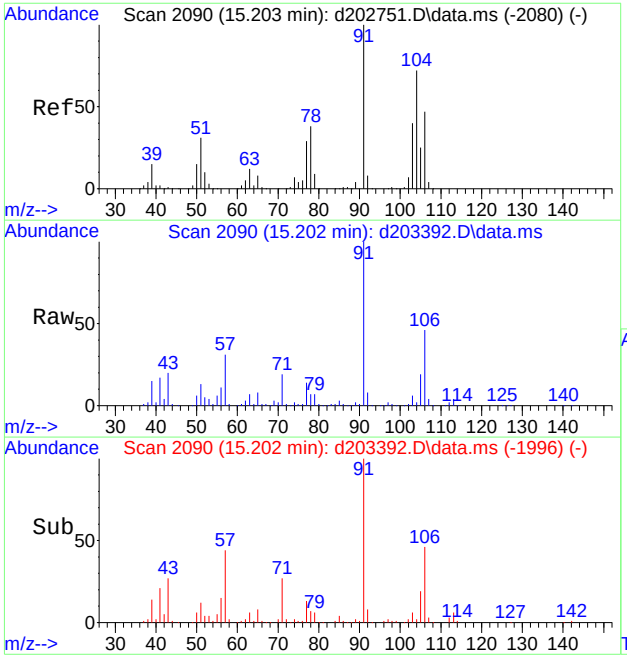
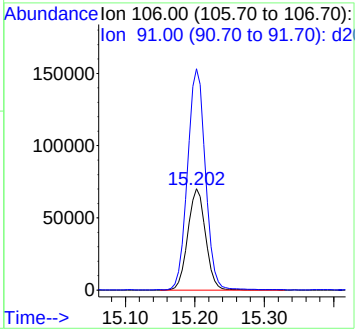
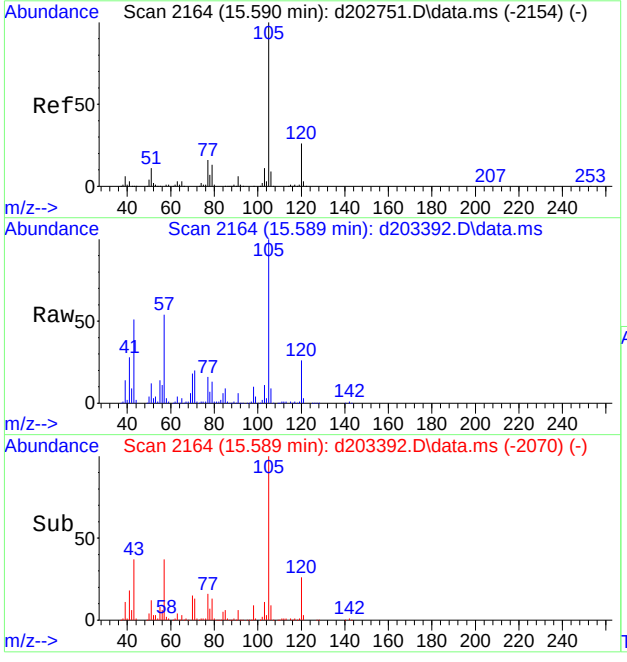


#96
o-xylene
Concen: 51.18 ug/L
RT: 15.202 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion:106 Resp: 124853

Ion	Ratio	Lower	Upper
106	100		
91	217.8	147.4	273.8

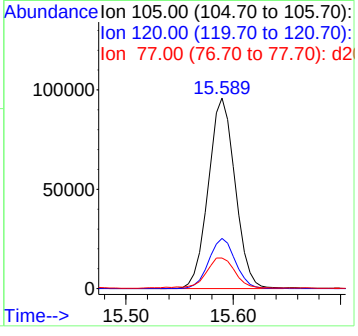


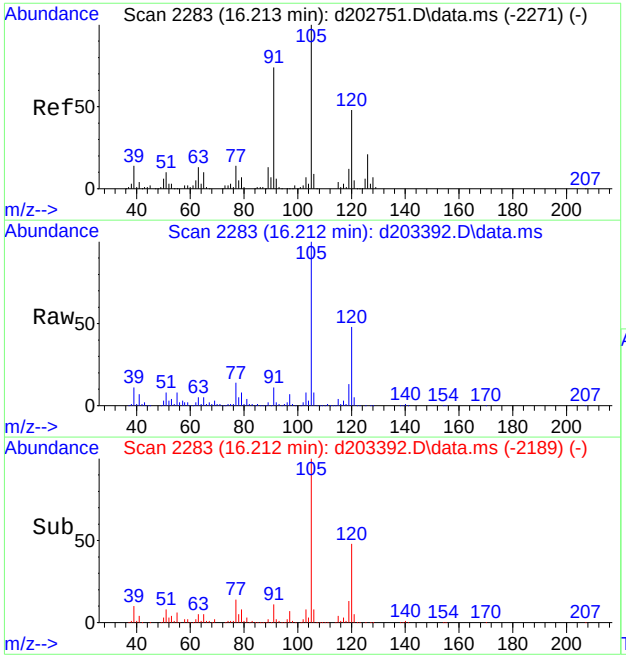


#100
isopropylbenzene
Concen: 25.14 ug/L
RT: 15.589 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion:105 Resp: 166645

Ion	Ratio	Lower	Upper
105	100		
120	26.4	0.0	56.7
77	15.7	0.0	44.9

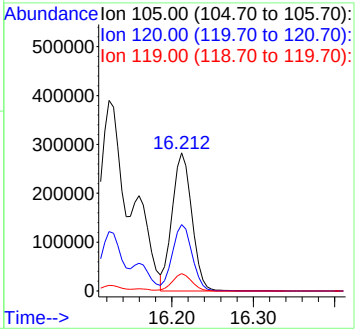


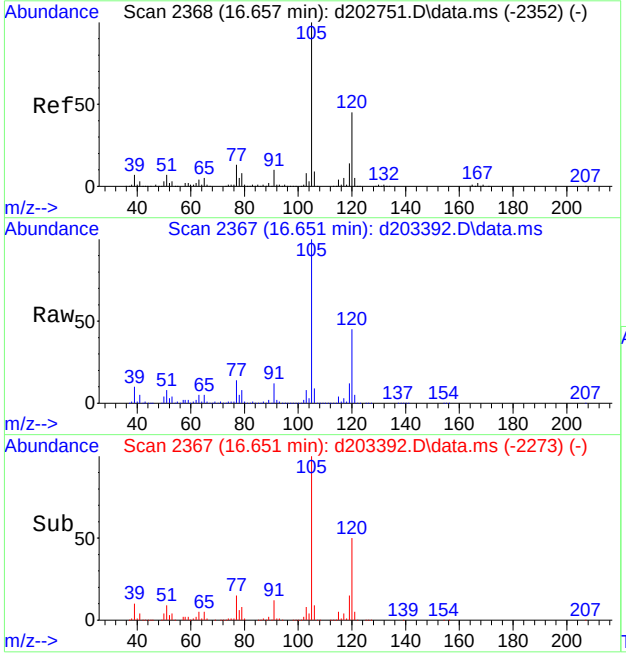


#111
1,3,5-trimethylbenzene
Concen: 81.99 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion:105 Resp: 476595

Ion	Ratio	Lower	Upper
105	100		
120	48.1	19.9	79.9
119	12.6	0.0	42.6

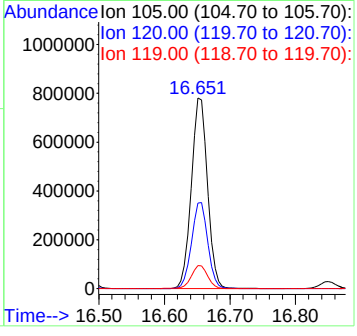


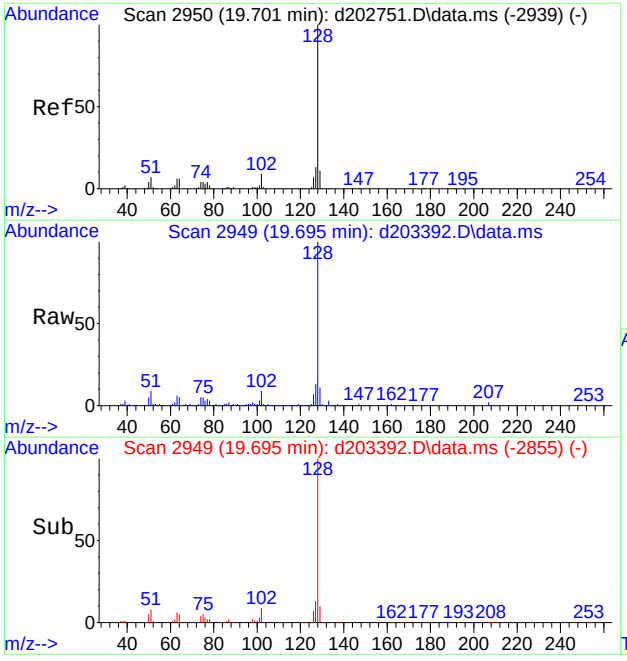


#114
1,2,4-trimethylbenzene
Concen: 221.92 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion:105 Resp: 1335679

Ion	Ratio	Lower	Upper
105	100		
120	44.9	16.5	76.5
119	12.0	0.0	43.8

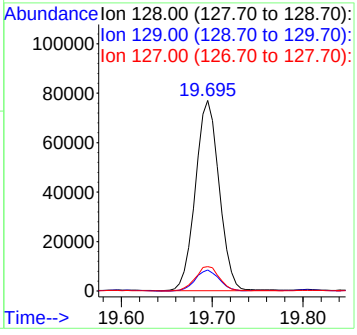




#128
naphthalene
Concen: 27.94 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203392.D
Acq: 14 Dec 2012 9:37 pm

Tgt Ion:128 Resp: 139801

Ion	Ratio	Lower	Upper
128	100		
129	11.0	0.0	41.0
127	12.8	0.0	42.7



7.1.15

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203478.D
Acq On : 17 Dec 2012 12:15 pm
Operator : EmilyT
Sample : jb22822-13
Misc : ms39773,vd8297,6.6,,1,5,2
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 17 16:38:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.017	65	76406	500.00 ug/L	-0.02
4) pentafluorobenzene	10.260	168	123701	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.171	114	179282	50.00 ug/L	-0.01
85) chlorobenzene-d5	14.518	117	167480	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.102	152	98314	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.287	113	56100	45.83 ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 91.66%		
47) 1,2-dichloroethane-d4 (s)	10.716	65	77341	54.93 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 109.86%		
77) toluene-d8 (s)	12.881	98	223421	49.15 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 98.30%		
101) 4-bromofluorobenzene (s)	15.799	95	87740	49.44 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 98.88%		

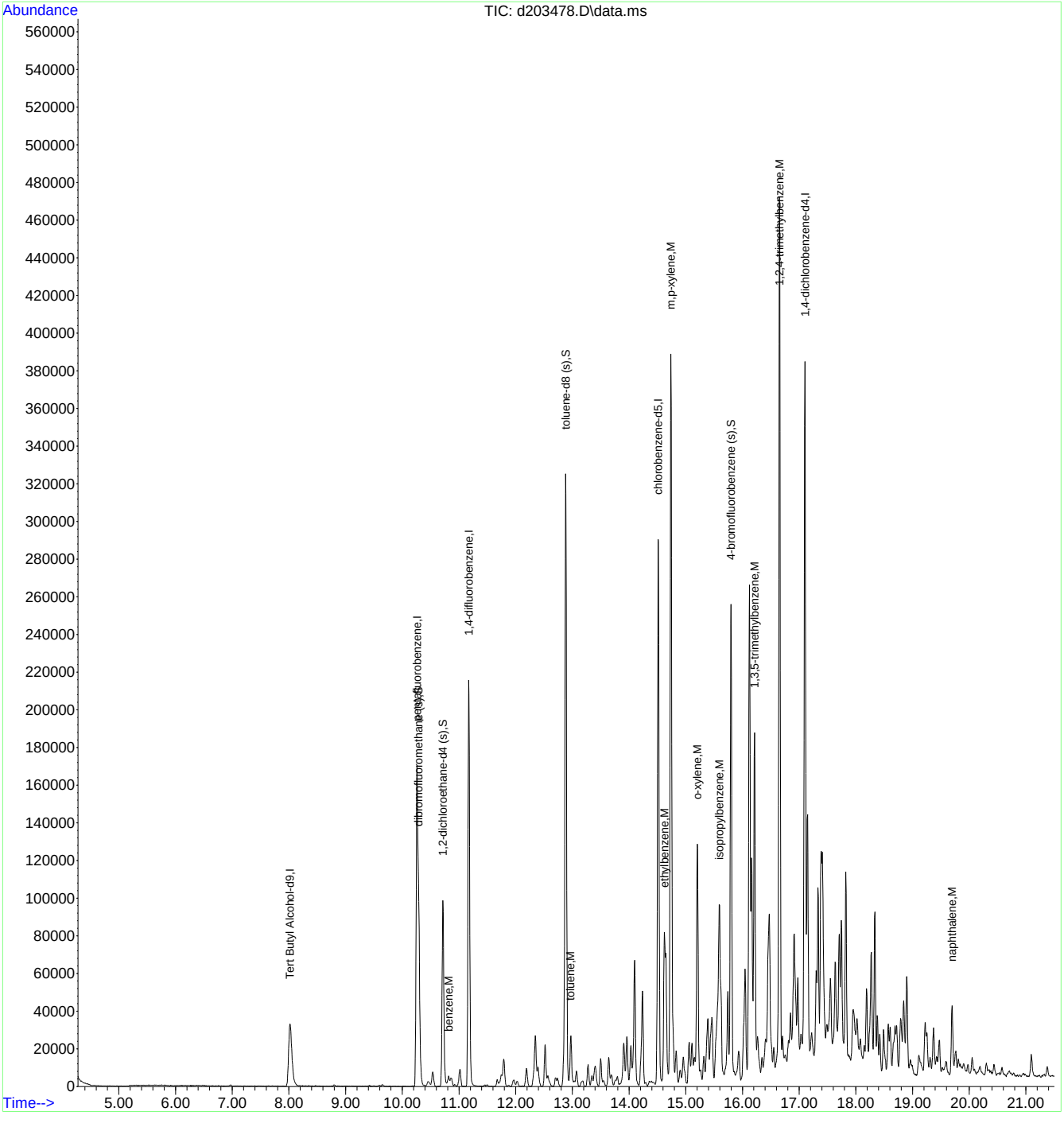
Target Compounds					Qvalue
62) benzene	10.820	78	4292	0.84 ug/L	96
79) toluene	12.959	92	1672	0.51 ug/L	95
94) ethylbenzene	14.622	91	60397	9.86 ug/L	99
95) m,p-xylene	14.737	106	119279	49.84 ug/L	94
96) o-xylene	15.203	106	25653	10.77 ug/L	96
100) isopropylbenzene	15.590	105	34117	5.64 ug/L	95
111) 1,3,5-trimethylbenzene	16.212	105	95536	18.02 ug/L	97
114) 1,2,4-trimethylbenzene	16.652	105	267352	48.69 ug/L	97
128) naphthalene	19.701	128	32910	7.21 ug/L	98

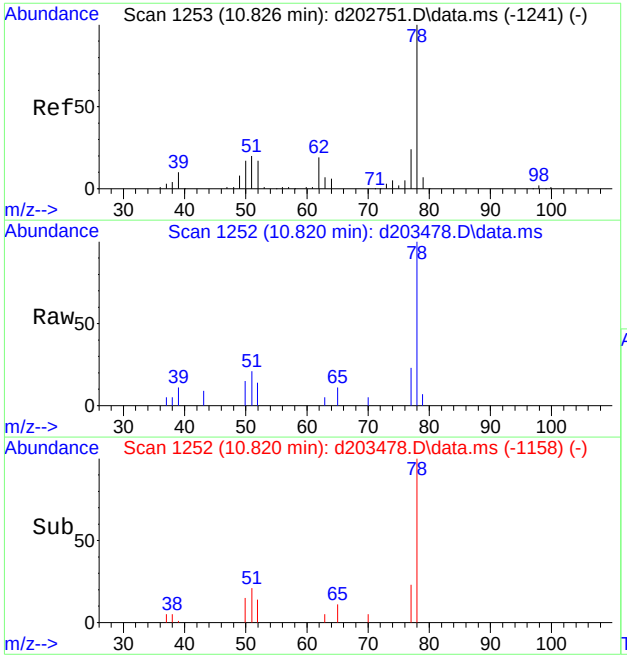
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203478.D
Acq On : 17 Dec 2012 12:15 pm
Operator : EmilyT
Sample : jb22822-13
Misc : ms39773,vd8297,6.6,,1,5,2
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 17 16:38:29 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

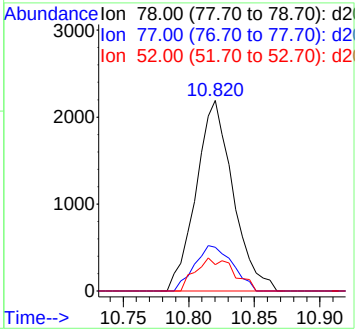


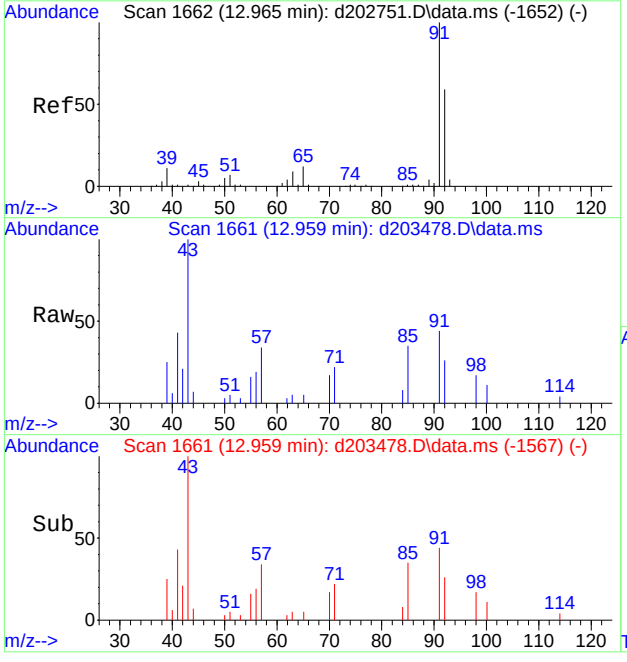


#62
benzene
Concen: 0.84 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion: 78 Resp: 4292

Ion	Ratio	Lower	Upper
78	100		
77	22.9	0.0	53.8
52	13.8	0.0	46.8

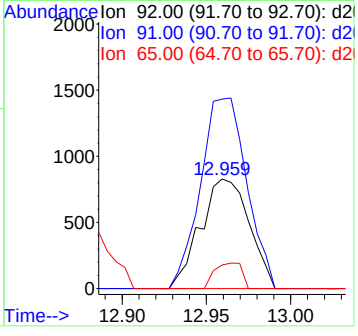


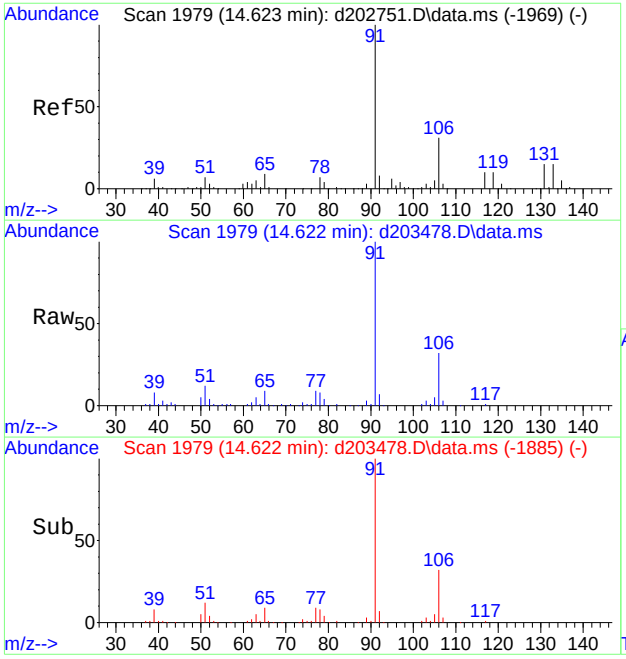


#79
toluene
Concen: 0.51 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion: 92 Resp: 1672

Ion	Ratio	Lower	Upper
92	100		
91	173.1	136.4	196.4
65	21.5	0.0	49.2

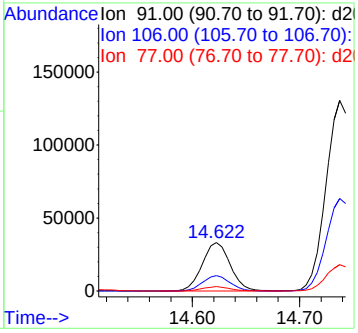


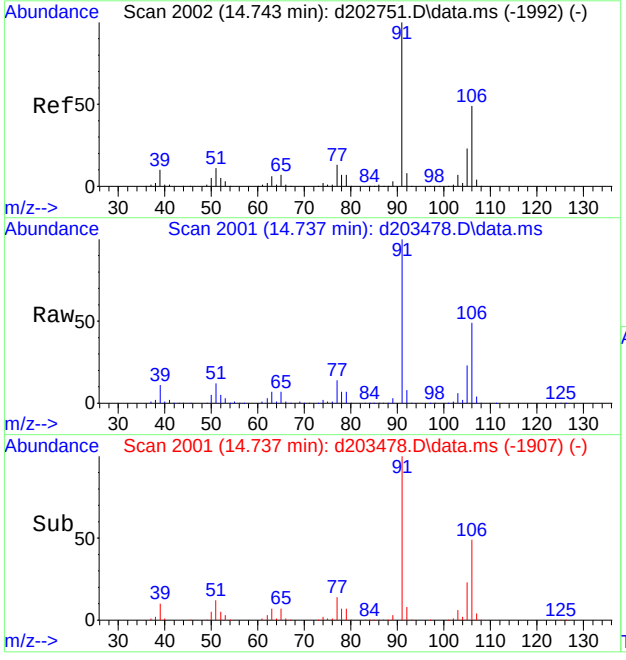


#94
ethylbenzene
Concen: 9.86 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion: 91 Resp: 60397

Ion	Ratio	Lower	Upper
91	100		
106	31.7	2.1	62.1
77	9.3	0.0	38.6

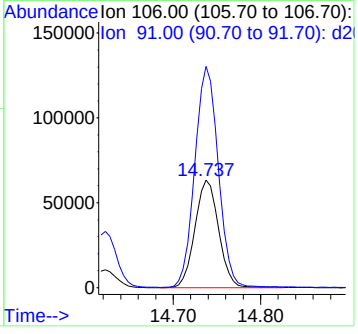


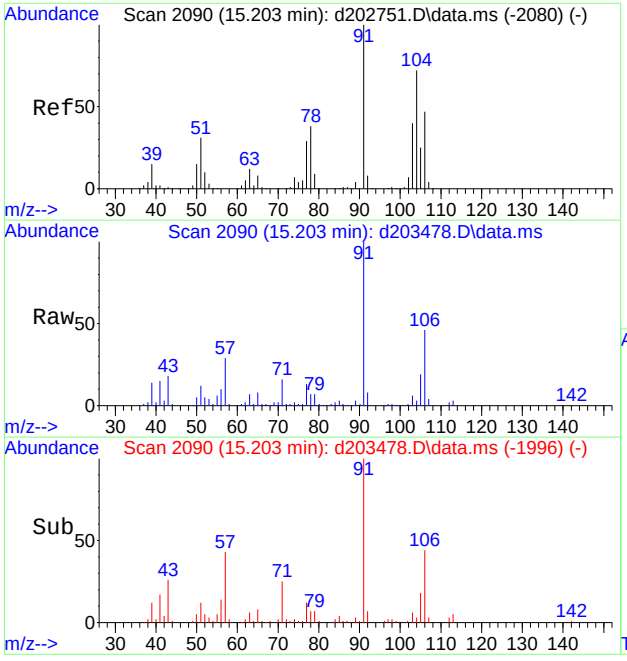


#95
m,p-xylene
Concen: 49.84 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion:106 Resp: 119279

Ion	Ratio	Lower	Upper
106	100		
91	205.4	137.7	255.7

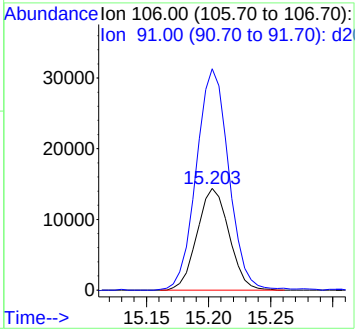


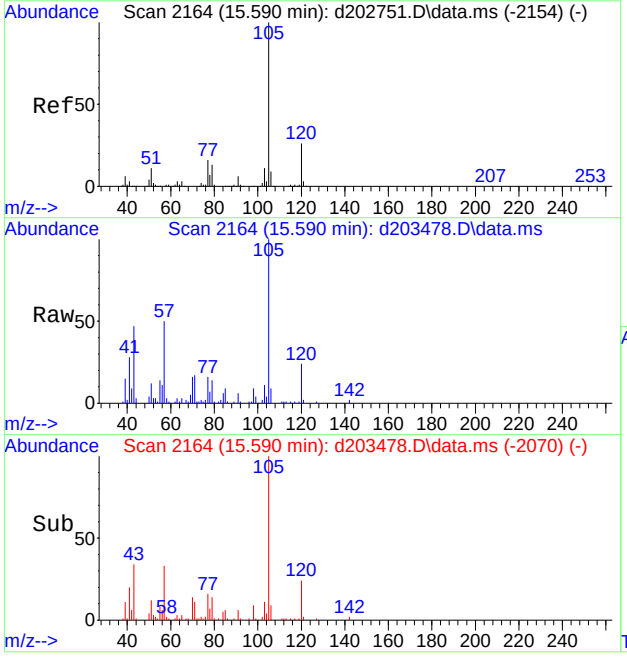


#96
o-xylene
Concen: 10.77 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion:106 Resp: 25653

Ion	Ratio	Lower	Upper
106	100		
91	217.0	147.4	273.8

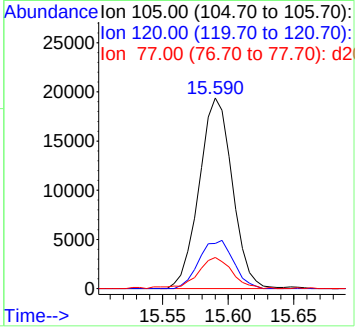


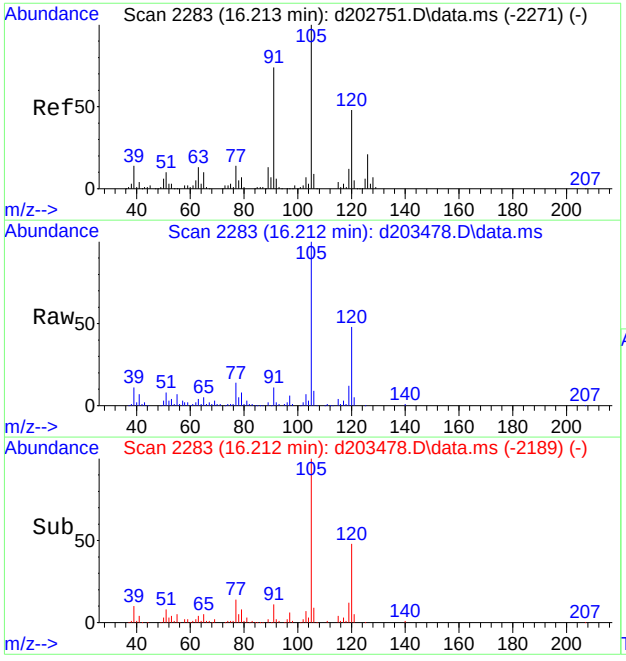


#100
isopropylbenzene
Concen: 5.64 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion:105 Resp: 34117

Ion	Ratio	Lower	Upper
105	100		
120	23.7	0.0	56.7
77	16.4	0.0	44.9

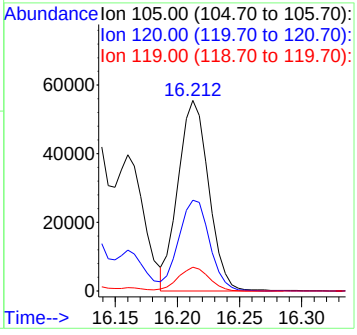


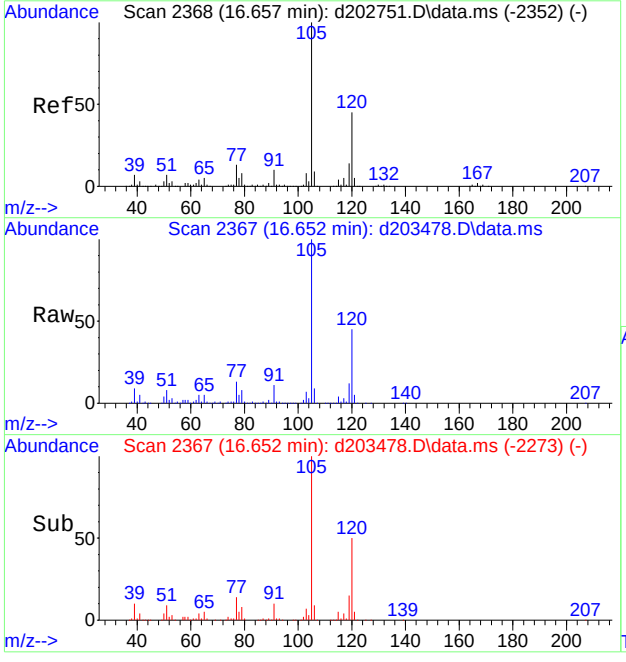


#111
1,3,5-trimethylbenzene
Concen: 18.02 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion:105 Resp: 95536

Ion	Ratio	Lower	Upper
105	100		
120	47.6	19.9	79.9
119	12.5	0.0	42.6

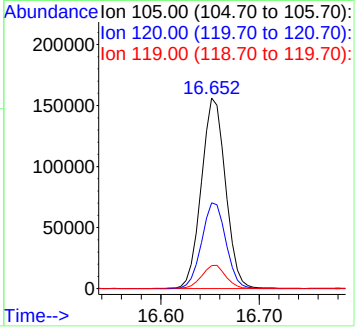


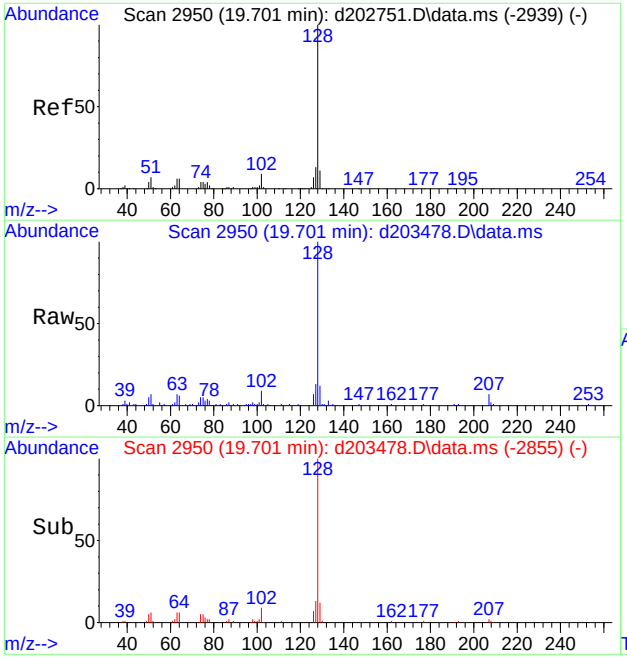


#114
1,2,4-trimethylbenzene
Concen: 48.69 ug/L
RT: 16.652 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion:105 Resp: 267352

Ion	Ratio	Lower	Upper
105	100		
120	45.1	16.5	76.5
119	12.0	0.0	43.8

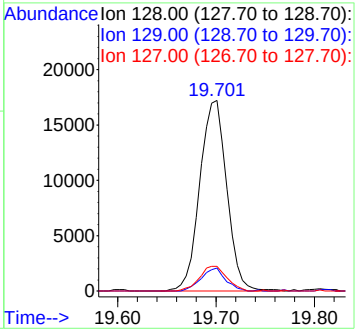




#128
naphthalene
Concen: 7.21 ug/L
RT: 19.701 min Scan# 2950
Delta R.T. -0.002 min
Lab File: d203478.D
Acq: 17 Dec 2012 12:15 pm

Tgt Ion:128 Resp: 32910

Ion	Ratio	Lower	Upper
128	100		
129	12.0	0.0	41.0
127	12.9	0.0	42.7



7.1.16

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203322.D
Acq On : 13 Dec 2012 6:21 am
Operator : EmilyT
Sample : jb22822-14
Misc : ms39773,vd8290,6.1,,100,5,1
ALS Vial : 40 Sample Multiplier: 1

Quant Time: Dec 13 09:57:59 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

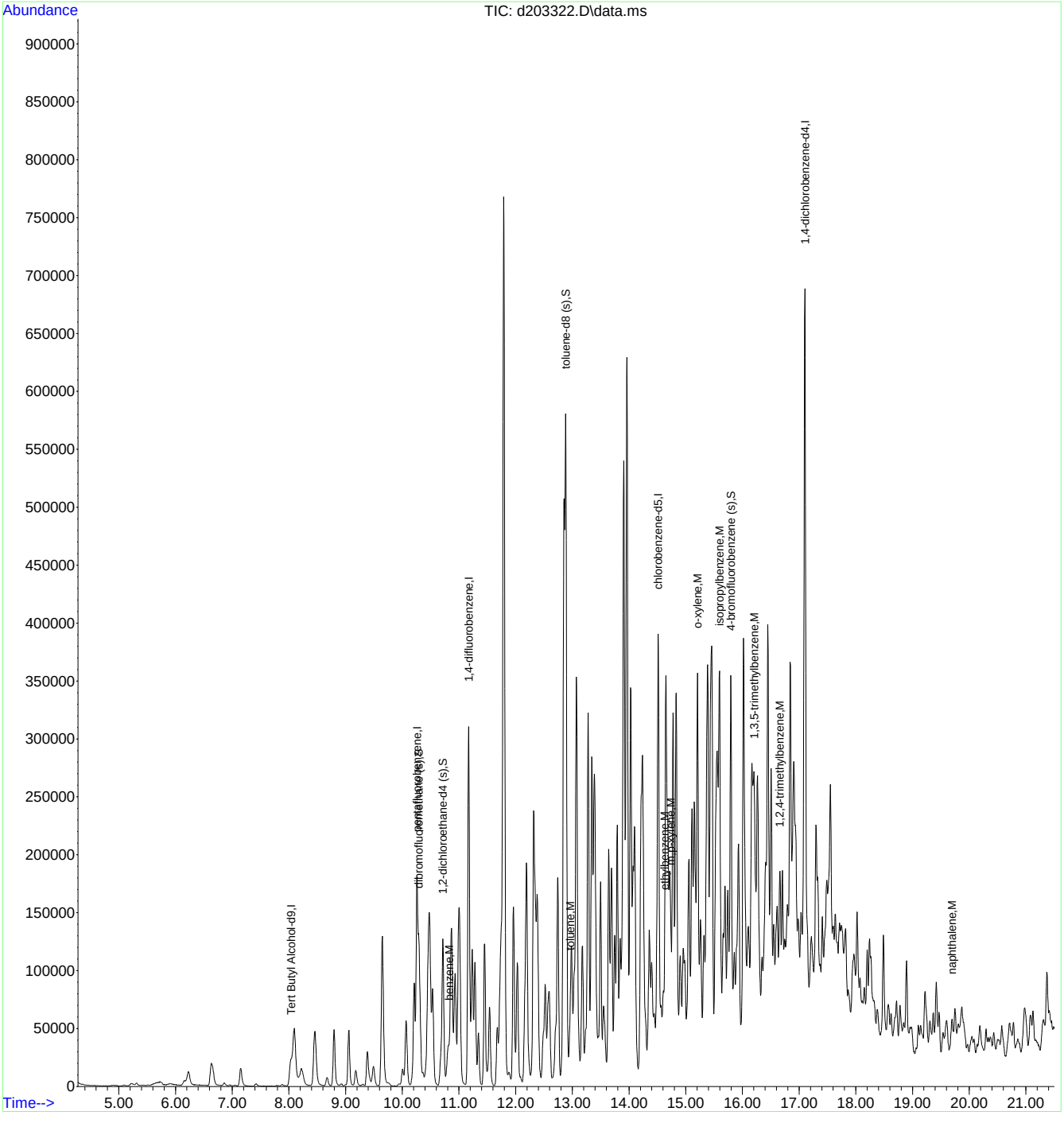
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.033	65	80028	500.00	ug/L	0.00
4) pentafluorobenzene	10.255	168	126906	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	11.171	114	192647	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.513	117	180120	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.102	152	107761	50.00	ug/L	0.00
System Monitoring Compounds						
46) dibromofluoromethane (s)	10.287	113	59396	47.30	ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.60%			
47) 1,2-dichloroethane-d4 (s)	10.716	65	83507	57.81	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 115.62%			
77) toluene-d8 (s)	12.881	98	263111	53.87	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 107.74%			
101) 4-bromofluorobenzene (s)	15.794	95	109695	56.39	ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 112.78%			
Target Compounds						Qvalue
62) benzene	10.820	78	22861	4.15	ug/L	98
79) toluene	12.959	92	13423	3.80	ug/L	93
94) ethylbenzene	14.623	91	11903	1.81	ug/L	97
95) m,p-xylene	14.738	106	19323	7.51	ug/L	99
96) o-xylene	15.203	106	7350	2.87	ug/L	94
100) isopropylbenzene	15.590	105	43546	6.57	ug/L	99
111) 1,3,5-trimethylbenzene	16.213	105	3792	0.65	ug/L	97
114) 1,2,4-trimethylbenzene	16.652	105	13366	2.22	ug/L	97
128) naphthalene	19.696	128	16761	3.35	ug/L	97

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

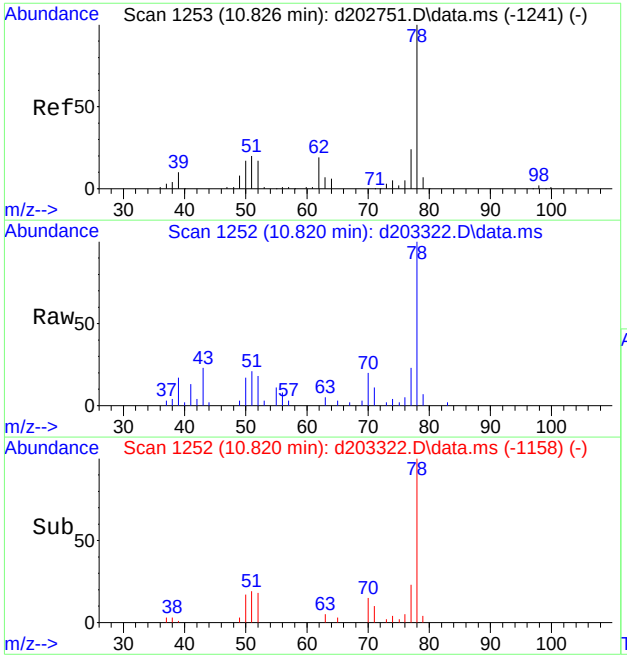
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203322.D
Acq On : 13 Dec 2012 6:21 am
Operator : EmilyT
Sample : jb22822-14
Misc : ms39773,vd8290,6.1,,100,5,1
ALS Vial : 40 Sample Multiplier: 1

Quant Time: Dec 13 09:57:59 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



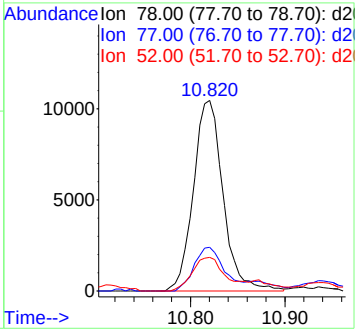
MD8248.M Thu Dec 13 09:58:17 2012 Page: 2

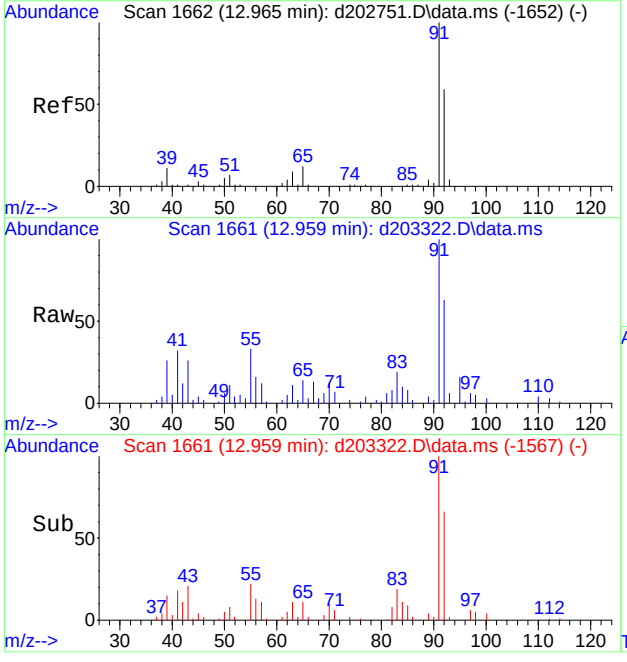


#62
benzene
Concen: 4.15 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion: 78 Resp: 22861

Ion	Ratio	Lower	Upper
78	100		
77	23.0	0.0	53.8
52	17.7	0.0	46.8

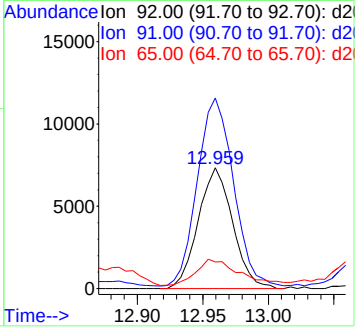


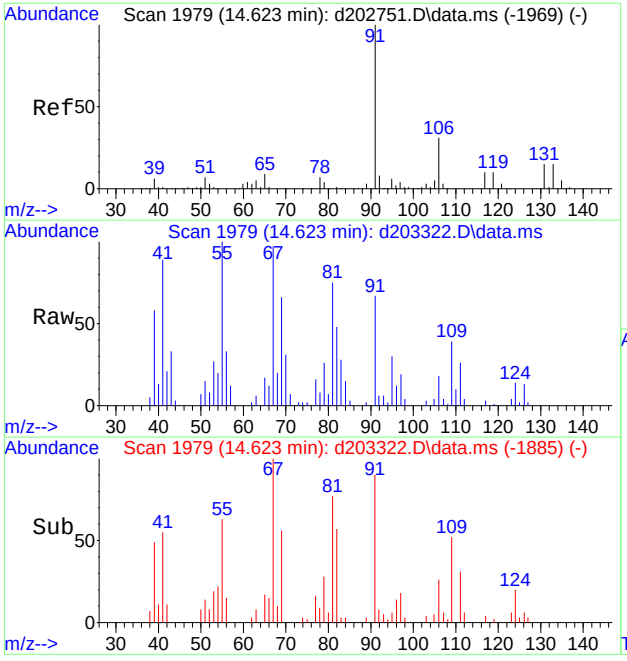


#79
toluene
Concen: 3.80 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion: 92 Resp: 13423

Ion	Ratio	Lower	Upper
92	100		
91	155.5	136.4	196.4
65	19.5	0.0	49.2

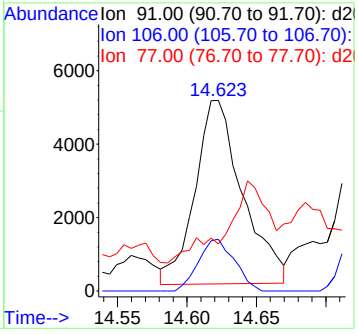


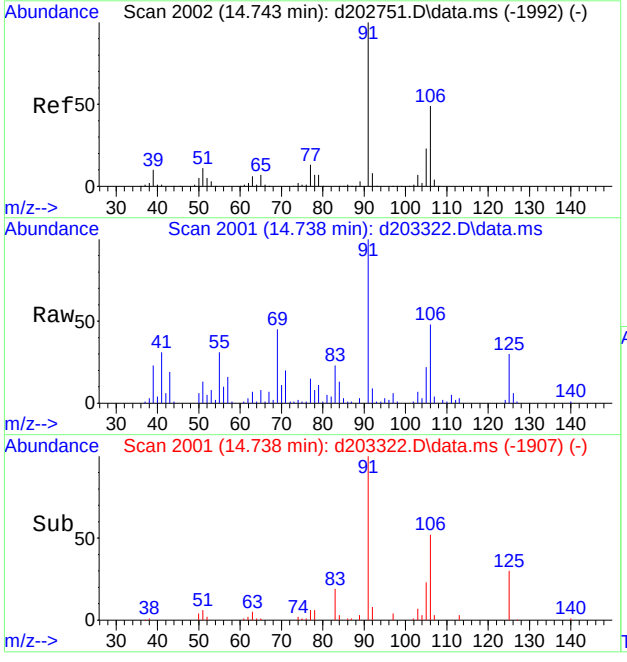


#94
ethylbenzene
Concen: 1.81 ug/L
RT: 14.623 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion: 91 Resp: 11903

Ion	Ratio	Lower	Upper
91	100		
106	30.8	2.1	62.1
77	10.9	0.0	38.6

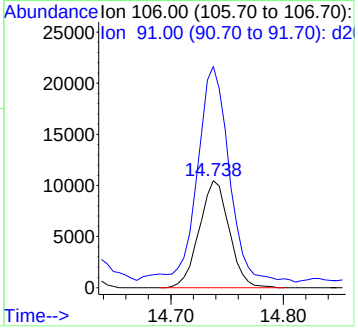


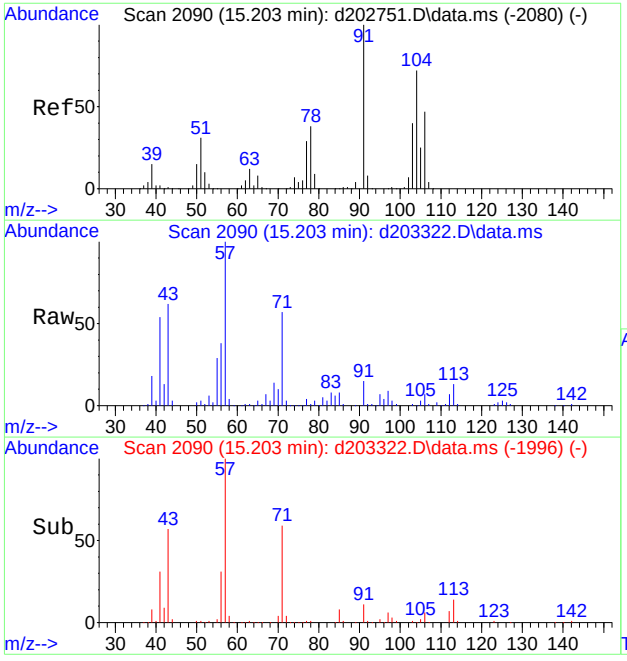


#95
m,p-xylene
Concen: 7.51 ug/L
RT: 14.738 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion:106 Resp: 19323

Ion	Ratio	Lower	Upper
106	100		
91	198.6	137.7	255.7

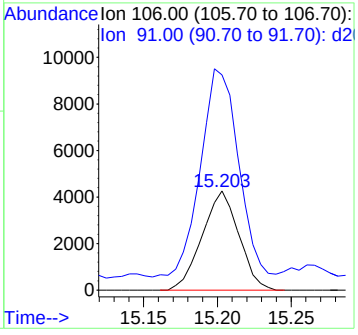


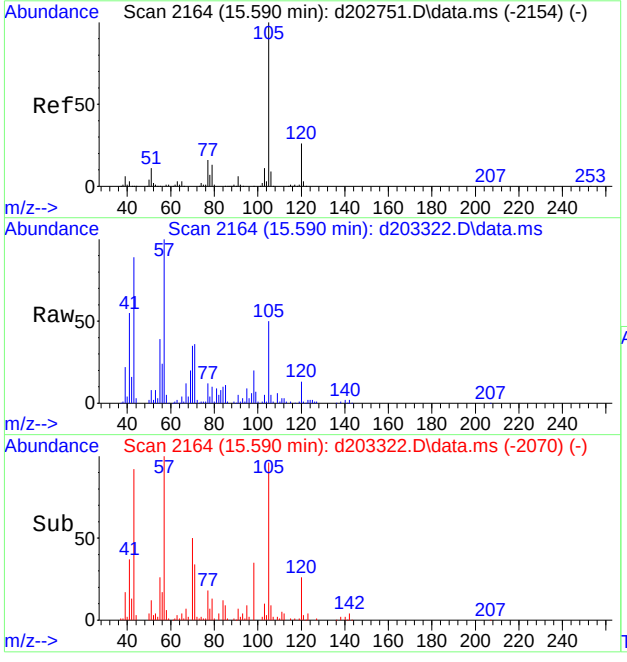


#96
o-xylene
Concen: 2.87 ug/L
RT: 15.203 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion:106 Resp: 7350

Ion	Ratio	Lower	Upper
106	100		
91	201.7	147.4	273.8

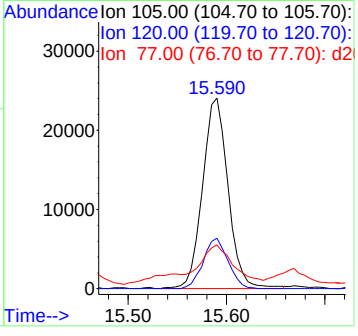


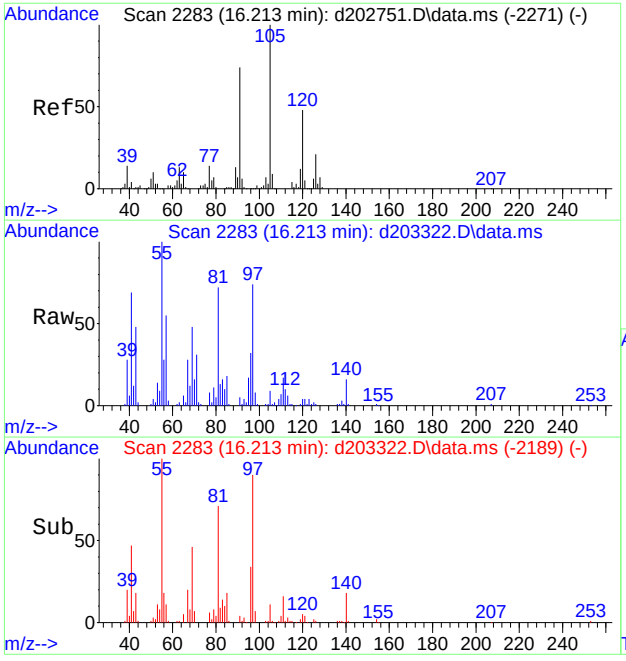


#100
isopropylbenzene
Concen: 6.57 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion:105 Resp: 43546

Ion	Ratio	Lower	Upper
105	100		
120	26.5	0.0	56.7
77	16.0	0.0	44.9

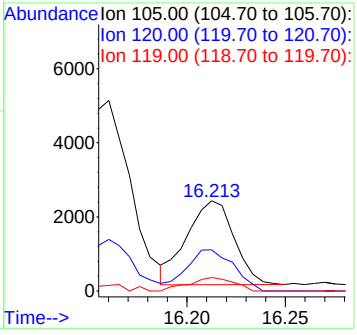


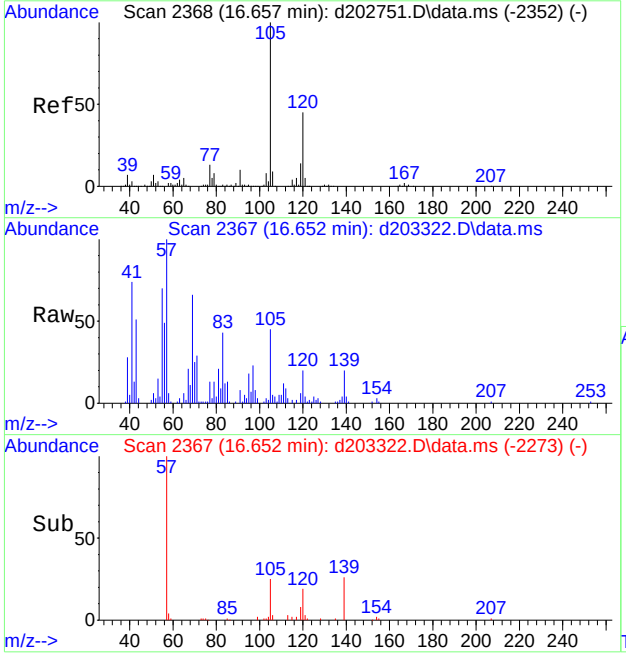


#111
1,3,5-trimethylbenzene
Concen: 0.65 ug/L
RT: 16.213 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion:105 Resp: 3792

Ion	Ratio	Lower	Upper
105	100		
120	49.0	19.9	79.9
119	16.0	0.0	42.6

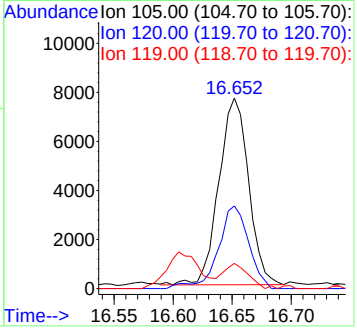




#114
1,2,4-trimethylbenzene
Concen: 2.22 ug/L
RT: 16.652 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion:105 Resp: 13366

Ion	Ratio	Lower	Upper
105	100		
120	44.3	16.5	76.5
119	12.2	0.0	43.8



7.1.17

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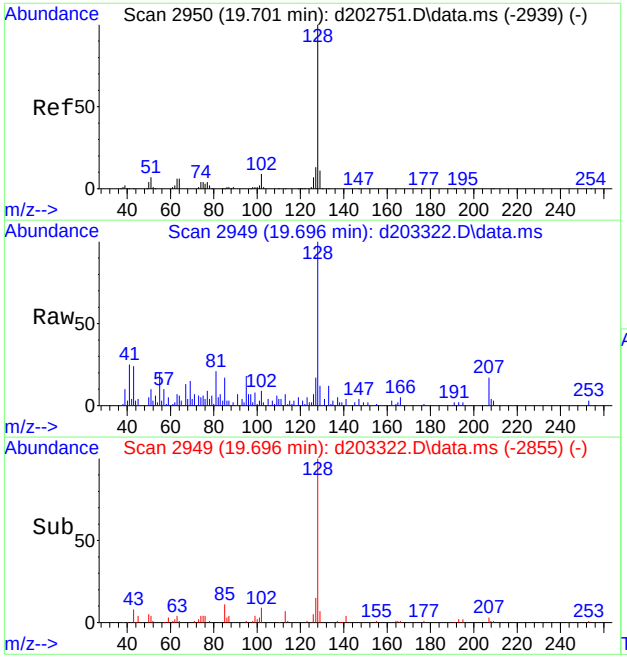
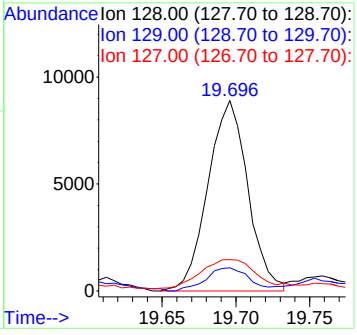


#128
naphthalene
Concen: 3.35 ug/L
RT: 19.696 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203322.D
Acq: 13 Dec 2012 6:21 am

Tgt Ion:128 Resp: 16761

Ion	Ratio	Lower	Upper
128	100		
129	11.0	0.0	41.0
127	15.0	0.0	42.7



7.1.17

7

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/12 03:12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5660\
Data File : V131350.D
Acq On : 13 Dec 2012 5:26 pm
Operator : THIENN
Sample : jb22822-15
Misc : MS39773,VV5660,6.0,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 14 11:58:52 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.631	65	38665	500.00	ug/L	0.00
4) pentafluorobenzene	9.849	168	182090	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.800	114	261648	50.00	ug/L	0.00
94) chlorobenzene-d5	14.205	117	232147	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	131893	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.932	113	58960	53.04	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 106.08%			
59) 1,2-dichloroethane-d4 (s)	10.366	65	53554	49.33	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 98.66%			
86) toluene-d8 (s)	12.526	98	238041	54.34	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 108.68%			
110) 4-bromofluorobenzene (s)	15.508	95	89274	49.36	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 98.72%			
Target Compounds						Qvalue
104) m,p-xylene	14.420	106	1229m	0.47	ug/L	
124) 1,2,4-trimethylbenzene	16.329	105	3553	0.58	ug/L	92

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

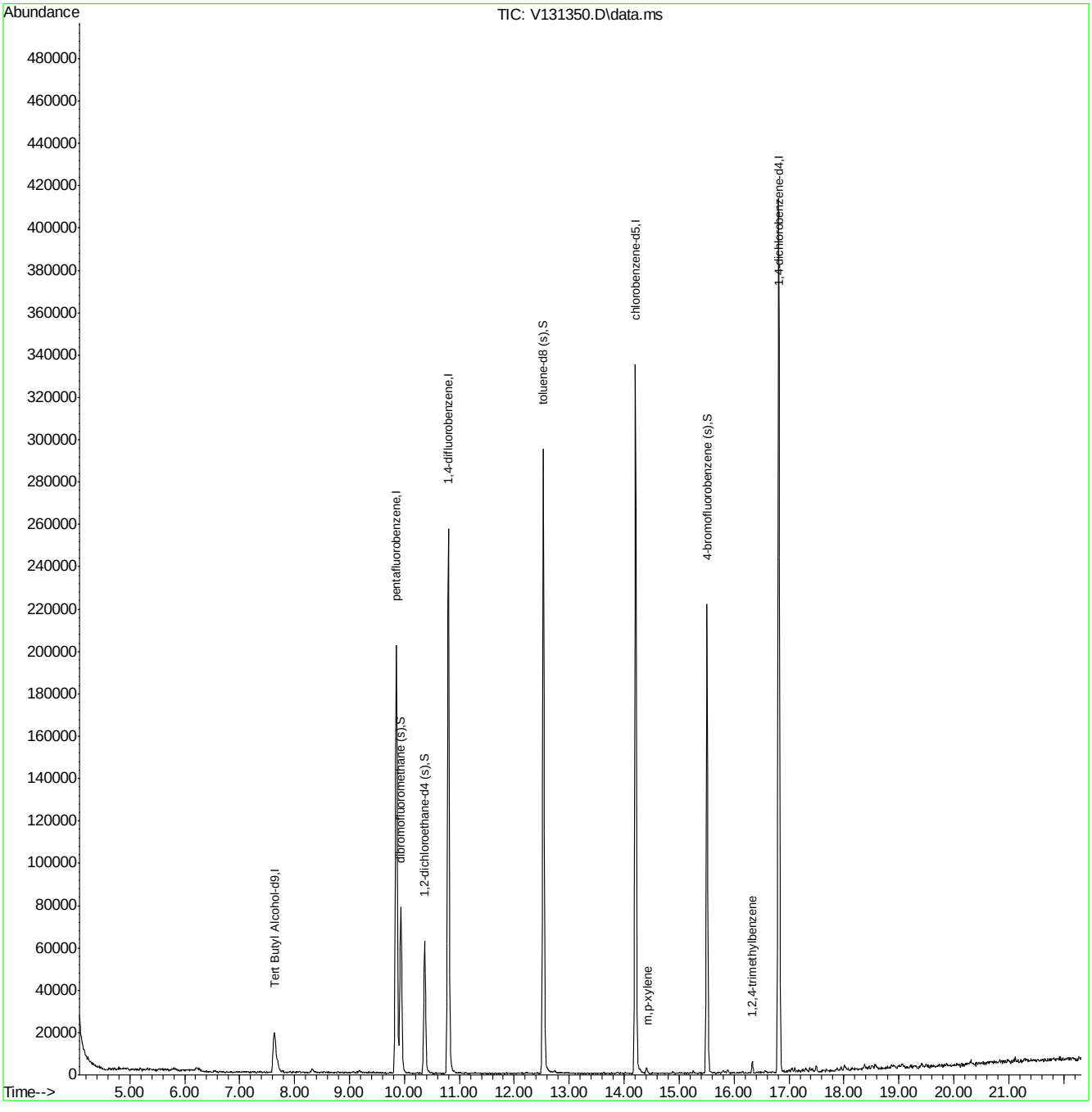
7.1.18

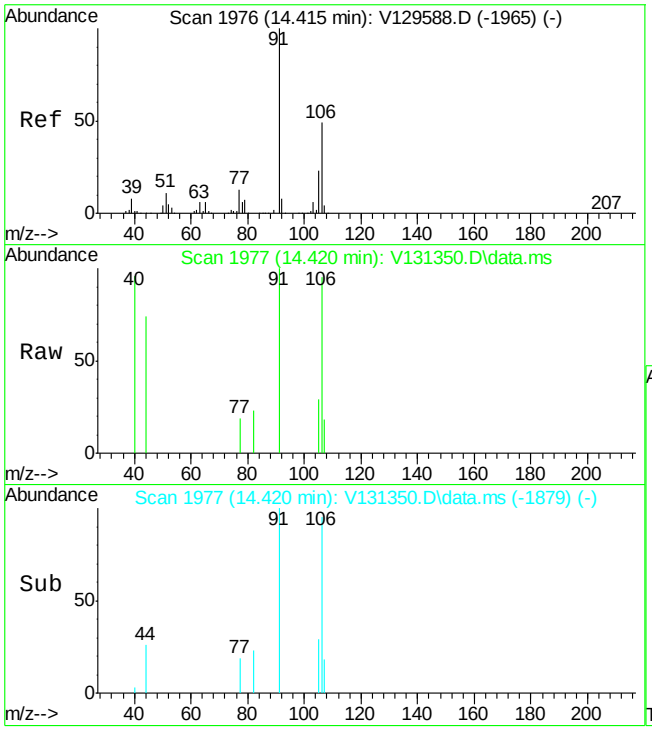
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5660\
Data File : V131350.D
Acq On : 13 Dec 2012 5:26 pm
Operator : THIENN
Sample : jb22822-15
Misc : MS39773,VV5660,6.0,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 14 11:58:52 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

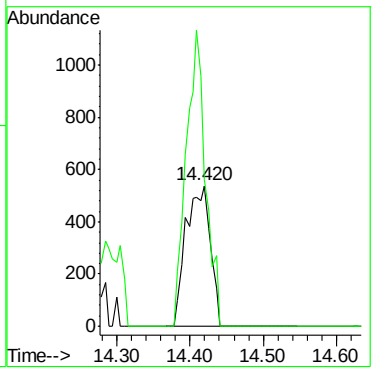


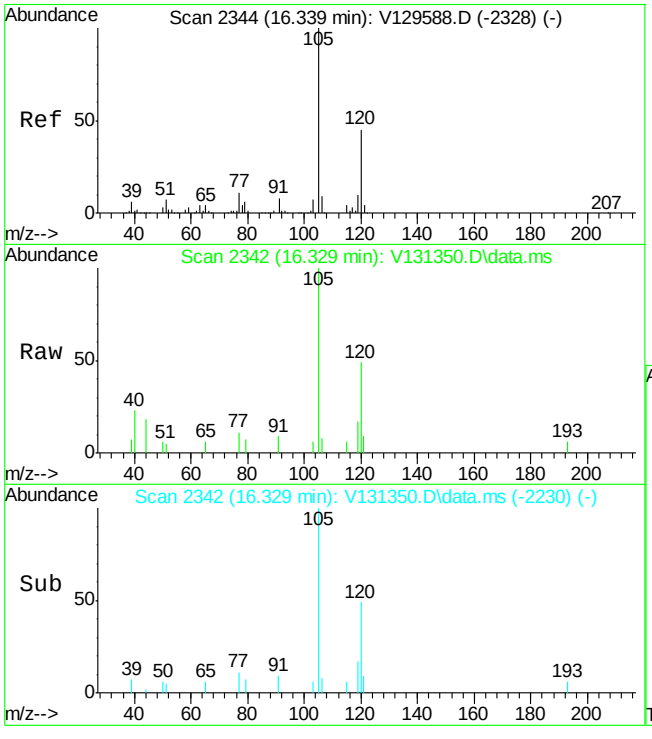


#104
m,p-xylene
Concen: 0.47 ug/L m
RT: 14.420 min Scan# 1977
Delta R.T. 0.010 min
Lab File: V131350.D
Acq: 13 Dec 2012 5:26 pm

Tgt Ion:106 Resp: 1229

Ion	Ratio	Lower	Upper
106	100		
91	104.8	140.7	261.3#

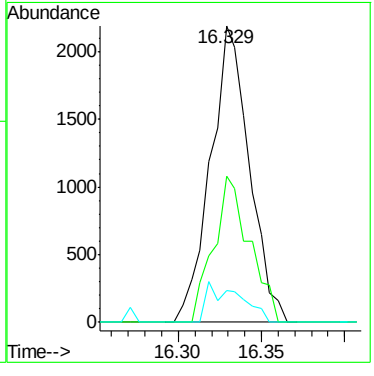




#124
1,2,4-trimethylbenzene
Concen: 0.58 ug/L
RT: 16.329 min Scan# 2342
Delta R.T. -0.005 min
Lab File: V131350.D
Acq: 13 Dec 2012 5:26 pm

Tgt Ion:105 Resp: 3553

Ion	Ratio	Lower	Upper
105	100		
120	49.4	13.9	73.9
77	10.6	0.0	42.2



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203368.D
Acq On : 14 Dec 2012 5:30 am
Operator : EmilyT
Sample : JB22822-16
Misc : ms39773,vd8292,5.9,,100,5,1
ALS Vial : 42 Sample Multiplier: 1

Quant Time: Dec 14 08:15:39 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.029	65	71475	500.00	ug/L	-0.01
4) pentafluorobenzene	10.257	168	107823	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	11.172	114	164914	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.514	117	156961	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.098	152	91924	50.00	ug/L	-0.01
System Monitoring Compounds						
46) dibromofluoromethane (s)	10.288	113	50419	47.25	ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.50%			
47) 1,2-dichloroethane-d4 (s)	10.712	65	73424	59.82	ug/L	-0.01
Spiked Amount 50.000	Range 70 - 122		Recovery = 119.64%			
77) toluene-d8 (s)	12.883	98	209810	50.18	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 100.36%			
101) 4-bromofluorobenzene (s)	15.796	95	86965	52.41	ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 104.82%			

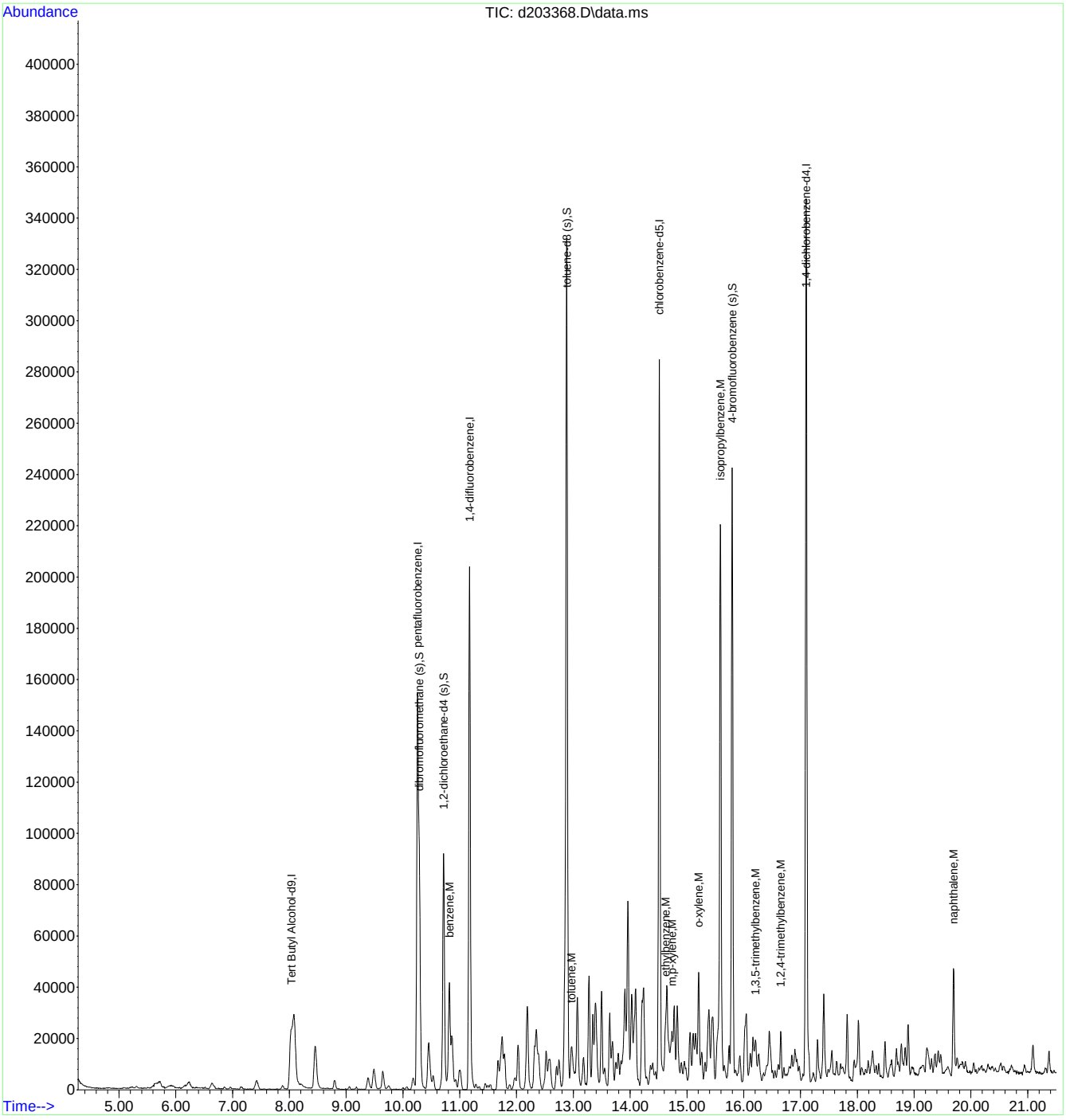
Target Compounds						Qvalue
62) benzene	10.817	78	36759	7.80	ug/L	98
79) toluene	12.961	92	4923	1.63	ug/L	91
94) ethylbenzene	14.619	91	14413	2.51	ug/L	96
95) m,p-xylene	14.739	106	4746	2.12	ug/L	100
96) o-xylene	15.200	106	1491	0.67	ug/L	91
100) isopropylbenzene	15.587	105	143599	25.40	ug/L	97
111) 1,3,5-trimethylbenzene	16.209	105	4497	0.91	ug/L	92
114) 1,2,4-trimethylbenzene	16.653	105	10150	1.98	ug/L	93
128) naphthalene	19.692	128	35839	8.40	ug/L	98

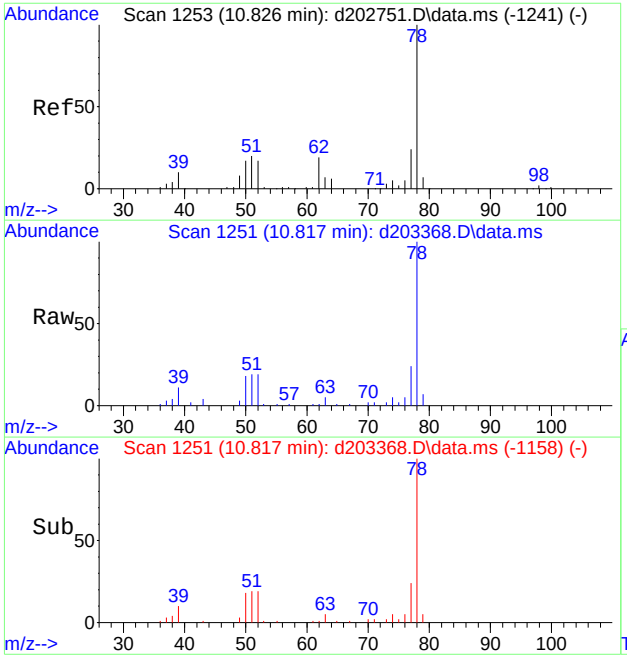
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203368.D
Acq On : 14 Dec 2012 5:30 am
Operator : EmilyT
Sample : JB22822-16
Misc : ms39773,vd8292,5.9,,100,5,1
ALS Vial : 42 Sample Multiplier: 1

Quant Time: Dec 14 08:15:39 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

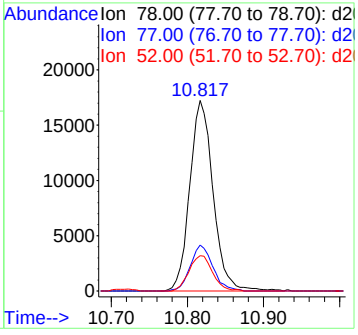


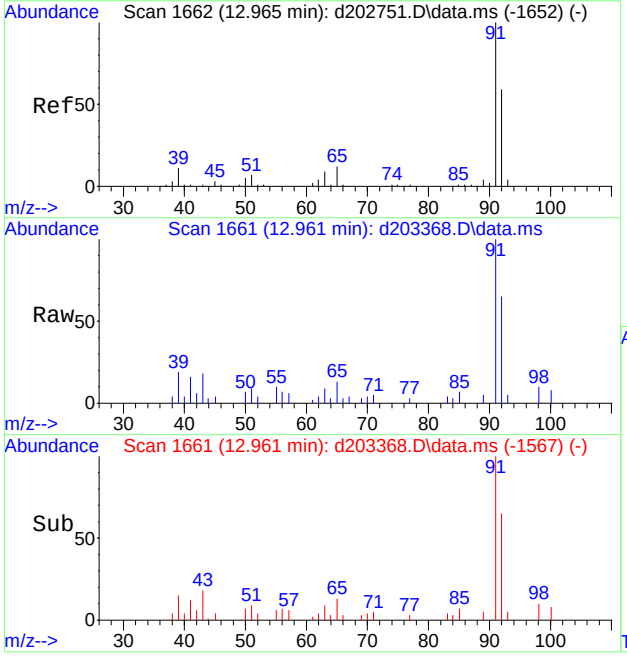


#62
benzene
Concen: 7.80 ug/L
RT: 10.817 min Scan# 1251
Delta R.T. -0.011 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion: 78 Resp: 36759

Ion	Ratio	Lower	Upper
78	100		
77	24.1	0.0	53.8
52	18.5	0.0	46.8

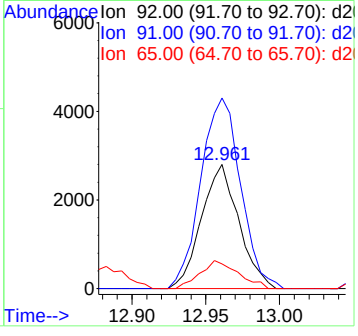


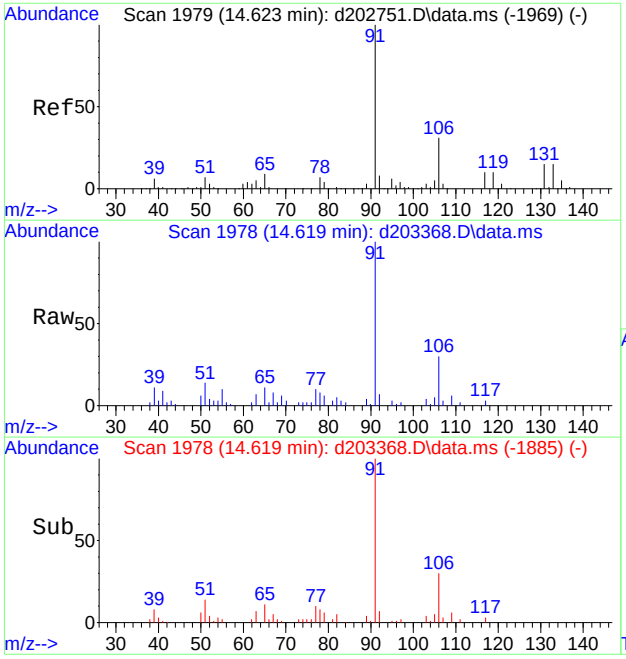


#79
toluene
Concen: 1.63 ug/L
RT: 12.961 min Scan# 1661
Delta R.T. -0.006 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion: 92 Resp: 4923

Ion	Ratio	Lower	Upper
92	100		
91	153.4	136.4	196.4
65	19.8	0.0	49.2

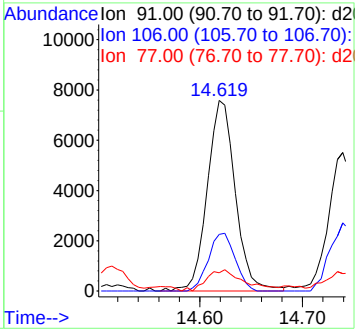


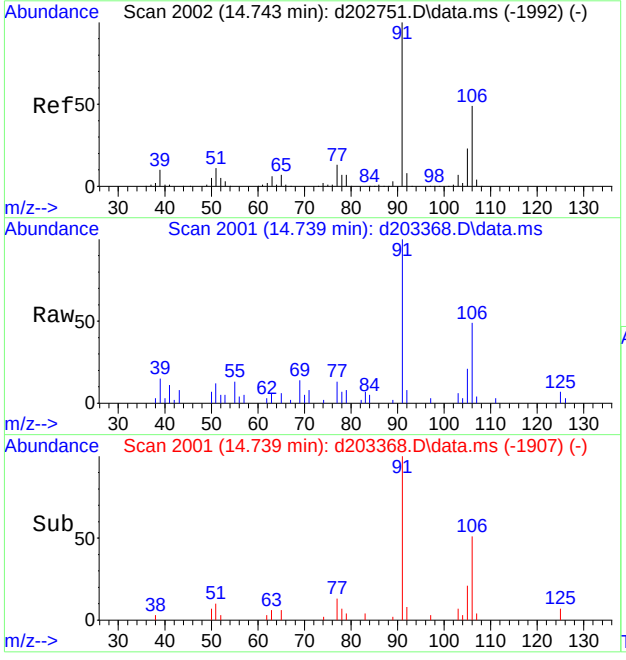


#94
ethylbenzene
Concen: 2.51 ug/L
RT: 14.619 min Scan# 1978
Delta R.T. -0.011 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion: 91 Resp: 14413

Ion	Ratio	Lower	Upper
91	100		
106	29.7	2.1	62.1
77	7.2	0.0	38.6

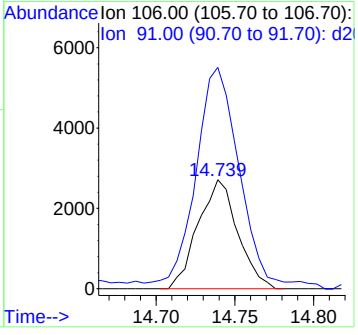




#95
m,p-xylene
Concen: 2.12 ug/L
RT: 14.739 min Scan# 2001
Delta R.T. -0.006 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

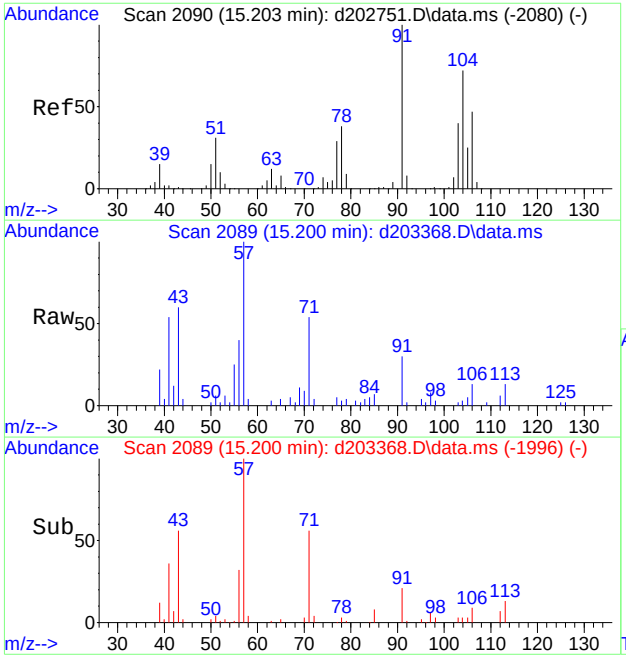
Tgt Ion:106 Resp: 4746

Ion	Ratio	Lower	Upper
106	100		
91	196.9	137.7	255.7



7.1.19

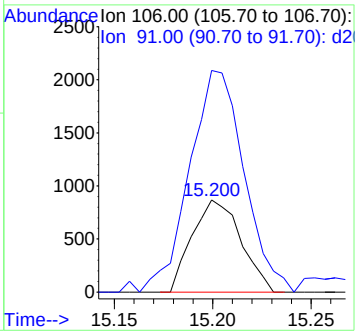
7

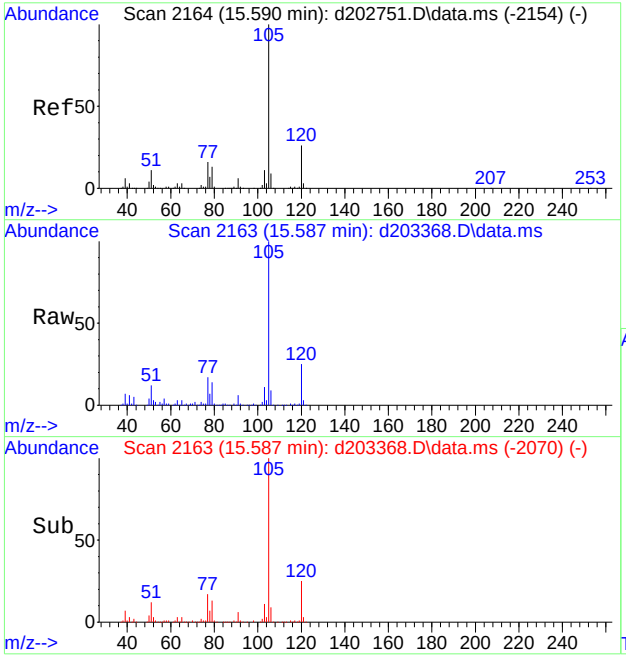


#96
o-xylene
Concen: 0.67 ug/L
RT: 15.200 min Scan# 2089
Delta R.T. -0.011 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion:106 Resp: 1491

Ion	Ratio	Lower	Upper
106	100		
91	225.4	147.4	273.8

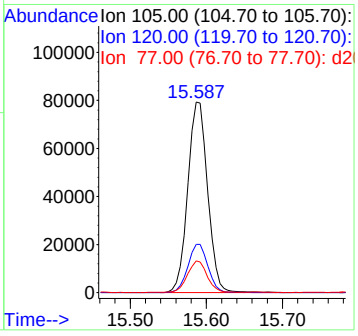


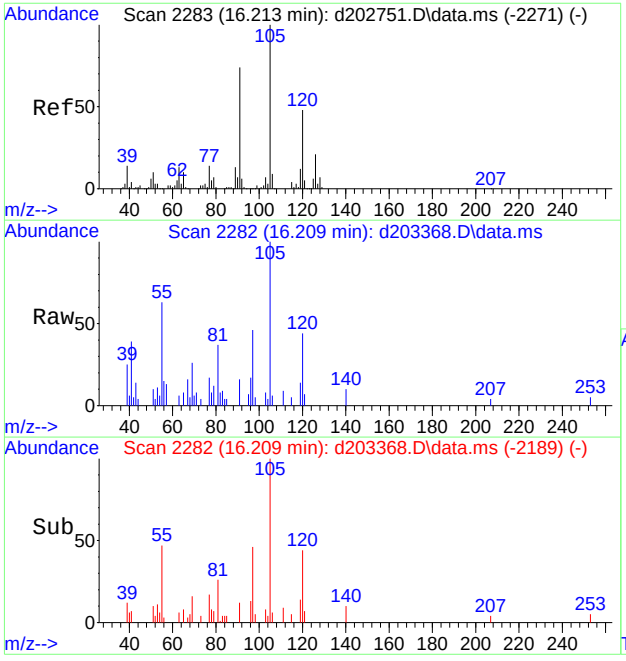


#100
isopropylbenzene
Concen: 25.40 ug/L
RT: 15.587 min Scan# 2163
Delta R.T. -0.011 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion:105 Resp: 143599

Ion	Ratio	Lower	Upper
105	100		
120	25.4	0.0	56.7
77	16.7	0.0	44.9

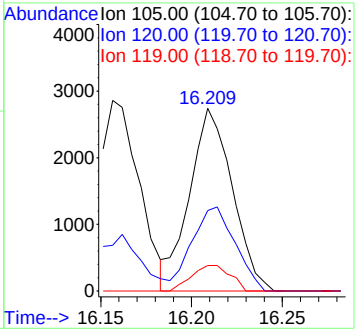


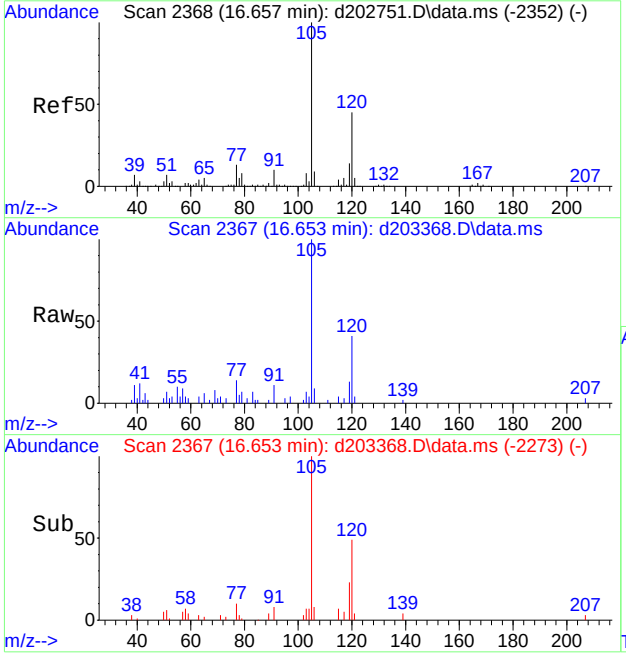


#111
1,3,5-trimethylbenzene
Concen: 0.91 ug/L
RT: 16.209 min Scan# 2282
Delta R.T. -0.011 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion:105 Resp: 4497

Ion	Ratio	Lower	Upper
105	100		
120	44.0	19.9	79.9
119	14.0	0.0	42.6

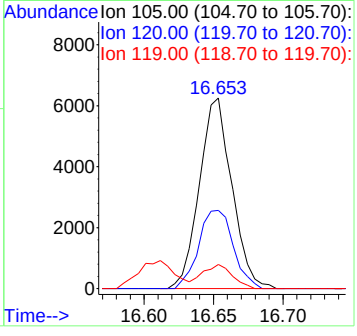


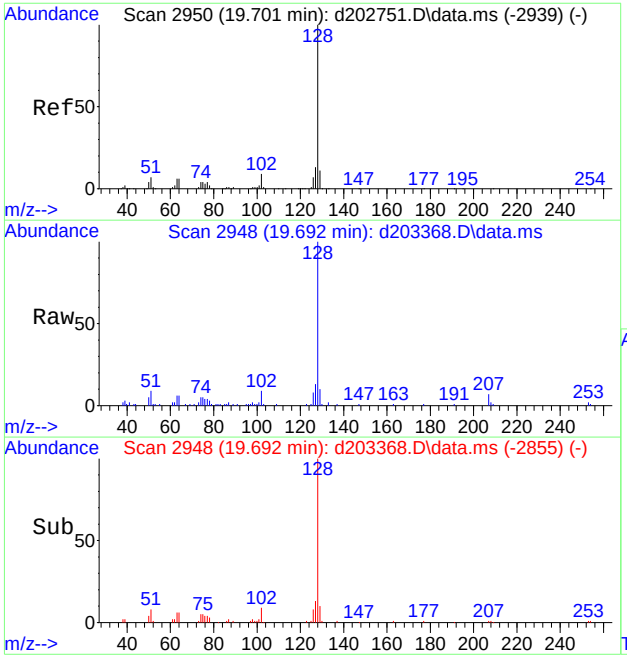


#114
1,2,4-trimethylbenzene
Concen: 1.98 ug/L
RT: 16.653 min Scan# 2367
Delta R.T. -0.006 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion:105 Resp: 10150

Ion	Ratio	Lower	Upper
105	100		
120	41.1	16.5	76.5
119	12.6	0.0	43.8

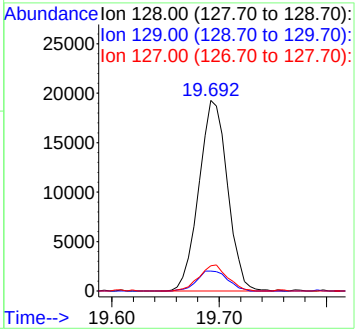




#128
naphthalene
Concen: 8.40 ug/L
RT: 19.692 min Scan# 2948
Delta R.T. -0.011 min
Lab File: d203368.D
Acq: 14 Dec 2012 5:30 am

Tgt Ion:128 Resp: 35839

Ion	Ratio	Lower	Upper
128	100		
129	10.4	0.0	41.0
127	13.3	0.0	42.7



7.1.19

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203325.D
Acq On : 13 Dec 2012 7:49 am
Operator : EmilyT
Sample : jb22822-17
Misc : ms39773,vd8290,6.5,,100,5,1
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Dec 13 10:01:51 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.032	65	78285	500.00 ug/L	0.00
4) pentafluorobenzene	10.260	168	125171	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.170	114	192324	50.00 ug/L	-0.01
85) chlorobenzene-d5	14.512	117	179629	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	109765	50.00 ug/L	0.00

System Monitoring Compounds					
46) dibromofluoromethane (s)	10.291	113	58294	47.06 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 94.12%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	84081	59.01 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 118.02%		
77) toluene-d8 (s)	12.880	98	269498	55.27 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 110.54%		
101) 4-bromofluorobenzene (s)	15.794	95	109964	55.50 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 111.00%		

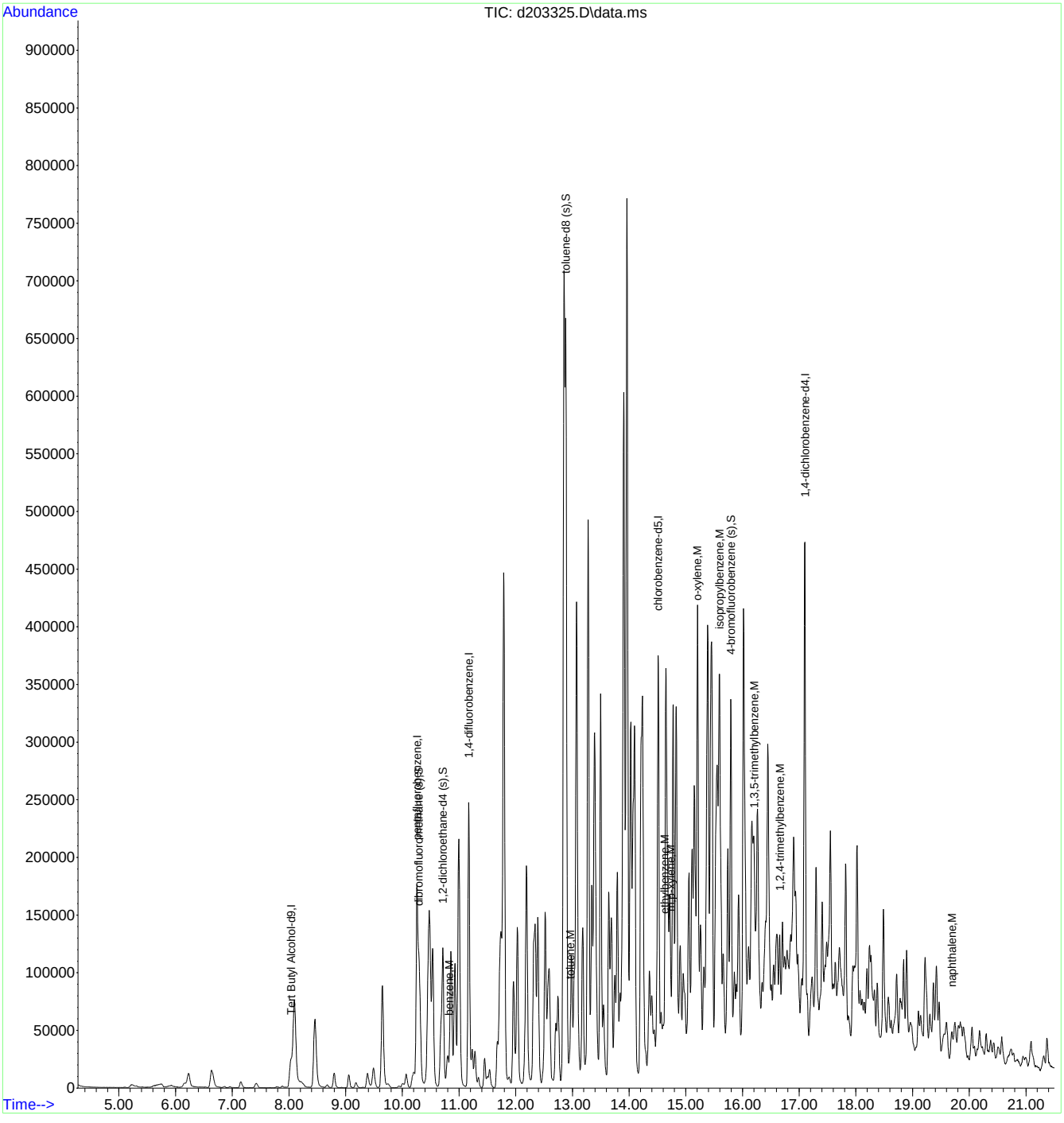
Target Compounds					Qvalue
62) benzene	10.820	78	6714	1.22 ug/L	96
79) toluene	12.959	92	6368	1.80 ug/L	92
94) ethylbenzene	14.622	91	8423	1.28 ug/L	98
95) m,p-xylene	14.737	106	9271	3.61 ug/L	92
96) o-xylene	15.197	106	2010	0.79 ug/L	79
100) isopropylbenzene	15.590	105	63579	9.42 ug/L	97
111) 1,3,5-trimethylbenzene	16.212	105	4986	0.84 ug/L	94
114) 1,2,4-trimethylbenzene	16.651	105	14897	2.43 ug/L	96
128) naphthalene	19.695	128	14763	2.90 ug/L	96

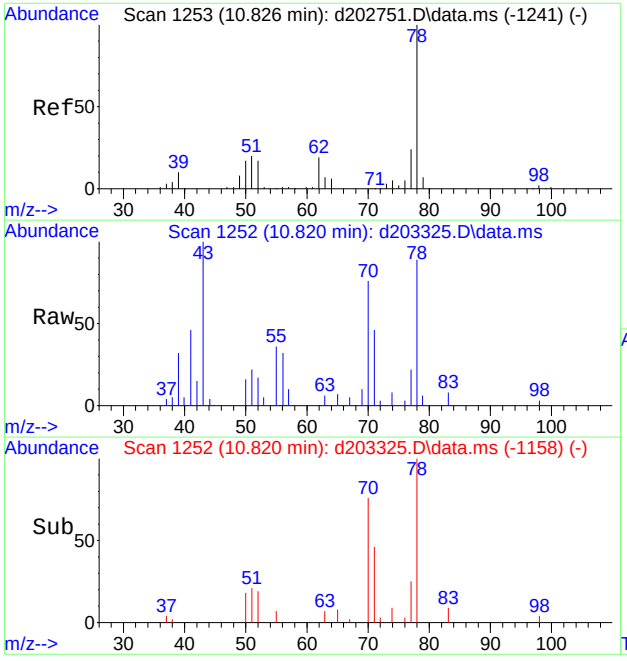
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203325.D
Acq On : 13 Dec 2012 7:49 am
Operator : EmilyT
Sample : jb22822-17
Misc : ms39773,vd8290,6.5,,100,5,1
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Dec 13 10:01:51 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

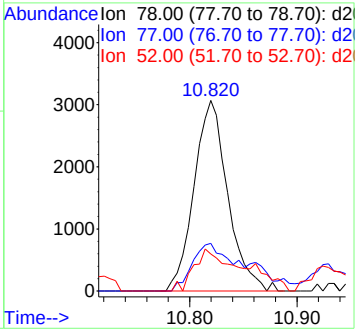


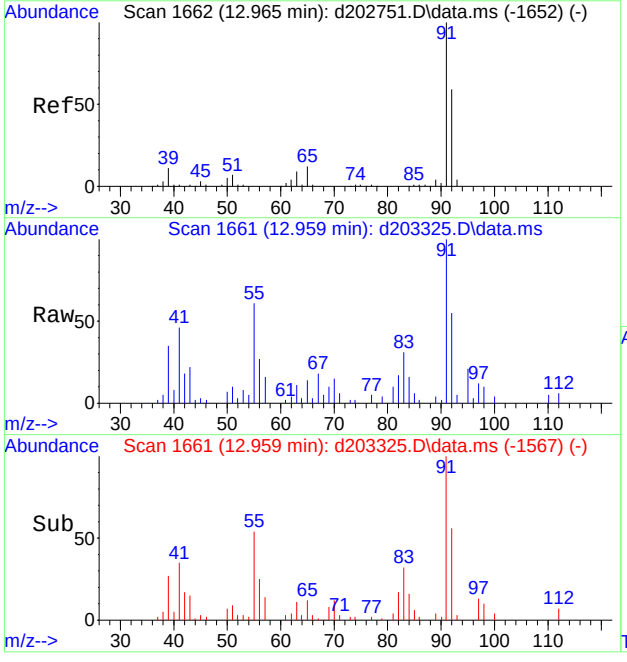


#62
benzene
Concen: 1.22 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion: 78 Resp: 6714

Ion	Ratio	Lower	Upper
78	100		
77	25.0	0.0	53.8
52	19.4	0.0	46.8

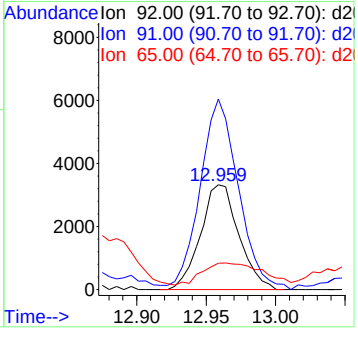




#79
toluene
Concen: 1.80 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

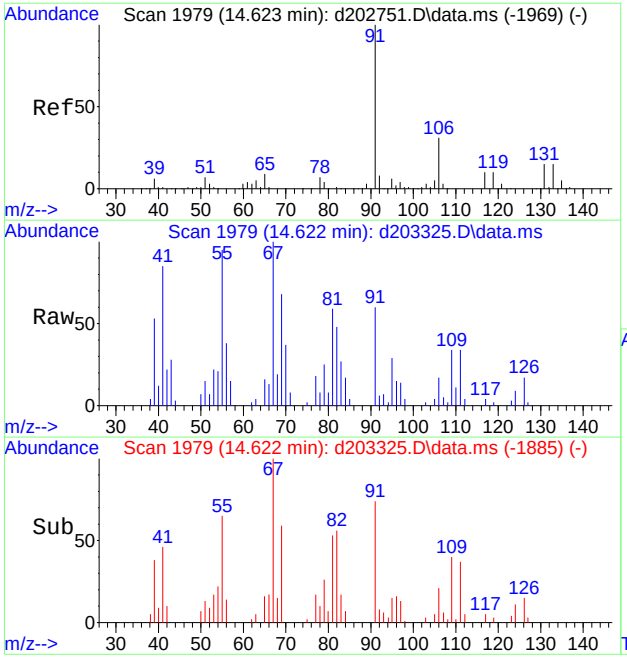
Tgt Ion: 92 Resp: 6368

Ion	Ratio	Lower	Upper
92	100		
91	177.6	136.4	196.4
65	17.9	0.0	49.2



7.1.20

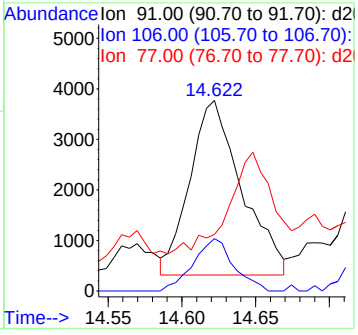
7

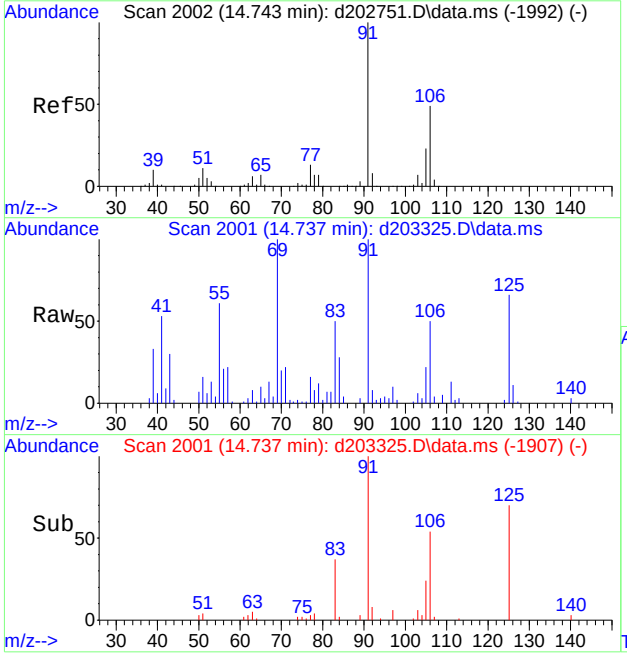


#94
ethylbenzene
Concen: 1.28 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion: 91 Resp: 8423

Ion	Ratio	Lower	Upper
91	100		
106	33.0	2.1	62.1
77	10.3	0.0	38.6

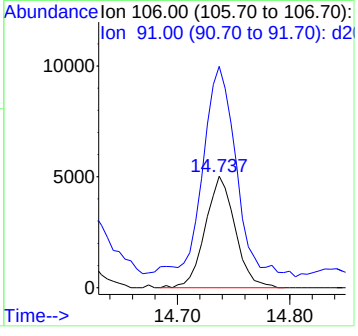


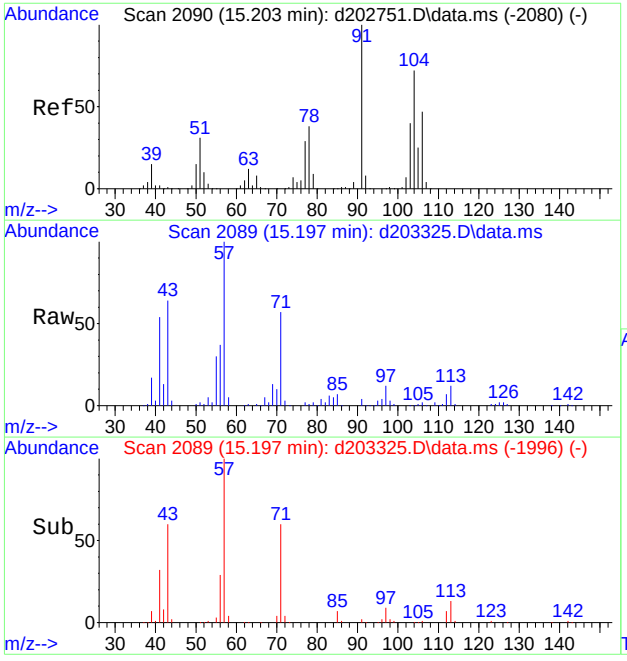


#95
m,p-xylene
Concen: 3.61 ug/L
RT: 14.737 min Scan# 2001
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion:106 Resp: 9271

Ion	Ratio	Lower	Upper
106	100		
91	185.2	137.7	255.7

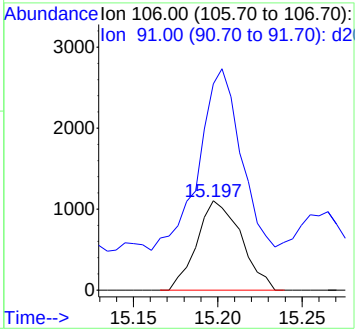


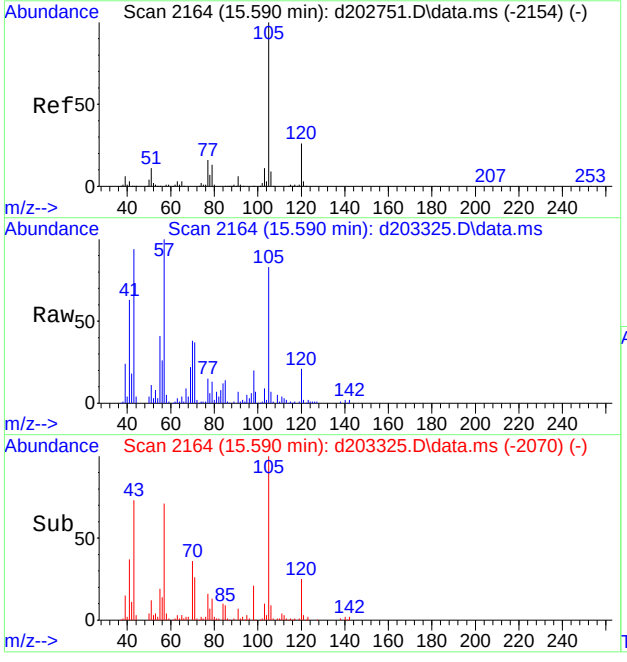


#96
o-xylene
Concen: 0.79 ug/L
RT: 15.197 min Scan# 2089
Delta R.T. -0.013 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion:106 Resp: 2010

Ion	Ratio	Lower	Upper
106	100		
91	177.2	147.4	273.8

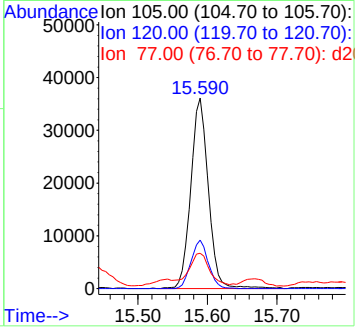


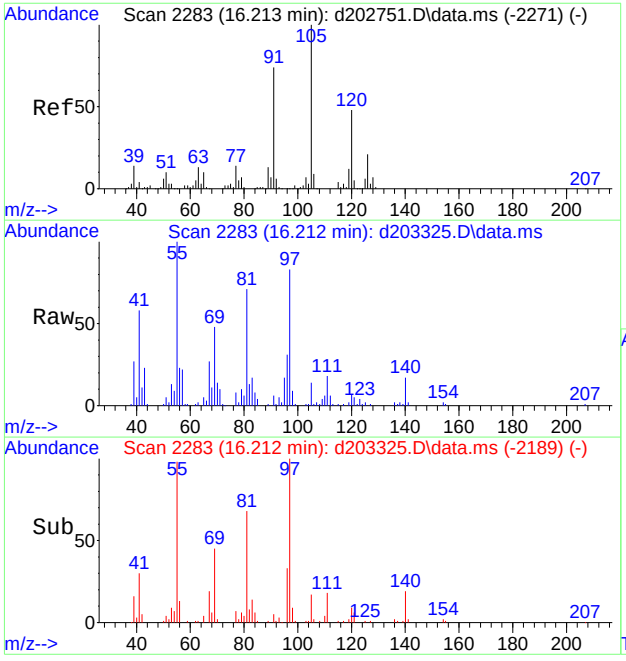


#100
isopropylbenzene
Concen: 9.42 ug/L
RT: 15.590 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion:105 Resp: 63579

Ion	Ratio	Lower	Upper
105	100		
120	25.5	0.0	56.7
77	17.2	0.0	44.9

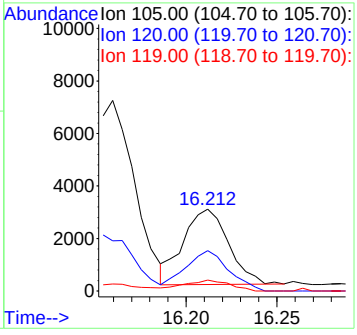


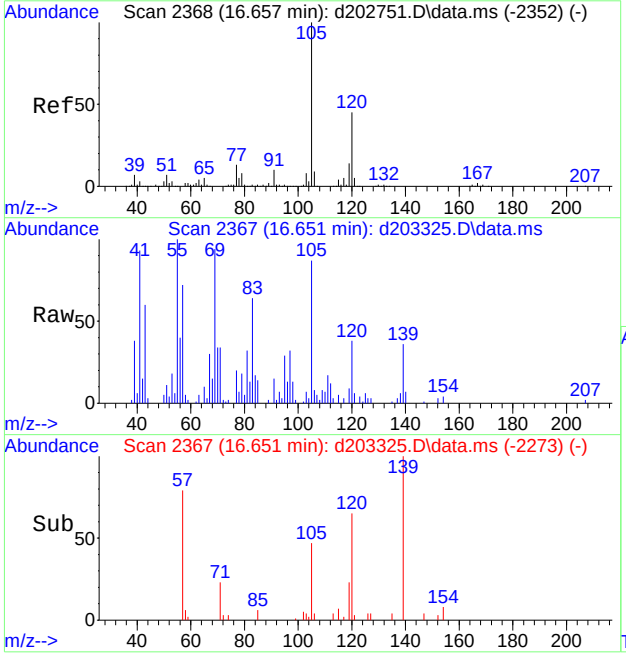


#111
1,3,5-trimethylbenzene
Concen: 0.84 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion:105 Resp: 4986

Ion	Ratio	Lower	Upper
105	100		
120	54.0	19.9	79.9
119	14.5	0.0	42.6

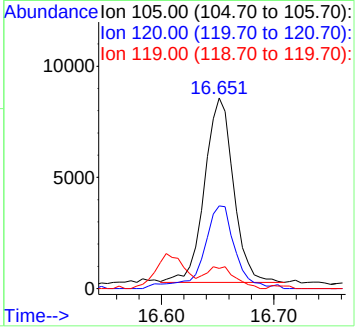


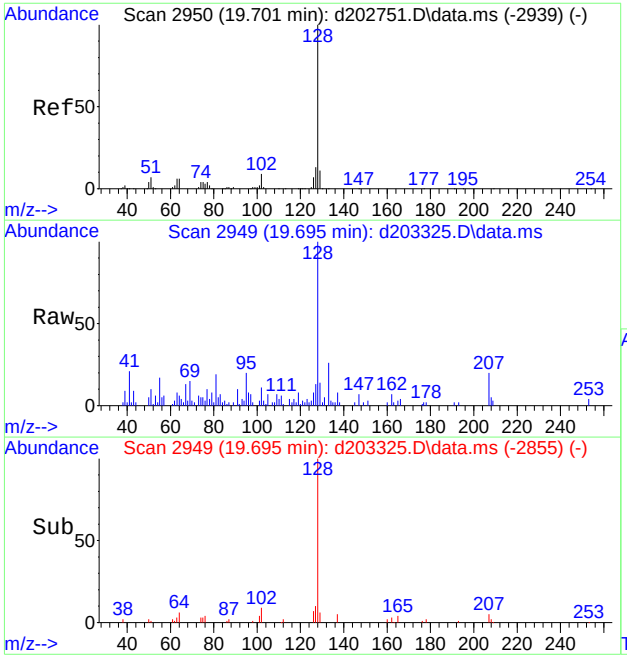


#114
1,2,4-trimethylbenzene
Concen: 2.43 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion:105 Resp: 14897

Ion	Ratio	Lower	Upper
105	100		
120	44.9	16.5	76.5
119	9.5	0.0	43.8

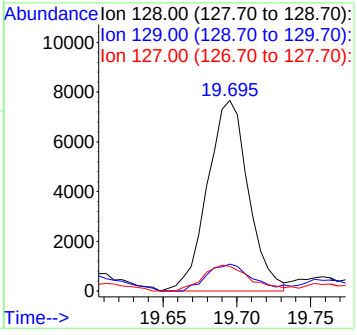




#128
naphthalene
Concen: 2.90 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203325.D
Acq: 13 Dec 2012 7:49 am

Tgt Ion:128 Resp: 14763

Ion	Ratio	Lower	Upper
128	100		
129	14.1	0.0	41.0
127	13.0	0.0	42.7



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5660\
Data File : V131351.D
Acq On : 13 Dec 2012 6:05 pm
Operator : THIENN
Sample : jb22822-18
Misc : MS39773,VV5660,6.2,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 14 12:04:22 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

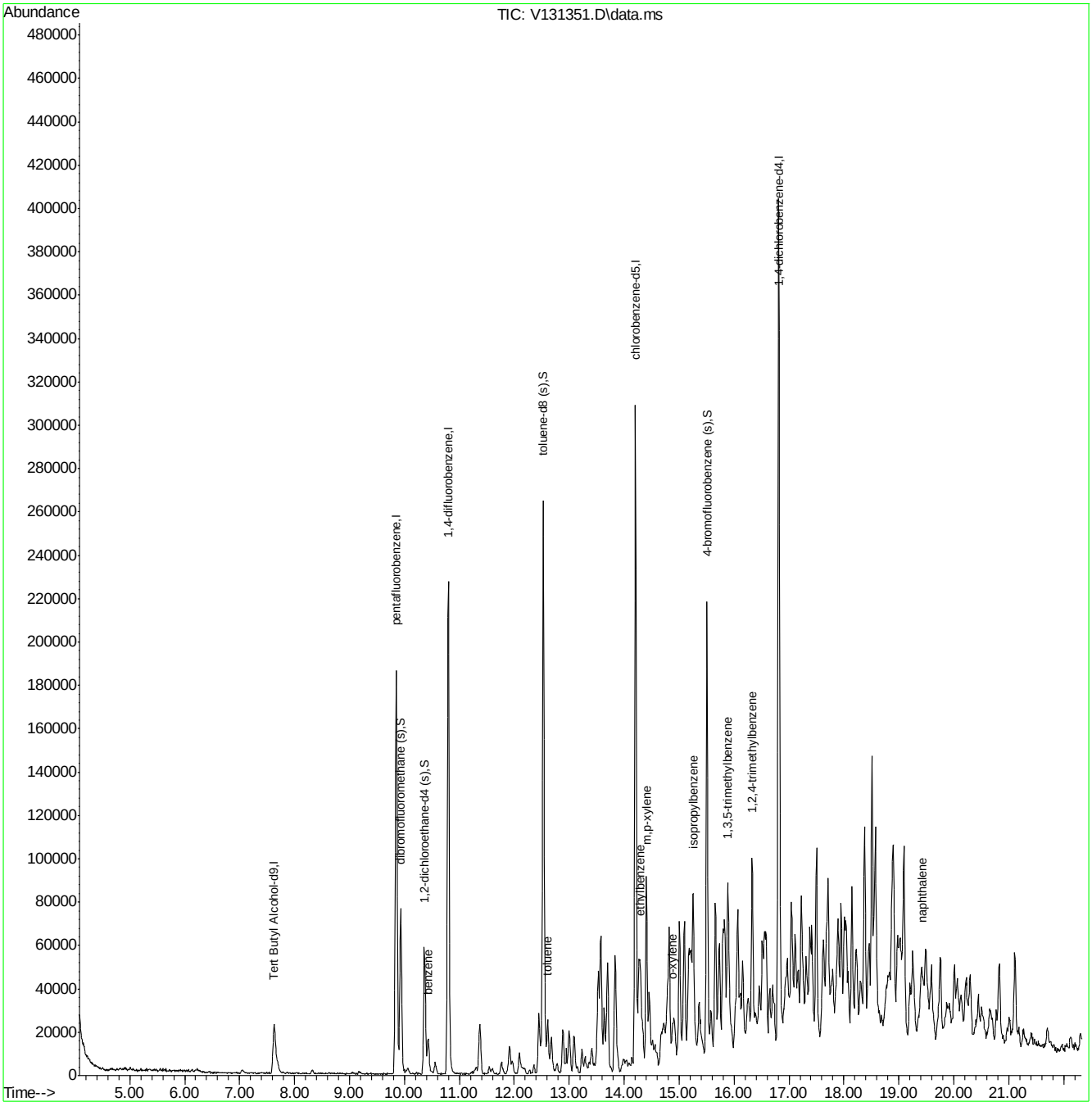
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.626	65	44406	500.00	ug/L	0.00
4) pentafluorobenzene	9.849	168	163454	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	233936	50.00	ug/L	0.00
94) chlorobenzene-d5	14.206	117	213391	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.816	152	119701	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.933	113	56302	56.43	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 112.86%			
59) 1,2-dichloroethane-d4 (s)	10.361	65	50201	51.52	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 103.04%			
86) toluene-d8 (s)	12.527	98	215129	54.93	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 109.86%			
110) 4-bromofluorobenzene (s)	15.503	95	80702	48.54	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 97.08%			
Target Compounds						Qvalue
71) benzene	10.429	78	17590	3.81	ug/L	97
88) toluene	12.610	92	11314	3.75	ug/L	98
103) ethylbenzene	14.289	91	14496	2.34	ug/L	97
104) m,p-xylene	14.410	106	17736	7.34	ug/L	91
105) o-xylene	14.880	106	4056	1.72	ug/L	87
112) isopropylbenzene	15.257	105	56021	9.23	ug/L	96
121) 1,3,5-trimethylbenzene	15.885	105	29967	5.54	ug/L	93
124) 1,2,4-trimethylbenzene	16.329	105	49201	8.90	ug/L	99
141) naphthalene	19.420	128	19242	5.74	ug/L	96

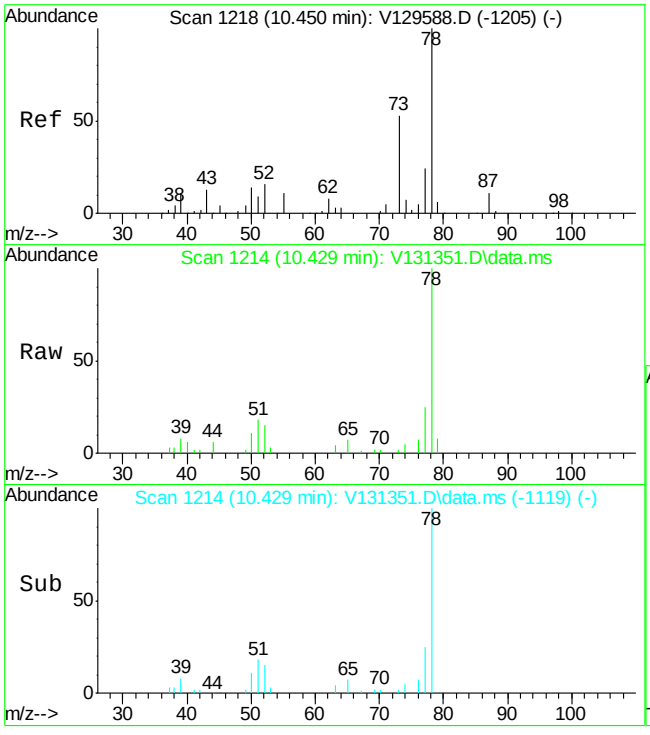
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5660\
Data File : V131351.D
Acq On : 13 Dec 2012 6:05 pm
Operator : THIENN
Sample : jb22822-18
Misc : MS39773,VV5660,6.2,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 14 12:04:22 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

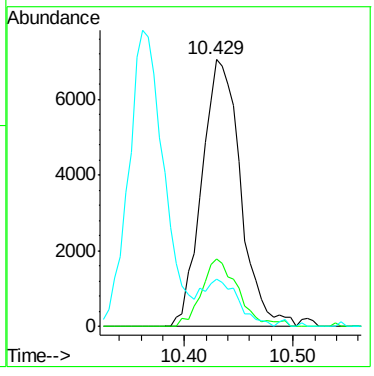


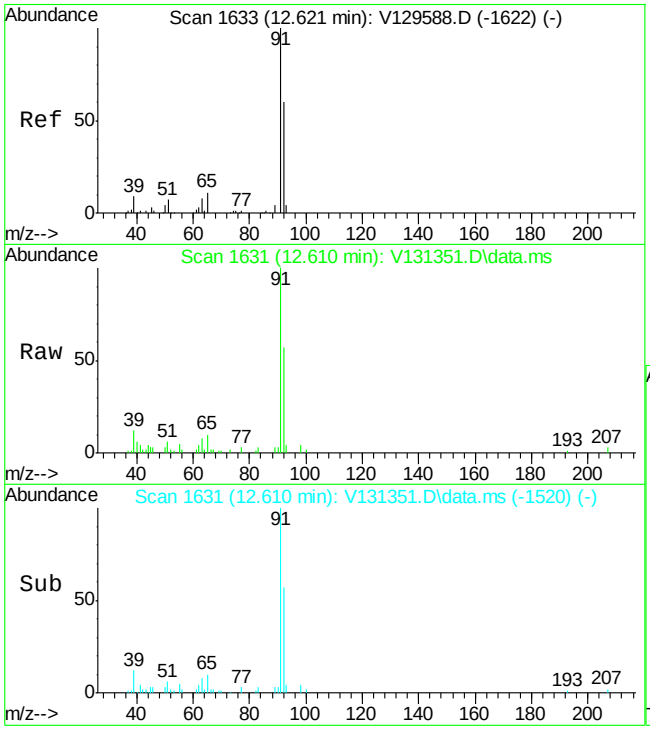


#71
benzene
Concen: 3.81 ug/L
RT: 10.429 min Scan# 1214
Delta R.T. -0.005 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion: 78 Resp: 17590

Ion	Ratio	Lower	Upper
78	100		
77	25.2	0.0	53.4
51	17.5	0.0	46.9

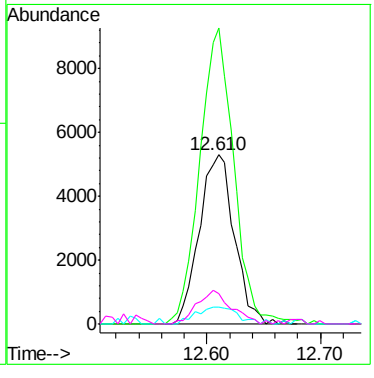


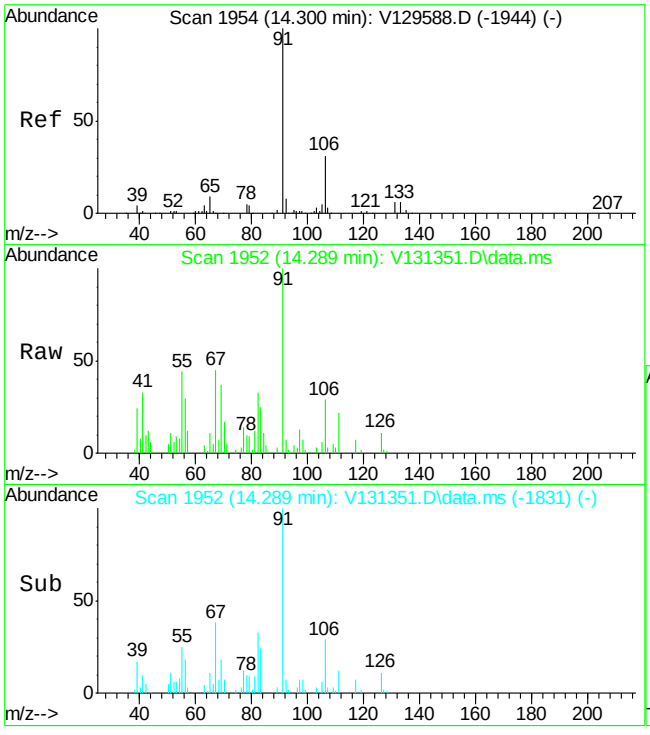


#88
toluene
Concen: 3.75 ug/L
RT: 12.610 min Scan# 1631
Delta R.T. 0.000 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion: 92 Resp: 11314

Ion	Ratio	Lower	Upper
92	100		
91	175.0	120.5	223.7
51	10.3	7.9	14.7
65	18.1	13.4	24.8

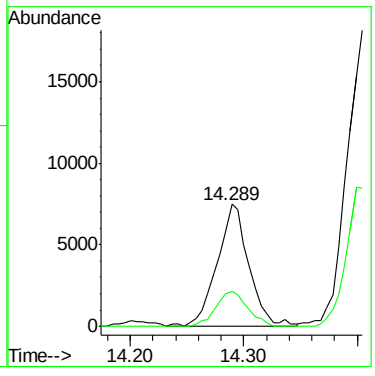


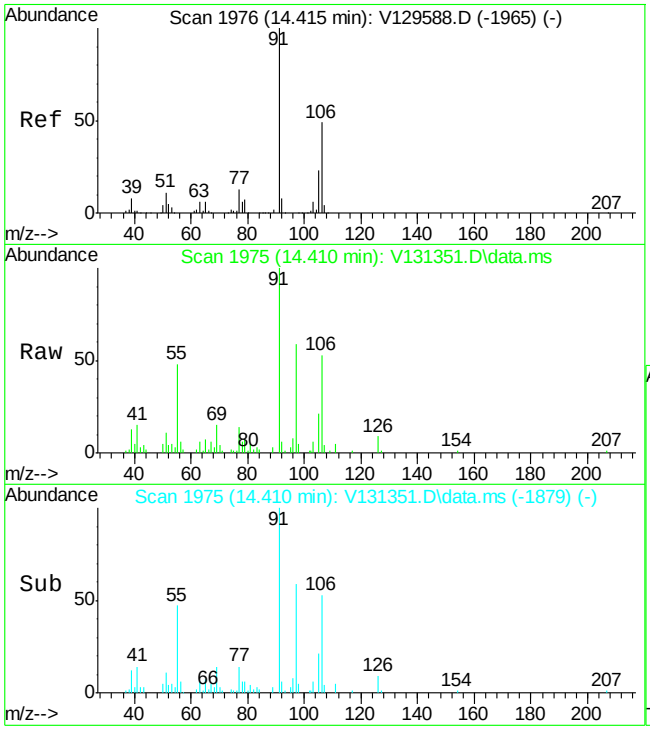


#103
ethylbenzene
Concen: 2.34 ug/L
RT: 14.289 min Scan# 1952
Delta R.T. 0.000 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion: 91 Resp: 14496

Ion	Ratio	Lower	Upper
91	100		
106	29.0	0.7	60.7

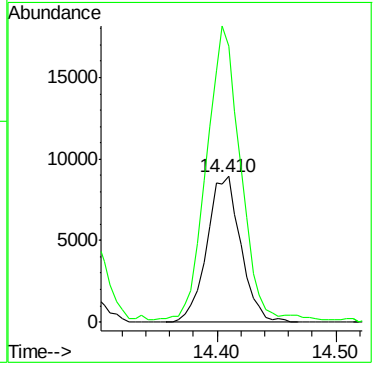


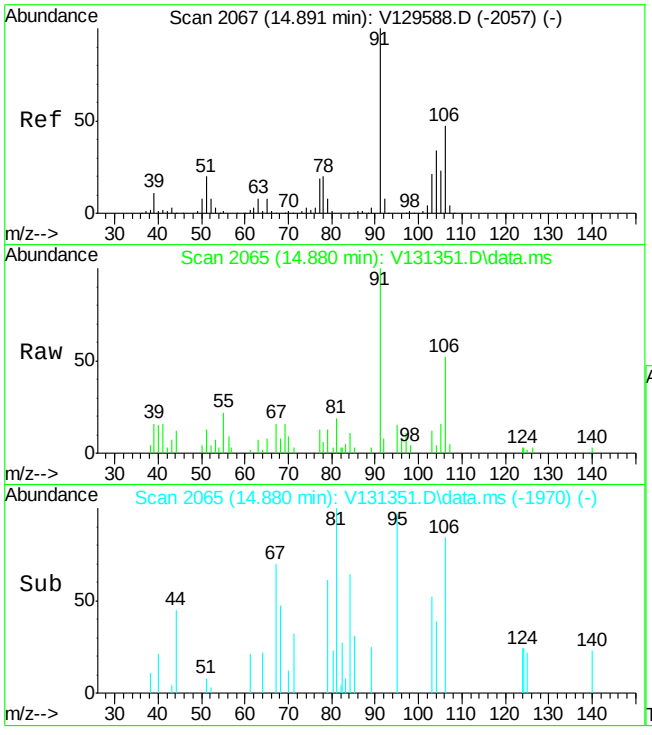


#104
m,p-xylene
Concen: 7.34 ug/L
RT: 14.410 min Scan# 1975
Delta R.T. 0.000 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion:106 Resp: 17736

Ion	Ratio	Lower	Upper
106	100		
91	186.8	140.7	261.3

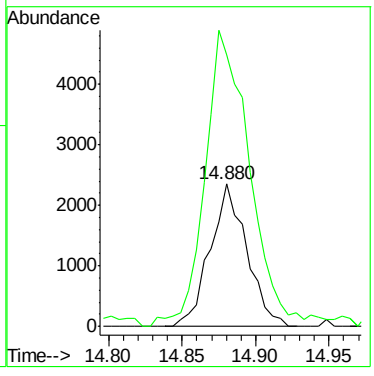


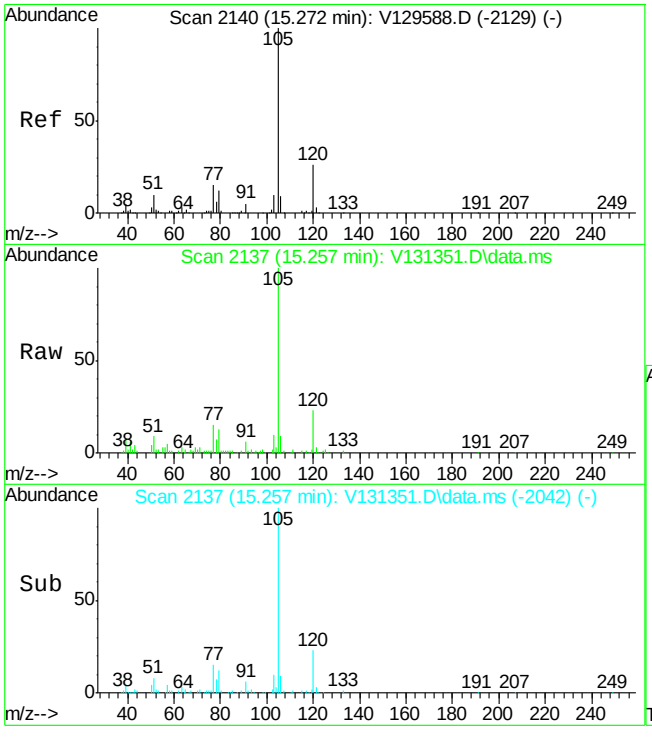


#105
o-xylene
Concen: 1.72 ug/L
RT: 14.880 min Scan# 2065
Delta R.T. -0.005 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion:106 Resp: 4056

Ion	Ratio	Lower	Upper
106	100		
91	185.7	144.3	267.9

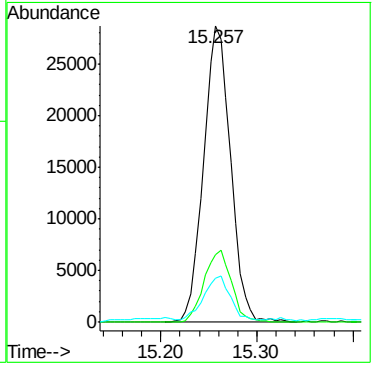


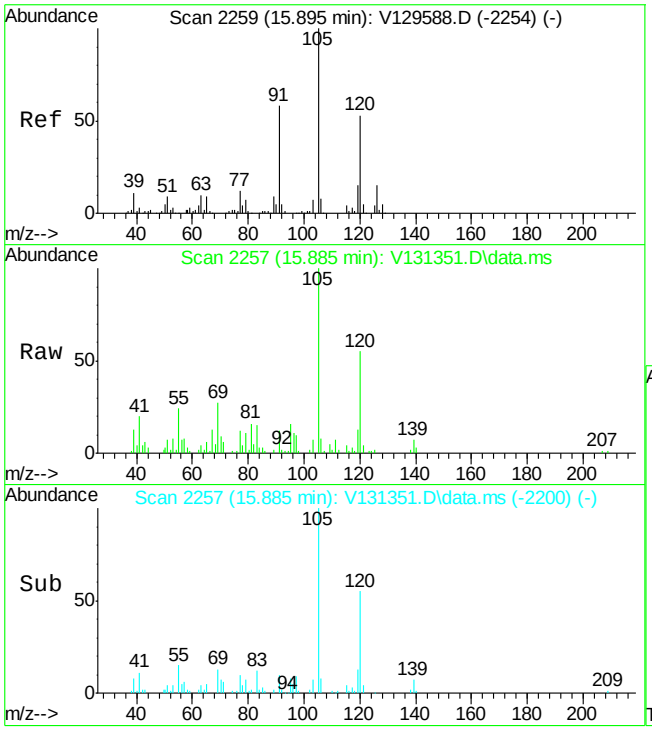


#112
isopropylbenzene
Concen: 9.23 ug/L
RT: 15.257 min Scan# 2137
Delta R.T. -0.005 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion:105 Resp: 56021

Ion	Ratio	Lower	Upper
105	100		
120	22.9	0.0	55.0
77	14.3	0.0	45.8

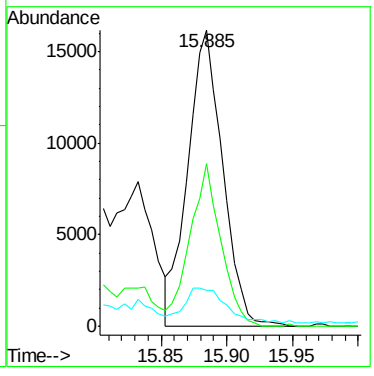


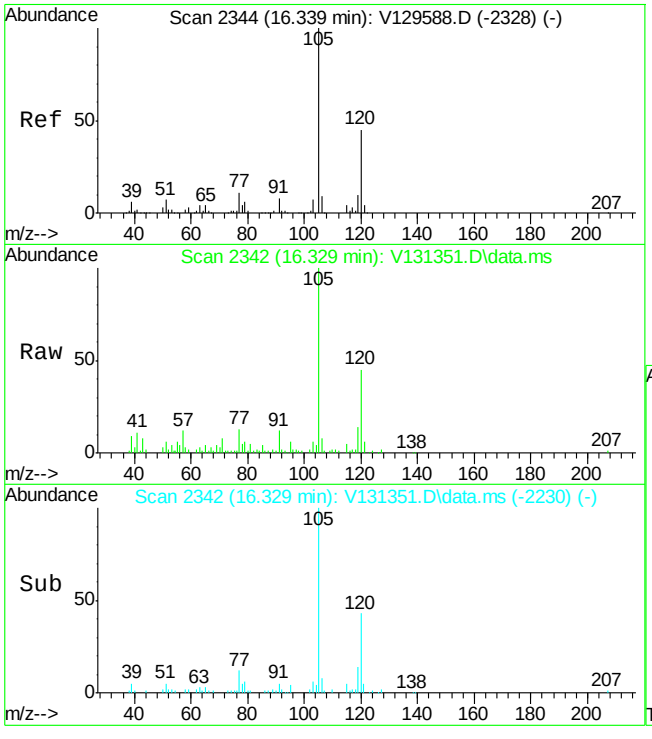


#121
1,3,5-trimethylbenzene
Concen: 5.54 ug/L
RT: 15.885 min Scan# 2257
Delta R.T. 0.000 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion:105 Resp: 29967

Ion	Ratio	Lower	Upper
105	100		
120	55.0	19.9	79.9
77	11.0	0.0	43.3

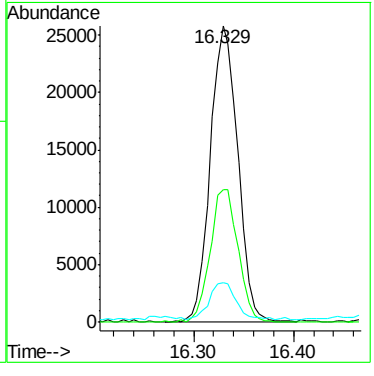


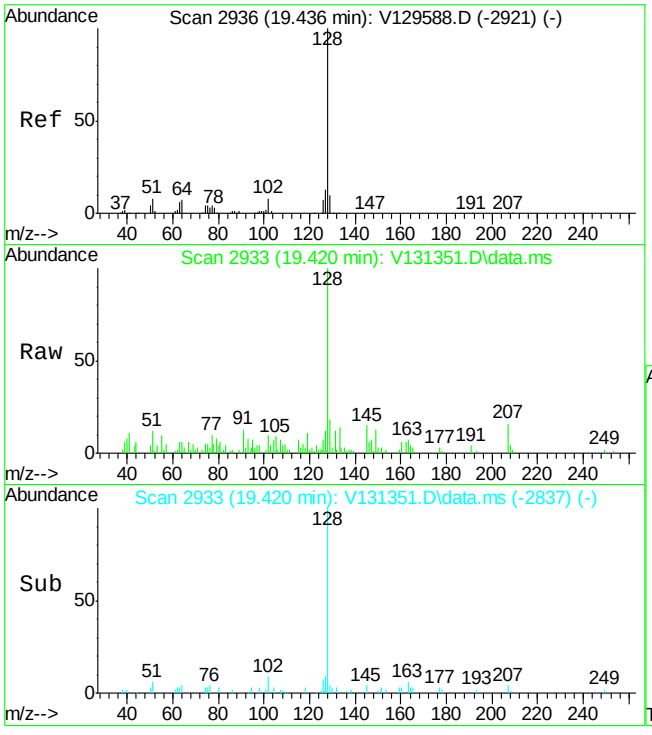


#124
1,2,4-trimethylbenzene
Concen: 8.90 ug/L
RT: 16.329 min Scan# 2342
Delta R.T. -0.005 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion:105 Resp: 49201

Ion	Ratio	Lower	Upper
105	100		
120	44.8	13.9	73.9
77	12.4	0.0	42.2

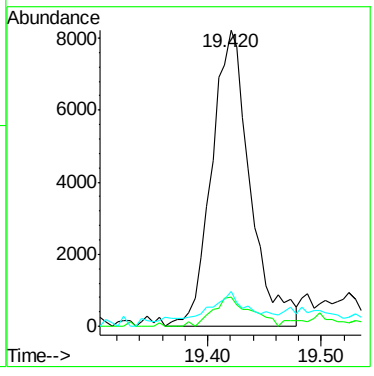




#141
naphthalene
Concen: 5.74 ug/L
RT: 19.420 min Scan# 2933
Delta R.T. 0.000 min
Lab File: V131351.D
Acq: 13 Dec 2012 6:05 pm

Tgt Ion:128 Resp: 19242

Ion	Ratio	Lower	Upper
128	100		
102	9.7	0.0	38.1
51	8.6	0.0	37.6



7.1.21

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203326.D
Acq On : 13 Dec 2012 8:18 am
Operator : EmilyT
Sample : jb22822-19
Misc : ms39773,vd8290,5.9,,100,5,1
ALS Vial : 44 Sample Multiplier: 1

Quant Time: Dec 13 10:03:03 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.031	65	78894	500.00 ug/L	0.00
4) pentafluorobenzene	10.259	168	124734	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	190912	50.00 ug/L	0.00
85) chlorobenzene-d5	14.511	117	182611	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.100	152	108039	50.00 ug/L	0.00

System Monitoring Compounds					
46) dibromofluoromethane (s)	10.291	113	58726	47.58 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.16%		
47) 1,2-dichloroethane-d4 (s)	10.714	65	82745	58.28 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 116.56%		
77) toluene-d8 (s)	12.880	98	247329	51.10 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 102.20%		
101) 4-bromofluorobenzene (s)	15.798	95	99403	50.97 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 101.94%		

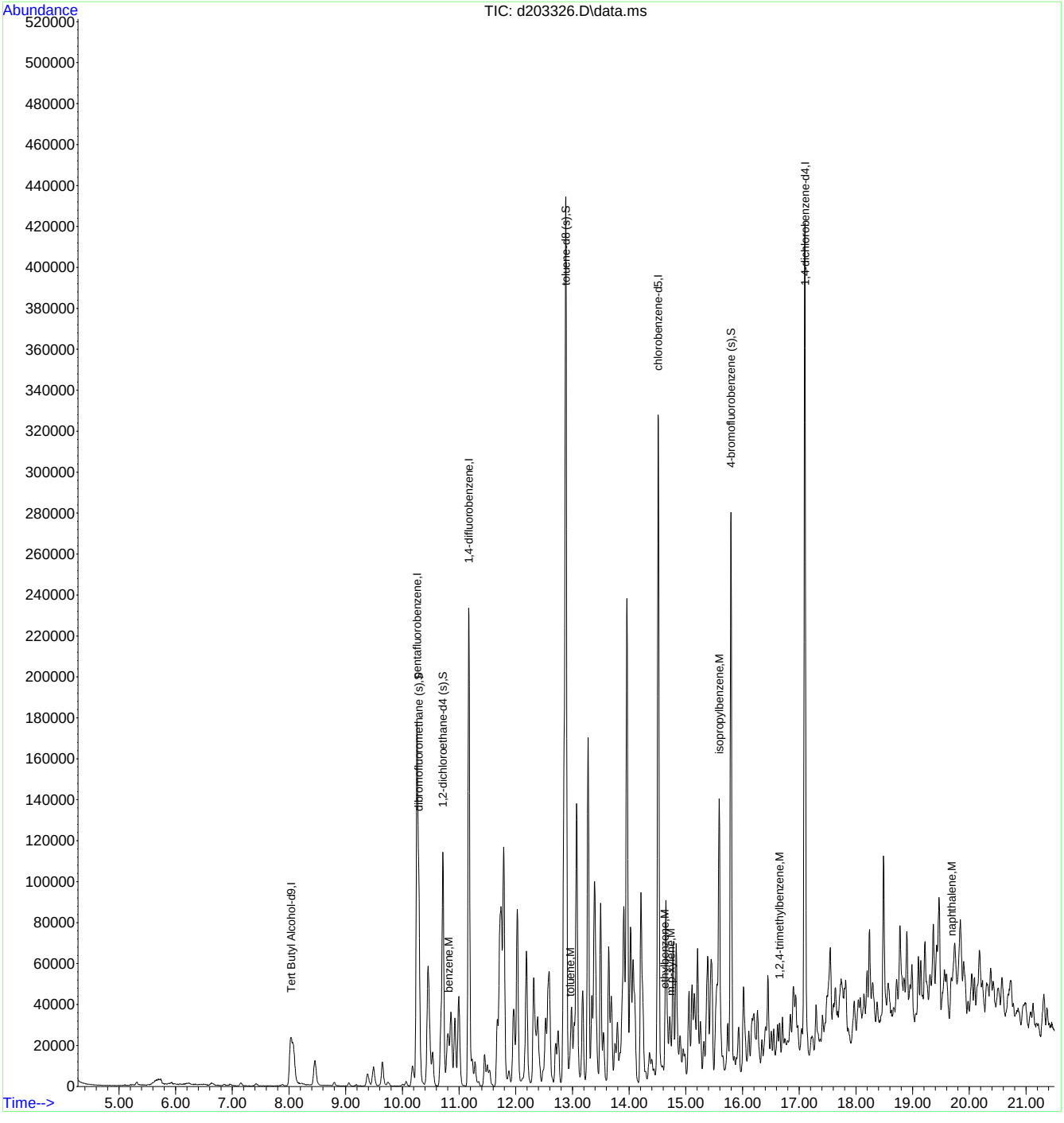
Target Compounds					Qvalue
62) benzene	10.819	78	12386	2.27 ug/L	99
79) toluene	12.958	92	4125	1.18 ug/L	96
94) ethylbenzene	14.621	91	2494	0.37 ug/L	93
95) m,p-xylene	14.742	106	2327	0.89 ug/L	97
100) isopropylbenzene	15.589	105	76701	11.54 ug/L	97
114) 1,2,4-trimethylbenzene	16.651	105	4854	0.80 ug/L	97
128) naphthalene	19.694	128	5499	1.10 ug/L	92

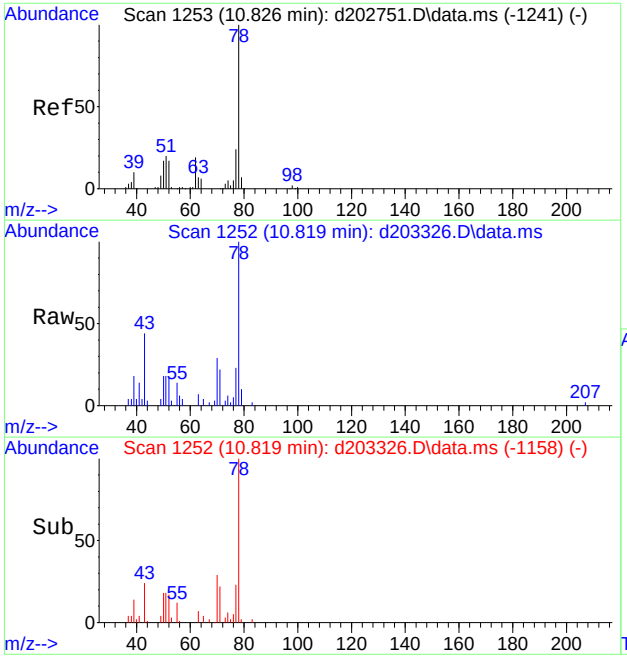
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203326.D
Acq On : 13 Dec 2012 8:18 am
Operator : EmilyT
Sample : jb22822-19
Misc : ms39773,vd8290,5.9,,100,5,1
ALS Vial : 44 Sample Multiplier: 1

Quant Time: Dec 13 10:03:03 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

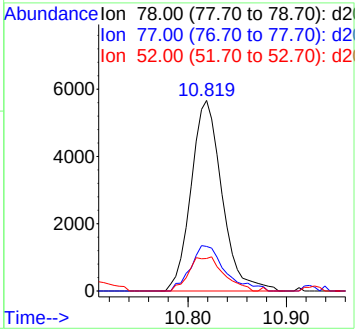


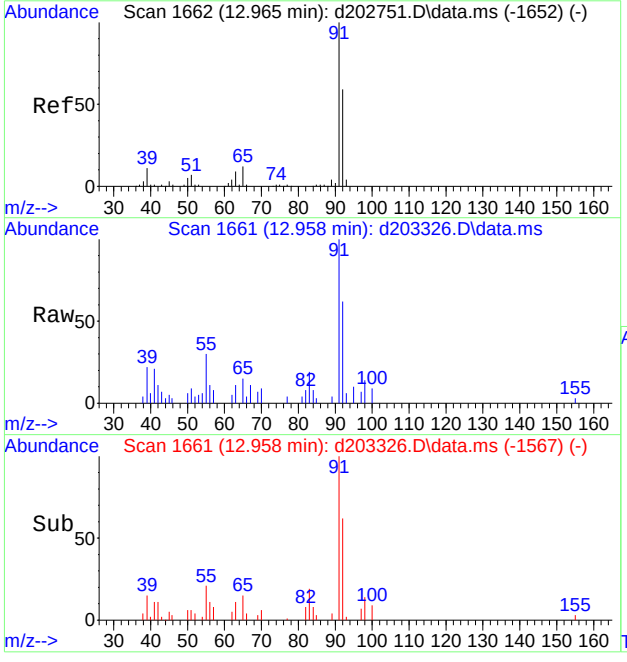


#62
benzene
Concen: 2.27 ug/L
RT: 10.819 min Scan# 1252
Delta R.T. -0.009 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

Tgt Ion: 78 Resp: 12386

Ion	Ratio	Lower	Upper
78	100		
77	23.4	0.0	53.8
52	17.0	0.0	46.8

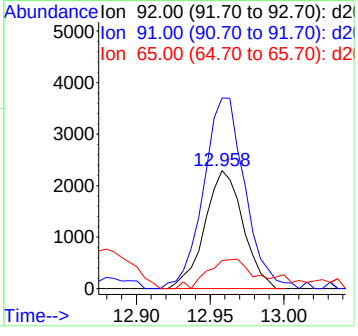


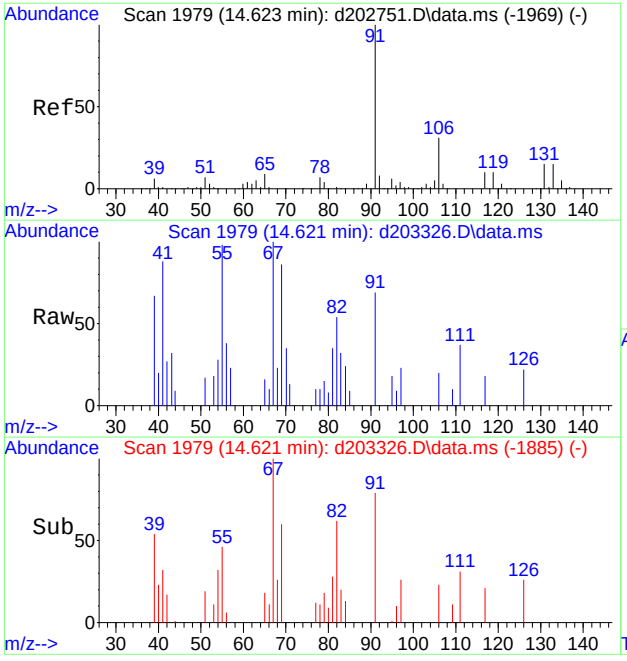


#79
toluene
Concen: 1.18 ug/L
RT: 12.958 min Scan# 1661
Delta R.T. -0.009 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

Tgt Ion: 92 Resp: 4125

Ion	Ratio	Lower	Upper
92	100		
91	161.2	136.4	196.4
65	23.8	0.0	49.2

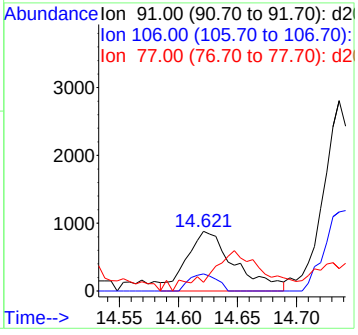


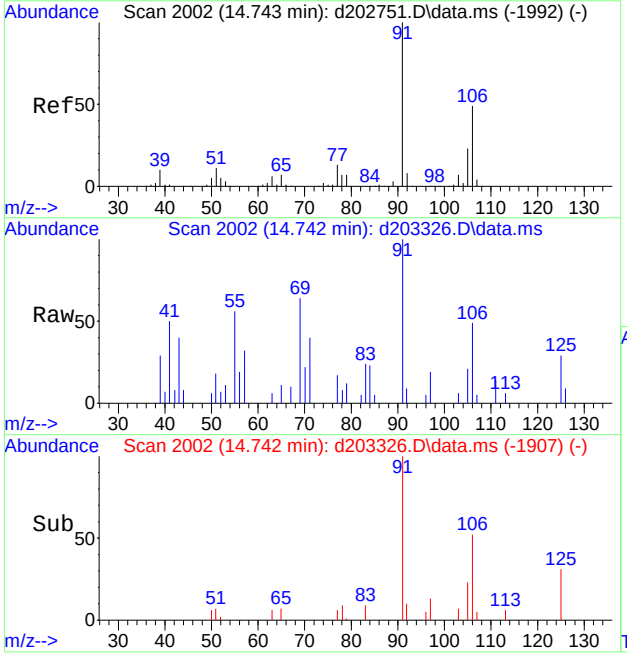


#94
ethylbenzene
Concen: 0.37 ug/L
RT: 14.621 min Scan# 1979
Delta R.T. -0.009 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

Tgt Ion: 91 Resp: 2494

Ion	Ratio	Lower	Upper
91	100		
106	33.6	2.1	62.1
77	16.9	0.0	38.6

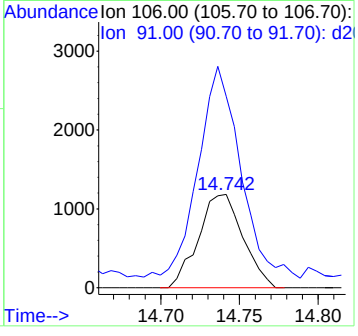




#95
m,p-xylene
Concen: 0.89 ug/L
RT: 14.742 min Scan# 2002
Delta R.T. -0.004 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

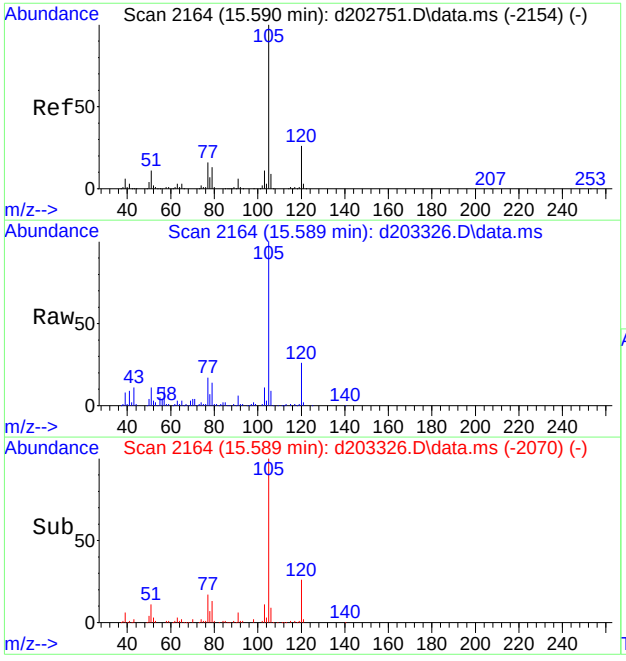
Tgt Ion:106 Resp: 2327

Ion	Ratio	Lower	Upper
106	100		
91	191.6	137.7	255.7



7.1.22

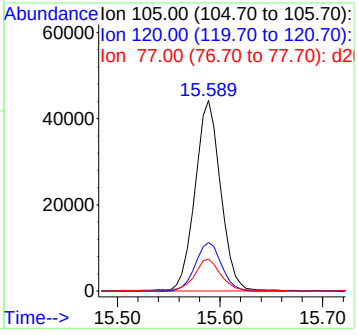
7

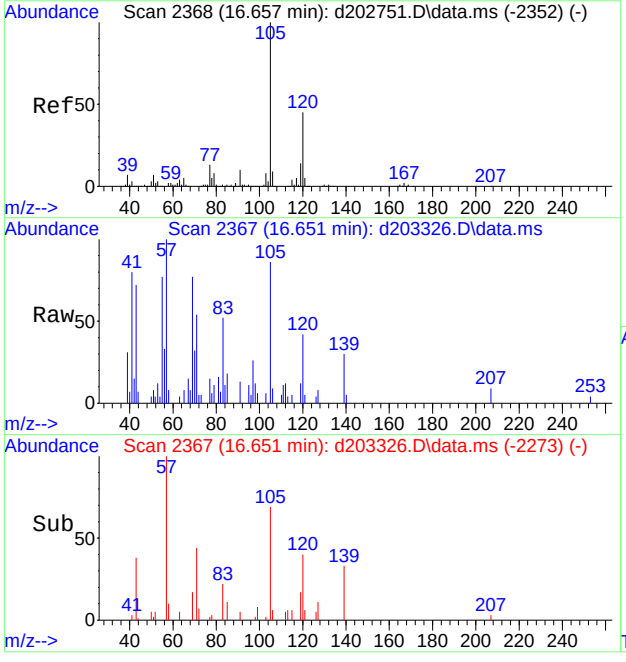


#100
isopropylbenzene
Concen: 11.54 ug/L
RT: 15.589 min Scan# 2164
Delta R.T. -0.009 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

Tgt Ion:105 Resp: 76701

Ion	Ratio	Lower	Upper
105	100		
120	25.5	0.0	56.7
77	16.5	0.0	44.9

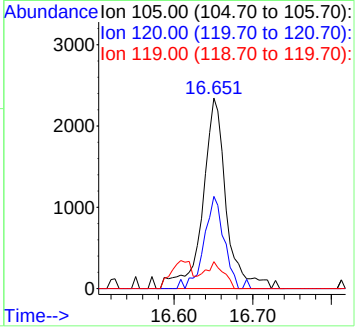


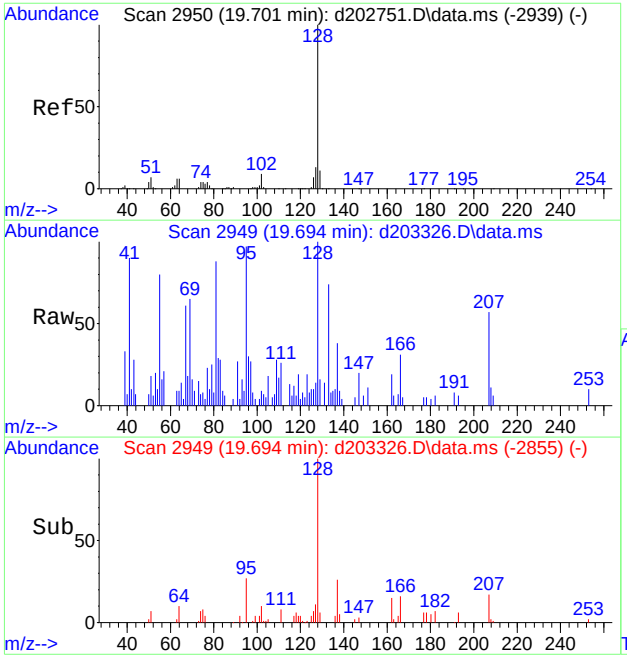


#114
1,2,4-trimethylbenzene
Concen: 0.80 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.009 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

Tgt Ion:105 Resp: 4854

Ion	Ratio	Lower	Upper
105	100		
120	48.5	16.5	76.5
119	14.2	0.0	43.8

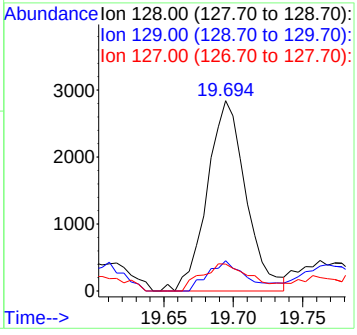




#128
naphthalene
Concen: 1.10 ug/L
RT: 19.694 min Scan# 2949
Delta R.T. -0.009 min
Lab File: d203326.D
Acq: 13 Dec 2012 8:18 am

Tgt Ion:128 Resp: 5499

Ion	Ratio	Lower	Upper
128	100		
129	15.9	0.0	41.0
127	14.1	0.0	42.7



7.1.22

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203360.D
Acq On : 14 Dec 2012 1:36 am
Operator : EmilyT
Sample : JB22822-20
Misc : ms39773,vd8292,5.8,,100,5,1
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Dec 14 08:01:21 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.027	65	77020	500.00 ug/L	-0.01
4) pentafluorobenzene	10.260	168	118081	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.175	114	180890	50.00 ug/L	0.00
85) chlorobenzene-d5	14.517	117	172138	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	106674	50.00 ug/L	0.00

System Monitoring Compounds					
46) dibromofluoromethane (s)	10.286	113	56331	48.21 ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 96.42%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	79332	59.02 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 118.04%		
77) toluene-d8 (s)	12.880	98	228292	49.78 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 99.56%		
101) 4-bromofluorobenzene (s)	15.793	95	100075	51.97 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 103.94%		

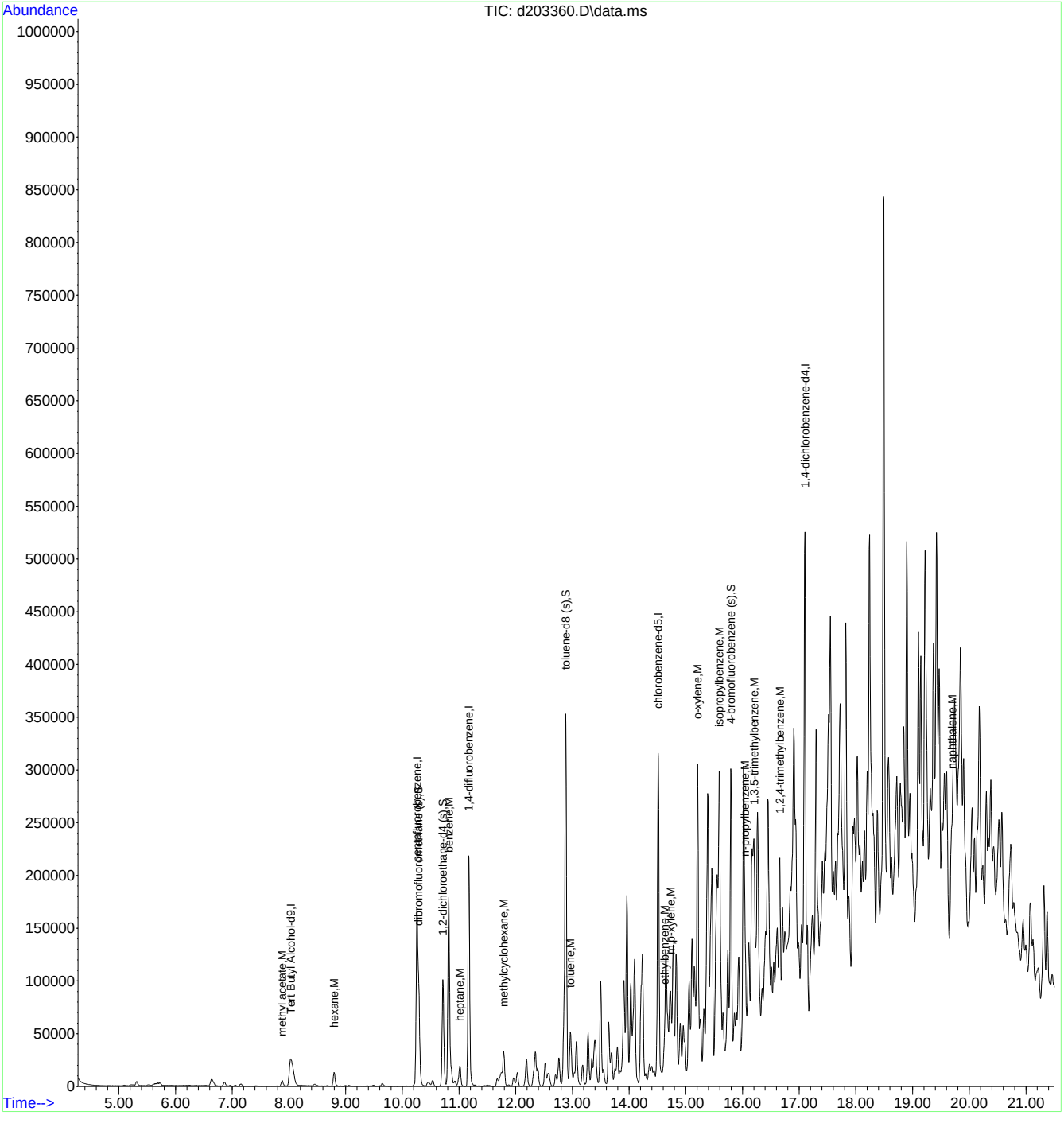
Target Compounds					Qvalue
29) methyl acetate	7.880	43	9903	8.12 ug/L	92
61) hexane	8.795	57	7576	5.18 ug/L	92
62) benzene	10.820	78	169706	32.82 ug/L	98
63) heptane	11.013	57	4604	5.05 ug/L	78
73) methylcyclohexane	11.787	83	14315	6.61 ug/L	98
79) toluene	12.959	92	15561	4.69 ug/L	98
94) ethylbenzene	14.622	91	21611	3.43 ug/L	95
95) m,p-xylene	14.742	106	15095	6.14 ug/L	99
96) o-xylene	15.202	106	2859	1.17 ug/L	97
100) isopropylbenzene	15.589	105	84844	12.93 ug/L	97
107) n-propylbenzene	16.044	91	51608	6.80 ug/L	99
111) 1,3,5-trimethylbenzene	16.212	105	10817	1.88 ug/L	96
114) 1,2,4-trimethylbenzene	16.651	105	31166	5.23 ug/L	97
128) naphthalene	19.695	128	44522	8.99 ug/L	99

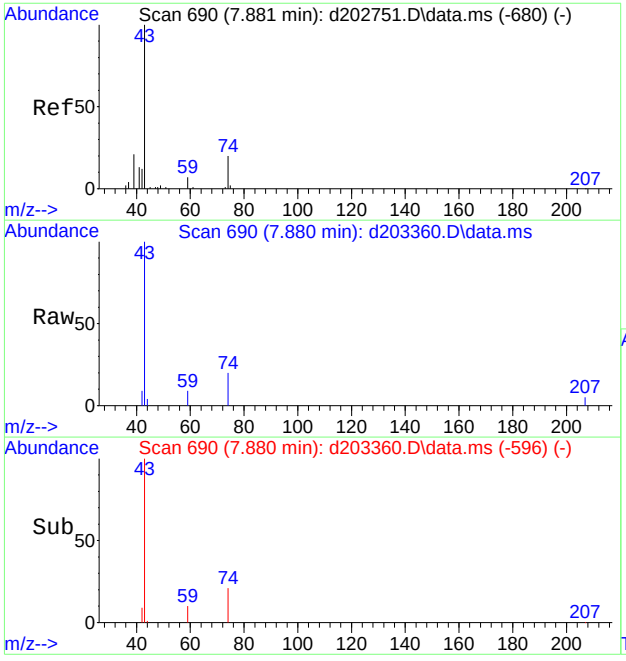
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203360.D
Acq On : 14 Dec 2012 1:36 am
Operator : EmilyT
Sample : JB22822-20
Misc : ms39773,vd8292,5.8,,100,5,1
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Dec 14 08:01:21 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

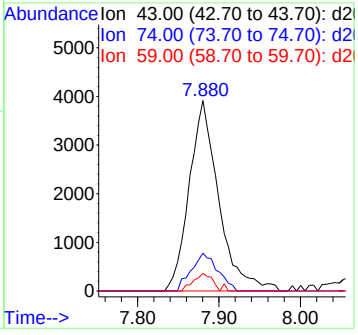


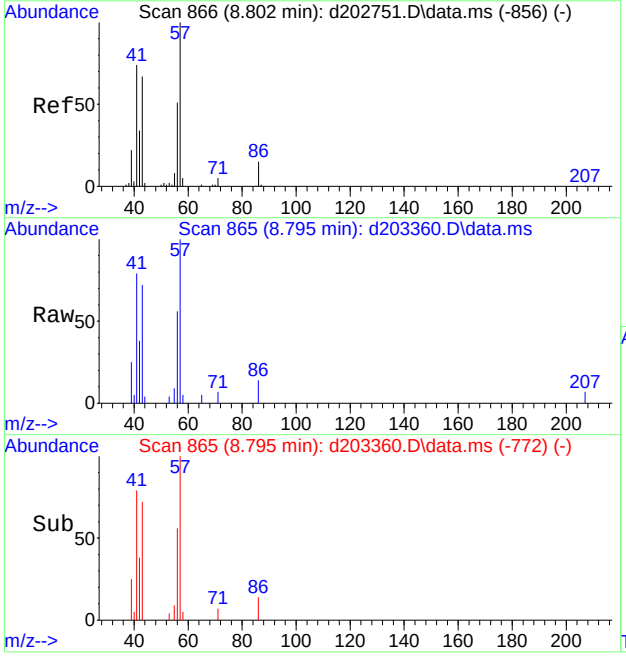


#29
methyl acetate
Concen: 8.12 ug/L
RT: 7.880 min Scan# 690
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 43 Resp: 9903

Ion	Ratio	Lower	Upper
43	100		
74	17.6	0.0	52.2
59	6.3	0.0	38.0

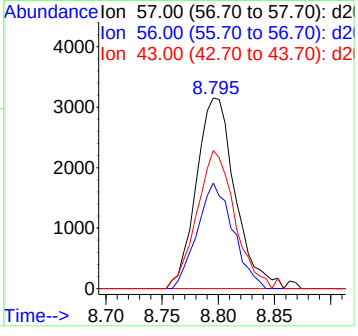


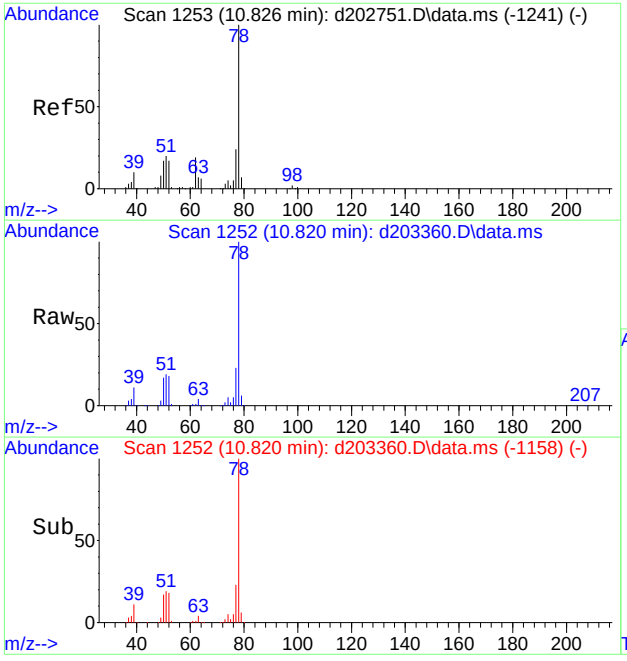


#61
hexane
Concen: 5.18 ug/L
RT: 8.795 min Scan# 865
Delta R.T. -0.014 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 57 Resp: 7576

Ion	Ratio	Lower	Upper
57	100		
56	55.5	20.8	80.8
43	72.5	35.7	95.7

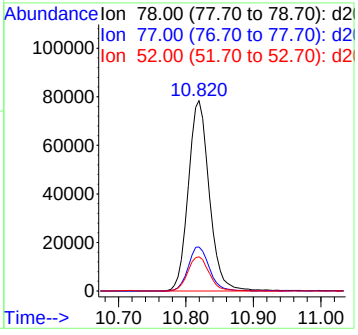


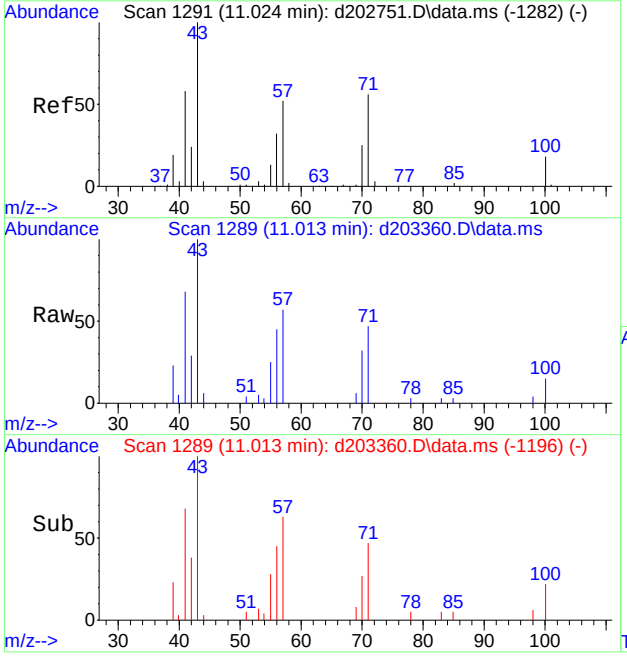


#62
benzene
Concen: 32.82 ug/L
RT: 10.820 min Scan# 1252
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 78 Resp: 169706

Ion	Ratio	Lower	Upper
78	100		
77	23.2	0.0	53.8
52	18.0	0.0	46.8

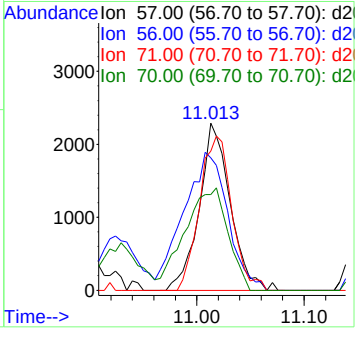


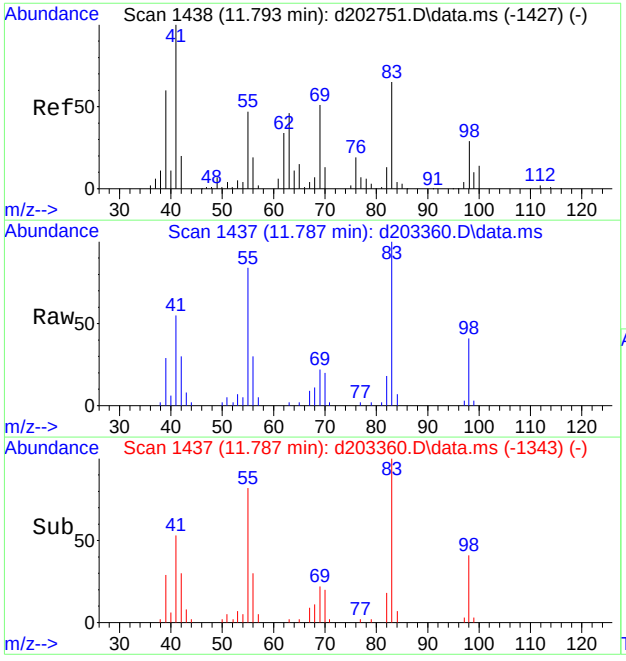


#63
heptane
Concen: 5.05 ug/L
RT: 11.013 min Scan# 1289
Delta R.T. -0.013 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 57 Resp: 4604

Ion	Ratio	Lower	Upper
57	100		
56	79.2	27.5	87.5
71	83.3	76.8	136.8
70	57.3	17.9	77.9

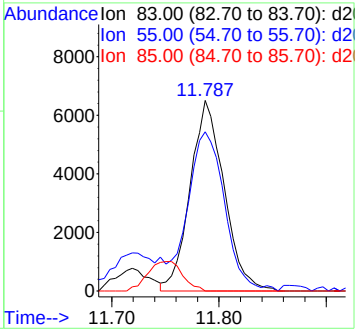


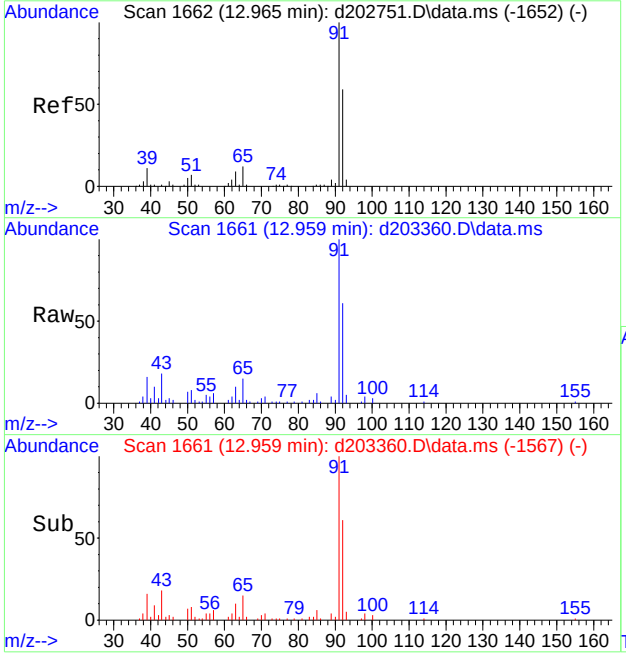


#73
methylcyclohexane
Concen: 6.61 ug/L
RT: 11.787 min Scan# 1437
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 83 Resp: 14315

Ion	Ratio	Lower	Upper
83	100		
55	80.6	51.7	111.7
85	0.0	0.0	34.9

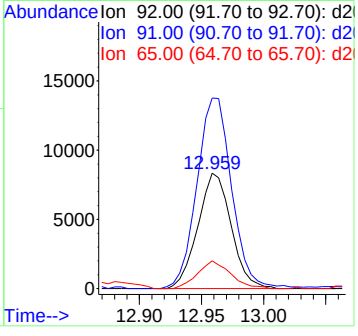


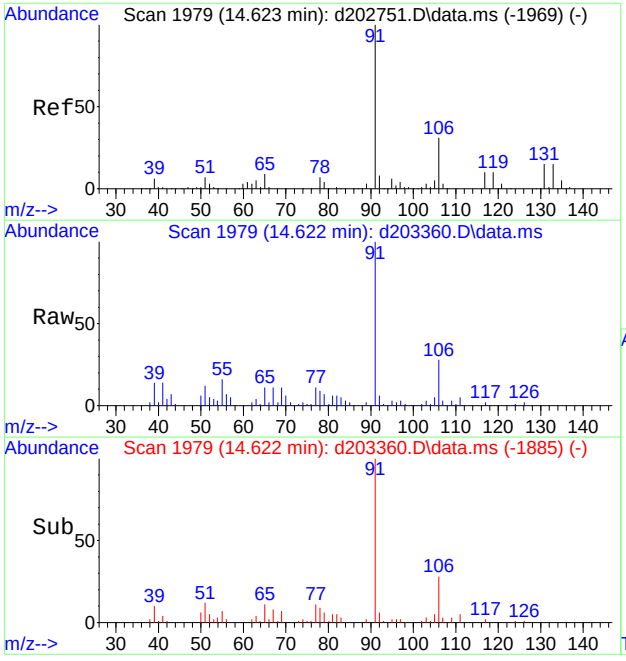


#79
toluene
Concen: 4.69 ug/L
RT: 12.959 min Scan# 1661
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 92 Resp: 15561

Ion	Ratio	Lower	Upper
92	100		
91	164.9	136.4	196.4
65	24.0	0.0	49.2

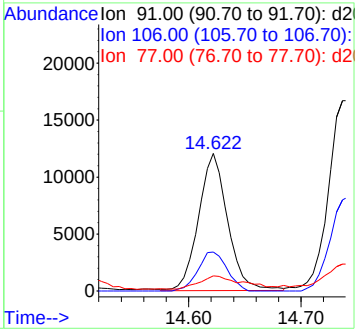


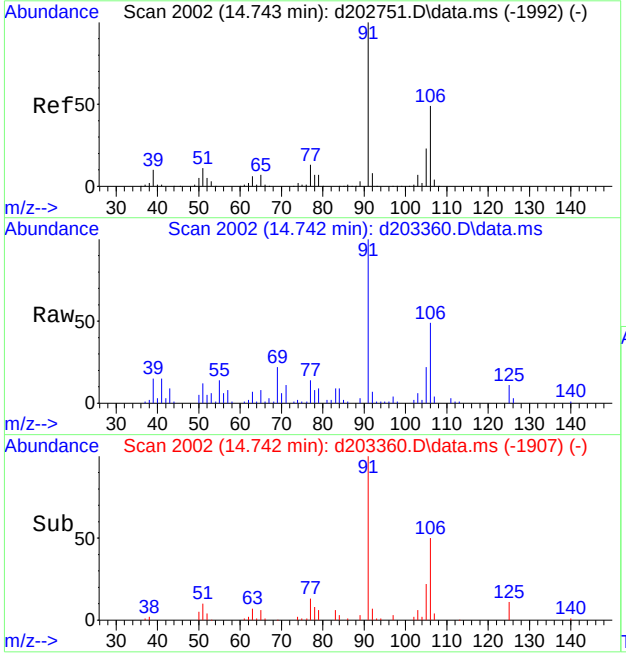


#94
ethylbenzene
Concen: 3.43 ug/L
RT: 14.622 min Scan# 1979
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 91 Resp: 21611

Ion	Ratio	Lower	Upper
91	100		
106	28.7	2.1	62.1
77	9.6	0.0	38.6

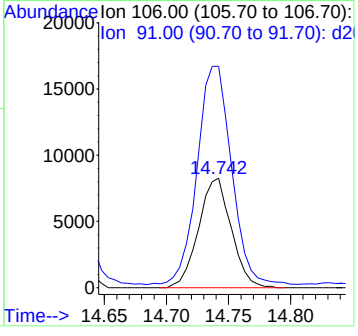




#95
m,p-xylene
Concen: 6.14 ug/L
RT: 14.742 min Scan# 2002
Delta R.T. -0.003 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

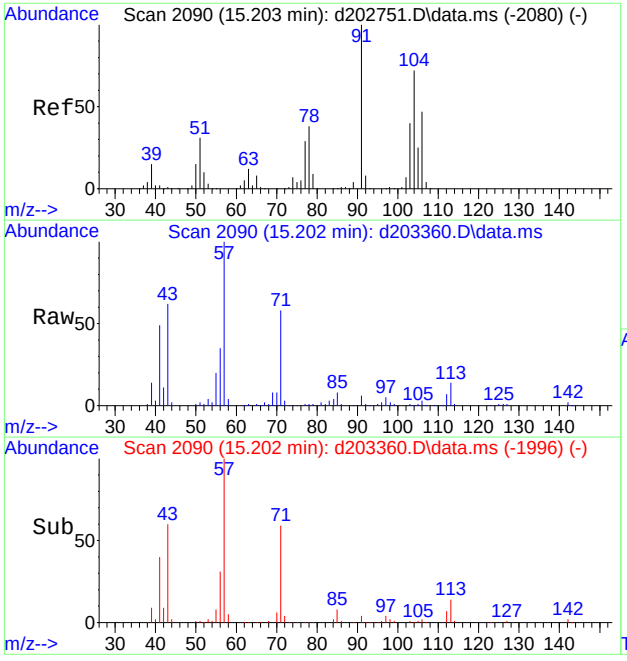
Tgt Ion:106 Resp: 15095

Ion	Ratio	Lower	Upper
106	100		
91	198.9	137.7	255.7



7.1.23

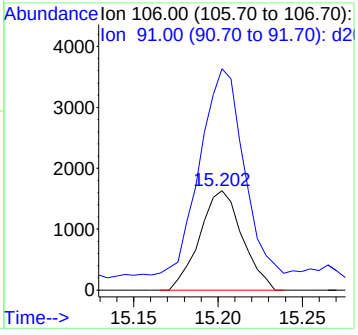
7

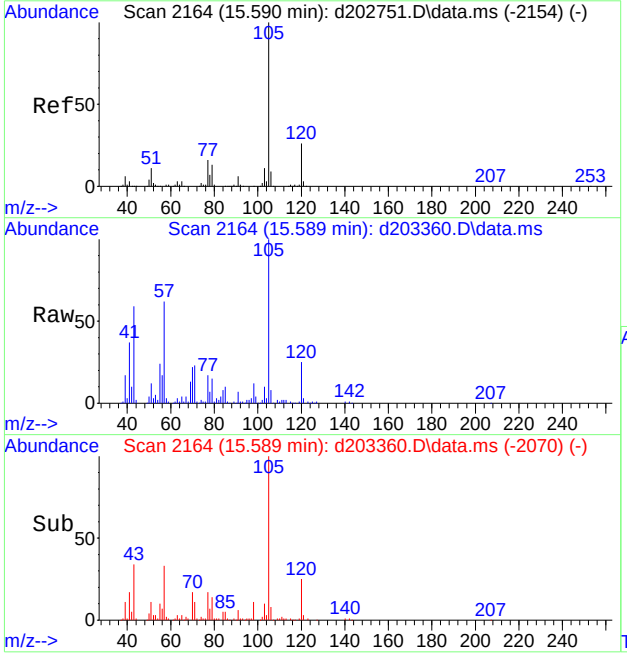


#96
o-xylene
Concen: 1.17 ug/L
RT: 15.202 min Scan# 2090
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion:106 Resp: 2859

Ion	Ratio	Lower	Upper
106	100		
91	205.9	147.4	273.8

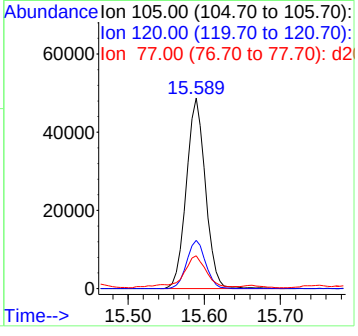


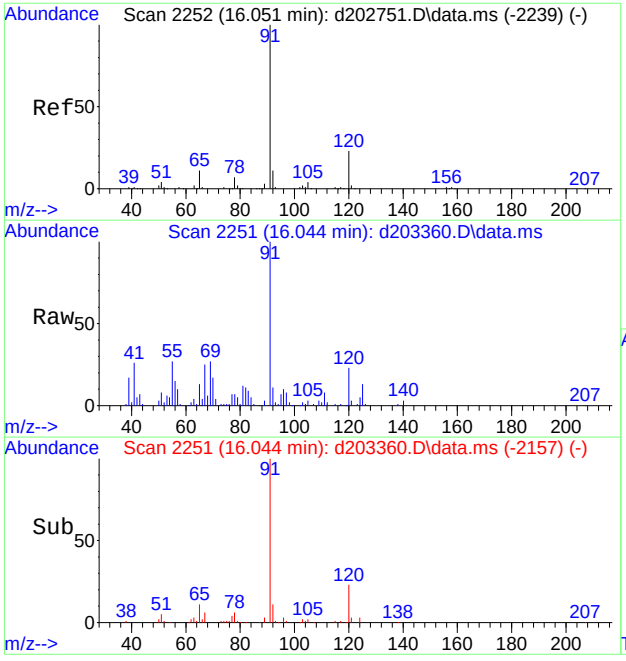


#100
isopropylbenzene
Concen: 12.93 ug/L
RT: 15.589 min Scan# 2164
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion:105 Resp: 84844

Ion	Ratio	Lower	Upper
105	100		
120	25.3	0.0	56.7
77	16.8	0.0	44.9

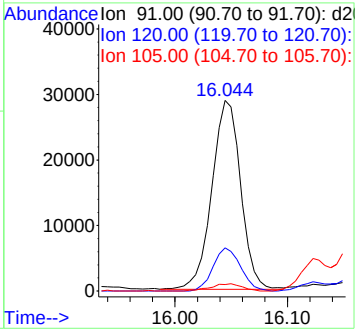


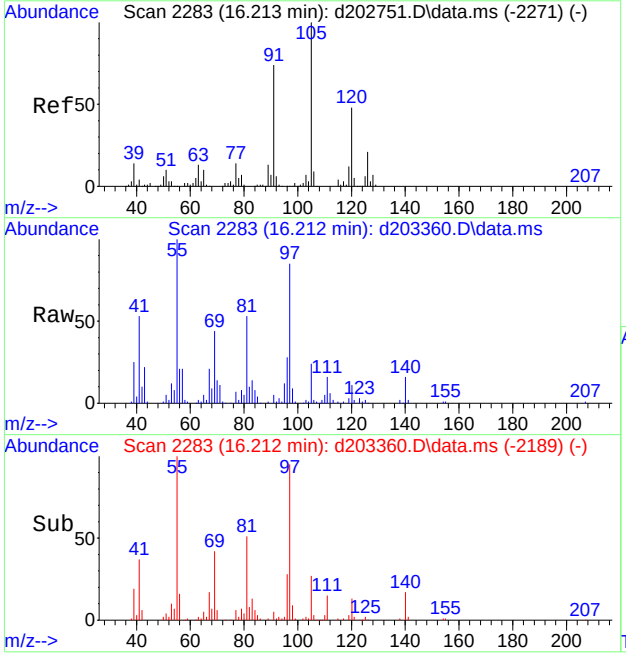


#107
n-propylbenzene
Concen: 6.80 ug/L
RT: 16.044 min Scan# 2251
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion: 91 Resp: 51608

Ion	Ratio	Lower	Upper
91	100		
120	22.8	0.0	53.2
105	3.5	0.0	33.8

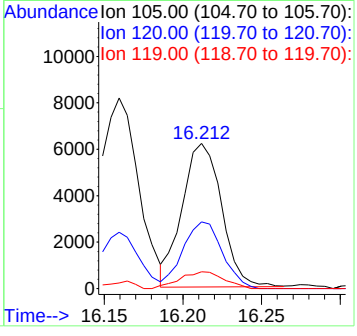


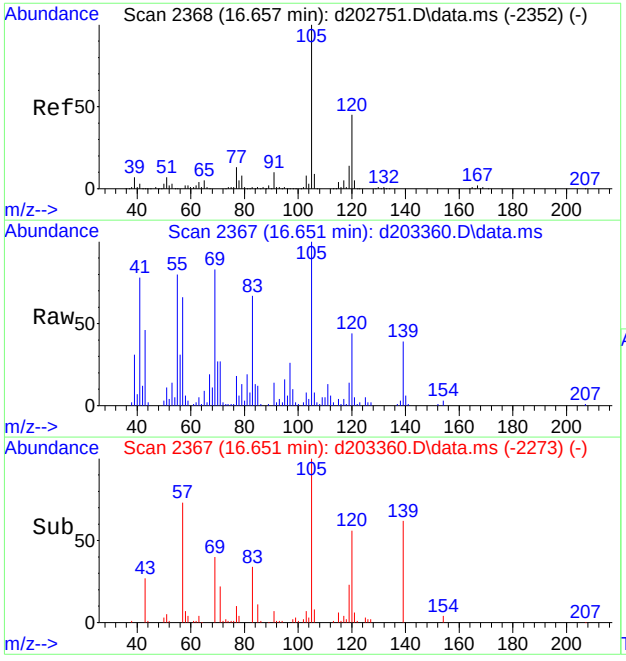


#111
1,3,5-trimethylbenzene
Concen: 1.88 ug/L
RT: 16.212 min Scan# 2283
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion:105 Resp: 10817

Ion	Ratio	Lower	Upper
105	100		
120	46.8	19.9	79.9
119	11.8	0.0	42.6

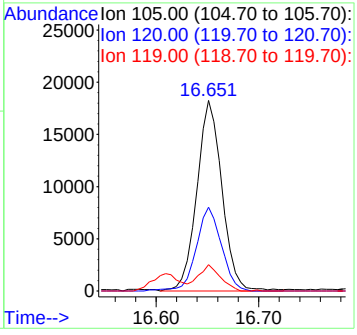


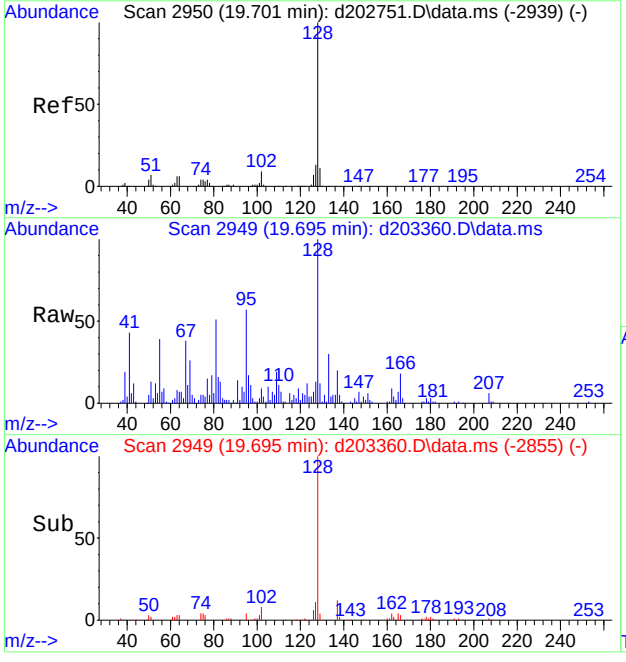


#114
1,2,4-trimethylbenzene
Concen: 5.23 ug/L
RT: 16.651 min Scan# 2367
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion:105 Resp: 31166

Ion	Ratio	Lower	Upper
105	100		
120	44.0	16.5	76.5
119	13.8	0.0	43.8

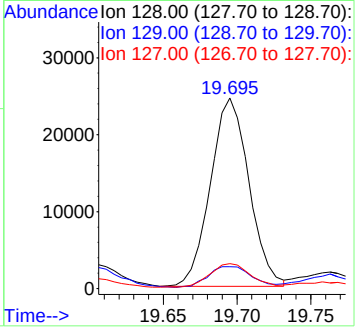




#128
naphthalene
Concen: 8.99 ug/L
RT: 19.695 min Scan# 2949
Delta R.T. -0.008 min
Lab File: d203360.D
Acq: 14 Dec 2012 1:36 am

Tgt Ion:128 Resp: 44522

Ion	Ratio	Lower	Upper
128	100		
129	10.6	0.0	41.0
127	12.4	0.0	42.7



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 12/19/12 03:21

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131193.D
Acq On : 8 Dec 2012 2:40 am
Operator : THIENN
Sample : jb22822-21
Misc : MS39773,VV5655,6.6,,,,1
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Dec 11 08:42:10 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

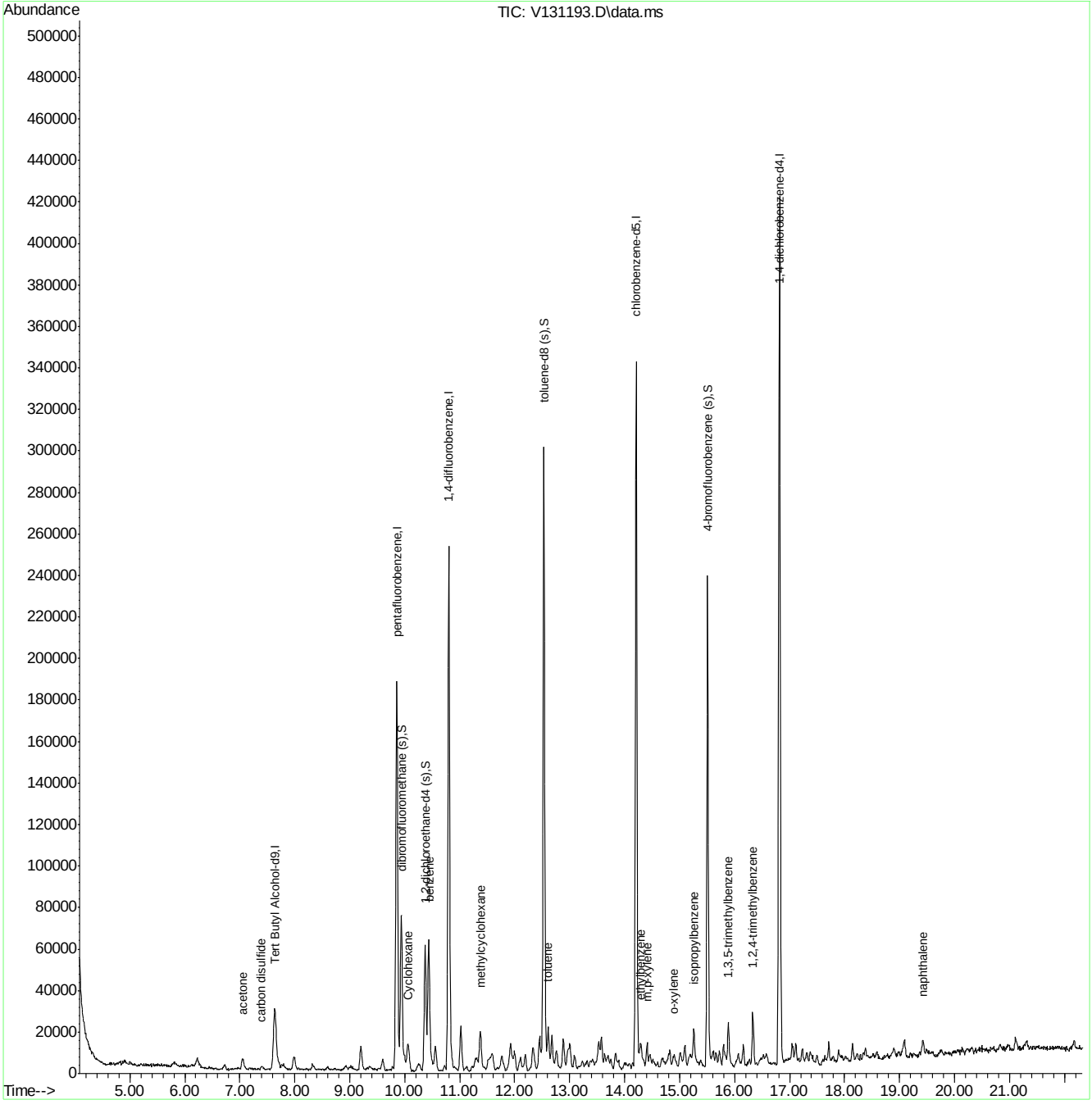
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.631	65	45390	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	162818	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	253521	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	235239	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.816	152	130949	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.938	113	57280	57.63	ug/L	0.00
Spiked Amount 50.000 Range 70 - 130 Recovery = 115.26%						
59) 1,2-dichloroethane-d4 (s)	10.372	65	49523	51.02	ug/L	0.00
Spiked Amount 50.000 Range 70 - 122 Recovery = 102.04%						
86) toluene-d8 (s)	12.532	98	245527	57.85	ug/L	0.00
Spiked Amount 50.000 Range 81 - 127 Recovery = 115.70%						
110) 4-bromofluorobenzene (s)	15.508	95	95713	52.22	ug/L	0.00
Spiked Amount 50.000 Range 66 - 132 Recovery = 104.44%						
Target Compounds						Qvalue
31) acetone	7.046	58	3361	60.38	ug/L	88
36) carbon disulfide	7.396	76	2622	0.64	ug/L	75
61) Cyclohexane	10.058	84	5531	3.33	ug/L #	37
64) methylcyclohexane	11.376	83	11706	5.79	ug/L	93
71) benzene	10.440	78	59721	11.95	ug/L	99
88) toluene	12.611	92	7928	2.42	ug/L	89
103) ethylbenzene	14.295	91	2387	0.35	ug/L	85
104) m,p-xylene	14.415	106	2276	0.85	ug/L	74
105) o-xylene	14.886	106	782m	0.30	ug/L	
112) isopropylbenzene	15.257	105	13377	2.02	ug/L	98
121) 1,3,5-trimethylbenzene	15.885	105	12356	2.09	ug/L	97
124) 1,2,4-trimethylbenzene	16.329	105	15653	2.59	ug/L	96
141) naphthalene	19.426	128	7671	2.09	ug/L	95

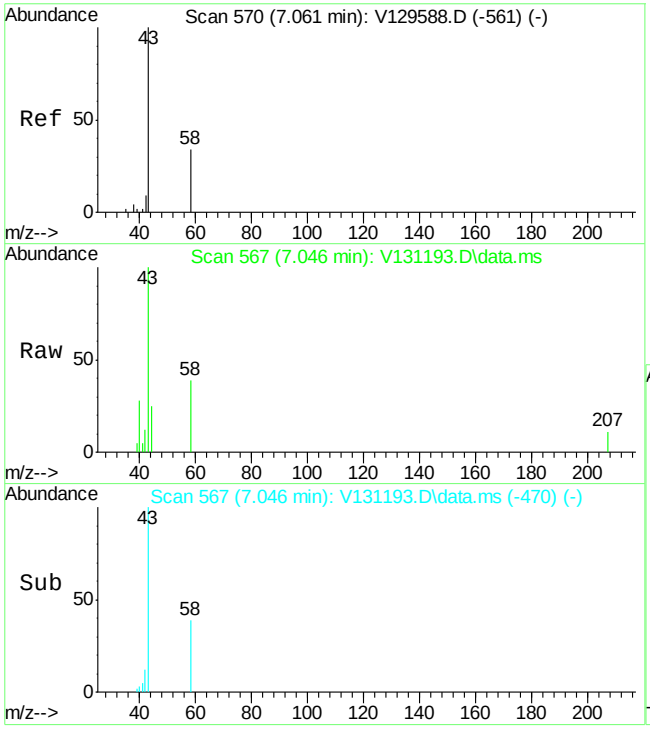
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131193.D
Acq On : 8 Dec 2012 2:40 am
Operator : THIENN
Sample : jb22822-21
Misc : MS39773,VV5655,6.6,,,,1
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Dec 11 08:42:10 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

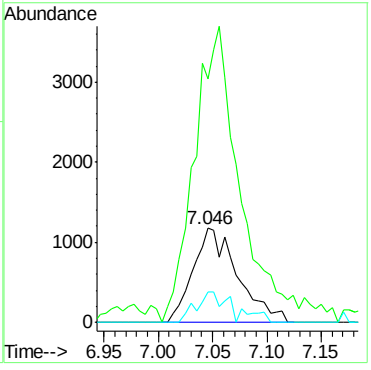


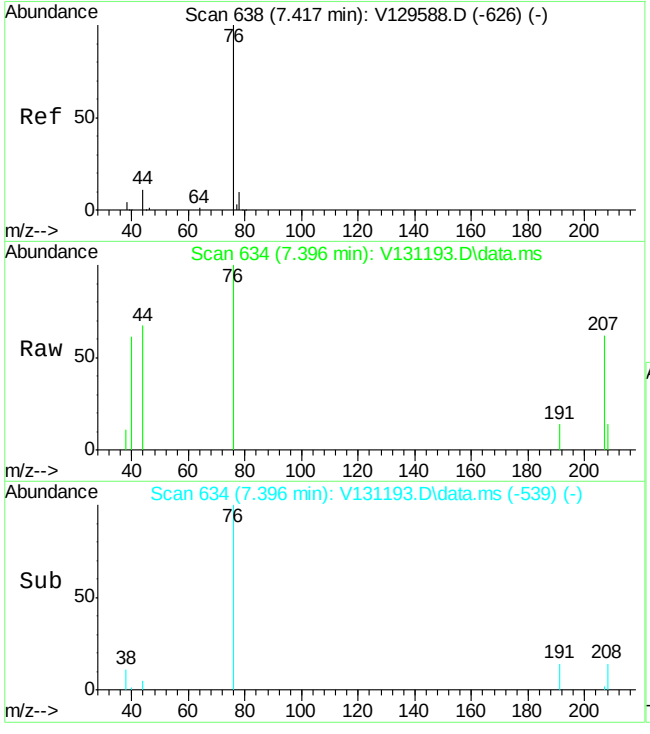


#31
acetone
Concen: 60.38 ug/L
RT: 7.046 min Scan# 567
Delta R.T. 0.005 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 58 Resp: 3361

Ion	Ratio	Lower	Upper
58	100		
43	258.9	198.4	368.4
42	31.9	21.1	39.1

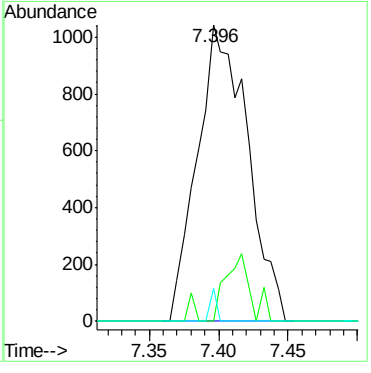


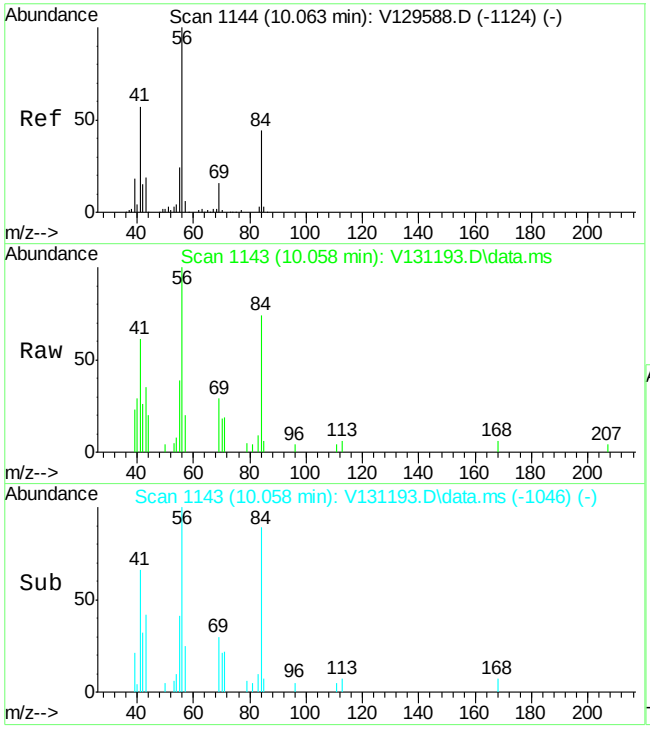


#36
carbon disulfide
Concen: 0.64 ug/L
RT: 7.396 min Scan# 634
Delta R.T. -0.005 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 76 Resp: 2622

Ion	Ratio	Lower	Upper
76	100		
78	0.0	0.0	39.3
38	11.1	0.0	33.1

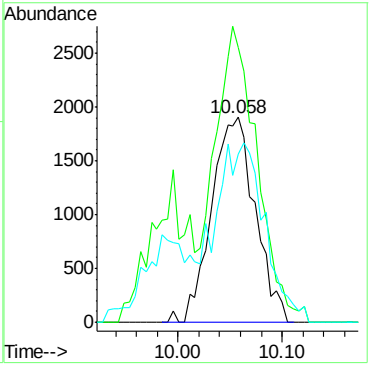


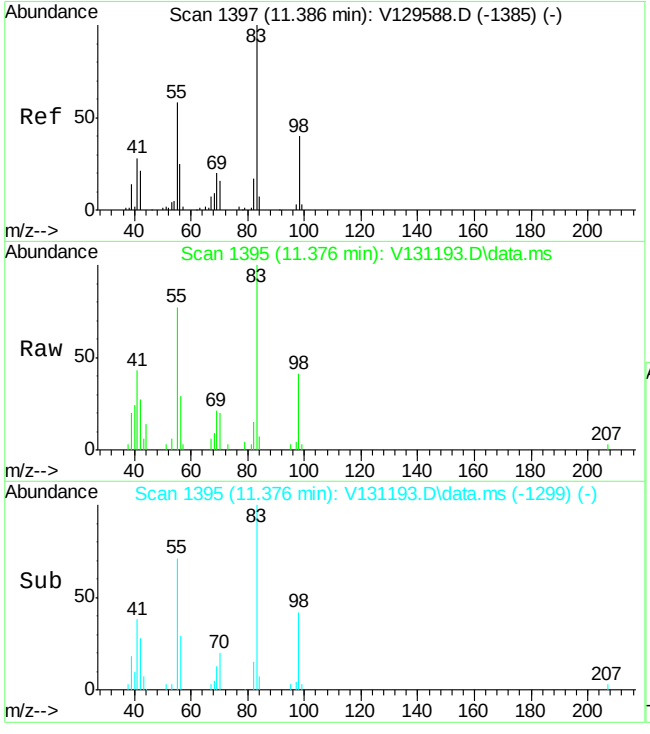


#61
Cyclohexane
Concen: 3.33 ug/L
RT: 10.058 min Scan# 1143
Delta R.T. 0.006 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 84 Resp: 5531

Ion	Ratio	Lower	Upper
84	100		
56	127.7	168.8	313.6#
41	73.3	100.2	186.2#

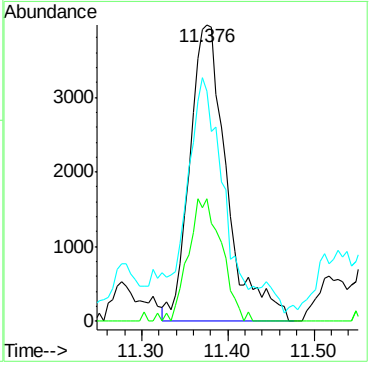


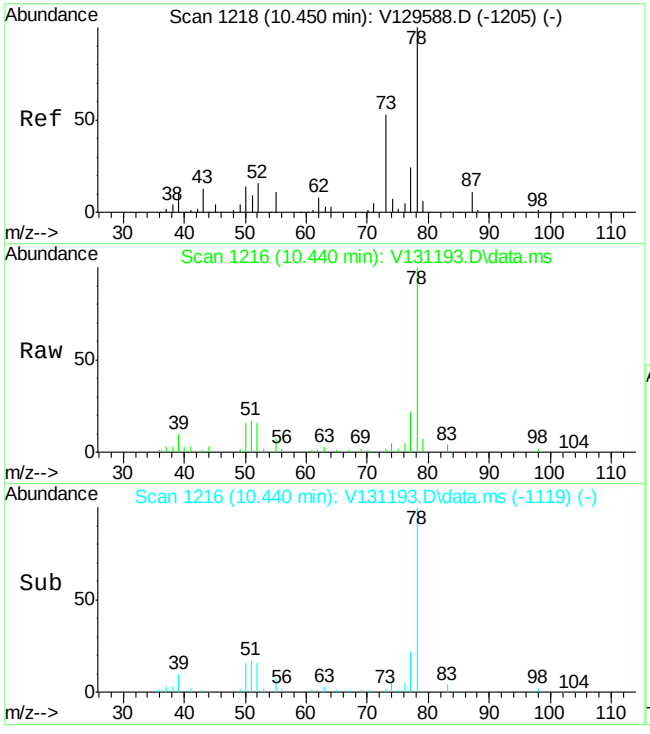


#64
methylcyclohexane
Concen: 5.79 ug/L
RT: 11.376 min Scan# 1395
Delta R.T. 0.000 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 83 Resp: 11706

Ion	Ratio	Lower	Upper
83	100		
98	37.1	29.8	55.4
55	78.3	58.4	108.6

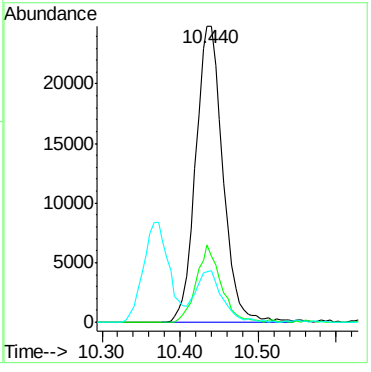


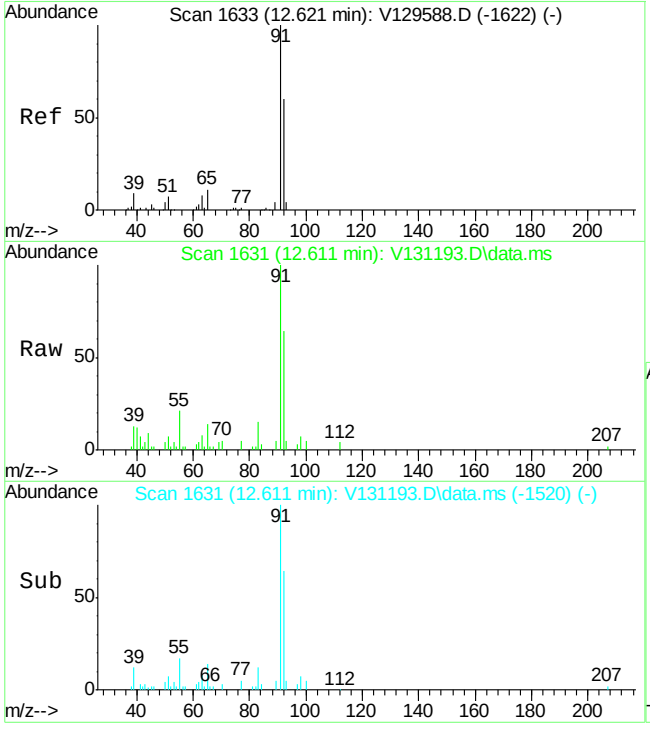


#71
benzene
Concen: 11.95 ug/L
RT: 10.440 min Scan# 1216
Delta R.T. 0.006 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 78 Resp: 59721

Ion	Ratio	Lower	Upper
78	100		
77	22.2	0.0	53.4
51	16.8	0.0	46.9

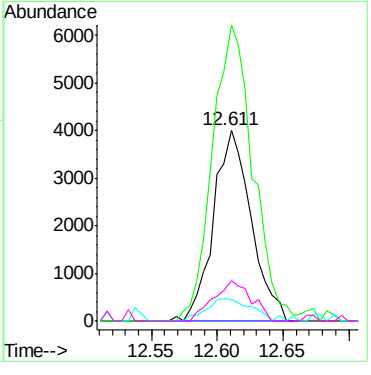


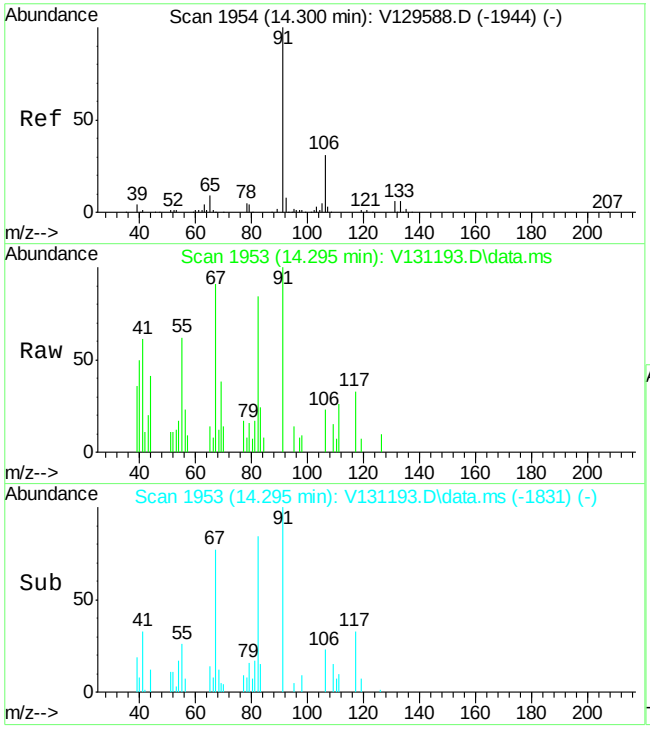


#88
toluene
Concen: 2.42 ug/L
RT: 12.611 min Scan# 1631
Delta R.T. 0.001 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 92 Resp: 7928

Ion	Ratio	Lower	Upper
92	100		
91	155.1	120.5	223.7
51	11.3	7.9	14.7
65	21.0	13.4	24.8

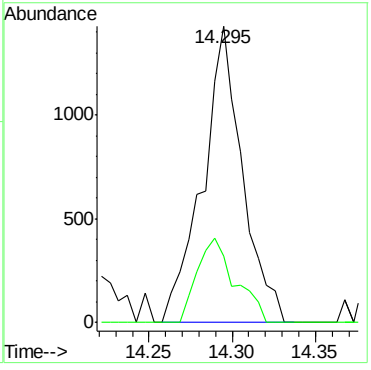


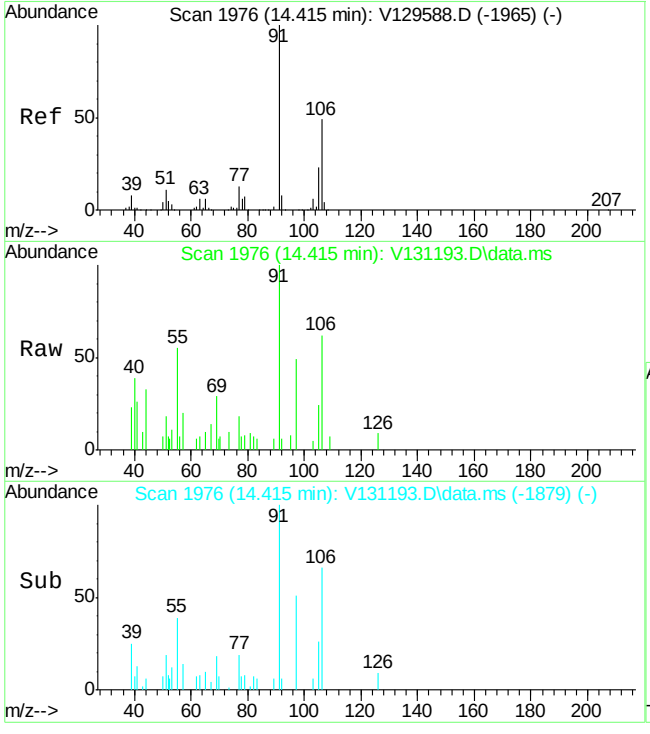


#103
ethylbenzene
Concen: 0.35 ug/L
RT: 14.295 min Scan# 1953
Delta R.T. 0.006 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion: 91 Resp: 2387

Ion	Ratio	Lower	Upper
91	100		
106	22.5	0.7	60.7

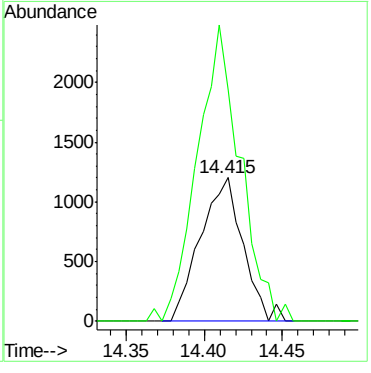


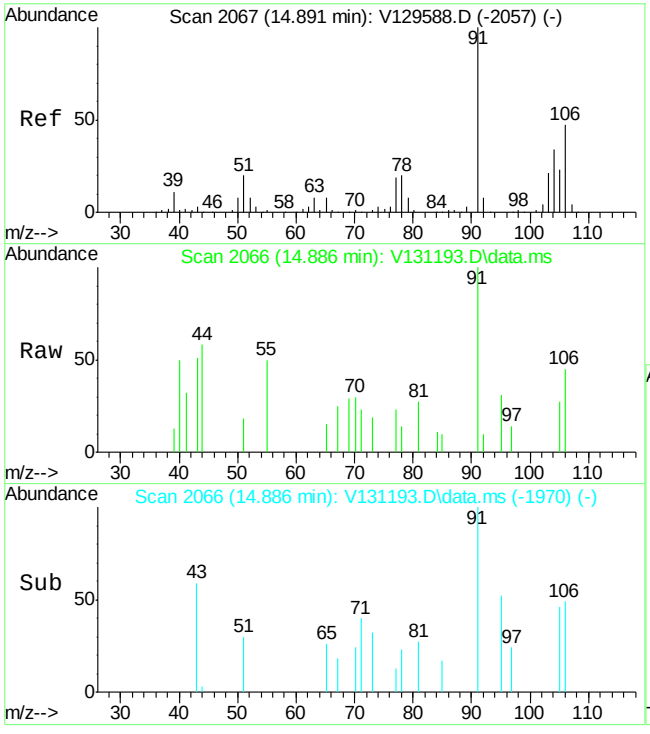


#104
m,p-xylene
Concen: 0.85 ug/L
RT: 14.415 min Scan# 1976
Delta R.T. 0.005 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion:106 Resp: 2276

Ion	Ratio	Lower	Upper
106	100		
91	160.9	140.7	261.3

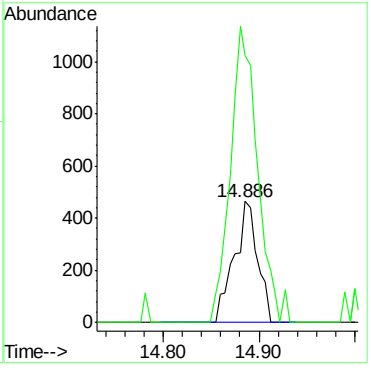


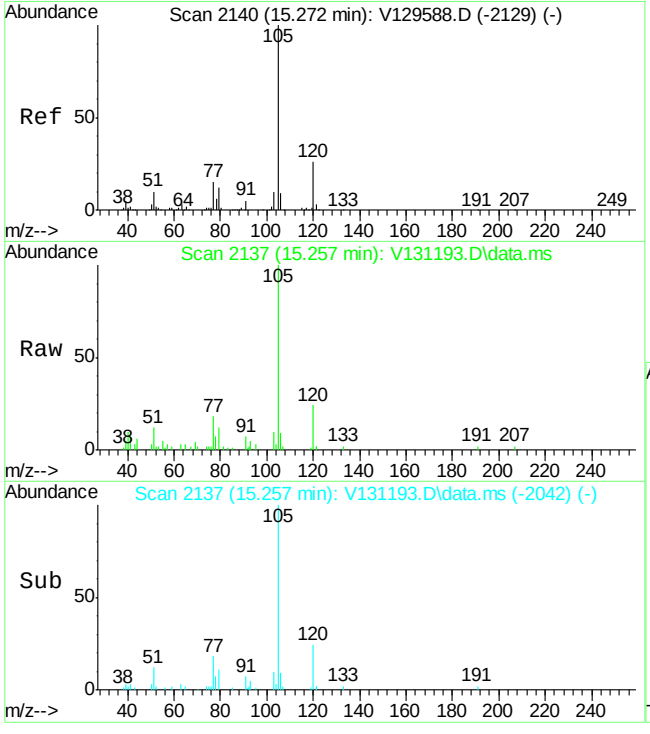


#105
o-xylene
Concen: 0.30 ug/L m
RT: 14.886 min Scan# 2066
Delta R.T. 0.001 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion:106 Resp: 782

Ion	Ratio	Lower	Upper
106	100		
91	221.1	144.3	267.9

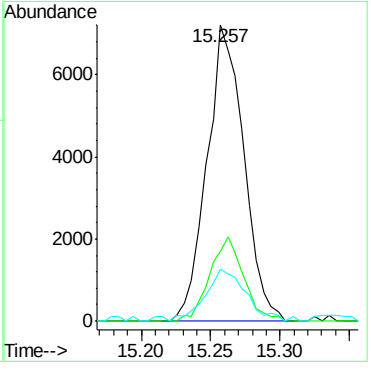


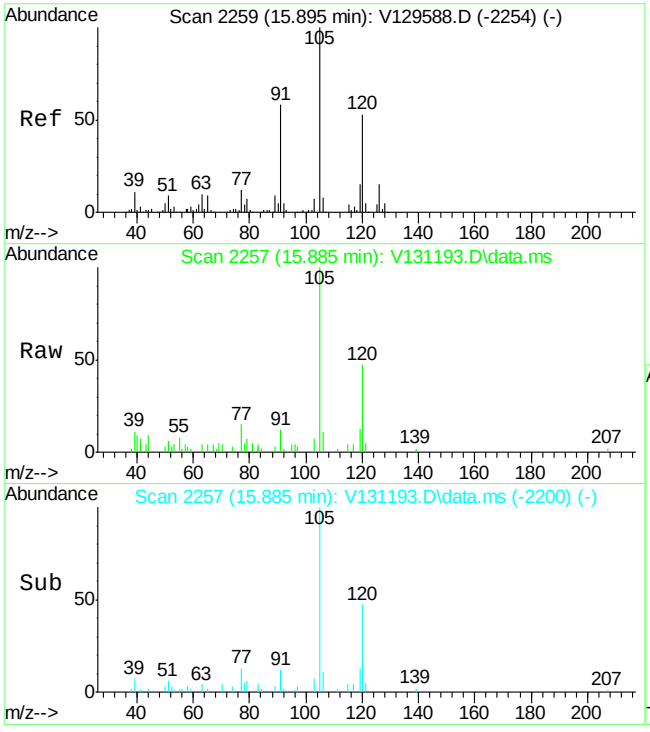


#112
isopropylbenzene
Concen: 2.02 ug/L
RT: 15.257 min Scan# 2137
Delta R.T. -0.005 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion:105 Resp: 13377

Ion	Ratio	Lower	Upper
105	100		
120	23.6	0.0	55.0
77	16.0	0.0	45.8

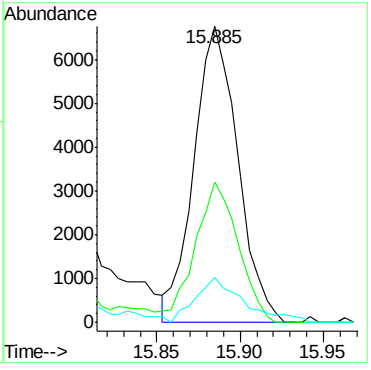


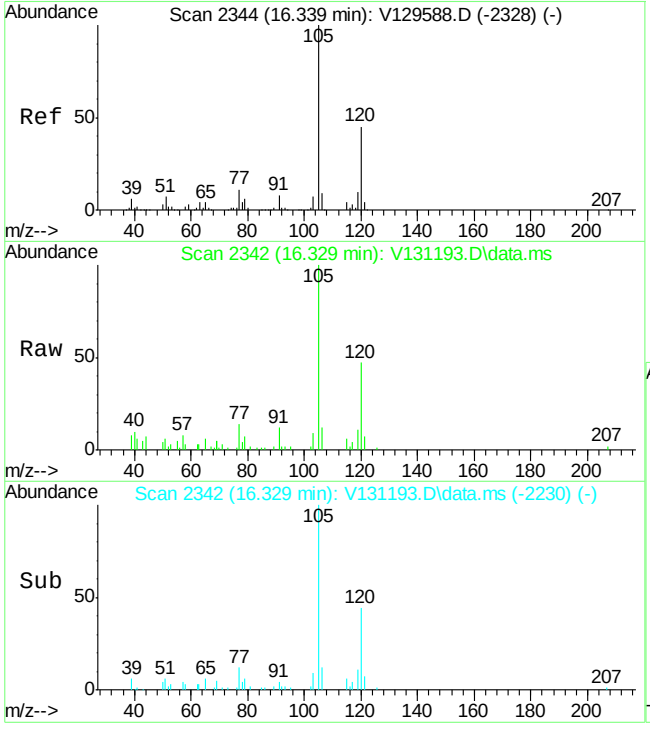


#121
1,3,5-trimethylbenzene
Concen: 2.09 ug/L
RT: 15.885 min Scan# 2257
Delta R.T. 0.000 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion:105 Resp: 12356

Ion	Ratio	Lower	Upper
105	100		
120	47.2	19.9	79.9
77	13.5	0.0	43.3

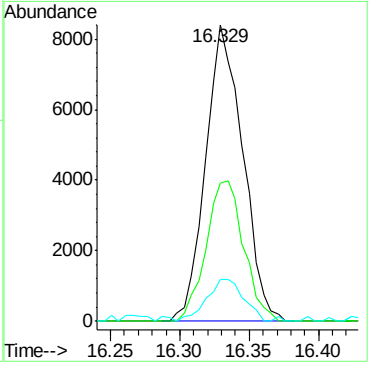


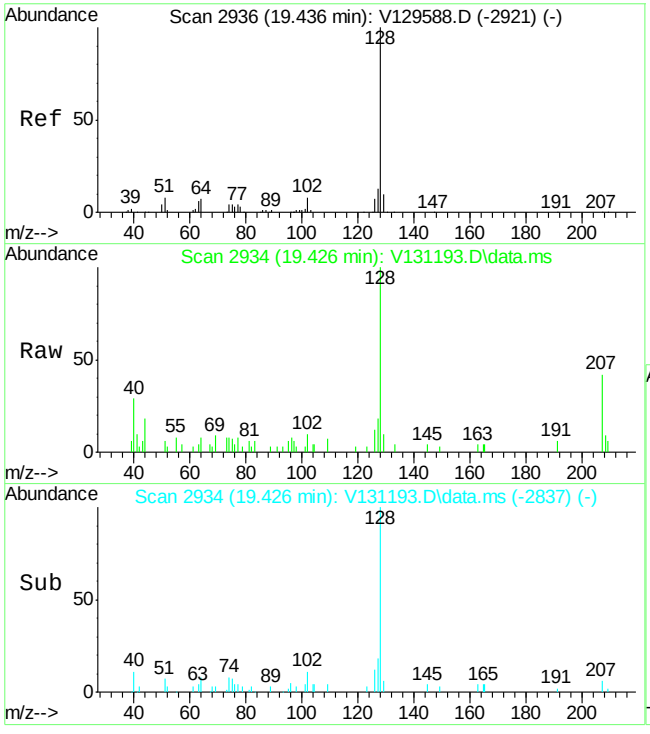


#124
1,2,4-trimethylbenzene
Concen: 2.59 ug/L
RT: 16.329 min Scan# 2342
Delta R.T. -0.005 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion:105 Resp: 15653

Ion	Ratio	Lower	Upper
105	100		
120	46.8	13.9	73.9
77	13.9	0.0	42.2

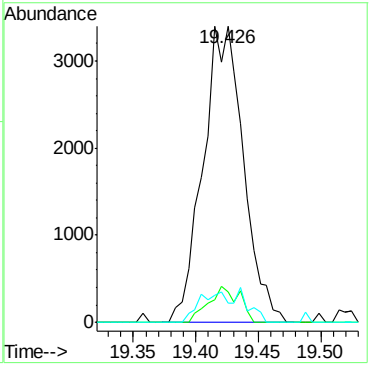




#141
naphthalene
Concen: 2.09 ug/L
RT: 19.426 min Scan# 2934
Delta R.T. 0.005 min
Lab File: V131193.D
Acq: 8 Dec 2012 2:40 am

Tgt Ion:128 Resp: 7671

Ion	Ratio	Lower	Upper
128	100		
102	10.3	0.0	38.1
51	6.4	0.0	37.6



7.1.24

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203236.D
Acq On : 11 Dec 2012 11:19 am
Operator : EmilyT
Sample : MB
Misc : ms40003,vd8287,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 11 15:08:30 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.038	65	73897	500.00 ug/L	0.00
4) pentafluorobenzene	10.261	168	126785	50.00 ug/L	0.00
53) 1,4-difluorobenzene	11.176	114	189524	50.00 ug/L	0.00
85) chlorobenzene-d5	14.518	117	178938	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.102	152	105736	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.292	113	58197	46.38 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 92.76%		
47) 1,2-dichloroethane-d4 (s)	10.716	65	81234	56.29 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 112.58%		
77) toluene-d8 (s)	12.881	98	235201	48.95 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 97.90%		
101) 4-bromofluorobenzene (s)	15.799	95	95924	50.26 ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 100.52%		

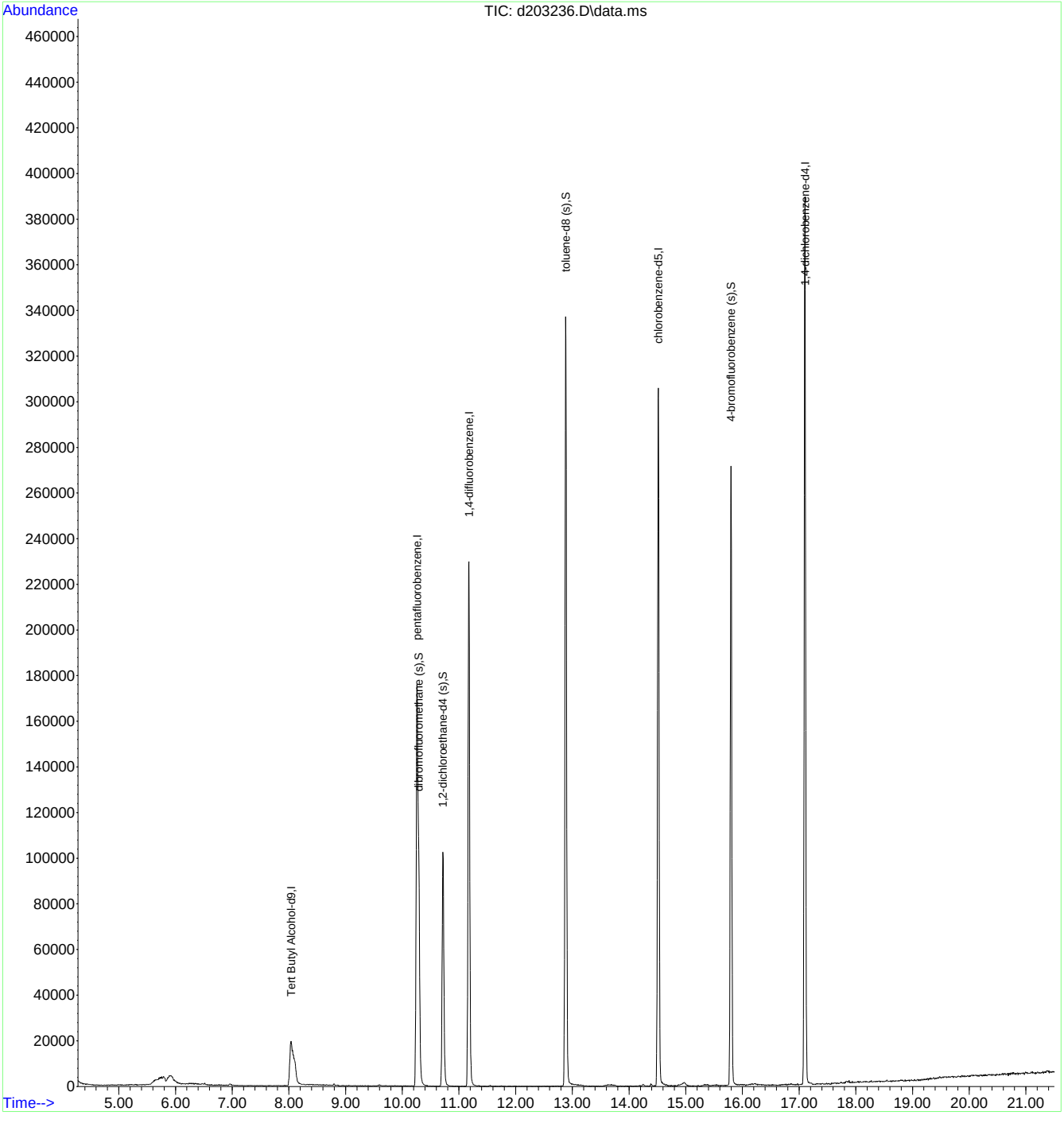
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203236.D
Acq On : 11 Dec 2012 11:19 am
Operator : EmilyT
Sample : MB
Misc : ms40003,vd8287,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 11 15:08:30 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203309.D
Acq On : 13 Dec 2012 12:01 am
Operator : EmilyT
Sample : mb
Misc : ms40077,vd8290,5,,100,5,1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Dec 13 09:01:58 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.032	65	66975	500.00	ug/L	0.00
4) pentafluorobenzene	10.255	168	120493	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	11.170	114	182432	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.512	117	173030	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	103791	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s) 10.286 113 56639 47.50 ug/L -0.01
Spiked Amount 50.000 Range 70 - 130 Recovery = 95.00%
47) 1,2-dichloroethane-d4 (s) 10.715 65 78742 57.41 ug/L 0.00
Spiked Amount 50.000 Range 70 - 122 Recovery = 114.82%
77) toluene-d8 (s) 12.880 98 225221 48.69 ug/L 0.00
Spiked Amount 50.000 Range 81 - 127 Recovery = 97.38%
101) 4-bromofluorobenzene (s) 15.793 95 93783 50.05 ug/L -0.01
Spiked Amount 50.000 Range 66 - 132 Recovery = 100.10%

Target Compounds Qvalue

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

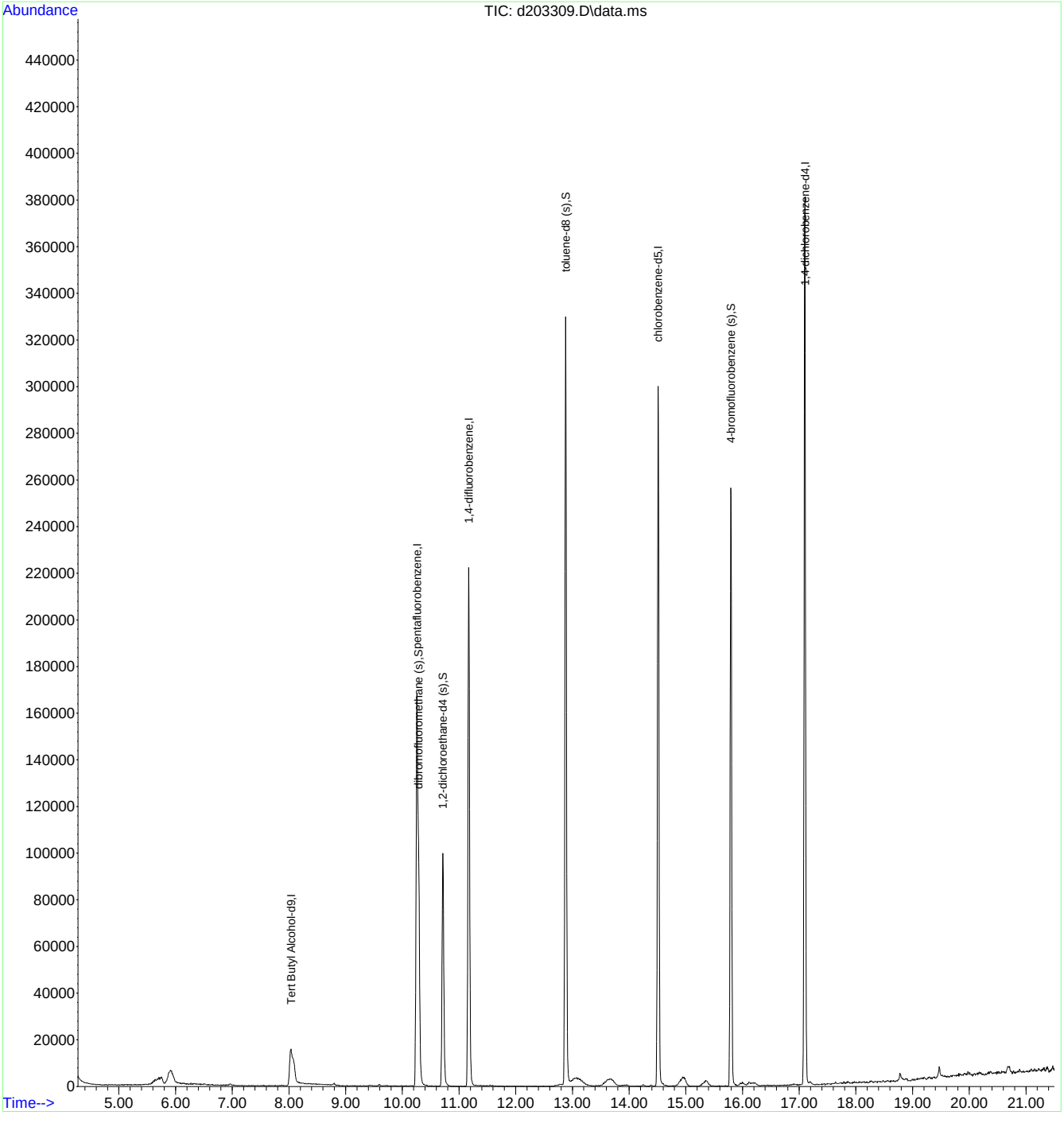
7.2.2

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203309.D
Acq On : 13 Dec 2012 12:01 am
Operator : EmilyT
Sample : mb
Misc : ms40077,vd8290,5,,100,5,1
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Dec 13 09:01:58 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203355.D
Acq On : 13 Dec 2012 11:10 pm
Operator : EmilyT
Sample : MB
Misc : ms39878,vd8292,5,,100,5,1
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Dec 14 07:56:49 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.042	65	69863	500.00	ug/L	0.00
4) pentafluorobenzene	10.260	168	111035	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.170	114	169364	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.512	117	160703	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	95546	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.291	113	52504	47.78	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 95.56%			
47) 1,2-dichloroethane-d4 (s)	10.715	65	75653	59.86	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 119.72%			
77) toluene-d8 (s)	12.880	98	211761	49.32	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 98.64%			
101) 4-bromofluorobenzene (s)	15.798	95	88150	51.11	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 102.22%			

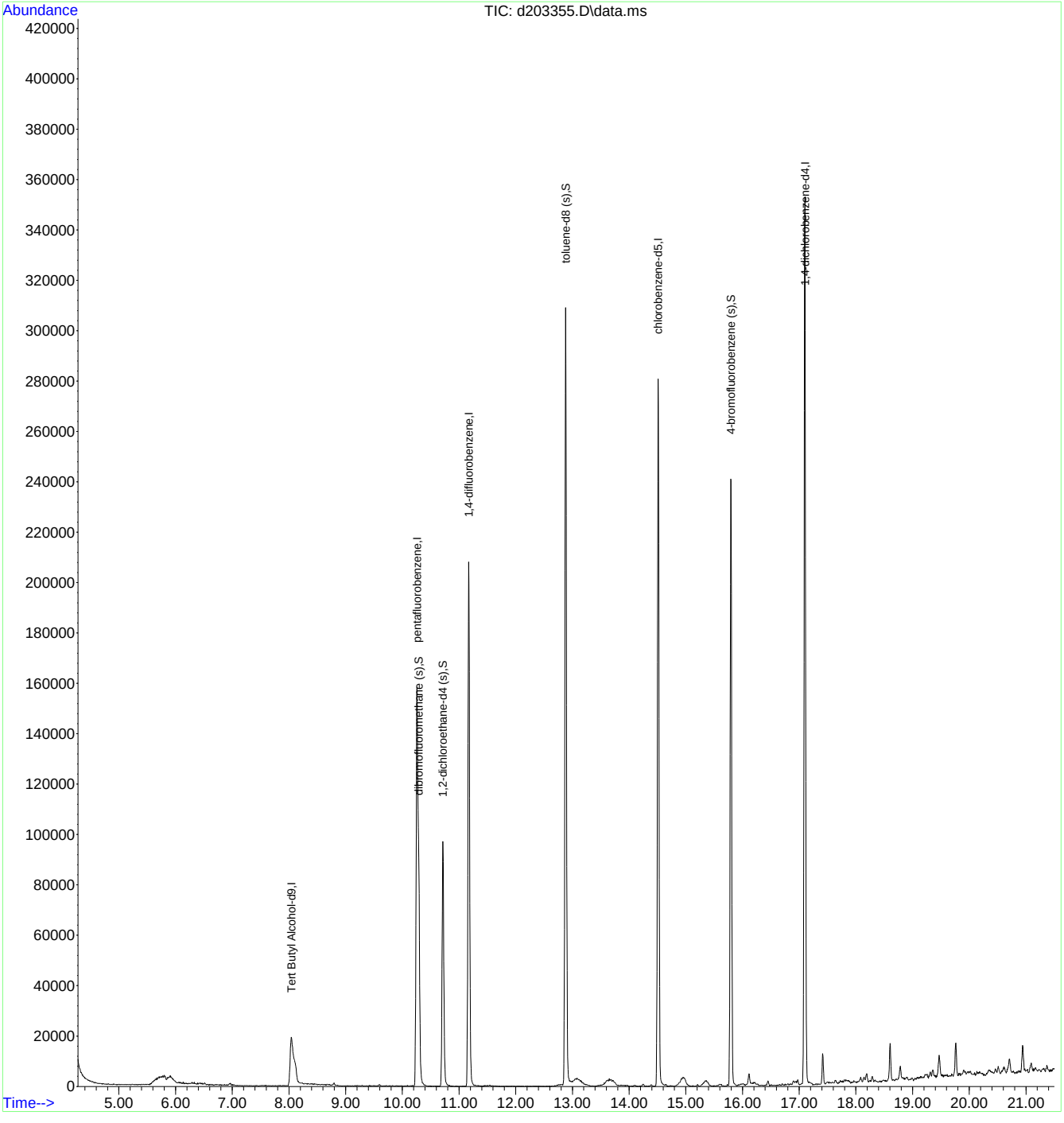
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203355.D
Acq On : 13 Dec 2012 11:10 pm
Operator : EmilyT
Sample : MB
Misc : ms39878,vd8292,5,,100,5,1
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Dec 14 07:56:49 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203378.D
Acq On : 14 Dec 2012 1:33 pm
Operator : EmilyT
Sample : mb
Misc : ms39893,vd8293,5,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 14 14:06:19 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.048	65	59172	500.00 ug/L	0.00
4) pentafluorobenzene	10.255	168	124018	50.00 ug/L	-0.01
53) 1,4-difluorobenzene	11.170	114	177730	50.00 ug/L	-0.01
85) chlorobenzene-d5	14.513	117	163649	50.00 ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	98082	50.00 ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.292	113	55424	45.16 ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 90.32%		
47) 1,2-dichloroethane-d4 (s)	10.715	65	75704	53.63 ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 107.26%		
77) toluene-d8 (s)	12.881	98	219269	48.66 ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 97.32%		
101) 4-bromofluorobenzene (s)	15.794	95	85014	48.02 ug/L	-0.01
Spiked Amount 50.000	Range 66 - 132		Recovery = 96.04%		

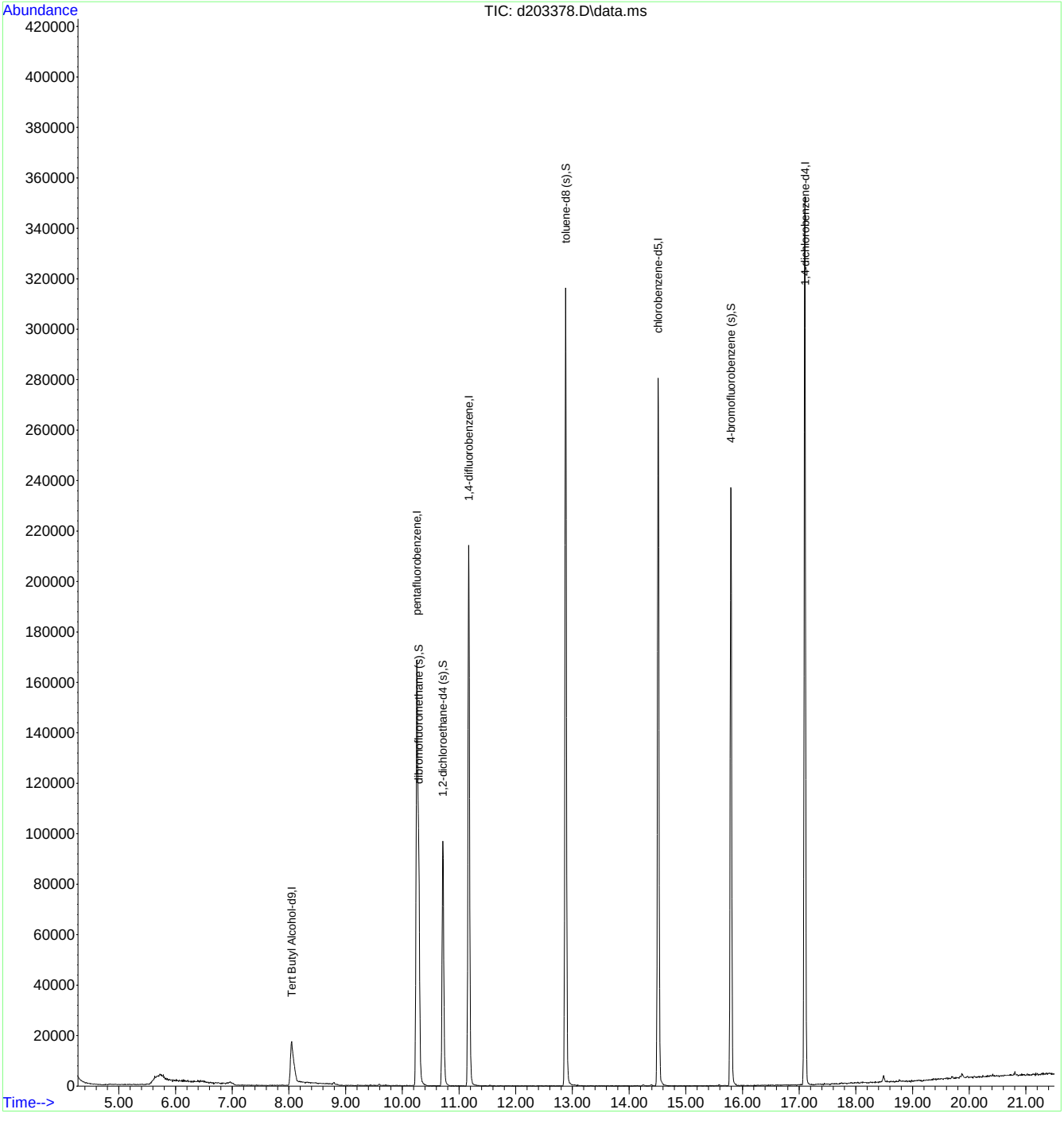
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203378.D
Acq On : 14 Dec 2012 1:33 pm
Operator : EmilyT
Sample : mb
Misc : ms39893,vd8293,5,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 14 14:06:19 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203476.D
Acq On : 17 Dec 2012 10:59 am
Operator : EmilyT
Sample : mb
Misc : ms39999,vd8297,5,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 17 16:35:48 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.068	65	64493	500.00	ug/L	0.03
4) pentafluorobenzene	10.254	168	127224	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	11.170	114	184213	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.512	117	169598	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.101	152	104057	50.00	ug/L	0.00

System Monitoring Compounds

46) dibromofluoromethane (s)	10.286	113	56456	44.84	ug/L	-0.01
Spiked Amount 50.000	Range 70 - 130		Recovery = 89.68%			
47) 1,2-dichloroethane-d4 (s)	10.715	65	77150	53.27	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 106.54%			
77) toluene-d8 (s)	12.880	98	224961	48.17	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 96.34%			
101) 4-bromofluorobenzene (s)	15.798	95	90944	48.42	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 96.84%			

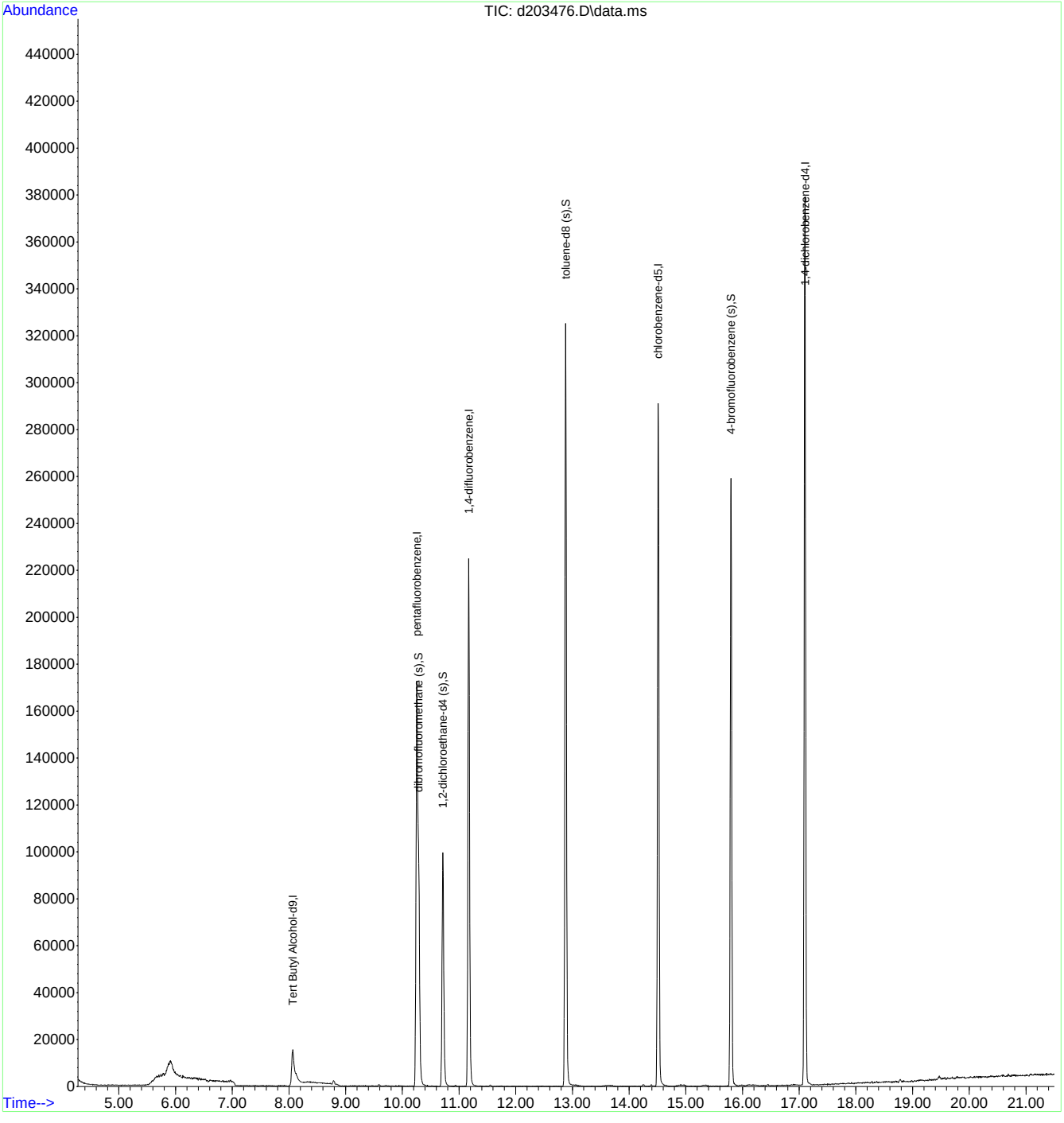
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : d203476.D
Acq On : 17 Dec 2012 10:59 am
Operator : EmilyT
Sample : mb
Misc : ms39999,vd8297,5,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 17 16:35:48 2012
Quant Method : C:\MSDCHEM\1\METHODS\MD8248.M
Quant Title : SW-846 Method 8260B
QLast Update : Wed Nov 28 10:39:36 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5654\
Data File : V131151.D
Acq On : 7 Dec 2012 12:00 am
Operator : THIENN
Sample : mb2
Misc : MS39738,VV5654,5,,,,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 07 10:40:21 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.631	65	35211	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	163453	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	249059	50.00	ug/L	0.00
94) chlorobenzene-d5	14.206	117	226635	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	126523	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.938	113	55384	55.51	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 111.02%			
59) 1,2-dichloroethane-d4 (s)	10.372	65	47817	49.07	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 98.14%			
86) toluene-d8 (s)	12.527	98	241211	57.85	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 115.70%			
110) 4-bromofluorobenzene (s)	15.508	95	89630	50.76	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 101.52%			

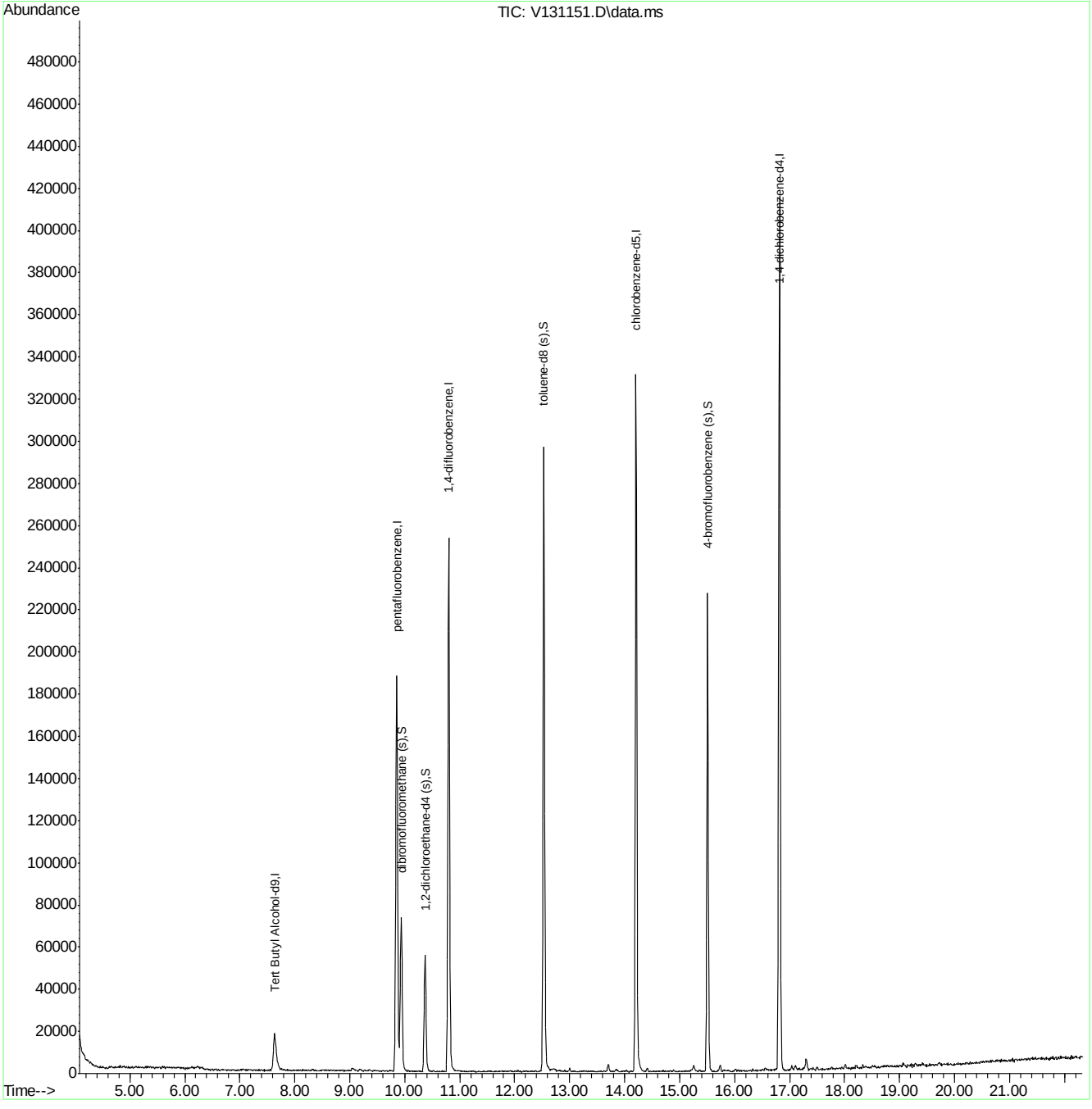
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5654\
Data File : V131151.D
Acq On : 7 Dec 2012 12:00 am
Operator : THIENN
Sample : mb2
Misc : MS39738,VV5654,5,,,,1
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 07 10:40:21 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131187.D
Acq On : 7 Dec 2012 11:35 pm
Operator : THIENN
Sample : mb2
Misc : MS39786,VV5655,5,,,,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 11 08:35:46 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.636	65	37151	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	140145	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	214845	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	199104	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.815	152	115597	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.938	113	48472	56.66	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 113.32%			
59) 1,2-dichloroethane-d4 (s)	10.367	65	43659	52.26	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 104.52%			
86) toluene-d8 (s)	12.532	98	209939	58.37	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 116.74%			
110) 4-bromofluorobenzene (s)	15.508	95	78508	50.61	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 101.22%			

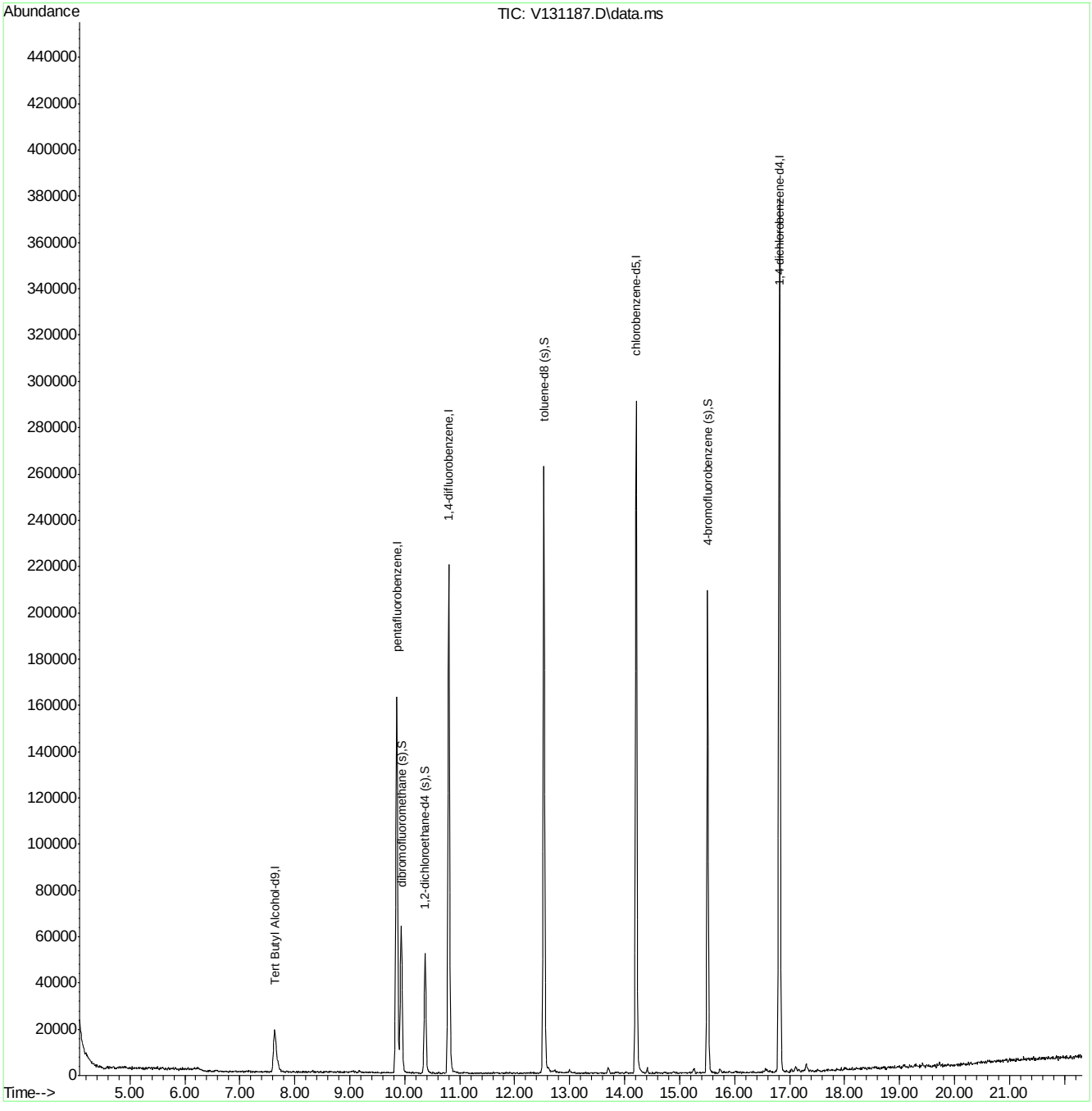
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5655\
Data File : V131187.D
Acq On : 7 Dec 2012 11:35 pm
Operator : THIENN
Sample : mb2
Misc : MS39786,VV5655,5,,,,1
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 11 08:35:46 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5660\
Data File : V131338.D
Acq On : 13 Dec 2012 10:58 am
Operator : THIENN
Sample : mb1
Misc : MS39770,VV5660,5,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 13 15:03:17 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Tert Butyl Alcohol-d9	7.626	65	38869	500.00	ug/L	0.00
4) pentafluorobenzene	9.854	168	169182	50.00	ug/L	0.00
63) 1,4-difluorobenzene	10.801	114	239647	50.00	ug/L	0.00
94) chlorobenzene-d5	14.211	117	213796	50.00	ug/L	0.00
111) 1,4-dichlorobenzene-d4	16.816	152	116211	50.00	ug/L	0.00
System Monitoring Compounds						
58) dibromofluoromethane (s)	9.933	113	55006	53.26	ug/L	0.00
Spiked Amount 50.000	Range 70 - 130		Recovery = 106.52%			
59) 1,2-dichloroethane-d4 (s)	10.367	65	48420	48.01	ug/L	0.00
Spiked Amount 50.000	Range 70 - 122		Recovery = 96.02%			
86) toluene-d8 (s)	12.532	98	218237	54.40	ug/L	0.00
Spiked Amount 50.000	Range 81 - 127		Recovery = 108.80%			
110) 4-bromofluorobenzene (s)	15.508	95	82731	49.67	ug/L	0.00
Spiked Amount 50.000	Range 66 - 132		Recovery = 99.34%			

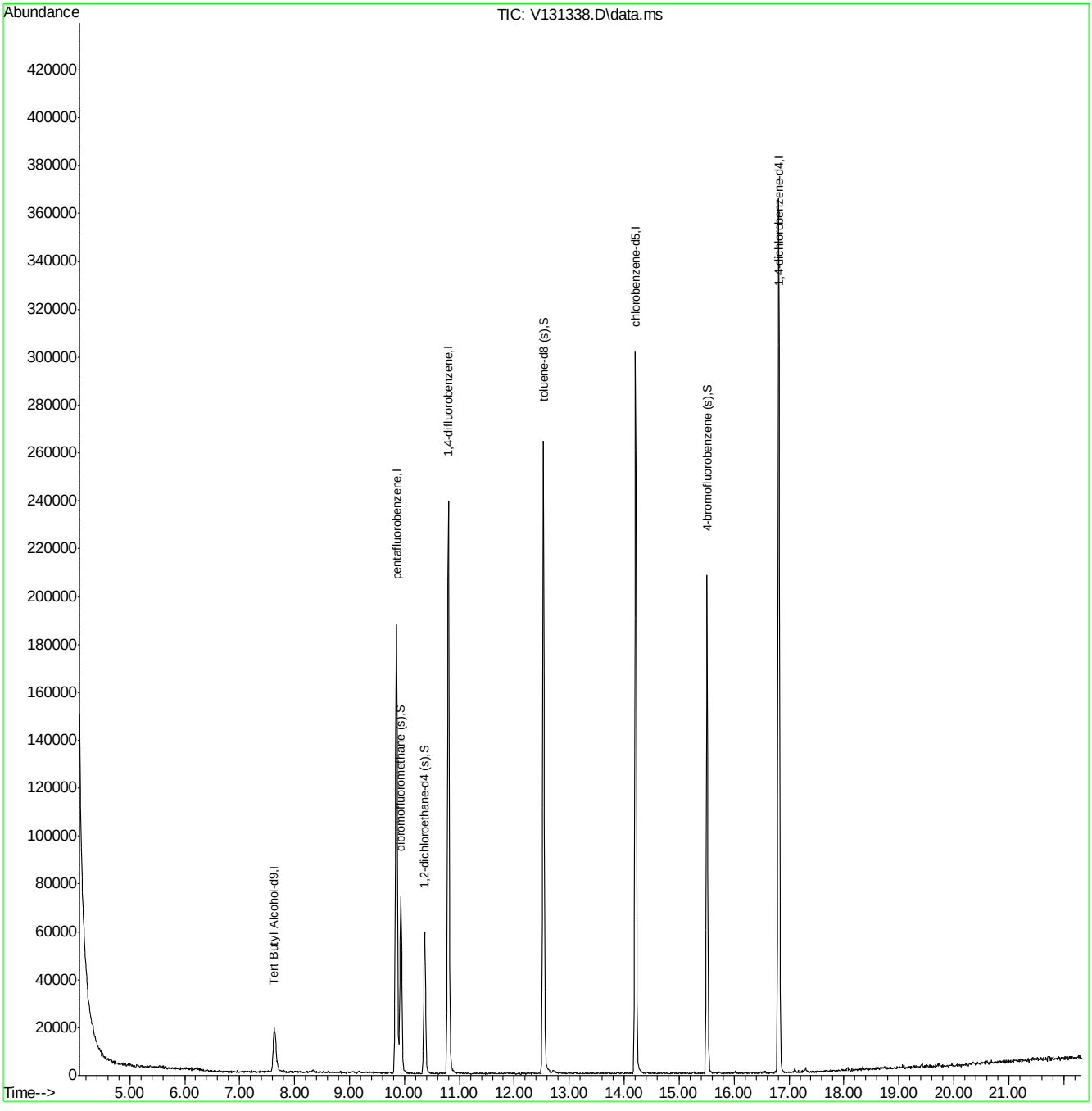
Target Compounds Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V-CORE\vv5660\
Data File : V131338.D
Acq On : 13 Dec 2012 10:58 am
Operator : THIENN
Sample : mb1
Misc : MS39770,VV5660,5,,,,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 13 15:03:17 2012
Quant Method : C:\MSDCHEM\1\METHODS\MVS5649.M
Quant Title : SW846 8260B, ZB624 60m x 0.25mm x 1.4um
QLast Update : Fri Nov 30 12:23:46 2012
Response via : Initial Calibration



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: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62037-MB1	2M48553.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080

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

JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	29	ug/kg	
56-55-3	Benzo(a)anthracene	ND	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	29	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	29	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	29	ug/kg	
218-01-9	Chrysene	ND	29	ug/kg	
86-73-7	Fluorene	ND	29	ug/kg	
85-01-8	Phenanthrene	ND	29	ug/kg	
129-00-0	Pyrene	ND	29	ug/kg	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	49%	21-122%
321-60-8	2-Fluorobiphenyl	67%	30-117%
1718-51-0	Terphenyl-d14	97%	31-129%

Method Blank Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62037-MB1	M90314.D	1	12/17/12	OYA	12/14/12	OP62037	EM3659

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

JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

CAS No.	Compound	Result	RL	Units	Q
120-12-7	Anthracene	ND	29	ug/kg	
56-55-3	Benzo(a)anthracene	ND	29	ug/kg	
50-32-8	Benzo(a)pyrene	ND	29	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	29	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	29	ug/kg	
218-01-9	Chrysene	ND	29	ug/kg	
86-73-7	Fluorene	ND	29	ug/kg	
85-01-8	Phenanthrene	ND	29	ug/kg	
129-00-0	Pyrene	ND	29	ug/kg	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	56%	21-122%
321-60-8	2-Fluorobiphenyl	74%	30-117%
1718-51-0	Terphenyl-d14	98%	31-129%

Blank Spike Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62037-BS1	2M48554.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080

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

JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	1430	1240	87	59-121
56-55-3	Benzo(a)anthracene	1430	1170	82	54-119
50-32-8	Benzo(a)pyrene	1430	1250	88	59-122
205-99-2	Benzo(b)fluoranthene	1430	1150	81	45-133
191-24-2	Benzo(g,h,i)perylene	1430	1260	88	57-122
218-01-9	Chrysene	1430	1150	81	55-120
86-73-7	Fluorene	1430	1270	89	57-117
85-01-8	Phenanthrene	1430	1180	83	58-118
129-00-0	Pyrene	1430	1070	75	54-122

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	67%	21-122%
321-60-8	2-Fluorobiphenyl	77%	30-117%
1718-51-0	Terphenyl-d14	91%	31-129%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62037-MS	2M48566.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
OP62037-MSD	2M48567.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
JB22822-1	2M48565.D	1	12/17/12	OYA	12/14/12	OP62037	E2M2080
JB22822-1 [a]	2M48583.D	2	12/18/12	OYA	12/14/12	OP62037	E2M2081

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

JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

CAS No.	Compound	JB22822-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	151		1690	1490	79	1670	89	11	33-130/30
56-55-3	Benzo(a)anthracene	411		1690	1820	83	1900	87	4	29-127/33
50-32-8	Benzo(a)pyrene	484		1690	2060	93	2090	94	1	28-134/34
205-99-2	Benzo(b)fluoranthene	626		1690	2510	111	2920	134	15	19-143/38
191-24-2	Benzo(g,h,i)perylene	335		1690	1640	77	1800	86	9	27-135/34
218-01-9	Chrysene	557		1690	1960	83	2030	86	4	29-129/32
86-73-7	Fluorene	206		1690	1510	77	1630	83	8	32-125/32
85-01-8	Phenanthrene	510		1690	1990	87	2070	91	4	28-132/34
129-00-0	Pyrene	718		1690	2480	104	2210	87	12	27-132/33

CAS No.	Surrogate Recoveries	MS	MSD	JB22822-1	JB22822-1	Limits
4165-60-0	Nitrobenzene-d5	47%	43%	40%	38%	21-122%
321-60-8	2-Fluorobiphenyl	55%	55%	54%	52%	30-117%
1718-51-0	Terphenyl-d14	80%	91%	97%	83%	31-129%

(a) Confirmation run for internal standard areas.

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2013-DFTPP
Lab File ID: 2M46670.D
Instrument ID: GCMS2M
Injection Date: 10/02/12
Injection Time: 14:01

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	29430	41.1		Pass
68	Less than 2.0% of mass 69	394	0.55	(1.41) [a]	Pass
69	Mass 69 relative abundance	27877	38.9		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	37690	52.6		Pass
197	Less than 1.0% of mass 198	309	0.43		Pass
198	Base peak, 100% relative abundance	71618	100.0		Pass
199	5.0 - 9.0% of mass 198	4898	6.84		Pass
275	10.0 - 30.0% of mass 198	15179	21.2		Pass
365	1.0 - 100.0% of mass 198	1725	2.41		Pass
441	Present, but less than mass 443	6265	8.75	(73.6) [b]	Pass
442	40.0 - 100.0% of mass 198	44074	61.5		Pass
443	17.0 - 23.0% of mass 442	8508	11.9	(19.3) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2013-IC2013	2M46671.D	10/02/12	14:14	00:13	Initial cal 100
E2M2013-IC2013	2M46672.D	10/02/12	14:38	00:37	Initial cal 2
E2M2013-IC2013	2M46673.D	10/02/12	15:03	01:02	Initial cal 80
E2M2013-IC2013	2M46674.D	10/02/12	15:27	01:26	Initial cal 10
E2M2013-IC2013	2M46675.D	10/02/12	15:51	01:50	Initial cal 5
E2M2013-IC2013	2M46676.D	10/02/12	16:15	02:14	Initial cal 1
E2M2013-IC2013	2M46677.D	10/02/12	16:39	02:38	Initial cal 25
E2M2013-ICC2013	2M46678.D	10/02/12	17:03	03:02	Initial cal 50
E2M2013-ICV2009	2M46679.D	10/02/12	17:27	03:26	Initial cal verification 50
E2M2013-ICV2013	2M46680.D	10/02/12	17:51	03:50	Initial cal verification 50
E2M2013-ICV2013	2M46681.D	10/02/12	18:15	04:14	Initial cal verification 50
E2M2013-ICV2013	2M46682.D	10/02/12	18:40	04:39	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2034-DFTPP
Lab File ID: 2M47225.D
Instrument ID: GCMS2M
Injection Date: 10/22/12
Injection Time: 10:12

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	45508	42.4		Pass
68	Less than 2.0% of mass 69	855	0.80	(1.86) [a]	Pass
69	Mass 69 relative abundance	45846	42.7		Pass
70	Less than 2.0% of mass 69	313	0.29	(0.68) [a]	Pass
127	40.0 - 60.0% of mass 198	58629	54.6		Pass
197	Less than 1.0% of mass 198	246	0.23		Pass
198	Base peak, 100% relative abundance	107368	100.0		Pass
199	5.0 - 9.0% of mass 198	7318	6.82		Pass
275	10.0 - 30.0% of mass 198	26496	24.7		Pass
365	1.0 - 100.0% of mass 198	3155	2.94		Pass
441	Present, but less than mass 443	10895	10.1	(75.2) [b]	Pass
442	40.0 - 100.0% of mass 198	75786	70.6		Pass
443	17.0 - 23.0% of mass 442	14484	13.5	(19.1) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2034-IC2034	2M47226.D	10/22/12	10:25	00:13	Initial cal 25
E2M2034-IC2034	2M47227.D	10/22/12	10:50	00:38	Initial cal 100
E2M2034-IC2034	2M47228.D	10/22/12	11:13	01:01	Initial cal 1
E2M2034-IC2034	2M47229.D	10/22/12	11:44	01:32	Initial cal 80
E2M2034-IC2034	2M47230.D	10/22/12	12:07	01:55	Initial cal 2
E2M2034-ICC2034	2M47231.D	10/22/12	12:36	02:24	Initial cal 50
E2M2034-IC2034	2M47232.D	10/22/12	12:59	02:47	Initial cal 5
E2M2034-IC2034	2M47233.D	10/22/12	13:22	03:10	Initial cal 10
E2M2034-ICV2034	2M47234.D	10/22/12	13:45	03:33	Initial cal verification 50
E2M2034-ICV2034	2M47235.D	10/22/12	14:08	03:56	Initial cal verification 50
E2M2034-ICV2034	2M47236.D	10/22/12	14:30	04:18	Initial cal verification 50
E2M2034-ICV2034	2M47237.D	10/22/12	14:53	04:41	Initial cal verification 50
E2M2034-ICV2034	2M47238.D	10/22/12	15:16	05:04	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2080-DFTPP
Lab File ID: 2M48550.D
Instrument ID: GCMS2M
Injection Date: 12/17/12
Injection Time: 10:34

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	11161	52.9		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	11123	52.7		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	12255	58.1		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	21090	100.0		Pass
199	5.0 - 9.0% of mass 198	1453	6.89		Pass
275	10.0 - 30.0% of mass 198	5360	25.4		Pass
365	1.0 - 100.0% of mass 198	580	2.75		Pass
441	Present, but less than mass 443	2542	12.1	(75.7) [b]	Pass
442	40.0 - 100.0% of mass 198	17506	83.0		Pass
443	17.0 - 23.0% of mass 442	3358	15.9	(19.2) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2080-CC2034	2M48551.D	12/17/12	10:49	00:15	Continuing cal 25
E2M2080-CC2013	2M48552.D	12/17/12	11:12	00:38	Continuing cal 50
OP62037-MB1	2M48553.D	12/17/12	11:35	01:01	Method Blank
OP62037-BS1	2M48554.D	12/17/12	11:58	01:24	Blank Spike
ZZZZZZ	2M48555.D	12/17/12	12:30	01:56	(unrelated sample)
ZZZZZZ	2M48556.D	12/17/12	12:54	02:20	(unrelated sample)
ZZZZZZ	2M48557.D	12/17/12	13:18	02:44	(unrelated sample)
ZZZZZZ	2M48558.D	12/17/12	13:41	03:07	(unrelated sample)
ZZZZZZ	2M48559.D	12/17/12	14:04	03:30	(unrelated sample)
ZZZZZZ	2M48560.D	12/17/12	14:27	03:53	(unrelated sample)
ZZZZZZ	2M48561.D	12/17/12	14:50	04:16	(unrelated sample)
ZZZZZZ	2M48562.D	12/17/12	15:13	04:39	(unrelated sample)
ZZZZZZ	2M48563.D	12/17/12	15:36	05:02	(unrelated sample)
ZZZZZZ	2M48564.D	12/17/12	16:00	05:26	(unrelated sample)
JB22822-1	2M48565.D	12/17/12	16:23	05:49	BH-12-112_0.5-1'
OP62037-MS	2M48566.D	12/17/12	16:46	06:12	Matrix Spike
OP62037-MSD	2M48567.D	12/17/12	17:09	06:35	Matrix Spike Duplicate
JB22822-4	2M48569.D	12/17/12	17:55	07:21	BH-12-107_2.5-3'
JB22822-5	2M48570.D	12/17/12	18:19	07:45	BH-12-110_3-3.5'

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2080-DFTPP
Lab File ID: 2M48550.D
Instrument ID: GCMS2M
Injection Date: 12/17/12
Injection Time: 10:34

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
JB22822-6	2M48571.D	12/17/12	18:42	08:08	BH-12-108_1'
JB22822-7	2M48572.D	12/17/12	19:05	08:31	BH-12-105_2-2.5'
JB22822-9	2M48574.D	12/17/12	19:51	09:17	BH-12-106_2-2.5'
JB22822-10	2M48575.D	12/17/12	20:14	09:40	BH-12-111_0.5-1'
JB22822-21	2M48577.D	12/17/12	21:00	10:26	BH-12-121_2-2.5'

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2081-DFTPP
Lab File ID: 2M48580.D
Instrument ID: GCMS2M
Injection Date: 12/18/12
Injection Time: 11:55

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	7125	51.0		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	7078	50.7		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	7712	55.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	13958	100.0		Pass
199	5.0 - 9.0% of mass 198	925	6.63		Pass
275	10.0 - 30.0% of mass 198	3654	26.2		Pass
365	1.0 - 100.0% of mass 198	396	2.84		Pass
441	Present, but less than mass 443	1963	14.1	(76.0) [b]	Pass
442	40.0 - 100.0% of mass 198	13550	97.1		Pass
443	17.0 - 23.0% of mass 442	2584	18.5	(19.1) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E2M2081-CC2034	2M48581.D	12/18/12	12:14	00:19	Continuing cal 50
E2M2081-CC2013	2M48582.D	12/18/12	12:45	00:50	Continuing cal 50
JB22822-1	2M48583.D	12/18/12	13:09	01:14	BH-12-112_0.5-1'
JB22822-2	2M48584.D	12/18/12	13:32	01:37	BH-12-107_1-1.5'
JB22822-4	2M48585.D	12/18/12	13:56	02:01	BH-12-107_2.5-3'
JB22822-6	2M48587.D	12/18/12	14:42	02:47	BH-12-108_1'
JB22822-8	2M48588.D	12/18/12	15:06	03:11	BH-12-106_1-1.5'
JB22822-9	2M48589.D	12/18/12	15:29	03:34	BH-12-106_2-2.5'
JB22822-11	2M48590.D	12/18/12	15:53	03:58	BH-12-111_1-1.5'
JB22822-21	2M48591.D	12/18/12	16:16	04:21	BH-12-121_2-2.5'
ZZZZZZ	2M48592.D	12/18/12	16:39	04:44	(unrelated sample)
ZZZZZZ	2M48593.D	12/18/12	17:02	05:07	(unrelated sample)
ZZZZZZ	2M48594.D	12/18/12	17:25	05:30	(unrelated sample)
ZZZZZZ	2M48595.D	12/18/12	17:49	05:54	(unrelated sample)
ZZZZZZ	2M48596.D	12/18/12	18:12	06:17	(unrelated sample)
ZZZZZZ	2M48597.D	12/18/12	18:35	06:40	(unrelated sample)
ZZZZZZ	2M48598.D	12/18/12	18:58	07:03	(unrelated sample)
ZZZZZZ	2M48599.D	12/18/12	19:21	07:26	(unrelated sample)
ZZZZZZ	2M48600.D	12/18/12	19:45	07:50	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: E2M2081-DFTPP
Lab File ID: 2M48580.D
Instrument ID: GCMS2M
Injection Date: 12/18/12
Injection Time: 11:55

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
JB22822-5	2M48601.D	12/18/12	20:08	08:13	BH-12-110_3-3.5'

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EM3617-DFTPP
Lab File ID: M89361.D
Instrument ID: GCMSM
Injection Date: 11/08/12
Injection Time: 13:13

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	11094	44.2		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	12249	48.8		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	12989	51.8		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	25085	100.0		Pass
199	5.0 - 9.0% of mass 198	1699	6.77		Pass
275	10.0 - 30.0% of mass 198	6129	24.4		Pass
365	1.0 - 100.0% of mass 198	719	2.87		Pass
441	Present, but less than mass 443	1751	6.98	(78.0) [b]	Pass
442	40.0 - 100.0% of mass 198	11381	45.4		Pass
443	17.0 - 23.0% of mass 442	2246	8.95	(19.7) [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
EM3617-IC3617	M89363.D	11/08/12	13:37	00:24	Initial cal 1
EM3617-IC3617	M89362.D	11/08/12	13:52	00:39	Initial cal 100
EM3617-ICC3617	M89364.D	11/08/12	14:22	01:09	Initial cal 50
EM3617-IC3617	M89365.D	11/08/12	15:03	01:50	Initial cal 5
EM3617-IC3617	M89366.D	11/08/12	15:29	02:16	Initial cal 2
EM3617-IC3617	M89367.D	11/08/12	15:59	02:46	Initial cal 25
EM3617-IC3617	M89368.D	11/08/12	16:23	03:10	Initial cal 10
EM3617-IC3617	M89369.D	11/08/12	16:53	03:40	Initial cal 80

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EM3618-DFTPP
Lab File ID: M89370.D
Instrument ID: GCMSM
Injection Date: 11/08/12
Injection Time: 17:07

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	13783	41.6		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	15238	45.9		Pass
70	Less than 2.0% of mass 69	112	0.34	(0.74) [a]	Pass
127	40.0 - 60.0% of mass 198	17004	51.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	33163	100.0		Pass
199	5.0 - 9.0% of mass 198	2279	6.87		Pass
275	10.0 - 30.0% of mass 198	8280	25.0		Pass
365	1.0 - 100.0% of mass 198	873	2.63		Pass
441	Present, but less than mass 443	2508	7.56	(85.7) [b]	Pass
442	40.0 - 100.0% of mass 198	14984	45.2		Pass
443	17.0 - 23.0% of mass 442	2928	8.83	(19.5) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EM3618-IC3618	M89371.D	11/08/12	17:27	00:20	Initial cal 100
EM3618-IC3618	M89372.D	11/08/12	18:01	00:54	Initial cal 80
EM3618-IC3618	M89373.D	11/08/12	18:16	01:09	Initial cal 10
EM3618-IC3618	M89374.D	11/08/12	18:46	01:39	Initial cal 5
EM3618-IC3618	M89375.D	11/08/12	19:15	02:08	Initial cal 2
EM3618-IC3618	M89376.D	11/08/12	19:45	02:38	Initial cal 1
EM3618-IC3618	M89377.D	11/08/12	20:14	03:07	Initial cal 25
EM3618-ICC3618	M89378.D	11/08/12	20:44	03:37	Initial cal 50
EM3618-ICV3617	M89379.D	11/08/12	21:14	04:07	Initial cal verification 50
EM3618-ICV3617	M89380.D	11/08/12	21:28	04:21	Initial cal verification 50
EM3618-ICV3618	M89380A.D	11/08/12	21:28	04:21	Initial cal verification 50
EM3618-ICV3618	M89381A.D	11/08/12	21:58	04:51	Initial cal verification 50
EM3618-ICV3617	M89381.D	11/08/12	21:58	04:51	Initial cal verification 50
EM3618-ICV3617	M89382.D	11/08/12	22:27	05:20	Initial cal verification 50
EM3618-ICV3617	M89383.D	11/08/12	22:57	05:50	Initial cal verification 50
EM3618-ICV3617	M89384.D	11/08/12	23:27	06:20	Initial cal verification 50
EM3618-ICV3618	M89384A.D	11/08/12	23:27	06:20	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EM3659-DFTPP
Lab File ID: M90308.D
Instrument ID: GCMSM
Injection Date: 12/17/12
Injection Time: 10:15

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	12545	37.7		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	14191	42.6		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	15628	46.9		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	33303	100.0		Pass
199	5.0 - 9.0% of mass 198	2613	7.85		Pass
275	10.0 - 30.0% of mass 198	8151	24.5		Pass
365	1.0 - 100.0% of mass 198	792	2.38		Pass
441	Present, but less than mass 443	2868	8.61	(81.7) [b]	Pass
442	40.0 - 100.0% of mass 198	19268	57.9		Pass
443	17.0 - 23.0% of mass 442	3510	10.5	(18.2) [c]	Pass

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EM3659-CC3617	M90309.D	12/17/12	10:29	00:14	Continuing cal 25
EM3659-CC3618	M90310.D	12/17/12	10:57	00:42	Continuing cal 50
OP61759A-MB1	M90311.D	12/17/12	11:40	01:25	Method Blank
OP61759A-BS1	M90312.D	12/17/12	12:10	01:55	Blank Spike
OP62037-MB1	M90314.D	12/17/12	13:09	02:54	Method Blank
JB22717-13R	M90315.D	12/17/12	13:34	03:19	(used for QC only; not part of job JB22822)
ZZZZZZ	M90316.D	12/17/12	14:04	03:49	(unrelated sample)
OP61759A-MS	M90317.D	12/17/12	14:30	04:15	Matrix Spike
OP61759A-MSD	M90318.D	12/17/12	15:03	04:48	Matrix Spike Duplicate
ZZZZZZ	M90321.D	12/17/12	16:23	06:08	(unrelated sample)
ZZZZZZ	M90323.D	12/17/12	17:22	07:07	(unrelated sample)
ZZZZZZ	M90324.D	12/17/12	17:37	07:22	(unrelated sample)
JB22822-12	M90325.D	12/17/12	18:07	07:52	BH-12-115_1-2'
JB22822-13	M90326.D	12/17/12	18:36	08:21	BH-12-108_2-2.5'
JB22822-14	M90327.D	12/17/12	19:06	08:51	BH-12-114_3-3.5'
JB22822-15	M90328.D	12/17/12	19:35	09:20	BH-12-114_1-1.5'
JB22822-17	M90329.D	12/17/12	20:05	09:50	BH-12-116_3.5'
JB22822-16	M90330.D	12/17/12	20:34	10:19	BH-12-109_3'
JB22822-18	M90331.D	12/17/12	20:49	10:34	BH-12-122_1-1.5'

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EM3659-DFTPP
Lab File ID: M90308.D
Instrument ID: GCMSM
Injection Date: 12/17/12
Injection Time: 10:15

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
JB22822-19	M90332.D	12/17/12	21:19	11:04	BH-12-117_2-2.5'
JB22822-20	M90333.D	12/17/12	21:48	11:33	BH-12-122_2.5-3'

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EM3660-DFTPP
Lab File ID: M90334.D
Instrument ID: GCMSM
Injection Date: 12/18/12
Injection Time: 09:12

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	13241	39.1		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	14794	43.7		Pass
70	Less than 2.0% of mass 69	78	0.23	(0.53) [a]	Pass
127	40.0 - 60.0% of mass 198	16069	47.5		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	33842	100.0		Pass
199	5.0 - 9.0% of mass 198	2289	6.76		Pass
275	10.0 - 30.0% of mass 198	8086	23.9		Pass
365	1.0 - 100.0% of mass 198	821	2.43		Pass
441	Present, but less than mass 443	3087	9.12	(86.4) [b]	Pass
442	40.0 - 100.0% of mass 198	19208	56.8		Pass
443	17.0 - 23.0% of mass 442	3571	10.6	(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
EM3660-CC3617	M90335.D	12/18/12	09:26	00:14	Continuing cal 50
EM3660-CC3618	M90336.D	12/18/12	10:07	00:55	Continuing cal 25
OP62070-MB1	M90337.D	12/18/12	10:31	01:19	Method Blank
JB22822-13	M90339.D	12/18/12	11:30	02:18	BH-12-108_2-2.5'
JB22822-16	M90340.D	12/18/12	11:56	02:44	BH-12-109_3'
ZZZZZZ	M90341.D	12/18/12	12:25	03:13	(unrelated sample)
ZZZZZZ	M90342.D	12/18/12	12:40	03:28	(unrelated sample)
ZZZZZZ	M90343.D	12/18/12	13:17	04:05	(unrelated sample)
ZZZZZZ	M90344.D	12/18/12	13:37	04:25	(unrelated sample)
ZZZZZZ	M90345.D	12/18/12	14:09	04:57	(unrelated sample)
ZZZZZZ	M90346.D	12/18/12	14:42	05:30	(unrelated sample)
ZZZZZZ	M90347.D	12/18/12	15:11	05:59	(unrelated sample)
ZZZZZZ	M90348.D	12/18/12	15:26	06:14	(unrelated sample)
ZZZZZZ	M90349.D	12/18/12	15:56	06:44	(unrelated sample)
ZZZZZZ	M90350.D	12/18/12	16:25	07:13	(unrelated sample)
ZZZZZZ	M90351.D	12/18/12	16:55	07:43	(unrelated sample)
ZZZZZZ	M90352.D	12/18/12	17:24	08:12	(unrelated sample)
ZZZZZZ	M90353.D	12/18/12	17:54	08:42	(unrelated sample)
ZZZZZZ	M90354.D	12/18/12	18:24	09:12	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: EM3660-DFTPP
Lab File ID: M90334.D
Instrument ID: GCMSM
Injection Date: 12/18/12
Injection Time: 09:12

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	M90355.D	12/18/12	18:53	09:41	(unrelated sample)
ZZZZZZ	M90356.D	12/18/12	19:08	09:56	(unrelated sample)
ZZZZZZ	M90357.D	12/18/12	19:38	10:26	(unrelated sample)
ZZZZZZ	M90358.D	12/18/12	20:07	10:55	(unrelated sample)
ZZZZZZ	M90359.D	12/18/12	20:37	11:25	(unrelated sample)

Semivolatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	E2M2080-CC2034	**Injection Date:**	12/17/12
Lab File ID:	2M48551.D	**Injection Time:**	10:49
Instrument ID:	GCMS2M	**Method:**	SW846 8270D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	324665	2.40	1536377	3.93	954367	6.50	1686151	8.73	1953887	12.54	1769695	13.94
Upper Limit [a]	649330	2.90	3072754	4.43	1908734	7.00	3372302	9.23	3907774	13.04	3539390	14.44
Lower Limit [b]	162333	1.90	768189	3.43	477184	6.00	843076	8.23	976944	12.04	884848	13.44

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
OP62037-MB1	222169	2.40	968955	3.93	587983	6.50	1002578	8.72	1172041	12.53	1142681	13.93
OP62037-BS1	257881	2.40	1133323	3.93	675728	6.50	1143054	8.72	1333168	12.54	1274532	13.94
ZZZZZZ	238817	2.41	1094374	3.94	745545	6.52	1301369	8.75	1300310	12.54	1209931	13.94
ZZZZZZ	245413	2.41	1146294	3.93	754652	6.51	1336014	8.74	1455769	12.53	1345150	13.94
ZZZZZZ	255365	2.41	1203227	3.93	804513	6.51	1415369	8.74	1539088	12.54	1322899	13.94
ZZZZZZ	250824	2.41	1209845	3.93	811439	6.51	1415407	8.75	1440449	12.54	1246393	13.94
ZZZZZZ	265832	2.41	1224242	3.94	795916	6.52	1355009	8.75	1277573	12.54	1205339	13.95
ZZZZZZ	238093	2.41	1158663	3.94	748205	6.50	1332093	8.73	1403798	12.55	1225536	13.96
ZZZZZZ	264022	2.41	1287897	3.94	933237	6.52	1586821	8.76	1561497	12.55	1739423	13.97
ZZZZZZ	238567	2.41	1240213	3.95	882822	6.53	1524210	8.78	1345985	12.55	1317141	13.96
ZZZZZZ	216404	2.41	1084336	3.94	747699	6.51	1320527	8.74	1363302	12.55	1286900	13.97
ZZZZZZ	226707	2.41	1138651	3.94	773633	6.52	1348870	8.75	1219753	12.55	1029217	13.96
JB22822-1	163378	2.41	851309	3.94	573395	6.51	999718	8.74	959207*	12.55	785964*	13.96
OP62037-MS	195272	2.41	1006421	3.94	689495	6.51	1159556	8.74	1237555	12.55	983605	13.96
OP62037-MSD	194898	2.41	1015363	3.93	683901	6.51	1156558	8.74	1212204	12.55	1019013	13.96
JB22822-4	171755	2.41	890881	3.94	603656	6.51	1027343	8.74	1090531	12.56	939826	13.97
JB22822-5	350661	2.42	1489973	3.97	854250	6.52	1608002	8.79	2026717	12.64	2097682	14.06
JB22822-6	327409	2.45	1374967	4.02	1315930	6.56	1348153	8.79	1618822	12.60	1627025	14.02
JB22822-7	542889	2.44	1324096	4.01	813204	6.58	1289086	8.81	1377267	12.61	1472737	14.02
JB22822-9	197063	2.42	1020021	3.95	683047	6.52	1113804	8.76	1466388	12.61	1188753	14.02
JB22822-10 [c]	316292	2.43	1726854	4.01	1044489	6.62	1190904	8.80	1474615	12.61	1581993	14.03
JB22822-21	194755	2.42	1003546	3.95	643145	6.53	1184582	8.79	1447538	12.61	1132670	14.02

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 Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	E2M2081-CC2034	**Injection Date:**	12/18/12
Lab File ID:	2M48581.D	**Injection Time:**	12:14
Instrument ID:	GCMS2M	**Method:**	SW846 8270D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	336528	2.39	1548411	3.91	947261	6.48	1663603	8.71	1918517	12.52	1565262	13.93
Upper Limit [a]	673056	2.89	3096822	4.41	1894522	6.98	3327206	9.21	3837034	13.02	3130524	14.43
Lower Limit [b]	168264	1.89	774206	3.41	473631	5.98	831802	8.21	959259	12.02	782631	13.43

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
JB22822-1 [c]	233584	2.39	1110138	3.91	708371	6.48	1258680	8.70	1383877	12.52	1173935	13.93
JB22822-2 [d]	264300	2.39	1235674	3.91	790280	6.48	1371790	8.71	1424633	12.53	1257557	13.94
JB22822-4	255809	2.39	1214822	3.91	754002	6.48	1246874	8.71	1183190	12.52	940117	13.93
JB22822-6	269991	2.39	1279468	3.92	796071	6.48	1279014	8.71	1233221	12.52	1043720	13.93
JB22822-8 [d]	277668	2.39	1304682	3.91	811436	6.48	1399078	8.71	1652313	12.53	1191140	13.94
JB22822-9	262728	2.39	1248395	3.91	776922	6.48	1285247	8.71	1241222	12.52	1060388	13.93
JB22822-11 [d]	364577	2.40	1776973	3.97	975943	6.53	1282239	8.72	1232260	12.52	1074267	13.94
JB22822-21	279620	2.39	1318004	3.91	804818	6.48	1341299	8.71	1267200	12.52	1060067	13.93
ZZZZZZ	274608	2.39	1264448	3.91	790503	6.48	1297841	8.71	1289247	12.52	1132246	13.93
ZZZZZZ	320421	2.44	1707375	3.98	867166	6.49	1488220	8.71	1447738	12.52	1217078	13.93
ZZZZZZ	245623	2.39	1189734	3.91	756287	6.48	1317423	8.71	1341481	12.52	1090489	13.93
ZZZZZZ	269494	2.39	1258982	3.91	801865	6.48	1363364	8.71	1312524	12.52	1101704	13.93
ZZZZZZ	268693	2.39	1257167	3.91	794885	6.48	1349225	8.71	1377689	12.52	1160455	13.93
ZZZZZZ	286232	2.39	1339681	3.91	857012	6.48	1422903	8.72	1459319	12.53	1131808	13.94
ZZZZZZ	267986	2.39	1257375	3.91	787317	6.48	1299405	8.71	1263251	12.52	1058525	13.93
ZZZZZZ	247749	2.39	1184897	3.91	764372	6.48	1322291	8.71	1359330	12.52	1123019	13.93
ZZZZZZ	299725	2.39	1445932	3.91	916256	6.48	1556394	8.71	1489200	12.52	1254929	13.93
JB22822-5	213653	2.39	1039195	3.91	671589	6.48	1172382	8.71	1175493	12.52	954902	13.93

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

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Confirmation run for internal standard areas.
(d) Dilution required due to viscosity of extract matrix

Semivolatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	EM3659-CC3617	**Injection Date:**	12/17/12
Lab File ID:	M90309.D	**Injection Time:**	10:29
Instrument ID:	GCMSM	**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	114216	3.17	436048	5.12	317454	8.35	576603	11.13	596489	16.05	491531	17.87
Upper Limit [a]	228432	3.67	872096	5.62	634908	8.85	1153206	11.63	1192978	16.55	983062	18.37
Lower Limit [b]	57108	2.67	218024	4.62	158727	7.85	288302	10.63	298245	15.55	245766	17.37

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
OP61759A-MB1	142129	3.17	514949	5.11	363299	8.34	655973	11.13	654589	16.04	545742	17.87
OP61759A-BS1	106407	3.17	414871	5.11	270610	8.34	520600	11.12	503856	16.04	419184	17.86
OP62037-MB1	97131	3.17	366950	5.11	251714	8.34	465770	11.12	487116	16.04	402844	17.86
JB22717-13R	171885	3.17	549720	5.12	379625	8.37	625600	11.17	656036	16.05	580449	17.87
ZZZZZZ	122956	3.17	416062	5.12	265819	8.35	490402	11.13	534535	16.04	460760	17.87
OP61759A-MS	112589	3.17	385560	5.13	261651	8.37	438291	11.16	454086	16.06	401179	17.87
OP61759A-MSD	138191	3.17	475534	5.12	339128	8.37	569655	11.16	596623	16.05	519997	17.87
ZZZZZZ	121918	3.17	469234	5.12	307044	8.35	547785	11.13	533378	16.04	393000	17.87
ZZZZZZ	120680	3.17	461838	5.12	301820	8.35	555242	11.13	571225	16.04	441598	17.87
ZZZZZZ	145176	3.17	501962	5.12	320348	8.36	544289	11.16	568106	16.05	476472	17.87
JB22822-12	122108	3.18	374367	5.15	221335	8.41	359276	11.18	391817	16.14	330925	17.99
JB22822-13	100287	3.22	326776	5.18	220413	8.40	366958	11.19	353300	16.12	324466	17.94
JB22822-14	105092	3.19	413260	5.14	265367	8.38	434820	11.18	408901	16.12	375829	17.96
JB22822-15	87711	3.19	331647	5.15	214224	8.39	362826	11.19	347068	16.11	308508	17.93
JB22822-17	89369	3.19	346322	5.15	221832	8.39	370948	11.19	326037	16.11	298733	17.94
JB22822-16 [c]	109684	3.20	422791	5.15	270293	8.39	455750	11.20	403346	16.13	348126	17.96
JB22822-18	95775	3.19	380356	5.15	224812	8.39	364062	11.19	346226	16.11	304520	17.94
JB22822-19	104859	3.19	378805	5.15	226708	8.39	367859	11.20	364723	16.12	320647	17.95
JB22822-20	103836	3.20	366374	5.16	227545	8.42	398903	11.21	383003	16.14	347710	17.97

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

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

Semivolatile Internal Standard Area Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Check Std:	EM3660-CC3617	**Injection Date:**	12/18/12
Lab File ID:	M90335.D	**Injection Time:**	09:26
Instrument ID:	GCMSM	**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	103342	3.16	374291	5.11	264961	8.34	471677	11.13	494630	16.06	414265	17.89
Upper Limit [a]	206684	3.66	748582	5.61	529922	8.84	943354	11.63	989260	16.56	828530	18.39
Lower Limit [b]	51671	2.66	187146	4.61	132481	7.84	235839	10.63	247315	15.56	207133	17.39

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP62070-MB1	85721	3.16	331043	5.10	237293	8.33	457463	11.12	485061	16.05	411880	17.88
JB22822-13	78743	3.16	293442	5.10	198695	8.34	369063	11.12	362137	16.05	303024	17.87
JB22822-16	108591	3.16	420089	5.11	278607	8.33	492007	11.12	469364	16.05	386345	17.88
ZZZZZZ	123747	3.16	507803	5.11	279634	8.33	493695	11.14	563812	16.17	394243	18.05
ZZZZZZ	94056	3.16	378388	5.11	258822	8.34	407215	11.13	405804	16.08	379553	17.94
ZZZZZZ	136400	3.17	510641	5.12	328088	8.36	519047	11.15	521657	16.27	413869	18.15
ZZZZZZ	95097	3.17	385917	5.12	252471	8.36	447074	11.15	413710	16.07	372335	17.90
ZZZZZZ	96330	3.17	382099	5.12	254604	8.35	453968	11.14	409831	16.07	324146	17.90
ZZZZZZ	97405	3.16	376597	5.11	246325	8.35	435724	11.14	393935	16.07	309050	17.89
ZZZZZZ	93377	3.17	366011	5.11	247532	8.35	444579	11.14	410313	16.06	325052	17.89
ZZZZZZ	92691	3.16	364718	5.11	246231	8.35	445057	11.13	420172	16.06	320678	17.89
ZZZZZZ	92661	3.16	361406	5.11	239562	8.34	443021	11.13	418323	16.06	316314	17.89
ZZZZZZ	94958	3.16	376037	5.11	256806	8.34	460221	11.13	429013	16.06	331864	17.89
ZZZZZZ	92820	3.16	369480	5.11	248750	8.33	446322	11.13	415422	16.06	320326	17.89
ZZZZZZ	103477	3.16	393853	5.11	268458	8.33	485776	11.13	475937	16.06	357599	17.89
ZZZZZZ	99386	3.16	382886	5.11	260606	8.34	471364	11.13	465570	16.06	356756	17.88
ZZZZZZ	98722	3.16	388498	5.11	263179	8.34	483548	11.13	475824	16.06	366119	17.88
ZZZZZZ	94305	3.16	381138	5.11	243449	8.34	429589	11.15	420670	16.11	365869	17.94
ZZZZZZ	105613	3.16	413695	5.11	260041	8.35	461156	11.15	440840	16.12	373083	17.95
ZZZZZZ	99399	3.16	406843	5.11	267970	8.35	484103	11.15	428760	16.09	376333	17.92
ZZZZZZ	103347	3.16	417410	5.11	263626	8.35	491420	11.19	475782	16.16	375508	17.99
ZZZZZZ	106350	3.17	393462	5.12	257604	8.35	437988	11.14	425890	16.11	377116	17.94

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

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

Semivolatile Surrogate Recovery Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JB22822-1	2M48583.D	38.0	52.0	83.0
JB22822-1	2M48565.D	40.0	54.0	97.0
JB22822-2	2M48584.D	43.0	58.0	87.0
JB22822-4	2M48585.D	30.0	48.0	81.0
JB22822-4	2M48569.D	38.0	51.0	86.0
JB22822-5	2M48601.D	27.0	62.0	90.0
JB22822-5	2M48570.D	115.0	58.0	64.0
JB22822-6	2M48587.D	73.0	75.0	119.0
JB22822-6	2M48571.D	79.0	43.0	92.0
JB22822-7	2M48572.D	64.0	69.0	83.0
JB22822-8	2M48588.D	34.0	59.0	79.0
JB22822-9	2M48589.D	32.0	60.0	90.0
JB22822-9	2M48574.D	45.0	58.0	66.0
JB22822-10	2M48575.D	32.0	83.0	82.0
JB22822-11	2M48590.D	60.0	85.0	91.0
JB22822-12	M90325.D	73.0	61.0	71.0
JB22822-13	M90339.D	91.0	83.0	127.0
JB22822-13	M90326.D	49.0	69.0	107.0
JB22822-14	M90327.D	34.0	50.0	65.0
JB22822-15	M90328.D	44.0	62.0	85.0
JB22822-16	M90340.D	49.0	51.0	81.0
JB22822-16	M90330.D	43.0	54.0	75.0
JB22822-17	M90329.D	38.0	43.0	54.0
JB22822-18	M90331.D	31.0	55.0	87.0
JB22822-19	M90332.D	33.0	51.0	78.0
JB22822-20	M90333.D	54.0	68.0	82.0
JB22822-21	2M48591.D	47.0	61.0	82.0
JB22822-21	2M48577.D	48.0	61.0	64.0
OP62037-BS1	2M48554.D	67.0	77.0	91.0
OP62037-MB1	2M48553.D	49.0	67.0	97.0
OP62037-MB1	M90314.D	56.0	74.0	98.0
OP62037-MS	2M48566.D	47.0	55.0	80.0
OP62037-MSD	2M48567.D	43.0	55.0	91.0

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

Initial Calibration Summary

Job Number: JB22822 **Sample:** E2M2013-ICC2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46678.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                         Response Factor Report  MS2M

  Method       : C:\MSDCHEM\1\METHODS\M2M2013.M (RTE Integrator)
  Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
  Last Update  : Wed Oct 03 09:24:42 2012
  Response via : Initial Calibration

  Calibration Files
  2   =2m46672.D   5   =2m46675.D   25  =2m46677.D   80  =2m46673.D
  100 =2m46671.D   50  =2m46678.D   1   =2m46676.D   10  =2m46674.D

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

102)     1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 1.132 1.122 1.168 1.169 1.096 1.007 1.173 1.182 1.131   5.17

104)     Acenaphthene-d10a     ----------------ISTD---------------------
105) 1,2,4,5-Tetr 0.467 0.461 0.471 0.478 0.497 0.475 0.489 0.482 0.478   2.44
106) 2-bromonapht 0.574 0.570 0.593 0.615 0.649 0.611 0.585 0.596 0.599   4.29

107)     Chrysene-d12a         ----------------ISTD---------------------
108) Benzidine          0.562 0.669 0.569 0.572 0.529       0.584 0.581   8.11
109) 1-chloroocta 0.406 0.404 0.454 0.463 0.481 0.457 0.351 0.447 0.433   9.82

110)     Phenanthrene-d10a     ----------------ISTD---------------------
111) Atrazine     0.101 0.095 0.108 0.115 0.123 0.111 0.088 0.106 0.106  10.61
112) o-terphenyl  0.539 0.545 0.585 0.613 0.656 0.601 0.549 0.582 0.584   6.84

113) I   Naphthalene-d8a       ----------------ISTD---------------------
114) hydroquinone 0.240 0.269 0.327 0.377 0.408 0.414 0.293 0.298 0.328  19.81
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M2M2009.M         Wed Oct 03 09:25:36 2012   MS2M
```

8.7.1

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2013-ICV2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46680.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2013\2m46680.D          Vial: 11
Acq On    :  2 Oct 2012   5:51 pm                    Operator: olgaa
Sample    : icv2013-50                               Inst    : MS2M
Misc      : op60024,e2m2013,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2009.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Wed Oct 03 09:37:56 2012
Response via : Multiple Level Calibration

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

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
104	Acenaphthene-d10a	1.000	1.000	0.0	88	0.00	7.28
105	1,2,4,5-Tetrachlorobenzen	0.478	0.455	4.8	85	0.00	6.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46678.D M2M2009.M Wed Oct 03 12:46:45 2012 MS2M

8.7.2

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2013-ICV2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46681.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2013\2m46681.D          Vial: 12
Acq On    :  2 Oct 2012   6:15 pm                    Operator: olgaa
Sample    : icv2013-50                               Inst    : MS2M
Misc      : op60024,e2m2013,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2009.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Wed Oct 03 09:37:56 2012
Response via : Multiple Level Calibration

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

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	144	0.00	3.03
103	Benzaldehyde	1.131	1.168	-3.3	167	0.00	2.58
108	Phenanthrene-d10a	1.000	1.000	0.0	128	0.00	9.53
109	Atrazine	0.106	0.127	-19.8	147	0.00	9.38

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46678.D M2M2009.M Wed Oct 03 12:49:22 2012 MS2M

8.7.3

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2013-ICV2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M46682.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2013\2m46682.D          Vial: 13
Acq On    :  2 Oct 2012   6:40 pm                    Operator: olgaa
Sample    : icv2013-50                               Inst    : MS2M
Misc      : op60024,e2m2013,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2009.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Wed Oct 03 09:37:56 2012
Response via : Multiple Level Calibration

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

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
106	Chrysene-d12a	1.000	1.000	0.0	123	0.00	13.16
107	Benzidine	0.581	0.897	-54.4#	209	0.00	11.69

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46678.D M2M2009.M Wed Oct 03 12:50:33 2012 MS2M

8.7.4

8

Initial Calibration Summary

Job Number: JB22822 **Sample:** E2M2034-ICC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47231.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MS2M

Method : C:\msdchem\1\METHODS\M2M2034.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update : Mon Oct 22 13:58:41 2012
Response via : Initial Calibration

Calibration Files
2 =2m47230.D 5 =2m47232.D 25 =2m47226.D 80 =2m47229.D
100 =2m47227.D 50 =2m47231.D 1 =2m47228.D 10 =2m47233.D

Compound	2	5	25	80	100	50	1	10	Avg	%RSD
1) I 1,4-Dichlorobenzene-d					ISTD					
2) 1,4-Dioxane	0.594	0.572	0.640	0.557	0.565	0.599	0.698	0.579	0.600	7.83
3) Pyridine	1.809	1.630	1.625	1.604	1.611	1.673	2.017	1.684	1.707	8.30
4) N-Nitrosodim	1.138	1.036	1.079	1.034	1.034	1.060	1.244	1.117	1.093	6.64
5) 2-Fluorophen	1.444	1.384	1.414	1.468	1.462	1.406	1.562	1.505	1.456	3.97
6) Indene	2.818	2.644	2.783	2.561	2.511	2.782	3.006	2.823	2.741	5.86
7) Cumene	3.887	3.659	3.762	3.422	3.356	3.748	4.095	3.821	3.719	6.48
8) Phenol-d5	2.042	1.936	1.861	1.900	1.847	1.852	2.094	2.077	1.951	5.34
9) Phenol	2.182	2.134	2.169	2.062	1.986	2.168	2.278	2.247	2.153	4.39
10) Aniline	2.524	2.285	1.943	1.774	1.741	1.838	2.706	2.240	2.131	17.03
11) bis(2-Chloro	1.706	1.618	1.600	1.548	1.499	1.602	1.798	1.711	1.635	5.93
12) 2-Chlorophen	1.612	1.520	1.561	1.524	1.503	1.550	1.740	1.621	1.579	4.92
13) Decane	1.987	1.902	1.900	1.676	1.611	1.908	2.131	1.993	1.888	9.00
14) 1,3-Dichloro	1.806	1.680	1.694	1.639	1.625	1.674	1.923	1.778	1.727	5.84
15) 1,4-Dichloro	1.898	1.744	1.738	1.672	1.666	1.710	2.120	1.817	1.796	8.46
16) Benzyl alcoh	1.134	1.076	1.113	1.104	1.087	1.103	1.187	1.165	1.121	3.44
17) 1,2-Dichloro	1.753	1.622	1.602	1.573	1.545	1.583	1.873	1.691	1.655	6.71
18) Acetophenone	2.386	2.210	2.253	2.211	2.135	2.293	2.310	2.406	2.276	4.05
19) 2-Methylphen	1.471	1.431	1.467	1.454	1.417	1.467	1.603	1.555	1.483	4.28
20) 2,2'-oxybis(	2.801	2.702	2.522	2.492	2.370	2.602	2.971	2.890	2.669	7.82
21) 3&4-Methylph	1.593	1.542	1.596	1.597	1.578	1.630	1.575	1.698	1.601	2.89
22) n-Nitroso-di	1.430	1.352	1.290	1.307	1.267	1.319	1.472	1.446	1.360	5.76
23) Hexachloroet	0.544	0.497	0.515	0.512	0.512	0.508	0.575	0.535	0.525	4.82
24) I Naphthalene-d8					ISTD					
25) Nitrobenzene	0.453	0.422	0.406	0.403	0.405	0.413	0.485	0.447	0.429	6.88
26) Nitrobenzene	0.463	0.448	0.432	0.422	0.419	0.437	0.517	0.470	0.451	7.14
27) Quinoline	0.775	0.699	0.754	0.708	0.702	0.744	0.807	0.755	0.743	5.11
28) Isophorone	0.796	0.755	0.724	0.682	0.664	0.723	0.854	0.805	0.750	8.67
29) 2-Nitropheno	0.219	0.201	0.213	0.208	0.209	0.211	0.223	0.224	0.214	3.69
30) 2,4-Dimethyl	0.285	0.303	0.323	0.355	0.357	0.356	0.310	0.328	0.327	8.29
31) Benzoic acid		0.236	0.278	0.328	0.323	0.315		0.306	0.298	11.80
32) bis(2-Chloro	0.437	0.416	0.412	0.402	0.401	0.414	0.463	0.448	0.424	5.29
33) 2,4-Dichloro	0.296	0.275	0.291	0.283	0.285	0.288	0.301	0.301	0.290	3.16
34) 2,6-Dichloro	0.293	0.280	0.287	0.276	0.276	0.283	0.317	0.296	0.289	4.79
35) 1,3,5-Trichl	0.324	0.292	0.311	0.289	0.293	0.304	0.357	0.313	0.310	7.16
36) 1,2,4-Trichl	0.323	0.296	0.295	0.289	0.295	0.293	0.350	0.310	0.306	6.76
37) 1,2,3-Trichl	0.309	0.285	0.300	0.281	0.286	0.294	0.328	0.302	0.298	5.18
38) Naphthalene	1.192	1.101	1.097	1.005	0.995	1.088	1.276	1.150	1.113	8.39
39) 4-Chloroanil	0.503	0.463	0.437	0.412	0.405	0.428	0.537	0.481	0.458	10.09
40) 2,3-Dichloro	0.365	0.335	0.353	0.339	0.339	0.352	0.381	0.363	0.353	4.42
41) Caprolactam	0.194	0.189	0.193	0.198	0.192	0.206	0.201	0.214	0.198	4.30
42) Hexachlorobu	0.175	0.162	0.161	0.161	0.167	0.161	0.194	0.173	0.169	6.73
43) 4-Chloro-3-m	0.347	0.318	0.337	0.337	0.333	0.350	0.366	0.362	0.344	4.57
44) 2-Methylnaph	0.715	0.662	0.662	0.640	0.635	0.666	0.760	0.720	0.683	6.47
45) 1-Methylnaph	0.737	0.690	0.710	0.673	0.660	0.703	0.786	0.734	0.712	5.65

Initial Calibration Summary

Job Number: JB22822 **Sample:** E2M2034-ICC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47231.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

46)	Dimethylnaph	0.635	0.608	0.639	0.617	0.612	0.640	0.679	0.659	0.636	3.84
47)	I Acenaphthene-d10	----------ISTD----------									
48)	Hexachlorocy	0.242	0.250	0.301	0.330	0.340	0.316	0.216	0.305	0.287	15.75
49)	2,4,6-Trichl	0.346	0.314	0.350	0.347	0.350	0.346	0.349	0.344	0.343	3.52
50)	2,4,5-Trichl	0.353	0.334	0.369	0.371	0.376	0.375	0.384	0.373	0.367	4.37
51)	2-Fluorobiph	1.398	1.289	1.260	1.237	1.241	1.238	1.520	1.339	1.315	7.64
52)	2-Chloronaph	1.278	1.159	1.146	1.123	1.124	1.133	1.377	1.216	1.195	7.64
53)	Biphenyl	1.642	1.513	1.555	1.456	1.457	1.545	1.756	1.585	1.564	6.38
54)	2-Nitroanili	0.446	0.424	0.430	0.447	0.435	0.449	0.440	0.495	0.446	4.92
55)	Dimethylphth	1.513	1.349	1.342	1.329	1.313	1.352	1.575	1.441	1.402	6.92
56)	Acenaphthyle	1.986	1.854	1.951	1.819	1.782	1.941	2.128	1.992	1.932	5.75
57)	2,6-Dinitrot	0.310	0.281	0.306	0.315	0.314	0.309	0.318	0.321	0.309	3.99
58)	3-Nitroanili	0.396	0.378	0.401	0.390	0.391	0.397	0.413	0.422	0.398	3.44
59)	Acenaphthene	1.318	1.210	1.216	1.148	1.136	1.220	1.414	1.275	1.242	7.38
60)	2,4-Dinitrop			0.159	0.195	0.199	0.173		0.163	0.178	10.25
61)	4-Nitropheno	0.151	0.135	0.172	0.191	0.187	0.193	0.150	0.189	0.171	13.37
62)	Dibenzofuran	1.826	1.671	1.647	1.593	1.570	1.635	1.945	1.745	1.704	7.49
63)	2,4-Dinitrot	0.425	0.404	0.428	0.435	0.433	0.430	0.421	0.453	0.429	3.18
64)	2,3,4,6-Tetr	0.250	0.226	0.271	0.292	0.295	0.282	0.276	0.272	0.271	8.39
65)	Diethylphtha	1.567	1.416	1.399	1.392	1.368	1.425	1.630	1.499	1.462	6.43
66)	Fluorene	1.405	1.288	1.324	1.281	1.266	1.333	1.492	1.368	1.345	5.63
67)	4-Chlorophen	0.640	0.587	0.586	0.588	0.595	0.590	0.671	0.622	0.610	5.19
68)	4-Nitroanili	0.399	0.363	0.390	0.393	0.388	0.400	0.423	0.417	0.397	4.68
69)	I Phenanthrene-d10	----------ISTD----------									
70)	4,6-Dinitro-	0.104	0.116	0.159	0.166	0.168	0.164		0.158	0.148	17.83
71)	n-Nitrosodip	0.670	0.631	0.631	0.607	0.610	0.616	0.729	0.653	0.643	6.36
72)	1,2-Diphenyl	1.126	1.070	1.028	1.010	0.978	1.032	1.203	1.129	1.072	7.02
73)	2,4,6-Tribro	0.088	0.084	0.088	0.103	0.108	0.091	0.097	0.094	0.094	8.86
74)	4-Bromopheny	0.210	0.195	0.205	0.208	0.213	0.201	0.228	0.208	0.208	4.74
75)	Hexachlorobe	0.236	0.214	0.212	0.223	0.227	0.212	0.248	0.220	0.224	5.65
76)	Pentachlorop		0.084	0.130	0.147	0.152	0.135		0.119	0.128	19.14
77)	Phenanthrene	1.298	1.202	1.195	1.126	1.122	1.171	1.442	1.241	1.225	8.58
78)	Anthracene	1.269	1.157	1.205	1.142	1.132	1.178	1.385	1.243	1.214	6.93
79)	Carbazole	1.208	1.128	1.187	1.081	1.072	1.156	1.382	1.189	1.175	8.29
80)	Di-n-butylph	1.533	1.446	1.492	1.414	1.393	1.485	1.675	1.573	1.502	6.12
81)	Fluoranthene	1.204	1.132	1.199	1.136	1.144	1.212	1.433	1.205	1.208	8.02
82)	Octadecane	0.686	0.652	0.665	0.600	0.577	0.664	0.724	0.706	0.659	7.59
83)	I Chrysene-d12	----------ISTD----------									
84)	Pyrene	1.350	1.230	1.280	1.173	1.186	1.235	1.622	1.272	1.294	11.13
85)	Terphenyl-d1	0.818	0.758	0.762	0.768	0.787	0.751	1.034	0.788	0.808	11.61
86)	Butylbenzylp	0.717	0.650	0.685	0.633	0.624	0.666	0.867	0.708	0.694	11.18
87)	Butyl steara	0.423	0.406	0.422	0.373	0.359	0.412	0.511	0.445	0.419	11.11
88)	Benzo[a]anth	1.279	1.134	1.184	1.129	1.131	1.163	1.643	1.179	1.230	14.12
89)	3,3'-Dichlor	0.481	0.442	0.458	0.474	0.484	0.460	0.606	0.465	0.484	10.60
90)	Chrysene	1.286	1.160	1.135	1.124	1.135	1.144	1.598	1.175	1.220	13.24
91)	bis(2-Ethylh	1.006	0.922	0.972	0.895	0.886	0.955	1.235	0.988	0.982	11.28
92)	I Perylene-d12	----------ISTD----------									
93)	Di-n-octylph	1.706	1.622	1.880	1.623	1.595	1.808	2.128	1.775	1.767	10.03
94)	Benzo[b]fluo	1.312	1.202	1.342	1.428	1.616	1.319	1.637	1.286	1.393	11.29
95)	Benzo[k]fluo	1.289	1.268	1.297	1.130	0.956	1.362	1.500	1.225	1.253	12.81
96)	Benzo[a]pyre	1.161	1.080	1.209	1.139	1.152	1.204	1.387	1.130	1.183	7.80
97)	Indeno[1,2,3	1.305	1.246	1.421	1.370	1.399	1.410	1.525	1.313	1.374	6.26
98)	Dibenz(a,h)a	0.921	0.873	1.052	0.972	0.993	1.031	1.055	0.939	0.979	6.73
99)	Dibenz[a,h]a	1.082	1.023	1.202	1.189	1.222	1.200	1.202	1.110	1.154	6.29
100)	7,12-Dimethy	0.508	0.480	0.538	0.636	0.649	0.607	0.652	0.504	0.572	12.56
101)	Benzo[g,h,i]	1.152	1.092	1.191	1.155	1.181	1.200	1.278	1.134	1.173	4.66

8.7.5

8

Initial Calibration Summary

Job Number: JB22822 **Sample:** E2M2034-ICC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47231.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

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

          M2M2034.M         Mon Oct 22 14:35:25 2012   MS2M
```

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47234.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47234.D          Vial: 10
Acq On    : 22 Oct 2012   1:45 pm                     Operator: olgaa
Sample    : icv2034-50                                Inst    : MS2M
Misc      : op60718,e2m2034,                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	89	0.01	2.78
9	t	Phenol	2.153	1.953	9.3	80	0.01	2.57
12	t	2-Chlorophenol	1.579	1.482	6.1	85	0.01	2.61
19	t	2-Methylphenol	1.483	1.391	6.2	85	0.00	3.22
21	t	3&4-Methylphenol	1.601	1.471	8.1	80	0.00	3.41
24	I	Naphthalene-d8	1.000	1.000	0.0	85	0.00	4.37
29	t	2-Nitrophenol	0.214	0.198	7.5	80	0.01	3.92
30	t	2,4-Dimethylphenol	0.327	0.376	-15.0	90	0.01	4.09
31	t	Benzoic acid	0.298	0.265	11.1	72	0.04	4.38
33	t	2,4-Dichlorophenol	0.290	0.277	4.5	82	0.00	4.27
34	t	2,6-Dichlorophenol	0.289	0.275	4.8	83	0.01	4.58
43	t	4-Chloro-3-methylphenol	0.344	0.317	7.8	77	0.00	5.41
47	I	Acenaphthene-d10	1.000	1.000	0.0	81	0.01	6.98
49	t	2,4,6-Trichlorophenol	0.343	0.335	2.3	79	0.00	5.94
50	t	2,4,5-Trichlorophenol	0.367	0.365	0.5	79	0.00	6.00
60	t	2,4-Dinitrophenol	0.178	0.148	16.9	70	0.00	7.21
61	t	4-Nitrophenol	0.171	0.170	0.6	72	0.00	7.50
64		2,3,4,6-Tetrachlorophenol	0.271	0.259	4.4	75	0.00	7.61
69	I	Phenanthrene-d10	1.000	1.000	0.0	79	0.00	9.22
70	t	4,6-Dinitro-2-methylpheno	0.148	0.149	-0.7	72	0.00	8.06
76	t	Pentachlorophenol	0.128	0.114	10.9	66	0.00	9.12

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m47272.D M2M2034.M Tue Oct 23 16:06:52 2012 MS2M

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47235.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47235.D          Vial: 11
Acq On    : 22 Oct 2012   2:08 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	124	0.01	2.79
3	t	Pyridine	1.707	1.474	13.6	109	0.00	0.96
4	t	N-Nitrosodimethylamine	1.093	0.994	9.1	116	0.00	0.96
11	t	bis(2-Chloroethyl)ether	1.635	1.515	7.3	117	0.01	2.58
14	t	1,3-Dichlorobenzene	1.727	1.590	7.9	118	0.01	2.74
15	t	1,4-Dichlorobenzene	1.796	1.629	9.3	118	0.01	2.80
16	t	Benzyl alcohol	1.121	1.027	8.4	115	0.02	3.02
17	t	1,2-Dichlorobenzene	1.655	1.541	6.9	120	0.01	3.00
20	t	2,2'-oxybis(1-Chloropropa	2.669	2.353	11.8	112	0.01	3.20
22	t	n-Nitroso-di-n-propylamin	1.360	1.168	14.1	110	0.01	3.36
23	t	Hexachloroethane	0.525	0.484	7.8	118	0.01	3.36
24	I	Naphthalene-d8	1.000	1.000	0.0	119	0.01	4.38
26	t	Nitrobenzene	0.451	0.414	8.2	113	0.02	3.50
28	t	Isophorone	0.750	0.715	4.7	118	0.01	3.81
32	t	bis(2-Chloroethoxy)methan	0.424	0.422	0.5	122	0.02	4.19
36	t	1,2,4-Trichlorobenzene	0.306	0.289	5.6	118	0.01	4.34
38	t	Naphthalene	1.113	1.033	7.2	113	0.01	4.41
42	t	Hexachlorobutadiene	0.169	0.160	5.3	118	0.01	4.71
44	t	2-Methylnaphthalene	0.683	0.582	14.8	104	0.01	5.41
47	I	Acenaphthene-d10	1.000	1.000	0.0	115	0.02	6.99
48	t	Hexachlorocyclopentadiene	0.287	0.266	7.3	96	0.01	5.77
52	t	2-Chloronaphthalene	1.195	1.108	7.3	112	0.01	6.12
54	t	2-Nitroaniline	0.446	0.405	9.2	103	0.02	6.41
55	t	Dimethylphthalate	1.402	1.269	9.5	108	0.02	6.80
56	t	Acenaphthylene	1.932	1.624	15.9	96	0.01	6.74
57	t	2,6-Dinitrotoluene	0.309	0.294	4.9	109	0.02	6.87
58	t	3-Nitroaniline	0.398	0.341	14.3	99	0.02	7.06
59	t	Acenaphthene	1.242	1.137	8.5	107	0.02	7.04
62	t	Dibenzofuran	1.704	1.535	9.9	108	0.01	7.29
63	t	2,4-Dinitrotoluene	0.429	0.394	8.2	105	0.02	7.46
65	t	Diethylphthalate	1.462	1.324	9.4	107	0.02	7.91
66	t	Fluorene	1.345	1.276	5.1	110	0.01	7.81
67	t	4-Chlorophenyl-phenylethe	0.610	0.567	7.0	110	0.02	7.90
68	t	4-Nitroaniline	0.397	0.366	7.8	105	0.02	8.02
69	I	Phenanthrene-d10	1.000	1.000	0.0	110	0.01	9.23
71	t	n-Nitrosodiphenylamine	0.643	0.594	7.6	106	0.02	8.12
72	t	1,2-Diphenylhydrazine	1.072	1.043	2.7	111	0.02	8.13
74	t	4-Bromophenyl-phenylether	0.208	0.203	2.4	112	0.02	8.63
75	t	Hexachlorobenzene	0.224	0.214	4.5	111	0.01	8.79

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47235.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	t	Phenanthrene	1.225	1.151	6.0	108	0.01	9.26
78	t	Anthracene	1.214	1.179	2.9	110	0.02	9.33
79	t	Carbazole	1.175	1.103	6.1	105	0.02	9.67
80	t	Di-n-butylphthalate	1.502	1.432	4.7	106	0.02	10.48
81	t	Fluoranthene	1.208	1.136	6.0	103	0.01	11.10
83	I	Chrysene-d12	1.000	1.000	0.0	108	0.01	12.93
84	t	Pyrene	1.294	1.208	6.6	105	0.01	11.40
86	t	Butylbenzylphthalate	0.694	0.644	7.2	104	0.01	12.49
88	t	Benzo[a]anthracene	1.230	1.119	9.0	104	0.01	12.91
89	t	3,3'-Dichlorobenzidine	0.484	0.385	20.5	90	0.00	12.96
90	t	Chrysene	1.220	1.152	5.6	109	0.01	12.95
91	t	bis(2-Ethylhexyl)phthalat	0.982	0.911	7.2	103	0.01	13.20
92	I	Perylene-d12	1.000	1.000	0.0	112	0.01	14.31
93	t	Di-n-octylphthalate	1.767	1.681	4.9	104	0.01	13.80
94	t	Benzo[b]fluoranthene	1.393	1.351	3.0	115	0.01	13.99
95	t	Benzo[k]fluoranthene	1.253	1.099	12.3	91	0.01	14.01
96	t	Benzo[a]pyrene	1.183	1.148	3.0	107	0.01	14.25
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.303	5.2	104	0.01	15.13
99	t	Dibenz[a,h]anthracene	1.154	1.097	4.9	103	0.01	15.15
101	t	Benzo[g,h,i]perylene	1.173	1.151	1.9	108	0.01	15.31

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m47272.D M2M2034.M Tue Oct 23 16:10:59 2012 MS2M

8.7.7

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47236.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47236.D          Vial: 12
Acq On    : 22 Oct 2012   2:30 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	92	0.01	2.79
2	t	1,4-Dioxane	0.600	0.731	-21.8	112	0.00	0.83
6	t	Indene	2.741	3.143	-14.7	104	0.00	3.10
7	t	Cumene	3.719	4.327	-16.3	106	0.01	2.05
13	t	Decane	1.888	2.091	-10.8	101	0.00	2.68
18	t	Acetophenone	2.276	2.570	-12.9	103	0.00	3.30
24	I	Naphthalene-d8	1.000	1.000	0.0	88	0.00	4.37
27	t	Quinoline	0.743	0.829	-11.6	98	0.00	4.89
40	t	2,3-Dichloroaniline	0.353	0.362	-2.5	91	0.02	5.92
41	t	Caprolactam	0.198	0.212	-7.1	91	-0.01	5.02
45	t	1-Methylnaphthalene	0.712	0.791	-11.1	99	0.01	5.56
46	t	Dimethylnaphthalene	0.636	0.726	-14.2	100	0.01	6.37
47	I	Acenaphthene-d10	1.000	1.000	0.0	87	0.01	6.98
53	t	Biphenyl	1.564	1.713	-9.5	96	0.01	6.15
69	I	Phenanthrene-d10	1.000	1.000	0.0	85	0.00	9.22
82	t	Octadecane	0.659	0.727	-10.3	93	0.02	9.39
92	I	Perylene-d12	1.000	1.000	0.0	74	0.00	14.30
100	t	7,12-Dimethylbenz(a)anthr	0.572	0.668	-16.8	82	0.00	14.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m47272.D M2M2034.M Tue Oct 23 16:14:35 2012 MS2M

8.7.8

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47237.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47237.D          Vial: 13
Acq On    : 22 Oct 2012   2:53 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	101	0.01	2.79
5	S	2-Fluorophenol	1.456	1.541	-5.8	111	0.01	1.70
8	S	Phenol-d5	1.951	1.930	1.1	106	0.01	2.56
24	I	Naphthalene-d8	1.000	1.000	0.0	99	0.00	4.37
25	S	Nitrobenzene-d5	0.429	0.426	0.7	102	0.01	3.48
47	I	Acenaphthene-d10	1.000	1.000	0.0	96	0.01	6.98
51	S	2-Fluorobiphenyl	1.315	1.315	0.0	102	0.01	6.04
69	I	Phenanthrene-d10	1.000	1.000	0.0	94	0.00	9.22
73	S	2,4,6-Tribromophenol	0.094	0.093	1.1	95	0.00	8.22
83	I	Chrysene-d12	1.000	1.000	0.0	89	0.00	12.92
85	S	Terphenyl-d14	0.808	0.925	-14.5	109	0.01	11.76

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 2m47272.D  M2M2034.M        Tue Oct 23 16:16:30 2012   MS2M
```

8.7.9

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** E2M2034-ICV2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M47238.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2034\2m47238.D          Vial: 14
Acq On    : 22 Oct 2012   3:16 pm                    Operator: olgaa
Sample    : icv2034-50                               Inst    : MS2M
Misc      : op60718,e2m2034,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Oct 23 14:27:29 2012
Response via : Multiple Level Calibration

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

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	140	0.01	2.79
10		Aniline	2.131	2.294	-7.6	174	0.01	2.50
24	I	Naphthalene-d8	1.000	1.000	0.0	141	0.01	4.38
39	t	4-Chloroaniline	0.458	0.426	7.0	140	0.01	4.58

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 2m47272.D  M2M2034.M        Tue Oct 23 16:18:11 2012   MS2M
```

8.7.10

8

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2080-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48551.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2080\2m48551.D          Vial: 2
Acq On    : 17 Dec 2012  10:49 am                    Operator: olgaa
Sample    : cc2034-25                                Inst    : MS2M
Misc      : op61933,e2m2080,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Dec 11 16:45:41 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	81	-0.06	2.40
2	t	1,4-Dioxane	0.600	0.547	8.8	69	-0.03	0.65
3	t	Pyridine	1.707	1.178	31.0#	59	-0.03	0.76
4	t	N-Nitrosodimethylamine	1.093	0.799	26.9#	60	-0.03	0.77
5	S	2-Fluorophenol	1.456	1.236	15.1	71	-0.04	1.44
6	t	Indene	2.741	2.796	-2.0	81	-0.06	2.69
7	t	Cumene	3.719	3.602	3.1	77	-0.05	1.72
8	S	Phenol-d5	1.951	1.821	6.7	79	-0.04	2.24
9	t	Phenol	2.153	2.081	3.3	78	-0.04	2.25
10		Aniline	2.131	1.681	21.1#	70	-0.06	2.15
11	t	bis(2-Chloroethyl)ether	1.635	1.544	5.6	78	-0.06	2.22
12	t	2-Chlorophenol	1.579	1.567	0.8	81	-0.05	2.26
13	t	Decane	1.888	1.620	14.2	69	-0.06	2.30
14	t	1,3-Dichlorobenzene	1.727	1.646	4.7	79	-0.06	2.36
15	t	1,4-Dichlorobenzene	1.796	1.738	3.2	81	-0.06	2.42
16	t	Benzyl alcohol	1.121	1.055	5.9	77	-0.06	2.65
17	t	1,2-Dichlorobenzene	1.655	1.617	2.3	82	-0.06	2.61
18	t	Acetophenone	2.276	2.379	-4.5	85	-0.06	2.91
19	t	2-Methylphenol	1.483	1.453	2.0	80	-0.05	2.87
20	t	2,2'-oxybis(1-Chloropropa	2.669	2.102	21.2#	67	-0.07	2.80
21	t	3&4-Methylphenol	1.601	1.600	0.1	81	-0.05	3.06
22	t	n-Nitroso-di-n-propylamin	1.360	1.279	6.0	80	-0.06	2.97
23	t	Hexachloroethane	0.525	0.537	-2.3	84	-0.07	2.93
24	I	Naphthalene-d8	1.000	1.000	0.0	90	-0.07	3.93
25	S	Nitrobenzene-d5	0.429	0.393	8.4	87	-0.07	3.07
26	t	Nitrobenzene	0.451	0.446	1.1	93	-0.07	3.10
27	t	Quinoline	0.743	0.731	1.6	87	-0.07	4.46
28	t	Isophorone	0.750	0.687	8.4	85	-0.07	3.39
29	t	2-Nitrophenol	0.214	0.200	6.5	84	-0.07	3.51
30	t	2,4-Dimethylphenol	0.327	0.320	2.1	89	-0.05	3.71
31	t	Benzoic acid	0.298	0.152	49.0#	49	-0.06	4.04
32	t	bis(2-Chloroethoxy)methan	0.424	0.370	12.7	81	-0.07	3.76
33	t	2,4-Dichlorophenol	0.290	0.284	2.1	88	-0.05	3.89
34	t	2,6-Dichlorophenol	0.289	0.287	0.7	90	-0.06	4.16
35		1,3,5-Trichlorobenzene	0.310	0.305	1.6	88	-0.18	3.49
36	t	1,2,4-Trichlorobenzene	0.306	0.293	4.2	89	-0.07	3.91
37		1,2,3-Trichlorobenzene	0.298	0.294	1.3	88	-0.19	4.22
38	t	Naphthalene	1.113	1.053	5.4	86	-0.07	3.96
39	t	4-Chloroaniline	0.458	0.418	8.7	86	-0.07	4.16
40	t	2,3-Dichloroaniline	0.353	0.370	-4.8	94	-0.07	5.46
41	t	Caprolactam	0.198	0.181	8.6	84	-0.10	4.64

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2080-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48551.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.169	0.171	-1.2	95	-0.08	4.25
43	t	4-Chloro-3-methylphenol	0.344	0.357	-3.8	95	-0.05	5.05
44	t	2-Methylnaphthalene	0.683	0.651	4.7	89	-0.07	4.95
45	t	1-Methylnaphthalene	0.712	0.776	-9.0	98	-0.07	5.10
46	t	Dimethylnaphthalene	0.636	0.668	-5.0	94	-0.08	5.89
47	I	Acenaphthene-d10	1.000	1.000	0.0	99	-0.08	6.50
48	t	Hexachlorocyclopentadiene	0.287	0.127	55.7#	42	-0.08	5.29
49	t	2,4,6-Trichlorophenol	0.343	0.306	10.8	87	-0.07	5.51
50	t	2,4,5-Trichlorophenol	0.367	0.317	13.6	85	-0.05	5.63
51	S	2-Fluorobiphenyl	1.315	1.177	10.5	93	-0.07	5.58
52	t	2-Chloronaphthalene	1.195	1.105	7.5	96	-0.07	5.65
53	t	Biphenyl	1.564	1.470	6.0	94	-0.07	5.68
54	t	2-Nitroaniline	0.446	0.424	4.9	98	-0.07	5.97
55	t	Dimethylphthalate	1.402	1.392	0.7	103	-0.08	6.33
56	t	Acenaphthylene	1.932	1.883	2.5	96	-0.08	6.26
57	t	2,6-Dinitrotoluene	0.309	0.316	-2.3	102	-0.07	6.42
58	t	3-Nitroaniline	0.398	0.379	4.8	94	-0.07	6.63
59	t	Acenaphthene	1.242	1.198	3.5	98	-0.08	6.54
60	t	2,4-Dinitrophenol	0.178	0.053	70.2#	33	-0.05	6.86
61	t	4-Nitrophenol	0.171	0.058	66.1#	33	-0.03	7.20
62	t	Dibenzofuran	1.704	1.625	4.6	98	-0.08	6.80
63	t	2,4-Dinitrotoluene	0.429	0.469	-9.3	109	-0.07	7.04
64		2,3,4,6-Tetrachlorophenol	0.271	0.121	55.4#	44	-0.06	7.17
65	t	Diethylphthalate	1.462	1.524	-4.2	108	-0.08	7.43
66	t	Fluorene	1.345	1.366	-1.6	102	-0.08	7.32
67	t	4-Chlorophenyl-phenylethe	0.610	0.615	-0.8	104	-0.08	7.40
68	t	4-Nitroaniline	0.397	0.398	-0.3	101	-0.07	7.58
69	I	Phenanthrene-d10	1.000	1.000	0.0	113	-0.08	8.73
70	t	4,6-Dinitro-2-methylpheno	0.148	0.103	30.4#	73	-0.06	7.68
71	t	n-Nitrosodiphenylamine	0.643	0.595	7.5	107	-0.08	7.63
72	t	1,2-Diphenylhydrazine	1.072	0.932	13.1	103	-0.09	7.63
73	S	2,4,6-Tribromophenol	0.094	0.092	2.1	119	-0.07	7.76
74	t	4-Bromophenyl-phenylether	0.208	0.203	2.4	112	-0.08	8.13
75	t	Hexachlorobenzene	0.224	0.230	-2.7	123	-0.08	8.29
76	t	Pentachlorophenol	0.128	0.033#	74.2#	29	-0.07	8.67
77	t	Phenanthrene	1.225	1.146	6.4	109	-0.08	8.76
78	t	Anthracene	1.214	1.148	5.4	108	-0.08	8.83
79	t	Carbazole	1.175	1.135	3.4	108	-0.08	9.19
80	t	Di-n-butylphthalate	1.502	1.519	-1.1	115	-0.08	9.97
81	t	Fluoranthene	1.208	1.227	-1.6	116	-0.09	10.59
82	t	Octadecane	0.659	0.545	17.3	93	-0.08	8.89
83	I	Chrysene-d12	1.000	1.000	0.0	134	-0.06	12.54
84	t	Pyrene	1.294	1.114	13.9	117	-0.09	10.90
85	S	Terphenyl-d14	0.808	0.722	10.6	127	-0.07	11.31
86	t	Butylbenzylphthalate	0.694	0.633	8.8	124	-0.07	12.08
87		Butyl stearate	0.419	0.329	21.5#	104	-0.17	12.22
88	t	Benzo[a]anthracene	1.230	1.146	6.8	130	-0.07	12.51
89	t	3,3'-Dichlorobenzidine	0.484	0.440	9.1	129	-0.07	12.58
90	t	Chrysene	1.220	1.064	12.8	126	-0.06	12.56
91	t	bis(2-Ethylhexyl)phthalat	0.982	0.905	7.8	125	-0.06	12.82
92	I	Perylene-d12	1.000	1.000	0.0	138	-0.06	13.94
93	t	Di-n-octylphthalate	1.767	1.771	-0.2	130	-0.06	13.43
94	t	Benzo[b]fluoranthene	1.393	1.444	-3.7	148	-0.06	13.62
95	t	Benzo[k]fluoranthene	1.253	1.216	3.0	129	-0.06	13.64
96	t	Benzo[a]pyrene	1.183	1.162	1.8	132	-0.06	13.89
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.448	-5.4	140	-0.06	14.78

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2080-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48551.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

98	t	Dibenz(a,h)acridine	0.979	1.066	-8.9	140	-0.14	14.63
99	t	Dibenz[a,h]anthracene	1.154	1.225	-6.2	140	-0.06	14.79
100	t	7,12-Dimethylbenz(a)anthr	0.572	0.487	14.9	125	-0.07	13.62
101	t	Benzo[g,h,i]perylene	1.173	1.161	1.0	134	-0.06	14.95

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m46677.D M2M2034.M Tue Dec 18 15:24:06 2012 MS2M

8.7.11

8

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2080-CC2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48552.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2080\2m48552.D          Vial: 3
Acq On    : 17 Dec 2012  11:12 am                     Operator: olgaa
Sample    : cc2013-50                                 Inst    : MS2M
Misc      : op61933,e2m2080,                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Dec 11 16:45:41 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	81	-0.06	2.41
103	Benzaldehyde	1.131	0.894	21.0#	72	-0.06	2.01
104	Acenaphthene-d10a	1.000	1.000	0.0	101	-0.08	6.50
105	1,2,4,5-Tetrachlorobenzen	0.478	0.432	9.6	92	-0.08	5.27
106	Chrysene-d12a	1.000	1.000	0.0	149	-0.07	12.53
107	Benzidine	0.581	0.459	21.0#	129	-0.09	10.94
108	Phenanthrene-d10a	1.000	1.000	0.0	111	-0.09	8.72
109	Atrazine	0.106	0.122	-15.1	121	-0.08	8.62

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m48422.D M2M2034.M Tue Dec 18 15:25:28 2012 MS2M

8.7.12

8

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2081-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48581.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2081\2m48581.D          Vial: 2
Acq On    : 18 Dec 2012  12:14 pm                    Operator: olgaa
Sample    : cc2034-50                                Inst    : MS2M
Misc      : op62037,e2m2081,                         Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Dec 18 12:41:40 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	98	0.00	2.39
2	t	1,4-Dioxane	0.600	0.543	9.5	89	0.02	0.66
3	t	Pyridine	1.707	1.421	16.8	83	0.00	0.76
4	t	N-Nitrosodimethylamine	1.093	0.880	19.5	81	0.00	0.76
5	S	2-Fluorophenol	1.456	1.333	8.4	93	0.01	1.43
6	t	Indene	2.741	2.802	-2.2	98	0.00	2.68
7	t	Cumene	3.719	3.698	0.6	97	0.00	1.70
8	S	Phenol-d5	1.951	2.026	-3.8	107	0.00	2.22
9	t	Phenol	2.153	2.273	-5.6	103	0.00	2.23
10		Aniline	2.131	1.657	22.2#	88	0.00	2.14
11	t	bis(2-Chloroethyl)ether	1.635	1.590	2.8	97	0.00	2.21
12	t	2-Chlorophenol	1.579	1.655	-4.8	104	0.00	2.24
13	t	Decane	1.888	1.628	13.8	83	0.00	2.29
14	t	1,3-Dichlorobenzene	1.727	1.685	2.4	98	0.00	2.35
15	t	1,4-Dichlorobenzene	1.796	1.752	2.4	100	0.00	2.41
16	t	Benzyl alcohol	1.121	1.132	-1.0	100	0.00	2.63
17	t	1,2-Dichlorobenzene	1.655	1.655	0.0	102	0.00	2.60
18	t	Acetophenone	2.276	2.487	-9.3	106	0.00	2.90
19	t	2-Methylphenol	1.483	1.480	0.2	99	0.00	2.85
20	t	2,2'-oxybis(1-Chloropropa	2.669	2.115	20.8#	80	0.00	2.79
21	t	3&4-Methylphenol	1.601	1.665	-4.0	100	0.00	3.04
22	t	n-Nitroso-di-n-propylamin	1.360	1.334	1.9	99	0.00	2.96
23	t	Hexachloroethane	0.525	0.560	-6.7	108	0.00	2.91
24	I	Naphthalene-d8	1.000	1.000	0.0	104	0.00	3.91
25	S	Nitrobenzene-d5	0.429	0.419	2.3	105	0.00	3.06
26	t	Nitrobenzene	0.451	0.465	-3.1	111	0.00	3.08
27	t	Quinoline	0.743	0.787	-5.9	110	0.00	4.45
28	t	Isophorone	0.750	0.732	2.4	105	0.00	3.38
29	t	2-Nitrophenol	0.214	0.220	-2.8	108	0.00	3.49
30	t	2,4-Dimethylphenol	0.327	0.377	-15.3	110	0.00	3.68
31	t	Benzoic acid	0.298	0.326	-9.4	107	0.00	4.09
32	t	bis(2-Chloroethoxy)methan	0.424	0.398	6.1	100	0.00	3.75
33	t	2,4-Dichlorophenol	0.290	0.309	-6.6	112	0.00	3.86
34	t	2,6-Dichlorophenol	0.289	0.309	-6.9	113	0.00	4.14
35		1,3,5-Trichlorobenzene	0.310	0.321	-3.5	110	0.00	3.47
36	t	1,2,4-Trichlorobenzene	0.306	0.312	-2.0	111	0.00	3.89
37		1,2,3-Trichlorobenzene	0.298	0.309	-3.7	109	0.00	4.21
38	t	Naphthalene	1.113	1.100	1.2	105	0.00	3.94
39	t	4-Chloroaniline	0.458	0.448	2.2	109	0.00	4.14
40	t	2,3-Dichloroaniline	0.353	0.388	-9.9	114	0.00	5.44
41	t	Caprolactam	0.198	0.194	2.0	98	0.02	4.68

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2081-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48581.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.169	0.180	-6.5	116	0.00	4.23
43	t	4-Chloro-3-methylphenol	0.344	0.403	-17.2	120	0.00	5.03
44	t	2-Methylnaphthalene	0.683	0.702	-2.8	109	0.00	4.93
45	t	1-Methylnaphthalene	0.712	0.804	-12.9	119	0.00	5.07
46	t	Dimethylnaphthalene	0.636	0.717	-12.7	117	0.00	5.88
47	I	Acenaphthene-d10	1.000	1.000	0.0	112	0.00	6.48
48	t	Hexachlorocyclopentadiene	0.287	0.218	24.0#	77	0.00	5.27
49	t	2,4,6-Trichlorophenol	0.343	0.344	-0.3	111	0.00	5.50
50	t	2,4,5-Trichlorophenol	0.367	0.394	-7.4	117	0.00	5.59
51	S	2-Fluorobiphenyl	1.315	1.297	1.4	117	0.00	5.56
52	t	2-Chloronaphthalene	1.195	1.211	-1.3	119	0.00	5.64
53	t	Biphenyl	1.564	1.597	-2.1	115	0.00	5.67
54	t	2-Nitroaniline	0.446	0.473	-6.1	117	0.00	5.95
55	t	Dimethylphthalate	1.402	1.502	-7.1	124	0.00	6.32
56	t	Acenaphthylene	1.932	2.031	-5.1	117	0.00	6.24
57	t	2,6-Dinitrotoluene	0.309	0.340	-10.0	123	0.00	6.41
58	t	3-Nitroaniline	0.398	0.407	-2.3	114	0.00	6.61
59	t	Acenaphthene	1.242	1.292	-4.0	118	0.00	6.52
60	t	2,4-Dinitrophenol	0.178	0.182	-2.2	117	0.00	6.82
61	t	4-Nitrophenol	0.171	0.125	26.9#	72	0.00	7.17
62	t	Dibenzofuran	1.704	1.784	-4.7	122	0.00	6.79
63	t	2,4-Dinitrotoluene	0.429	0.503	-17.2	131	0.00	7.03
64		2,3,4,6-Tetrachlorophenol	0.271	0.193	28.8#	76	0.00	7.15
65	t	Diethylphthalate	1.462	1.649	-12.8	129	0.00	7.42
66	t	Fluorene	1.345	1.500	-11.5	126	0.00	7.30
67	t	4-Chlorophenyl-phenylethe	0.610	0.676	-10.8	128	0.00	7.38
68	t	4-Nitroaniline	0.397	0.435	-9.6	121	0.00	7.57
69	I	Phenanthrene-d10	1.000	1.000	0.0	124	0.00	8.71
70	t	4,6-Dinitro-2-methylpheno	0.148	0.155	-4.7	117	0.00	7.66
71	t	n-Nitrosodiphenylamine	0.643	0.654	-1.7	132	0.00	7.62
72	t	1,2-Diphenylhydrazine	1.072	1.090	-1.7	131	0.00	7.61
73	S	2,4,6-Tribromophenol	0.094	0.105	-11.7	143	0.00	7.74
74	t	4-Bromophenyl-phenylether	0.208	0.224	-7.7	139	0.00	8.11
75	t	Hexachlorobenzene	0.224	0.251	-12.1	147	0.00	8.28
76	t	Pentachlorophenol	0.128	0.078	39.1#	72	0.00	8.65
77	t	Phenanthrene	1.225	1.239	-1.1	132	0.00	8.74
78	t	Anthracene	1.214	1.238	-2.0	131	0.00	8.81
79	t	Carbazole	1.175	1.220	-3.8	131	0.00	9.17
80	t	Di-n-butylphthalate	1.502	1.655	-10.2	138	0.00	9.96
81	t	Fluoranthene	1.208	1.341	-11.0	138	0.00	10.57
82	t	Octadecane	0.659	0.594	9.9	111	0.00	8.87
83	I	Chrysene-d12	1.000	1.000	0.0	142	0.00	12.52
84	t	Pyrene	1.294	1.208	6.6	139	0.00	10.89
85	S	Terphenyl-d14	0.808	0.791	2.1	150	0.00	11.29
86	t	Butylbenzylphthalate	0.694	0.699	-0.7	149	0.00	12.06
87		Butyl stearate	0.419	0.361	13.8	124	0.00	12.21
88	t	Benzo[a]anthracene	1.230	1.228	0.2	150	0.00	12.50
89	t	3,3'-Dichlorobenzidine	0.484	0.463	4.3	143	0.00	12.57
90	t	Chrysene	1.220	1.145	6.1	142	0.00	12.55
91	t	bis(2-Ethylhexyl)phthalat	0.982	0.998	-1.6	148	0.00	12.81
92	I	Perylene-d12	1.000	1.000	0.0	130	0.00	13.93
93	t	Di-n-octylphthalate	1.767	2.103	-19.0	151	0.00	13.42
94	t	Benzo[b]fluoranthene	1.393	1.672	-20.0	165	-0.02	13.62
95	t	Benzo[k]fluoranthene	1.253	1.454	-16.0	139	0.00	13.63
96	t	Benzo[a]pyrene	1.183	1.341	-13.4	145	0.00	13.88
97	t	Indeno[1,2,3-cd]pyrene	1.374	1.523	-10.8	141	-0.01	14.77

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2081-CC2034
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48581.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

98	t	Dibenz(a,h)acridine	0.979	1.131	-15.5	143	0.00	14.62
99	t	Dibenz[a,h]anthracene	1.154	1.320	-14.4	143	-0.01	14.78
100	t	7,12-Dimethylbenz(a)anthr	0.572	0.675	-18.0	145	0.00	13.62
101	t	Benzo[g,h,i]perylene	1.173	1.185	-1.0	129	0.00	14.94

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m48579.D M2M2034.M Tue Dec 18 12:43:50 2012 MS2M

8.7.13

8

Continuing Calibration Summary

Job Number: JB22822 **Sample:** E2M2081-CC2013
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** 2M48582.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\msdchem\1\DATA\e2m2081\2m48582.D          Vial: 3
Acq On    : 18 Dec 2012  12:45 pm                     Operator: olgaa
Sample    : cc2013-50                                 Inst    : MS2M
Misc      : op62037,e2m2081,                          Multiplr: 1.00
MS Integration Params: lscint.p

Method       : C:\MSDCHEM\1\METHODS\M2M2034.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
Last Update  : Tue Dec 11 16:45:41 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.050  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	90	-0.08	2.39
103	Benzaldehyde	1.131	0.879	22.3#	79	-0.08	1.99
104	Acenaphthene-d10a	1.000	1.000	0.0	121	-0.10	6.48
105	1,2,4,5-Tetrachlorobenzen	0.478	0.418	12.6	107	-0.10	5.25
106	Chrysene-d12a	1.000	1.000	0.0	174	-0.09	12.51
107	Benzidine	0.581	0.452	22.2#	149	-0.11	10.93
108	Phenanthrene-d10a	1.000	1.000	0.0	133	-0.11	8.70
109	Atrazine	0.106	0.124	-17.0	148	-0.09	8.60

(#) = Out of Range SPCC's out = 0 CCC's out = 0
2m48422.D M2M2034.M Wed Dec 19 09:57:37 2012 MS2M

8.7.14

8

Initial Calibration Summary

Job Number: JB22822 **Sample:** EM3617-ICC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89364.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Response Factor Report MSM

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Thu Nov 08 17:32:00 2012
Response via : Initial Calibration

Calibration Files
2 =M89366.D 5 =M89365.D 100 =M89362.D 50 =M89364.D
1 =M89363.D 10 =M89368.D 80 =M89369.D 25 =M89367.D

Compound	2	5	100	50	1	10	80	25	Avg	%RSD
1) I 1,4-Dichlorobenzene-d					ISTD					
2) 1,4-Dioxane	0.519	0.567	0.530	0.496	0.561	0.605	0.533	0.496	0.539	6.94
3) Pyridine	1.306	1.245	1.399	1.258	1.263	1.368	1.365	1.237	1.305	4.89
4) N-Nitrosodim	1.177	0.956	0.962	0.917	1.224	0.886	0.952	0.885	0.995	13.15
5) 2-Fluorophen	1.306	1.244	1.384	1.299	1.334	1.228	1.393	1.173	1.295	5.90
6) Indene	2.354	2.312	2.192	2.087	2.195	2.253	2.202	2.003	2.200	5.18
7) Cumene	3.611	3.390	3.142	3.144	3.514	3.331	3.214	3.057	3.301	5.92
8) Phenol-d5	1.637	1.682	1.708	1.636	1.535	1.627	1.722	1.554	1.638	4.10
9) Phenol	1.938	1.891	1.874	1.817	2.009	1.910	1.886	1.738	1.883	4.26
10) Aniline	2.158	2.237	2.054	2.005	2.173	2.088	2.033	1.917	2.083	4.95
11) bis(2-Chloro	1.427	1.415	1.270	1.207	1.482	1.299	1.291	1.193	1.323	8.04
12) 2-Chlorophen	1.557	1.455	1.471	1.364	1.605	1.428	1.480	1.305	1.458	6.60
13) Decane	1.548	1.413	1.202	1.177	1.703	1.280	1.197	1.096	1.327	15.83
14) 1,3-Dichloro	1.763	1.682	1.576	1.505	1.714	1.584	1.613	1.422	1.607	6.96
15) 1,4-Dichloro	1.787	1.744	1.608	1.532	1.796	1.625	1.628	1.457	1.647	7.36
16) Benzyl alcoh	0.875	0.924	0.983	0.929	0.833	0.938	0.979	0.859	0.915	5.98
17) 1,2-Dichloro	1.690	1.622	1.548	1.462	1.612	1.516	1.563	1.418	1.554	5.71
18) Acetophenone	2.191	2.093	1.977	1.911	2.110	2.011	1.988	1.849	2.016	5.51
19) 2-Methylphen	1.159	1.273	1.301	1.226	1.323	1.226	1.322	1.171	1.250	5.18
20) 2,2'-oxybis(	0.553	0.497	0.490	0.454	0.450	0.464	0.482	0.433	0.478	7.78
21) 3&4-Methylph	1.363	1.421	1.407	1.336	1.306	1.339	1.408	1.283	1.358	3.73
22) n-Nitroso-di	1.216	1.221	1.100	1.069	1.301	1.151	1.092	1.040	1.149	7.83
23) Hexachloroet	0.701	0.674	0.633	0.612	0.700	0.632	0.650	0.563	0.646	7.19
24) I Naphthalene-d8					ISTD					
25) Nitrobenzene	0.428	0.408	0.421	0.396	0.390	0.394	0.423	0.366	0.403	5.16
26) Nitrobenzene	0.487	0.463	0.441	0.429	0.445	0.426	0.442	0.406	0.442	5.53
27) Quinoline	0.823	0.786	0.780	0.749	0.771	0.790	0.793	0.726	0.777	3.81
28) Isophorone	0.788	0.796	0.777	0.754	0.794	0.774	0.783	0.725	0.774	3.06
29) 2-Nitropheno	0.168	0.181	0.217	0.202	0.148	0.179	0.215	0.186	0.187	12.53
30) 2,4-Dimethyl	0.418	0.432	0.423	0.401	0.375	0.410	0.429	0.382	0.409	5.17
31) Benzoic acid		0.236	0.337	0.314		0.261	0.350	0.275	0.296	15.24
32) bis(2-Chloro	0.434	0.418	0.414	0.392	0.411	0.410	0.411	0.384	0.409	3.76
33) 2,4-Dichloro	0.338	0.349	0.374	0.354	0.284	0.362	0.375	0.340	0.347	8.35
34) 2,6-Dichloro	0.345	0.338	0.384	0.350	0.308	0.342	0.378	0.329	0.347	7.14
35) 1,3,5-Trichl	0.438	0.426	0.416	0.392	0.412	0.398	0.418	0.367	0.408	5.47
36) 1,2,4-Trichl	0.450	0.413	0.405	0.380	0.414	0.397	0.409	0.372	0.405	5.83
37) 1,2,3-Trichl	0.390	0.394	0.393	0.367	0.435	0.375	0.396	0.352	0.388	6.36
38) Naphthalene	1.219	1.134	1.046	1.037	1.207	1.077	1.064	0.994	1.097	7.45
39) 4-Chloroanil	0.470	0.486	0.501	0.477	0.423	0.479	0.496	0.448	0.472	5.49
40) 2,3-Dichloro	0.451	0.457	0.447	0.425	0.403	0.444	0.452	0.413	0.436	4.60
41) Caprolactam	0.152	0.173	0.173	0.174	0.187	0.178	0.177	0.161	0.172	6.29
42) Hexachlorobu	0.284	0.265	0.262	0.248	0.293	0.262	0.268	0.238	0.265	6.69
43) 4-Chloro-3-m	0.353	0.372	0.395	0.382	0.315	0.375	0.398	0.365	0.369	7.15
44) 2-Methylnaph	0.719	0.686	0.685	0.673	0.682	0.657	0.691	0.611	0.675	4.65
45) 1-Methylnaph	0.818	0.793	0.747	0.725	0.803	0.754	0.743	0.683	0.758	5.91

Initial Calibration Summary

Job Number: JB22822 **Sample:** EM3617-ICC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89364.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
46) Dimethylnaph 0.771 0.742 0.737 0.701 0.685 0.702 0.743 0.674 0.719   4.69

47) I   Acenaphthene-d10      ----------------ISTD---------------------
48) Hexachlorocy 0.345 0.369 0.438 0.399 0.319 0.360 0.432 0.369 0.379  10.95
49) 2,4,6-Trichl 0.392 0.432 0.434 0.407 0.373 0.420 0.430 0.387 0.409   5.71
50) 2,4,5-Trichl 0.406 0.448 0.468 0.433 0.383 0.419 0.469 0.418 0.430   6.99
51) 2-Fluorobiph 1.385 1.336 1.241 1.178 1.354 1.265 1.242 1.157 1.270   6.49
52) 2-Chloronaph 1.179 1.139 1.085 1.003 1.146 1.084 1.072 0.988 1.087   6.21
53) Biphenyl     1.473 1.407 1.313 1.256 1.464 1.340 1.307 1.220 1.347   6.89
54) 2-Nitroanili 0.277 0.329 0.345 0.334 0.253 0.322 0.347 0.308 0.315  10.62
55) Dimethylphth 1.433 1.386 1.262 1.236 1.340 1.321 1.273 1.215 1.308   5.78
56) Acenaphthyle 1.681 1.822 1.764 1.712 1.753 1.771 1.768 1.658 1.741   3.08
57) 2,6-Dinitrot 0.216 0.254 0.286 0.267 0.189 0.249 0.290 0.243 0.249  13.73
58) 3-Nitroanili 0.216 0.263 0.316 0.287 0.173 0.260 0.310 0.263 0.261  18.20
59) Acenaphthene 1.185 1.121 1.132 1.060 1.202 1.101 1.103 1.037 1.118   5.04
60) 2,4-Dinitrop             0.173 0.150       0.085 0.172 0.111 0.138  28.20
            ----- Linear regression -----  Coefficient =  0.9969
              Response Ratio = -0.07539 + 0.18739 *A

61) 4-Nitropheno 0.157 0.191 0.238 0.230 0.138 0.203 0.249 0.206 0.201  19.27
62) Dibenzofuran 1.632 1.619 1.506 1.458 1.677 1.513 1.518 1.443 1.546   5.57
63) 2,4-Dinitrot 0.242 0.315 0.405 0.384       0.350 0.409 0.355 0.352  16.64
64) 2,3,4,6-Tetr 0.330 0.368 0.416 0.385 0.340 0.383 0.415 0.357 0.374   8.47
65) Diethylphtha 1.449 1.474 1.323 1.285 1.464 1.373 1.324 1.263 1.369   6.10
66) Fluorene     1.297 1.310 1.288 1.235 1.283 1.273 1.298 1.196 1.272   3.00
67) 4-Chlorophen 0.761 0.758 0.725 0.689 0.709 0.740 0.737 0.670 0.724   4.49
68) 4-Nitroanili 0.245 0.298 0.311 0.295 0.220 0.285 0.313 0.272 0.280  11.70

69) I   Phenanthrene-d10      ----------------ISTD---------------------
70) 4,6-Dinitro-             0.134 0.119       0.076 0.137 0.096 0.112  23.35
            ----- Linear regression -----  Coefficient =  0.9966
              Response Ratio = -0.02475 + 0.14518 *A

71) n-Nitrosodip 0.558 0.552 0.534 0.502 0.541 0.519 0.534 0.489 0.529   4.50
72) 1,2-Diphenyl 0.827 0.775 0.686 0.674 0.755 0.750 0.694 0.676 0.730   7.63
73) 2,4,6-Tribro 0.066 0.070 0.084 0.075 0.050 0.071 0.083 0.069 0.071  14.88
74) 4-Bromopheny 0.210 0.207 0.218 0.202 0.214 0.210 0.221 0.193 0.209   4.25
75) Hexachlorobe 0.224 0.219 0.212 0.201 0.236 0.211 0.213 0.191 0.213   6.47
76) Pentachlorop 0.119 0.143 0.164 0.155 0.112 0.144 0.167 0.142 0.143  13.78
77) Phenanthrene 1.111 1.019 0.966 0.948 1.149 1.003 0.979 0.931 1.013   7.70
78) Anthracene   1.014 1.013 0.978 0.957 0.935 1.007 0.990 0.930 0.978   3.48
79) Carbazole    0.962 0.972 0.937 0.919 0.867 0.957 0.948 0.904 0.933   3.75
80) Di-n-butylph 1.077 1.160 1.178 1.189 0.971 1.199 1.221 1.165 1.145   7.17
81) Fluoranthene 1.295 1.338 1.235 1.246 1.209 1.301 1.281 1.232 1.267   3.42
82) Octadecane   0.295 0.305 0.341 0.327 0.302 0.316 0.338 0.312 0.317   5.34

83) I   Chrysene-d12          ----------------ISTD---------------------
84) Pyrene       1.229 1.281 1.178 1.177 1.200 1.195 1.220 1.156 1.205   3.23
85) Butyl steara 0.172 0.194 0.223 0.215 0.143 0.196 0.222 0.203 0.196  13.83
86) Terphenyl-d1 0.825 0.845 0.837 0.806 0.771 0.814 0.859 0.784 0.818   3.68
87) Butylbenzylp 0.425 0.486 0.542 0.522       0.483 0.560 0.495 0.502   8.90
88) Benzo[a]anth 1.235 1.234 1.100 1.115 1.303 1.133 1.147 1.092 1.170   6.62
89) 3,3'-Dichlor 0.311 0.379 0.412 0.385 0.310 0.355 0.423 0.352 0.366  11.53
90) Chrysene     1.142 1.095 1.011 1.013 1.140 1.043 1.023 0.994 1.058   5.64
91) bis(2-Ethylh 0.484 0.573 0.678 0.669       0.573 0.702 0.611 0.613  12.46

92) I   Perylene-d12          ----------------ISTD---------------------
93) Di-n-octylph 0.857 1.127 1.421 1.350       1.189 1.463 1.280 1.241  16.71
94) Benzo[b]fluo 1.296 1.319 1.299 1.289 1.214 1.238 1.465 1.410 1.316   6.35
95) Benzo[k]fluo 1.334 1.271 1.289 1.184 1.318 1.334 1.166 1.035 1.241   8.50
```

Initial Calibration Summary

Job Number: JB22822 **Sample:** EM3617-ICC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89364.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
 96) Benzo[a]pyre 1.130 1.188 1.199 1.171 0.962 1.136 1.245 1.115 1.143   7.41
 97) Indeno[1,2,3 1.204 1.261 1.313 1.297 1.113 1.229 1.345 1.232 1.249   5.82
 98) Dibenz(a,h)a 0.775 0.879 0.983 0.980 0.715 0.867 1.033 0.903 0.892  12.14
 99) Dibenz[a,h]a 0.920 1.042 1.093 1.075 0.890 1.041 1.117 1.013 1.024   7.86
100) 7,12-Dimethy 0.619 0.629 0.743 0.660 0.577 0.620 0.746 0.599 0.649   9.79
101) Benzo[g,h,i] 1.040 1.005 1.065 1.040 0.984 1.012 1.067 0.998 1.026   3.03

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

          MM3617.M          Fri Nov 09 09:27:39 2012   GCMSM
```

8.7.15

8

Initial Calibration Summary

Job Number: JB22822 **Sample:** EM3618-ICC3618
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89378.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

```
                         Response Factor Report  MSM

  Method       : C:\HPCHEM\1\METHODS\MM3618.M (RTE Integrator)
  Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
  Last Update  : Fri Nov 09 15:05:00 2012
  Response via : Initial Calibration

  Calibration Files
  2   =M89375.D    5   =M89374.D    100 =M89371.D    50  =M89378.D
  1   =M89376.D    10  =M89373.D    80  =M89372.D    25  =M89377.D

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

102) I   1,4-Dichlorobenzene-d ----------------ISTD---------------------
103) Benzaldehyde 0.967 1.135 1.153 1.081 0.887 0.993 1.133 1.047 1.050   9.00

104) I   Acenaphthene-d10a     ----------------ISTD---------------------
105) 1,2,4,5-Tetr 0.578 0.648 0.638 0.598 0.544 0.559 0.619 0.603 0.598   6.12
106) 2-bromonapht 0.548 0.688 0.646 0.603 0.518 0.560 0.624 0.611 0.600   9.25

107) I   Phenanthrene-d10a     ----------------ISTD---------------------
108) Atrazine     0.108 0.134 0.146 0.130 0.087 0.116 0.143 0.124 0.123  15.83
109) o-terphenyl  0.570 0.695 0.697 0.650 0.518 0.610 0.683 0.638 0.633  10.12

110) I   Chrysene-d12a         ----------------ISTD---------------------
111) Benzidine    0.420 0.597 0.601 0.612 0.385 0.554 0.631 0.591 0.549  16.99
112) 1-chloroocta 0.169 0.223 0.238 0.213 0.160 0.206 0.235 0.212 0.207  13.77

113) I   Naphthalene-d8a       ----------------ISTD---------------------
114) hydroquinone       0.358 0.442 0.402       0.322 0.424 0.358 0.384  11.91
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           MM3617.M          Fri Nov 09 15:05:31 2012   GCMSM
```

8.7.16

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89379.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89379.D            Vial: 10
Acq On    :  8 Nov 2012   9:14 pm                   Operator: olgaa
Sample    : icv3617-50                              Inst    : MSM
Misc      : op60918,em3618,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Thu Nov 08 17:32:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	92	-0.01	3.56
9	t	Phenol	1.883	1.825	3.1	93	-0.01	3.23
12	t	2-Chlorophenol	1.458	1.502	-3.0	101	0.00	3.34
19	t	2-Methylphenol	1.250	1.291	-3.3	97	-0.01	4.07
21	t	3&4-Methylphenol	1.358	1.330	2.1	92	-0.01	4.31
24	I	Naphthalene-d8	1.000	1.000	0.0	86	-0.01	5.57
29	t	2-Nitrophenol	0.187	0.199	-6.4	85	-0.01	4.99
30	t	2,4-Dimethylphenol	0.409	0.476	-16.4	103	0.00	5.18
31	t	Benzoic acid	0.296	0.294	0.7	81	-0.07	5.47
33	t	2,4-Dichlorophenol	0.347	0.394	-13.5	96	-0.01	5.41
34	t	2,6-Dichlorophenol	0.347	0.381	-9.8	94	-0.01	5.81
43	t	4-Chloro-3-methylphenol	0.369	0.420	-13.8	95	-0.03	6.80
47	I	Acenaphthene-d10	1.000	1.000	0.0	93	0.00	8.84
49	t	2,4,6-Trichlorophenol	0.409	0.433	-5.9	99	-0.01	7.51
50	t	2,4,5-Trichlorophenol	0.430	0.447	-4.0	96	-0.02	7.56
		----------	True	Calc.	% Drift		----------	
60	t	2,4-Dinitrophenol	100.000	82.844	17.2	58	-0.02	9.09
		----------	AvgRF	CCRF	% Dev		----------	
61	t	4-Nitrophenol	0.201	0.227	-12.9	92	-0.02	9.37
64		2,3,4,6-Tetrachlorophenol	0.374	0.376	-0.5	91	-0.01	9.60
69	I	Phenanthrene-d10	1.000	1.000	0.0	91	0.00	11.65
		----------	True	Calc.	% Drift		----------	
70	t	4,6-Dinitro-2-methylpheno	50.000	41.857	16.3	77	-0.03	10.16
		----------	AvgRF	CCRF	% Dev		----------	
76	t	Pentachlorophenol	0.143	0.154	-7.7	90	-0.02	11.48

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89364.D MM3617.M Fri Nov 09 09:35:25 2012 GCMSM

8.7.17

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3618
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89380A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89380A.D            Vial: 11
Acq On    :  8 Nov 2012   9:28 pm                    Operator: olgaa
Sample    : icv3618-50                               Inst    : MSM
Misc      : op60918,em3618,                          Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Fri Nov 09 15:05:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
104	I	Acenaphthene-d10a	1.000	1.000	0.0	96	0.00	8.85
105	t	1,2,4,5-Tetrachlorobenzen	0.598	0.568	5.0	91	0.00	7.26

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89378.D MM3617.M Fri Nov 09 15:07:16 2012 GCMSM

8.7.18

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89380.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89380.D            Vial: 11
Acq On    :  8 Nov 2012   9:28 pm                   Operator: olgaa
Sample    : icv3617-50                              Inst    : MSM
Misc      : op60918,em3618,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Thu Nov 08 17:32:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	101	0.00	3.57
3	t	Pyridine	1.305	1.095	16.1	88	-0.02	1.24
4	t	N-Nitrosodimethylamine	0.995	0.856	14.0	94	-0.02	1.23
11	t	bis(2-Chloroethyl)ether	1.323	1.283	3.0	107	0.00	3.31
14	t	1,3-Dichlorobenzene	1.607	1.560	2.9	104	0.00	3.51
15	t	1,4-Dichlorobenzene	1.647	1.505	8.6	99	0.00	3.59
16	t	Benzyl alcohol	0.915	0.868	5.1	94	0.00	3.84
17	t	1,2-Dichlorobenzene	1.554	1.431	7.9	99	0.00	3.85
20	t	2,2'-oxybis(1-Chloropropa	0.478	0.438	8.4	97	0.00	4.09
22	t	n-Nitroso-di-n-propylamin	1.149	0.990	13.8	93	0.00	4.30
23	t	Hexachloroethane	0.646	0.583	9.8	96	0.00	4.30
24	I	Naphthalene-d8	1.000	1.000	0.0	96	0.00	5.57
26	t	Nitrobenzene	0.442	0.401	9.3	90	0.00	4.47
28	t	Isophorone	0.774	0.717	7.4	91	-0.02	4.86
32	t	bis(2-Chloroethoxy)methan	0.409	0.431	-5.4	106	-0.02	5.33
36	t	1,2,4-Trichlorobenzene	0.405	0.395	2.5	100	0.00	5.53
38	t	Naphthalene	1.097	1.017	7.3	94	0.00	5.61
42	t	Hexachlorobutadiene	0.265	0.258	2.6	100	0.00	6.00
44	t	2-Methylnaphthalene	0.675	0.685	-1.5	98	0.00	6.87
47	I	Acenaphthene-d10	1.000	1.000	0.0	95	0.00	8.85
48	t	Hexachlorocyclopentadiene	0.379	0.320	15.6	76	0.00	7.33
52	t	2-Chloronaphthalene	1.087	1.058	2.7	100	0.00	7.76
54	t	2-Nitroaniline	0.315	0.331	-5.1	94	0.00	8.09
55	t	Dimethylphthalate	1.308	1.255	4.1	96	0.00	8.61
56	t	Acenaphthylene	1.741	1.562	10.3	86	0.00	8.53
57	t	2,6-Dinitrotoluene	0.249	0.251	-0.8	89	0.00	8.69
58	t	3-Nitroaniline	0.261	0.254	2.7	84	0.00	8.91
59	t	Acenaphthene	1.118	1.057	5.5	95	0.00	8.90
62	t	Dibenzofuran	1.546	1.548	-0.1	101	0.00	9.22
63	t	2,4-Dinitrotoluene	0.352	0.320	9.1	79	0.00	9.41
65	t	Diethylphthalate	1.369	1.286	6.1	95	-0.02	10.01
66	t	Fluorene	1.272	1.263	0.7	97	-0.02	9.87
67	t	4-Chlorophenyl-phenylethe	0.724	0.708	2.2	97	0.00	9.98
68	t	4-Nitroaniline	0.280	0.278	0.7	89	-0.03	10.09
69	I	Phenanthrene-d10	1.000	1.000	0.0	98	0.00	11.64
71	t	n-Nitrosodiphenylamine	0.529	0.465	12.1	91	-0.02	10.24
72	t	1,2-Diphenylhydrazine	0.730	0.659	9.7	96	-0.02	10.26
74	t	4-Bromophenyl-phenylether	0.209	0.199	4.8	97	0.00	10.90
75	t	Hexachlorobenzene	0.213	0.199	6.6	97	0.00	11.09

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89380.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

77	t	Phenanthrene	1.013	0.943	6.9	98	-0.02	11.68
78	t	Anthracene	0.978	0.934	4.5	96	0.00	11.77
79	t	Carbazole	0.933	0.911	2.4	97	0.00	12.18
80	t	Di-n-butylphthalate	1.145	1.147	-0.2	95	0.00	13.21
81	t	Fluoranthene	1.267	1.200	5.3	95	0.00	13.99
83	I	Chrysene-d12	1.000	1.000	0.0	95	0.00	16.46
84	t	Pyrene	1.205	1.161	3.7	94	0.00	14.38
87	t	Butylbenzylphthalate	0.502	0.516	-2.8	94	0.00	15.90
88	t	Benzo[a]anthracene	1.170	1.123	4.0	96	0.00	16.44
90	t	Chrysene	1.058	1.031	2.6	97	0.00	16.50
91	t	bis(2-Ethylhexyl)phthalat	0.613	0.639	-4.2	91	0.00	16.87
92	I	Perylene-d12	1.000	1.000	0.0	91	0.00	18.25
93	t	Di-n-octylphthalate	1.241	1.348	-8.6	91	0.00	17.64
94	t	Benzo[b]fluoranthene	1.316	1.465	-11.3	104	0.00	17.84
95	t	Benzo[k]fluoranthene	1.241	1.000	19.4	77	-0.02	17.87
96	t	Benzo[a]pyrene	1.143	1.186	-3.8	92	0.00	18.19
97	t	Indeno[1,2,3-cd]pyrene	1.249	1.356	-8.6	95	-0.02	19.30
99	t	Dibenz[a,h]anthracene	1.024	1.087	-6.2	92	0.00	19.33
101	t	Benzo[g,h,i]perylene	1.026	1.096	-6.8	96	0.00	19.53

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89364.D MM3617.M Fri Nov 09 09:31:37 2012 GCMSM

8.7.19

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89381.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89381.D            Vial: 12
Acq On    :  8 Nov 2012   9:58 pm                   Operator: olgaa
Sample    : icv3617-50                              Inst    : MSM
Misc      : op60918,em3618,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Thu Nov 08 17:32:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  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	93	0.00	3.57
2	t	1,4-Dioxane	0.539	0.530	1.7	100	-0.02	1.07
6	t	Indene	2.200	2.382	-8.3	106	0.00	3.96
7	t	Cumene	3.301	3.474	-5.2	103	0.00	2.65
13	t	Decane	1.327	1.265	4.7	100	0.00	3.44
18	t	Acetophenone	2.016	2.066	-2.5	101	0.00	4.22
24	I	Naphthalene-d8	1.000	1.000	0.0	96	0.00	5.57
27	t	Quinoline	0.777	0.788	-1.4	101	-0.04	6.21
40	t	2,3-Dichloroaniline	0.436	0.418	4.1	94	0.00	7.49
41	t	Caprolactam	0.172	0.161	6.4	88	-0.10	6.36
45	t	1-Methylnaphthalene	0.758	0.776	-2.4	102	0.00	7.05
46	t	Dimethylnaphthalene	0.719	0.735	-2.2	100	0.00	8.07
47	I	Acenaphthene-d10	1.000	1.000	0.0	93	0.00	8.84
53	t	Biphenyl	1.347	1.428	-6.0	105	0.00	7.80
69	I	Phenanthrene-d10	1.000	1.000	0.0	93	0.00	11.64
82	t	Octadecane	0.317	0.361	-13.9	103	0.00	11.85
92	I	Perylene-d12	1.000	1.000	0.0	88	0.00	18.25
100	t	7,12-Dimethylbenz(a)anthr	0.649	0.731	-12.6	98	-0.02	17.88

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 M89364.D   MM3617.M         Fri Nov 09 09:37:08 2012   GCMSM
```

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3618
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89381A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89381A.D            Vial: 12
Acq On    :  8 Nov 2012   9:58 pm                     Operator: olgaa
Sample    : icv3618-50                                Inst    : MSM
Misc      : op60918,em3618,                           Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Fri Nov 09 15:05:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	I	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	94	0.00	3.57
103	t	Benzaldehyde	1.050	1.192	-13.5	104	0.00	3.02
107	I	Phenanthrene-d10a	1.000	1.000	0.0	90	0.00	11.64
108	t	Atrazine	0.123	0.146	-18.7	102	0.00	11.46

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89378.D MM3617.M Fri Nov 09 15:08:34 2012 GCMSM

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89382.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89382.D            Vial: 13
Acq On    :  8 Nov 2012  10:27 pm                    Operator: olgaa
Sample    : icv3617-50                               Inst    : MSM
Misc      : op60918,em3618,                          Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Thu Nov 08 17:32:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  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	93	-0.01	3.56
5	S	2-Fluorophenol	1.295	1.369	-5.7	98	0.00	2.17
8	S	Phenol-d5	1.638	1.628	0.6	92	-0.01	3.21
24	I	Naphthalene-d8	1.000	1.000	0.0	92	-0.01	5.57
25	S	Nitrobenzene-d5	0.403	0.422	-4.7	98	-0.01	4.43
47	I	Acenaphthene-d10	1.000	1.000	0.0	91	0.00	8.84
51	S	2-Fluorobiphenyl	1.270	1.325	-4.3	102	-0.01	7.66
69	I	Phenanthrene-d10	1.000	1.000	0.0	92	-0.01	11.64
73	S	2,4,6-Tribromophenol	0.071	0.079	-11.3	96	-0.01	10.38
83	I	Chrysene-d12	1.000	1.000	0.0	89	-0.01	16.46
86	S	Terphenyl-d14	0.818	0.902	-10.3	100	-0.01	14.90

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89364.D MM3617.M Fri Nov 09 09:38:00 2012 GCMSM

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89383.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89383.D            Vial: 14
Acq On    :  8 Nov 2012  10:57 pm                    Operator: olgaa
Sample    : icv3617-50                               Inst    : MSM
Misc      : op60918,em3618,                          Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Thu Nov 08 17:32:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  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	182	0.00	3.57
10	t	Aniline	2.083	1.815	12.9	165	0.00	3.20
24	I	Naphthalene-d8	1.000	1.000	0.0	189	0.00	5.57
39	t	4-Chloroaniline	0.472	0.416	11.9	165	0.00	5.82

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 M89364.D   MM3617.M         Fri Nov 09 09:40:07 2012   GCMSM
```

8.7.23

8

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89384.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3618\M89384.D            Vial: 15
Acq On    :  8 Nov 2012  11:27 pm                   Operator: olgaa
Sample    : icv3617-50                              Inst    : MSM
Misc      : op60918,em3618,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Thu Nov 08 17:32:00 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  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	265	0.00	16.47
89	t	3,3'-Dichlorobenzidine	0.366	0.401	-9.6	276	0.00	16.53

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89364.D MM3617.M Fri Nov 09 09:58:33 2012 GCMSM

Initial Calibration Verification

Job Number: JB22822 **Sample:** EM3618-ICV3618
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M89384A.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
  Data File : C:\HPCHEM\1\DATA\EM3618\M89384A.D            Vial: 15
  Acq On    :  8 Nov 2012  11:27 pm                     Operator: olgaa
  Sample    : icv3618-50                                Inst    : MSM
  Misc      : op60918,em3618,                           Multiplr: 1.00
  MS Integration Params: LSCINT.P

  Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
  Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
  Last Update  : Fri Nov 09 15:05:00 2012
  Response via : Multiple Level Calibration

  Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
  Max. RRF Dev :  30%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
110	I	Chrysene-d12a	1.000	1.000	0.0	238	0.01	16.47
111	t	Benzidine	0.549	0.774	-41.0#	301	0.01	14.42

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89378.D MM3617.M Fri Nov 09 15:09:28 2012 GCMSM

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3659-CC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90309.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90309.D Vial: 2
Acq On : 17 Dec 2012 10:29 am Operator: olgaa
Sample : cc3617-25 Inst : MSM
Misc : op62039,em3659, Multiplr: 1.00
MS Integration Params: LSCINT.P

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Multiple Level Calibration

Min. RRF : 0.049 Min. Rel. Area : 49% 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	117	-0.09	3.17
2	t	1,4-Dioxane	0.539	0.513	4.8	120	-0.04	0.89
3	t	Pyridine	1.305	1.215	6.9	114	-0.04	1.05
4	t	N-Nitrosodimethylamine	0.995	0.617	38.0#	81	-0.04	1.04
5	S	2-Fluorophenol	1.295	1.179	9.0	117	-0.05	1.91
6	t	Indene	2.200	2.153	2.1	125	-0.09	3.55
7	t	Cumene	3.301	2.887	12.5	110	-0.08	2.29
8	S	Phenol-d5	1.638	1.629	0.5	122	-0.04	2.93
9	t	Phenol	1.883	1.713	9.0	115	-0.05	2.94
10	t	Aniline	2.083	1.668	19.9	101	-0.08	2.84
11	t	bis(2-Chloroethyl)ether	1.323	1.301	1.7	127	-0.08	2.93
12	t	2-Chlorophenol	1.458	1.331	8.7	119	-0.07	2.98
13	t	Decane	1.327	1.221	8.0	130	-0.09	3.06
14	t	1,3-Dichlorobenzene	1.607	1.463	9.0	120	-0.09	3.12
15	t	1,4-Dichlorobenzene	1.647	1.432	13.1	115	-0.09	3.19
16	t	Benzyl alcohol	0.915	0.905	1.1	123	-0.07	3.47
17	t	1,2-Dichlorobenzene	1.554	1.459	6.1	120	-0.09	3.44
18	t	Acetophenone	2.016	1.857	7.9	117	-0.09	3.81
19	t	2-Methylphenol	1.250	1.255	-0.4	125	-0.06	3.74
20	t	2,2'-oxybis(1-Chloropropa	0.478	0.451	5.6	121	-0.09	3.69
21	t	3&4-Methylphenol	1.358	1.368	-0.7	124	-0.06	3.98
22	t	n-Nitroso-di-n-propylamin	1.149	1.067	7.1	120	-0.09	3.90
23	t	Hexachloroethane	0.646	0.575	11.0	119	-0.10	3.86
24	I	Naphthalene-d8	1.000	1.000	0.0	120	-0.10	5.12
25	S	Nitrobenzene-d5	0.403	0.384	4.7	126	-0.09	4.02
26	t	Nitrobenzene	0.442	0.385	12.9	114	-0.09	4.05
27	t	Quinoline	0.777	0.761	2.1	126	-0.09	5.78
28	t	Isophorone	0.774	0.696	10.1	115	-0.09	4.44
29	t	2-Nitrophenol	0.187	0.213	-13.9	138	-0.09	4.57
30	t	2,4-Dimethylphenol	0.409	0.340	16.9	107	-0.07	4.81
31	t	Benzoic acid	0.296	0.302	-2.0	132	-0.06	5.16
32	t	bis(2-Chloroethoxy)methan	0.409	0.398	2.7	124	-0.10	4.90
33	t	2,4-Dichlorophenol	0.347	0.346	0.3	122	-0.07	5.02
34	t	2,6-Dichlorophenol	0.347	0.330	4.9	120	-0.09	5.39
35	t	1,3,5-Trichlorobenzene	0.408	0.375	8.1	123	-0.10	4.56
36	t	1,2,4-Trichlorobenzene	0.405	0.366	9.6	118	-0.09	5.09
37	t	1,2,3-Trichlorobenzene	0.388	0.351	9.5	120	-0.10	5.49
38	t	Naphthalene	1.097	0.990	9.8	119	-0.10	5.15
39	t	4-Chloroaniline	0.472	0.439	7.0	118	-0.08	5.40
40	t	2,3-Dichloroaniline	0.436	0.412	5.5	120	-0.09	7.04
41	t	Caprolactam	0.172	0.173	-0.6	128	-0.11	5.98

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3659-CC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90309.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.265	0.215	18.9	108	-0.11	5.53
43	t	4-Chloro-3-methylphenol	0.369	0.356	3.5	117	-0.06	6.46
44	t	2-Methylnaphthalene	0.675	0.620	8.1	122	-0.10	6.40
45	t	1-Methylnaphthalene	0.758	0.688	9.2	121	-0.10	6.59
46	t	Dimethylnaphthalene	0.719	0.672	6.5	120	-0.10	7.59
47	I	Acenaphthene-d10	1.000	1.000	0.0	120	-0.11	8.35
48	t	Hexachlorocyclopentadiene	0.379	0.276	27.2#	90	-0.11	6.85
49	t	2,4,6-Trichlorophenol	0.409	0.373	8.8	115	-0.09	7.08
50	t	2,4,5-Trichlorophenol	0.430	0.407	5.3	117	-0.07	7.19
51	S	2-Fluorobiphenyl	1.270	1.136	10.6	118	-0.11	7.19
52	t	2-Chloronaphthalene	1.087	0.959	11.8	116	-0.10	7.28
53	t	Biphenyl	1.347	1.226	9.0	121	-0.11	7.32
54	t	2-Nitroaniline	0.315	0.320	-1.6	124	-0.09	7.65
55	t	Dimethylphthalate	1.308	1.195	8.6	118	-0.10	8.14
56	t	Acenaphthylene	1.741	1.653	5.1	120	-0.10	8.05
57	t	2,6-Dinitrotoluene	0.249	0.285	-14.5	141	-0.10	8.22
58	t	3-Nitroaniline	0.261	0.297	-13.8	136	-0.08	8.47
59	t	Acenaphthene	1.118	1.014	9.3	117	-0.11	8.40
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	50.000	61.196	-22.4#	183	-0.08	8.69
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.201	0.152	24.4#	89	-0.03	9.09
62	t	Dibenzofuran	1.546	1.450	6.2	121	-0.10	8.73
63	t	2,4-Dinitrotoluene	0.352	0.407	-15.6	138	-0.09	8.97
64		2,3,4,6-Tetrachlorophenol	0.374	0.311	16.8	105	-0.09	9.15
65	t	Diethylphthalate	1.369	1.181	13.7	112	-0.11	9.53
66	t	Fluorene	1.272	1.199	5.7	120	-0.10	9.38
67	t	4-Chlorophenyl-phenylethe	0.724	0.659	9.0	118	-0.11	9.48
68	t	4-Nitroaniline	0.280	0.312	-11.4	137	-0.09	9.65
69	I	Phenanthrene-d10	1.000	1.000	0.0	113	-0.12	11.13
		----------	True	Calc.	% Drift	----------		
70	t	4,6-Dinitro-2-methylpheno	25.000	33.017	-32.1#	179	-0.09	9.74
		----------	AvgRF	CCRF	% Dev	----------		
71	t	n-Nitrosodiphenylamine	0.529	0.520	1.7	120	-0.11	9.76
72	t	1,2-Diphenylhydrazine	0.730	0.680	6.8	113	-0.11	9.77
73	S	2,4,6-Tribromophenol	0.071	0.082	-15.5	133	-0.10	9.91
74	t	4-Bromophenyl-phenylether	0.209	0.207	1.0	121	-0.11	10.40
75	t	Hexachlorobenzene	0.213	0.209	1.9	123	-0.12	10.58
76	t	Pentachlorophenol	0.143	0.110	23.1#	87	-0.09	11.03
77	t	Phenanthrene	1.013	0.951	6.1	115	-0.12	11.17
78	t	Anthracene	0.978	0.961	1.7	116	-0.12	11.25
79	t	Carbazole	0.933	0.993	-6.4	124	-0.10	11.70
80	t	Di-n-butylphthalate	1.145	1.209	-5.6	117	-0.12	12.70
81	t	Fluoranthene	1.267	1.256	0.9	115	-0.12	13.46
82	t	Octadecane	0.317	0.359	-13.2	129	-0.11	11.36
83	I	Chrysene-d12	1.000	1.000	0.0	107	-0.10	16.05
84	t	Pyrene	1.205	1.253	-4.0	116	-0.12	13.85
85		Butyl stearate	0.196	0.258	-31.6#	136	-0.09	15.67
86	S	Terphenyl-d14	0.818	0.870	-6.4	119	-0.11	14.39
87	t	Butylbenzylphthalate	0.502	0.560	-11.6	122	-0.10	15.47
88	t	Benzo[a]anthracene	1.170	1.174	-0.3	115	-0.09	16.03
89	t	3,3'-Dichlorobenzidine	0.366	0.413	-12.8	126	-0.09	16.12
90	t	Chrysene	1.058	1.002	5.3	108	-0.10	16.08

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3659-CC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90309.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

91	t	bis(2-Ethylhexyl)phthalat	0.613	0.723	-17.9	127	-0.09	16.47
92	I	Perylene-d12	1.000	1.000	0.0	108	-0.09	17.87
93	t	Di-n-octylphthalate	1.241	1.548	-24.7#	131	-0.09	17.26
94	t	Benzo[b]fluoranthene	1.316	1.330	-1.1	102	-0.09	17.45
95	t	Benzo[k]fluoranthene	1.241	1.228	1.0	129	-0.09	17.49
96	t	Benzo[a]pyrene	1.143	1.218	-6.6	118	-0.09	17.80
97	t	Indeno[1,2,3-cd]pyrene	1.249	1.324	-6.0	116	-0.08	18.92
98	t	Dibenz(a,h)acridine	0.892	1.018	-14.1	122	-0.09	18.74
99	t	Dibenz[a,h]anthracene	1.024	1.071	-4.6	115	-0.08	18.95
100	t	7,12-Dimethylbenz(a)anthr	0.649	0.533	17.9	97	-0.09	17.49
101	t	Benzo[g,h,i]perylene	1.026	1.057	-3.0	115	-0.08	19.14

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M89377.D MM3617.M Tue Dec 18 08:57:23 2012 GCMSM

8.7.26

8

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3659-CC3618
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90310.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3659\M90310.D            Vial: 3
Acq On    : 17 Dec 2012  10:57 am                   Operator: olgaa
Sample    : cc3618-50                               Inst    : MSM
Misc      : op62039,em3659,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617A.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Mon Dec 17 14:42:29 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	I	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	134	0.00	3.17
103	t	Benzaldehyde	1.050	0.841	19.9	104	0.00	2.65
104	I	Acenaphthene-d10a	1.000	1.000	0.0	131	0.00	8.35
105	t	1,2,4,5-Tetrachlorobenzen	0.598	0.575	3.8	126	0.00	6.79
107	I	Phenanthrene-d10a	1.000	1.000	0.0	123	0.00	11.13
108	t	Atrazine	0.123	0.135	-9.8	128	0.00	11.00
109	s	o-terphenyl	0.633	0.644	-1.7	122	0.00	12.12
110	I	Chrysene-d12a	1.000	1.000	0.0	118	0.00	16.04
111	t	Benzidine	0.549	0.465	15.3	89	0.00	13.90
112	s	1-chlorooctadecane	0.207	0.259	-25.1#	144	0.00	13.66

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M90310.D MM3617A.M Tue Dec 18 08:59:05 2012 GCMSM

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3660-CC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90335.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3660\M90335.D            Vial: 2
Acq On    : 18 Dec 2012   9:26 am                   Operator: olgaa
Sample    : cc3617-50                               Inst    : MSM
Misc      : op62037,em3660,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Tue Dec 11 16:20:49 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  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	115	-0.10	3.16
2	t	1,4-Dioxane	0.539	0.458	15.0	106	-0.05	0.88
3	t	Pyridine	1.305	1.325	-1.5	121	-0.05	1.04
4	t	N-Nitrosodimethylamine	0.995	0.675	32.2#	84	-0.05	1.03
5	S	2-Fluorophenol	1.295	1.322	-2.1	117	-0.06	1.90
6	t	Indene	2.200	2.178	1.0	120	-0.10	3.54
7	t	Cumene	3.301	3.021	8.5	110	-0.09	2.28
8	S	Phenol-d5	1.638	1.752	-7.0	123	-0.05	2.92
9	t	Phenol	1.883	1.786	5.2	113	-0.06	2.93
10	t	Aniline	2.083	1.587	23.8#	91	-0.09	2.83
11	t	bis(2-Chloroethyl)ether	1.323	1.362	-2.9	129	-0.09	2.92
12	t	2-Chlorophenol	1.458	1.341	8.0	113	-0.09	2.96
13	t	Decane	1.327	1.271	4.2	124	-0.10	3.05
14	t	1,3-Dichlorobenzene	1.607	1.471	8.5	112	-0.10	3.11
15	t	1,4-Dichlorobenzene	1.647	1.495	9.2	112	-0.10	3.18
16	t	Benzyl alcohol	0.915	0.905	1.1	112	-0.08	3.46
17	t	1,2-Dichlorobenzene	1.554	1.448	6.8	113	-0.10	3.43
18	t	Acetophenone	2.016	1.817	9.9	109	-0.10	3.80
19	t	2-Methylphenol	1.250	1.250	0.0	117	-0.07	3.73
20	t	2,2'-oxybis(1-Chloropropa	0.478	0.455	4.8	115	-0.11	3.67
21	t	3&4-Methylphenol	1.358	1.362	-0.3	117	-0.07	3.97
22	t	n-Nitroso-di-n-propylamin	1.149	1.033	10.1	111	-0.10	3.88
23	t	Hexachloroethane	0.646	0.565	12.5	106	-0.11	3.85
24	I	Naphthalene-d8	1.000	1.000	0.0	112	-0.11	5.11
25	S	Nitrobenzene-d5	0.403	0.395	2.0	112	-0.10	4.01
26	t	Nitrobenzene	0.442	0.412	6.8	108	-0.10	4.04
27	t	Quinoline	0.777	0.767	1.3	115	-0.10	5.77
28	t	Isophorone	0.774	0.722	6.7	108	-0.10	4.43
29	t	2-Nitrophenol	0.187	0.222	-18.7	124	-0.10	4.56
30	t	2,4-Dimethylphenol	0.409	0.367	10.3	103	-0.08	4.80
31	t	Benzoic acid	0.296	0.312	-5.4	112	0.00	5.22
32	t	bis(2-Chloroethoxy)methan	0.409	0.409	0.0	117	-0.11	4.89
33	t	2,4-Dichlorophenol	0.347	0.352	-1.4	112	-0.08	5.01
34	t	2,6-Dichlorophenol	0.347	0.340	2.0	109	-0.10	5.38
35	t	1,3,5-Trichlorobenzene	0.408	0.389	4.7	111	-0.11	4.55
36	t	1,2,4-Trichlorobenzene	0.405	0.375	7.4	111	-0.10	5.08
37	t	1,2,3-Trichlorobenzene	0.388	0.360	7.2	110	-0.11	5.48
38	t	Naphthalene	1.097	1.004	8.5	109	-0.11	5.14
39	t	4-Chloroaniline	0.472	0.439	7.0	103	-0.09	5.39
40	t	2,3-Dichloroaniline	0.436	0.409	6.2	108	-0.10	7.03
41	t	Caprolactam	0.172	0.185	-7.6	119	-0.07	6.02

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3660-CC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90335.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

42	t	Hexachlorobutadiene	0.265	0.221	16.6	100	-0.12	5.52
43	t	4-Chloro-3-methylphenol	0.369	0.360	2.4	106	-0.06	6.46
44	t	2-Methylnaphthalene	0.675	0.634	6.1	106	-0.11	6.39
45	t	1-Methylnaphthalene	0.758	0.711	6.2	110	-0.11	6.58
46	t	Dimethylnaphthalene	0.719	0.686	4.6	110	-0.11	7.58
47	I	Acenaphthene-d10	1.000	1.000	0.0	110	-0.12	8.34
48	t	Hexachlorocyclopentadiene	0.379	0.308	18.7	85	-0.12	6.83
49	t	2,4,6-Trichlorophenol	0.409	0.382	6.6	103	-0.10	7.07
50	t	2,4,5-Trichlorophenol	0.430	0.437	-1.6	111	-0.08	7.18
51	S	2-Fluorobiphenyl	1.270	1.145	9.8	107	-0.12	7.18
52	t	2-Chloronaphthalene	1.087	1.004	7.6	110	-0.11	7.27
53	t	Biphenyl	1.347	1.224	9.1	107	-0.12	7.31
54	t	2-Nitroaniline	0.315	0.322	-2.2	106	-0.10	7.64
55	t	Dimethylphthalate	1.308	1.162	11.2	103	-0.11	8.13
56	t	Acenaphthylene	1.741	1.682	3.4	108	-0.11	8.04
57	t	2,6-Dinitrotoluene	0.249	0.299	-20.1#	123	-0.10	8.22
58	t	3-Nitroaniline	0.261	0.301	-15.3	115	-0.09	8.46
59	t	Acenaphthene	1.118	1.038	7.2	107	-0.11	8.40
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	100.000	119.270	-19.3	142	-0.08	8.69
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.201	0.157	21.9#	75	-0.03	9.09
62	t	Dibenzofuran	1.546	1.441	6.8	109	-0.11	8.72
63	t	2,4-Dinitrotoluene	0.352	0.407	-15.6	116	-0.09	8.97
64		2,3,4,6-Tetrachlorophenol	0.374	0.295	21.1#	84	-0.09	9.15
65	t	Diethylphthalate	1.369	1.157	15.5	99	-0.11	9.53
66	t	Fluorene	1.272	1.192	6.3	106	-0.11	9.37
67	t	4-Chlorophenyl-phenylethe	0.724	0.647	10.6	103	-0.11	9.48
68	t	4-Nitroaniline	0.280	0.317	-13.2	118	-0.08	9.66
69	I	Phenanthrene-d10	1.000	1.000	0.0	101	-0.12	11.13
		----------	True	Calc.	% Drift	----------		
70	t	4,6-Dinitro-2-methylpheno	50.000	61.147	-22.3#	134	-0.08	9.75
		----------	AvgRF	CCRF	% Dev	----------		
71	t	n-Nitrosodiphenylamine	0.529	0.508	4.0	102	-0.11	9.76
72	t	1,2-Diphenylhydrazine	0.730	0.675	7.5	101	-0.12	9.76
73	S	2,4,6-Tribromophenol	0.071	0.083	-16.9	112	-0.10	9.91
74	t	4-Bromophenyl-phenylether	0.209	0.212	-1.4	107	-0.11	10.39
75	t	Hexachlorobenzene	0.213	0.207	2.8	104	-0.11	10.59
76	t	Pentachlorophenol	0.143	0.110	23.1#	72	-0.09	11.03
77	t	Phenanthrene	1.013	0.919	9.3	98	-0.12	11.17
78	t	Anthracene	0.978	0.955	2.4	101	-0.11	11.26
79	t	Carbazole	0.933	0.974	-4.4	107	-0.10	11.70
80	t	Di-n-butylphthalate	1.145	1.202	-5.0	102	-0.11	12.71
81	t	Fluoranthene	1.267	1.221	3.6	99	-0.11	13.47
82	t	Octadecane	0.317	0.363	-14.5	113	-0.11	11.36
83	I	Chrysene-d12	1.000	1.000	0.0	97	-0.09	16.06
84	t	Pyrene	1.205	1.208	-0.2	99	-0.11	13.86
85		Butyl stearate	0.196	0.259	-32.1#	117	-0.09	15.67
86	S	Terphenyl-d14	0.818	0.857	-4.8	103	-0.11	14.39
87	t	Butylbenzylphthalate	0.502	0.545	-8.6	101	-0.09	15.48
88	t	Benzo[a]anthracene	1.170	1.146	2.1	100	-0.08	16.04
89	t	3,3'-Dichlorobenzidine	0.366	0.406	-10.9	102	-0.08	16.13
90	t	Chrysene	1.058	0.979	7.5	94	-0.08	16.10

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3660-CC3617
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90335.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

91	t	bis(2-Ethylhexyl)phthalat	0.613	0.726	-18.4	105	-0.09	16.47
92	I	Perylene-d12	1.000	1.000	0.0	98	-0.07	17.89
93	t	Di-n-octylphthalate	1.241	1.480	-19.3	107	-0.08	17.27
94	t	Benzo[b]fluoranthene	1.316	1.311	0.4	100	-0.07	17.47
95	t	Benzo[k]fluoranthene	1.241	1.163	6.3	96	-0.07	17.51
96	t	Benzo[a]pyrene	1.143	1.208	-5.7	101	-0.07	17.82
97	t	Indeno[1,2,3-cd]pyrene	1.249	1.269	-1.6	96	-0.06	18.94
98	t	Dibenz(a,h)acridine	0.892	0.976	-9.4	98	-0.07	18.76
99	t	Dibenz[a,h]anthracene	1.024	1.054	-2.9	96	-0.06	18.98
100	t	7,12-Dimethylbenz(a)anthr	0.649	0.595	8.3	88	-0.07	17.51
101	t	Benzo[g,h,i]perylene	1.026	1.055	-2.8	99	-0.05	19.17

(#) = Out of Range SPCC's out = 0 CCC's out = 0
M90150.D MM3617.M Wed Dec 19 12:41:36 2012 GCMSM

Continuing Calibration Summary

Job Number: JB22822 **Sample:** EM3660-CC3618
Account: AQTPAW Aquaterra Technologies, Inc. **Lab FileID:** M90336.D
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\1\DATA\EM3660\M90336.D            Vial: 3
Acq On    : 18 Dec 2012  10:07 am                   Operator: olgaa
Sample    : cc3618-25                               Inst    : MSM
Misc      : op62037,em3660,                         Multiplr: 1.00
MS Integration Params: LSCINT.P

Method       : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title        : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update  : Tue Dec 11 16:20:49 2012
Response via : Multiple Level Calibration

Min. RRF     :   0.049  Min. Rel. Area :  49%  Max. R.T. Dev  0.50min
Max. RRF Dev :  20%     Max. Rel. Area : 200%
```

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
102	I	1,4-Dichlorobenzene-d4a	1.000	1.000	0.0	137	-0.10	3.16
103	t	Benzaldehyde	1.050	1.100	-4.8	144	-0.11	2.64
104	I	Acenaphthene-d10a	1.000	1.000	0.0	133	-0.12	8.34
105	t	1,2,4,5-Tetrachlorobenzen	0.598	0.575	3.8	127	-0.13	6.78
106	I	Phenanthrene-d10a	1.000	1.000	0.0	127	-0.12	11.13
107	t	Atrazine	0.123	0.136	-10.6	139	-0.13	10.99
108	I	Chrysene-d12a	1.000	1.000	0.0	126	-0.10	16.05
109	t	Benzidine	0.549	0.595	-8.4	127	-0.14	13.90

```
(#) = Out of Range              SPCC's out = 0  CCC's out = 0
 M89377.D   MM3617.M         Wed Dec 19 12:40:44 2012   GCMSM
```

8.7.29

8

New Jersey

ACCUTEST LABORATORIES

GC/MS Semi-volatiles

Raw Data

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48565.D
Acq On : 17 Dec 2012 4:23 pm
Operator : olgaa
Sample : jb22822-1
Misc : op62037,e2m2080,34.8
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 18 15:40:56 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.410	152	163378	40.00	ppb	-0.05
24) Naphthalene-d8	3.940	136	851309	40.00	ppb	-0.06
47) Acenaphthene-d10	6.508	164	573395	40.00	ppb	-0.07
69) Phenanthrene-d10	8.738	188	999718	40.00	ppb	-0.07
83) Chrysene-d12	12.546	240	959207	40.00	ppb	-0.05
92) Perylene-d12	13.958	264	785964	40.00	ppb	-0.04
102) 1,4-Dichlorobenzene-d4a	2.410	152	163378	40.00	ppb	-0.05
104) Acenaphthene-d10a	6.508	164	573395	40.00	ppb	-0.07
106) Chrysene-d12a	12.546	240	959207	40.00	ppb	-0.05
108) Phenanthrene-d10a	8.738	188	999718	40.00	ppb	-0.07
110) Chrysene-d12b	12.546	240	959207	40.00	ppb	-0.05
System Monitoring Compounds						
5) 2-Fluorophenol	1.442	112	106293	17.88	ppb	-0.03
Spiked Amount 50.000			Recovery	=	35.76%	
8) Phenol-d5	2.255	99	198749	24.94	ppb	-0.02
Spiked Amount 50.000			Recovery	=	49.88%	
25) Nitrobenzene-d5	3.084	82	183191	20.06	ppb	-0.06
Spiked Amount 50.000			Recovery	=	40.12%	
51) 2-Fluorobiphenyl	5.582	172	505624	26.82	ppb	-0.07
Spiked Amount 50.000			Recovery	=	53.64%	
73) 2,4,6-Tribromophenol	7.764	330	86375	36.77	ppb	-0.06
Spiked Amount 50.000			Recovery	=	73.54%	
85) Terphenyl-d14	11.321	244	942998	48.65	ppb	-0.06
Spiked Amount 50.000			Recovery	=	97.30%	
Target Compounds						Qvalue
38) Naphthalene	3.967	128	24771	1.05	ppb	96
44) 2-Methylnaphthalene	4.967	141	16728	1.15	ppb	97
56) Acenaphthylene	6.272	152	59078	2.13	ppb	96
59) Acenaphthene	6.550	153	23437	1.32	ppb	97
66) Fluorene	7.331	166	115390	5.99	ppb	99
77) Phenanthrene	8.770	178	453831	14.83	ppb	100
78) Anthracene	8.845	178	133157	4.39	ppb	97
81) Fluoranthene	10.605	202	615828	20.40	ppb	96
84) Pyrene	10.920	202	646862	20.85	ppb	99
88) Benzo[a]anthracene	12.535	228	352598	11.95	ppb	94
90) Chrysene	12.573	228	473035	16.17	ppb	99
94) Benzo[b]fluoranthene	13.632	252	497390m	18.18	ppb	
95) Benzo[k]fluoranthene	13.643	252	186564m	7.58	ppb	
96) Benzo[a]pyrene	13.905	252	327172	14.08	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.798	276	221478	8.21	ppb	88
99) Dibenz[a,h]anthracene	14.809	278	85052m	3.75	ppb	
101) Benzo[g,h,i]perylene	14.974	276	224007	9.72	ppb	90

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

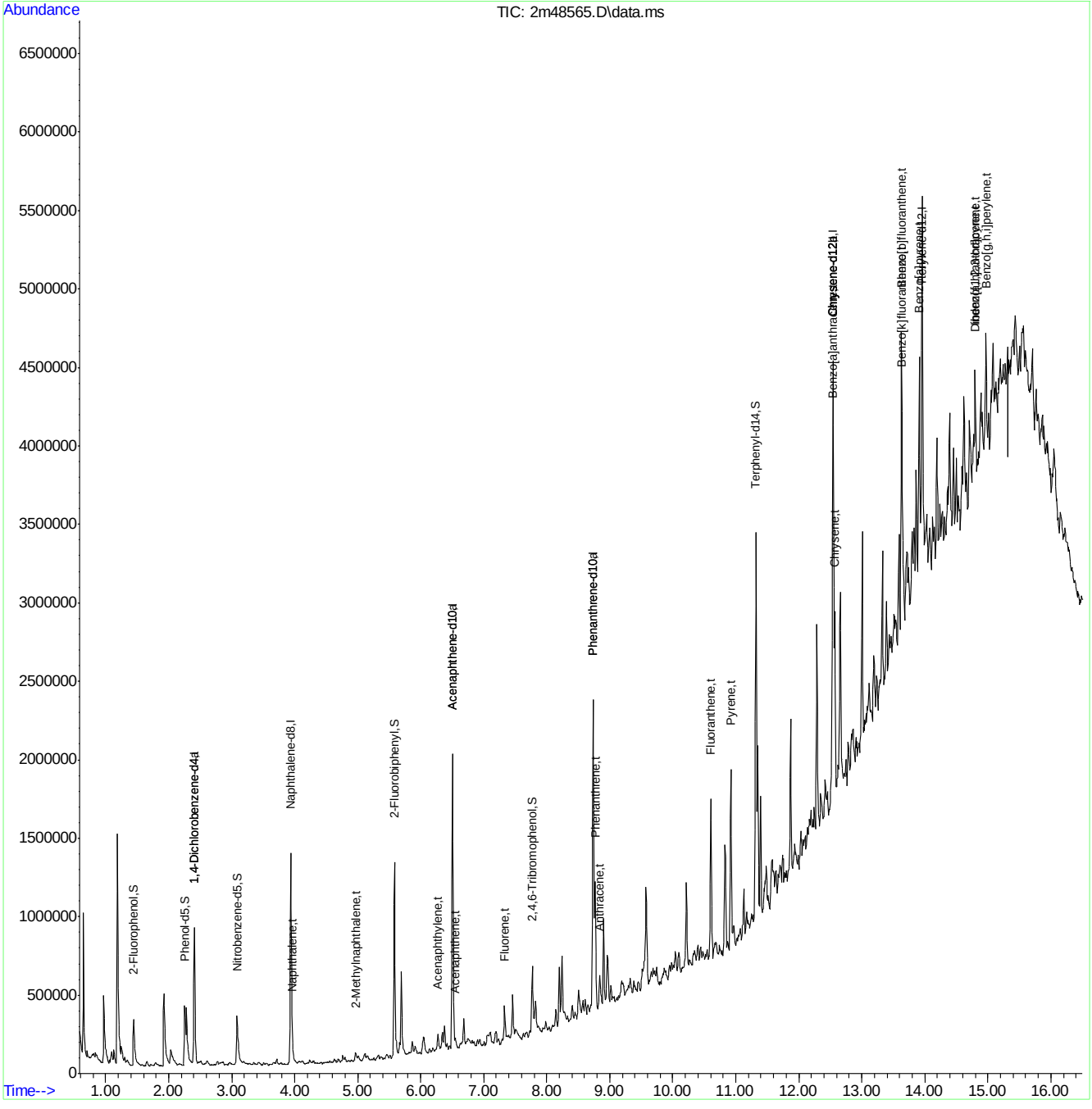
9.1.1

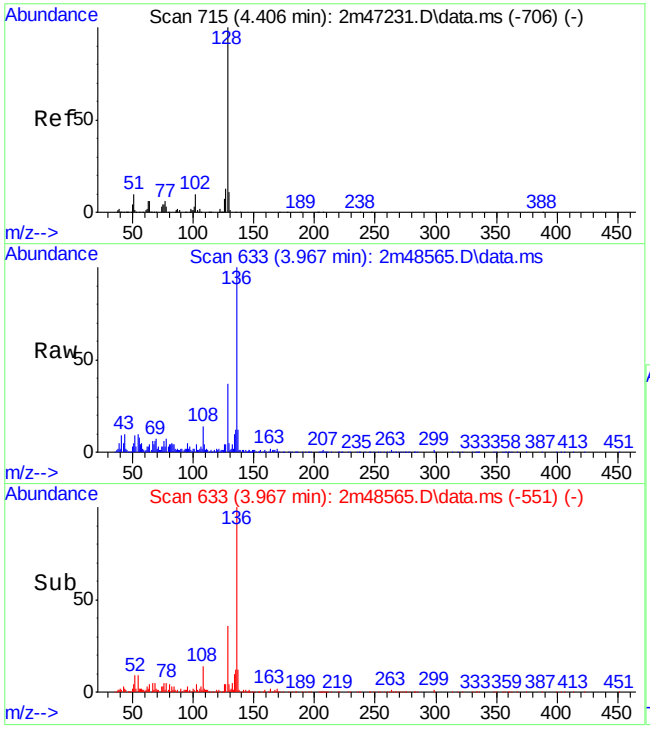
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48565.D
Acq On : 17 Dec 2012 4:23 pm
Operator : olgaa
Sample : jb22822-1
Misc : op62037,e2m2080,34.8
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 18 15:40:56 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

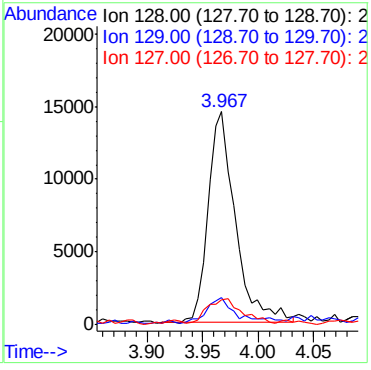


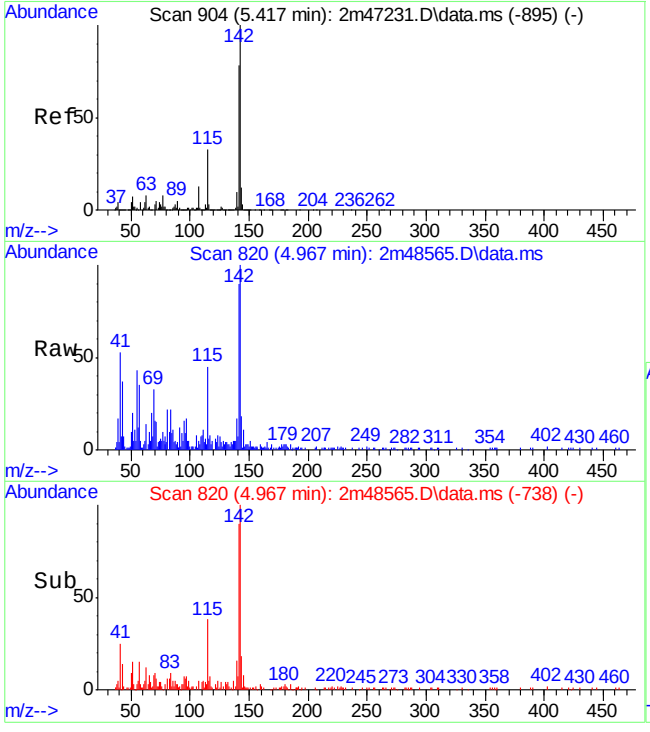


#38
Naphthalene
Concen: 1.05 ppb
RT: 3.967 min Scan# 633
Delta R.T. -0.059 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:128 Resp: 24771

Ion	Ratio	Lower	Upper
128	100		
129	10.8	0.0	40.9
127	10.7	0.0	43.3

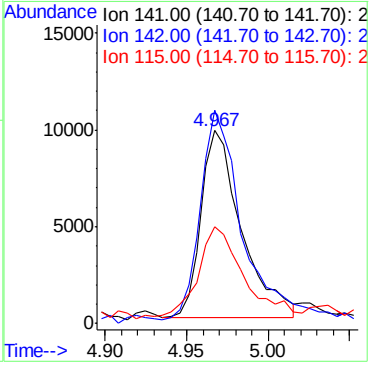




#44
2-Methylnaphthalene
Concen: 1.15 ppb
RT: 4.967 min Scan# 820
Delta R.T. -0.059 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:141 Resp: 16728

Ion	Ratio	Lower	Upper
141	100		
142	111.8	81.7	141.7
115	47.9	12.0	72.0



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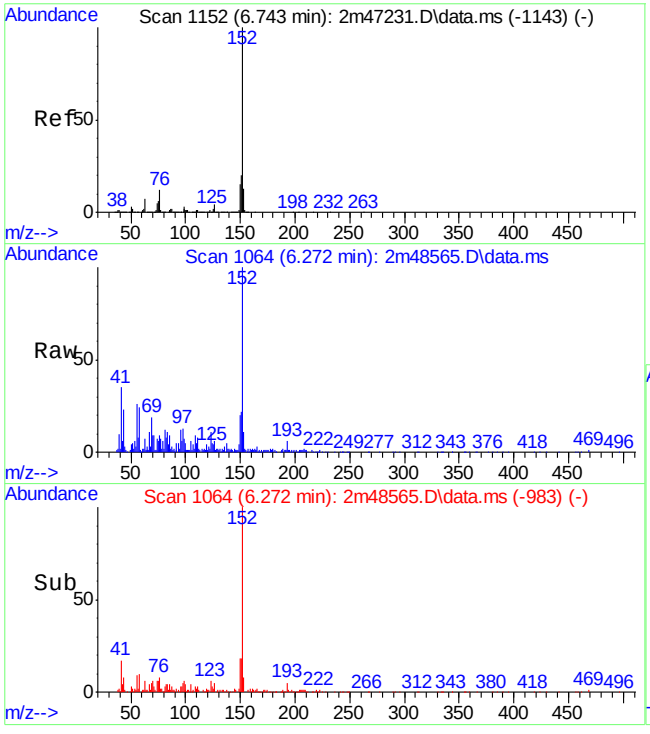
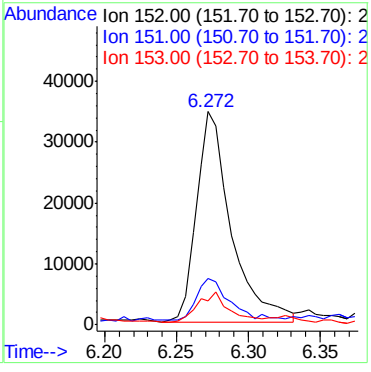
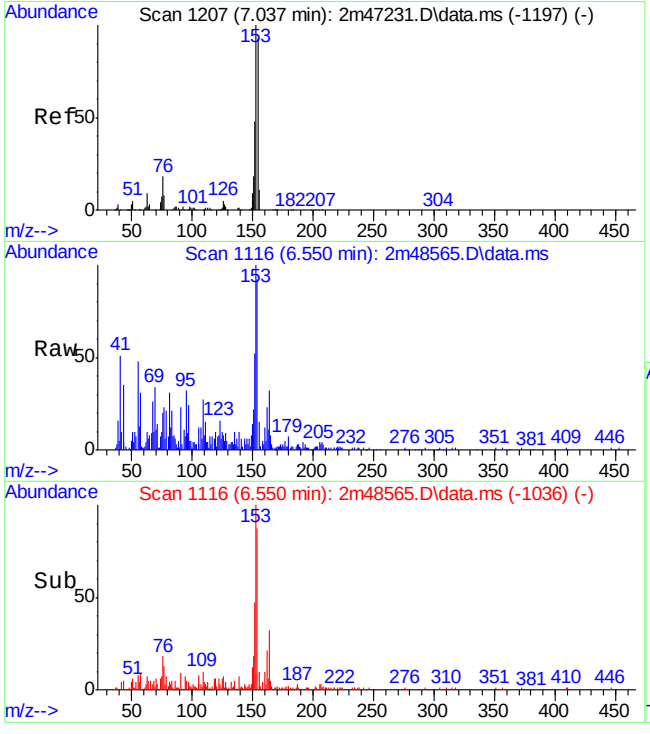


#56
Acenaphthylene
Concen: 2.13 ppb
RT: 6.272 min Scan# 1064
Delta R.T. -0.064 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:152 Resp: 59078

Ion	Ratio	Lower	Upper
152	100		
151	19.6	0.0	49.4
153	9.0	0.0	43.0

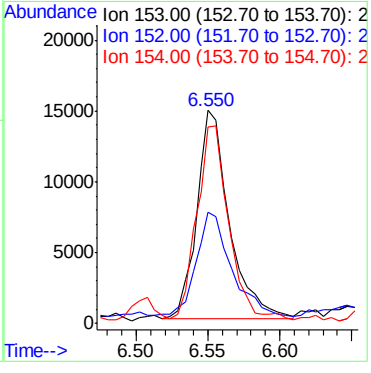




#59
Acenaphthene
Concen: 1.32 ppb
RT: 6.550 min Scan# 1116
Delta R.T. -0.070 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:153 Resp: 23437

Ion	Ratio	Lower	Upper
153	100		
152	49.6	15.8	75.8
154	91.4	59.7	119.7



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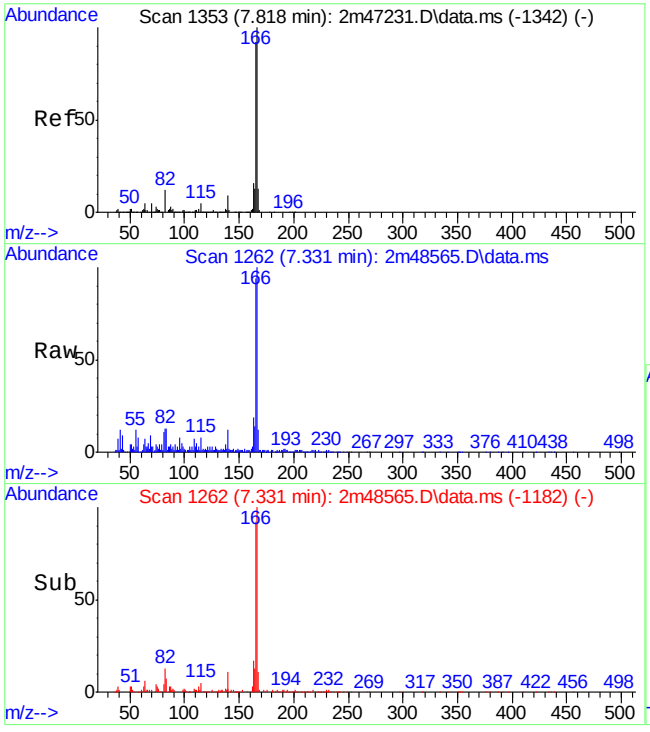
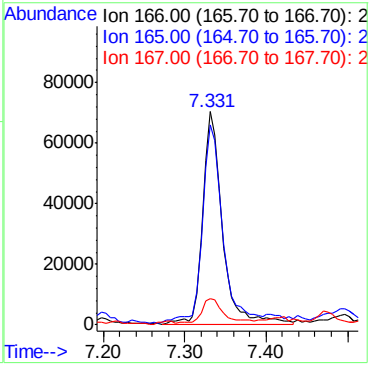
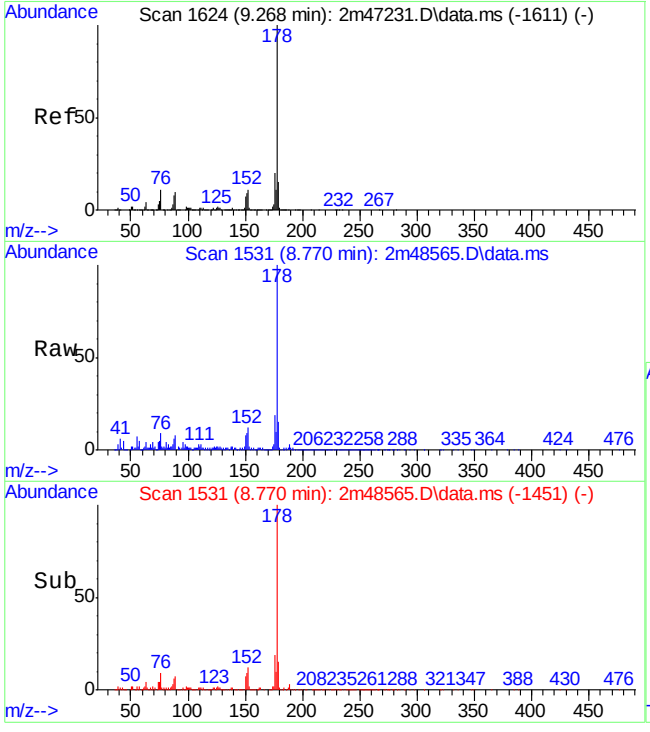


#66
Fluorene
Concen: 5.99 ppb
RT: 7.331 min Scan# 1262
Delta R.T. -0.070 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:166 Resp: 115390

Ion	Ratio	Lower	Upper
166	100		
165	92.3	61.9	121.9
167	10.4	0.0	43.1

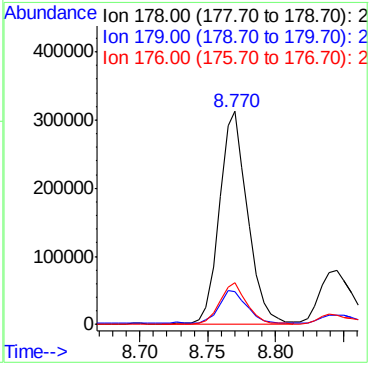


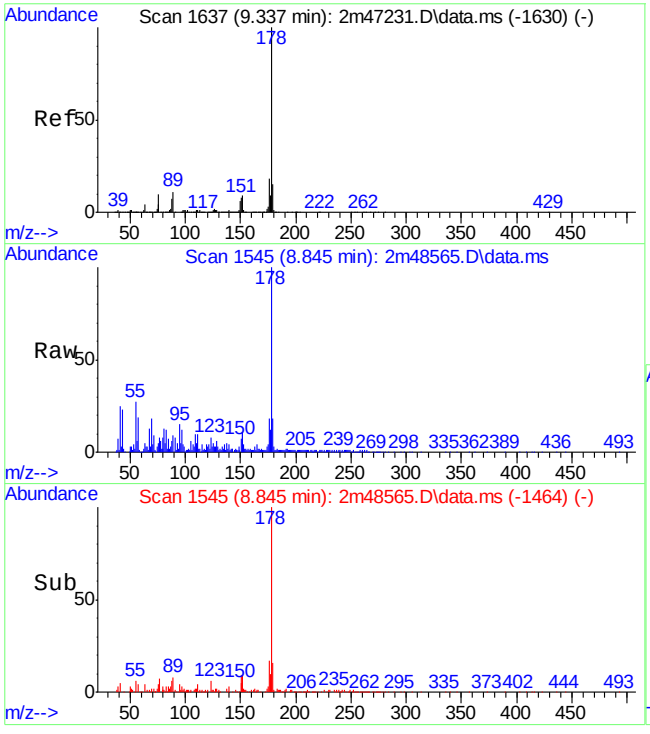


#77
Phenanthrene
Concen: 14.83 ppb
RT: 8.770 min Scan# 1531
Delta R.T. -0.070 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:178 Resp: 453831

Ion	Ratio	Lower	Upper
178	100		
179	14.9	0.0	44.9
176	19.3	0.0	49.1

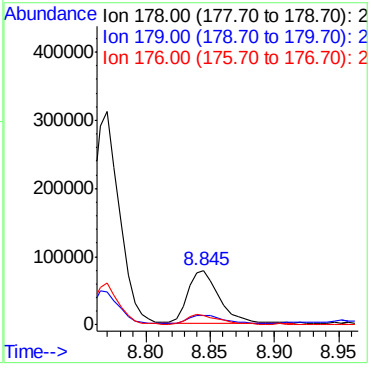


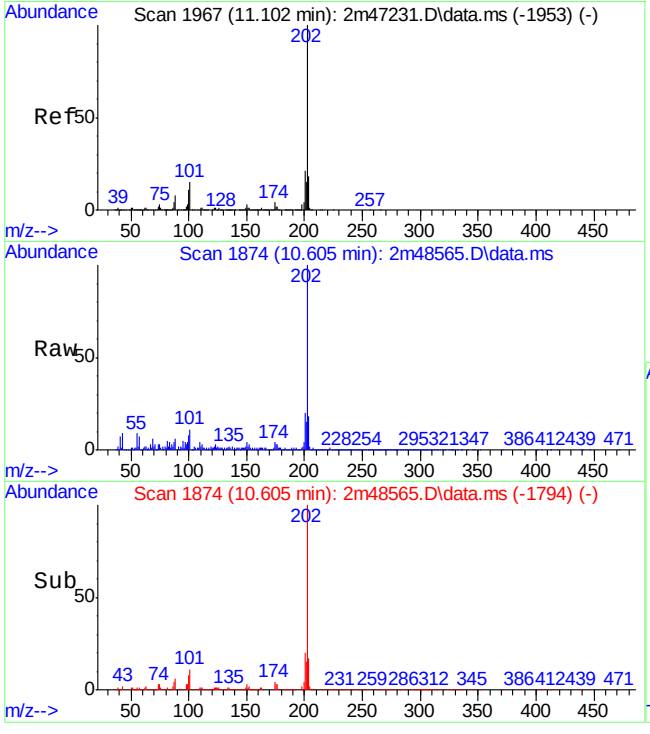


#78
Anthracene
Concen: 4.39 ppb
RT: 8.845 min Scan# 1545
Delta R.T. -0.064 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:178 Resp: 133157

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	44.3
176	16.7	0.0	48.3

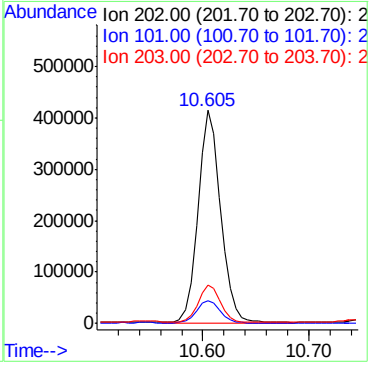


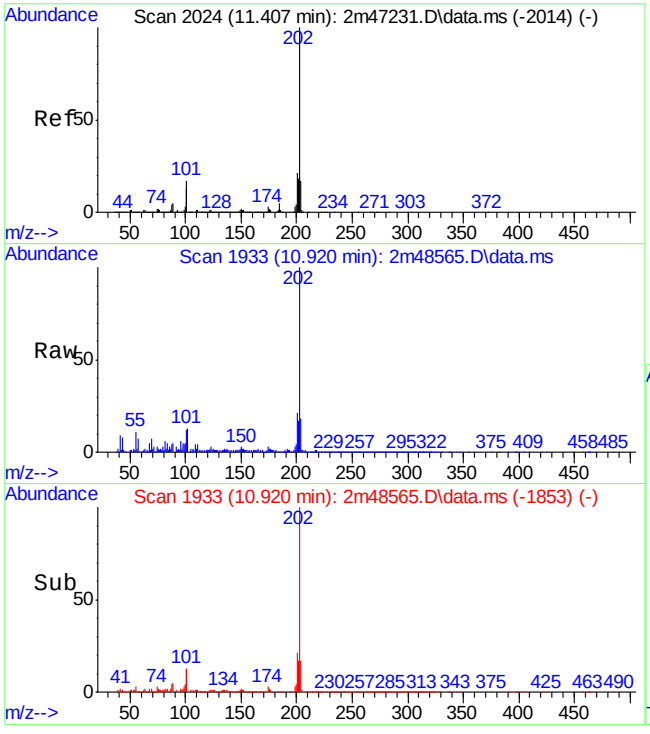


#81
Fluoranthene
Concen: 20.40 ppb
RT: 10.605 min Scan# 1874
Delta R.T. -0.070 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:202 Resp: 615828

Ion	Ratio	Lower	Upper
202	100		
101	10.7	0.0	43.8
203	17.1	0.0	47.5

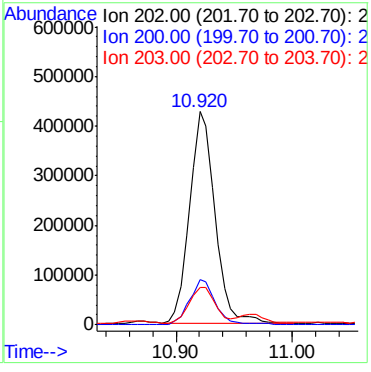


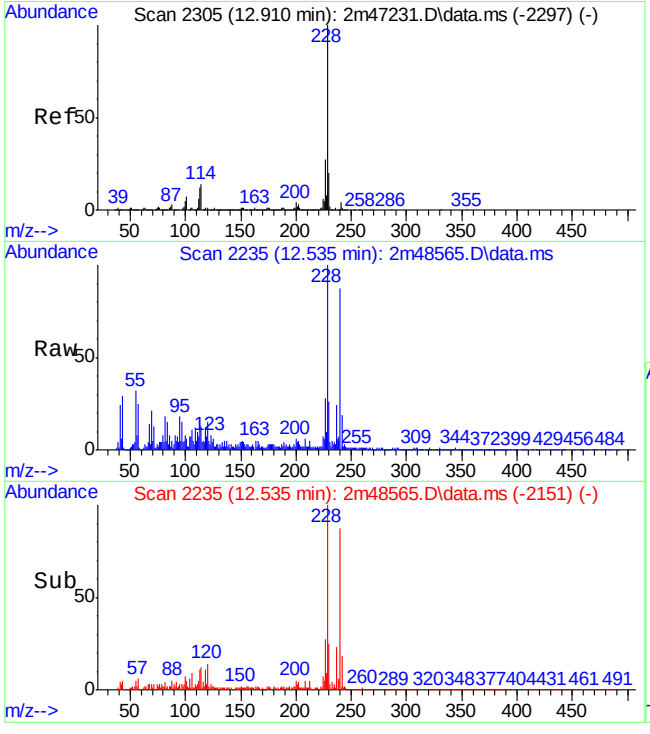


#84
Pyrene
Concen: 20.85 ppb
RT: 10.920 min Scan# 1933
Delta R.T. -0.070 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:202 Resp: 646862

Ion	Ratio	Lower	Upper
202	100		
200	21.3	0.0	51.3
203	17.0	0.0	47.6

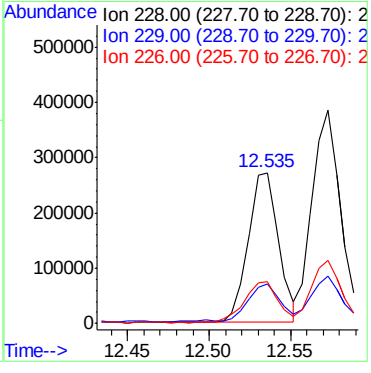




#88
Benzo[a]anthracene
Concen: 11.95 ppb
RT: 12.535 min Scan# 2235
Delta R.T. -0.048 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:228 Resp: 352598

Ion	Ratio	Lower	Upper
228	100		
229	24.6	0.0	49.3
226	27.1	0.0	56.0



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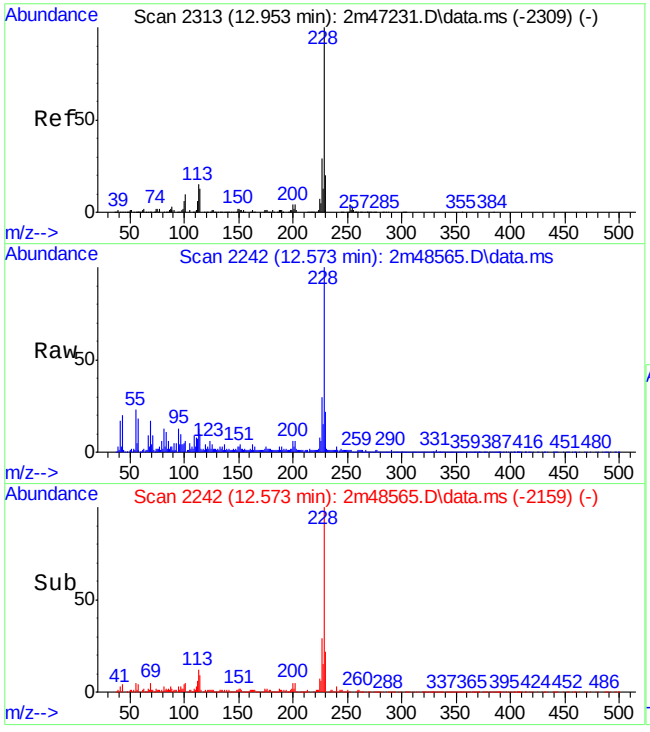
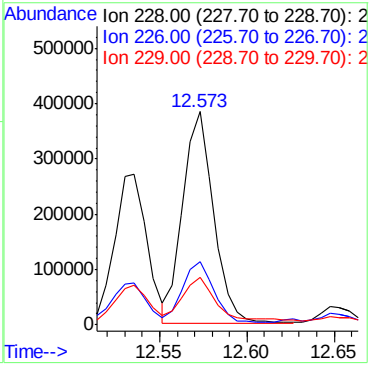
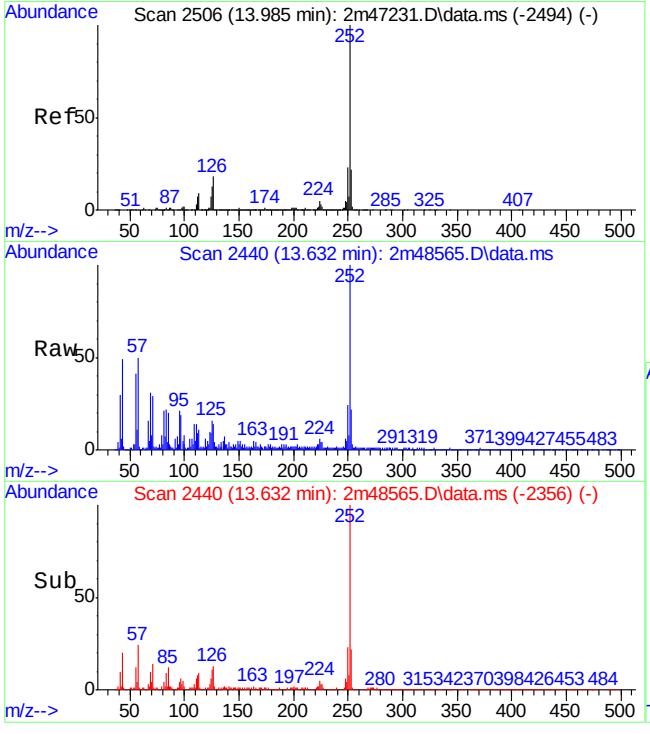


#90
Chrysene
Concen: 16.17 ppb
RT: 12.573 min Scan# 2242
Delta R.T. -0.054 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:228 Resp: 473035

Ion	Ratio	Lower	Upper
228	100		
226	28.1	0.0	57.7
229	20.3	0.0	49.3

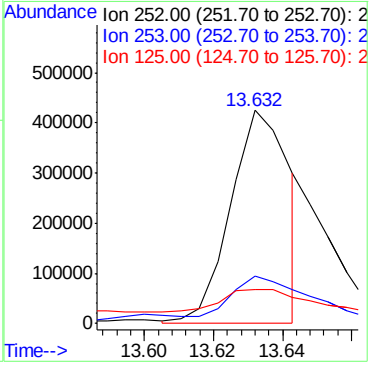


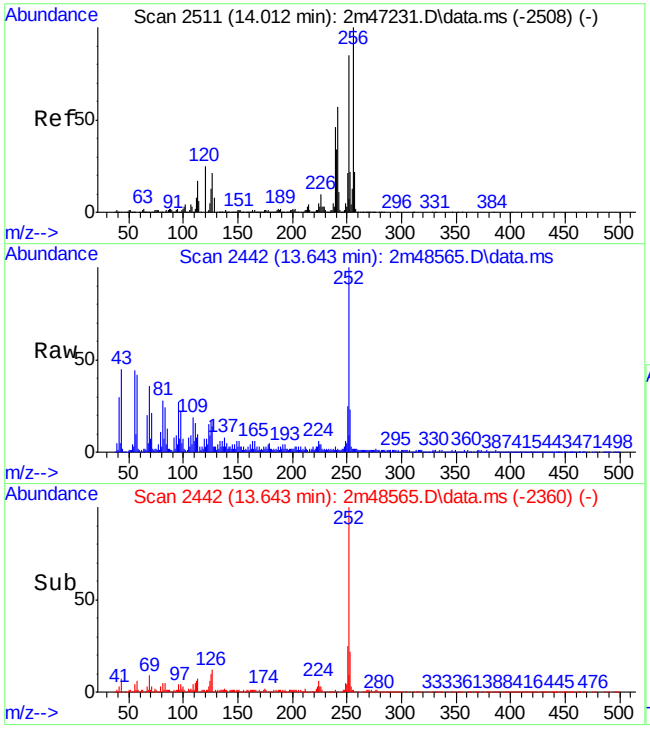


#94
Benzo[b]fluoranthene
Concen: 18.18 ppb m
RT: 13.632 min Scan# 2440
Delta R.T. -0.048 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:252 Resp: 497390

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	51.6
125	16.0	0.0	40.1

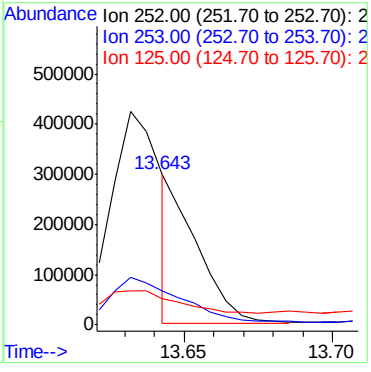


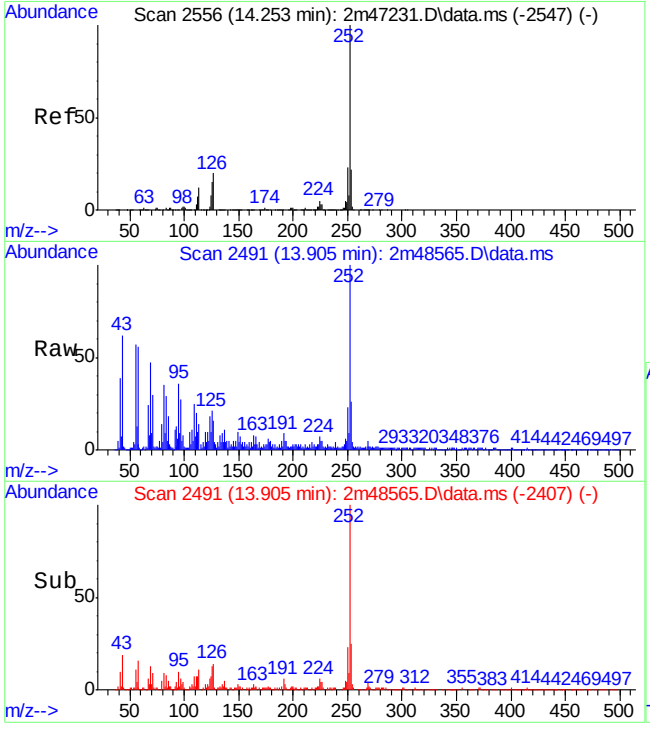


#95
Benzo[k]fluoranthene
Concen: 7.58 ppb m
RT: 13.643 min Scan# 2442
Delta R.T. -0.059 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:252 Resp: 186564

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	52.7
125	17.2	0.0	42.9

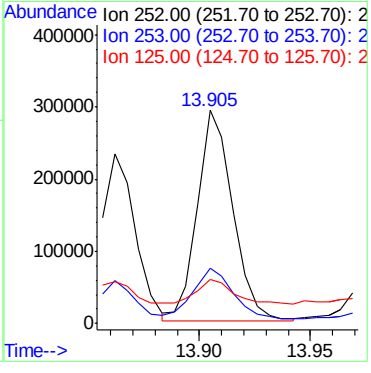




#96
Benzo[a]pyrene
Concen: 14.08 ppb
RT: 13.905 min Scan# 2491
Delta R.T. -0.048 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:252 Resp: 327172

Ion	Ratio	Lower	Upper
252	100		
253	23.8	0.0	52.4
125	12.0	0.0	42.7



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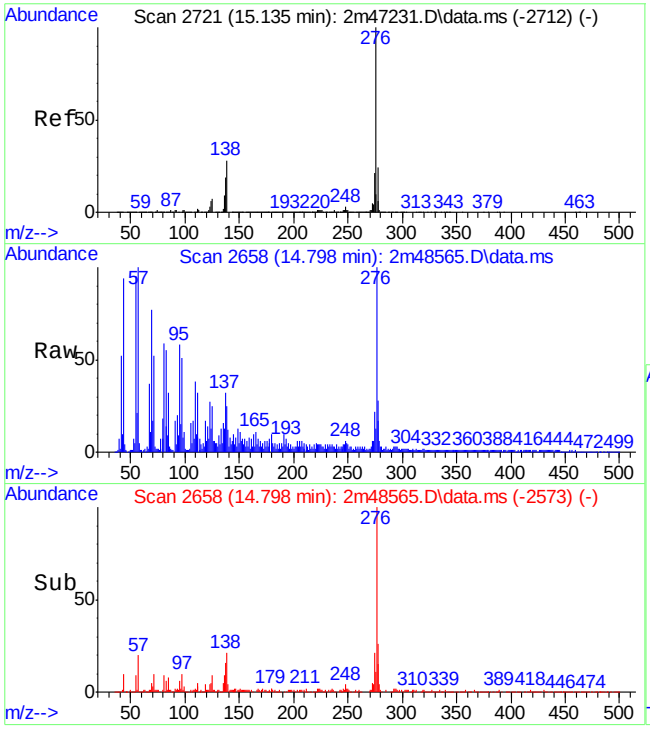
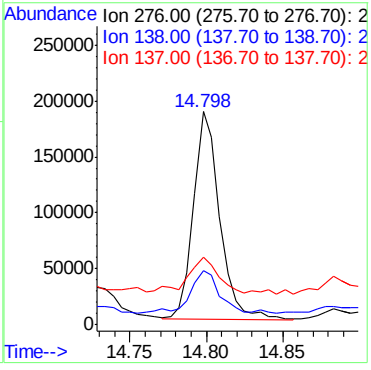
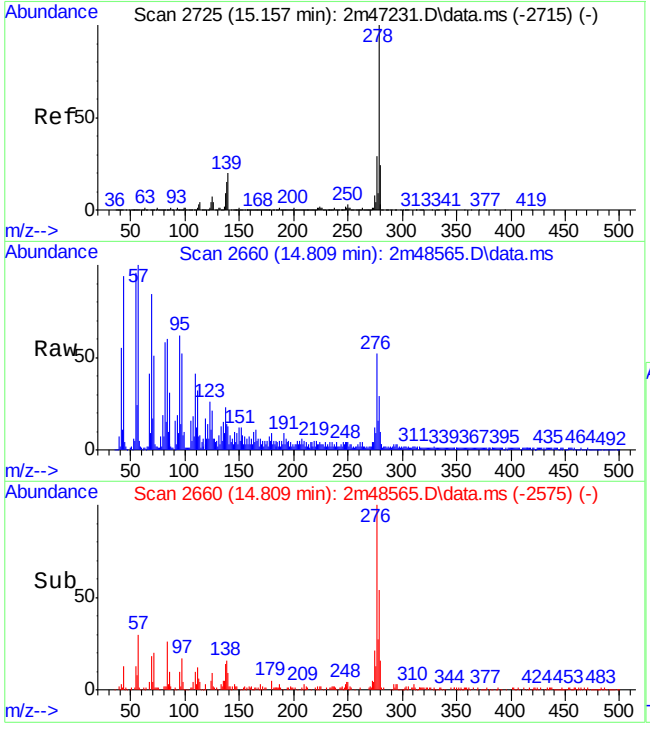


#97
Indeno[1,2,3-cd]pyrene
Concen: 8.21 ppb
RT: 14.798 min Scan# 2658
Delta R.T. -0.043 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:276 Resp: 221478

Ion	Ratio	Lower	Upper
276	100		
138	19.2	0.0	57.6
137	16.1	0.0	48.9

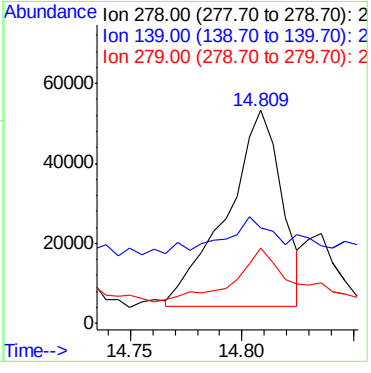


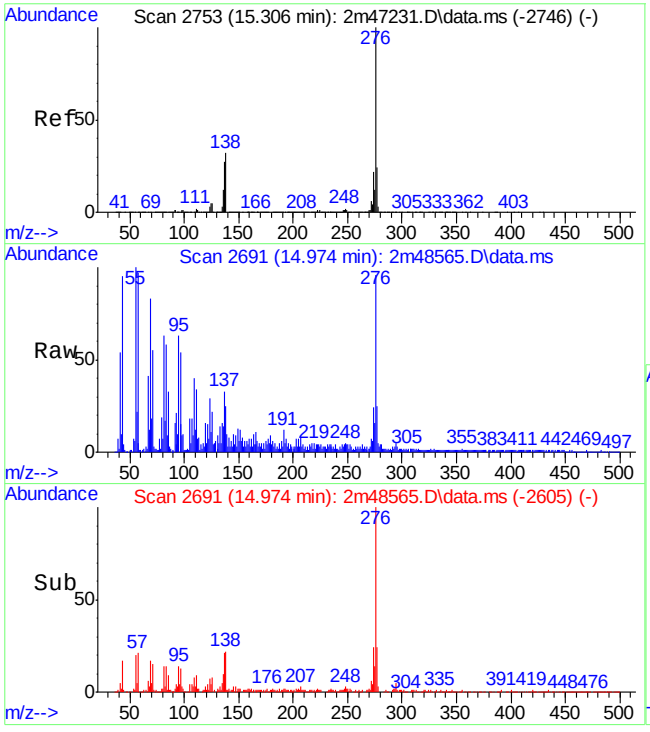


#99
Dibenz[a,h]anthracene
Concen: 3.75 ppb m
RT: 14.809 min Scan# 2660
Delta R.T. -0.043 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:278 Resp: 85052

Ion	Ratio	Lower	Upper
278	100		
139	44.6	0.0	52.4
279	35.2	0.0	54.1

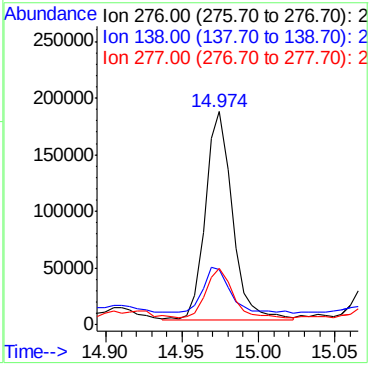




#101
Benzo[g,h,i]perylene
Concen: 9.72 ppb
RT: 14.974 min Scan# 2691
Delta R.T. -0.038 min
Lab File: 2m48565.D
Acq: 17 Dec 2012 4:23 pm

Tgt Ion:276 Resp: 224007

Ion	Ratio	Lower	Upper
276	100		
138	20.9	0.1	60.1
277	23.2	0.0	53.2



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Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48583.D
Acq On : 18 Dec 2012 1:09 pm
Operator : olgaa
Sample : jb22822-1cfi
Misc : op62037,e2m2081,34.8,,,1,2
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 19 10:00:48 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.389	152	233584	40.00	ppb	0.00
24) Naphthalene-d8	3.914	136	1110138	40.00	ppb	0.00
47) Acenaphthene-d10	6.476	164	708371	40.00	ppb	0.00
69) Phenanthrene-d10	8.701	188	1258680	40.00	ppb	0.00
83) Chrysene-d12	12.520	240	1383877	40.00	ppb	0.00
92) Perylene-d12	13.926	264	1173935	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.389	152	233584	40.00	ppb	0.00
104) Acenaphthene-d10a	6.476	164	708371	40.00	ppb	0.00
106) Chrysene-d12a	12.520	240	1383877	40.00	ppb	0.00
108) Phenanthrene-d10a	8.701	188	1258680	40.00	ppb	0.00
110) Chrysene-d12b	12.520	240	1383877	40.00	ppb	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	1.437	112	100241	11.79	ppb	0.01
Spiked Amount 50.000			Recovery	=	23.58%	
8) Phenol-d5	2.240	99	141613	12.43	ppb	0.02
Spiked Amount 50.000			Recovery	=	24.86%	
25) Nitrobenzene-d5	3.079	82	114268	9.59	ppb	0.02
Spiked Amount 50.000			Recovery	=	19.18%	
51) 2-Fluorobiphenyl	5.556	172	299960	12.88	ppb	0.00
Spiked Amount 50.000			Recovery	=	25.76%	
73) 2,4,6-Tribromophenol	7.743	330	39128	13.23	ppb	0.00
Spiked Amount 50.000			Recovery	=	26.46%	
85) Terphenyl-d14	11.284	244	578060	20.67	ppb	0.00
Spiked Amount 50.000			Recovery	=	41.34%	
Target Compounds						Qvalue
38) Naphthalene	3.935	128	15262	0.49	ppb	98
44) 2-Methylnaphthalene	4.957	141	9023	0.48	ppb	87
56) Acenaphthylene	6.251	152	32186	0.94	ppb	98
59) Acenaphthene	6.519	153	15380	0.70	ppb	94
66) Fluorene	7.305	166	63846	2.68	ppb	96
77) Phenanthrene	8.733	178	262011	6.80	ppb	99
78) Anthracene	8.818	178	73511	1.92	ppb	94
81) Fluoranthene	10.573	202	370553	9.75	ppb	97
84) Pyrene	10.883	202	398457	8.90	ppb	98
88) Benzo[a]anthracene	12.504	228	250183	5.88	ppb	99
90) Chrysene	12.541	228	326646	7.74	ppb	98
94) Benzo[b]fluoranthene	13.605	252	340182m	8.32	ppb	
95) Benzo[k]fluoranthene	13.616	252	149597m	4.07	ppb	
96) Benzo[a]pyrene	13.884	252	226622	6.53	ppb	96
97) Indeno[1,2,3-cd]pyrene	14.777	276	147683	3.66	ppb	90
99) Dibenz[a,h]anthracene	14.782	278	50823m	1.50	ppb	
101) Benzo[g,h,i]perylene	14.948	276	145839	4.24	ppb	92

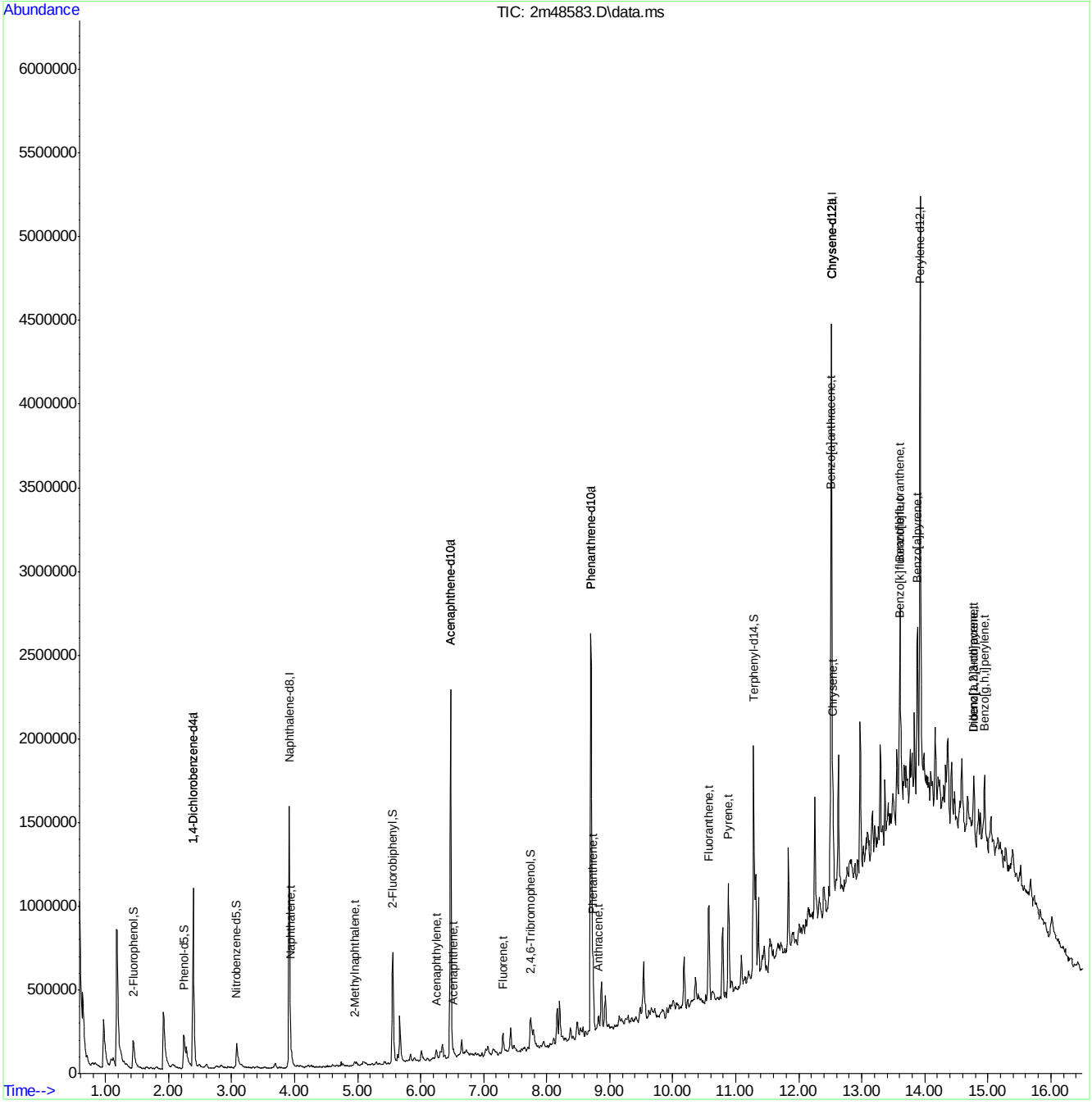
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.2
9

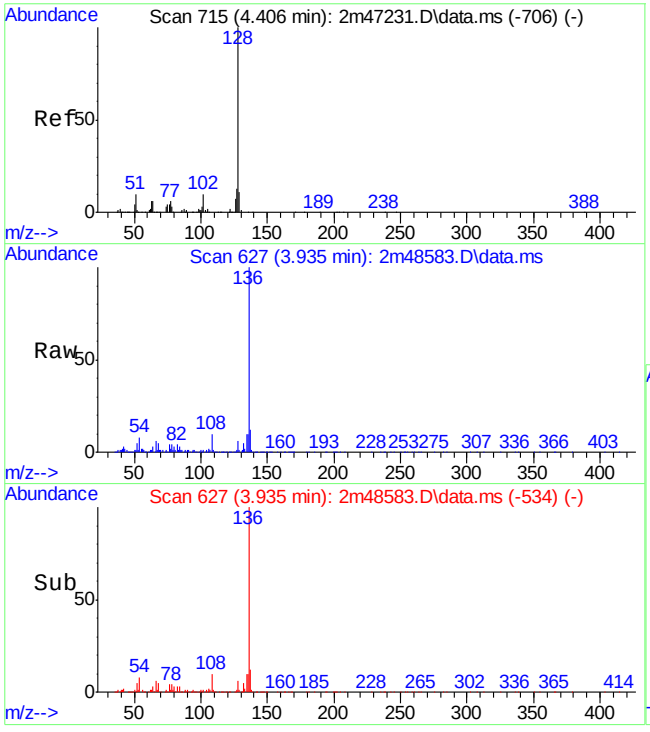
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48583.D
Acq On : 18 Dec 2012 1:09 pm
Operator : olgaa
Sample : jb22822-1cfi
Misc : op62037,e2m2081,34.8,,,1,2
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 19 10:00:48 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration



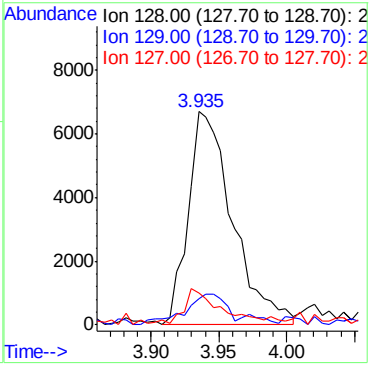
M2M2034.M Wed Dec 19 10:01:04 2012 MS2M Page: 2

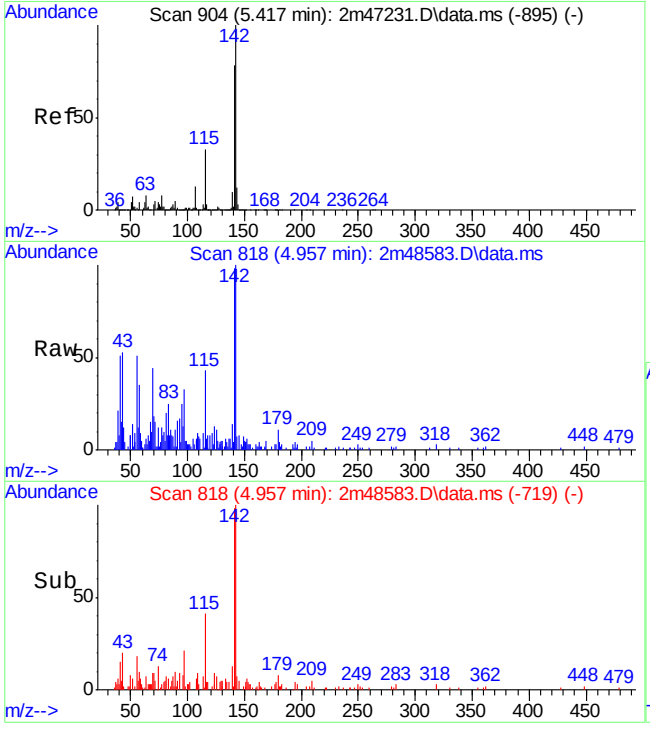


#38
Naphthalene
Concen: 0.49 ppb
RT: 3.935 min Scan# 627
Delta R.T. -0.005 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:128 Resp: 15262

Ion	Ratio	Lower	Upper
128	100		
129	9.5	0.0	40.9
127	13.0	0.0	43.3

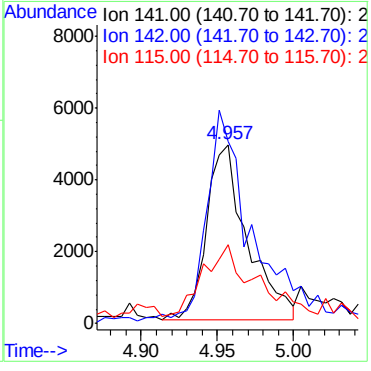


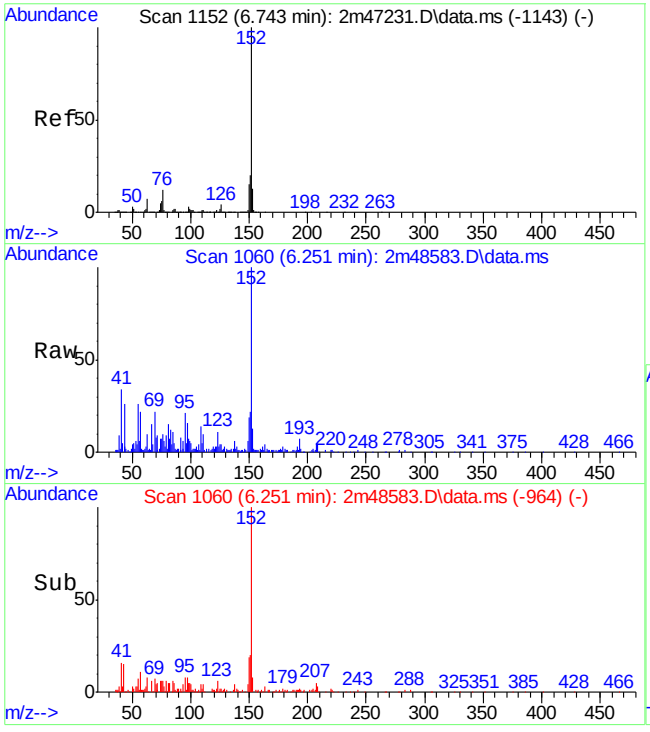


#44
2-Methylnaphthalene
Concen: 0.48 ppb
RT: 4.957 min Scan# 818
Delta R.T. 0.027 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:141 Resp: 9023

Ion	Ratio	Lower	Upper
141	100		
142	95.5	81.7	141.7
115	38.4	12.0	72.0

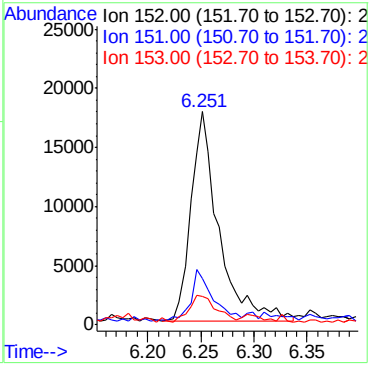


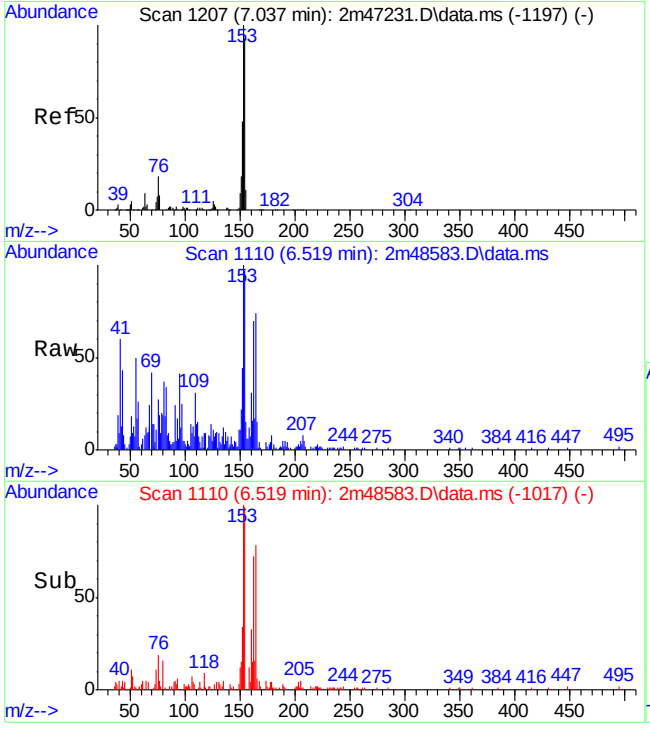


#56
Acenaphthylene
Concen: 0.94 ppb
RT: 6.251 min Scan# 1060
Delta R.T. 0.011 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:152 Resp: 32186

Ion	Ratio	Lower	Upper
152	100		
151	19.3	0.0	49.4
153	11.2	0.0	43.0

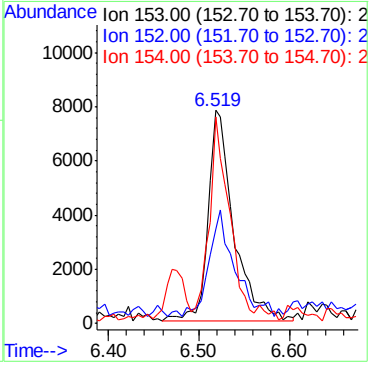




#59
Acenaphthene
Concen: 0.70 ppb
RT: 6.519 min Scan# 1110
Delta R.T. -0.005 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:153 Resp: 15380

Ion	Ratio	Lower	Upper
153	100		
152	37.1	15.8	75.8
154	92.2	59.7	119.7



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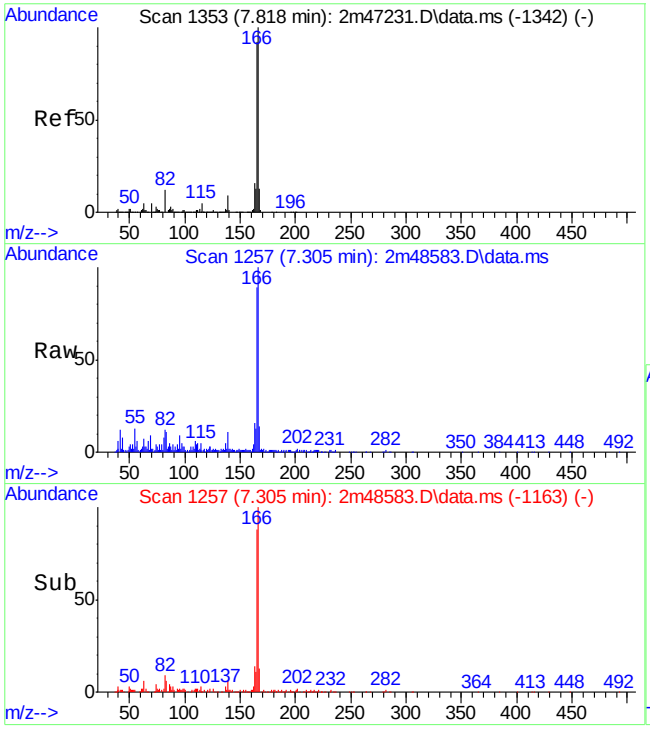
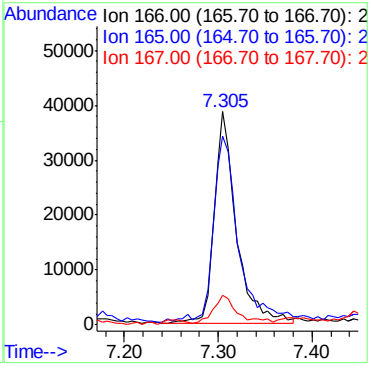
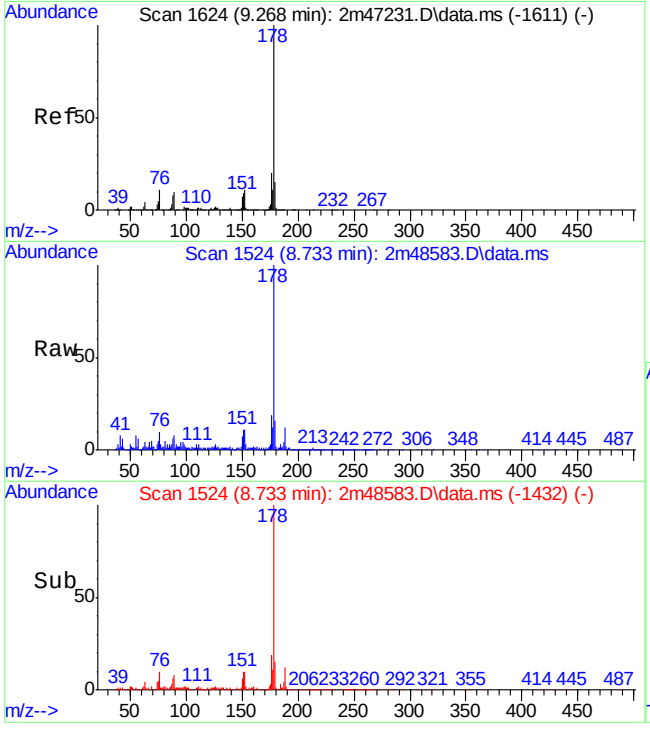


#66
Fluorene
Concen: 2.68 ppb
RT: 7.305 min Scan# 1257
Delta R.T. 0.000 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:166 Resp: 63846

Ion	Ratio	Lower	Upper
166	100		
165	87.4	61.9	121.9
167	12.0	0.0	43.1

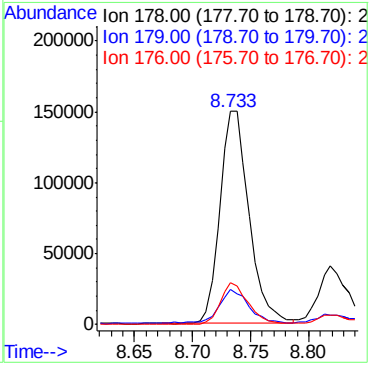




#77
Phenanthrene
Concen: 6.80 ppb
RT: 8.733 min Scan# 1524
Delta R.T. -0.011 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:178 Resp: 262011

Ion	Ratio	Lower	Upper
178	100		
179	15.7	0.0	44.9
176	19.1	0.0	49.1



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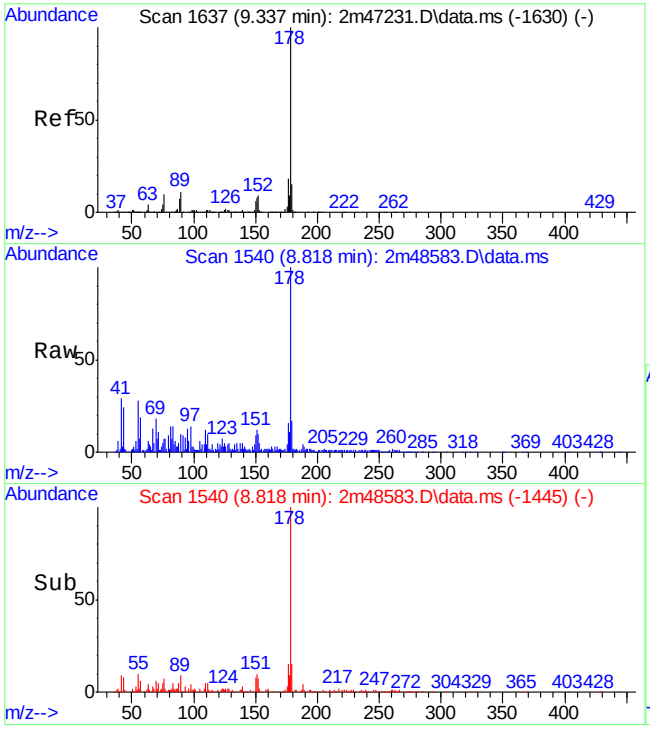
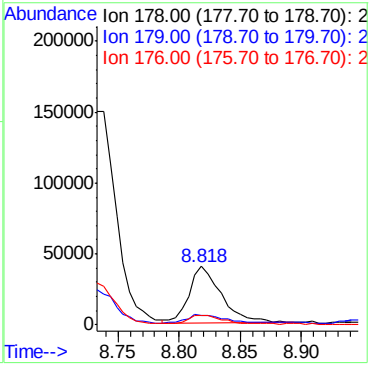
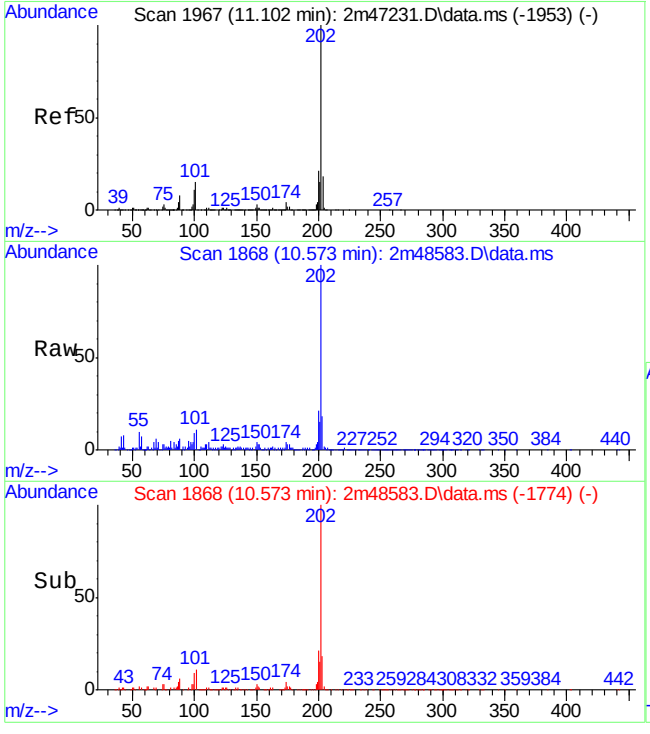


#78
Anthracene
Concen: 1.92 ppb
RT: 8.818 min Scan# 1540
Delta R.T. 0.005 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:178 Resp: 73511

Ion	Ratio	Lower	Upper
178	100		
179	14.0	0.0	44.3
176	14.0	0.0	48.3

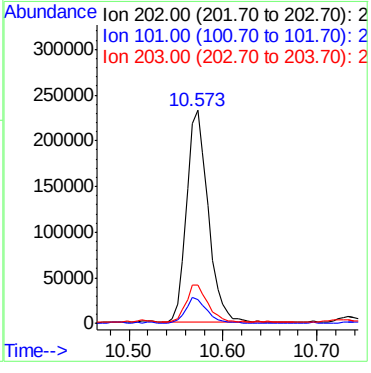




#81
Fluoranthene
Concen: 9.75 ppb
RT: 10.573 min Scan# 1868
Delta R.T. 0.000 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:202 Resp: 370553

Ion	Ratio	Lower	Upper
202	100		
101	11.0	0.0	43.8
203	17.6	0.0	47.5



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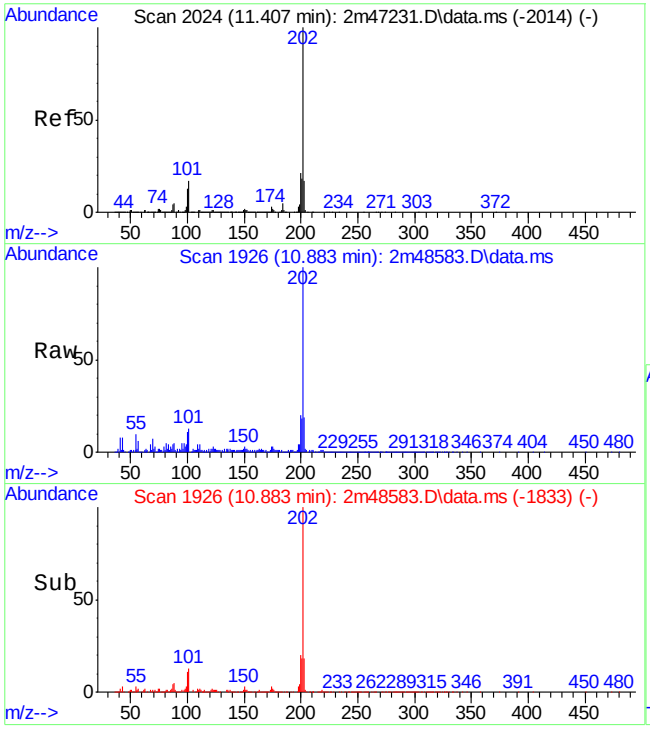
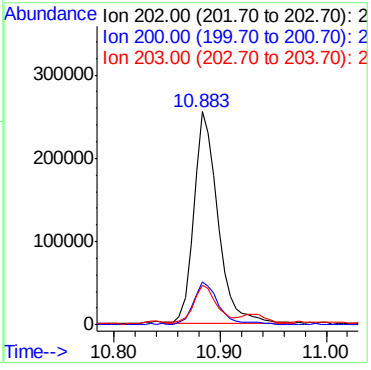
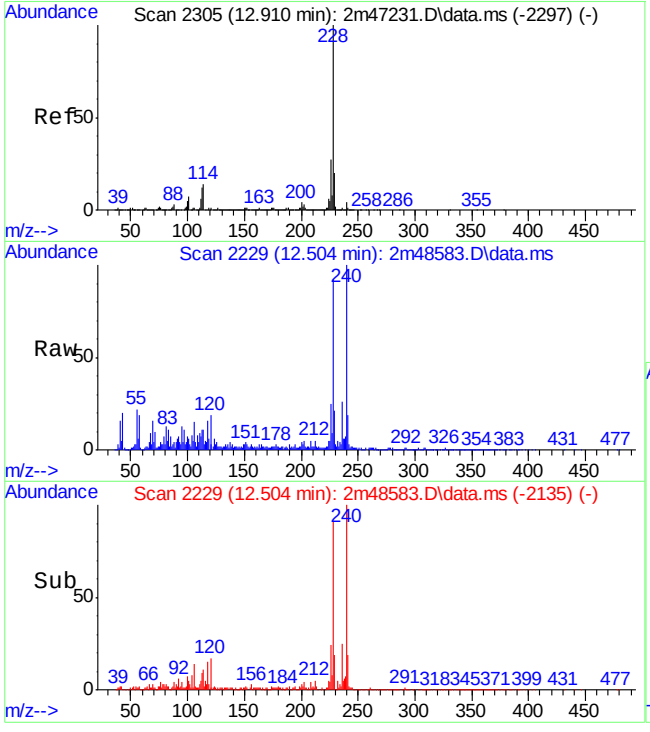


#84
Pyrene
Concen: 8.90 ppb
RT: 10.883 min Scan# 1926
Delta R.T. -0.005 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:202 Resp: 398457

Ion	Ratio	Lower	Upper
202	100		
200	20.1	0.0	51.3
203	17.4	0.0	47.6

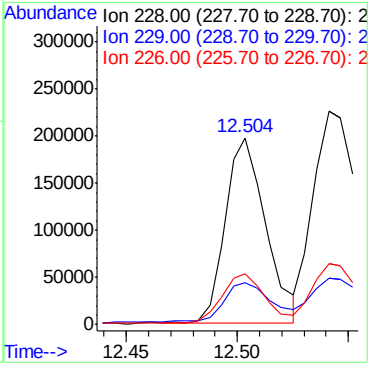




#88
Benzo[a]anthracene
Concen: 5.88 ppb
RT: 12.504 min Scan# 2229
Delta R.T. 0.000 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:228 Resp: 250183

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	49.3
226	26.4	0.0	56.0



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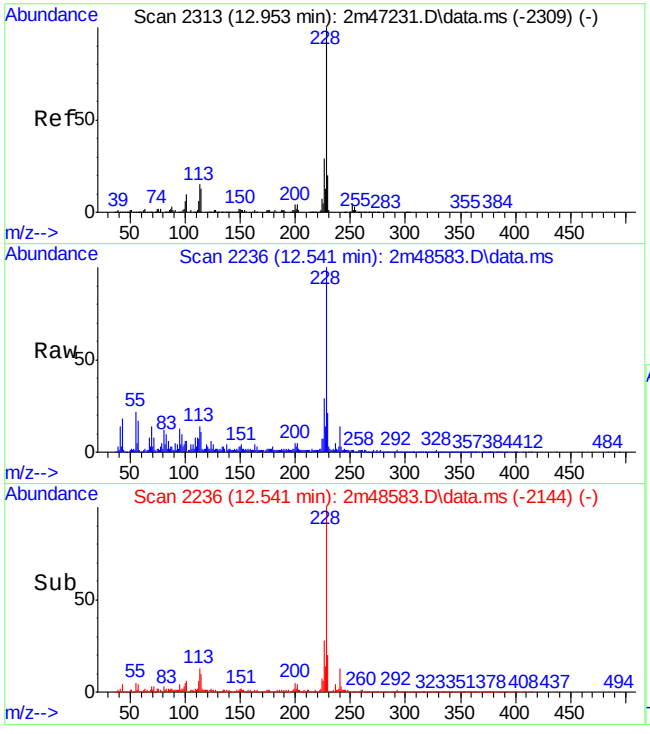
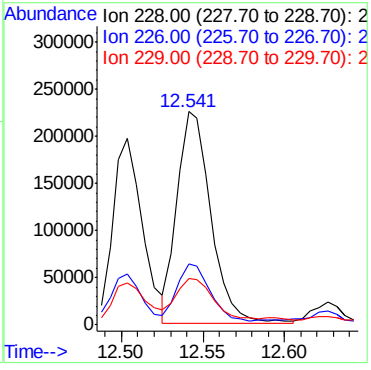
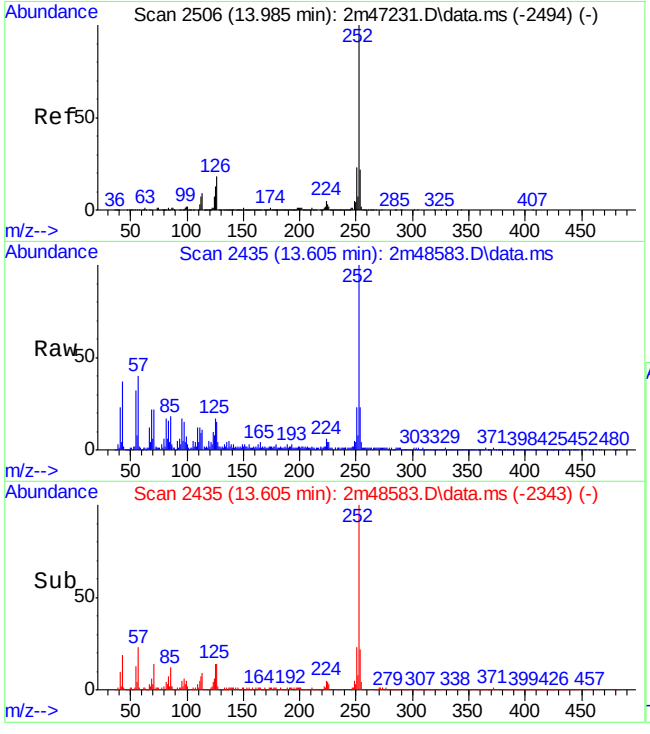


#90
Chrysene
Concen: 7.74 ppb
RT: 12.541 min Scan# 2236
Delta R.T. -0.011 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:228 Resp: 326646

Ion	Ratio	Lower	Upper
228	100		
226	27.2	0.0	57.7
229	18.2	0.0	49.3

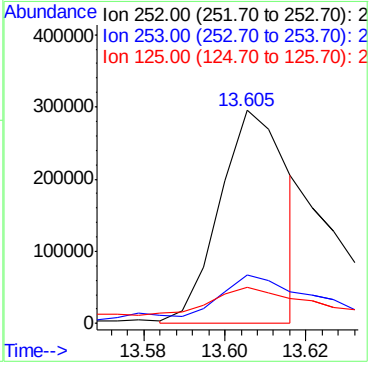




#94
Benzo[b]fluoranthene
Concen: 8.32 ppb m
RT: 13.605 min Scan# 2435
Delta R.T. -0.011 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:252 Resp: 340182

Ion	Ratio	Lower	Upper
252	100		
253	22.6	0.0	51.6
125	17.0	0.0	40.1



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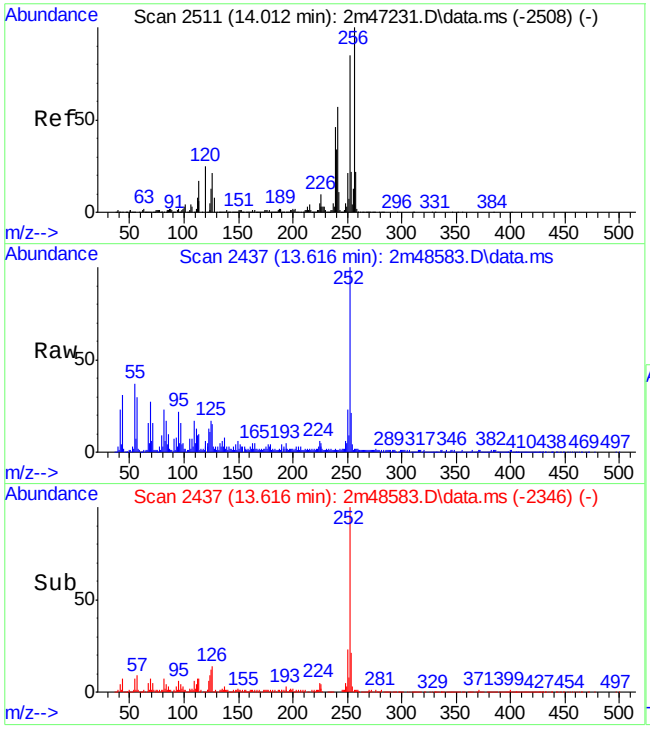
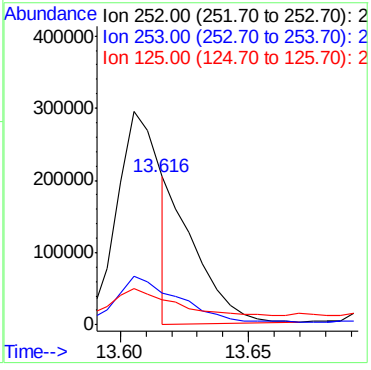
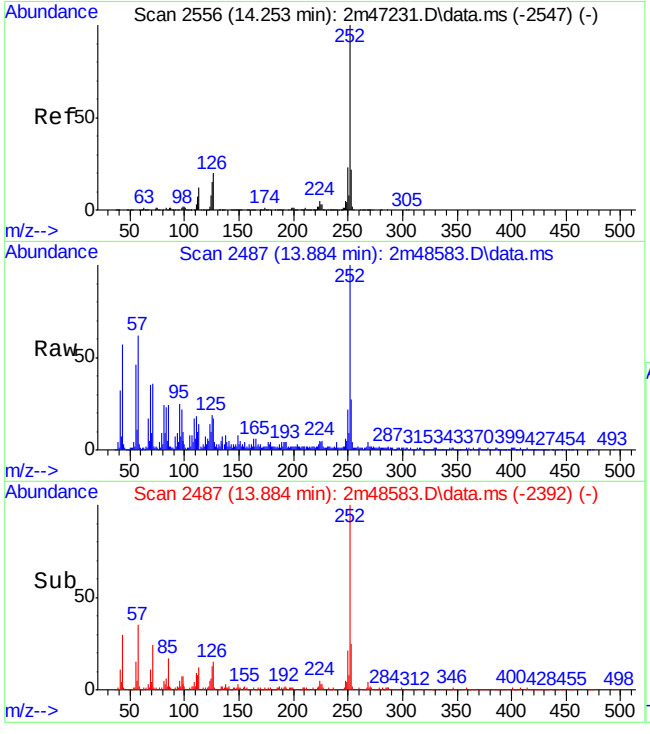


#95
Benzo[k]fluoranthene
Concen: 4.07 ppb m
RT: 13.616 min Scan# 2437
Delta R.T. -0.016 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:252 Resp: 149597

Ion	Ratio	Lower	Upper
252	100		
253	21.4	0.0	52.7
125	16.6	0.0	42.9

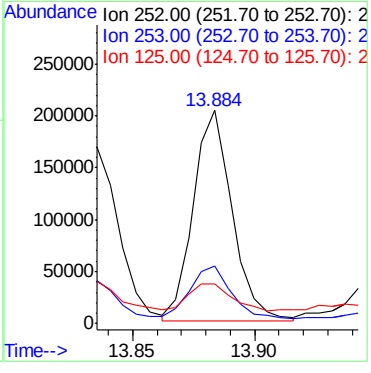




#96
Benzo[a]pyrene
Concen: 6.53 ppb
RT: 13.884 min Scan# 2487
Delta R.T. 0.005 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:252 Resp: 226622

Ion	Ratio	Lower	Upper
252	100		
253	24.9	0.0	52.4
125	12.4	0.0	42.7



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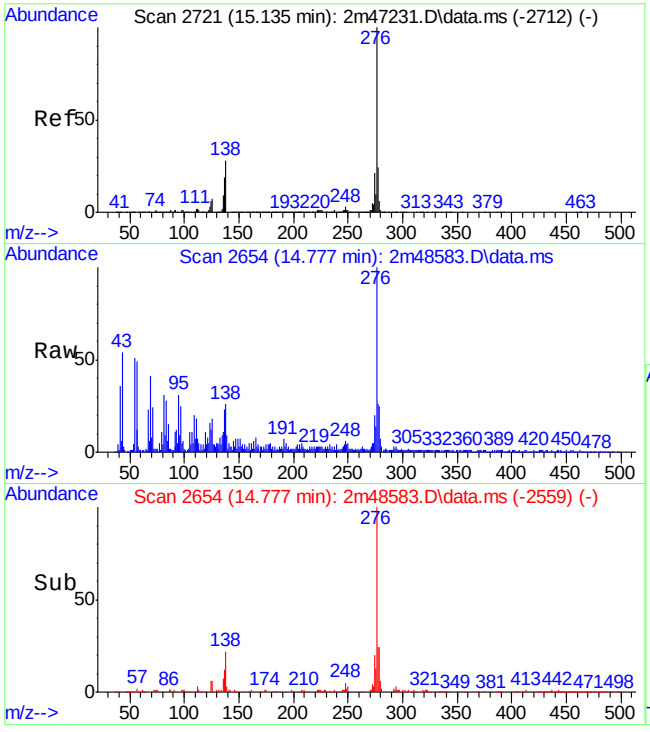
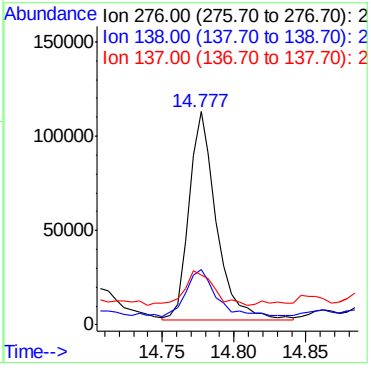
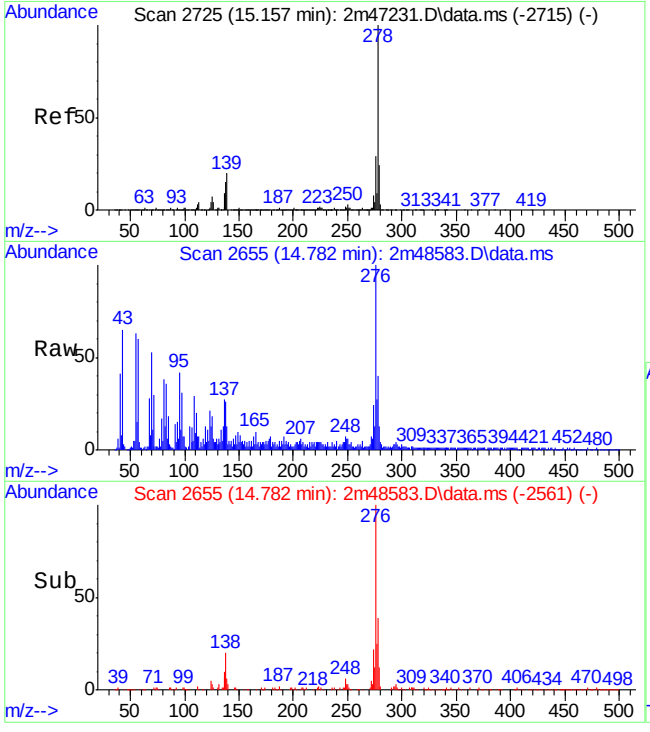


#97
Indeno[1,2,3-cd]pyrene
Concen: 3.66 ppb
RT: 14.777 min Scan# 2654
Delta R.T. 0.005 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:276 Resp: 147683

Ion	Ratio	Lower	Upper
276	100		
138	22.6	0.0	57.6
137	13.8	0.0	48.9

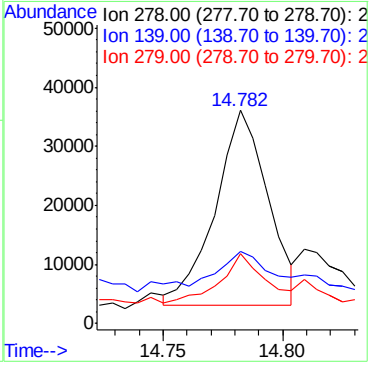




#99
Dibenz[a,h]anthracene
Concen: 1.50 ppb m
RT: 14.782 min Scan# 2655
Delta R.T. 0.000 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:278 Resp: 50823

Ion	Ratio	Lower	Upper
278	100		
139	33.7	0.0	52.4
279	32.6	0.0	54.1



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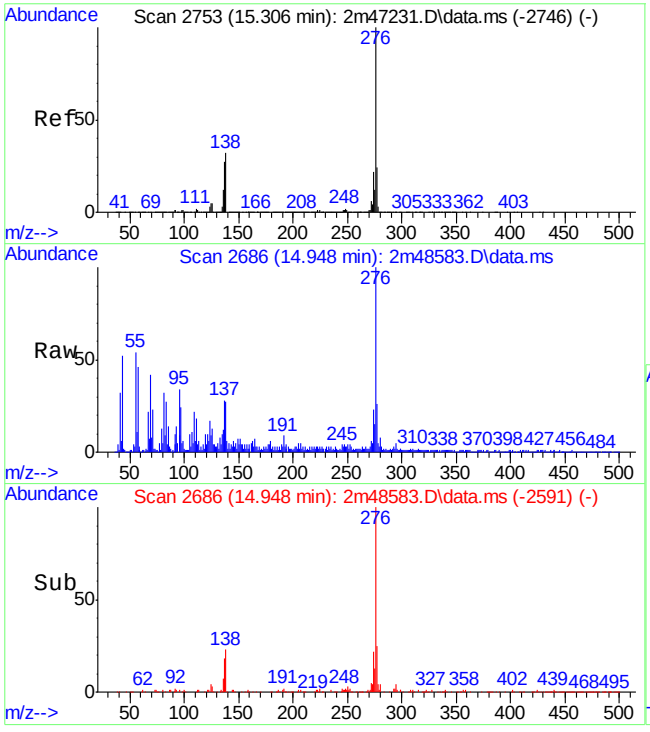
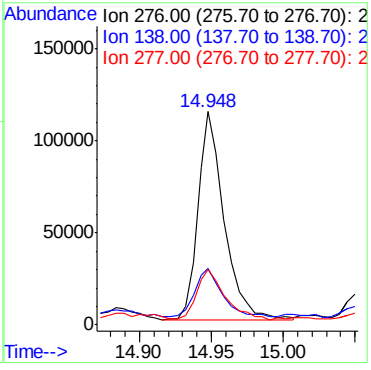


#101
Benzo[g,h,i]perylene
Concen: 4.24 ppb
RT: 14.948 min Scan# 2686
Delta R.T. 0.006 min
Lab File: 2m48583.D
Acq: 18 Dec 2012 1:09 pm

Tgt Ion:276 Resp: 145839

Ion	Ratio	Lower	Upper
276	100		
138	22.7	0.1	60.1
277	23.1	0.0	53.2



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Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48584.D
Acq On : 18 Dec 2012 1:32 pm
Operator : olgaa
Sample : jb22822-2
Misc : op62037,e2m2081,33.4,,,1,2
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 10:30:46 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.389	152	264300	40.00	ppb	0.00
24) Naphthalene-d8	3.914	136	1235674	40.00	ppb	0.00
47) Acenaphthene-d10	6.476	164	790280	40.00	ppb	0.00
69) Phenanthrene-d10	8.706	188	1371790	40.00	ppb	0.00
83) Chrysene-d12	12.530	240	1424633	40.00	ppb	0.00
92) Perylene-d12	13.942	264	1257557	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.389	152	264300	40.00	ppb	0.00
104) Acenaphthene-d10a	6.476	164	790280	40.00	ppb	0.00
106) Chrysene-d12a	12.530	240	1424633	40.00	ppb	0.00
108) Phenanthrene-d10a	8.706	188	1371790	40.00	ppb	0.00
110) Chrysene-d12b	12.530	240	1424633	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.437	112	111262	11.57	ppb	0.01
Spiked Amount 50.000			Recovery	=	23.14%	
8) Phenol-d5	2.240	99	167843	13.02	ppb	0.02
Spiked Amount 50.000			Recovery	=	26.04%	
25) Nitrobenzene-d5	3.074	82	143626	10.83	ppb	0.01
Spiked Amount 50.000			Recovery	=	21.66%	
51) 2-Fluorobiphenyl	5.556	172	376533	14.49	ppb	0.00
Spiked Amount 50.000			Recovery	=	28.98%	
73) 2,4,6-Tribromophenol	7.743	330	68954	21.39	ppb	0.00
Spiked Amount 50.000			Recovery	=	42.78%	
85) Terphenyl-d14	11.295	244	626935	21.78	ppb	0.00
Spiked Amount 50.000			Recovery	=	43.56%	

Target Compounds						Qvalue
38) Naphthalene	3.940	128	77088	2.24	ppb	98
44) 2-Methylnaphthalene	4.935	141	69881	3.31	ppb	97
56) Acenaphthylene	6.240	152	144287	3.78	ppb	95
59) Acenaphthene	6.524	153	57212	2.33	ppb	94
66) Fluorene	7.299	166	170057	6.40	ppb	96
77) Phenanthrene	8.743	178	1849301	44.03	ppb	100
78) Anthracene	8.813	178	433790	10.42	ppb	97
81) Fluoranthene	10.583	202	2579840	62.27	ppb	98
84) Pyrene	10.899	202	3390594	73.58	ppb	99
88) Benzo[a]anthracene	12.514	228	1479935	33.77	ppb	96
90) Chrysene	12.557	228	1501355	34.56	ppb	98
94) Benzo[b]fluoranthene	13.621	252	1482914m	33.87	ppb	
95) Benzo[k]fluoranthene	13.627	252	699690m	17.76	ppb	
96) Benzo[a]pyrene	13.894	252	1413111	38.00	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.787	276	939333	21.75	ppb	96
99) Dibenz[a,h]anthracene	14.793	278	337147m	9.29	ppb	
101) Benzo[g,h,i]perylene	14.959	276	974417	26.43	ppb	93

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

9.1.3
9

Quantitation Report (QT Reviewed)

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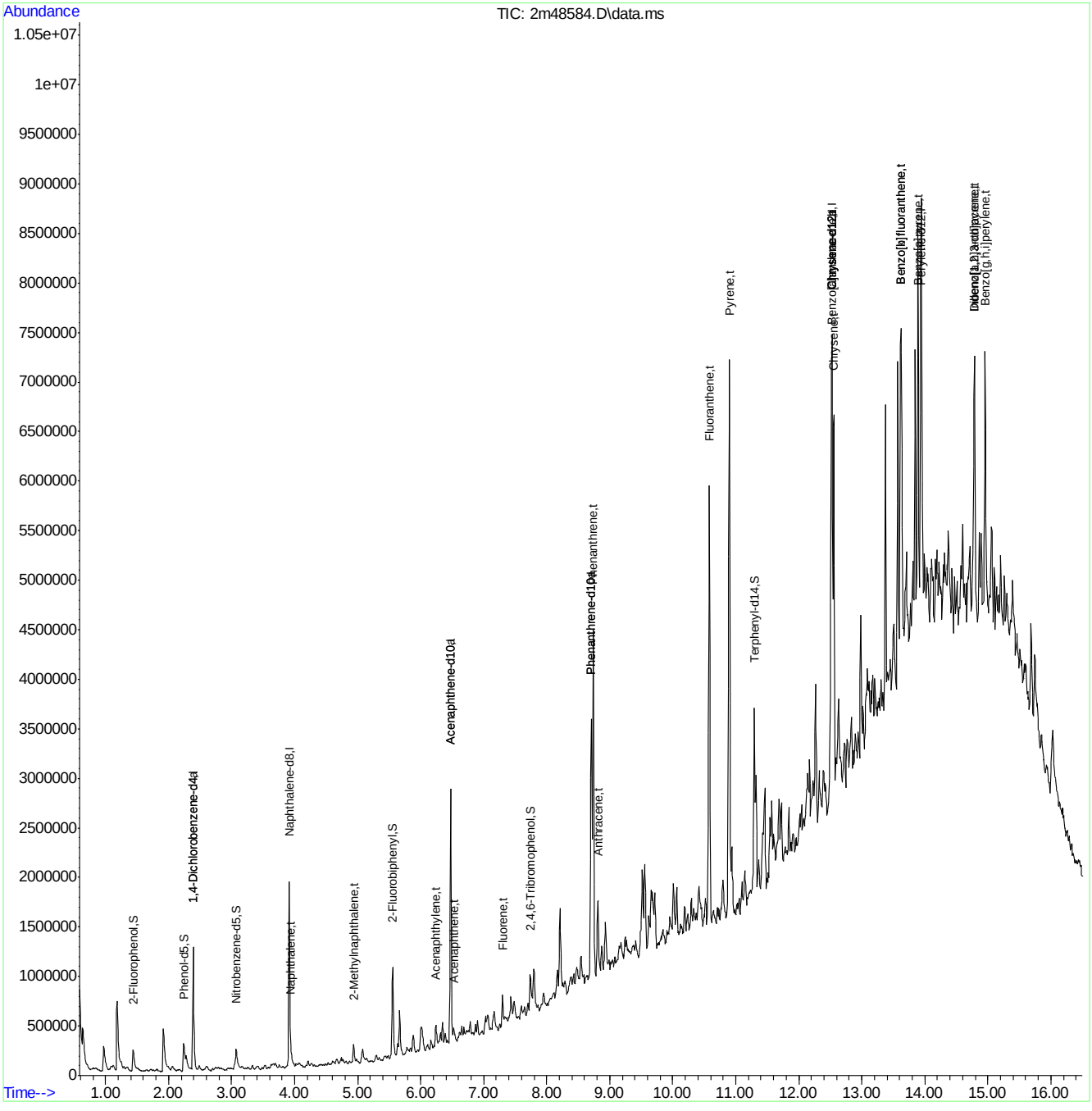
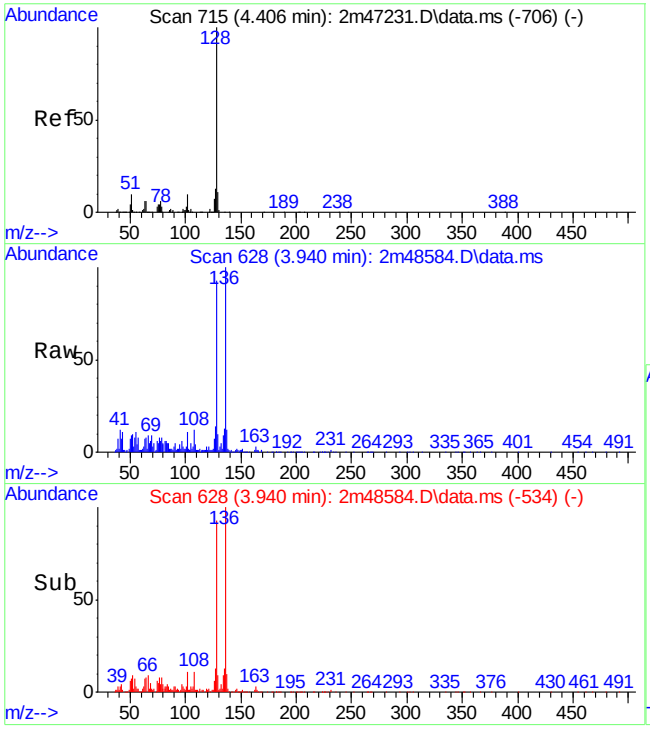
Data File : 2m48584.D
Acq On : 18 Dec 2012 1:32 pm
Operator : olgaa
Sample : jb22822-2
Misc : op62037,e2m2081,33.4,,,1,2
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 19 10:30:46 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration



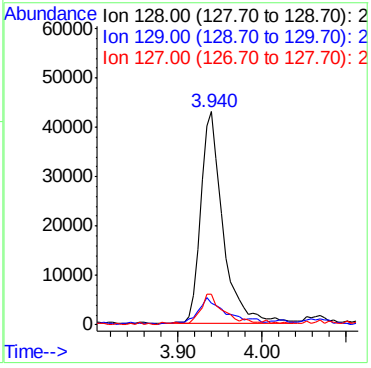
M2M2034.M Wed Dec 19 10:30:55 2012 MS2M Page: 2

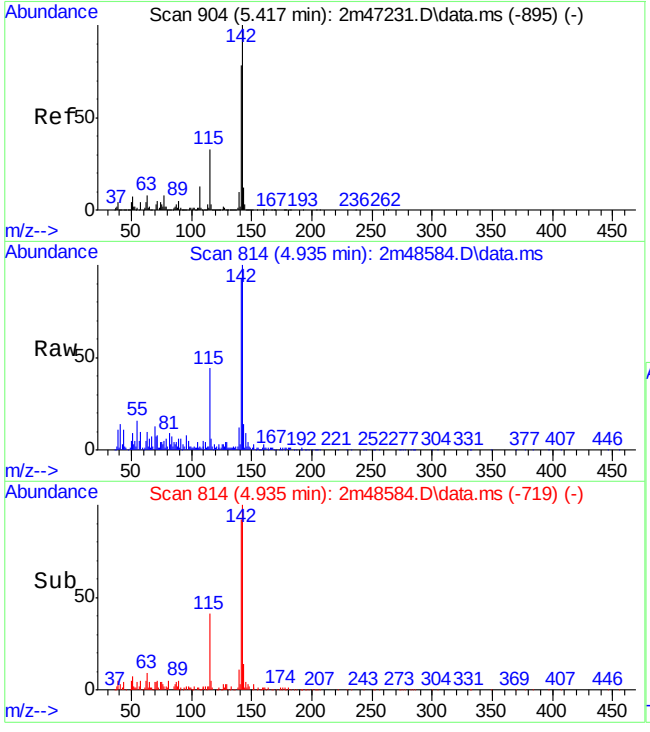


#38
Naphthalene
Concen: 2.24 ppb
RT: 3.940 min Scan# 628
Delta R.T. 0.000 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:128 Resp: 77088

Ion	Ratio	Lower	Upper
128	100		
129	9.4	0.0	40.9
127	13.8	0.0	43.3

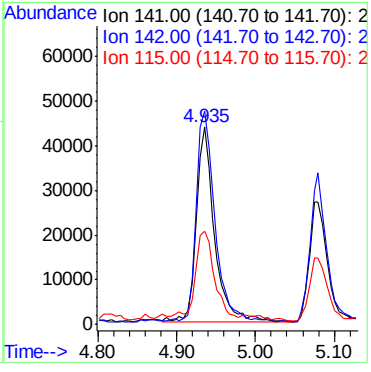




#44
2-Methylnaphthalene
Concen: 3.31 ppb
RT: 4.935 min Scan# 814
Delta R.T. 0.005 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:141 Resp: 69881

Ion	Ratio	Lower	Upper
141	100		
142	108.2	81.7	141.7
115	44.2	12.0	72.0



9.1.3

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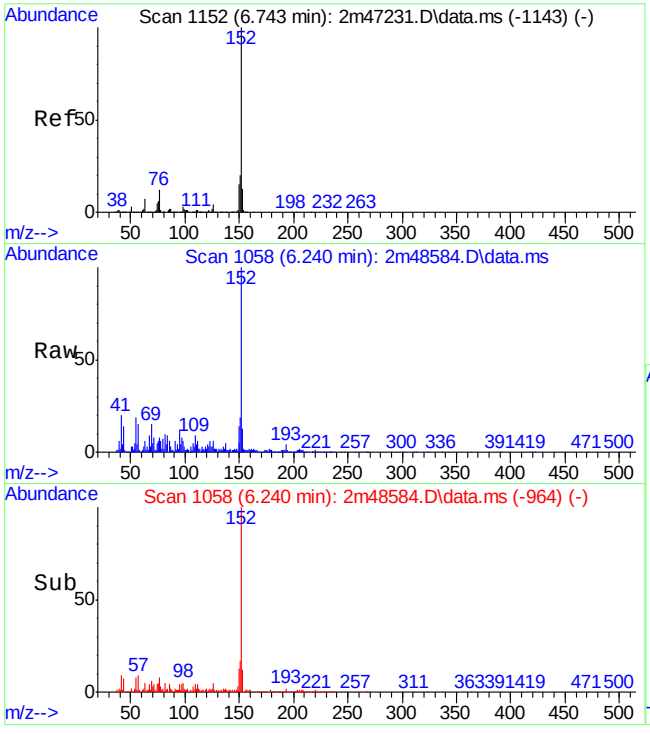
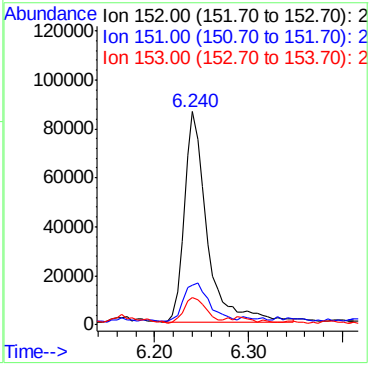
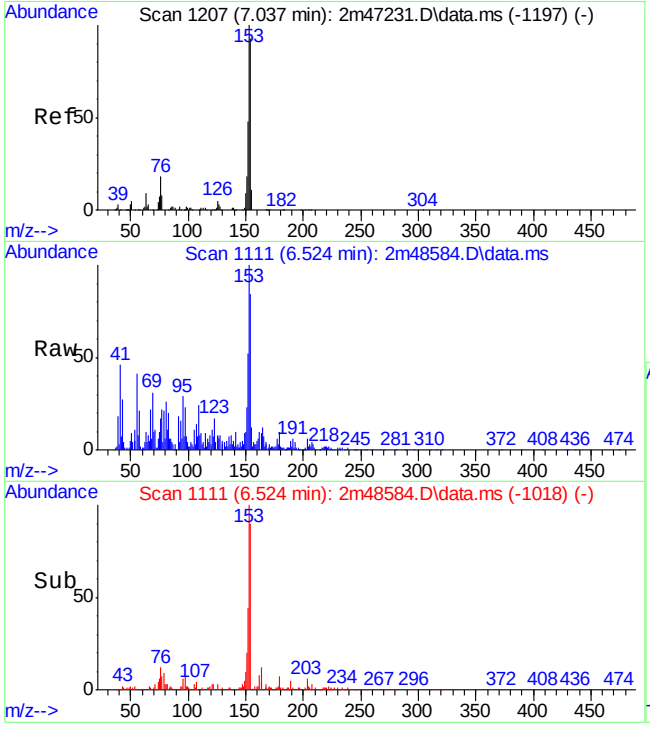


#56
Acenaphthylene
Concen: 3.78 ppb
RT: 6.240 min Scan# 1058
Delta R.T. 0.000 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:152 Resp: 144287

Ion	Ratio	Lower	Upper
152	100		
151	16.8	0.0	49.4
153	11.4	0.0	43.0

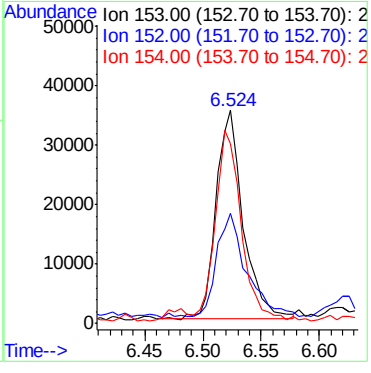


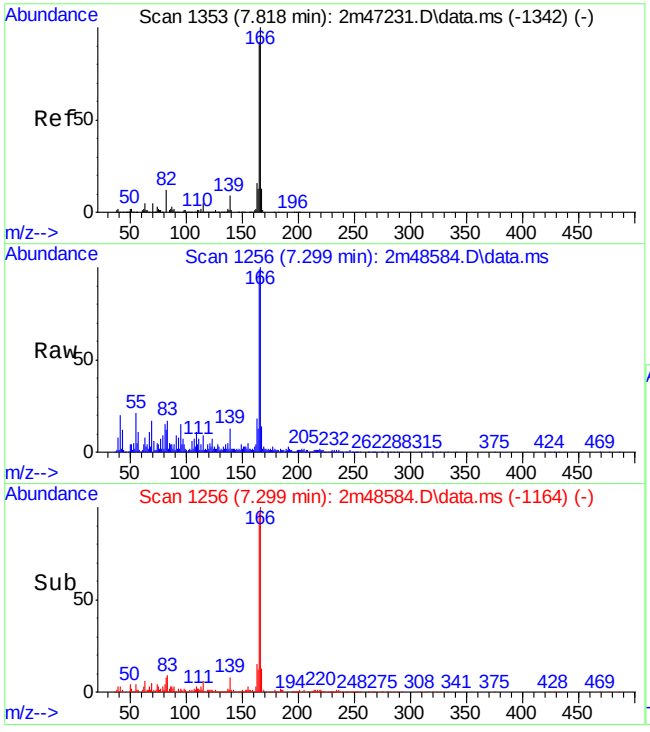


#59
Acenaphthene
Concen: 2.33 ppb
RT: 6.524 min Scan# 1111
Delta R.T. 0.000 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:153 Resp: 57212

Ion	Ratio	Lower	Upper
153	100		
152	49.1	15.8	75.8
154	83.6	59.7	119.7

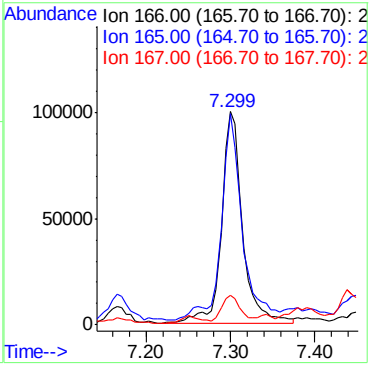


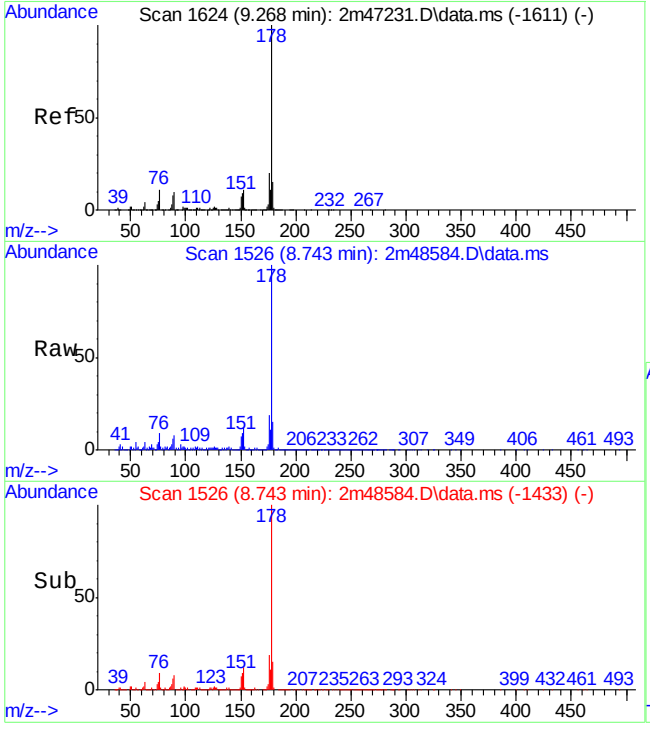


#66
Fluorene
Concen: 6.40 ppb
RT: 7.299 min Scan# 1256
Delta R.T. -0.005 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:166 Resp: 170057

Ion	Ratio	Lower	Upper
166	100		
165	95.5	61.9	121.9
167	10.8	0.0	43.1

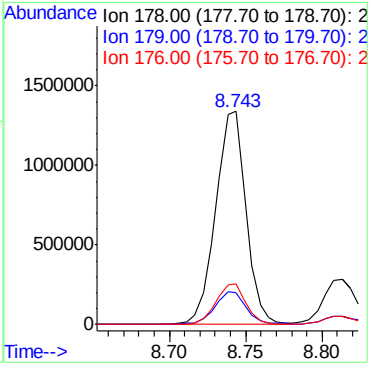




#77
Phenanthrene
Concen: 44.03 ppb
RT: 8.743 min Scan# 1526
Delta R.T. 0.000 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:178 Resp: 1849301

Ion	Ratio	Lower	Upper
178	100		
179	14.8	0.0	44.9
176	19.0	0.0	49.1



9.1.3

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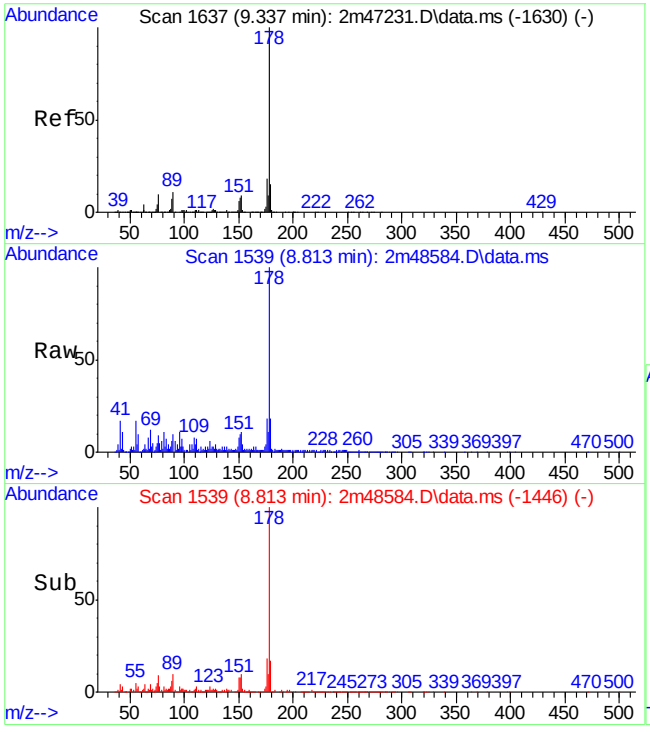
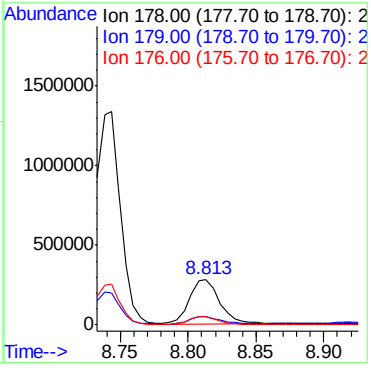
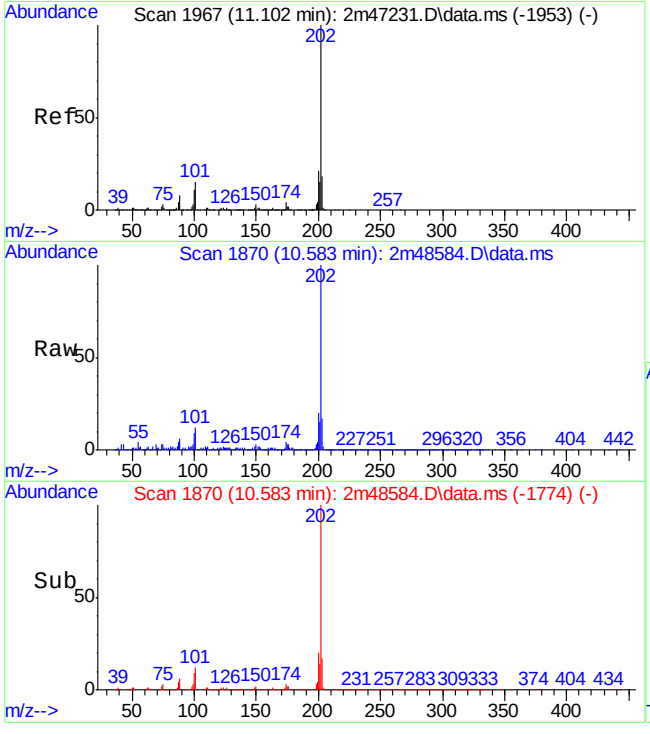


#78
Anthracene
Concen: 10.42 ppb
RT: 8.813 min Scan# 1539
Delta R.T. 0.000 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:178 Resp: 433790

Ion	Ratio	Lower	Upper
178	100		
179	16.4	0.0	44.3
176	17.6	0.0	48.3

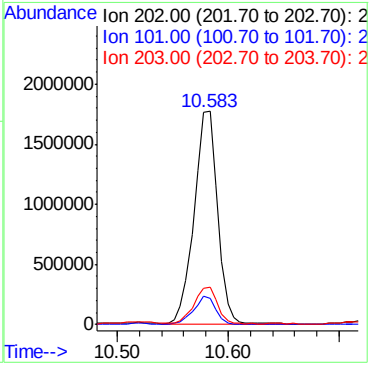


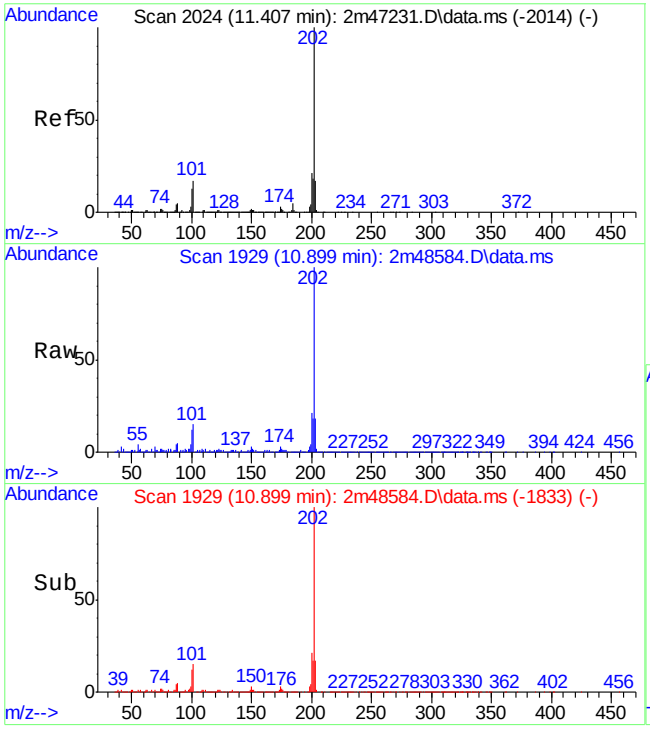


#81
Fluoranthene
Concen: 62.27 ppb
RT: 10.583 min Scan# 1870
Delta R.T. 0.011 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:202 Resp: 2579840

Ion	Ratio	Lower	Upper
202	100		
101	12.3	0.0	43.8
203	17.1	0.0	47.5

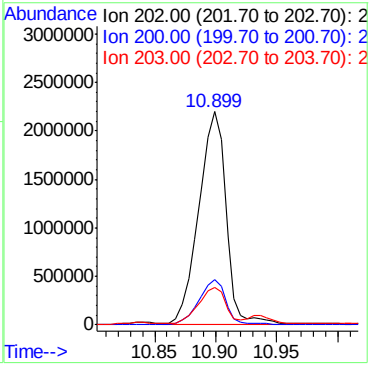


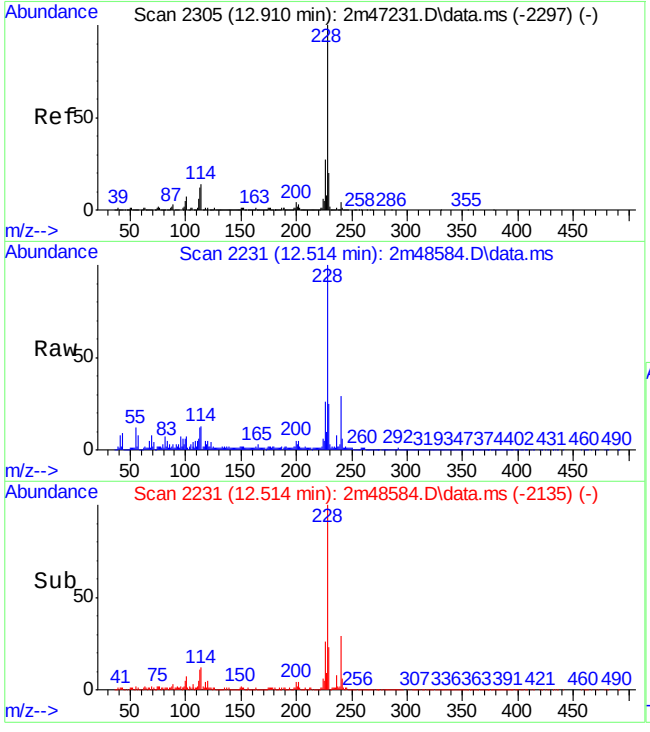


#84
Pyrene
Concen: 73.58 ppb
RT: 10.899 min Scan# 1929
Delta R.T. 0.011 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:202 Resp: 3390594

Ion	Ratio	Lower	Upper
202	100		
200	21.0	0.0	51.3
203	17.2	0.0	47.6

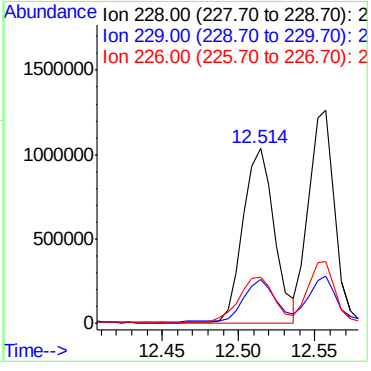


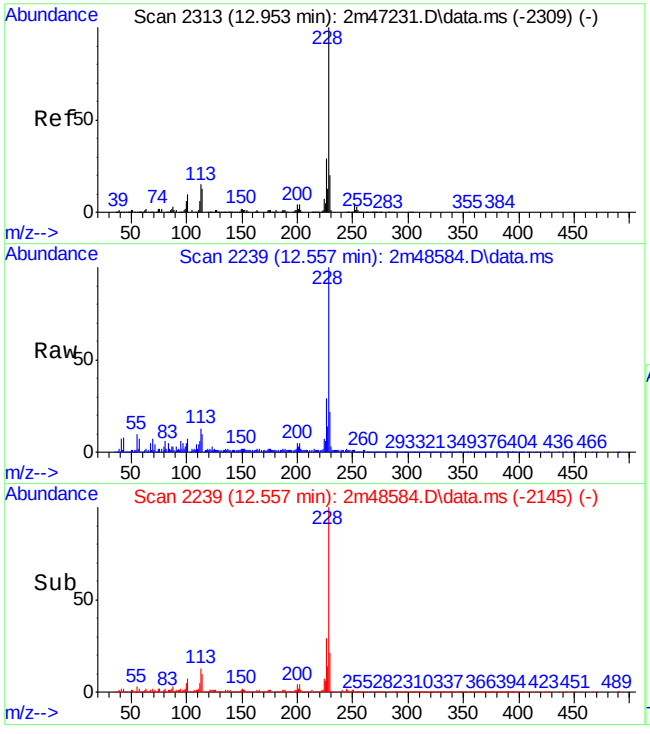


#88
Benzo[a]anthracene
Concen: 33.77 ppb
RT: 12.514 min Scan# 2231
Delta R.T. 0.011 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:228 Resp: 1479935

Ion	Ratio	Lower	Upper
228	100		
229	23.4	0.0	49.3
226	25.6	0.0	56.0

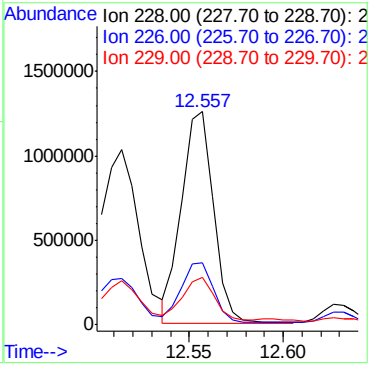


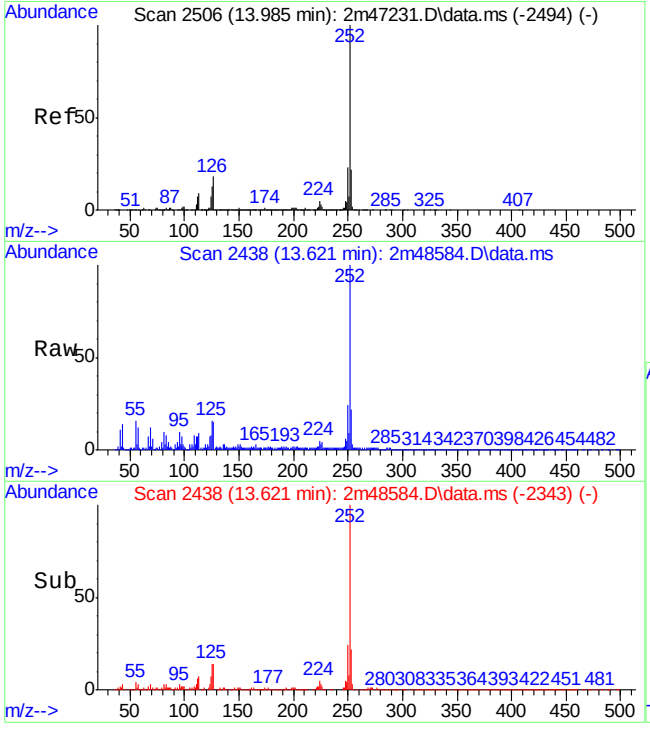


#90
Chrysene
Concen: 34.56 ppb
RT: 12.557 min Scan# 2239
Delta R.T. 0.005 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:228 Resp: 1501355

Ion	Ratio	Lower	Upper
228	100		
226	28.5	0.0	57.7
229	20.1	0.0	49.3

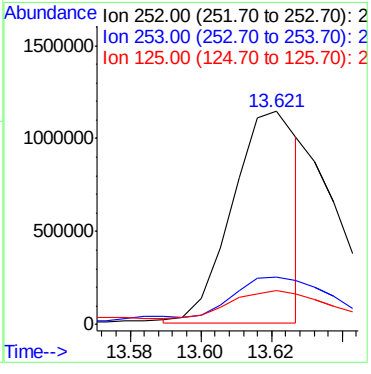


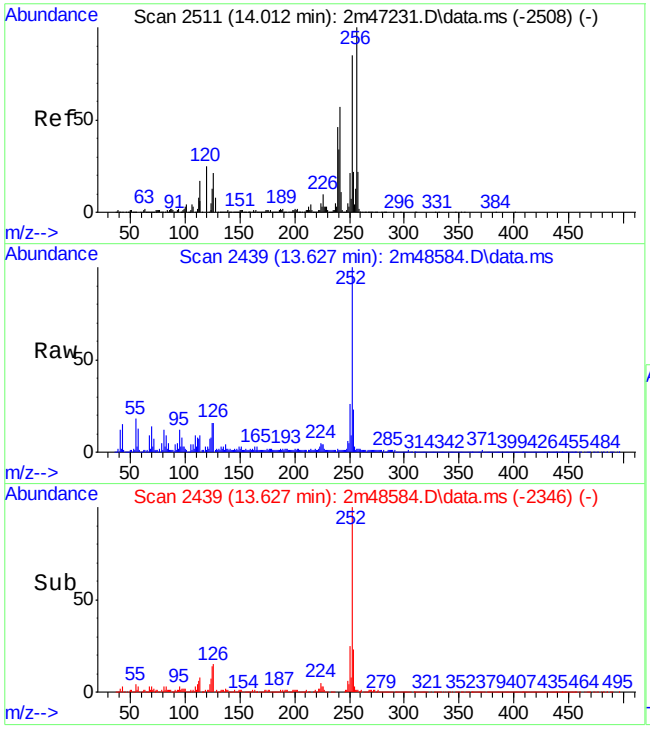


#94
Benzo[b]fluoranthene
Concen: 33.87 ppb m
RT: 13.621 min Scan# 2438
Delta R.T. 0.005 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:252 Resp: 1482914

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	51.6
125	15.9	0.0	40.1

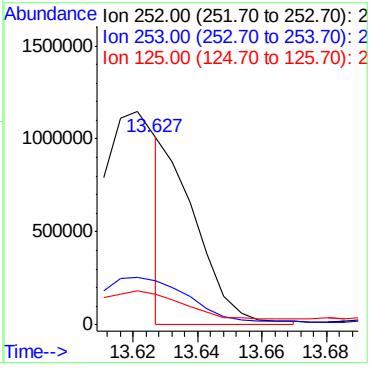


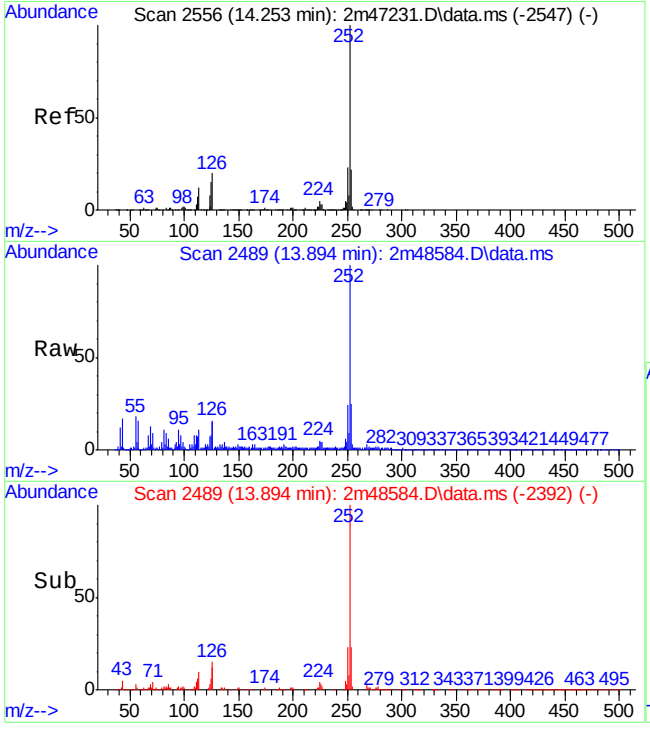


#95
Benzo[k]fluoranthene
Concen: 17.76 ppb m
RT: 13.627 min Scan# 2439
Delta R.T. -0.005 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:252 Resp: 699690

Ion	Ratio	Lower	Upper
252	100		
253	23.5	0.0	52.7
125	16.4	0.0	42.9

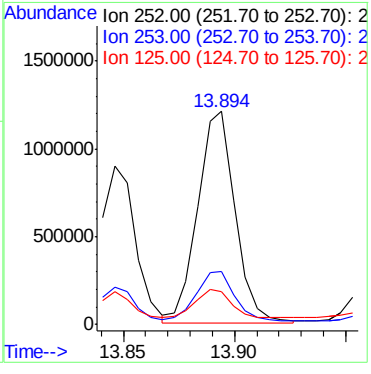


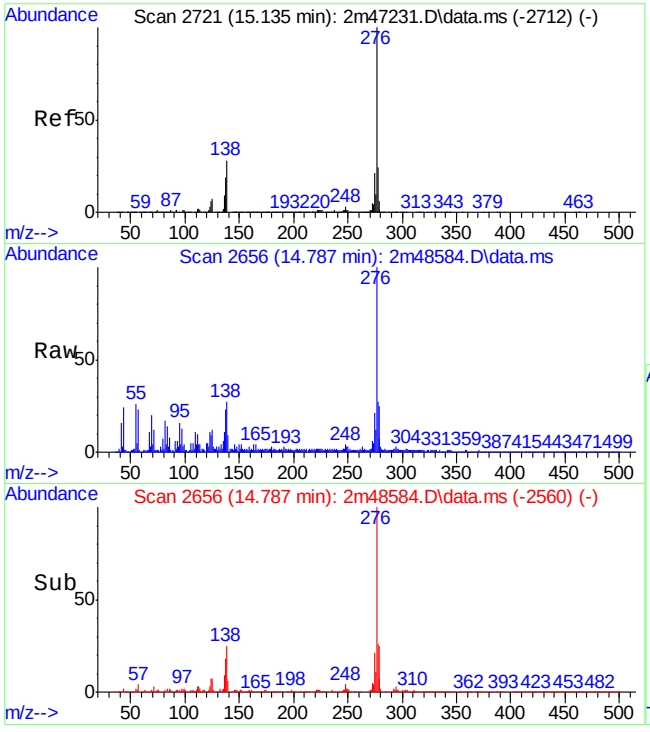


#96
Benzo[a]pyrene
Concen: 38.00 ppb
RT: 13.894 min Scan# 2489
Delta R.T. 0.016 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:252 Resp: 1413111

Ion	Ratio	Lower	Upper
252	100		
253	23.4	0.0	52.4
125	12.3	0.0	42.7

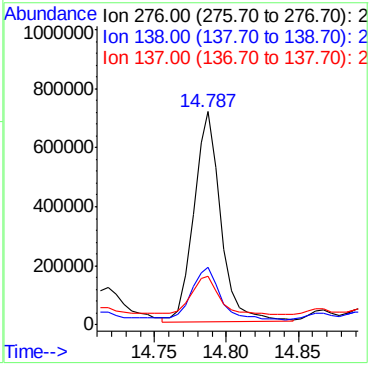


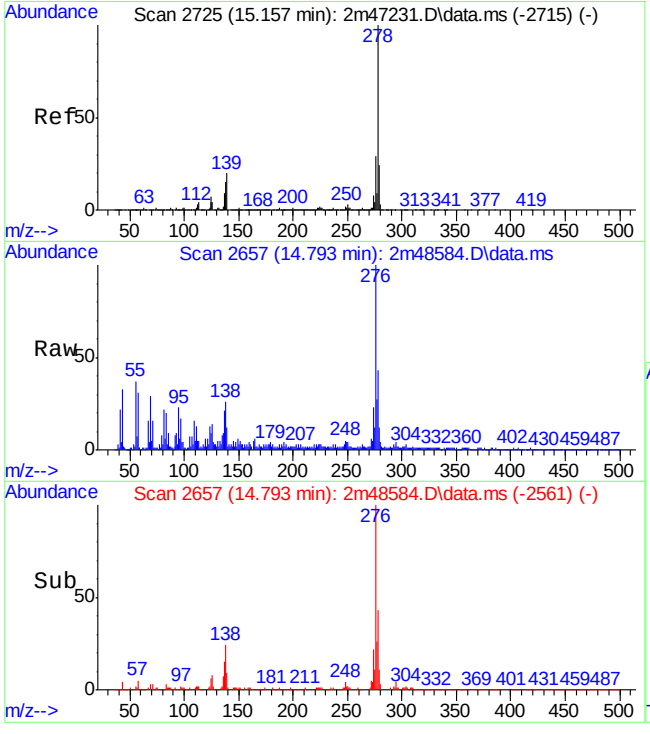


#97
Indeno[1,2,3-cd]pyrene
Concen: 21.75 ppb
RT: 14.787 min Scan# 2656
Delta R.T. 0.016 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:276 Resp: 939333

Ion	Ratio	Lower	Upper
276	100		
138	24.5	0.0	57.6
137	18.2	0.0	48.9

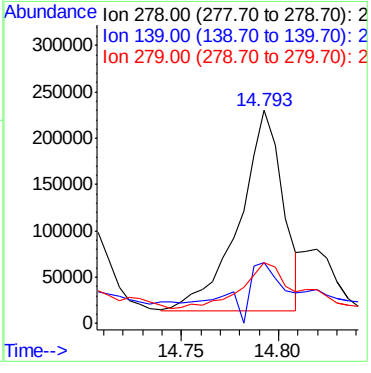




#99
Dibenz[a,h]anthracene
Concen: 9.29 ppb m
RT: 14.793 min Scan# 2657
Delta R.T. 0.011 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

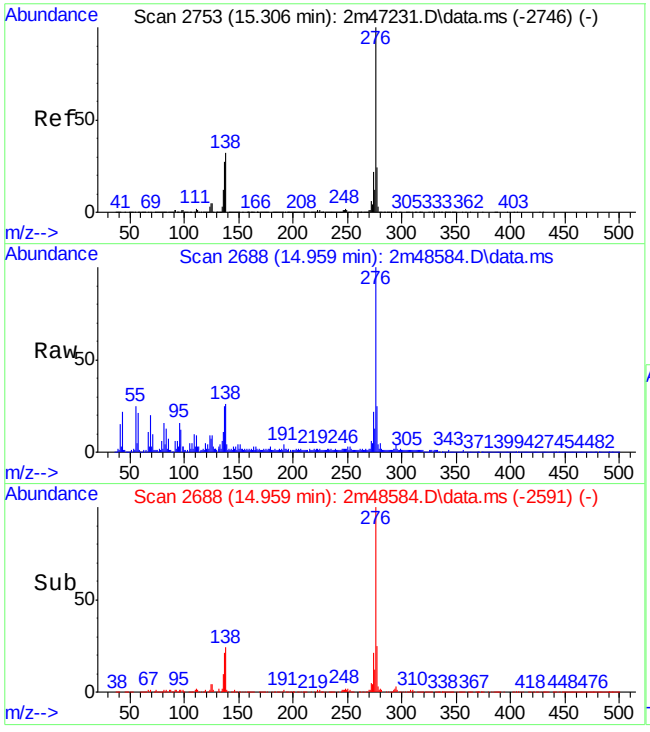
Tgt Ion:278 Resp: 337147

Ion	Ratio	Lower	Upper
278	100		
139	28.4	0.0	52.4
279	28.6	0.0	54.1



9.1.3

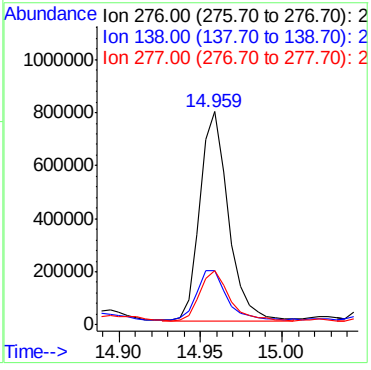
9



#101
Benzo[g,h,i]perylene
Concen: 26.43 ppb
RT: 14.959 min Scan# 2688
Delta R.T. 0.016 min
Lab File: 2m48584.D
Acq: 18 Dec 2012 1:32 pm

Tgt Ion:276 Resp: 974417

Ion	Ratio	Lower	Upper
276	100		
138	23.8	0.1	60.1
277	23.8	0.0	53.2



9.1.3

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48569.D
Acq On : 17 Dec 2012 5:55 pm
Operator : olgaa
Sample : jb22822-4
Misc : op62037,e2m2080,34.1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 18 15:50:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.405	152	171755	40.00	ppb	-0.06
24) Naphthalene-d8	3.940	136	890881	40.00	ppb	-0.06
47) Acenaphthene-d10	6.508	164	603656	40.00	ppb	-0.07
69) Phenanthrene-d10	8.743	188	1027343	40.00	ppb	-0.06
83) Chrysene-d12	12.562	240	1090531	40.00	ppb	-0.04
92) Perylene-d12	13.974	264	939826	40.00	ppb	-0.03
102) 1,4-Dichlorobenzene-d4a	2.405	152	171755	40.00	ppb	-0.06
104) Acenaphthene-d10a	6.508	164	603656	40.00	ppb	-0.07
106) Chrysene-d12a	12.562	240	1090531	40.00	ppb	-0.04
108) Phenanthrene-d10a	8.743	188	1027343	40.00	ppb	-0.06
110) Chrysene-d12b	12.562	240	1090531	40.00	ppb	-0.04

System Monitoring Compounds						
5) 2-Fluorophenol	1.448	112	103762	16.60	ppb	-0.03
Spiked Amount 50.000			Recovery	=	33.20%	
8) Phenol-d5	2.256	99	204835	24.45	ppb	-0.02
Spiked Amount 50.000			Recovery	=	48.90%	
25) Nitrobenzene-d5	3.085	82	183253	19.17	ppb	-0.06
Spiked Amount 50.000			Recovery	=	38.34%	
51) 2-Fluorobiphenyl	5.582	172	509903	25.69	ppb	-0.07
Spiked Amount 50.000			Recovery	=	51.38%	
73) 2,4,6-Tribromophenol	7.770	330	102499	42.46	ppb	-0.06
Spiked Amount 50.000			Recovery	=	84.92%	
85) Terphenyl-d14	11.327	244	944721	42.87	ppb	-0.05
Spiked Amount 50.000			Recovery	=	85.74%	

Target Compounds						Qvalue
38) Naphthalene	3.962	128	399650	16.12	ppb	97
44) 2-Methylnaphthalene	4.962	141	165820	10.91	ppb	96
56) Acenaphthylene	6.272	152	284256	9.75	ppb	99
59) Acenaphthene	6.550	153	312557	16.68	ppb	95
66) Fluorene	7.331	166	492217	24.26	ppb	97
77) Phenanthrene	8.792	178	8200491	260.74	ppb	99
78) Anthracene	8.850	178	1756723	56.35	ppb	94
81) Fluoranthene	10.642	202	9998970	322.28	ppb	98
84) Pyrene	10.958	202	8706353	246.84	ppb	100
88) Benzo[a]anthracene	12.552	228	4375065	130.43	ppb	92
90) Chrysene	12.594	228	4366779	131.32	ppb	96
94) Benzo[b]fluoranthene	13.664	252	4518583m	138.10	ppb	
95) Benzo[k]fluoranthene	13.664	252	1980205m	67.24	ppb	
96) Benzo[a]pyrene	13.932	252	3525340	126.84	ppb	99
97) Indeno[1,2,3-cd]pyrene	14.825	276	2270932	70.37	ppb	96
99) Dibenz[a,h]anthracene	14.830	278	882351m	32.54	ppb	
101) Benzo[g,h,i]perylene	14.996	276	1994556	72.39	ppb	94

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

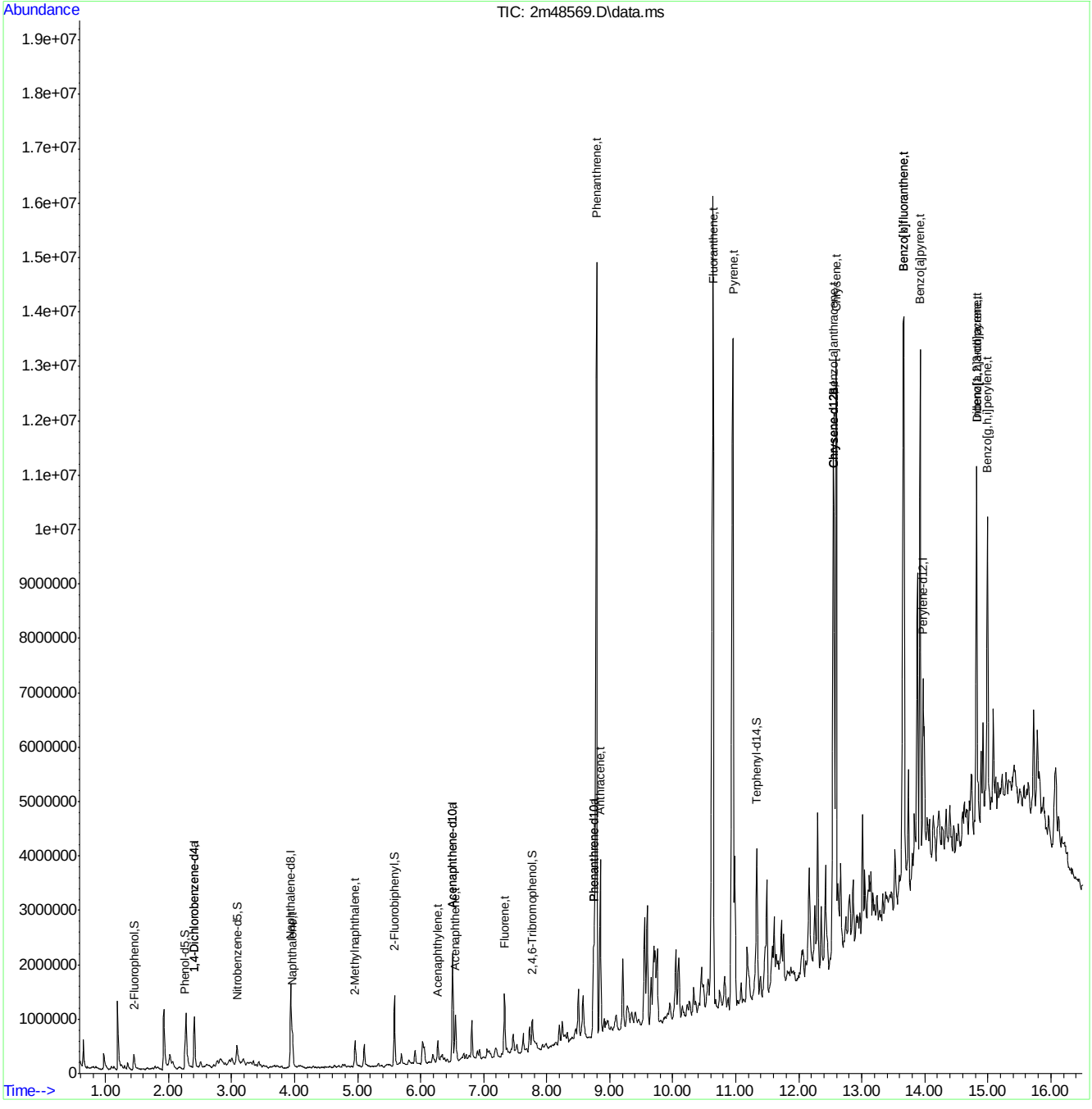
9.1.4

9

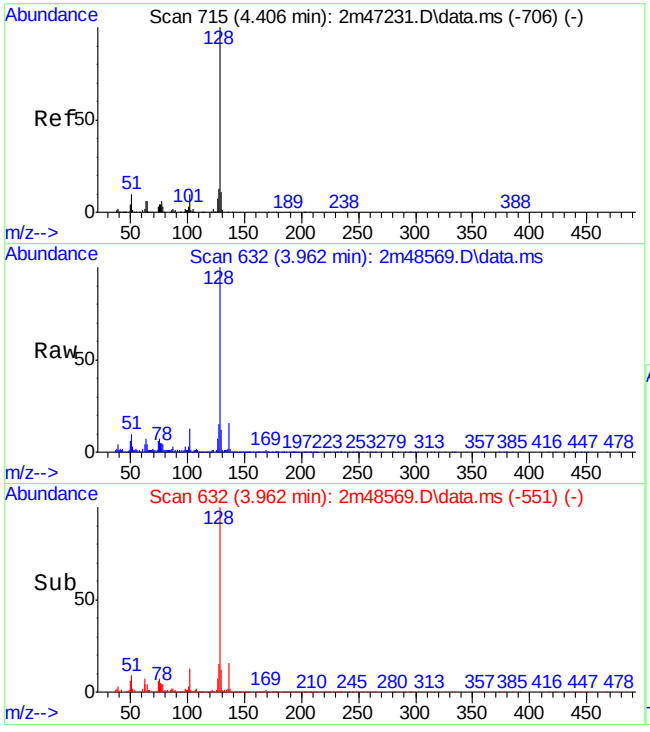
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48569.D
Acq On : 17 Dec 2012 5:55 pm
Operator : olgaa
Sample : jb22822-4
Misc : op62037,e2m2080,34.1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 18 15:50:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration



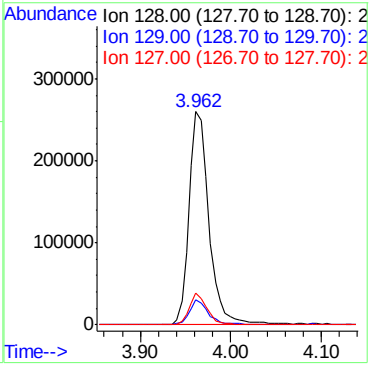
M2M2034.M Tue Dec 18 15:50:58 2012 MS2M Page: 2

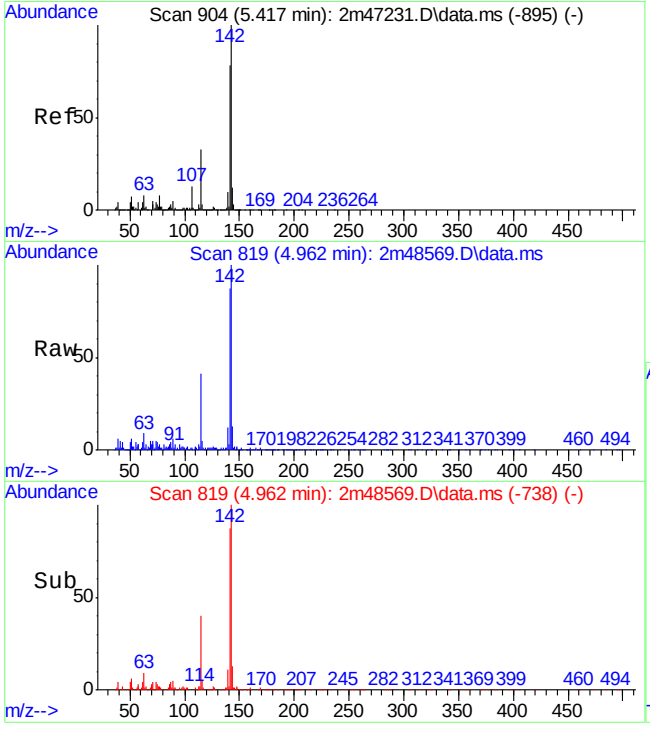


#38
Naphthalene
Concen: 16.12 ppb
RT: 3.962 min Scan# 632
Delta R.T. -0.064 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:128 Resp: 399650

Ion	Ratio	Lower	Upper
128	100		
129	11.5	0.0	40.9
127	14.7	0.0	43.3

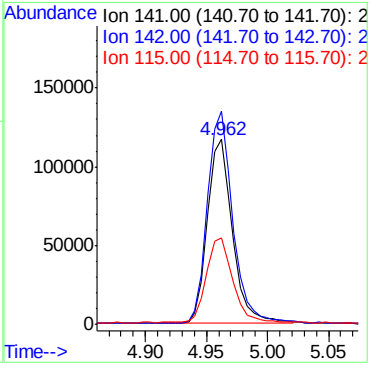




#44
2-Methylnaphthalene
Concen: 10.91 ppb
RT: 4.962 min Scan# 819
Delta R.T. -0.064 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:141 Resp: 165820

Ion	Ratio	Lower	Upper
141	100		
142	115.0	81.7	141.7
115	46.1	12.0	72.0



9.1.4

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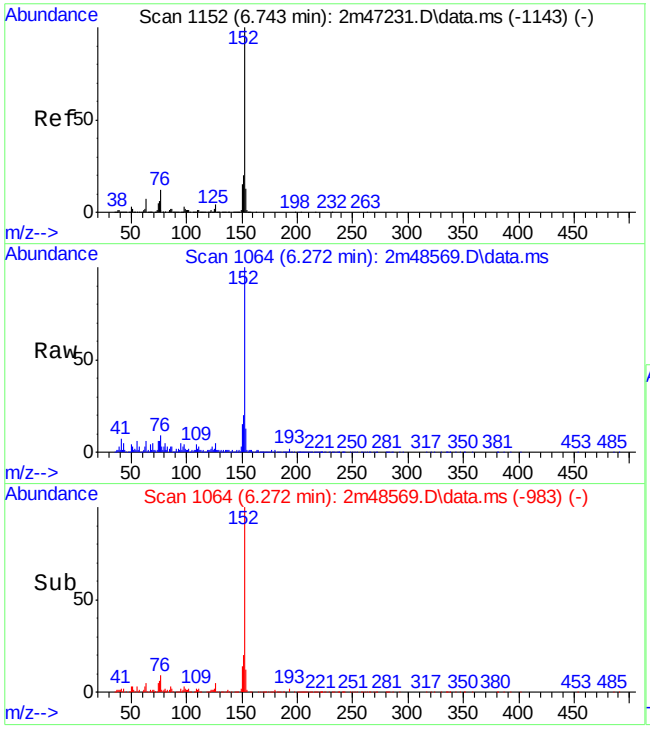
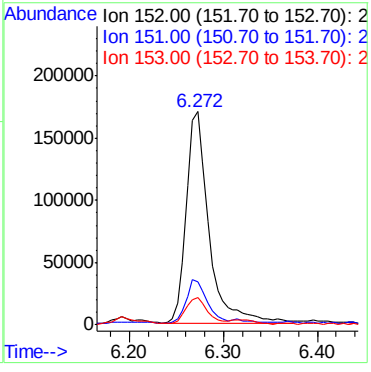
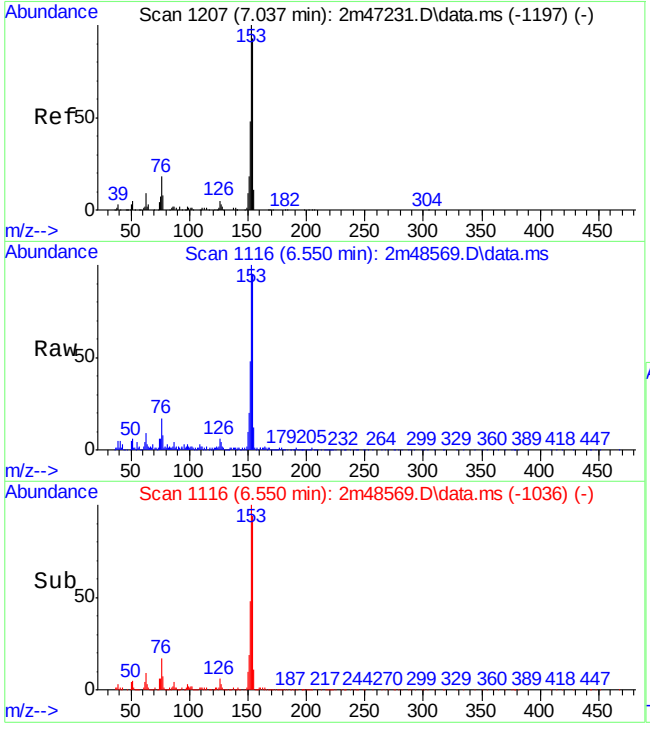


#56
Acenaphthylene
Concen: 9.75 ppb
RT: 6.272 min Scan# 1064
Delta R.T. -0.064 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:152 Resp: 284256

Ion	Ratio	Lower	Upper
152	100		
151	19.5	0.0	49.4
153	12.1	0.0	43.0

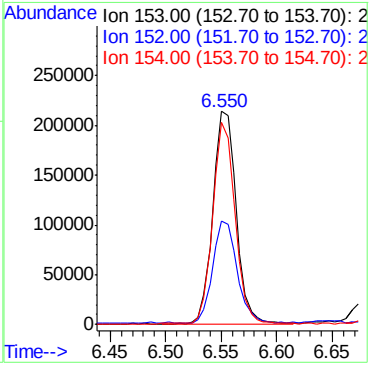




#59
Acenaphthene
Concen: 16.68 ppb
RT: 6.550 min Scan# 1116
Delta R.T. -0.070 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:153 Resp: 312557

Ion	Ratio	Lower	Upper
153	100		
152	47.6	15.8	75.8
154	94.8	59.7	119.7



9.1.4

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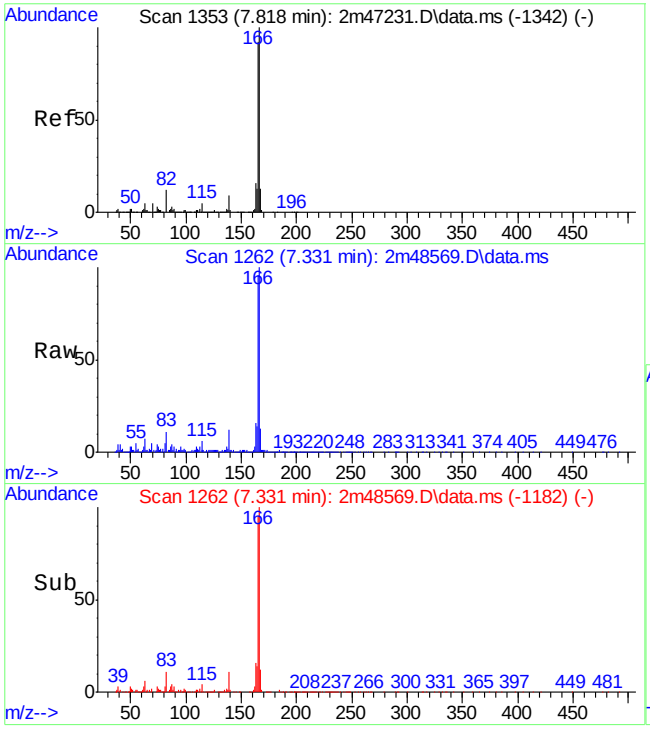
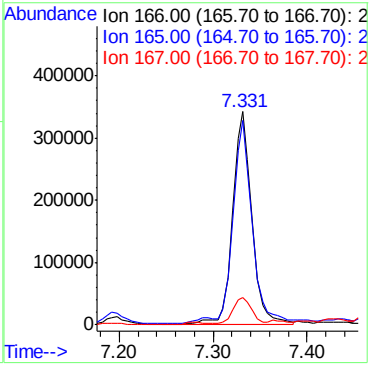
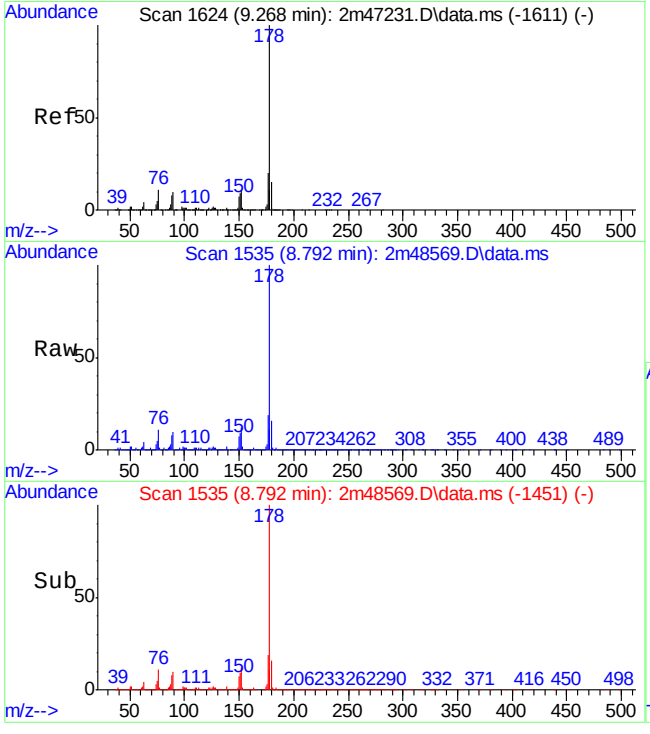


#66
Fluorene
Concen: 24.26 ppb
RT: 7.331 min Scan# 1262
Delta R.T. -0.070 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:166 Resp: 492217

Ion	Ratio	Lower	Upper
166	100		
165	95.1	61.9	121.9
167	12.2	0.0	43.1

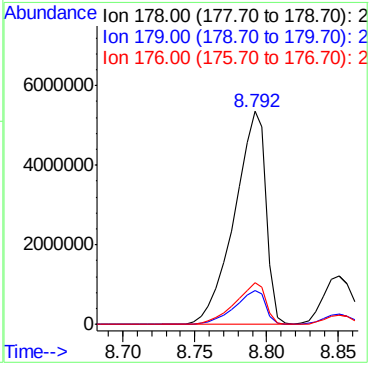




#77
Phenanthrene
Concen: 260.74 ppb
RT: 8.792 min Scan# 1535
Delta R.T. -0.048 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

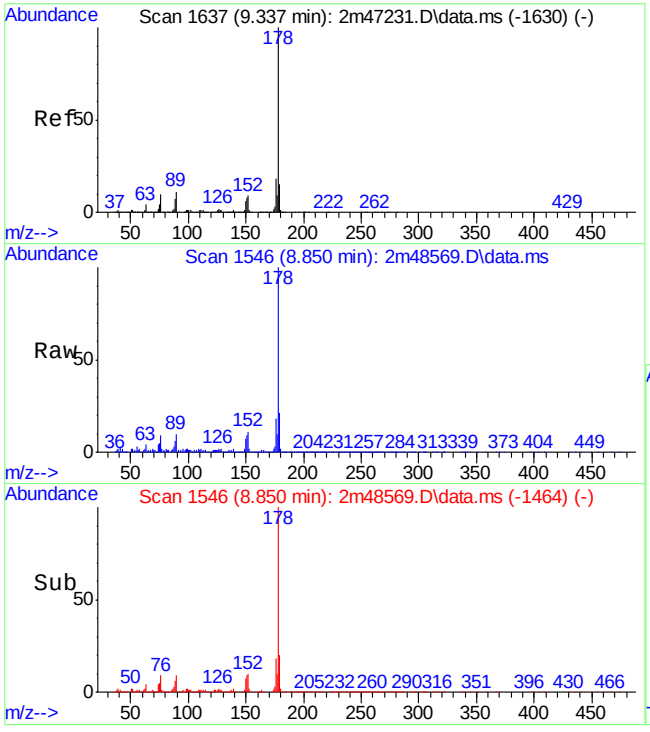
Tgt Ion:178 Resp: 8200491

Ion	Ratio	Lower	Upper
178	100		
179	15.7	0.0	44.9
176	19.4	0.0	49.1



9.1.4

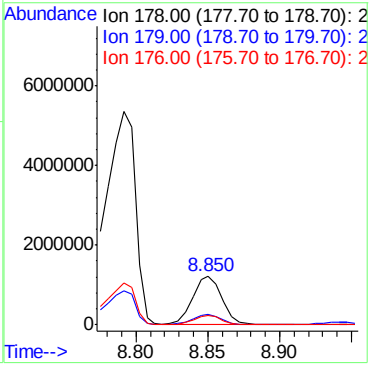
9

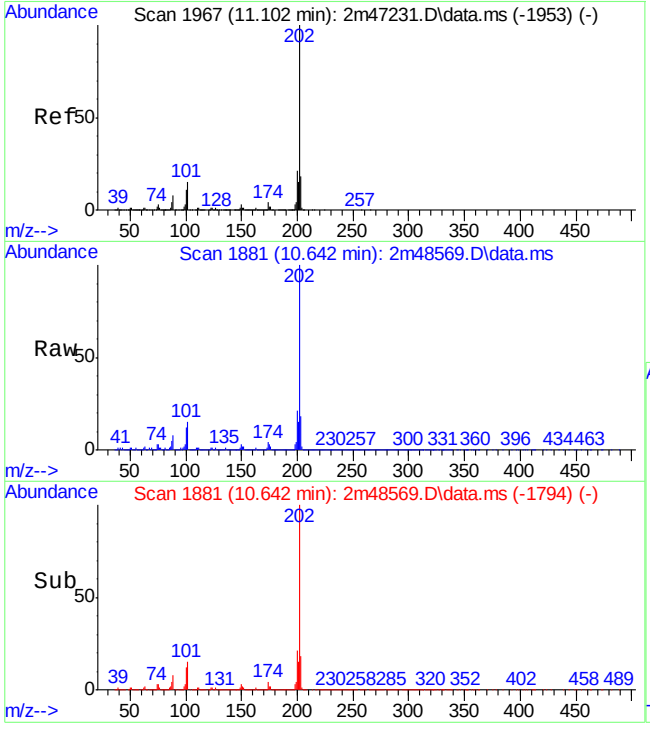


#78
Anthracene
Concen: 56.35 ppb
RT: 8.850 min Scan# 1546
Delta R.T. -0.059 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:178 Resp: 1756723

Ion	Ratio	Lower	Upper
178	100		
179	20.1	0.0	44.3
176	18.2	0.0	48.3

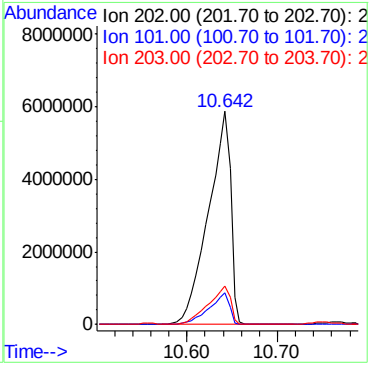


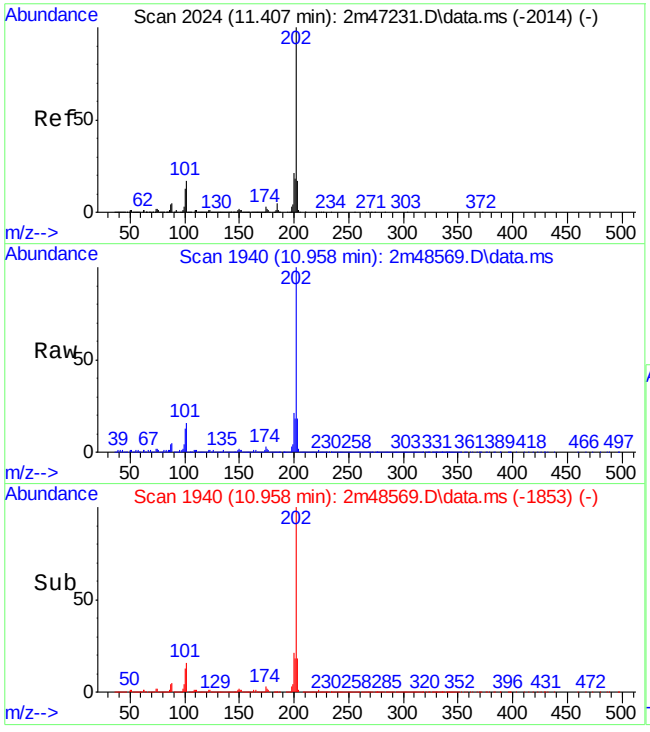


#81
Fluoranthene
Concen: 322.28 ppb
RT: 10.642 min Scan# 1881
Delta R.T. -0.032 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:202 Resp: 9998970

Ion	Ratio	Lower	Upper
202	100		
101	14.9	0.0	43.8
203	18.0	0.0	47.5

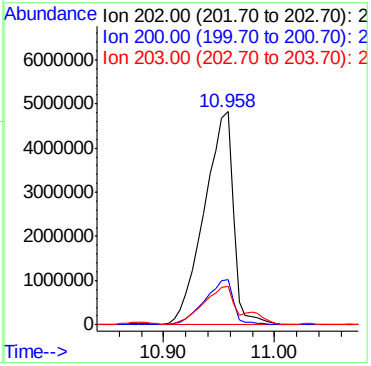


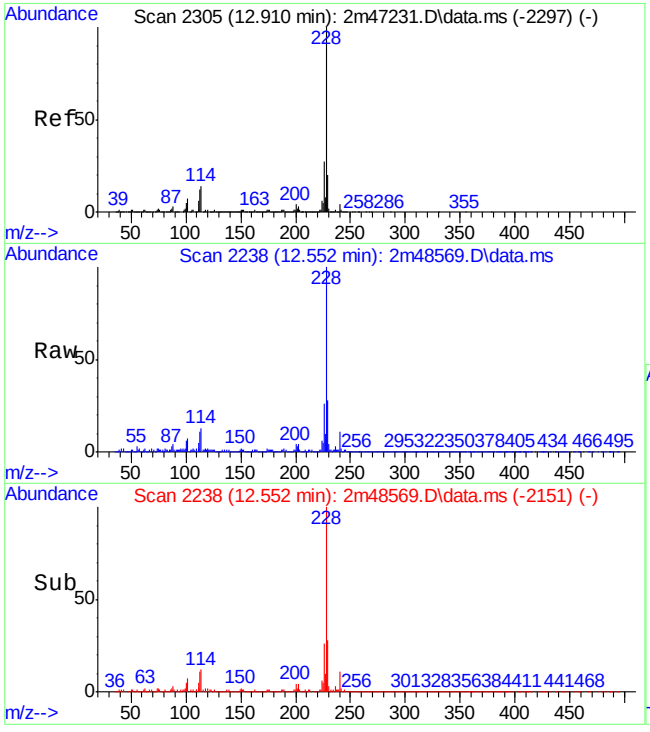


#84
Pyrene
Concen: 246.84 ppb
RT: 10.958 min Scan# 1940
Delta R.T. -0.032 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:202 Resp: 8706353

Ion	Ratio	Lower	Upper
202	100		
200	21.0	0.0	51.3
203	17.7	0.0	47.6

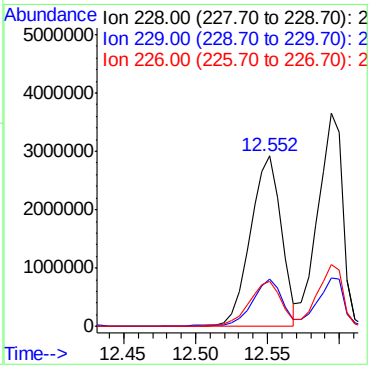


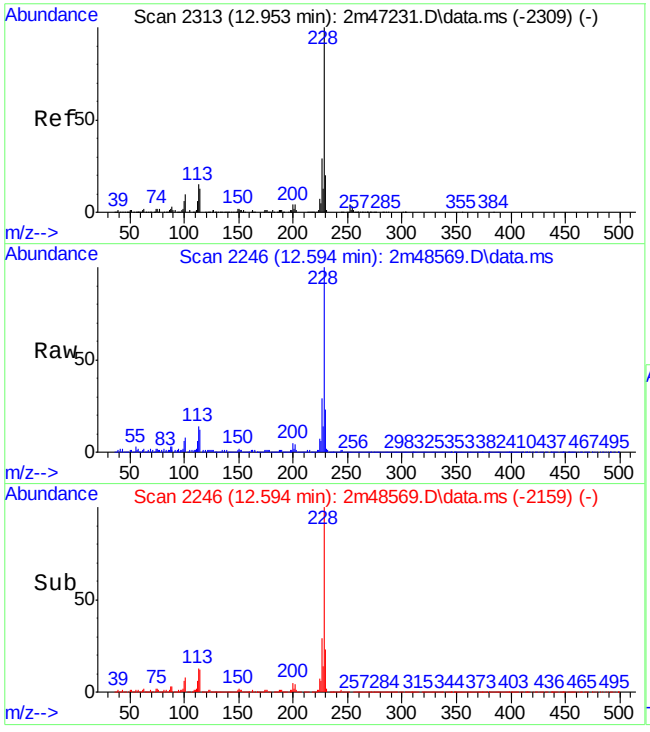


#88
Benzo[a]anthracene
Concen: 130.43 ppb
RT: 12.552 min Scan# 2238
Delta R.T. -0.032 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:228 Resp: 4375065

Ion	Ratio	Lower	Upper
228	100		
229	27.5	0.0	49.3
226	25.9	0.0	56.0

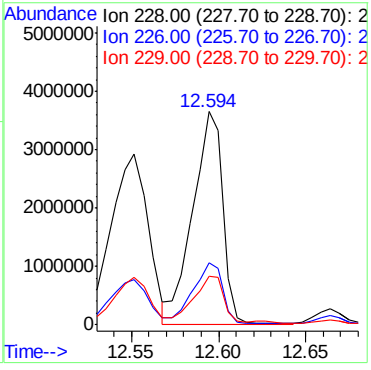


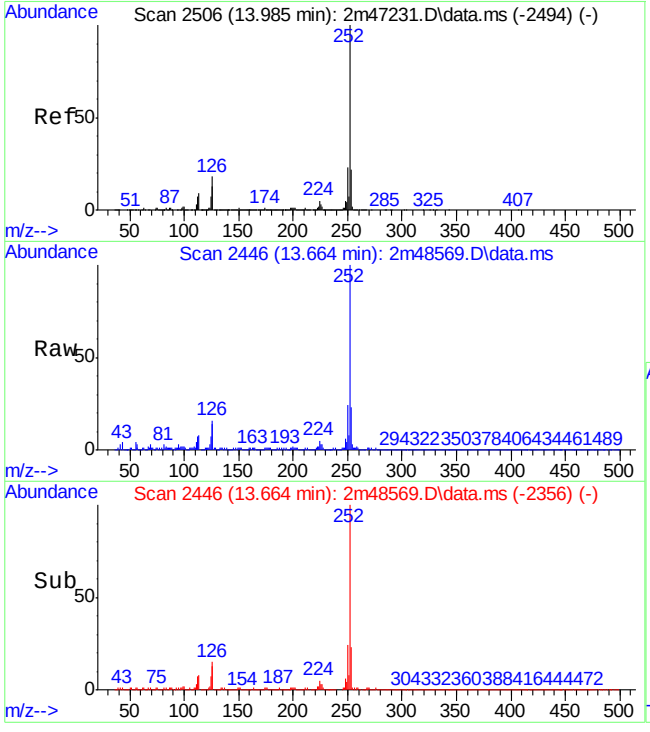


#90
Chrysene
Concen: 131.32 ppb
RT: 12.594 min Scan# 2246
Delta R.T. -0.032 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:228 Resp: 4366779

Ion	Ratio	Lower	Upper
228	100		
226	28.7	0.0	57.7
229	22.1	0.0	49.3

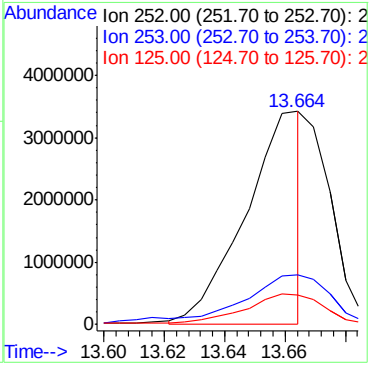


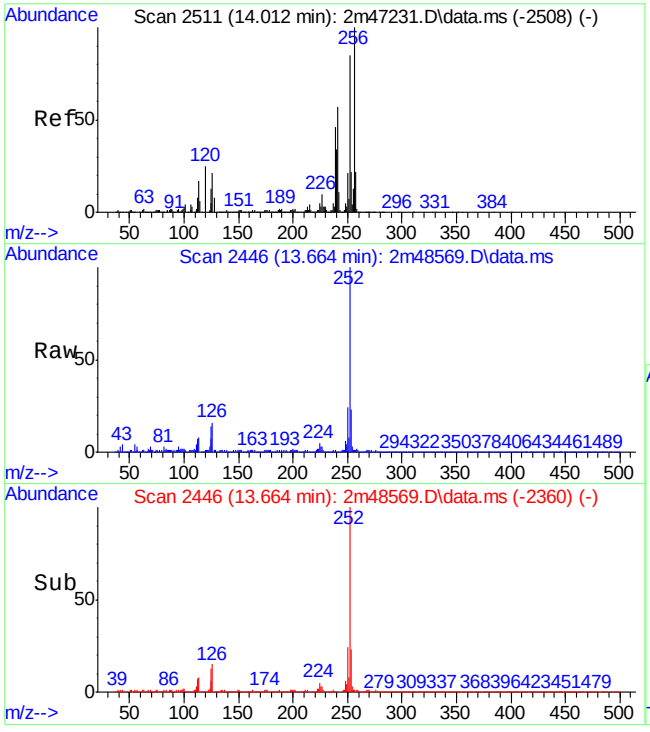


#94
Benzo[b]fluoranthene
Concen: 138.10 ppb m
RT: 13.664 min Scan# 2446
Delta R.T. -0.016 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:252 Resp: 4518583

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	51.6
125	13.8	0.0	40.1

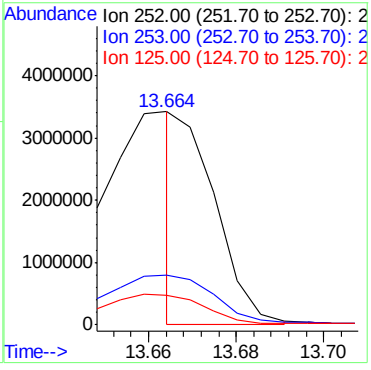


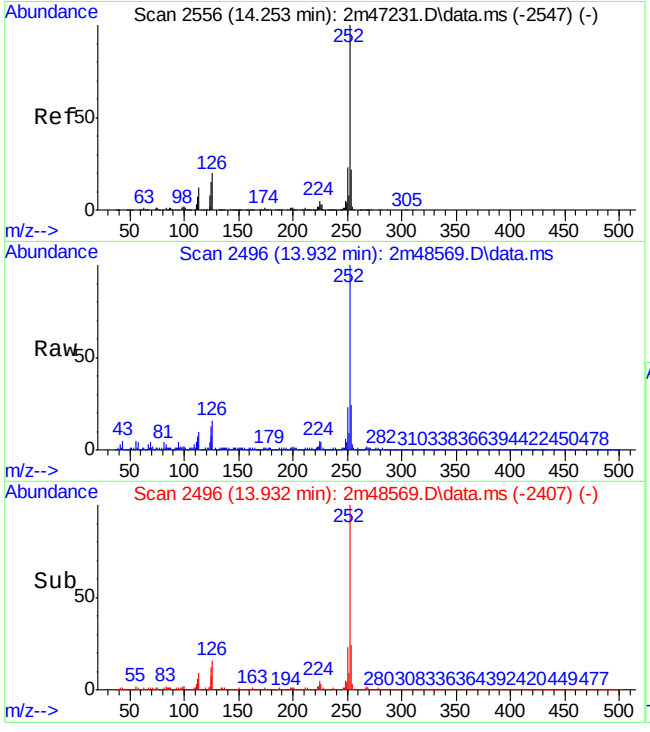


#95
Benzo[k]fluoranthene
Concen: 67.24 ppb m
RT: 13.664 min Scan# 2446
Delta R.T. -0.038 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:252 Resp: 1980205

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	52.7
125	13.8	0.0	42.9

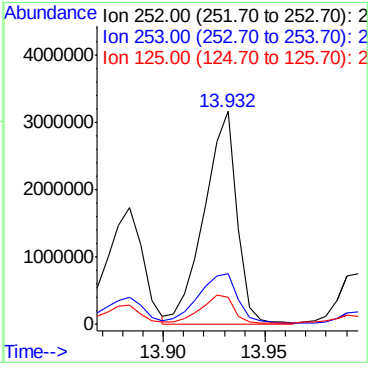




#96
Benzo[a]pyrene
Concen: 126.84 ppb
RT: 13.932 min Scan# 2496
Delta R.T. -0.021 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

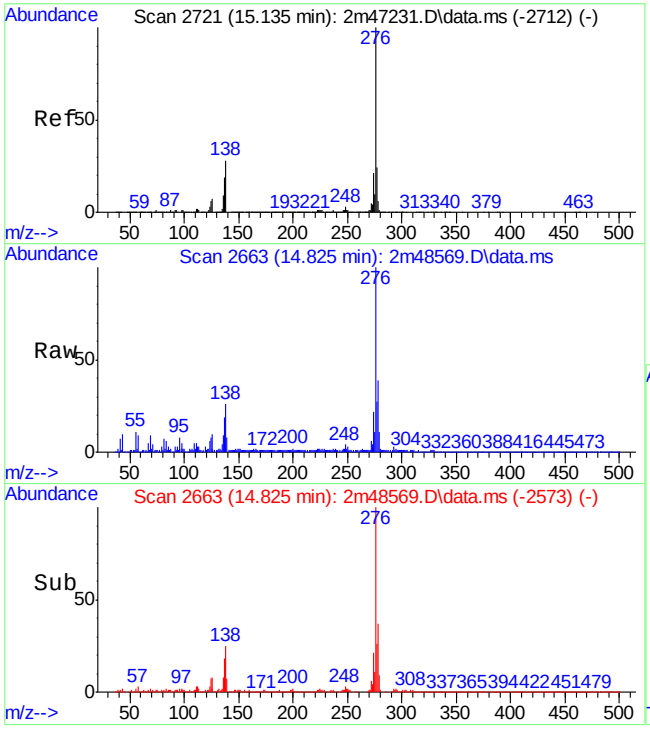
Tgt Ion:252 Resp: 3525340

Ion	Ratio	Lower	Upper
252	100		
253	23.1	0.0	52.4
125	12.2	0.0	42.7



9.1.4

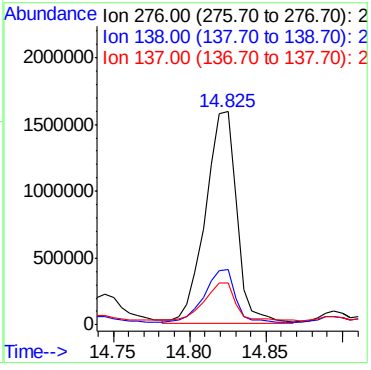
9

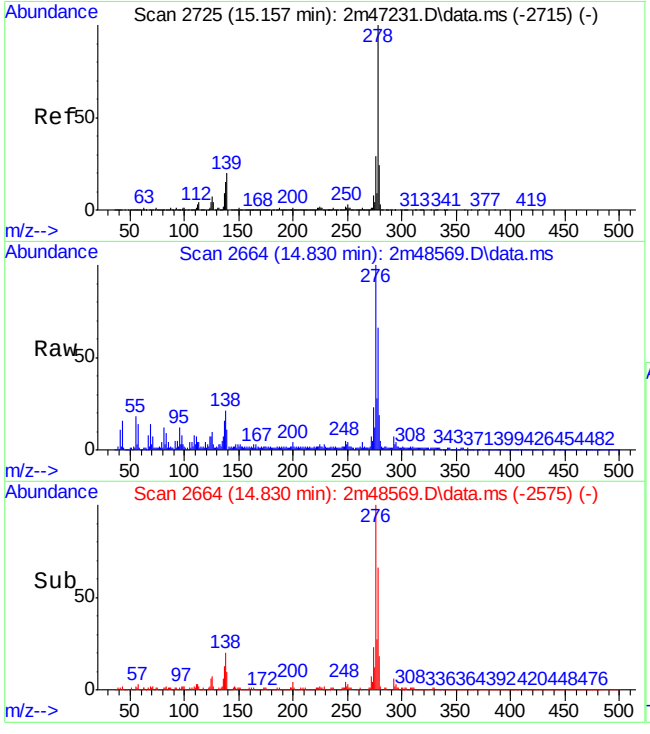


#97
Indeno[1,2,3-cd]pyrene
Concen: 70.37 ppb
RT: 14.825 min Scan# 2663
Delta R.T. -0.016 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:276 Resp: 2270932

Ion	Ratio	Lower	Upper
276	100		
138	24.9	0.0	57.6
137	17.6	0.0	48.9

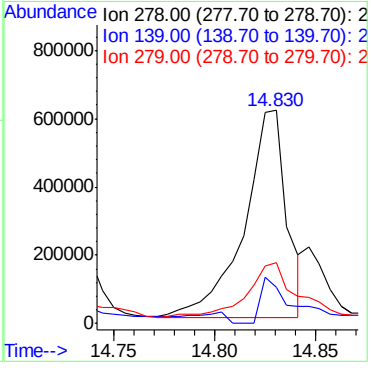




#99
Dibenz[a,h]anthracene
Concen: 32.54 ppb m
RT: 14.830 min Scan# 2664
Delta R.T. -0.021 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

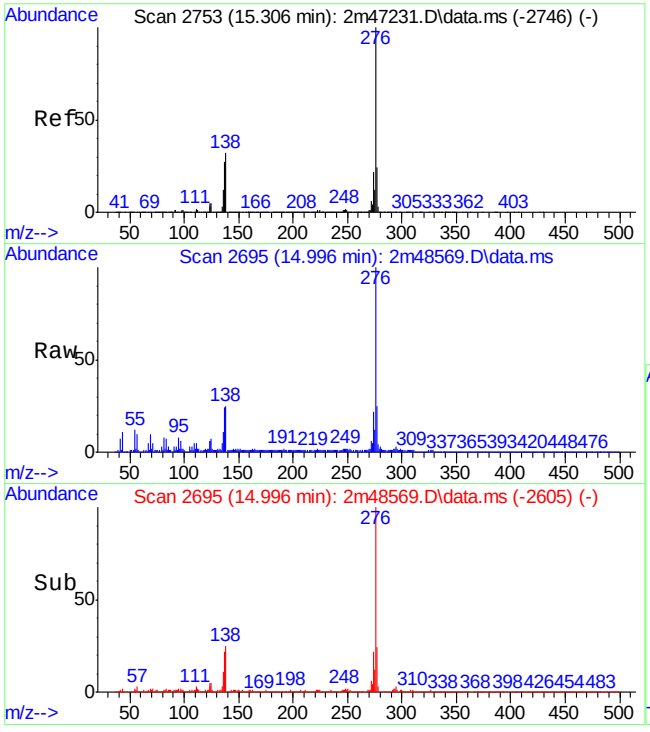
Tgt Ion:278 Resp: 882351

Ion	Ratio	Lower	Upper
278	100		
139	16.8	0.0	52.4
279	28.8	0.0	54.1



9.1.4

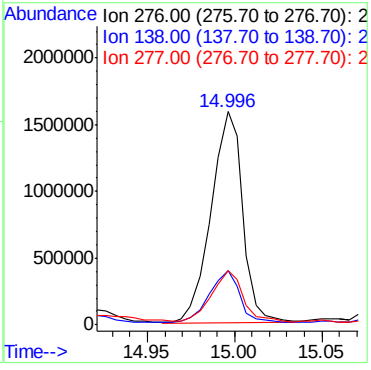
9



#101
Benzo[g,h,i]perylene
Concen: 72.39 ppb
RT: 14.996 min Scan# 2695
Delta R.T. -0.016 min
Lab File: 2m48569.D
Acq: 17 Dec 2012 5:55 pm

Tgt Ion:276 Resp: 1994556

Ion	Ratio	Lower	Upper
276	100		
138	24.6	0.1	60.1
277	24.0	0.0	53.2



9.1.4

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48585.D
Acq On : 18 Dec 2012 1:56 pm
Operator : olgaa
Sample : jb22822-4
Misc : op62037,e2m2081,34.1,,,1,10
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 19 10:32:02 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.389	152	255809	40.00	ppb	0.00
24) Naphthalene-d8	3.914	136	1214822	40.00	ppb	0.00
47) Acenaphthene-d10	6.476	164	754002	40.00	ppb	0.00
69) Phenanthrene-d10	8.706	188	1246874	40.00	ppb	0.00
83) Chrysene-d12	12.520	240	1183190	40.00	ppb	0.00
92) Perylene-d12	13.926	264	940117	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.389	152	255809	40.00	ppb	0.00
104) Acenaphthene-d10a	6.476	164	754002	40.00	ppb	0.00
106) Chrysene-d12a	12.520	240	1183190	40.00	ppb	0.00
108) Phenanthrene-d10a	8.706	188	1246874	40.00	ppb	0.00
110) Chrysene-d12b	12.520	240	1183190	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.459	112	15268	1.64	ppb	0.03
Spiked Amount 50.000			Recovery	=	3.28%	
8) Phenol-d5	2.261	99	22729	1.82	ppb	0.04
Spiked Amount 50.000			Recovery	=	3.64%	
25) Nitrobenzene-d5	3.095	82	19820	1.52	ppb	0.03
Spiked Amount 50.000			Recovery	=	3.04%	
51) 2-Fluorobiphenyl	5.561	172	59196	2.39	ppb	0.00
Spiked Amount 50.000			Recovery	=	4.78%	
73) 2,4,6-Tribromophenol	7.749	330	9754	3.33	ppb	0.01
Spiked Amount 50.000			Recovery	=	6.66%	
85) Terphenyl-d14	11.284	244	97291	4.07	ppb	0.00
Spiked Amount 50.000			Recovery	=	8.14%	

Target Compounds						Qvalue
38) Naphthalene	3.940	128	50771	1.50	ppb	97
44) 2-Methylnaphthalene	4.941	141	19203	0.93	ppb	91
56) Acenaphthylene	6.246	152	31222	0.86	ppb	96
59) Acenaphthene	6.519	153	37121	1.59	ppb	93
66) Fluorene	7.299	166	52426	2.07	ppb	96
77) Phenanthrene	8.738	178	817415	21.41	ppb	99
78) Anthracene	8.808	178	181788	4.80	ppb	96
81) Fluoranthene	10.573	202	956136	25.39	ppb	96
84) Pyrene	10.888	202	831197	21.72	ppb	98
88) Benzo[a]anthracene	12.504	228	437928	12.03	ppb	95
90) Chrysene	12.546	228	404484	11.21	ppb	97
94) Benzo[b]fluoranthene	13.605	252	326585m	9.98	ppb	
95) Benzo[k]fluoranthene	13.611	252	218249m	7.41	ppb	
96) Benzo[a]pyrene	13.878	252	285559	10.27	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.771	276	168493	5.22	ppb	93
99) Dibenz[a,h]anthracene	14.777	278	66823m	2.46	ppb	
101) Benzo[g,h,i]perylene	14.943	276	153162	5.56	ppb	90

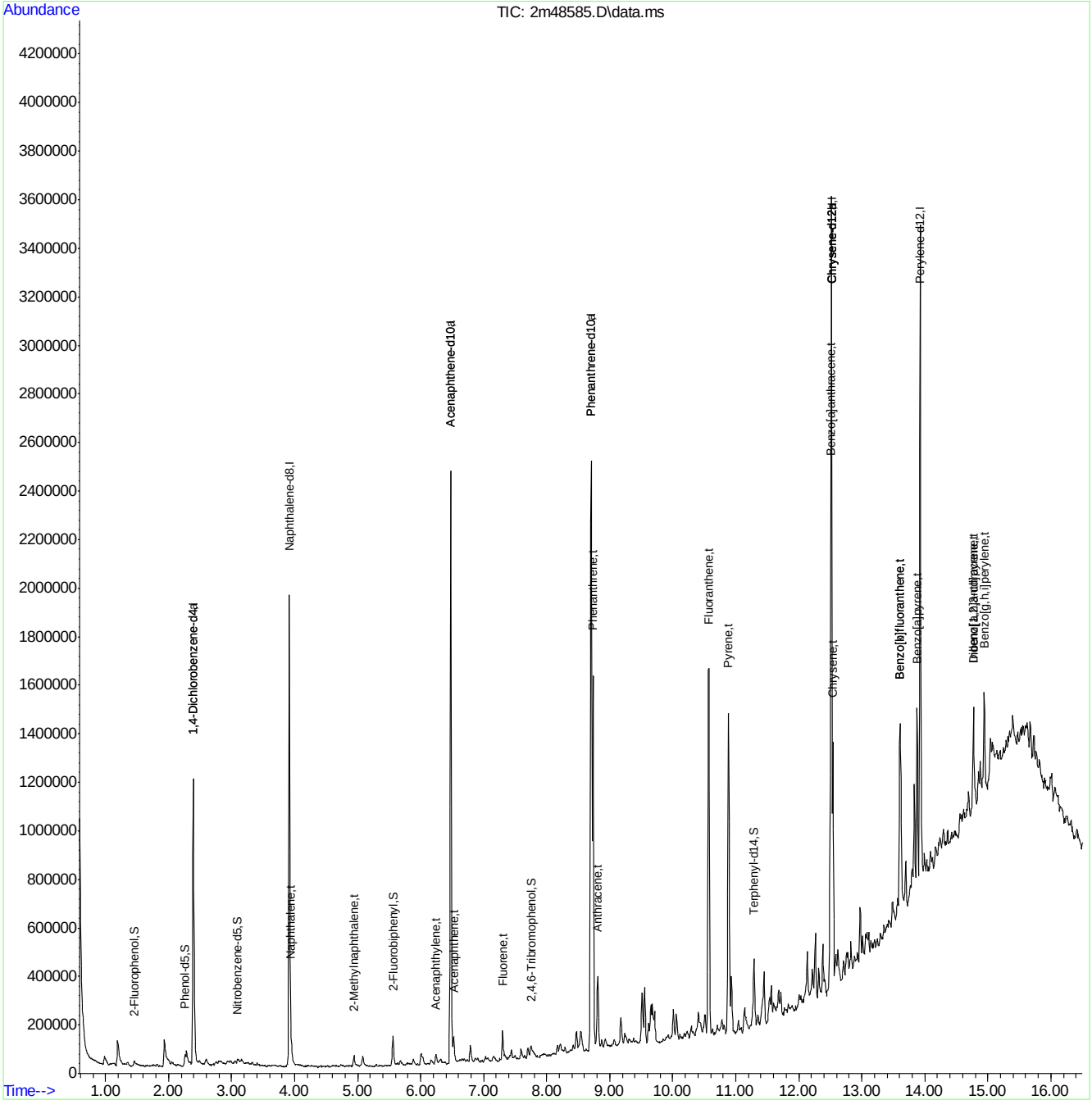
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.5
9

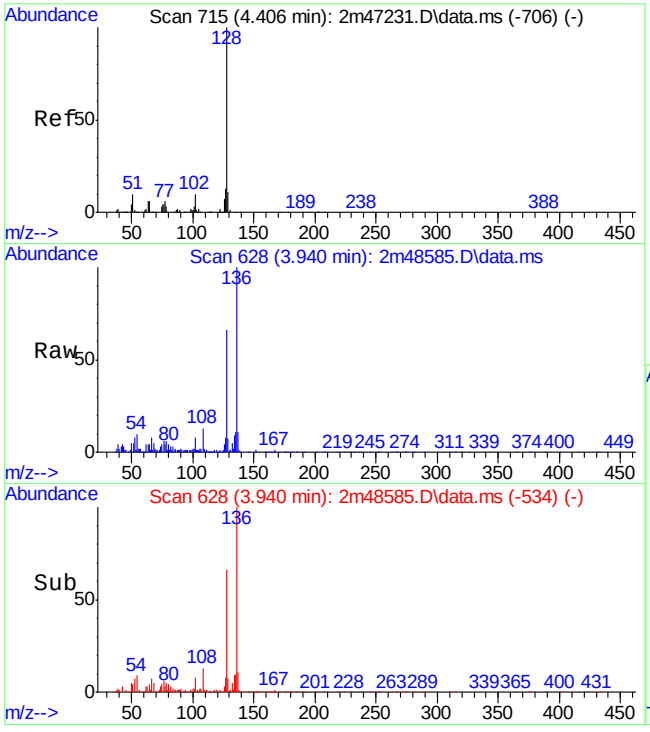
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48585.D
Acq On : 18 Dec 2012 1:56 pm
Operator : olgaa
Sample : jb22822-4
Misc : op62037,e2m2081,34.1,,,1,10
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 19 10:32:02 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration



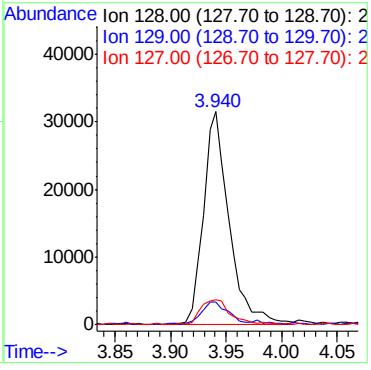
M2M2034.M Wed Dec 19 10:32:13 2012 MS2M Page: 2

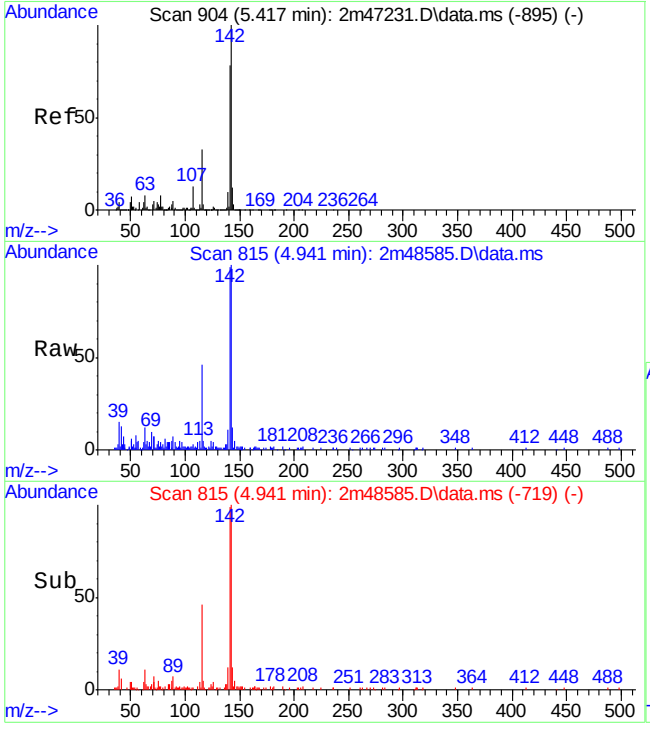


#38
Naphthalene
Concen: 1.50 ppb
RT: 3.940 min Scan# 628
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:128 Resp: 50771

Ion	Ratio	Lower	Upper
128	100		
129	10.1	0.0	40.9
127	11.9	0.0	43.3

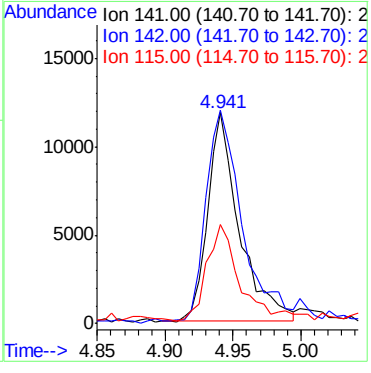


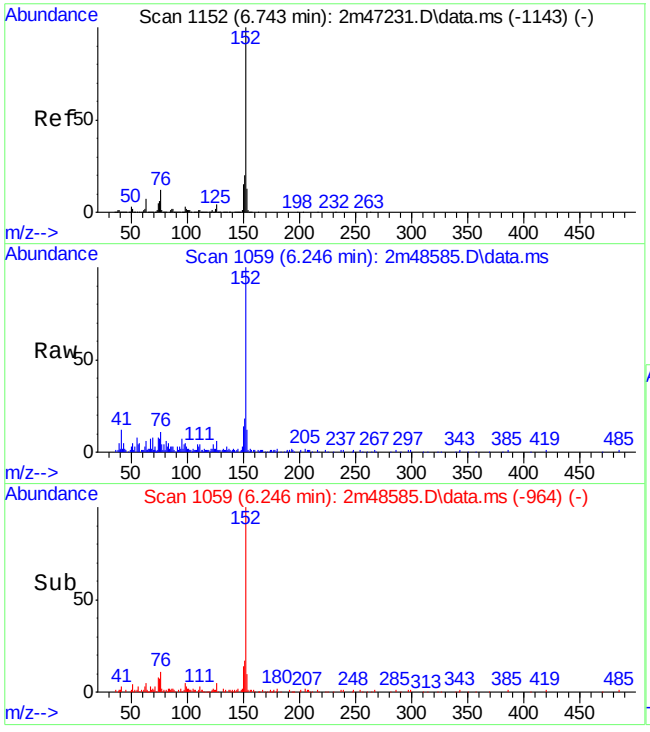


#44
2-Methylnaphthalene
Concen: 0.93 ppb
RT: 4.941 min Scan# 815
Delta R.T. 0.011 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:141 Resp: 19203

Ion	Ratio	Lower	Upper
141	100		
142	100.8	81.7	141.7
115	45.1	12.0	72.0

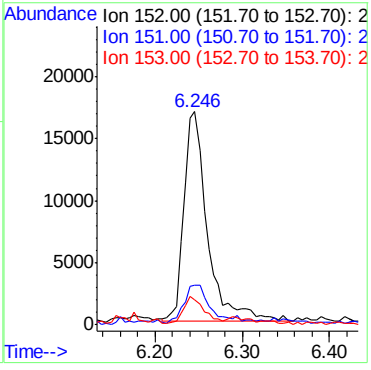


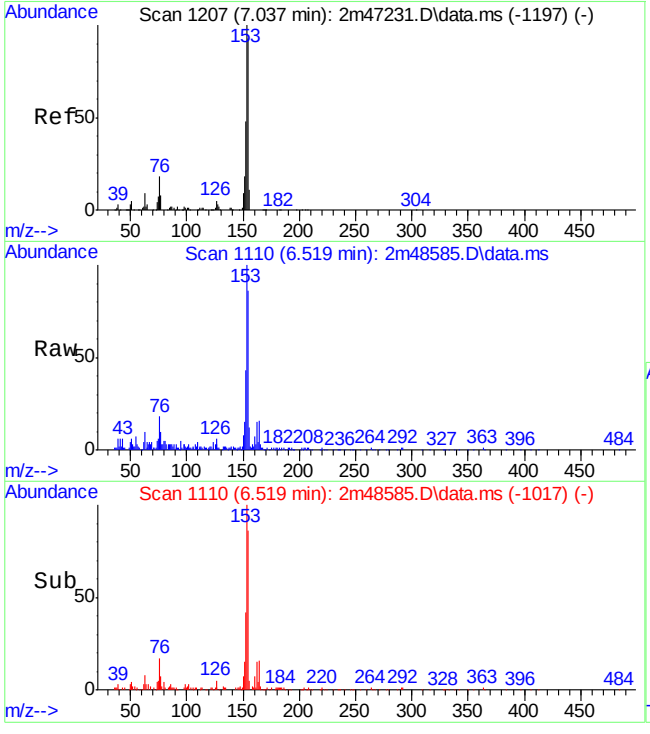


#56
Acenaphthylene
Concen: 0.86 ppb
RT: 6.246 min Scan# 1059
Delta R.T. 0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:152 Resp: 31222

Ion	Ratio	Lower	Upper
152	100		
151	17.4	0.0	49.4
153	11.5	0.0	43.0

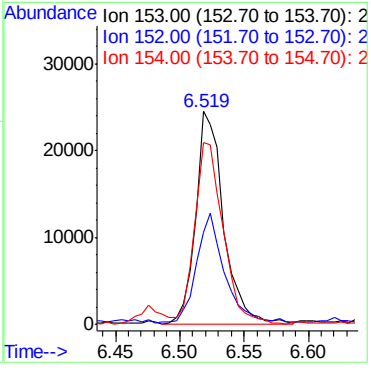




#59
Acenaphthene
Concen: 1.59 ppb
RT: 6.519 min Scan# 1110
Delta R.T. -0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

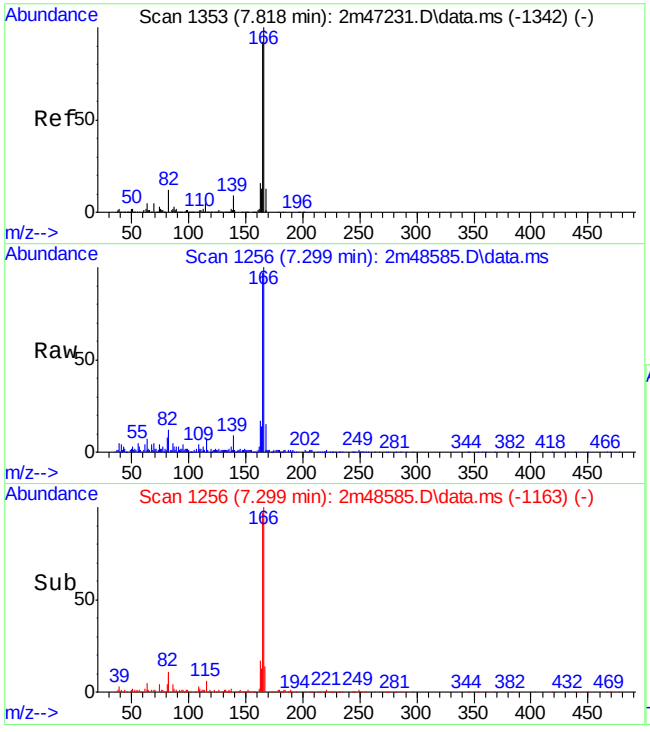
Tgt Ion:153 Resp: 37121

Ion	Ratio	Lower	Upper
153	100		
152	42.1	15.8	75.8
154	82.7	59.7	119.7



9.1.5

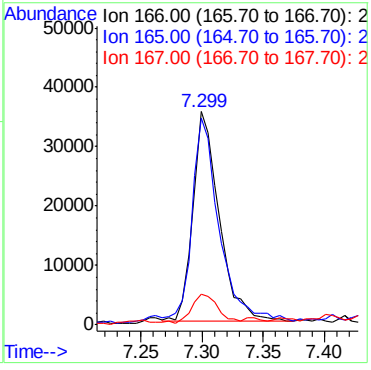
9

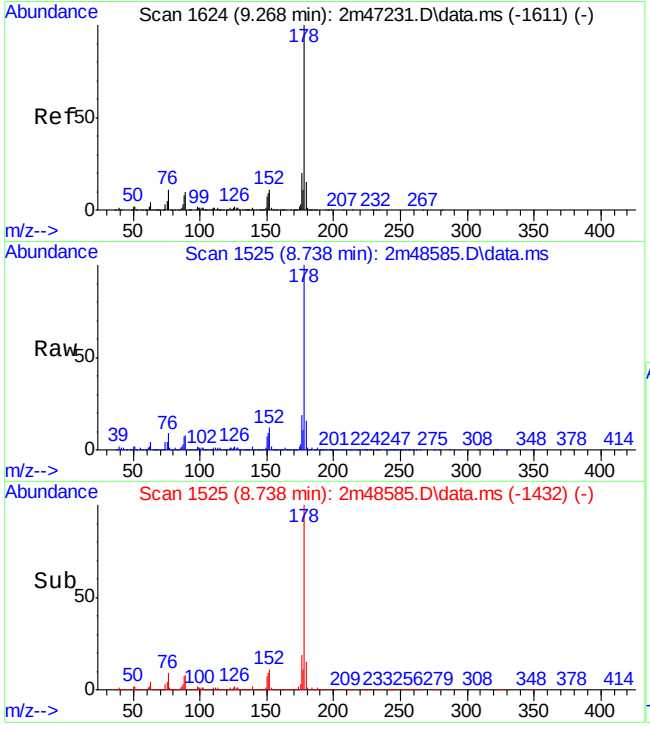


#66
Fluorene
Concen: 2.07 ppb
RT: 7.299 min Scan# 1256
Delta R.T. -0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:166 Resp: 52426

Ion	Ratio	Lower	Upper
166	100		
165	96.3	61.9	121.9
167	13.1	0.0	43.1

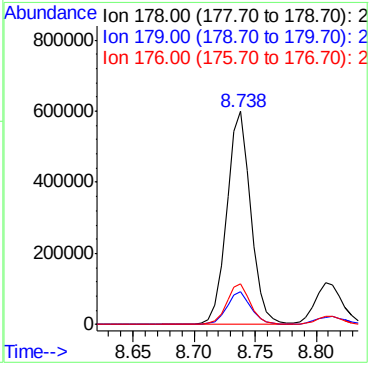




#77
Phenanthrene
Concen: 21.41 ppb
RT: 8.738 min Scan# 1525
Delta R.T. -0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

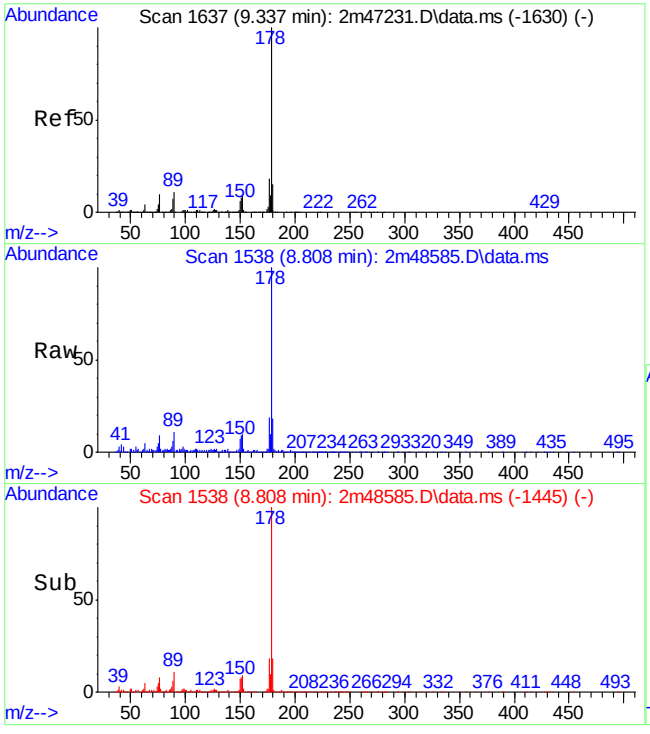
Tgt Ion:178 Resp: 817415

Ion	Ratio	Lower	Upper
178	100		
179	15.5	0.0	44.9
176	19.3	0.0	49.1



9.1.5

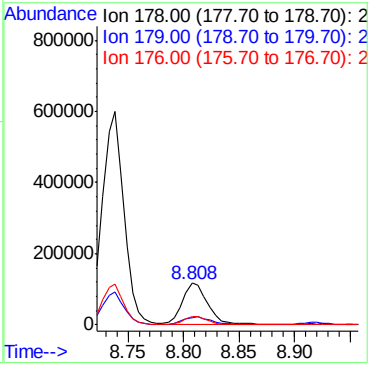
9

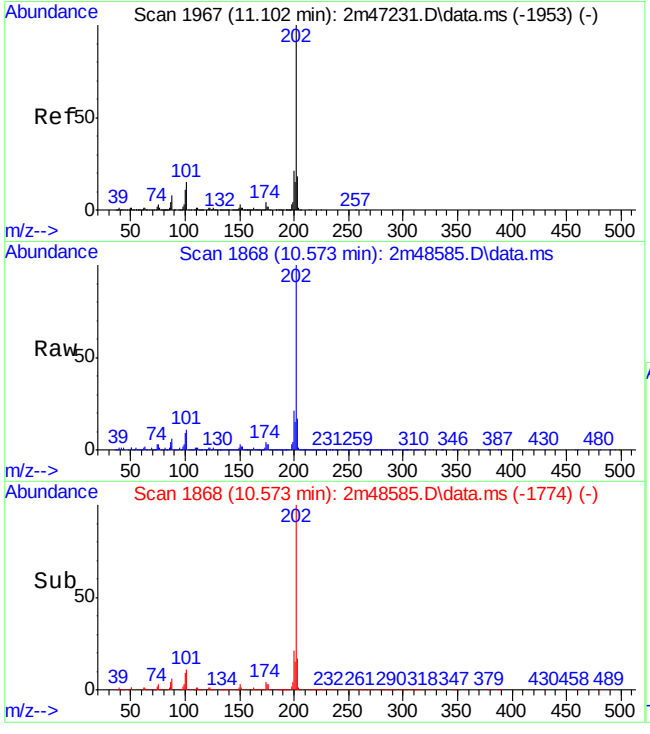


#78
Anthracene
Concen: 4.80 ppb
RT: 8.808 min Scan# 1538
Delta R.T. -0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:178 Resp: 181788

Ion	Ratio	Lower	Upper
178	100		
179	17.3	0.0	44.3
176	18.5	0.0	48.3

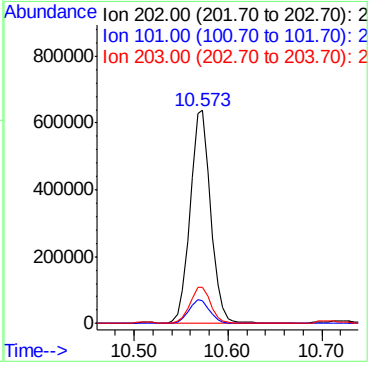


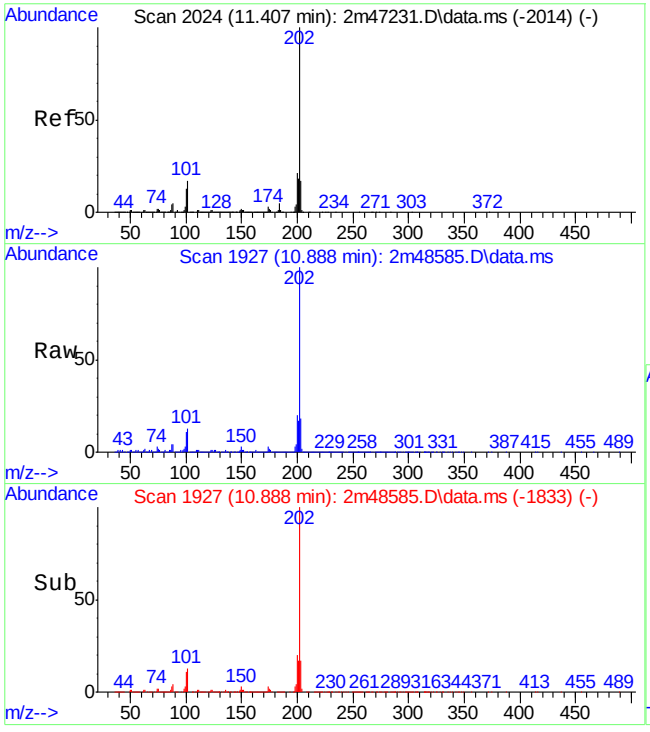


#81
Fluoranthene
Concen: 25.39 ppb
RT: 10.573 min Scan# 1868
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:202 Resp: 956136

Ion	Ratio	Lower	Upper
202	100		
101	10.7	0.0	43.8
203	17.0	0.0	47.5

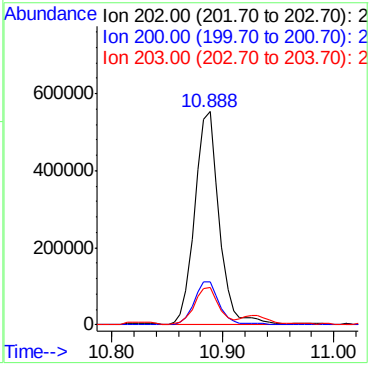


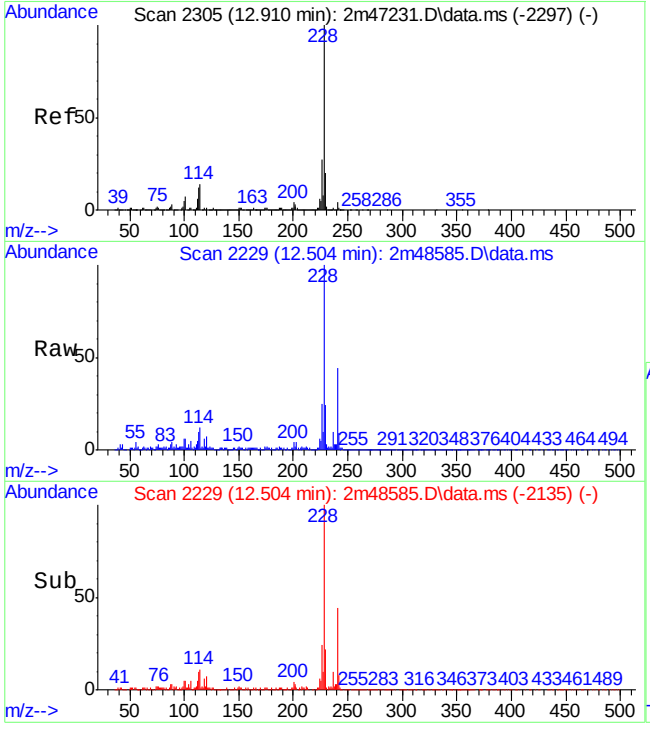


#84
Pyrene
Concen: 21.72 ppb
RT: 10.888 min Scan# 1927
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:202 Resp: 831197

Ion	Ratio	Lower	Upper
202	100		
200	20.1	0.0	51.3
203	17.3	0.0	47.6

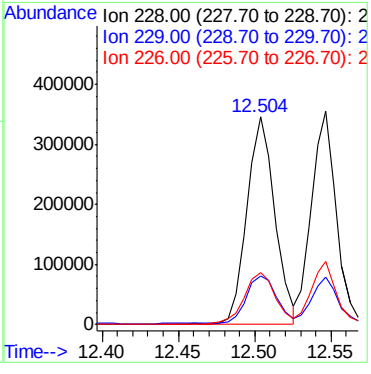




#88
Benzo[a]anthracene
Concen: 12.03 ppb
RT: 12.504 min Scan# 2229
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

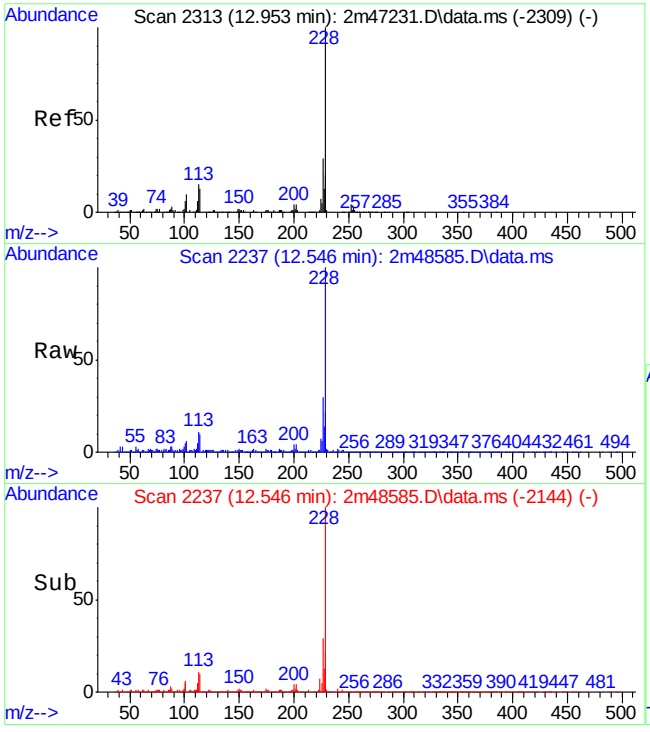
Tgt Ion:228 Resp: 437928

Ion	Ratio	Lower	Upper
228	100		
229	22.7	0.0	49.3
226	24.5	0.0	56.0



9.1.5

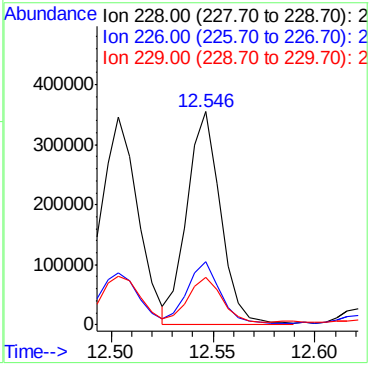
9

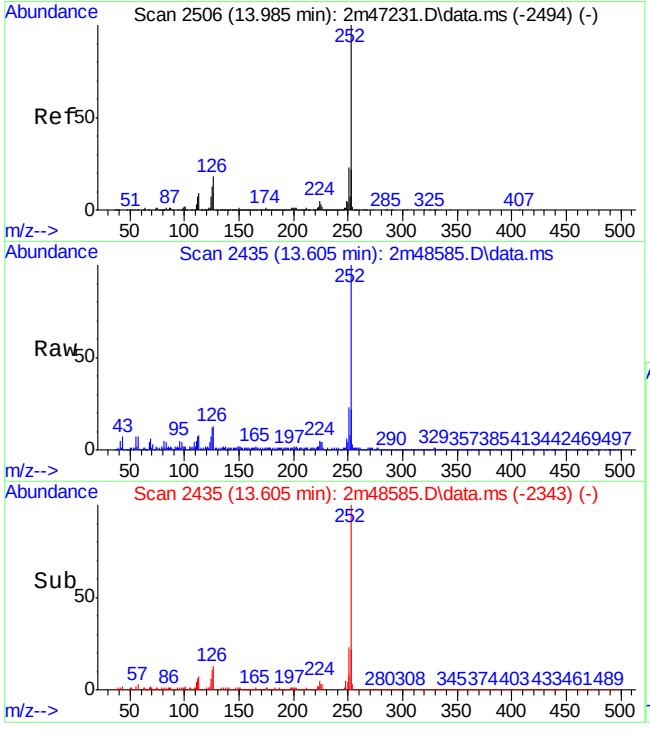


#90
Chrysene
Concen: 11.21 ppb
RT: 12.546 min Scan# 2237
Delta R.T. -0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:228 Resp: 404484

Ion	Ratio	Lower	Upper
228	100		
226	29.3	0.0	57.7
229	21.0	0.0	49.3

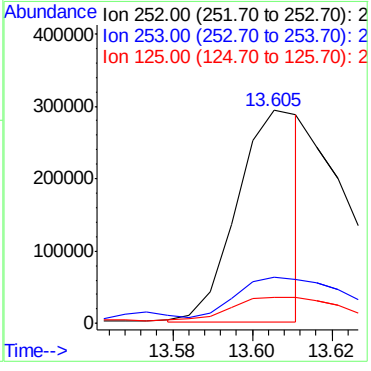


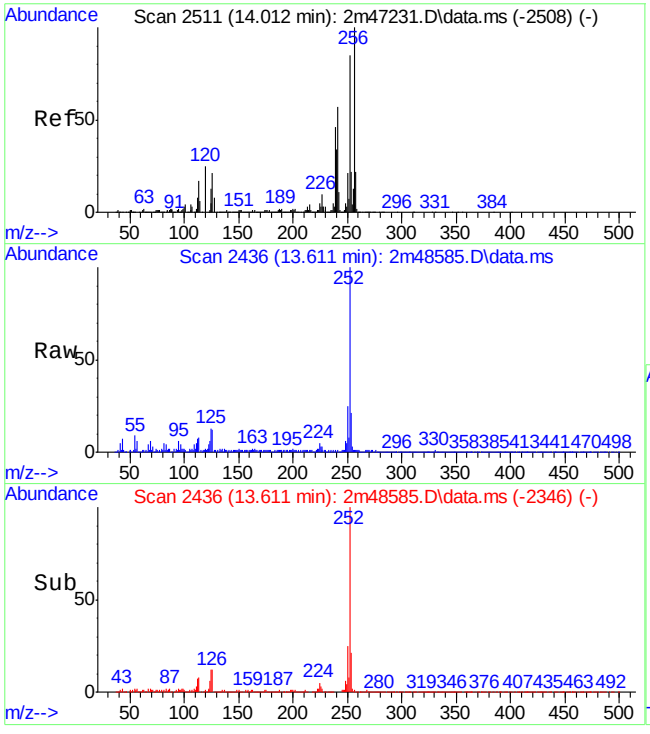


#94
Benzo[b]fluoranthene
Concen: 9.98 ppb m
RT: 13.605 min Scan# 2435
Delta R.T. -0.011 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:252 Resp: 326585

Ion	Ratio	Lower	Upper
252	100		
253	21.8	0.0	51.6
125	12.5	0.0	40.1

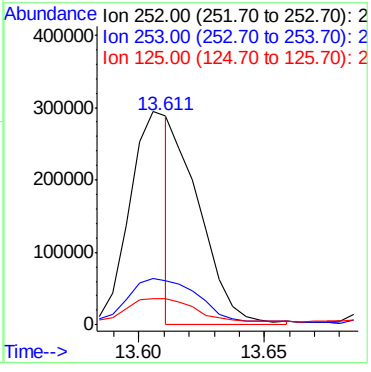


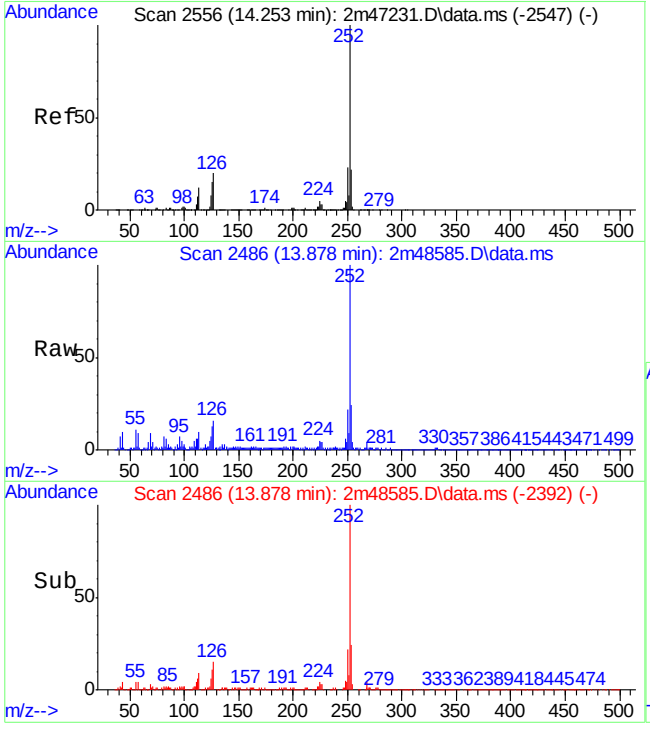


#95
Benzo[k]fluoranthene
Concen: 7.41 ppb m
RT: 13.611 min Scan# 2436
Delta R.T. -0.021 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:252 Resp: 218249

Ion	Ratio	Lower	Upper
252	100		
253	21.0	0.0	52.7
125	12.7	0.0	42.9

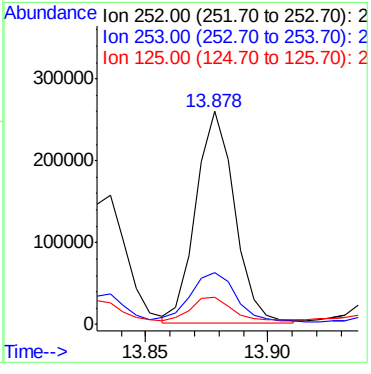


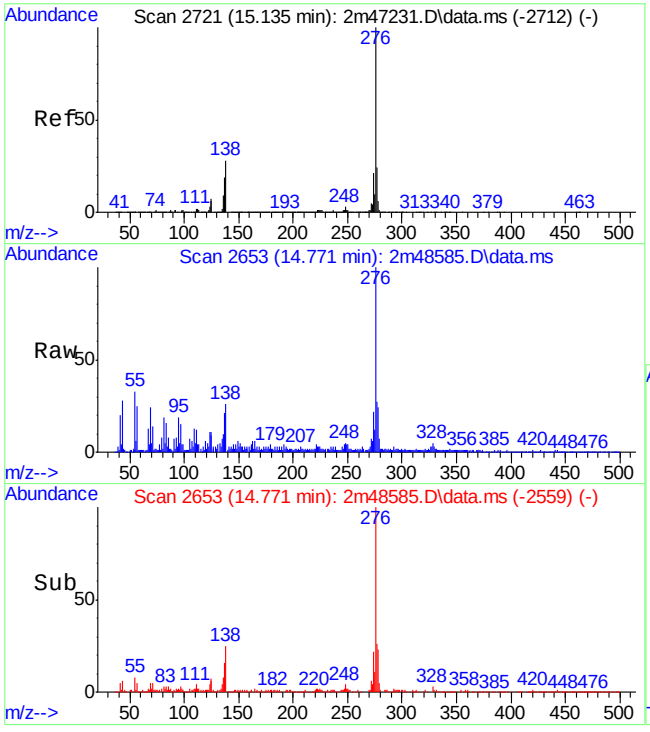


#96
Benzo[a]pyrene
Concen: 10.27 ppb
RT: 13.878 min Scan# 2486
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:252 Resp: 285559

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	52.4
125	11.2	0.0	42.7

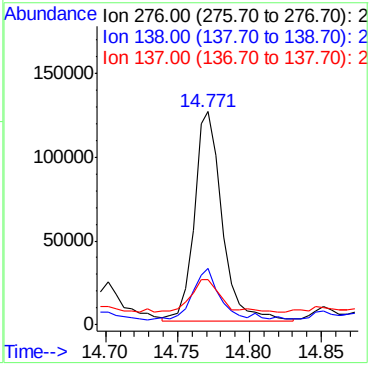


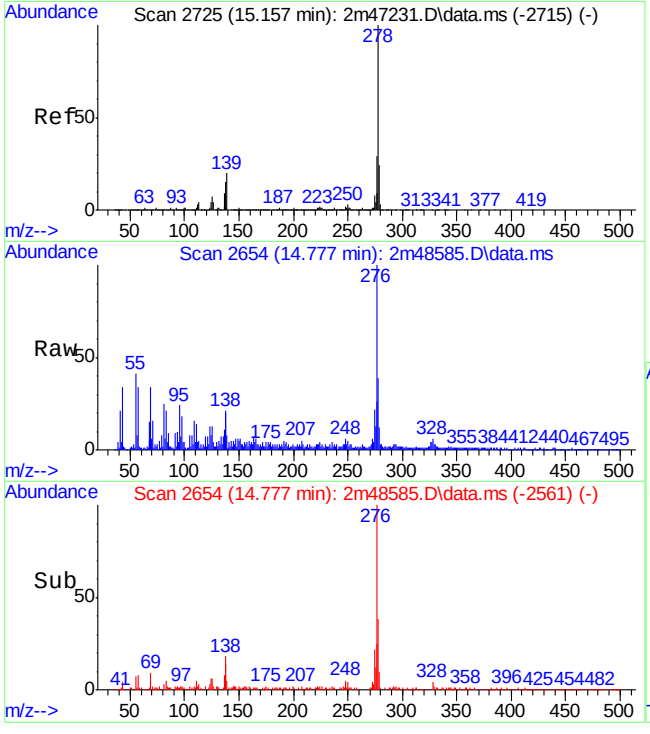


#97
Indeno[1,2,3-cd]pyrene
Concen: 5.22 ppb
RT: 14.771 min Scan# 2653
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:276 Resp: 168493

Ion	Ratio	Lower	Upper
276	100		
138	24.0	0.0	57.6
137	15.2	0.0	48.9

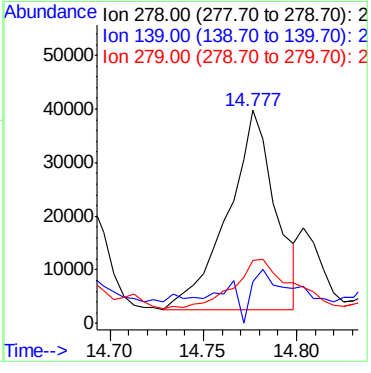


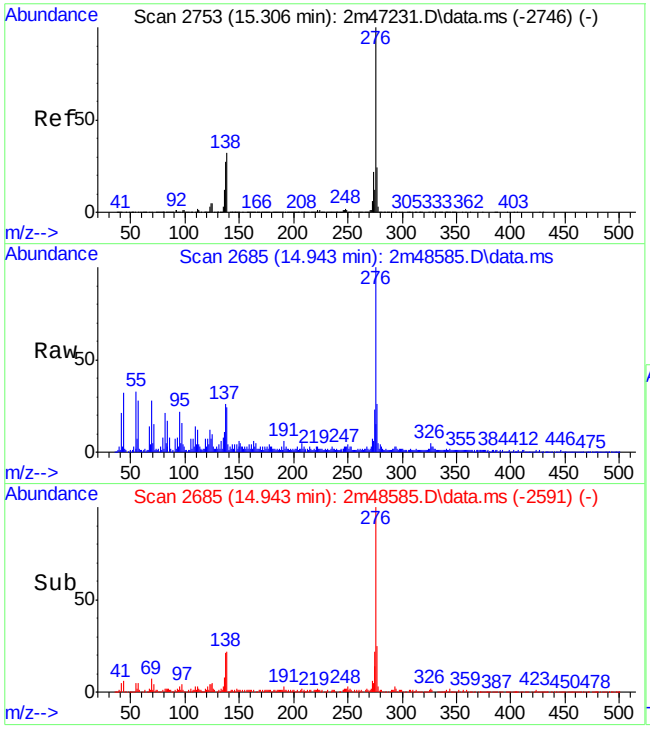


#99
Dibenz[a,h]anthracene
Concen: 2.46 ppb m
RT: 14.777 min Scan# 2654
Delta R.T. -0.005 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:278 Resp: 66823

Ion	Ratio	Lower	Upper
278	100		
139	19.5	0.0	52.4
279	29.6	0.0	54.1

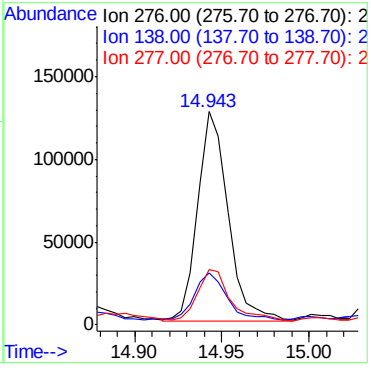




#101
Benzo[g,h,i]perylene
Concen: 5.56 ppb
RT: 14.943 min Scan# 2685
Delta R.T. 0.000 min
Lab File: 2m48585.D
Acq: 18 Dec 2012 1:56 pm

Tgt Ion:276 Resp: 153162

Ion	Ratio	Lower	Upper
276	100		
138	21.9	0.1	60.1
277	24.5	0.0	53.2



9.1.5

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48570.D
Acq On : 17 Dec 2012 6:19 pm
Operator : olgaa
Sample : jb22822-5
Misc : op62037,e2m2080,34.7
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 18 15:55:40 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 18 15:53:34 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.421	152	350661	40.00	ppb	0.00
24) Naphthalene-d8	3.967	136	1489973	40.00	ppb	0.00
47) Acenaphthene-d10	6.524	164	854250	40.00	ppb	0.00
69) Phenanthrene-d10	8.792	188	1608002	40.00	ppb	0.00
83) Chrysene-d12	12.643	240	2026717	40.00	ppb	0.00
92) Perylene-d12	14.060	264	2097682	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.421	152	350661	40.00	ppb	0.00
104) Acenaphthene-d10a	6.524	164	854250	40.00	ppb	0.00
106) Chrysene-d12a	12.643	240	2026717	40.00	ppb	0.00
108) Phenanthrene-d10a	8.792	188	1608002	40.00	ppb	0.00
110) Chrysene-d12b	12.643	240	2026717	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.448	112	198017	15.52	ppb	0.00
Spiked Amount 50.000			Recovery	=	31.04%	
8) Phenol-d5	2.261	99	365266	21.36	ppb	0.00
Spiked Amount 50.000			Recovery	=	42.72%	
25) Nitrobenzene-d5	3.101	82	923160m	57.75	ppb	0.00
Spiked Amount 50.000			Recovery	=	115.50%	
51) 2-Fluorobiphenyl	5.598	172	814560	29.00	ppb	0.00
Spiked Amount 50.000			Recovery	=	58.00%	
73) 2,4,6-Tribromophenol	7.781	330	136889	36.23	ppb	0.00
Spiked Amount 50.000			Recovery	=	72.46%	
85) Terphenyl-d14	11.370	244	1301476	31.78	ppb	0.00
Spiked Amount 50.000			Recovery	=	63.56%	

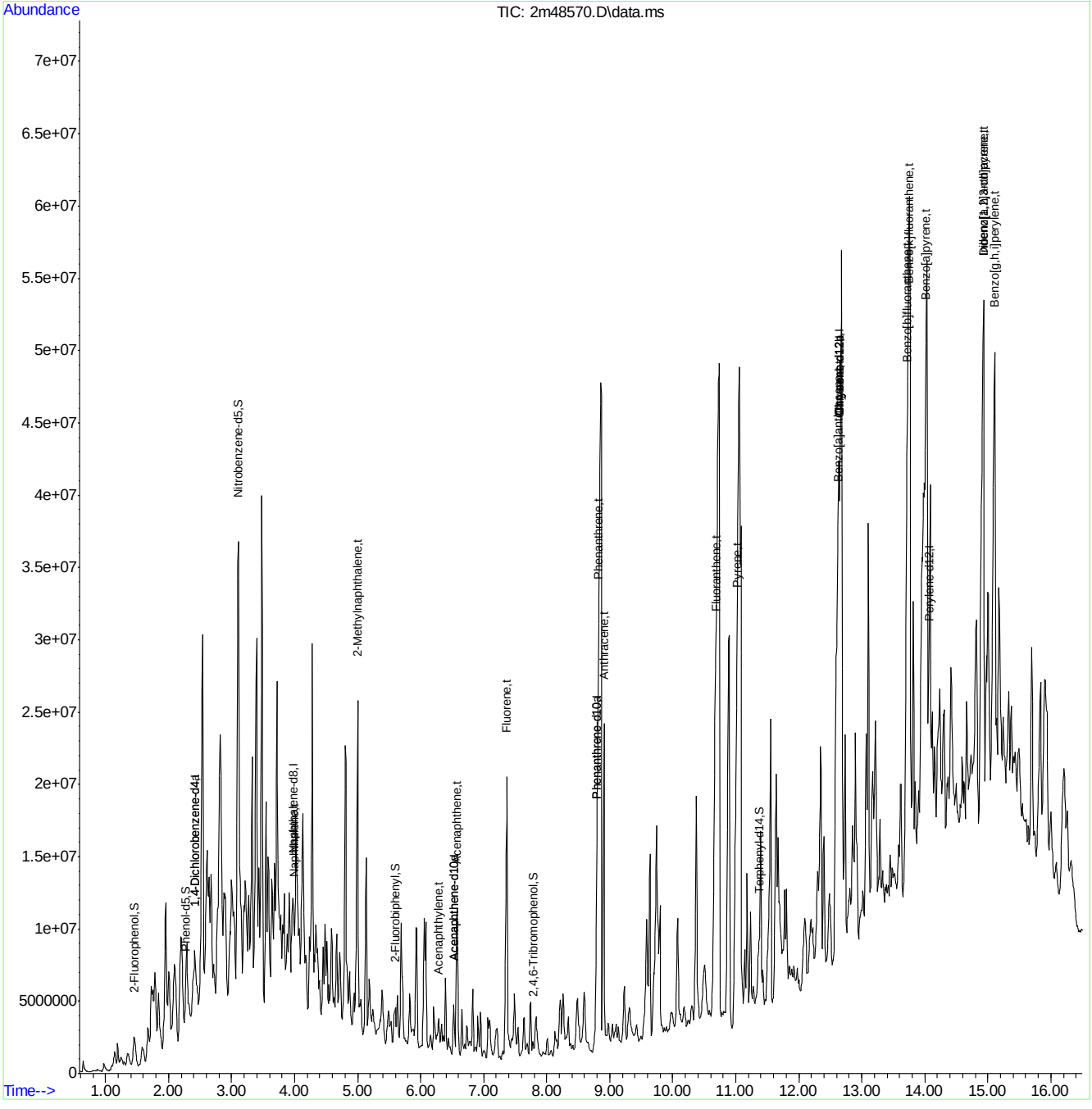
Target Compounds						Qvalue
38) Naphthalene	3.994	128	1543604	37.23	ppb	98
44) 2-Methylnaphthalene	4.999	141	6092572	239.60	ppb	95
56) Acenaphthylene	6.283	152	966380	23.43	ppb	99
59) Acenaphthene	6.572	153	2748608	103.63	ppb	97
66) Fluorene	7.369	166	9838259	342.61	ppb	99
77) Phenanthrene	8.818	178	39919456m	810.91	ppb	
78) Anthracene	8.909	178	11354843	232.71	ppb	96
81) Fluoranthene	10.674	202	46701699m	961.70	ppb	
84) Pyrene	11.017	202	43935995m	670.26	ppb	
88) Benzo[a]anthracene	12.616	228	38990896m	625.48	ppb	
90) Chrysene	12.648	228	19303693m	312.35	ppb	
94) Benzo[b]fluoranthene	13.718	252	24322359m	333.06	ppb	
95) Benzo[k]fluoranthene	13.739	252	16678187m	253.74	ppb	
96) Benzo[a]pyrene	14.012	252	22118913m	356.55	ppb	
97) Indeno[1,2,3-cd]pyrene	14.932	276	23107076	320.79	ppb	95
99) Dibenz[a,h]anthracene	14.926	278	11370126	187.89	ppb	97
101) Benzo[g,h,i]perylene	15.108	276	20220956	328.81	ppb	97

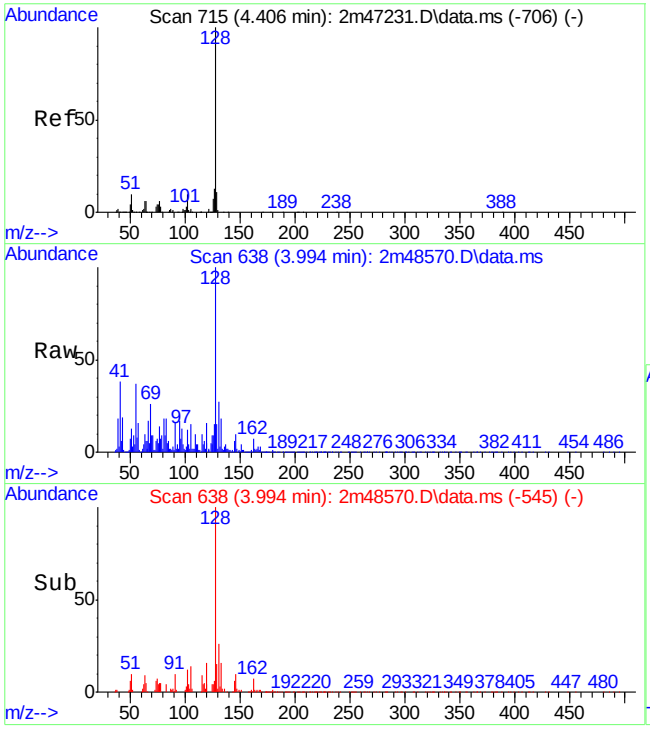
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48570.D
Acq On : 17 Dec 2012 6:19 pm
Operator : olgaa
Sample : jb22822-5
Misc : op62037,e2m2080,34.7
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 18 15:55:40 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 18 15:53:34 2012
Response via : Initial Calibration

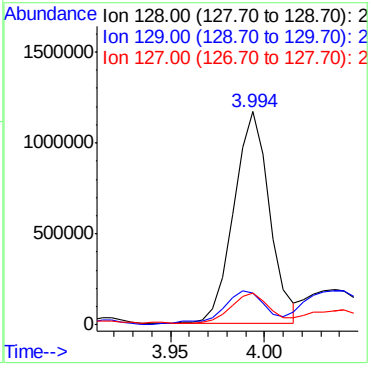


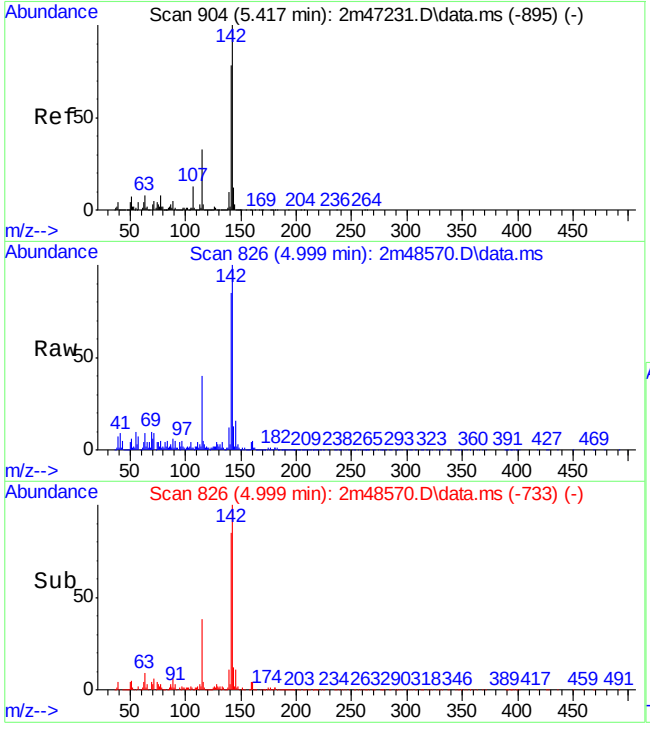


#38
Naphthalene
Concen: 37.23 ppb
RT: 3.994 min Scan# 638
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:128 Resp: 1543604

Ion	Ratio	Lower	Upper
128	100		
129	12.5	0.0	40.9
127	13.4	0.0	43.3

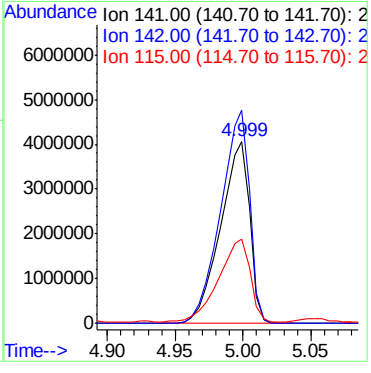




#44
2-Methylnaphthalene
Concen: 239.60 ppb
RT: 4.999 min Scan# 826
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

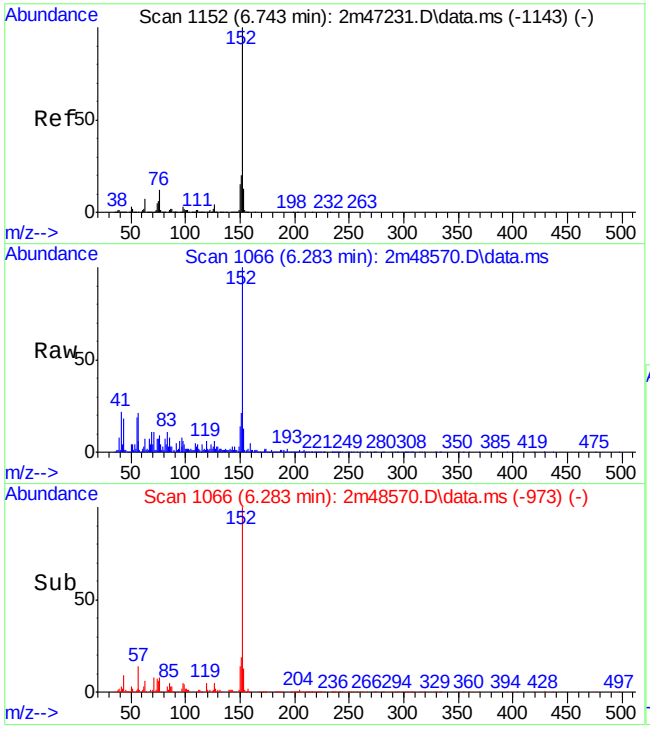
Tgt Ion:141 Resp: 6092572

Ion	Ratio	Lower	Upper
141	100		
142	117.2	81.7	141.7
115	45.6	12.0	72.0



9.1.6

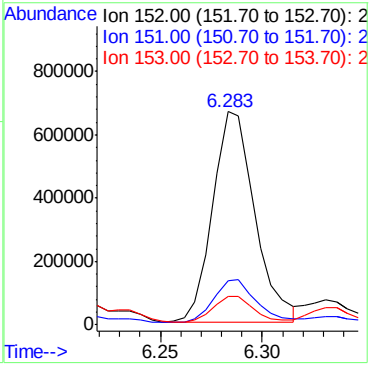
9

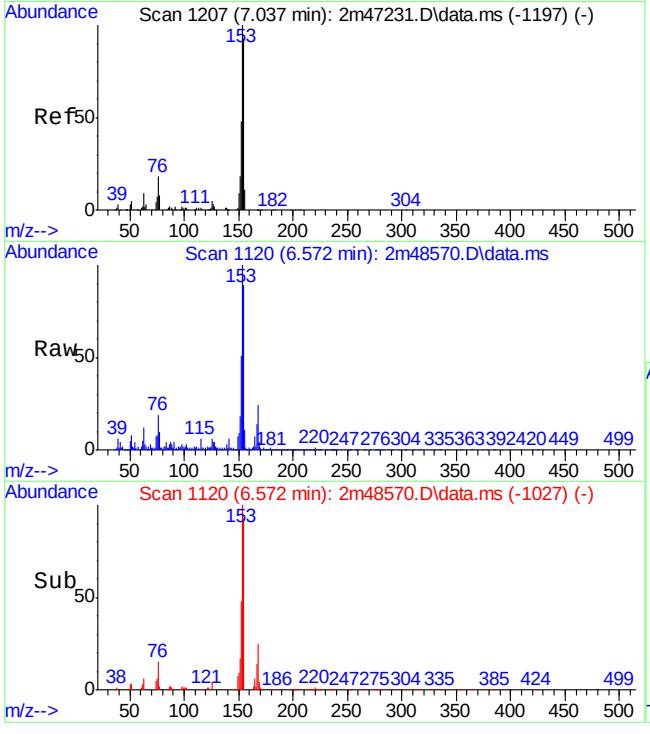


#56
Acenaphthylene
Concen: 23.43 ppb
RT: 6.283 min Scan# 1066
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:152 Resp: 966380

Ion	Ratio	Lower	Upper
152	100		
151	19.5	0.0	49.4
153	11.9	0.0	43.0

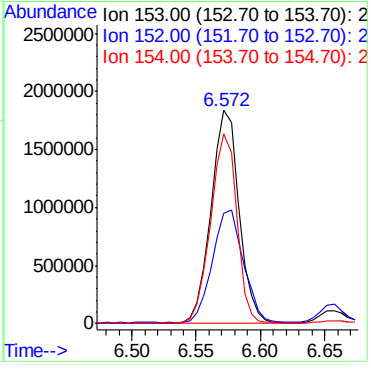




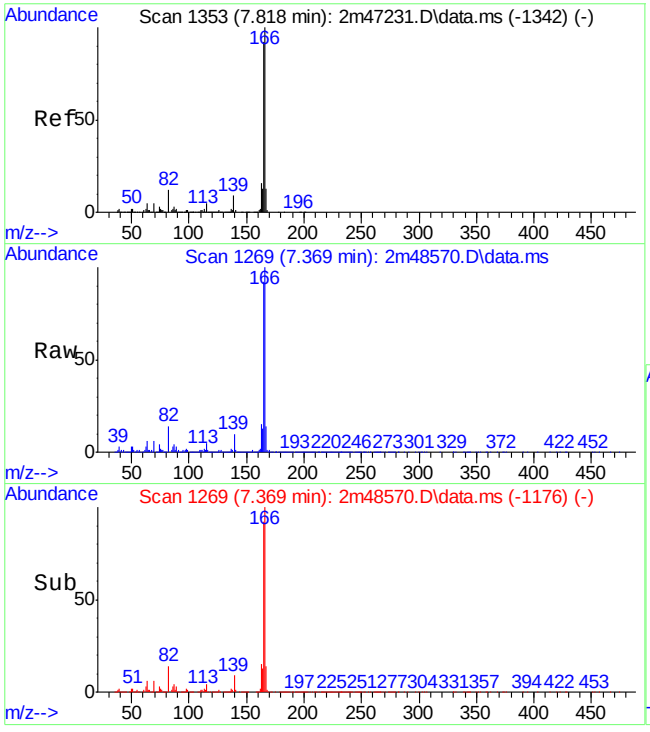
#59
Acenaphthene
Concen: 103.63 ppb
RT: 6.572 min Scan# 1120
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:153 Resp: 2748608

Ion	Ratio	Lower	Upper
153	100		
152	51.2	15.8	75.8
154	88.8	59.7	119.7



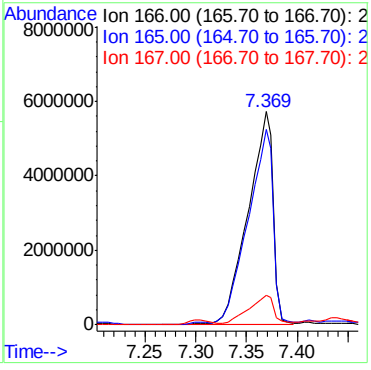
9.1.6

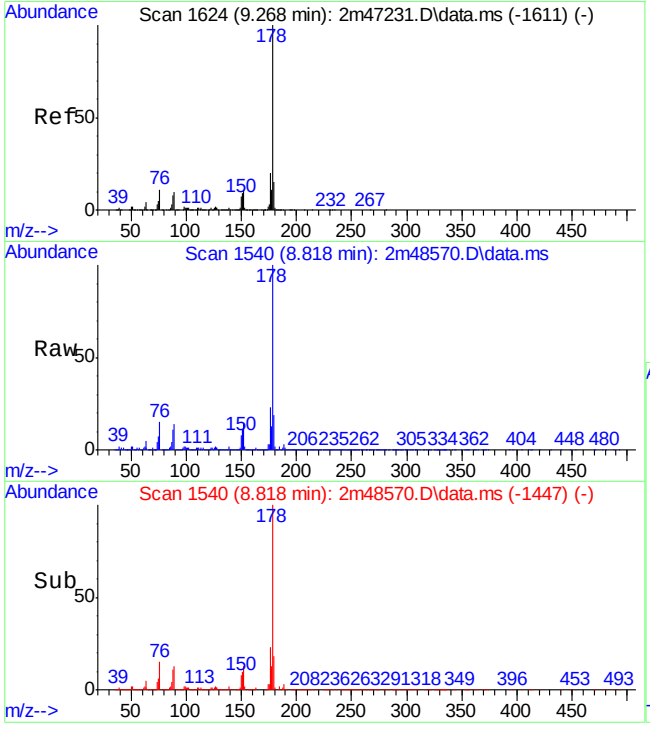


#66
Fluorene
Concen: 342.61 ppb
RT: 7.369 min Scan# 1269
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:166 Resp: 9838259

Ion	Ratio	Lower	Upper
166	100		
165	91.3	61.9	121.9
167	13.4	0.0	43.1

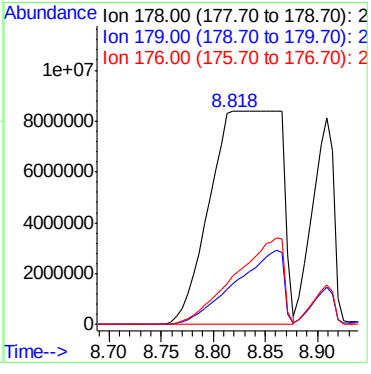




#77
Phenanthrene
Concen: 810.91 ppb m
RT: 8.818 min Scan# 1540
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

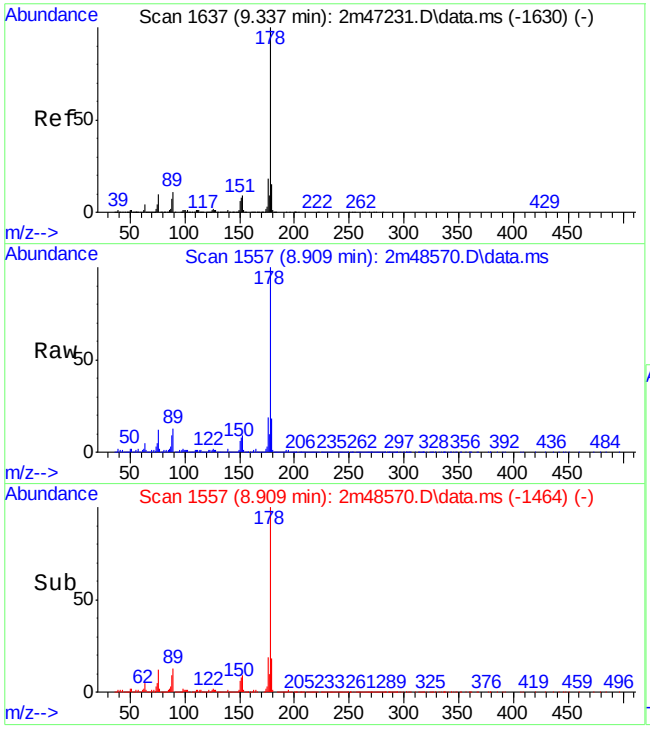
Tgt Ion:178 Resp:39919456

Ion	Ratio	Lower	Upper
178	100		
179	19.1	0.0	44.9
176	22.7	0.0	49.1



9.1.6

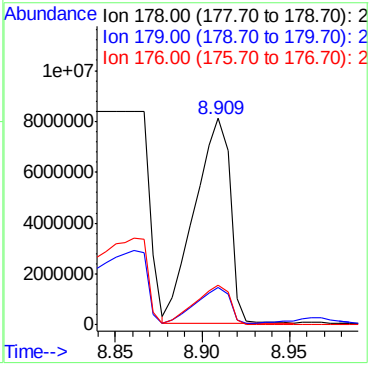
9

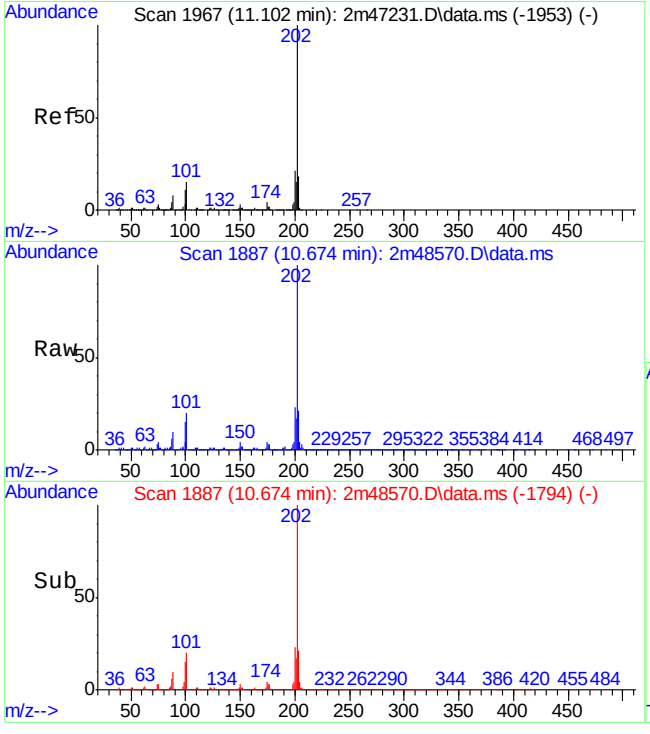


#78
Anthracene
Concen: 232.71 ppb
RT: 8.909 min Scan# 1557
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:178 Resp:11354843

Ion	Ratio	Lower	Upper
178	100		
179	17.1	0.0	44.3
176	19.0	0.0	48.3

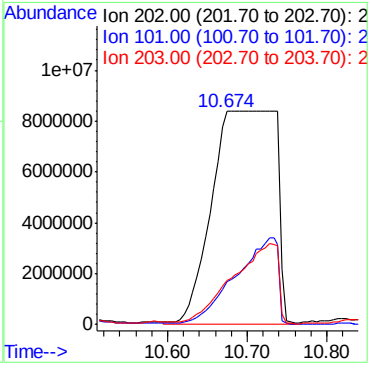


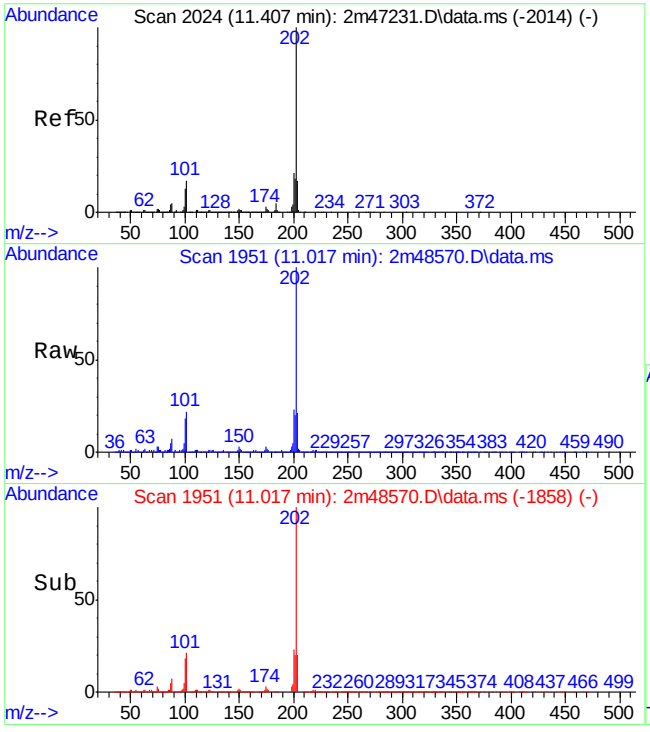


#81
Fluoranthene
Concen: 961.70 ppb m
RT: 10.674 min Scan# 1887
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:202 Resp:46701699

Ion	Ratio	Lower	Upper
202	100		
101	20.2	0.0	43.8
203	20.9	0.0	47.5

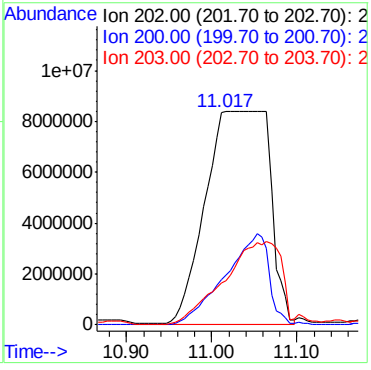


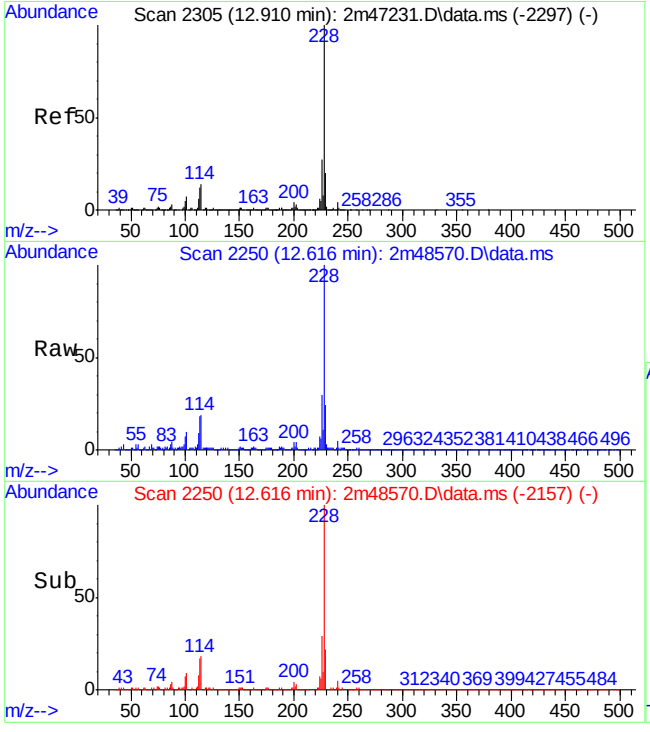


#84
Pyrene
Concen: 670.26 ppb m
RT: 11.017 min Scan# 1951
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:202 Resp:43935995

Ion	Ratio	Lower	Upper
202	100		
200	23.2	0.0	51.3
203	20.9	0.0	47.6

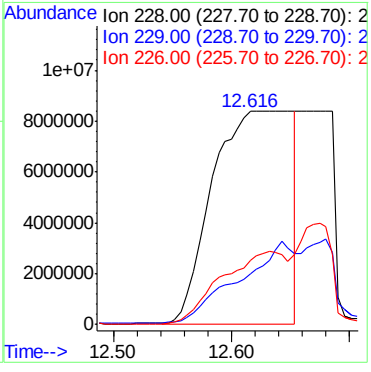


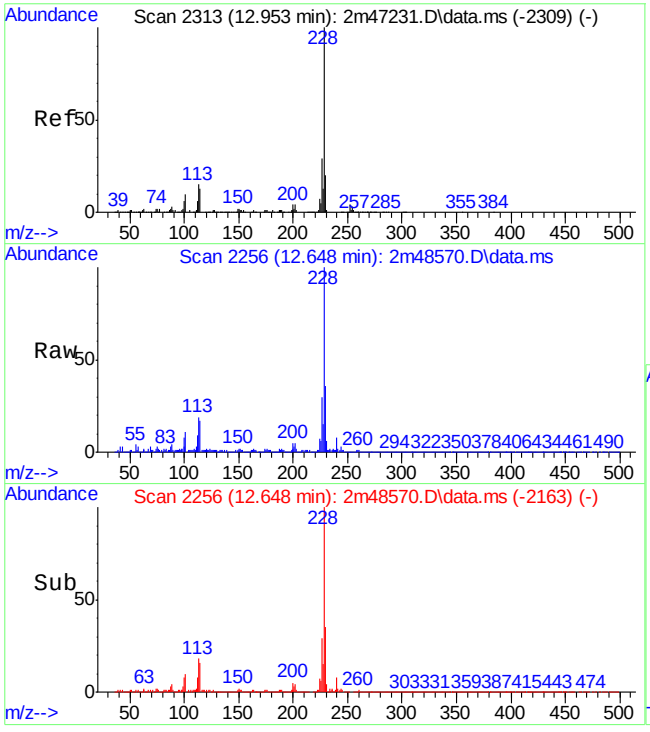


#88
Benzo[a]anthracene
Concen: 625.48 ppb m
RT: 12.616 min Scan# 2250
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:228 Resp:38990896

Ion	Ratio	Lower	Upper
228	100		
229	24.1	0.0	49.3
226	30.3	0.0	56.0

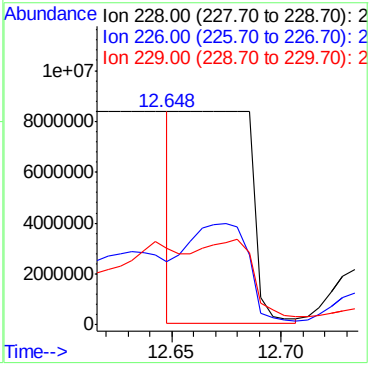


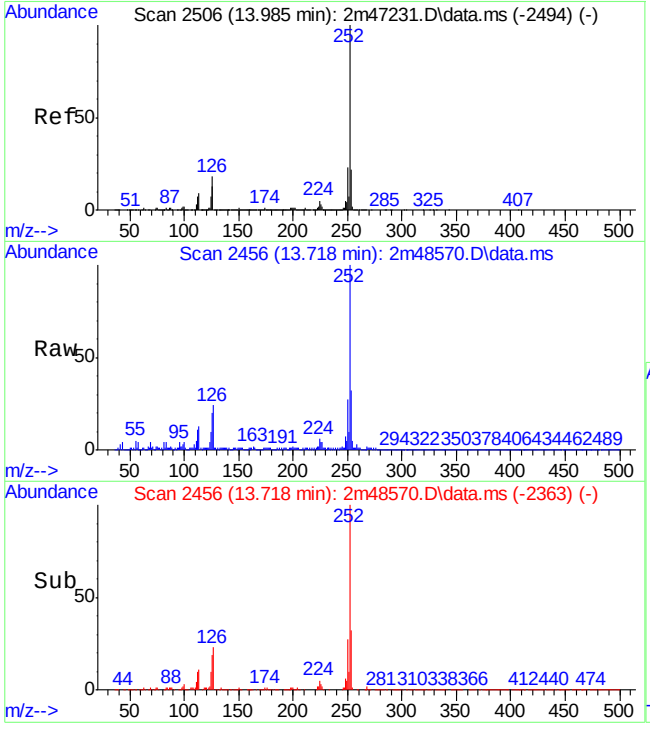


#90
Chrysene
Concen: 312.35 ppb m
RT: 12.648 min Scan# 2256
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:228 Resp:19303693

Ion	Ratio	Lower	Upper
228	100		
226	29.7	0.0	57.7
229	35.8	0.0	49.3

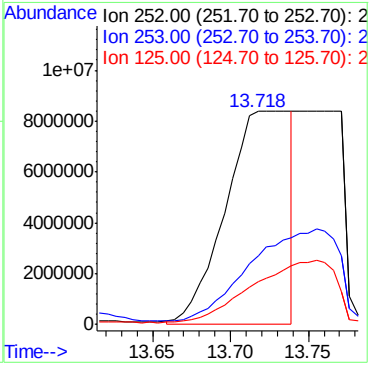


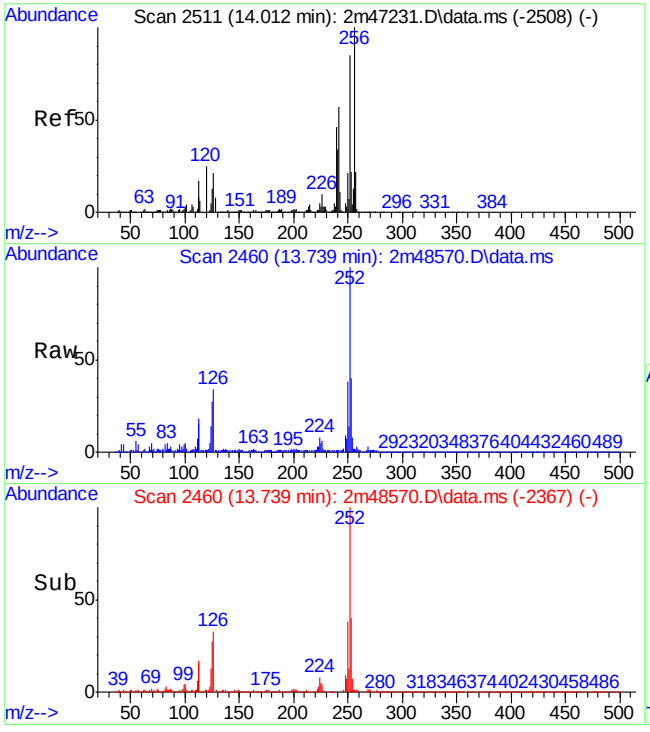


#94
Benzo[b]fluoranthene
Concen: 333.06 ppb m
RT: 13.718 min Scan# 2456
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:252 Resp:24322359

Ion	Ratio	Lower	Upper
252	100		
253	32.3	0.0	51.6
125	20.0	0.0	40.1

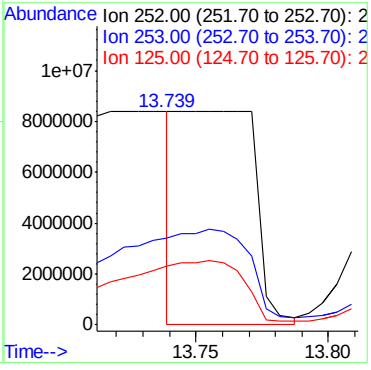


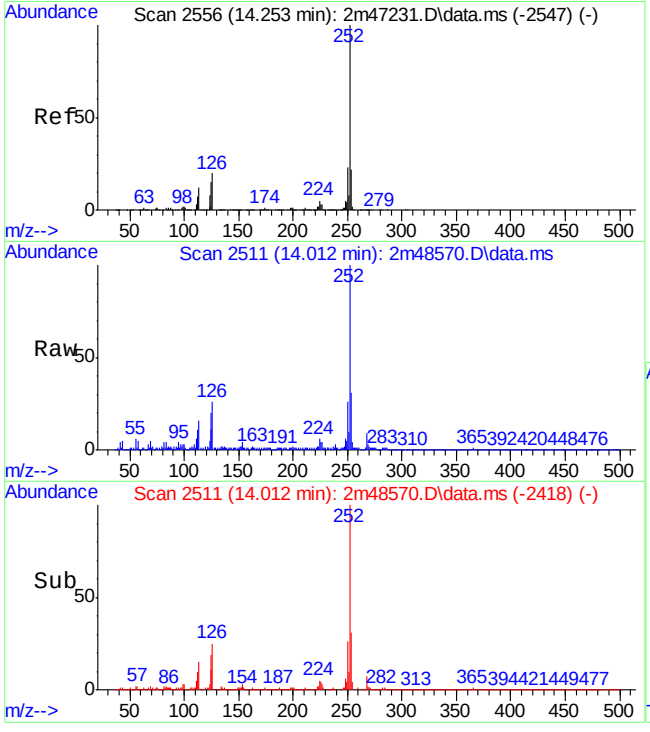


#95
Benzo[k]fluoranthene
Concen: 253.74 ppb m
RT: 13.739 min Scan# 2460
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:252 Resp:16678187

Ion	Ratio	Lower	Upper
252	100		
253	40.4	0.0	52.7
125	27.4	0.0	42.9

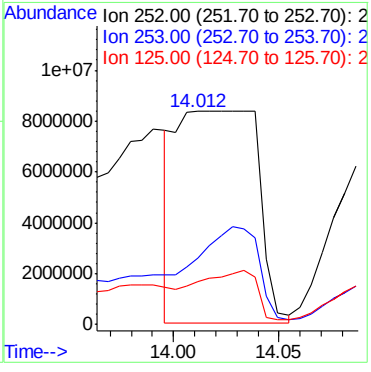


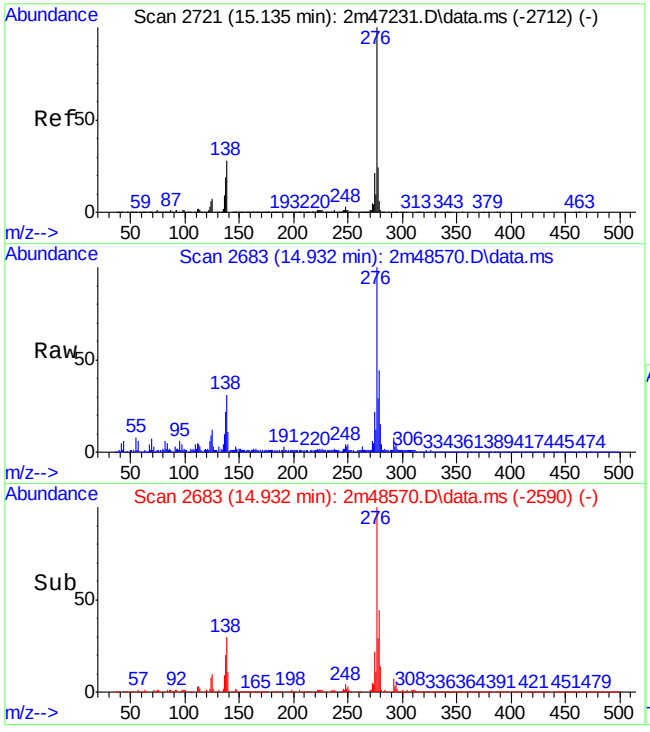


#96
Benzo[a]pyrene
Concen: 356.55 ppb m
RT: 14.012 min Scan# 2511
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:252 Resp:22118913

Ion	Ratio	Lower	Upper
252	100		
253	31.2	0.0	52.4
125	20.1	0.0	42.7

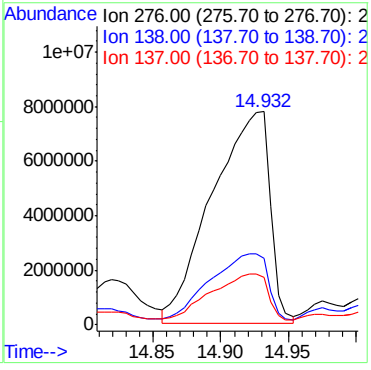


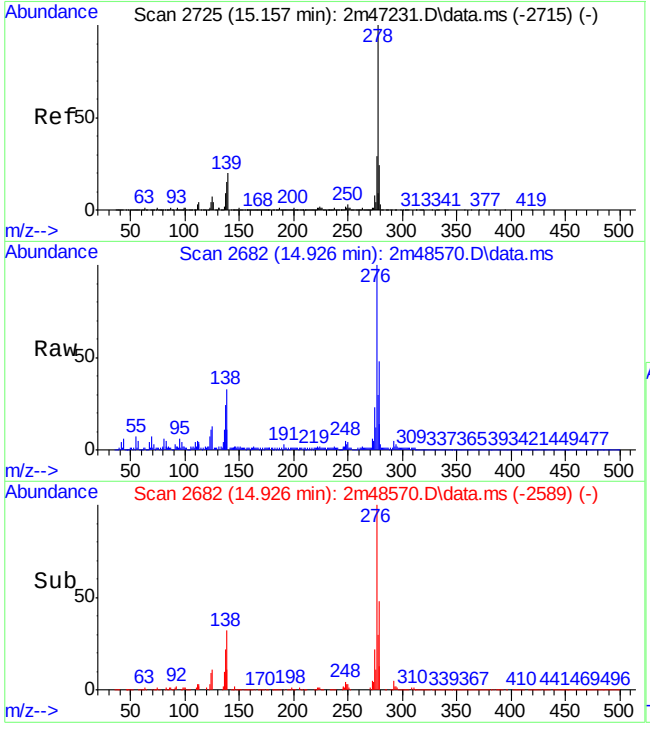


#97
Indeno[1,2,3-cd]pyrene
Concen: 320.79 ppb
RT: 14.932 min Scan# 2683
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:276 Resp:23107076

Ion	Ratio	Lower	Upper
276	100		
138	30.1	0.0	57.6
137	21.1	0.0	48.9

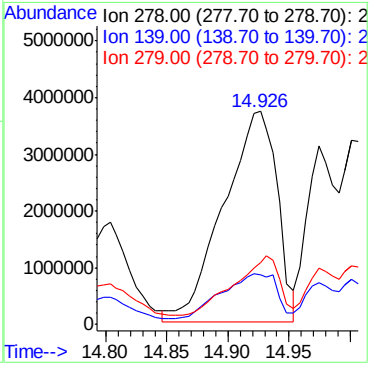


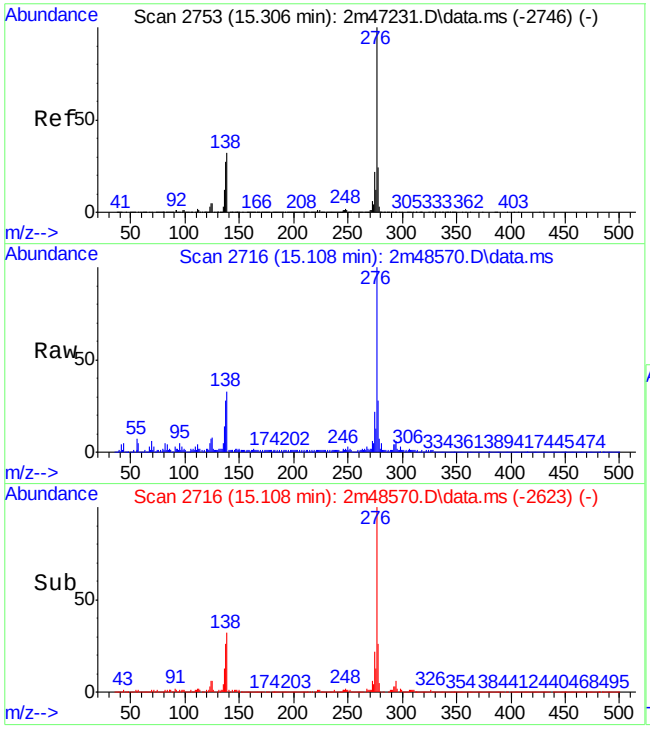


#99
Dibenz[a,h]anthracene
Concen: 187.89 ppb
RT: 14.926 min Scan# 2682
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:278 Resp:11370126

Ion	Ratio	Lower	Upper
278	100		
139	21.3	0.0	52.4
279	25.6	0.0	54.1

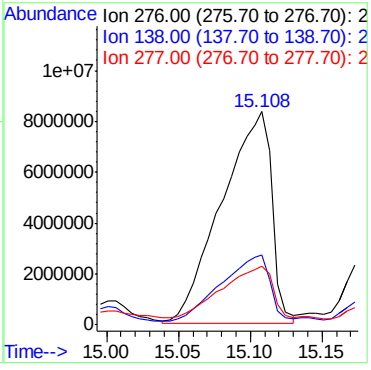




#101
Benzo[g,h,i]perylene
Concen: 328.81 ppb
RT: 15.108 min Scan# 2716
Delta R.T. 0.000 min
Lab File: 2m48570.D
Acq: 17 Dec 2012 6:19 pm

Tgt Ion:276 Resp:20220956

Ion	Ratio	Lower	Upper
276	100		
138	31.5	0.1	60.1
277	25.2	0.0	53.2



9.1.6

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48601.D
Acq On : 18 Dec 2012 8:08 pm
Operator : olgaa
Sample : jb22822-5
Misc : op62037,e2m2081,34.7,,,1,40
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 19 12:17:49 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 12:08:29 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.389	152	213653	40.00	ppb	0.00
24) Naphthalene-d8	3.914	136	1039195	40.00	ppb	0.00
47) Acenaphthene-d10	6.476	164	671589	40.00	ppb	0.00
69) Phenanthrene-d10	8.706	188	1172382	40.00	ppb	0.00
83) Chrysene-d12	12.520	240	1175493	40.00	ppb	0.00
92) Perylene-d12	13.932	264	954902	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.389	152	213653	40.00	ppb	0.00
104) Acenaphthene-d10a	6.476	164	671589	40.00	ppb	0.00
106) Chrysene-d12a	12.520	240	1175493	40.00	ppb	0.00
108) Phenanthrene-d10a	8.706	188	1172382	40.00	ppb	0.00
110) Chrysene-d12b	12.520	240	1175493	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	0.000	112	0	0.00	ppb	
Spiked Amount 50.000			Recovery	=	0.00%	
8) Phenol-d5	0.000	99	0	0.00	ppb	
Spiked Amount 50.000			Recovery	=	0.00%	
25) Nitrobenzene-d5	3.068	82	3699m	0.33	ppb	0.00
Spiked Amount 50.000			Recovery	=	0.66%	
51) 2-Fluorobiphenyl	5.561	172	17000	0.77	ppb	0.00
Spiked Amount 50.000			Recovery	=	1.54%	
73) 2,4,6-Tribromophenol	0.000	330	0	0.00	ppb	
Spiked Amount 50.000			Recovery	=	0.00%	
85) Terphenyl-d14	11.289	244	26715	1.12	ppb	0.00
Spiked Amount 50.000			Recovery	=	2.24%	

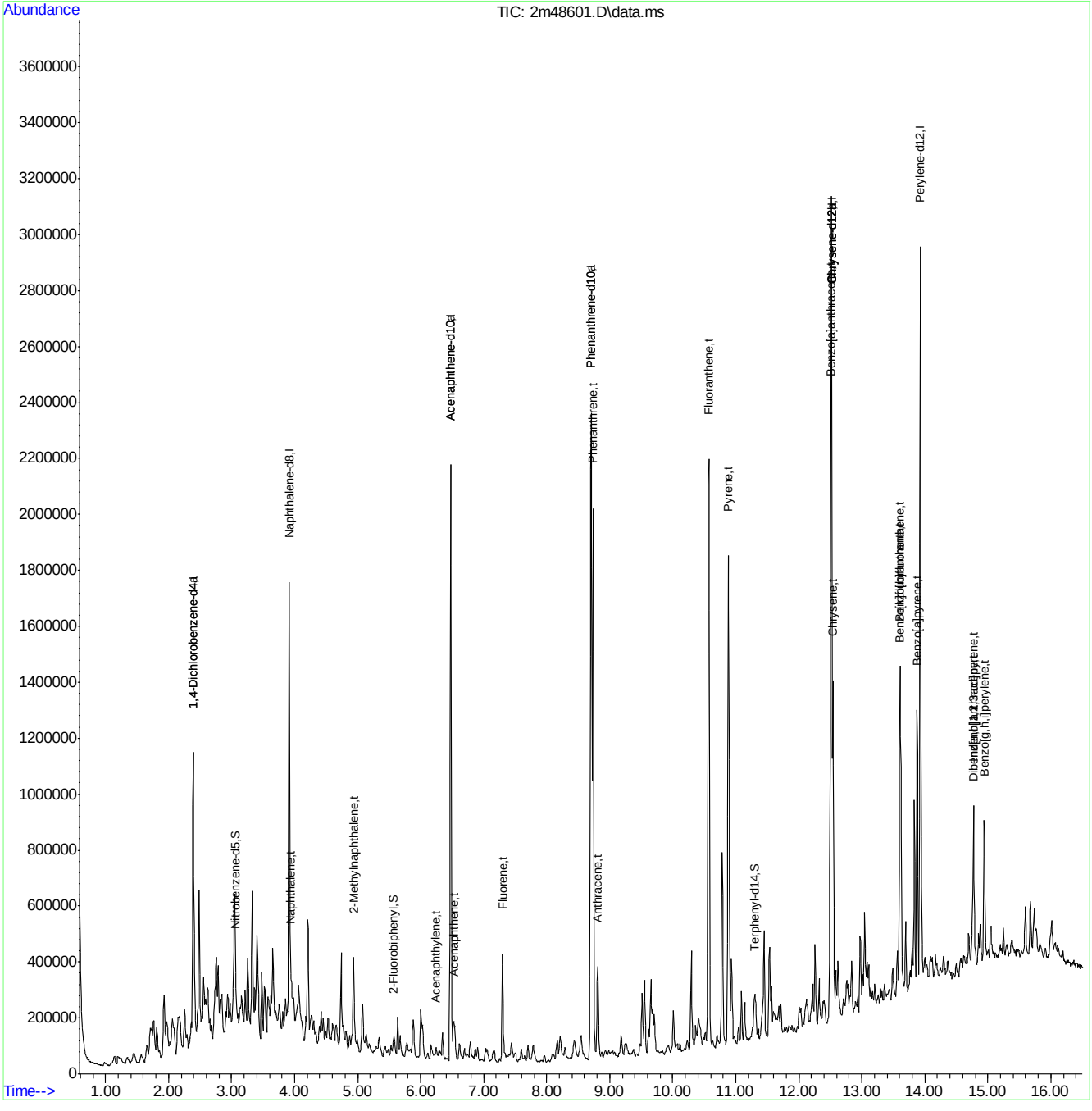
Target Compounds						Qvalue
38) Naphthalene	3.940	128	27343m	0.95	ppb	
44) 2-Methylnaphthalene	4.935	141	105846	5.97	ppb	88
56) Acenaphthylene	6.246	152	19351	0.60	ppb	92
59) Acenaphthene	6.518	153	52352	2.51	ppb	99
66) Fluorene	7.299	166	174455	7.73	ppb	99
77) Phenanthrene	8.738	178	1082380	30.16	ppb	100
78) Anthracene	8.808	178	212809	5.98	ppb	97
81) Fluoranthene	10.573	202	1264091	35.70	ppb	96
84) Pyrene	10.883	202	1082939	28.48	ppb	99
88) Benzo[a]anthracene	12.503	228	548660	15.17	ppb	95
90) Chrysene	12.546	228	535505	14.94	ppb	98
94) Benzo[b]fluoranthene	13.605	252	548323m	16.49	ppb	
95) Benzo[k]fluoranthene	13.616	252	225685m	7.54	ppb	
96) Benzo[a]pyrene	13.878	252	394665	13.98	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.771	276	261784	7.98	ppb	91
99) Dibenz[a,h]anthracene	14.782	278	87743	3.19	ppb	90
101) Benzo[g,h,i]perylene	14.942	276	225951	8.07	ppb	92

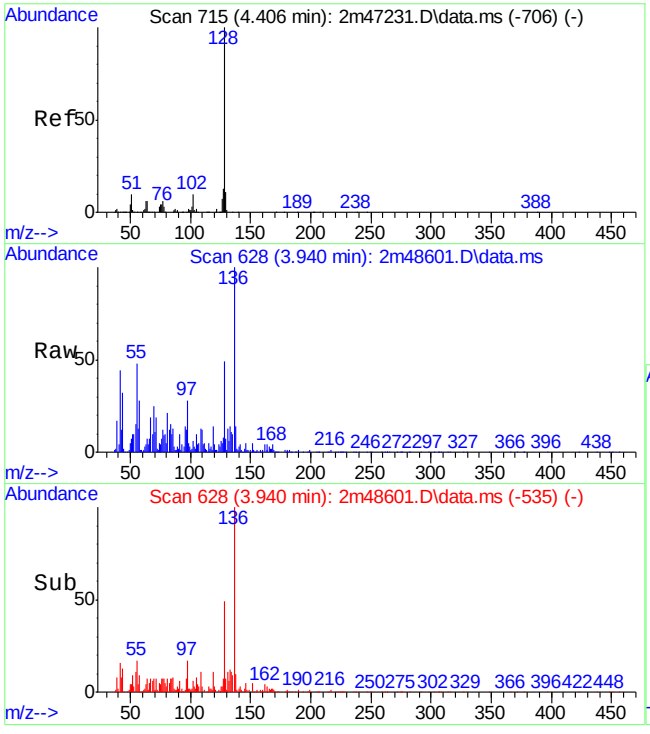
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48601.D
Acq On : 18 Dec 2012 8:08 pm
Operator : olgaa
Sample : jb22822-5
Misc : op62037,e2m2081,34.7,,,1,40
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 19 12:17:49 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 12:08:29 2012
Response via : Initial Calibration

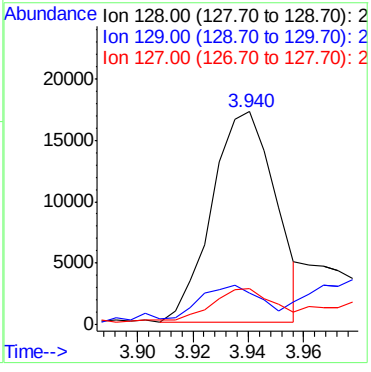


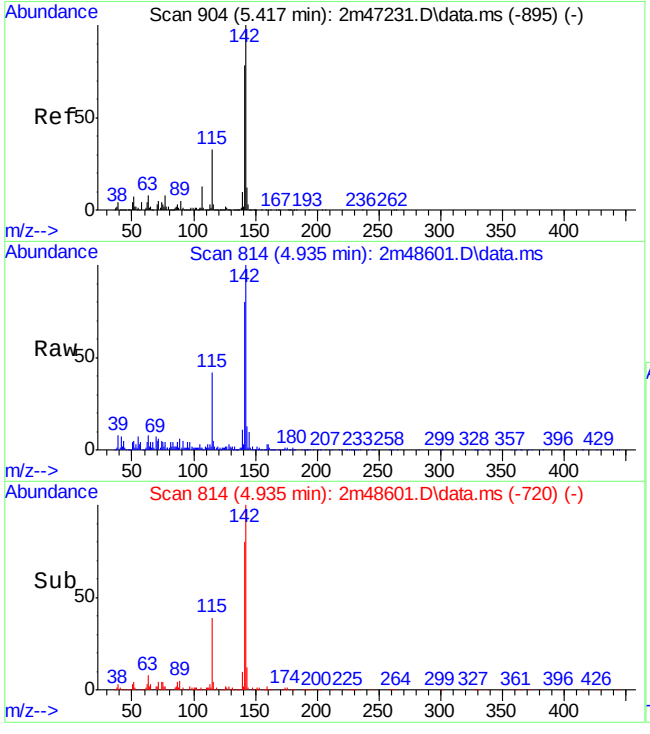


#38
Naphthalene
Concen: 0.95 ppb m
RT: 3.940 min Scan# 628
Delta R.T. 0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:128 Resp: 27343

Ion	Ratio	Lower	Upper
128	100		
129	15.0	0.0	40.9
127	17.1	0.0	43.3

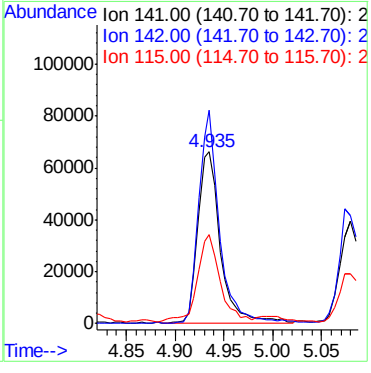




#44
2-Methylnaphthalene
Concen: 5.97 ppb
RT: 4.935 min Scan# 814
Delta R.T. 0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

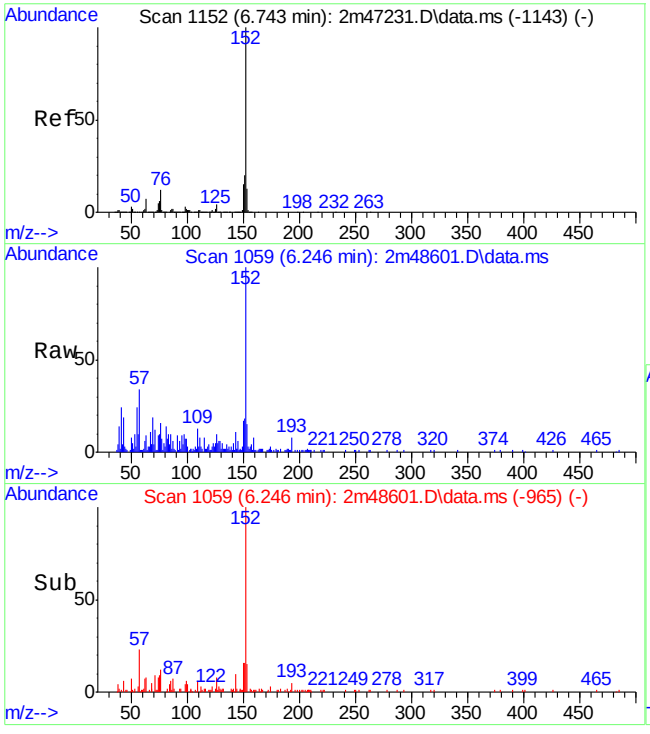
Tgt Ion:141 Resp: 105846

Ion	Ratio	Lower	Upper
141	100		
142	124.0	81.7	141.7
115	50.2	12.0	72.0



9.1.7

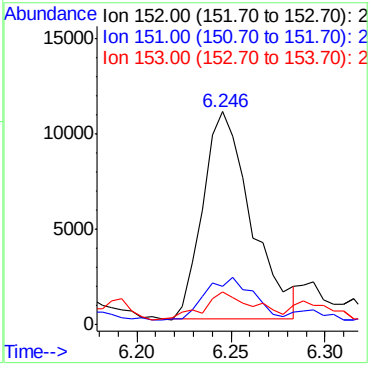
9

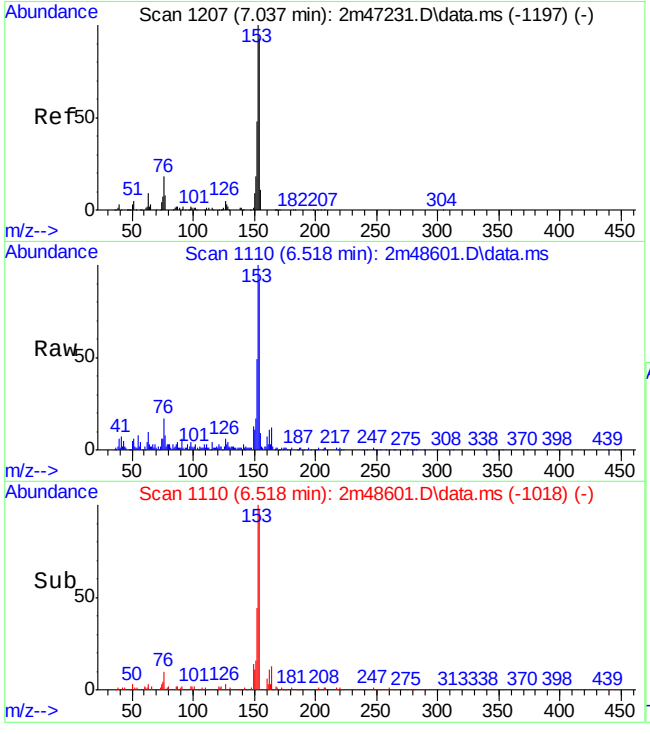


#56
Acenaphthylene
Concen: 0.60 ppb
RT: 6.246 min Scan# 1059
Delta R.T. 0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:152 Resp: 19351

Ion	Ratio	Lower	Upper
152	100		
151	15.4	0.0	49.4
153	10.7	0.0	43.0

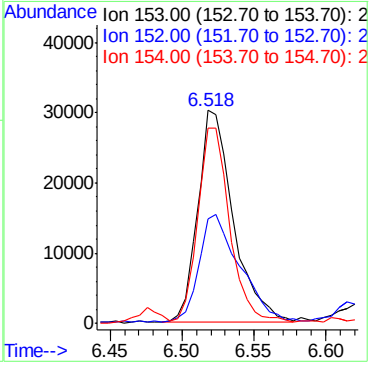




#59
Acenaphthene
Concen: 2.51 ppb
RT: 6.518 min Scan# 1110
Delta R.T. -0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

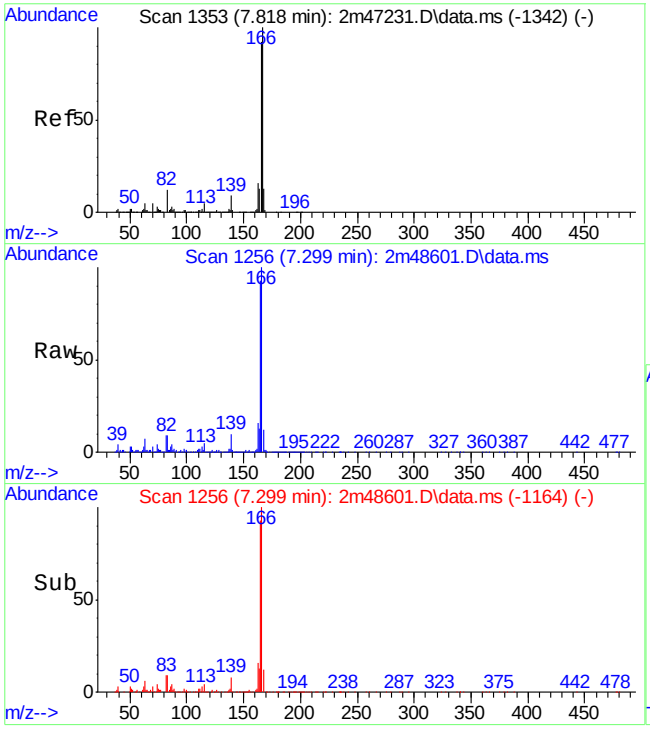
Tgt Ion:153 Resp: 52352

Ion	Ratio	Lower	Upper
153	100		
152	47.9	15.8	75.8
154	89.7	59.7	119.7



9.1.7

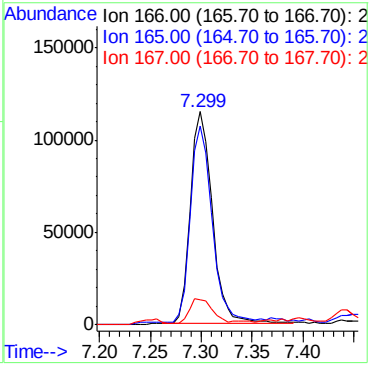
9

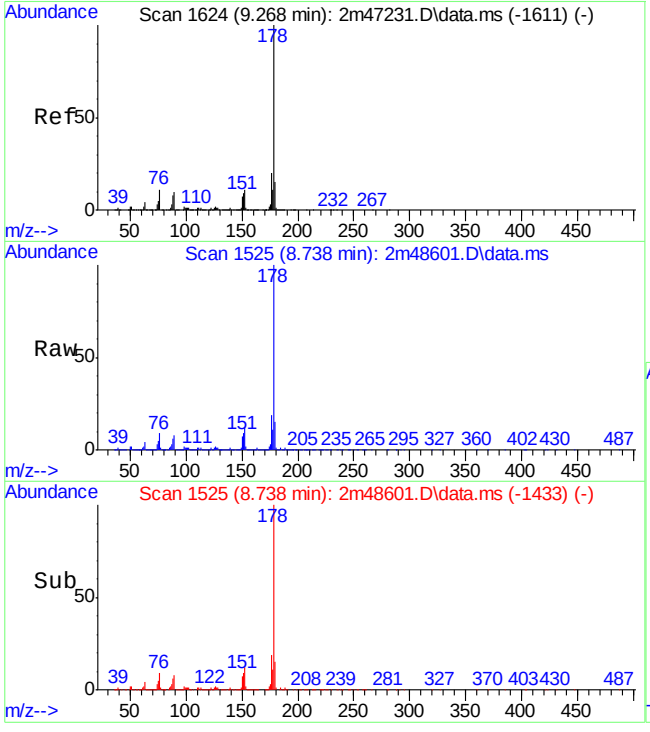


#66
Fluorene
Concen: 7.73 ppb
RT: 7.299 min Scan# 1256
Delta R.T. -0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:166 Resp: 174455

Ion	Ratio	Lower	Upper
166	100		
165	92.1	61.9	121.9
167	10.0	0.0	43.1

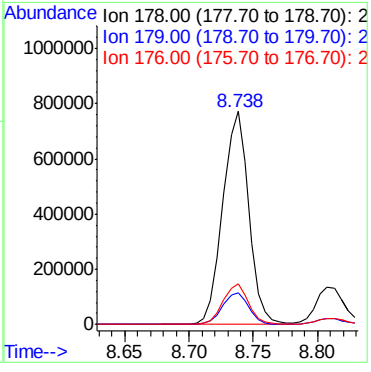


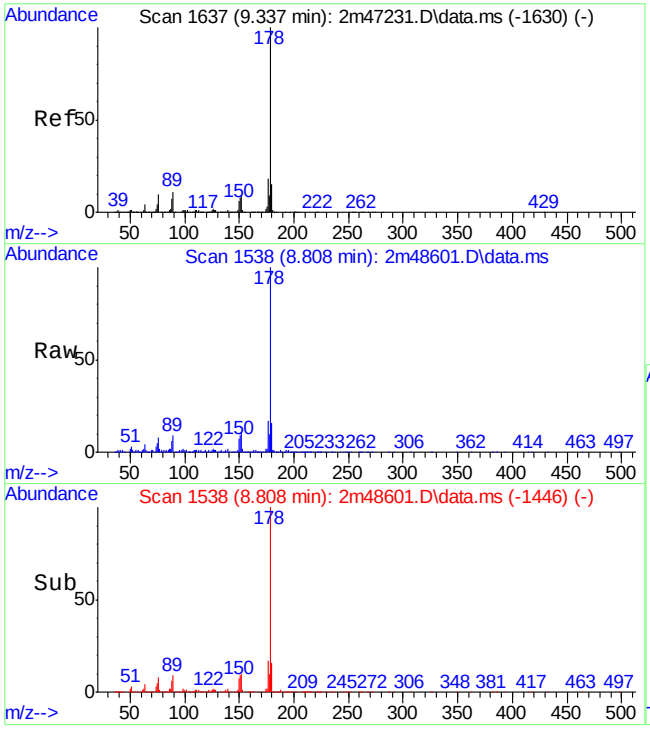


#77
Phenanthrene
Concen: 30.16 ppb
RT: 8.738 min Scan# 1525
Delta R.T. -0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:178 Resp: 1082380

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	44.9
176	19.0	0.0	49.1

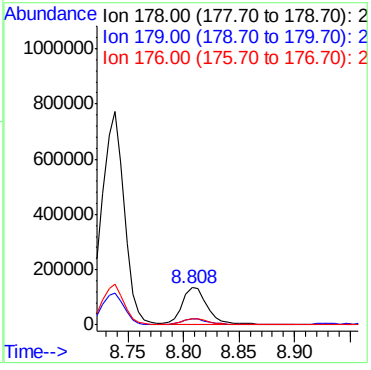


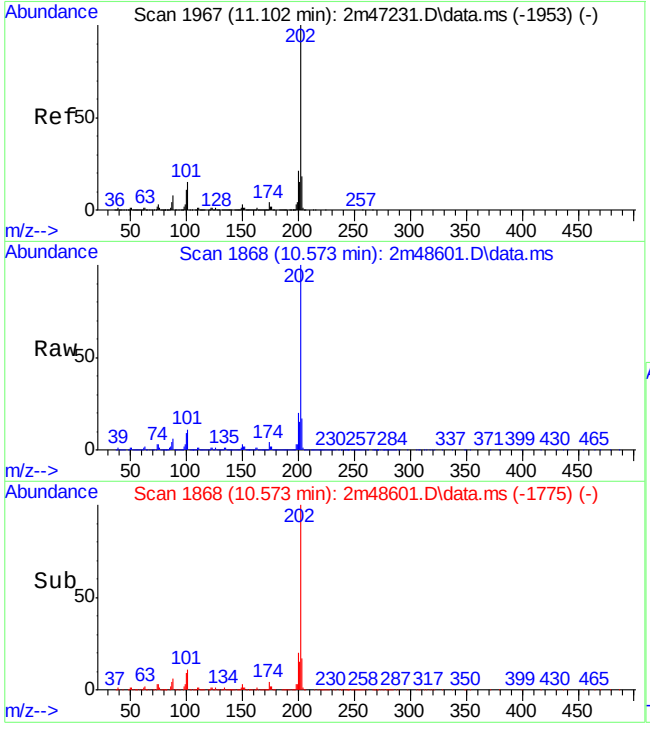


#78
Anthracene
Concen: 5.98 ppb
RT: 8.808 min Scan# 1538
Delta R.T. -0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:178 Resp: 212809

Ion	Ratio	Lower	Upper
178	100		
179	15.6	0.0	44.3
176	17.2	0.0	48.3

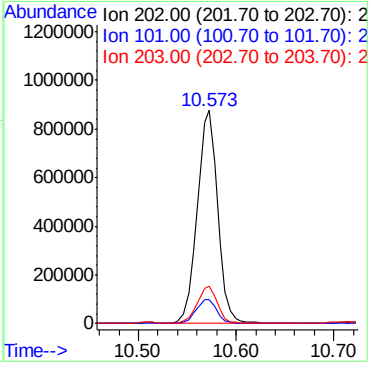


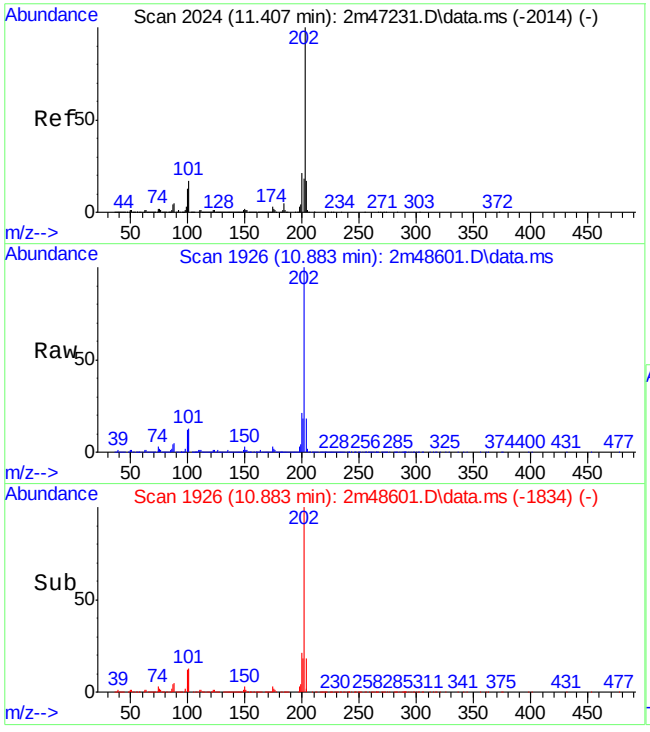


#81
Fluoranthene
Concen: 35.70 ppb
RT: 10.573 min Scan# 1868
Delta R.T. -0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:202 Resp: 1264091

Ion	Ratio	Lower	Upper
202	100		
101	10.9	0.0	43.8
203	17.1	0.0	47.5

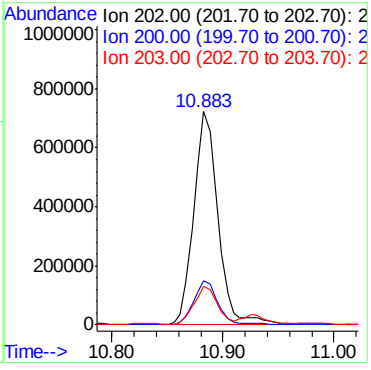


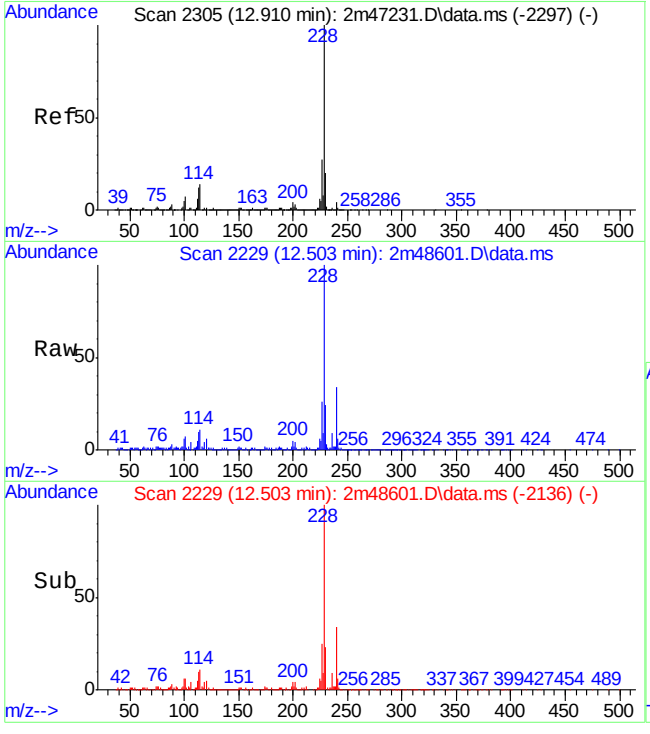


#84
Pyrene
Concen: 28.48 ppb
RT: 10.883 min Scan# 1926
Delta R.T. -0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:202 Resp: 1082939

Ion	Ratio	Lower	Upper
202	100		
200	20.9	0.0	51.3
203	17.7	0.0	47.6

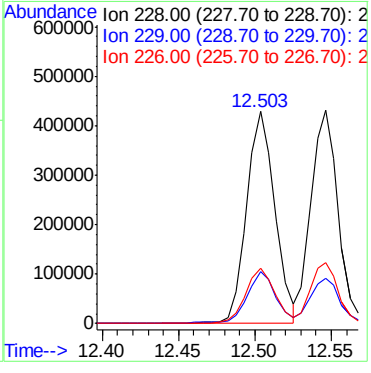


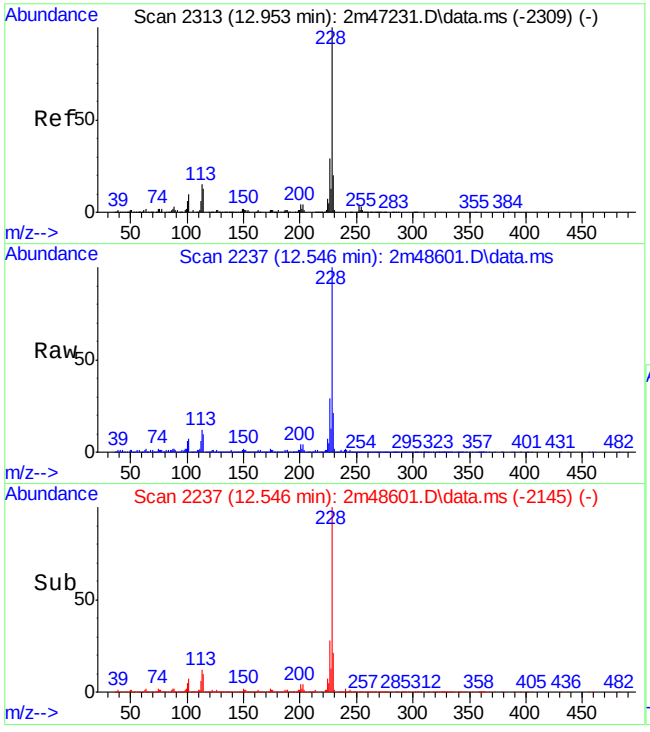


#88
Benzo[a]anthracene
Concen: 15.17 ppb
RT: 12.503 min Scan# 2229
Delta R.T. 0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:228 Resp: 548660

Ion	Ratio	Lower	Upper
228	100		
229	23.9	0.0	49.3
226	25.6	0.0	56.0

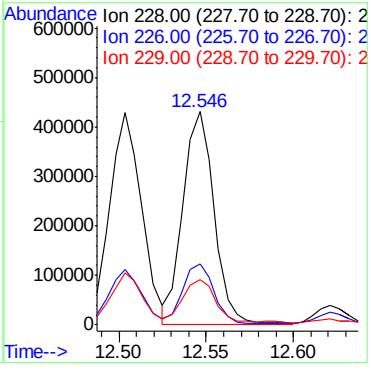


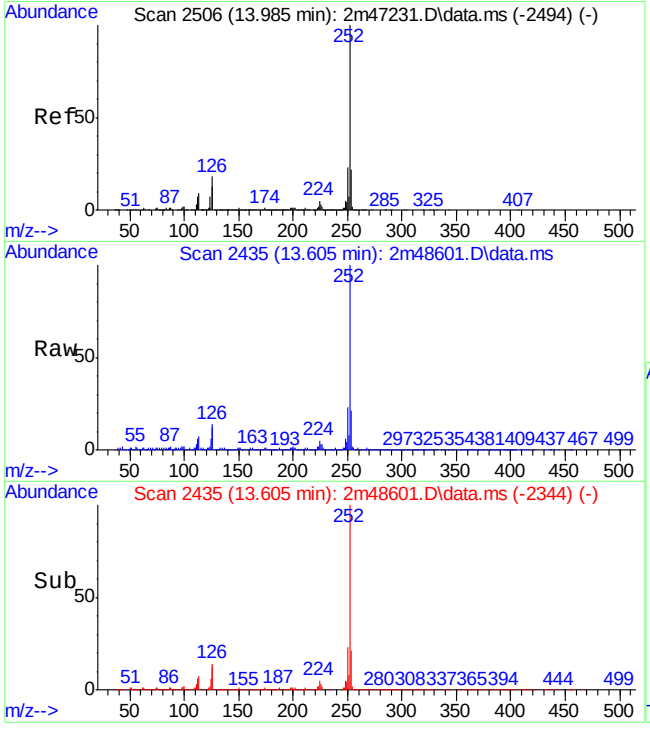


#90
Chrysene
Concen: 14.94 ppb
RT: 12.546 min Scan# 2237
Delta R.T. -0.005 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:228 Resp: 535505

Ion	Ratio	Lower	Upper
228	100		
226	28.2	0.0	57.7
229	20.4	0.0	49.3

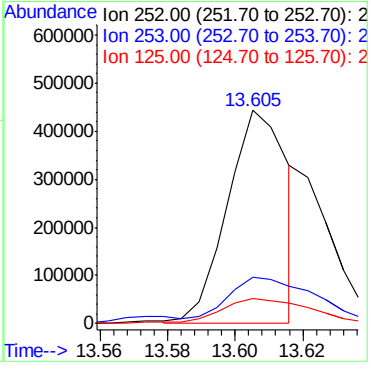


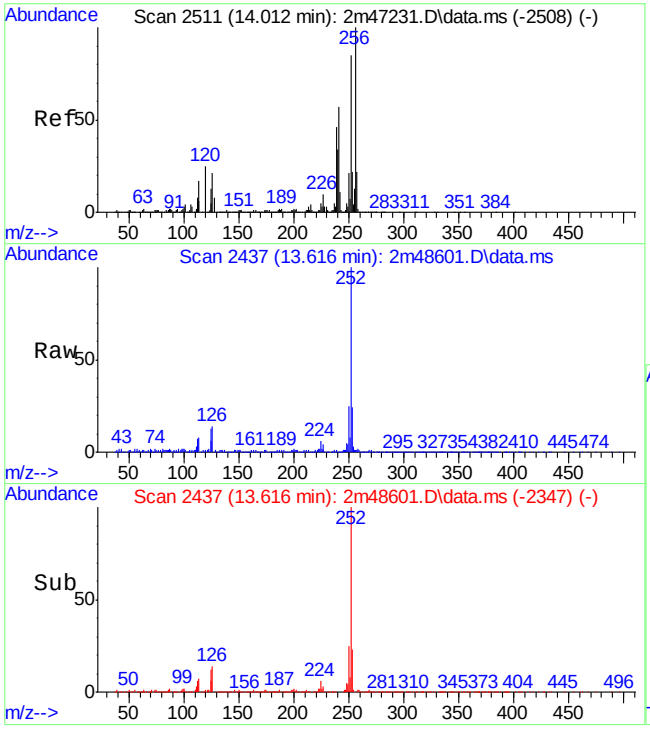


#94
Benzo[b]fluoranthene
Concen: 16.49 ppb m
RT: 13.605 min Scan# 2435
Delta R.T. -0.011 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:252 Resp: 548323

Ion	Ratio	Lower	Upper
252	100		
253	21.5	0.0	51.6
125	11.8	0.0	40.1

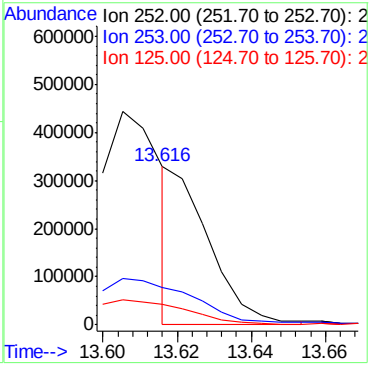


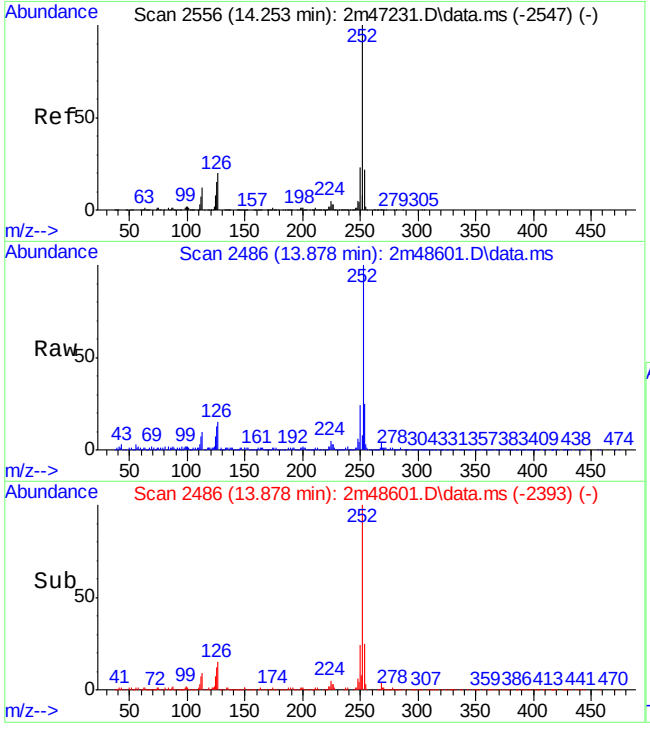


#95
Benzo[k]fluoranthene
Concen: 7.54 ppb m
RT: 13.616 min Scan# 2437
Delta R.T. -0.016 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:252 Resp: 225685

Ion	Ratio	Lower	Upper
252	100		
253	23.8	0.0	52.7
125	12.7	0.0	42.9

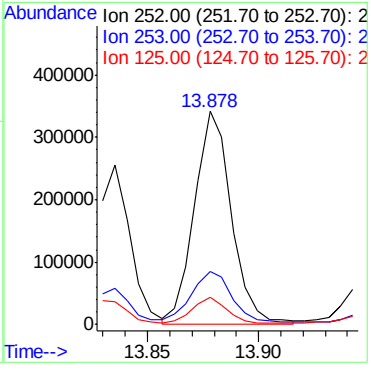


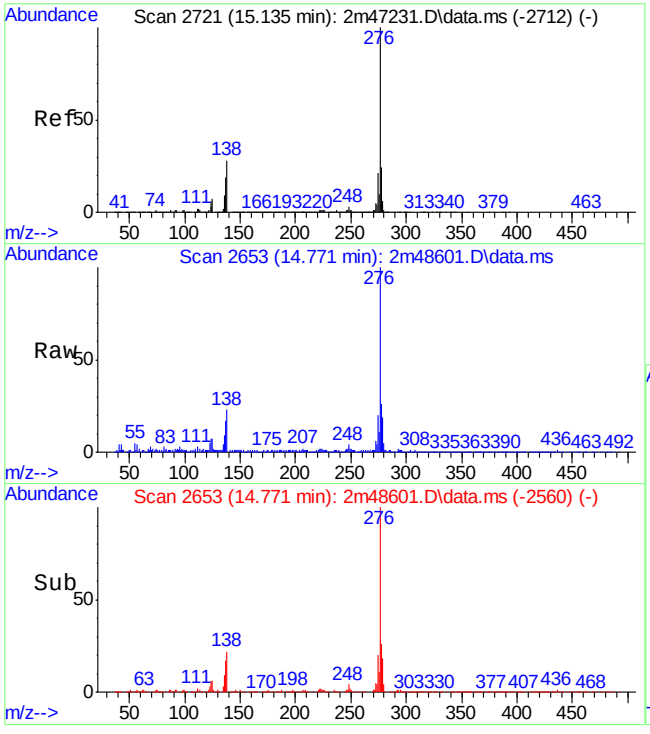


#96
Benzo[a]pyrene
Concen: 13.98 ppb
RT: 13.878 min Scan# 2486
Delta R.T. 0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:252 Resp: 394665

Ion	Ratio	Lower	Upper
252	100		
253	23.9	0.0	52.4
125	12.4	0.0	42.7

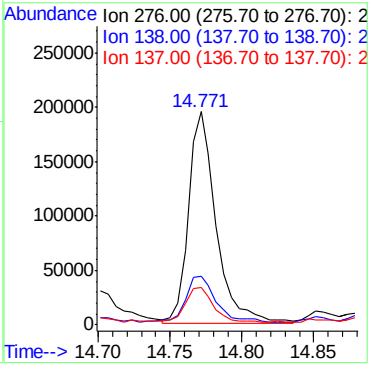


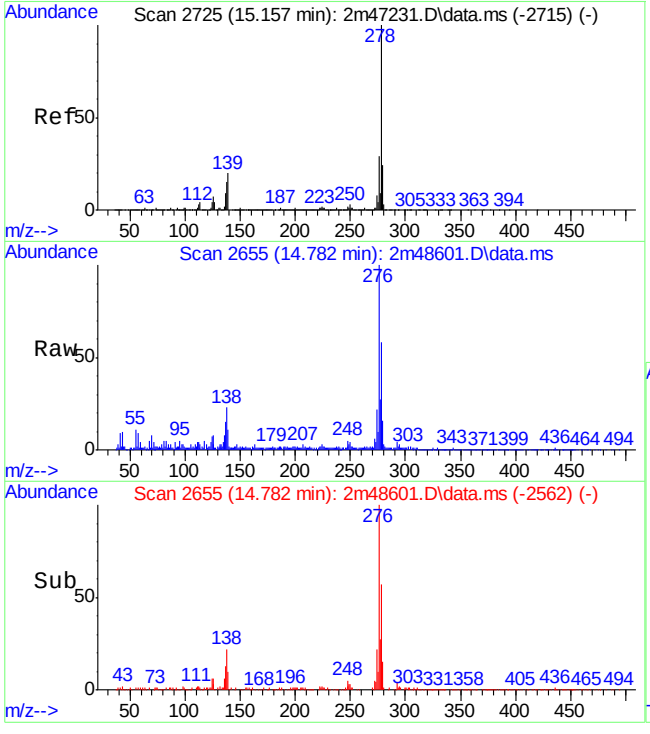


#97
Indeno[1,2,3-cd]pyrene
Concen: 7.98 ppb
RT: 14.771 min Scan# 2653
Delta R.T. -0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:276 Resp: 261784

Ion	Ratio	Lower	Upper
276	100		
138	21.4	0.0	57.6
137	16.5	0.0	48.9

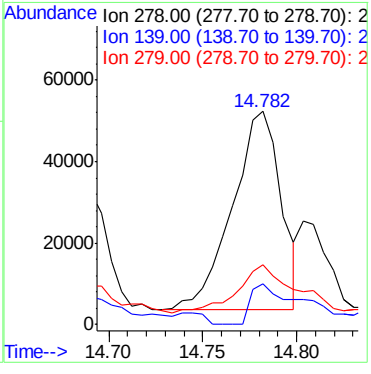


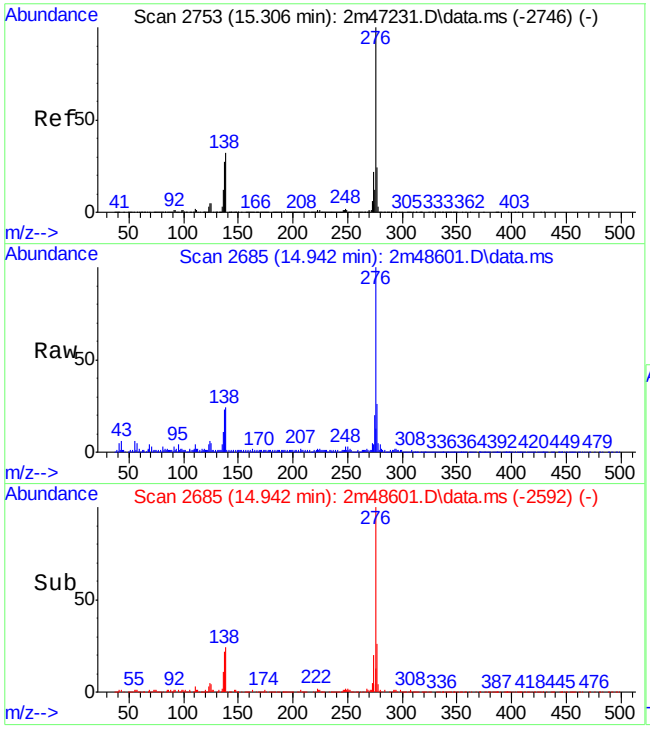


#99
Dibenz[a,h]anthracene
Concen: 3.19 ppb
RT: 14.782 min Scan# 2655
Delta R.T. 0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:278 Resp: 87743

Ion	Ratio	Lower	Upper
278	100		
139	14.5	0.0	52.4
279	21.7	0.0	54.1

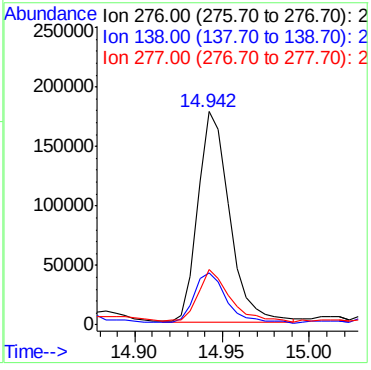




#101
Benzo[g,h,i]perylene
Concen: 8.07 ppb
RT: 14.942 min Scan# 2685
Delta R.T. 0.000 min
Lab File: 2m48601.D
Acq: 18 Dec 2012 8:08 pm

Tgt Ion:276 Resp: 225951

Ion	Ratio	Lower	Upper
276	100		
138	24.1	0.1	60.1
277	24.7	0.0	53.2



9.1.7

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48571.D
Acq On : 17 Dec 2012 6:42 pm
Operator : olgaa
Sample : jb22822-6
Misc : op62037,e2m2080,35.5
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 18 15:58:36 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 18 09:24:11 2012
Response via : Initial Calibration

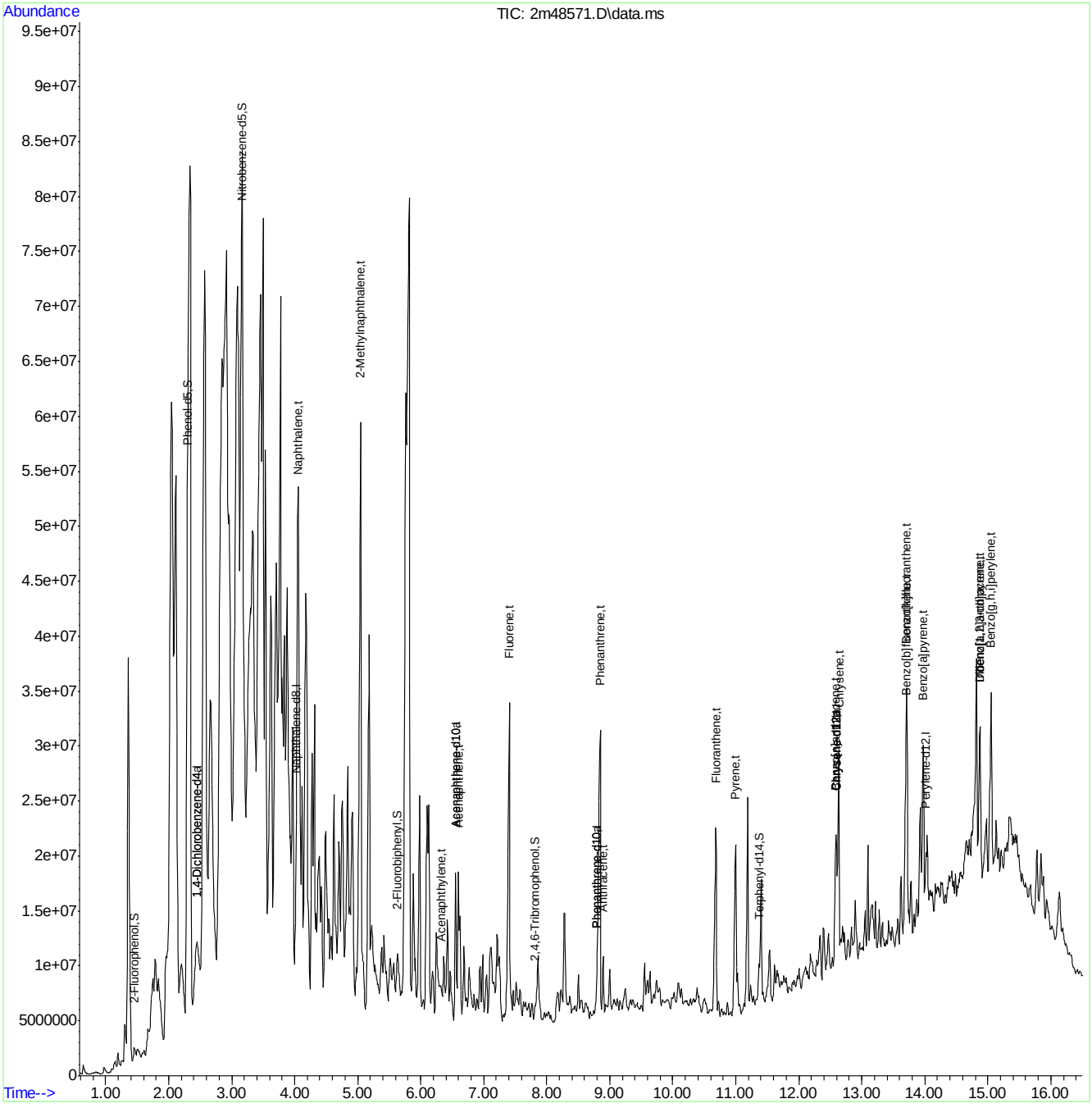
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.448	152	327409	40.00	ppb	0.05
24) Naphthalene-d8	4.020	136	1374967	40.00	ppb	0.09
47) Acenaphthene-d10	6.556	164	1315930	40.00	ppb	0.06
69) Phenanthrene-d10	8.791	188	1348153	40.00	ppb	0.06
83) Chrysene-d12	12.600	240	1618822	40.00	ppb	0.06
92) Perylene-d12	14.017	264	1627025	40.00	ppb	0.08
102) 1,4-Dichlorobenzene-d4a	2.448	152	327409	40.00	ppb	0.05
104) Acenaphthene-d10a	6.556	164	1315930	40.00	ppb	0.06
106) Chrysene-d12a	12.600	240	1618822	40.00	ppb	0.06
108) Phenanthrene-d10a	8.791	188	1348153	40.00	ppb	0.06
110) Chrysene-d12b	12.600	240	1618822	40.00	ppb	0.06
System Monitoring Compounds						
5) 2-Fluorophenol	1.448	112	174010	14.60	ppb	0.01
Spiked Amount 50.000			Recovery	=	29.20%	
8) Phenol-d5	2.293	99	652840	40.88	ppb	0.05
Spiked Amount 50.000			Recovery	=	81.76%	
25) Nitrobenzene-d5	3.149	82	583048m	39.52	ppb	0.07
Spiked Amount 50.000			Recovery	=	79.04%	
51) 2-Fluorobiphenyl	5.625	172	929520	21.48	ppb	0.05
Spiked Amount 50.000			Recovery	=	42.96%	
73) 2,4,6-Tribromophenol	7.813	330	169650	53.55	ppb	0.05
Spiked Amount 50.000			Recovery	=	107.10%	
85) Terphenyl-d14	11.370	244	1511702	46.21	ppb	0.06
Spiked Amount 50.000			Recovery	=	92.42%	
Target Compounds						Qvalue
38) Naphthalene	4.042	128	20089051	525.02	ppb	90
44) 2-Methylnaphthalene	5.047	141	17513756	746.35	ppb	96
56) Acenaphthylene	6.320	152	409516	6.44	ppb	97
59) Acenaphthene	6.599	153	1281836	31.37	ppb	91
66) Fluorene	7.406	166	14807747	334.75	ppb	99
77) Phenanthrene	8.845	178	19799646	479.73	ppb	97
78) Anthracene	8.893	178	2157563	52.74	ppb	97
81) Fluoranthene	10.685	202	11717356	287.80	ppb	97
84) Pyrene	11.000	202	11010885	210.30	ppb	99
88) Benzo[a]anthracene	12.589	228	6502909	130.60	ppb	95
90) Chrysene	12.637	228	7657158	155.12	ppb	97
94) Benzo[b]fluoranthene	13.696	252	5065171m	89.42	ppb	
95) Benzo[k]fluoranthene	13.712	252	8942241m	175.40	ppb	
96) Benzo[a]pyrene	13.980	252	6915780	143.73	ppb	95
97) Indeno[1,2,3-cd]pyrene	14.878	276	6457778	115.59	ppb	97
99) Dibenz[a,h]anthracene	14.878	278	2669178m	56.87	ppb	
101) Benzo[g,h,i]perylene	15.055	276	6526522	136.83	ppb	100

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

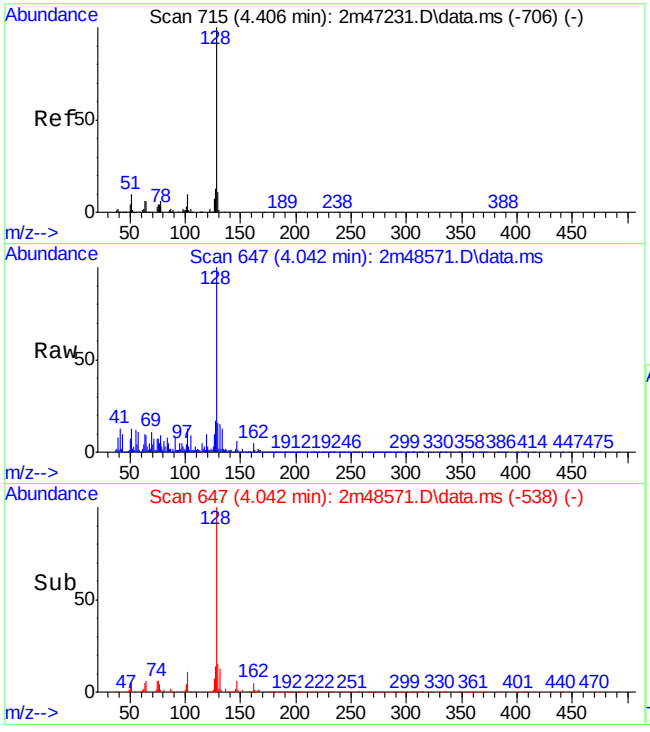
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48571.D
Acq On : 17 Dec 2012 6:42 pm
Operator : olgaa
Sample : jb22822-6
Misc : op62037,e2m2080,35.5
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Dec 18 15:58:36 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 18 09:24:11 2012
Response via : Initial Calibration



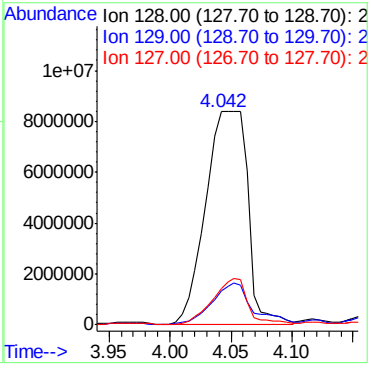
M2M2034.M Tue Dec 18 15:58:50 2012 MS2M Page: 2

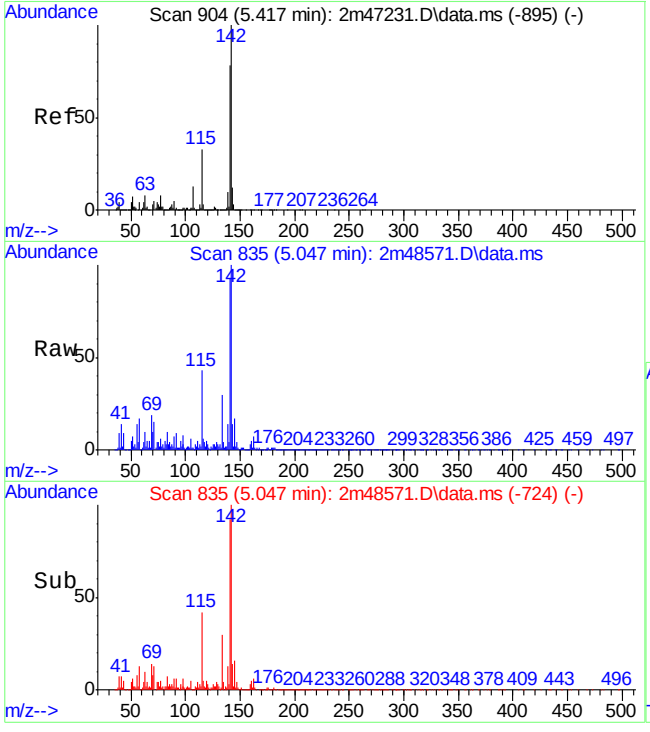


#38
Naphthalene
Concen: 525.02 ppb
RT: 4.042 min Scan# 647
Delta R.T. 0.085 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:128 Resp:20089051

Ion	Ratio	Lower	Upper
128	100		
129	15.4	0.0	40.9
127	16.5	0.0	43.3

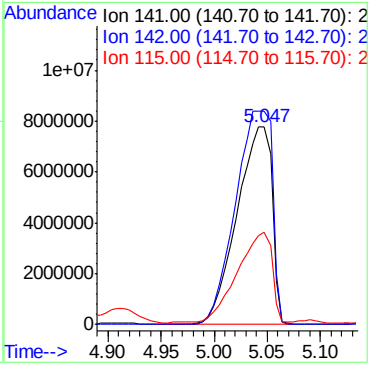




#44
2-Methylnaphthalene
Concen: 746.35 ppb
RT: 5.047 min Scan# 835
Delta R.T. 0.096 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

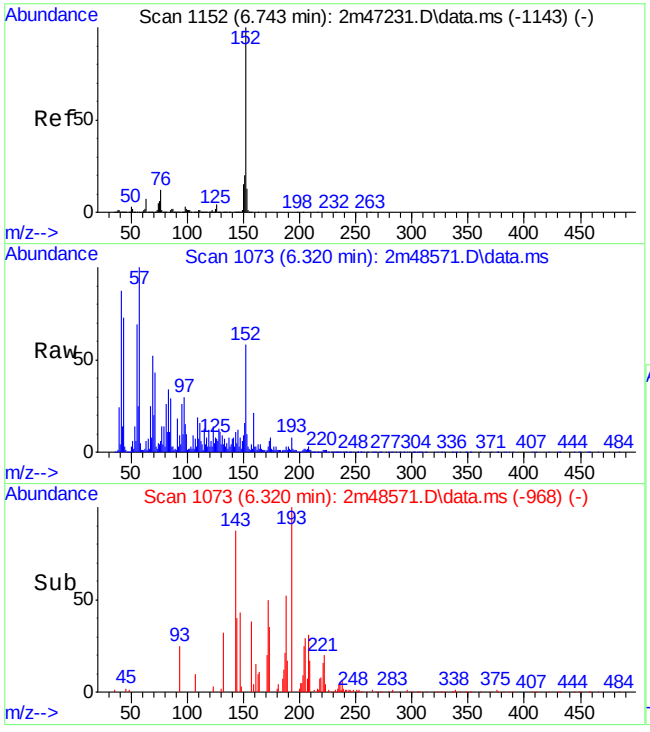
Tgt Ion:141 Resp:17513756

Ion	Ratio	Lower	Upper
141	100		
142	108.2	81.7	141.7
115	45.9	12.0	72.0



9.1.8

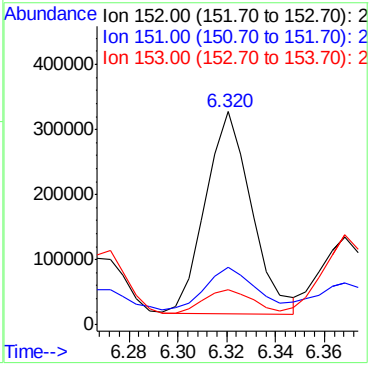
9

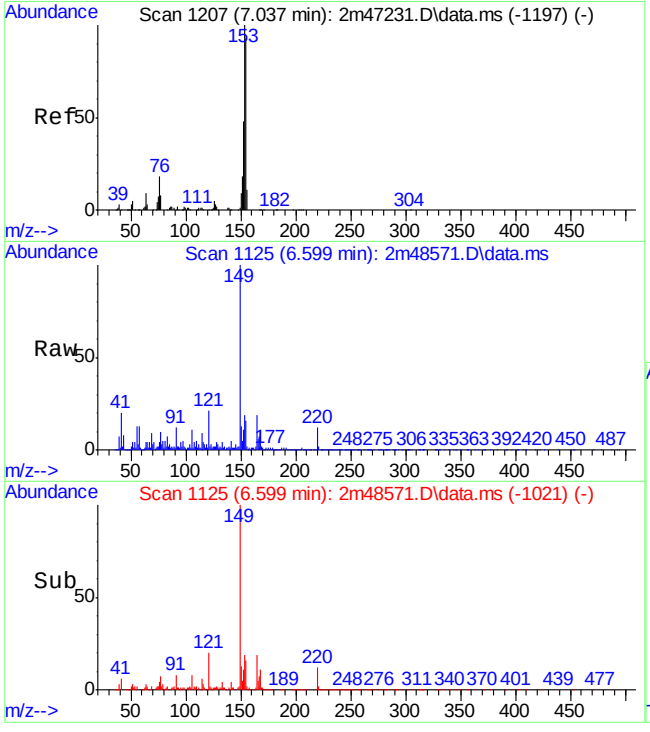


#56
Acenaphthylene
Concen: 6.44 ppb
RT: 6.320 min Scan# 1073
Delta R.T. 0.064 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:152 Resp: 409516

Ion	Ratio	Lower	Upper
152	100		
151	19.8	0.0	49.4
153	10.9	0.0	43.0

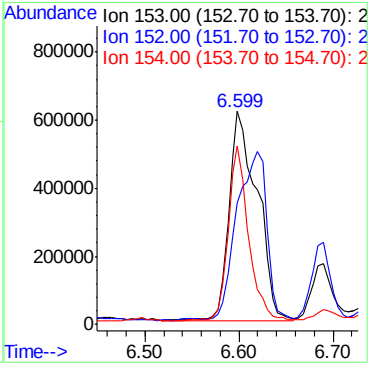




#59
Acenaphthene
Concen: 31.37 ppb
RT: 6.599 min Scan# 1125
Delta R.T. 0.059 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

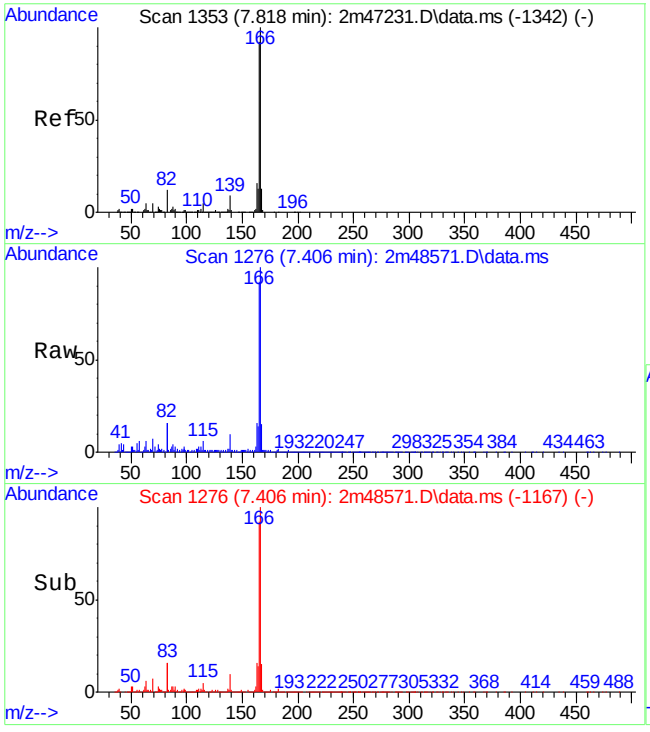
Tgt Ion:153 Resp: 1281836

Ion	Ratio	Lower	Upper
153	100		
152	55.9	15.8	75.8
154	83.6	59.7	119.7



9.1.8

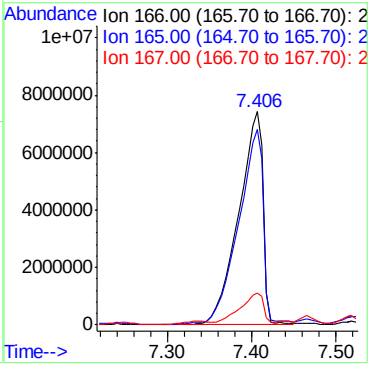
9

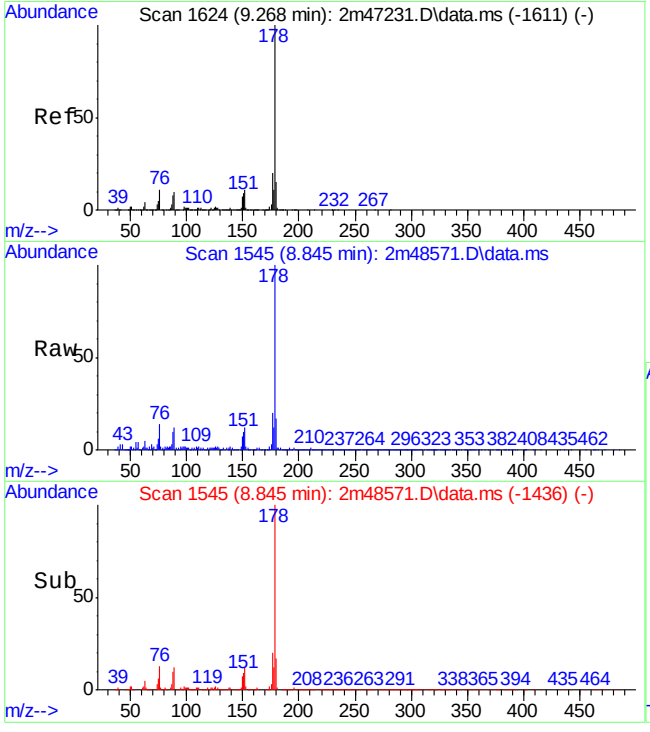


#66
Fluorene
Concen: 334.75 ppb
RT: 7.406 min Scan# 1276
Delta R.T. 0.085 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:166 Resp:14807747

Ion	Ratio	Lower	Upper
166	100		
165	91.3	61.9	121.9
167	14.3	0.0	43.1

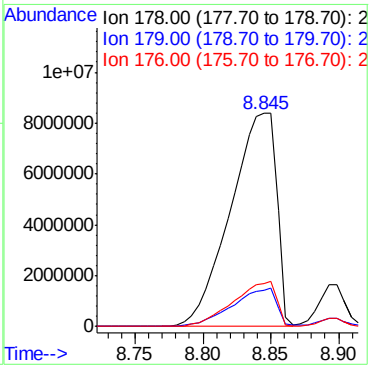


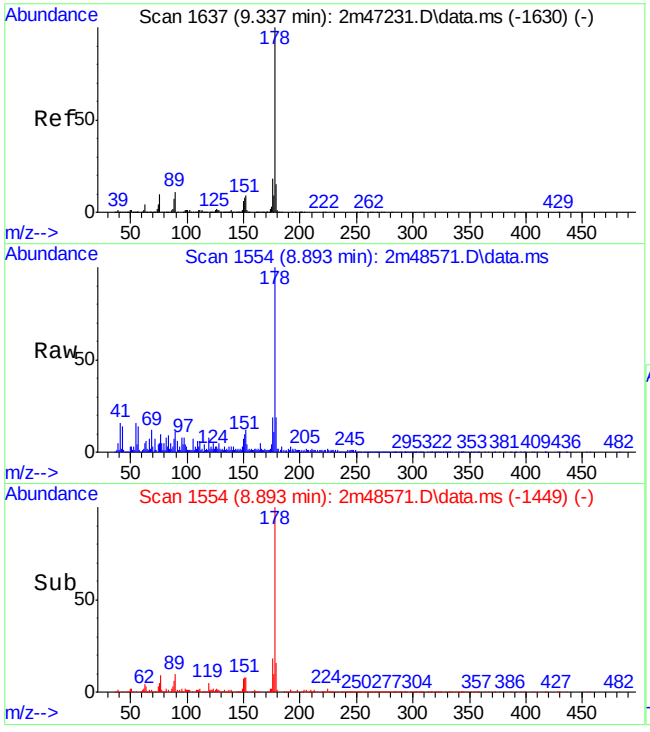


#77
Phenanthrene
Concen: 479.73 ppb
RT: 8.845 min Scan# 1545
Delta R.T. 0.085 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:178 Resp:19799646

Ion	Ratio	Lower	Upper
178	100		
179	16.9	0.0	44.9
176	20.1	0.0	49.1

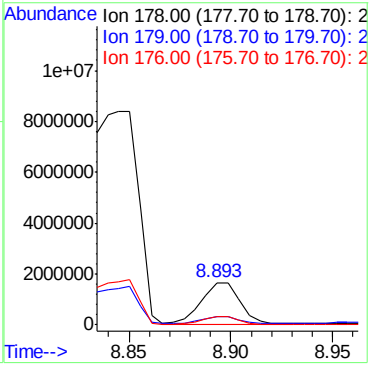


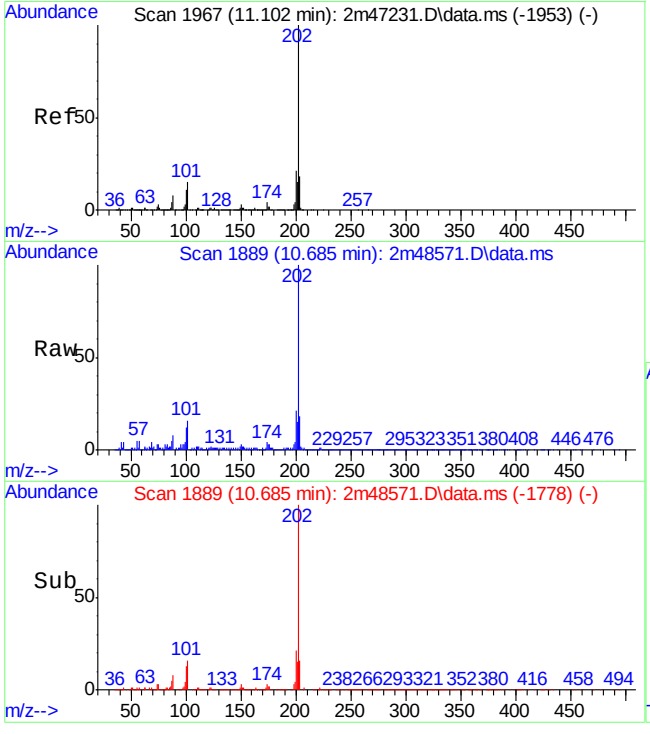


#78
Anthracene
Concen: 52.74 ppb
RT: 8.893 min Scan# 1554
Delta R.T. 0.064 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:178 Resp: 2157563

Ion	Ratio	Lower	Upper
178	100		
179	17.1	0.0	44.3
176	18.4	0.0	48.3

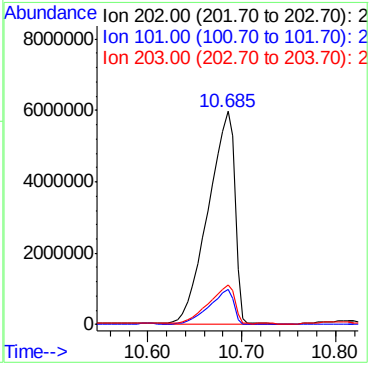


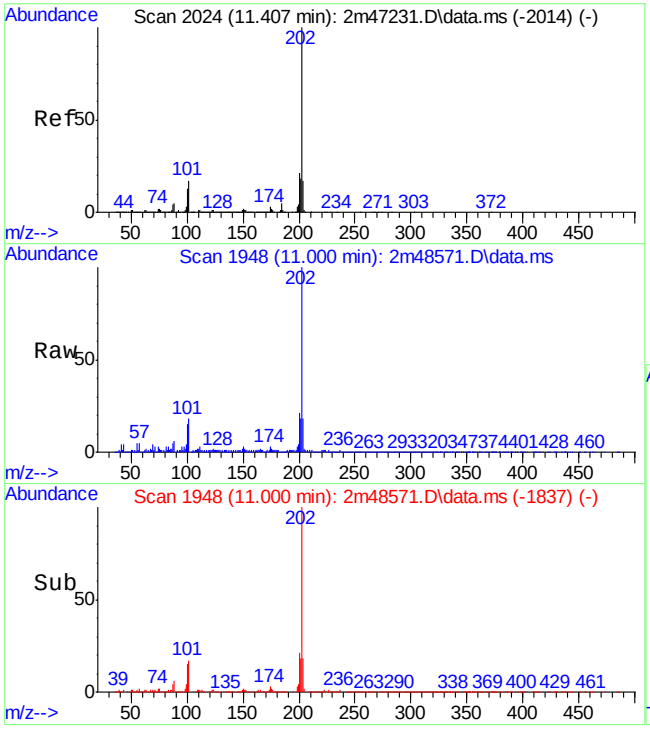


#81
Fluoranthene
Concen: 287.80 ppb
RT: 10.685 min Scan# 1889
Delta R.T. 0.096 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:202 Resp:11717356

Ion	Ratio	Lower	Upper
202	100		
101	16.2	0.0	43.8
203	17.9	0.0	47.5

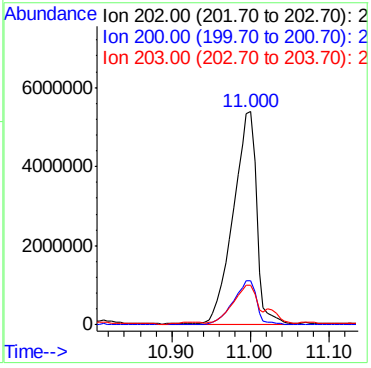


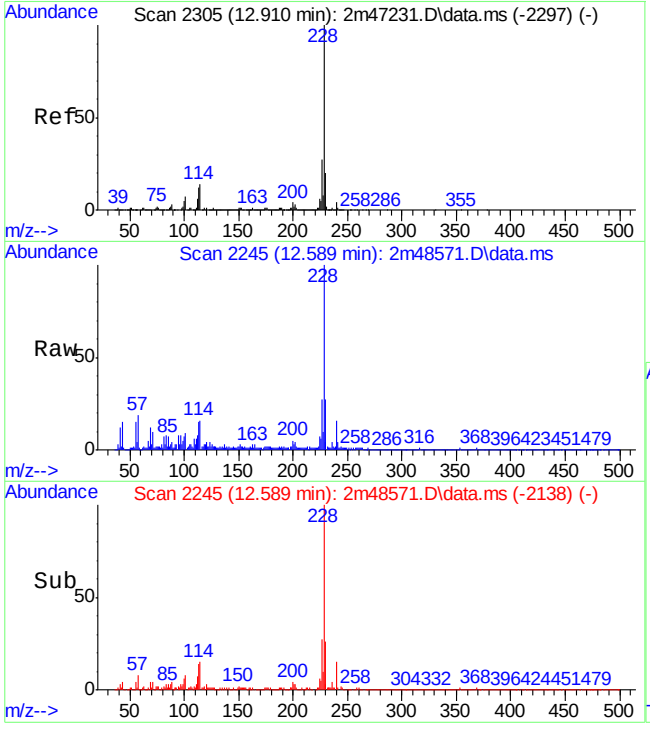


#84
Pyrene
Concen: 210.30 ppb
RT: 11.000 min Scan# 1948
Delta R.T. 0.096 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:202 Resp:11010885

Ion	Ratio	Lower	Upper
202	100		
200	20.7	0.0	51.3
203	18.0	0.0	47.6

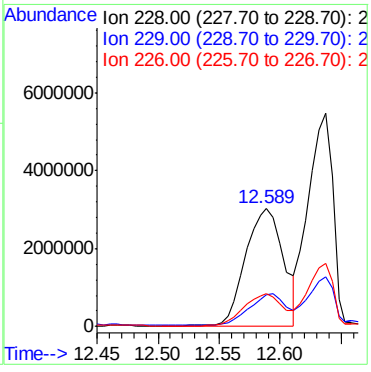


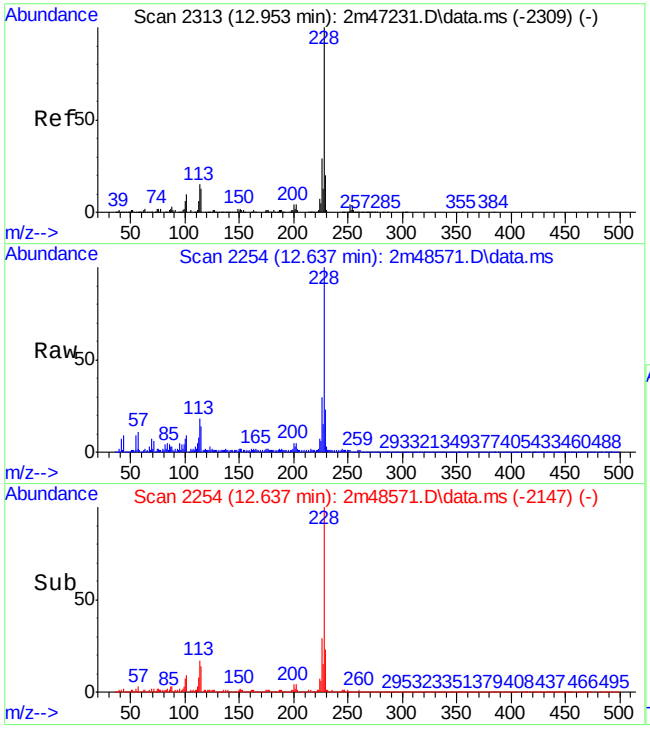


#88
Benzo[a]anthracene
Concen: 130.60 ppb
RT: 12.589 min Scan# 2245
Delta R.T. 0.075 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:228 Resp: 6502909

Ion	Ratio	Lower	Upper
228	100		
229	24.5	0.0	49.3
226	26.5	0.0	56.0

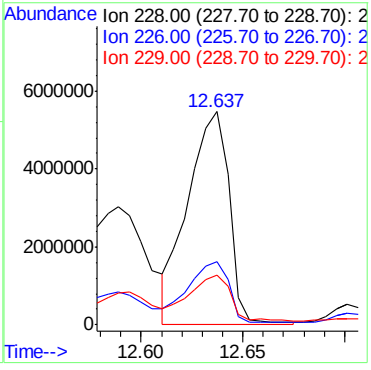


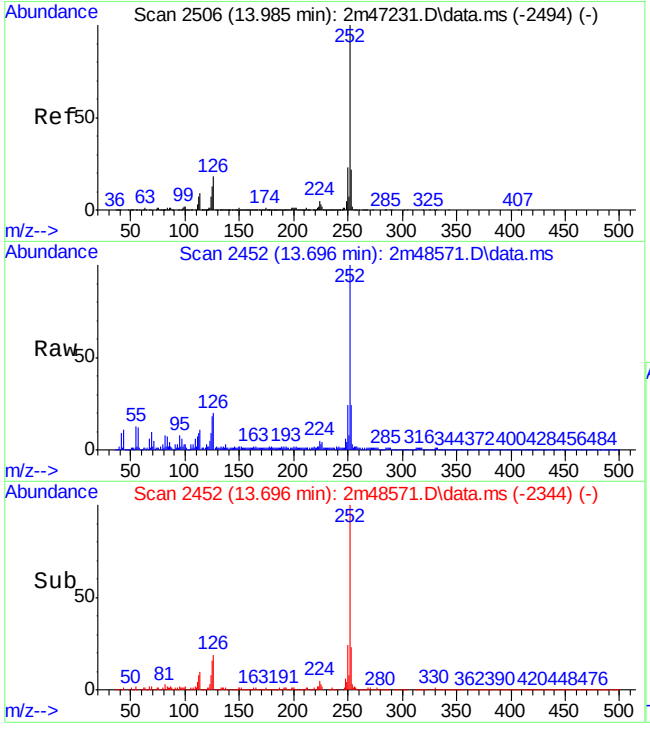


#90
Chrysene
Concen: 155.12 ppb
RT: 12.637 min Scan# 2254
Delta R.T. 0.075 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:228 Resp: 7657158

Ion	Ratio	Lower	Upper
228	100		
226	29.0	0.0	57.7
229	21.3	0.0	49.3

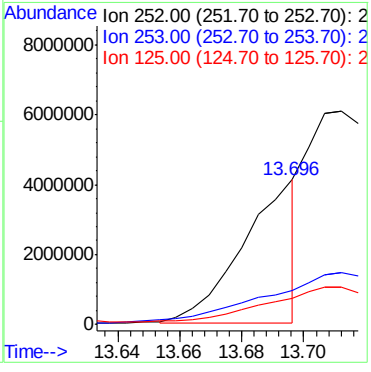




#94
Benzo[b]fluoranthene
Concen: 89.42 ppb m
RT: 13.696 min Scan# 2452
Delta R.T. 0.080 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

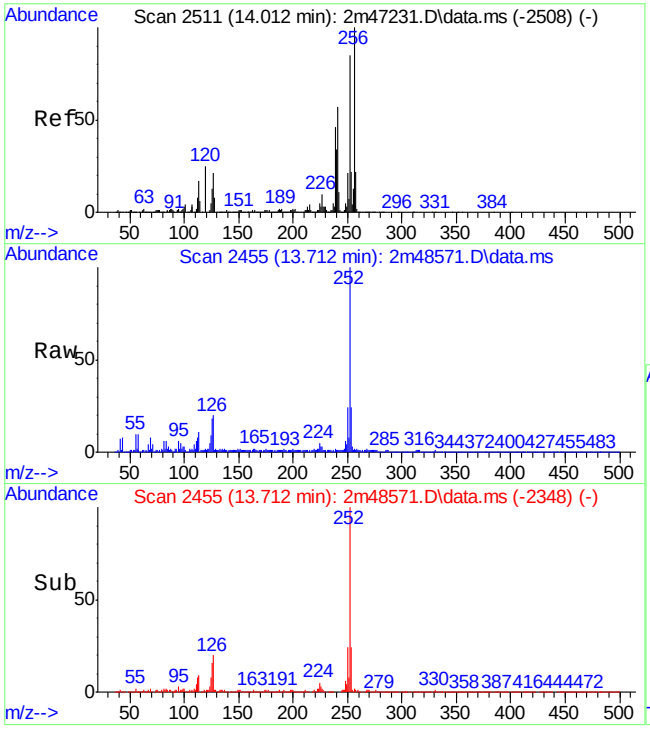
Tgt Ion:252 Resp: 5065171

Ion	Ratio	Lower	Upper
252	100		
253	23.5	0.0	51.6
125	17.9	0.0	40.1



9.1.8

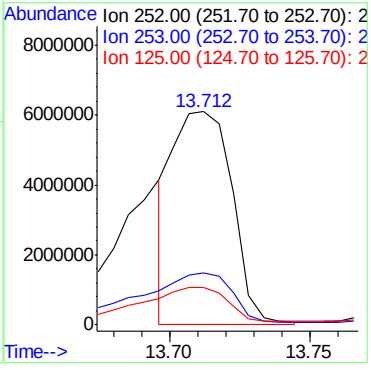
9

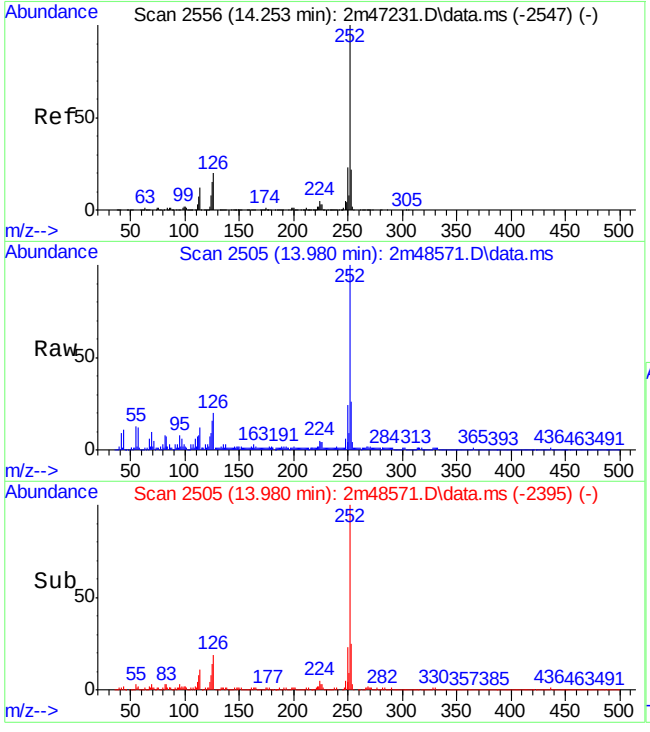


#95
Benzo[k]fluoranthene
Concen: 175.40 ppb m
RT: 13.712 min Scan# 2455
Delta R.T. 0.075 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:252 Resp: 8942241

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	52.7
125	17.5	0.0	42.9

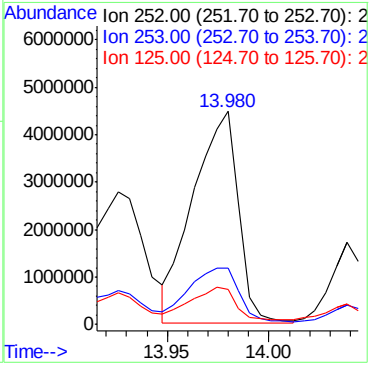


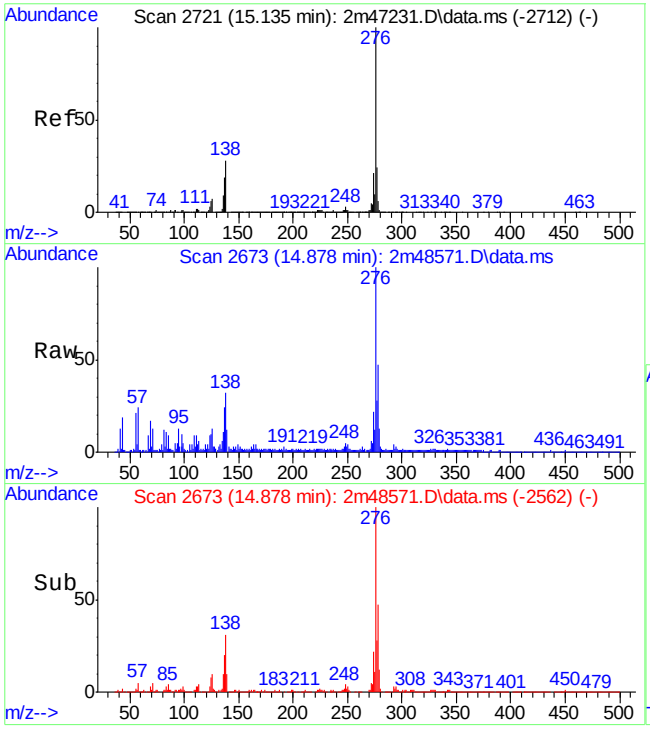


#96
Benzo[a]pyrene
Concen: 143.73 ppb
RT: 13.980 min Scan# 2505
Delta R.T. 0.091 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:252 Resp: 6915780

Ion	Ratio	Lower	Upper
252	100		
253	25.2	0.0	52.4
125	13.9	0.0	42.7

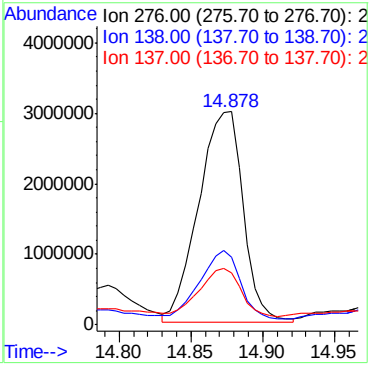


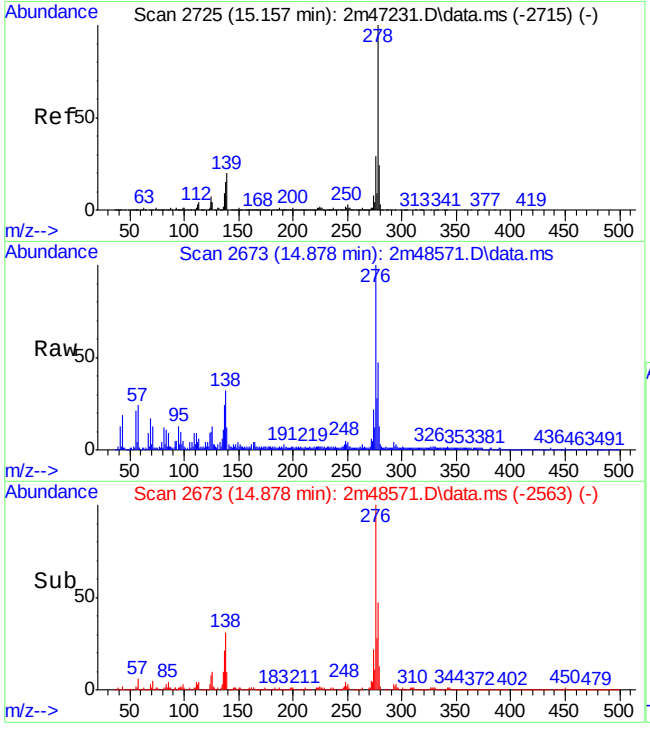


#97
Indeno[1,2,3-cd]pyrene
Concen: 115.59 ppb
RT: 14.878 min Scan# 2673
Delta R.T. 0.096 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:276 Resp: 6457778

Ion	Ratio	Lower	Upper
276	100		
138	29.5	0.0	57.6
137	19.8	0.0	48.9

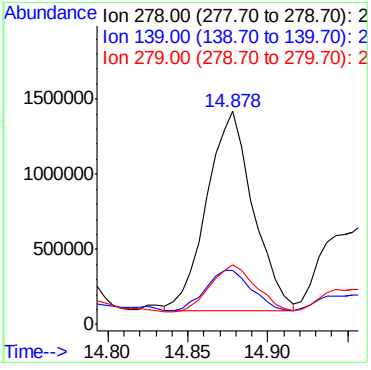




#99
Dibenz[a,h]anthracene
Concen: 56.87 ppb m
RT: 14.878 min Scan# 2673
Delta R.T. 0.091 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:278 Resp: 2669178

Ion	Ratio	Lower	Upper
278	100		
139	25.3	0.0	52.4
279	28.1	0.0	54.1



9.1.8

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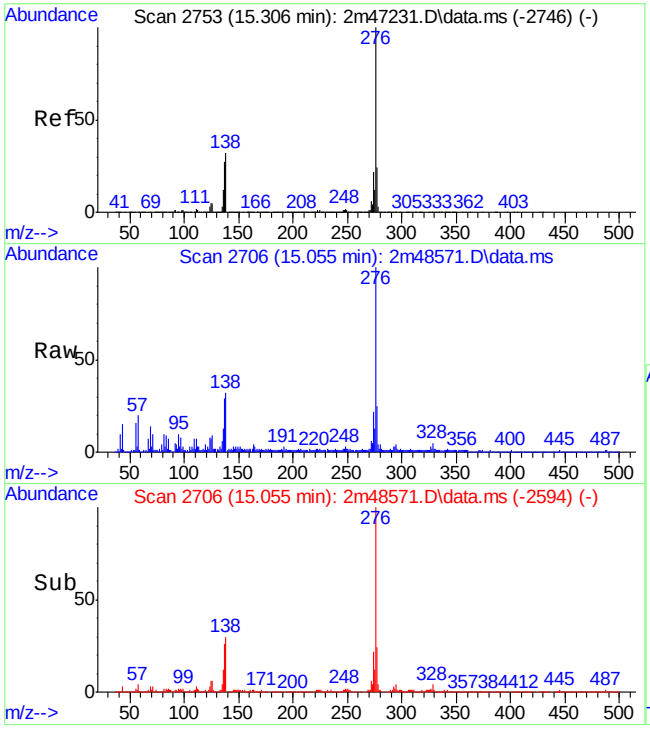
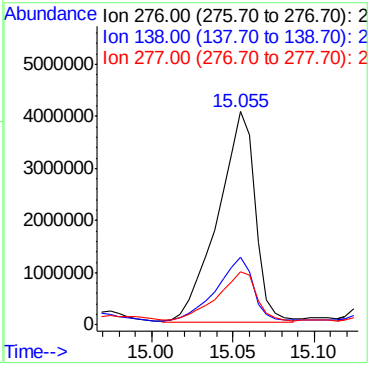


#101
Benzo[g,h,i]perylene
Concen: 136.83 ppb
RT: 15.055 min Scan# 2706
Delta R.T. 0.102 min
Lab File: 2m48571.D
Acq: 17 Dec 2012 6:42 pm

Tgt Ion:276 Resp: 6526522

Ion	Ratio	Lower	Upper
276	100		
138	30.2	0.1	60.1
277	23.4	0.0	53.2



9.1.8

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48587.D
Acq On : 18 Dec 2012 2:42 pm
Operator : olgaa
Sample : jb22822-6
Misc : op62037,e2m2081,35.5,,,1,20
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 19 11:54:25 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.395	152	269991	40.00	ppb	0.00
24) Naphthalene-d8	3.919	136	1279468	40.00	ppb	0.00
47) Acenaphthene-d10	6.481	164	796071	40.00	ppb	0.00
69) Phenanthrene-d10	8.706	188	1279014	40.00	ppb	0.00
83) Chrysene-d12	12.520	240	1233221	40.00	ppb	0.00
92) Perylene-d12	13.926	264	1043720	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.395	152	269991	40.00	ppb	0.00
104) Acenaphthene-d10a	6.481	164	796071	40.00	ppb	0.00
106) Chrysene-d12a	12.520	240	1233221	40.00	ppb	0.00
108) Phenanthrene-d10a	8.706	188	1279014	40.00	ppb	0.00
110) Chrysene-d12b	12.520	240	1233221	40.00	ppb	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	1.453	112	11613	1.18	ppb	0.03
Spiked Amount 50.000			Recovery	=	2.36%	
8) Phenol-d5	2.261	99	26526	2.01	ppb	0.04
Spiked Amount 50.000			Recovery	=	4.02%	
25) Nitrobenzene-d5	3.074	82	24992m	1.82	ppb	0.01
Spiked Amount 50.000			Recovery	=	3.64%	
51) 2-Fluorobiphenyl	5.561	172	49206	1.88	ppb	0.00
Spiked Amount 50.000			Recovery	=	3.76%	
73) 2,4,6-Tribromophenol	7.749	330	7598	2.53	ppb	0.01
Spiked Amount 50.000			Recovery	=	5.06%	
85) Terphenyl-d14	11.290	244	74203	2.98	ppb	0.00
Spiked Amount 50.000			Recovery	=	5.96%	
Target Compounds						Qvalue
38) Naphthalene	3.940	128	1060555	29.79	ppb	99
44) 2-Methylnaphthalene	4.935	141	777861	35.62	ppb	97
56) Acenaphthylene	6.246	152	19860	0.52	ppb	94
59) Acenaphthene	6.524	153	60855	2.46	ppb	86
66) Fluorene	7.299	166	630989	23.58	ppb	95
77) Phenanthrene	8.738	178	904362	23.10	ppb	99
78) Anthracene	8.808	178	101042	2.60	ppb	95
81) Fluoranthene	10.573	202	534829	13.85	ppb	97
84) Pyrene	10.888	202	490593	12.30	ppb	98
88) Benzo[a]anthracene	12.504	228	267107	7.04	ppb	93
90) Chrysene	12.546	228	312030	8.30	ppb	98
94) Benzo[b]fluoranthene	13.605	252	332318m	9.15	ppb	
95) Benzo[k]fluoranthene	13.616	252	129475m	3.96	ppb	
96) Benzo[a]pyrene	13.878	252	230733	7.48	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.771	276	179903	5.02	ppb	91
99) Dibenz[a,h]anthracene	14.782	278	69254m	2.30	ppb	
101) Benzo[g,h,i]perylene	14.943	276	167702	5.48	ppb	92

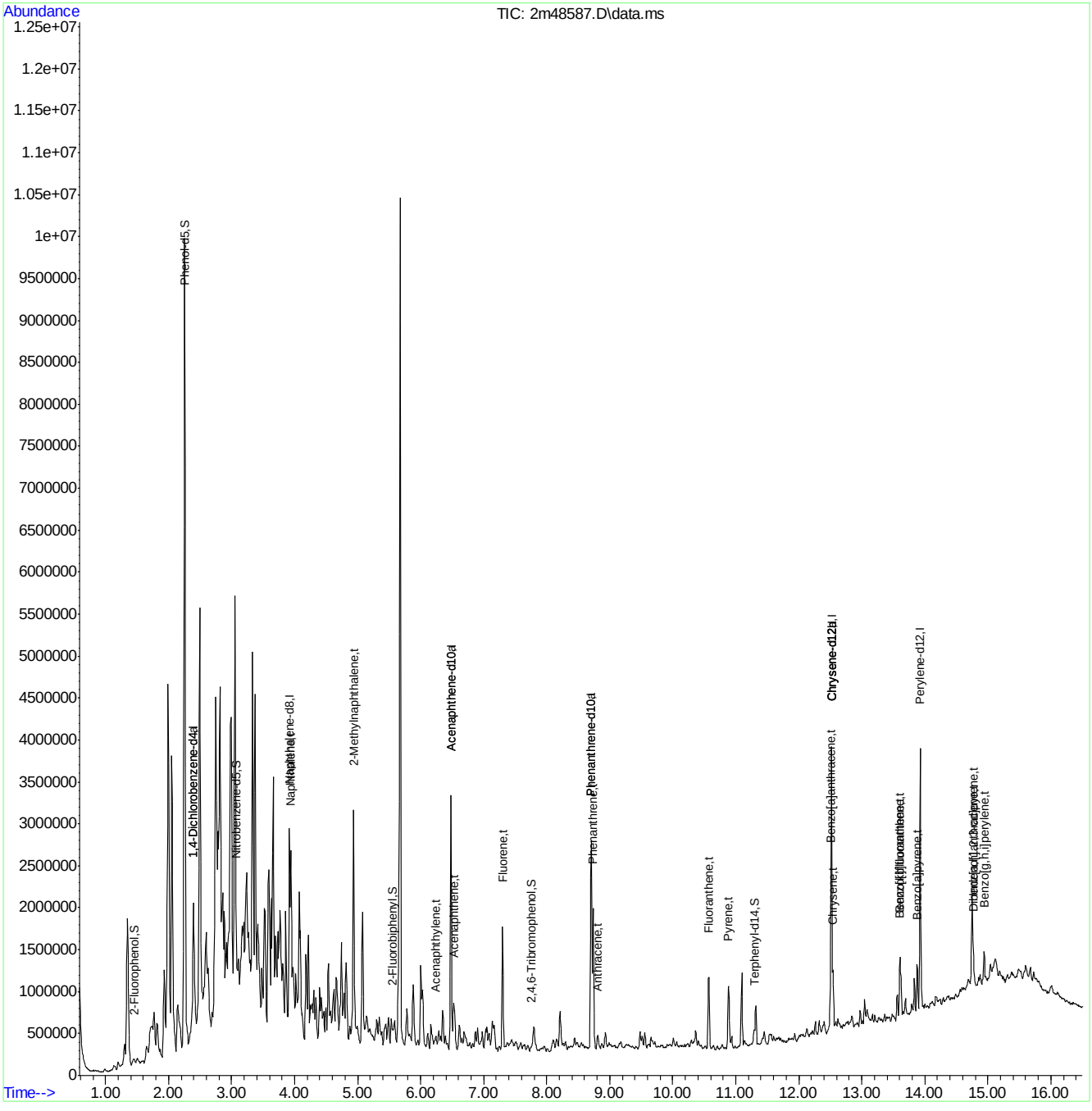
(#) = qualifier out of range (m) = manual integration (+) = signals summed

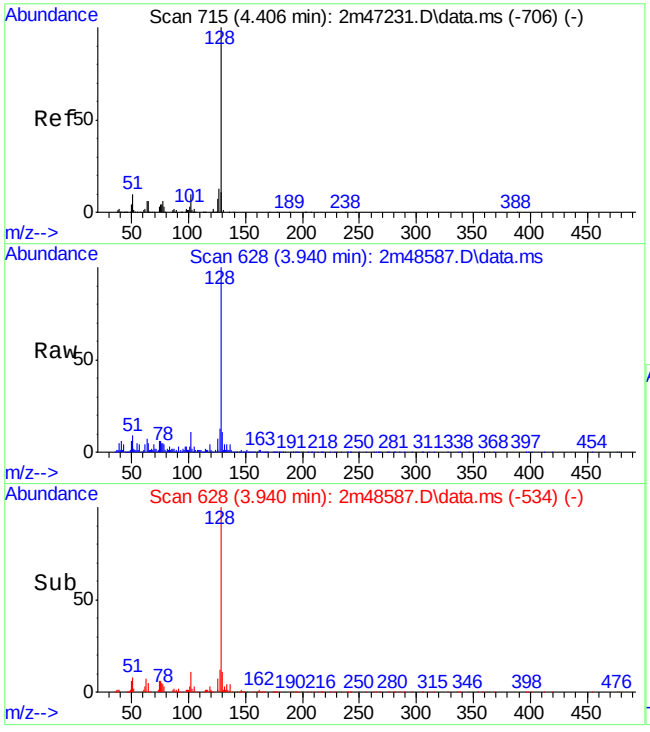
9.1.9
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48587.D
Acq On : 18 Dec 2012 2:42 pm
Operator : olgaa
Sample : jb22822-6
Misc : op62037,e2m2081,35.5,,,1,20
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 19 11:54:25 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

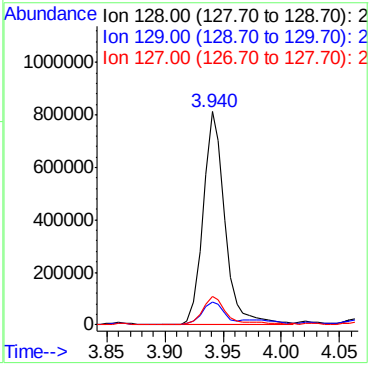


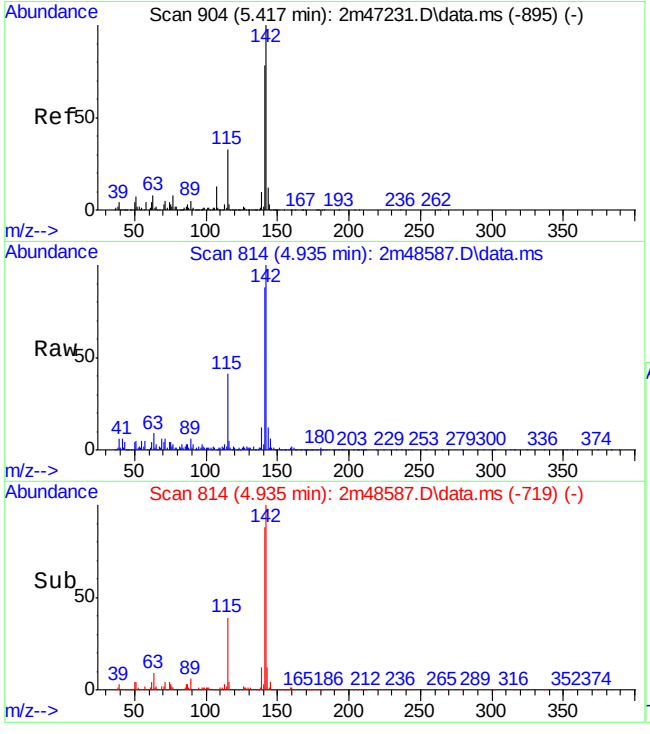


#38
Naphthalene
Concen: 29.79 ppb
RT: 3.940 min Scan# 628
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:128 Resp: 1060555

Ion	Ratio	Lower	Upper
128	100		
129	10.4	0.0	40.9
127	12.9	0.0	43.3

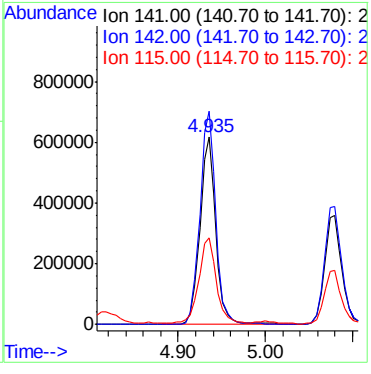




#44
2-Methylnaphthalene
Concen: 35.62 ppb
RT: 4.935 min Scan# 814
Delta R.T. 0.006 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:141 Resp: 777861

Ion	Ratio	Lower	Upper
141	100		
142	114.1	81.7	141.7
115	45.9	12.0	72.0



9.1.9

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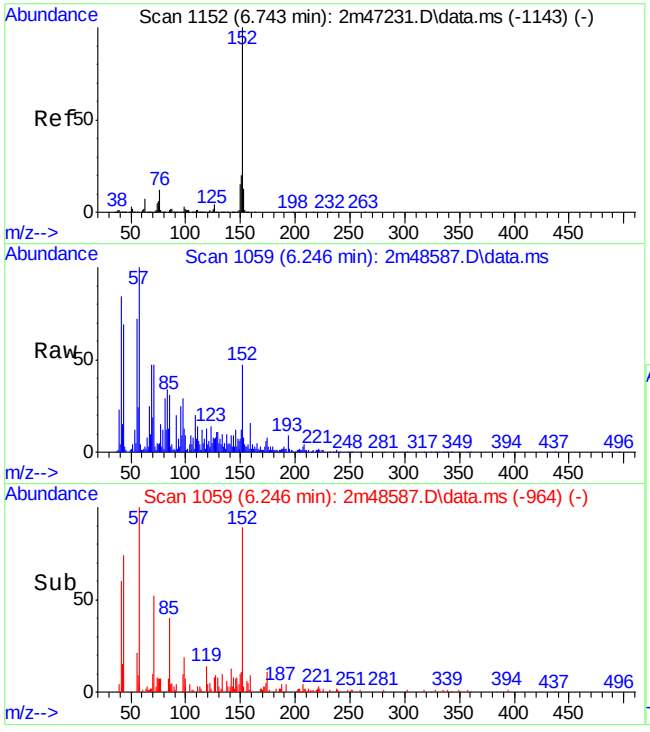
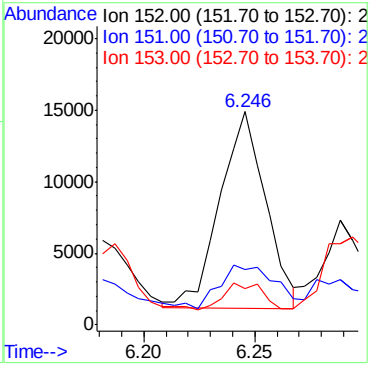
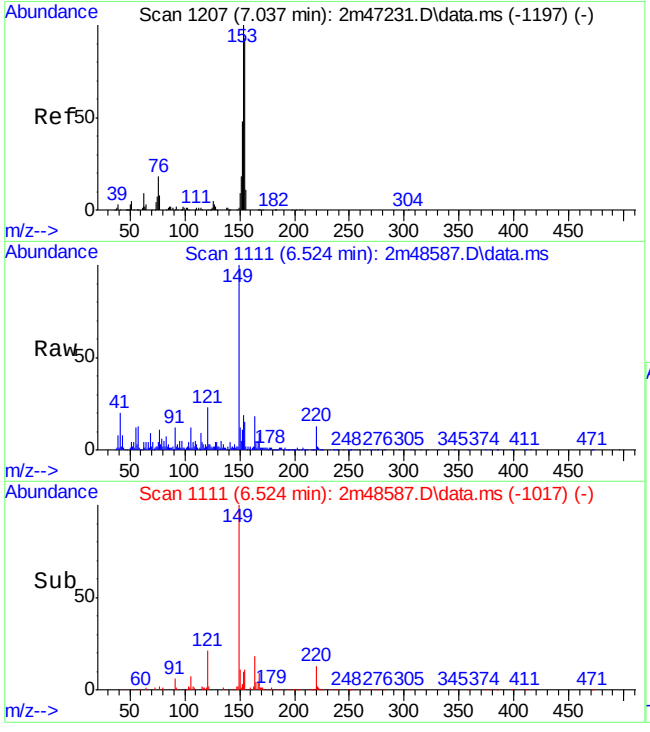


#56
Acenaphthylene
Concen: 0.52 ppb
RT: 6.246 min Scan# 1059
Delta R.T. 0.006 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:152 Resp: 19860

Ion	Ratio	Lower	Upper
152	100		
151	16.7	0.0	49.4
153	10.1	0.0	43.0

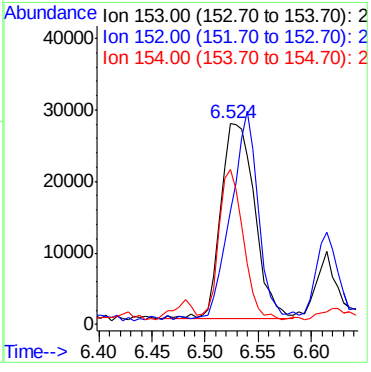




#59
Acenaphthene
Concen: 2.46 ppb
RT: 6.524 min Scan# 1111
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:153 Resp: 60855

Ion	Ratio	Lower	Upper
153	100		
152	54.1	15.8	75.8
154	75.9	59.7	119.7



9.1.9
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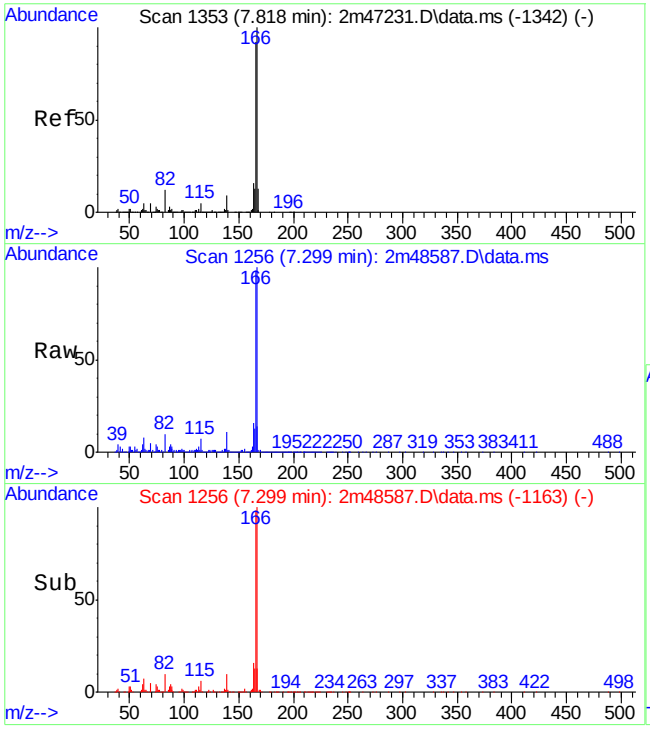
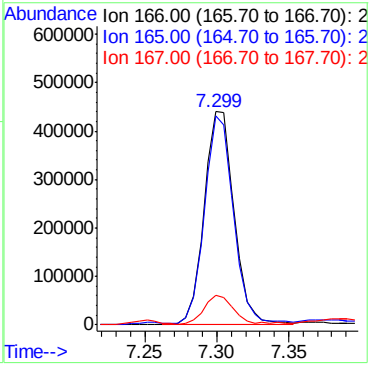
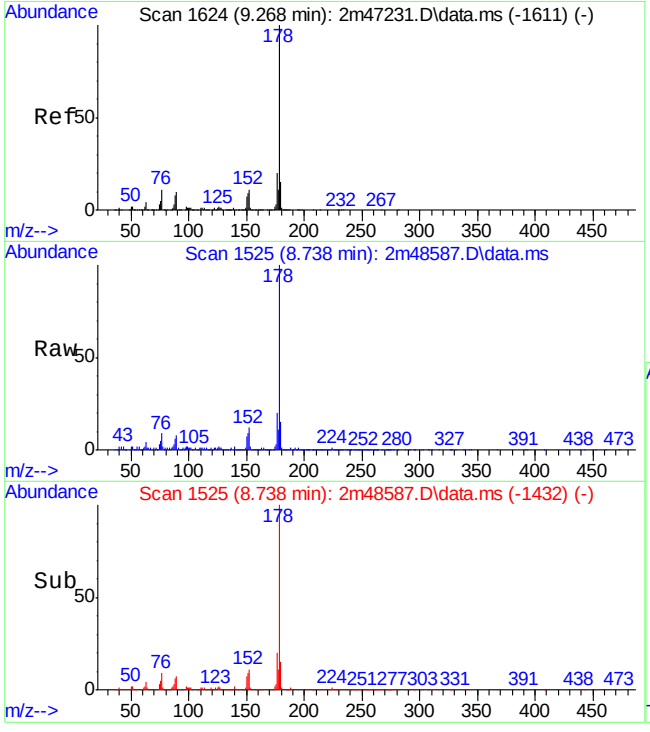


#66
Fluorene
Concen: 23.58 ppb
RT: 7.299 min Scan# 1256
Delta R.T. -0.005 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:166 Resp: 630989

Ion	Ratio	Lower	Upper
166	100		
165	97.4	61.9	121.9
167	12.9	0.0	43.1

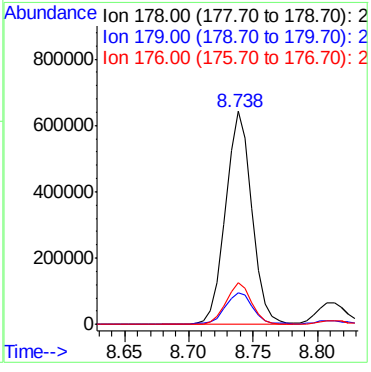




#77
Phenanthrene
Concen: 23.10 ppb
RT: 8.738 min Scan# 1525
Delta R.T. -0.005 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:178 Resp: 904362

Ion	Ratio	Lower	Upper
178	100		
179	14.7	0.0	44.9
176	19.5	0.0	49.1



9.1.9

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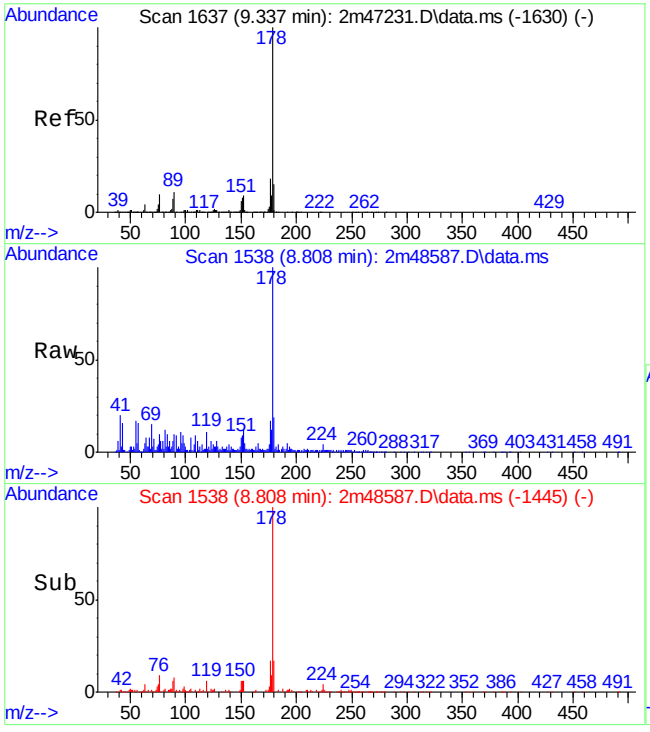
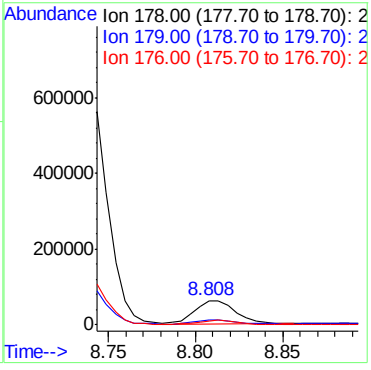
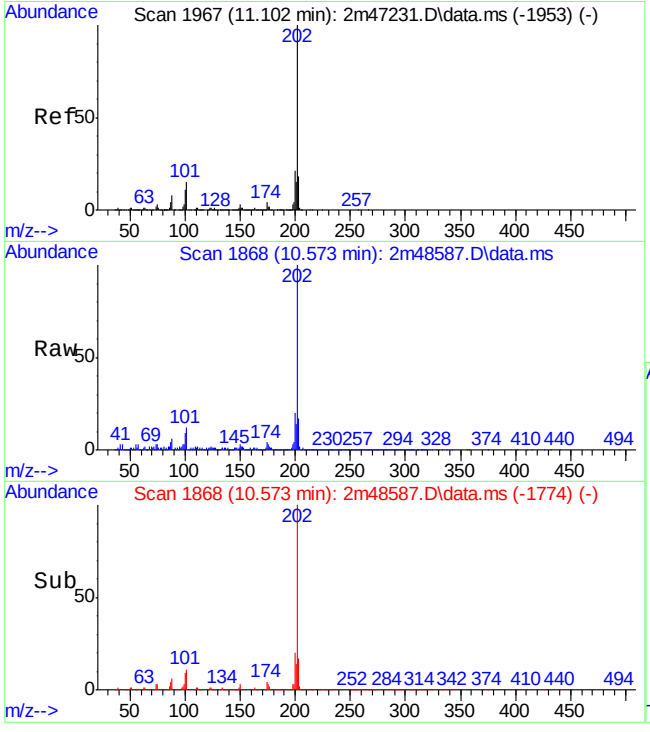


#78
Anthracene
Concen: 2.60 ppb
RT: 8.808 min Scan# 1538
Delta R.T. -0.005 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:178 Resp: 101042

Ion	Ratio	Lower	Upper
178	100		
179	16.5	0.0	44.3
176	15.9	0.0	48.3

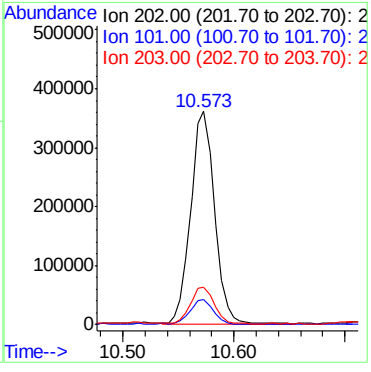




#81
Fluoranthene
Concen: 13.85 ppb
RT: 10.573 min Scan# 1868
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:202 Resp: 534829

Ion	Ratio	Lower	Upper
202	100		
101	11.3	0.0	43.8
203	17.2	0.0	47.5



9.1.9

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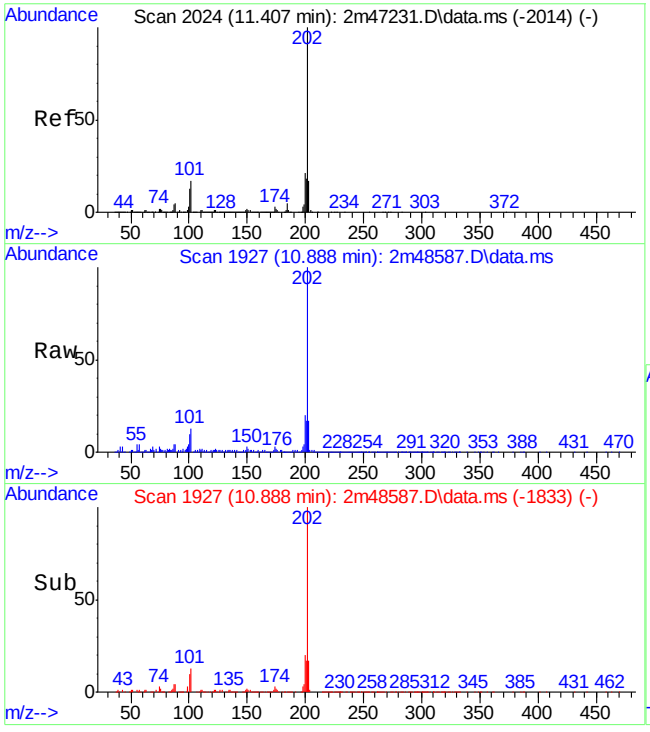
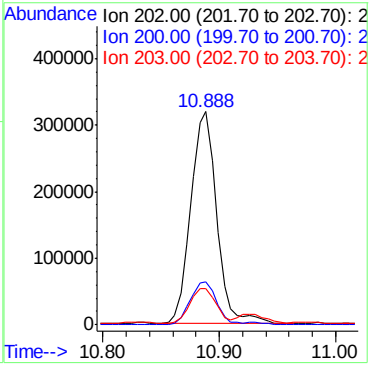
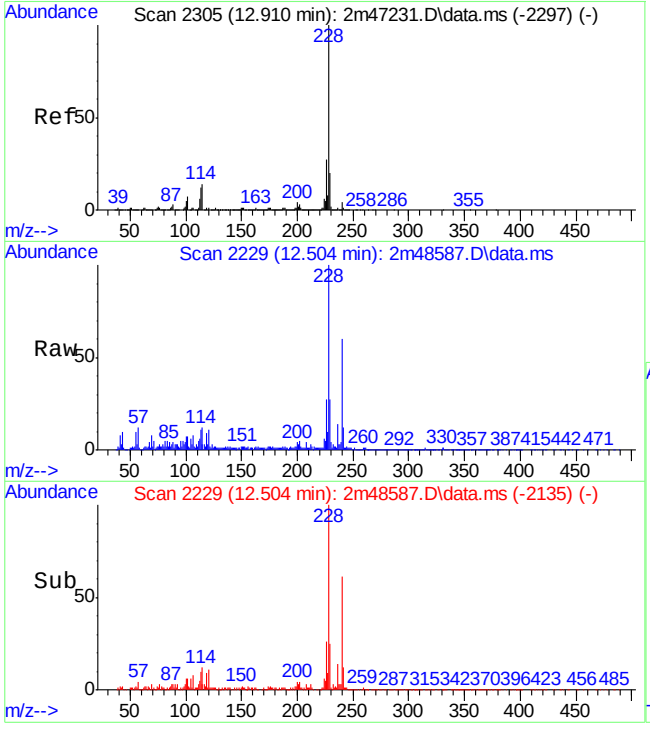


#84
Pyrene
Concen: 12.30 ppb
RT: 10.888 min Scan# 1927
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:202 Resp: 490593

Ion	Ratio	Lower	Upper
202	100		
200	20.2	0.0	51.3
203	16.5	0.0	47.6

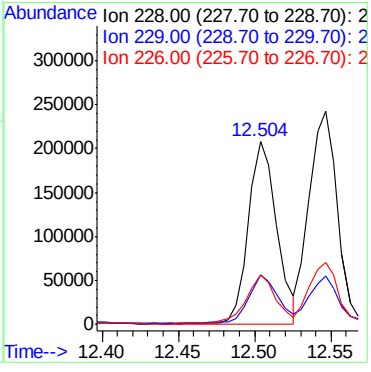




#88
Benzo[a]anthracene
Concen: 7.04 ppb
RT: 12.504 min Scan# 2229
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:228 Resp: 267107

Ion	Ratio	Lower	Upper
228	100		
229	26.0	0.0	49.3
226	27.0	0.0	56.0



9.1.9

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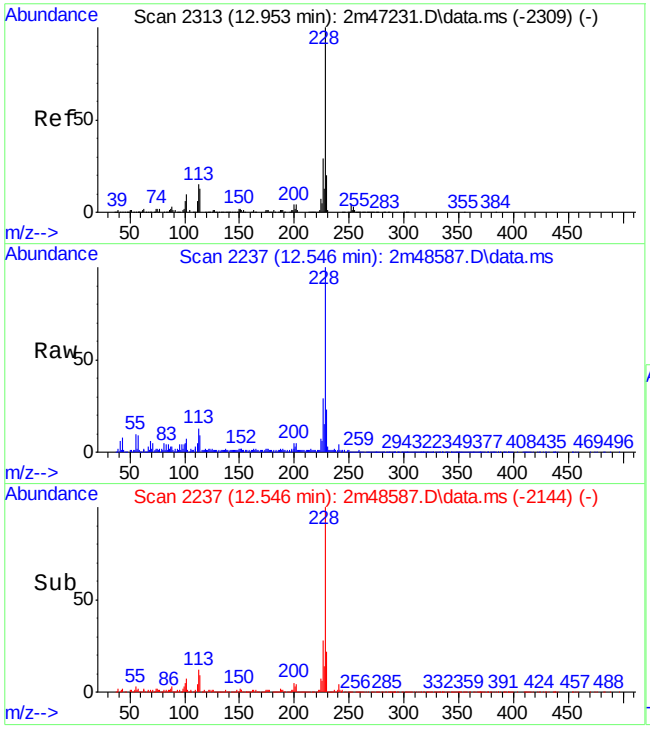
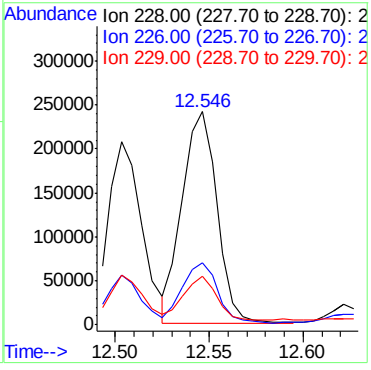
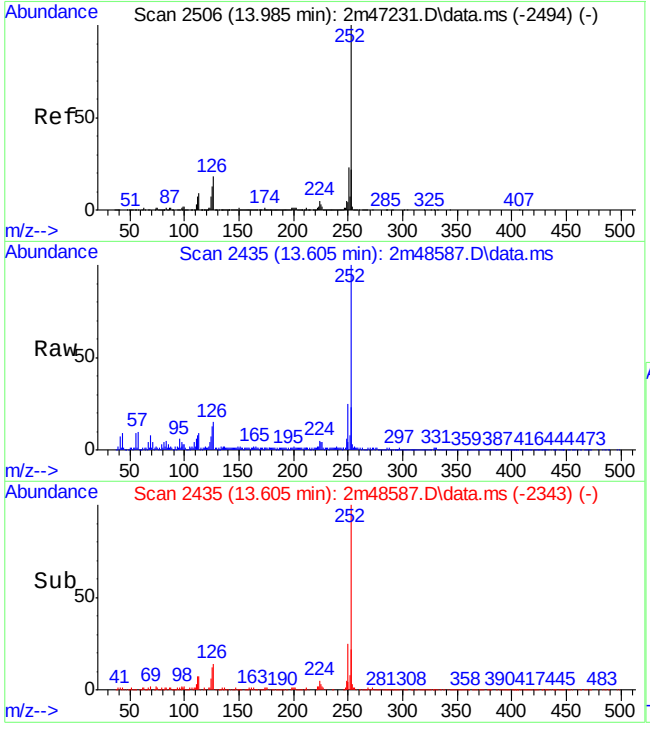


#90
Chrysene
Concen: 8.30 ppb
RT: 12.546 min Scan# 2237
Delta R.T. -0.005 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:228 Resp: 312030

Ion	Ratio	Lower	Upper
228	100		
226	28.5	0.0	57.7
229	20.4	0.0	49.3

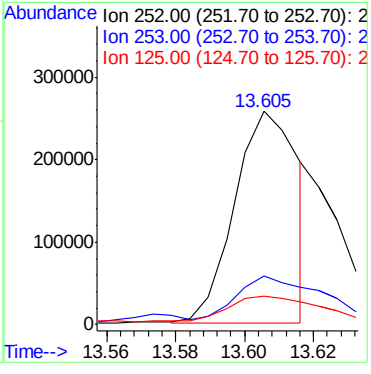




#94
Benzo[b]fluoranthene
Concen: 9.15 ppb m
RT: 13.605 min Scan# 2435
Delta R.T. -0.011 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

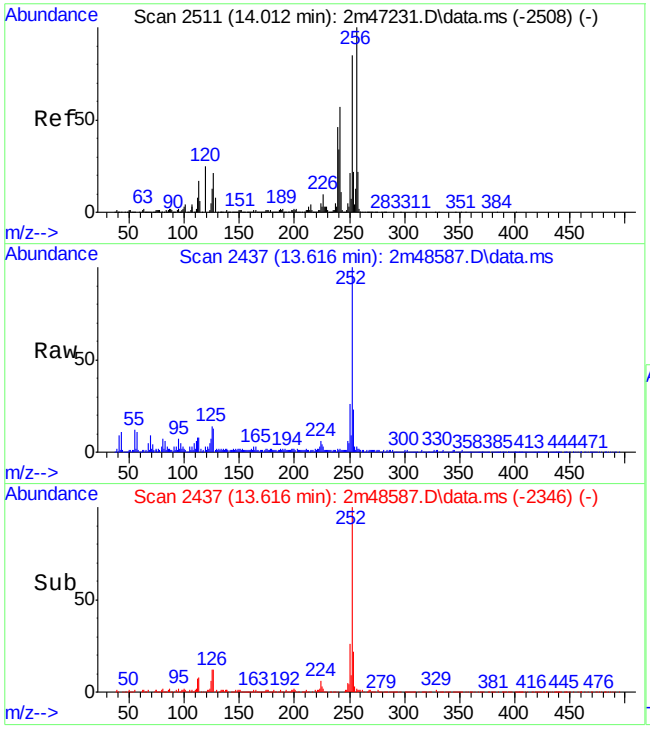
Tgt Ion:252 Resp: 332318

Ion	Ratio	Lower	Upper
252	100		
253	22.7	0.0	51.6
125	13.1	0.0	40.1



9.1.9

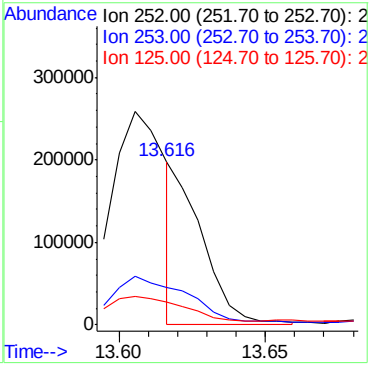
6

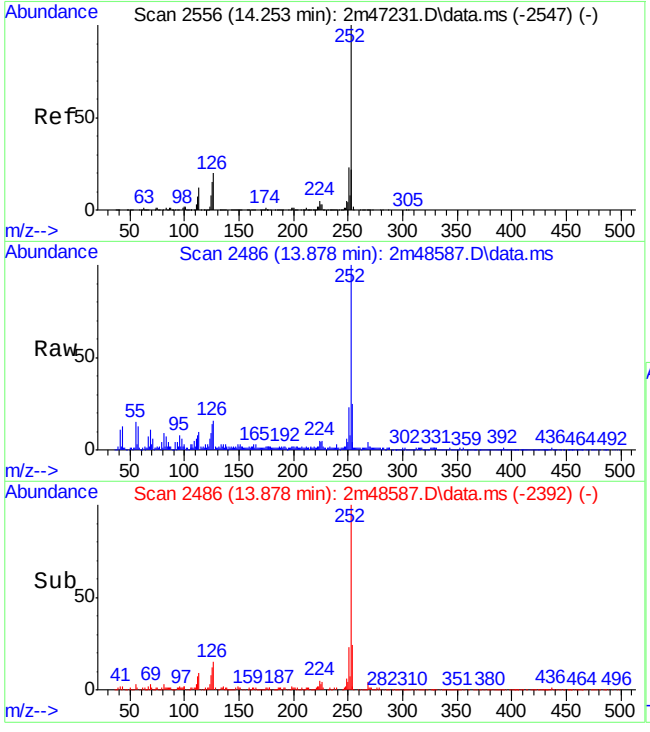


#95
Benzo[k]fluoranthene
Concen: 3.96 ppb m
RT: 13.616 min Scan# 2437
Delta R.T. -0.016 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:252 Resp: 129475

Ion	Ratio	Lower	Upper
252	100		
253	22.7	0.0	52.7
125	13.9	0.0	42.9

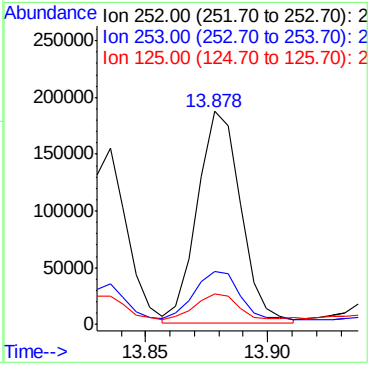




#96
Benzo[a]pyrene
Concen: 7.48 ppb
RT: 13.878 min Scan# 2486
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:252 Resp: 230733

Ion	Ratio	Lower	Upper
252	100		
253	23.4	0.0	52.4
125	12.0	0.0	42.7



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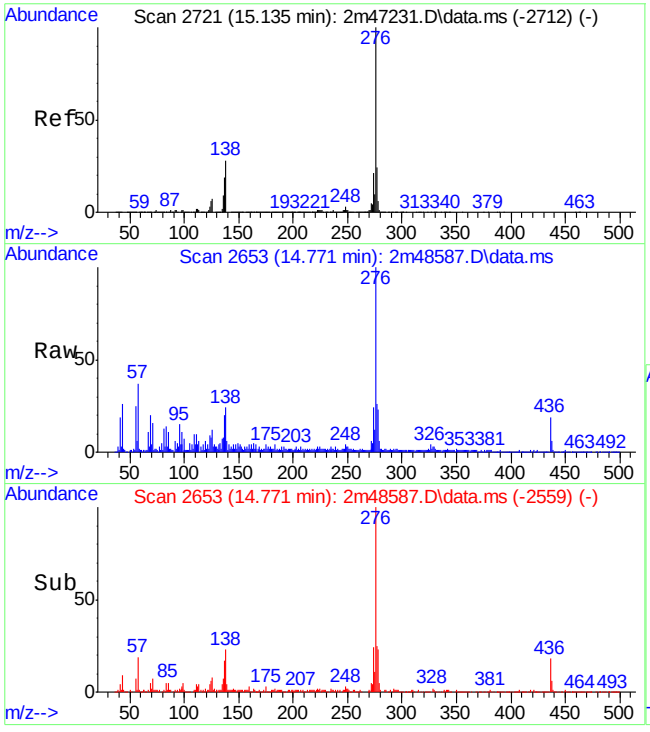
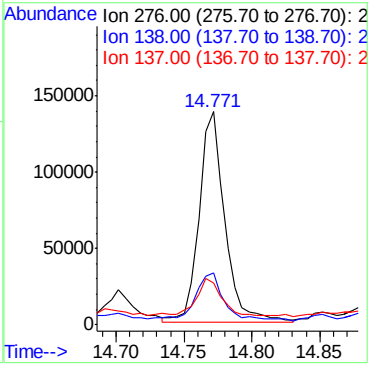
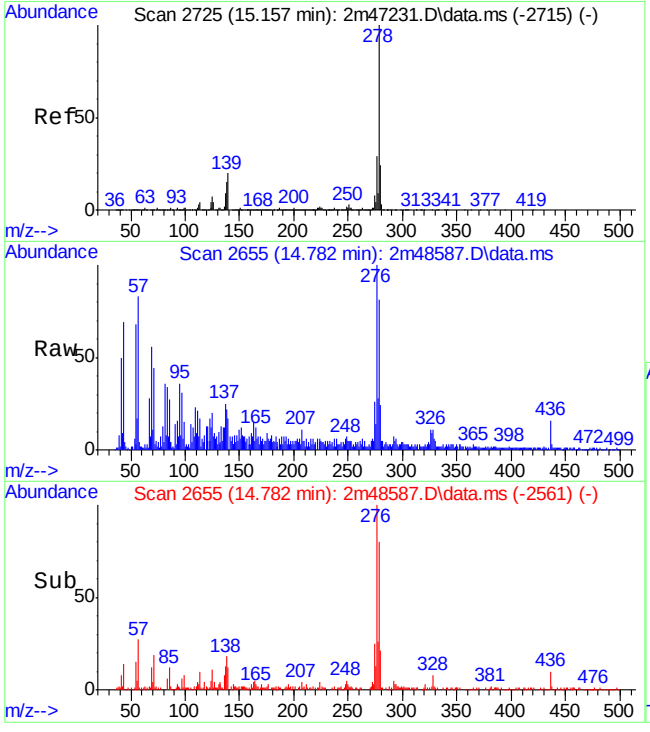


#97
Indeno[1,2,3-cd]pyrene
Concen: 5.02 ppb
RT: 14.771 min Scan# 2653
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:276 Resp: 179903

Ion	Ratio	Lower	Upper
276	100		
138	22.3	0.0	57.6
137	15.6	0.0	48.9

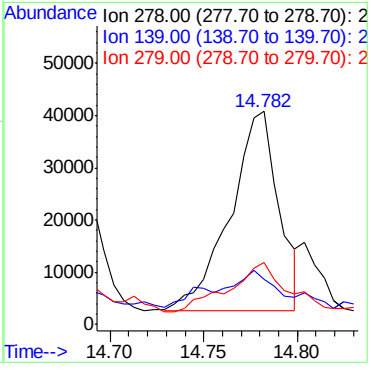


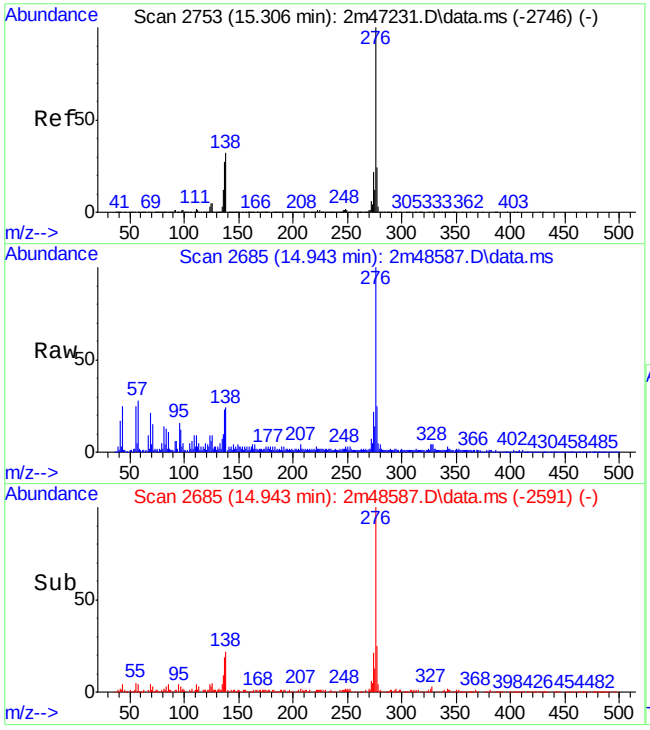


#99
Dibenz[a,h]anthracene
Concen: 2.30 ppb m
RT: 14.782 min Scan# 2655
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:278 Resp: 69254

Ion	Ratio	Lower	Upper
278	100		
139	21.0	0.0	52.4
279	29.1	0.0	54.1

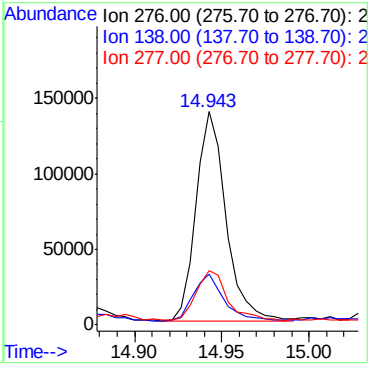




#101
Benzo[g,h,i]perylene
Concen: 5.48 ppb
RT: 14.943 min Scan# 2685
Delta R.T. 0.000 min
Lab File: 2m48587.D
Acq: 18 Dec 2012 2:42 pm

Tgt Ion:276 Resp: 167702

Ion	Ratio	Lower	Upper
276	100		
138	22.3	0.1	60.1
277	23.4	0.0	53.2



9.1.9

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48572.D
Acq On : 17 Dec 2012 7:05 pm
Operator : olgaa
Sample : jb22822-7
Misc : op62037,e2m2080,36.0
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 18 16:00:24 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.438	152	542889	40.00	ppb	-0.03
24) Naphthalene-d8	4.010	136	1324096	40.00	ppb	0.00
47) Acenaphthene-d10	6.577	164	813204	40.00	ppb	0.00
69) Phenanthrene-d10	8.808	188	1289086	40.00	ppb	0.00
83) Chrysene-d12	12.605	240	1377267	40.00	ppb	0.00
92) Perylene-d12	14.017	264	1472737	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.438	152	542889	40.00	ppb	-0.03
104) Acenaphthene-d10a	6.577	164	813204	40.00	ppb	0.00
106) Chrysene-d12a	12.605	240	1377267	40.00	ppb	0.00
108) Phenanthrene-d10a	8.808	188	1289086	40.00	ppb	0.00
110) Chrysene-d12b	12.605	240	1377267	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.448	112	160170	8.11	ppb	-0.03
Spiked Amount 50.000			Recovery	=	16.22%	
8) Phenol-d5	2.277	99	384536	14.52	ppb	0.00
Spiked Amount 50.000			Recovery	=	29.04%	
25) Nitrobenzene-d5	3.127	82	451977	31.81	ppb	-0.02
Spiked Amount 50.000			Recovery	=	63.62%	
51) 2-Fluorobiphenyl	5.641	172	918832	34.36	ppb	-0.01
Spiked Amount 50.000			Recovery	=	68.72%	
73) 2,4,6-Tribromophenol	7.840	330	156408	51.63	ppb	0.01
Spiked Amount 50.000			Recovery	=	103.26%	
85) Terphenyl-d14	11.380	244	1152620	41.41	ppb	0.00
Spiked Amount 50.000			Recovery	=	82.82%	

Target Compounds							Qvalue
38) Naphthalene	4.031	128	384705	10.44	ppb		76
44) 2-Methylnaphthalene	5.032	141	452148	20.01	ppb	#	70
56) Acenaphthylene	6.337	152	307772	7.84	ppb		89
59) Acenaphthene	6.620	153	478207	18.94	ppb		94
66) Fluorene	7.406	166	1794803	65.66	ppb		99
77) Phenanthrene	8.851	178	3766056	95.43	ppb		98
78) Anthracene	8.915	178	833627	21.31	ppb		91
81) Fluoranthene	10.690	202	3583422	92.05	ppb		99
84) Pyrene	11.006	202	3682897	82.68	ppb		99
88) Benzo[a]anthracene	12.589	228	2241527	52.91	ppb		96
90) Chrysene	12.627	228	2188986	52.12	ppb		98
94) Benzo[b]fluoranthene	13.696	252	2167897m	42.28	ppb		
95) Benzo[k]fluoranthene	13.702	252	1817087m	39.38	ppb		
96) Benzo[a]pyrene	13.969	252	1931600	44.35	ppb		98
97) Indeno[1,2,3-cd]pyrene	14.862	276	1547674	30.60	ppb		98
99) Dibenz[a,h]anthracene	14.868	278	546833m	12.87	ppb		
101) Benzo[g,h,i]perylene	15.039	276	1422341	32.94	ppb		98

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

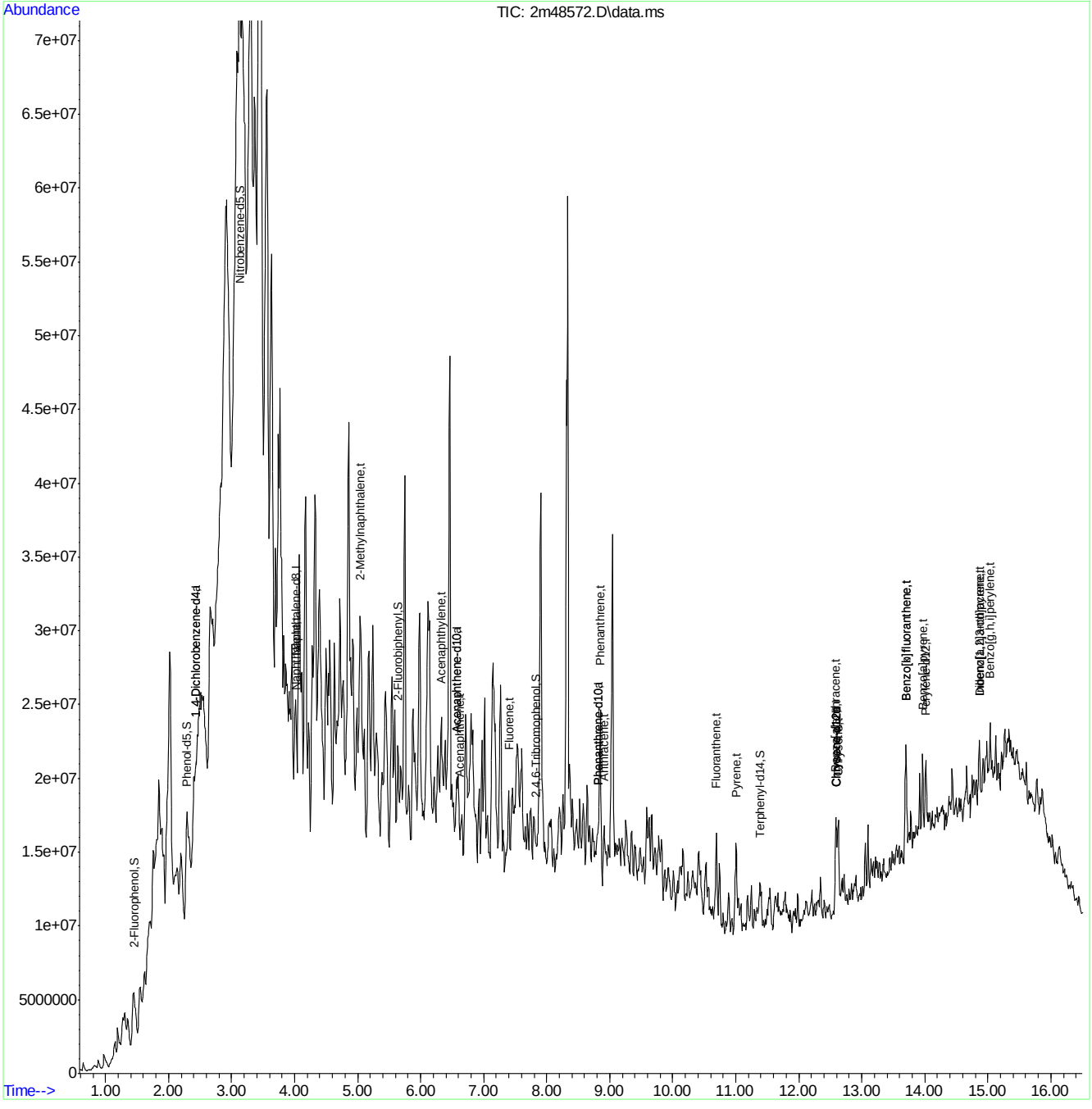
9.1.10

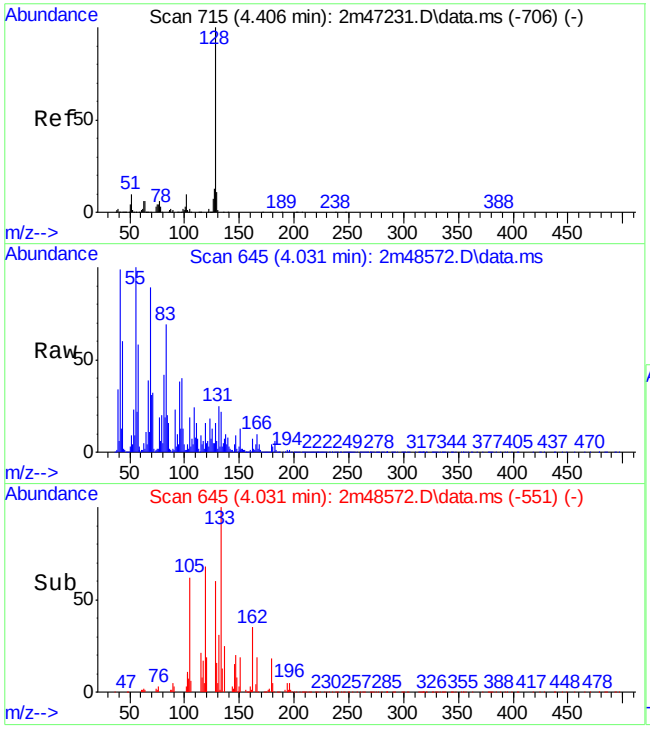
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48572.D
Acq On : 17 Dec 2012 7:05 pm
Operator : olgaa
Sample : jb22822-7
Misc : op62037,e2m2080,36.0
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 18 16:00:24 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

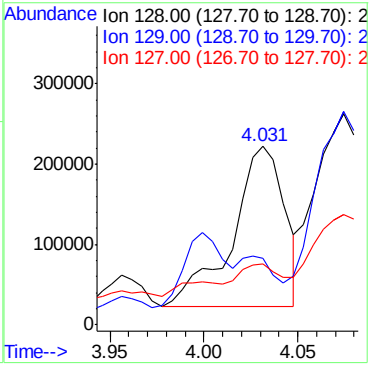


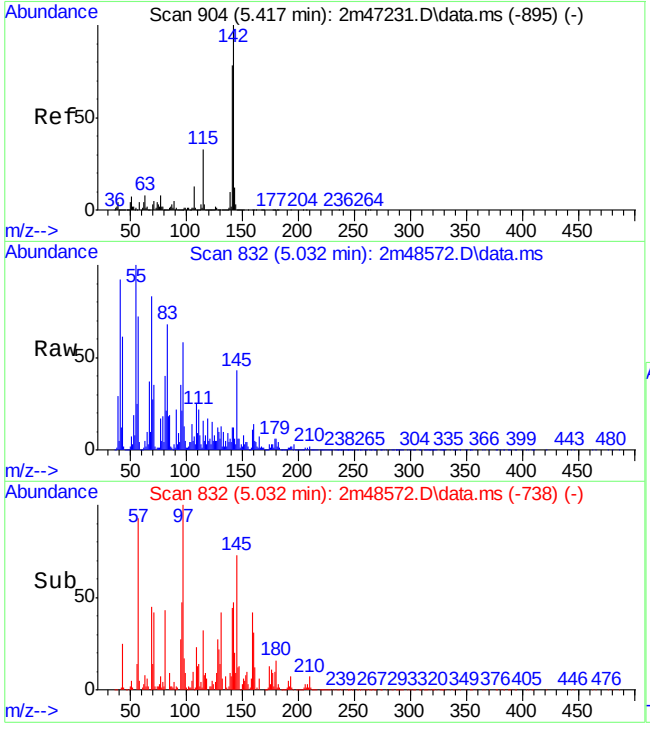


#38
Naphthalene
Concen: 10.44 ppb
RT: 4.031 min Scan# 645
Delta R.T. 0.005 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:128 Resp: 384705

Ion	Ratio	Lower	Upper
128	100		
129	25.9	0.0	40.9
127	18.0	0.0	43.3

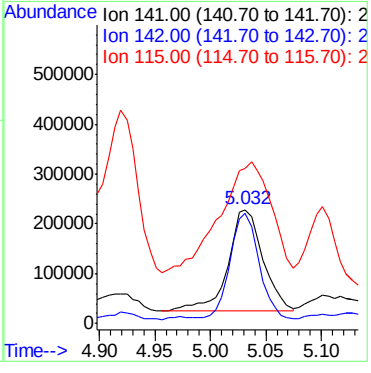




#44
2-Methylnaphthalene
Concen: 20.01 ppb
RT: 5.032 min Scan# 832
Delta R.T. 0.005 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:141 Resp: 452148

Ion	Ratio	Lower	Upper
141	100		
142	105.8	81.7	141.7
115	101.4	12.0	72.0#



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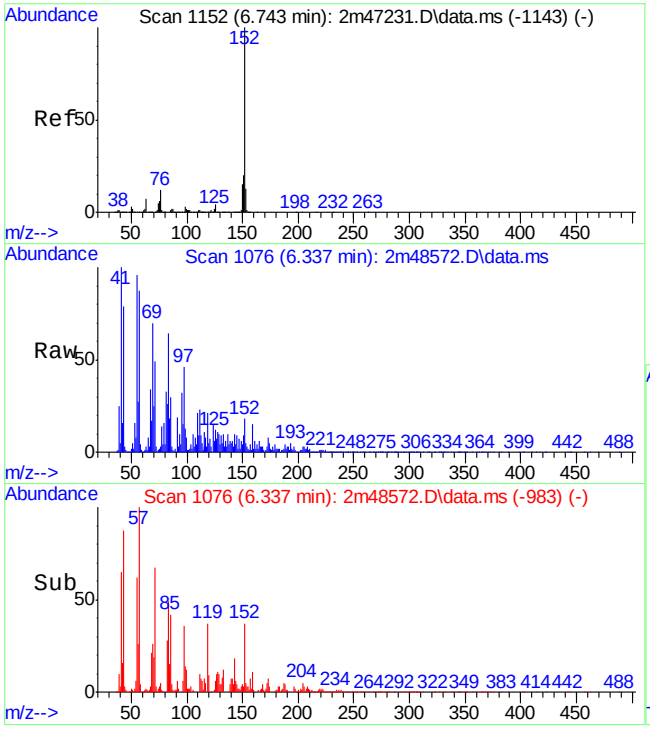
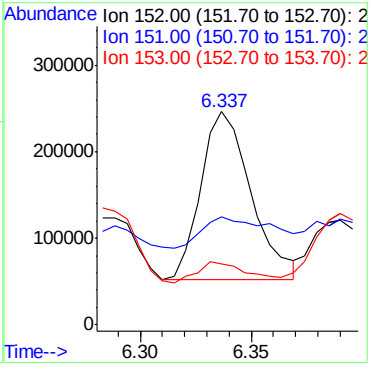
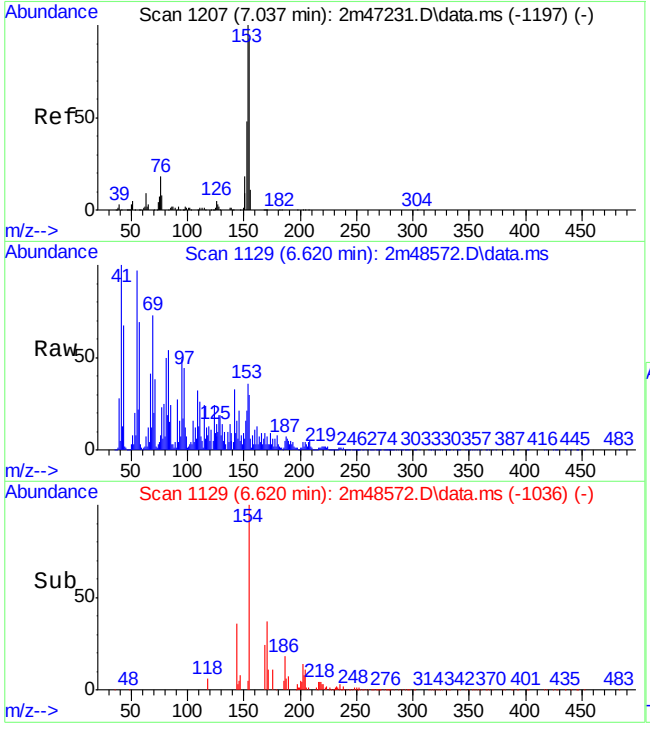


#56
Acenaphthylene
Concen: 7.84 ppb
RT: 6.337 min Scan# 1076
Delta R.T. 0.000 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:152 Resp: 307772

Ion	Ratio	Lower	Upper
152	100		
151	14.8	0.0	49.4
153	8.1	0.0	43.0

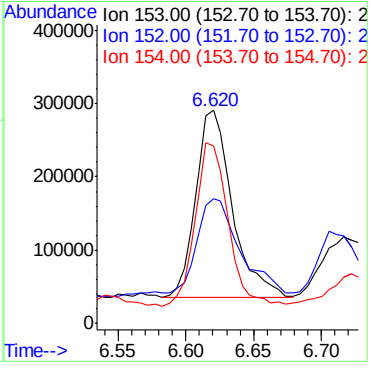




#59
Acenaphthene
Concen: 18.94 ppb
RT: 6.620 min Scan# 1129
Delta R.T. 0.000 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:153 Resp: 478207

Ion	Ratio	Lower	Upper
153	100		
152	50.3	15.8	75.8
154	84.9	59.7	119.7



9.1.10

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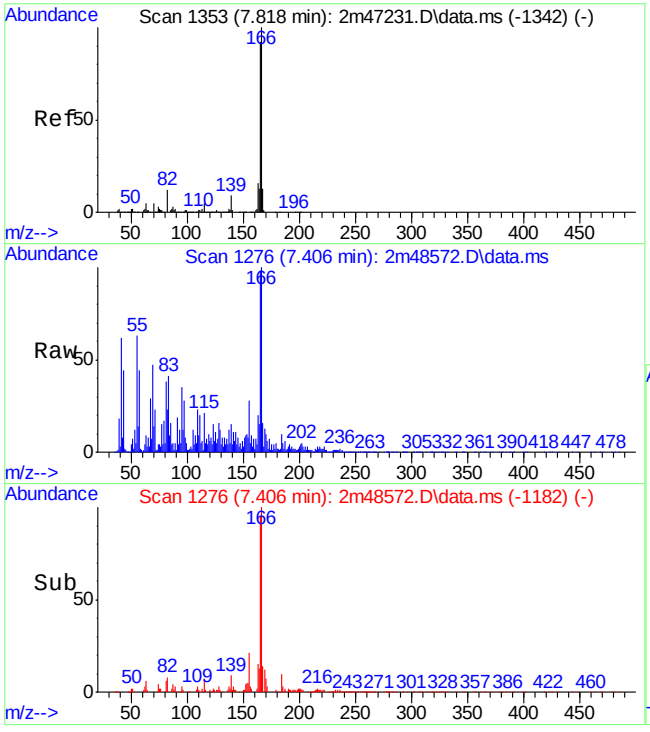
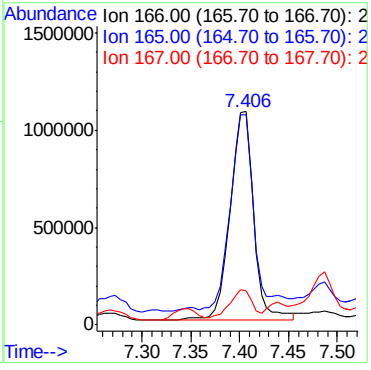
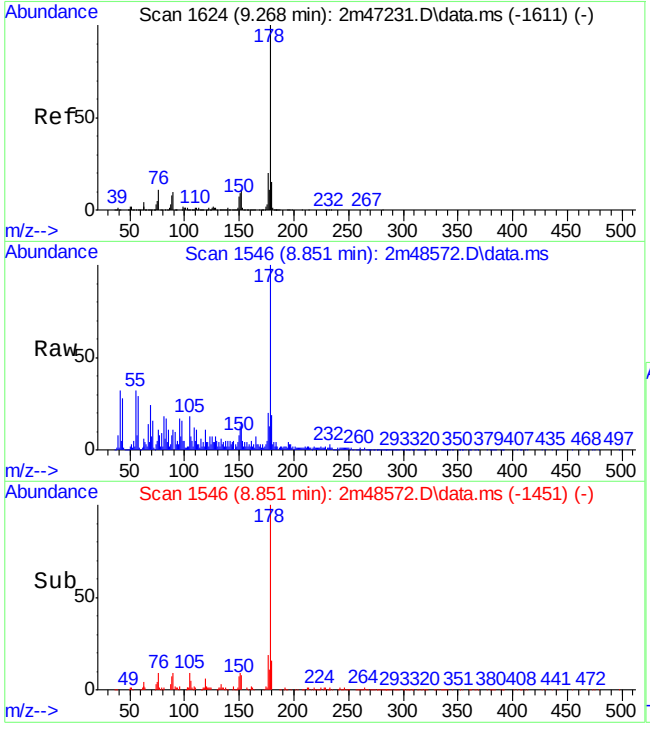


#66
Fluorene
Concen: 65.66 ppb
RT: 7.406 min Scan# 1276
Delta R.T. 0.005 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:166 Resp: 1794803

Ion	Ratio	Lower	Upper
166	100		
165	92.5	61.9	121.9
167	10.7	0.0	43.1

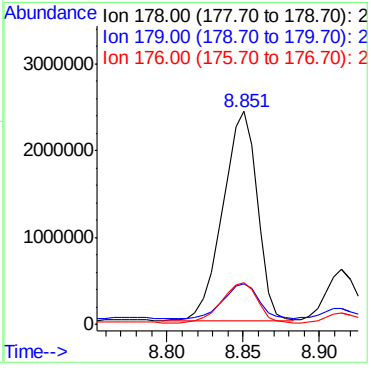


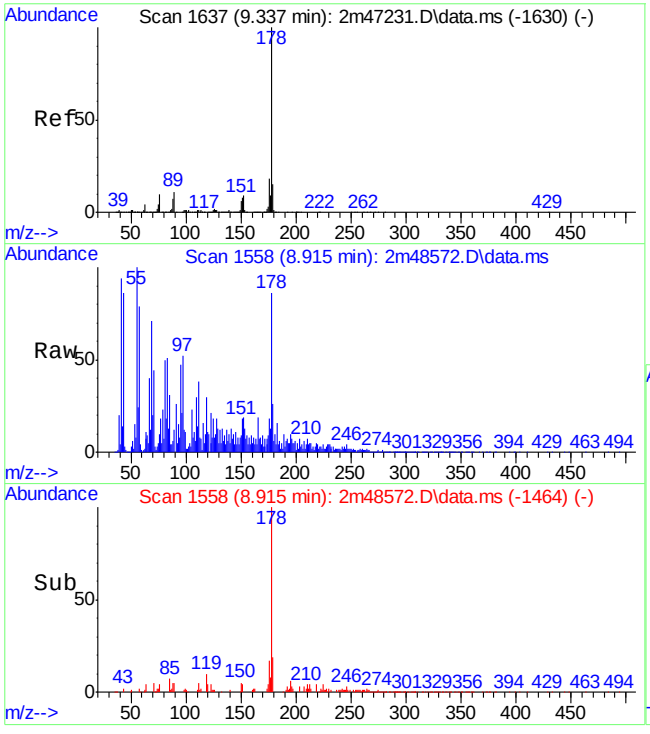


#77
Phenanthrene
Concen: 95.43 ppb
RT: 8.851 min Scan# 1546
Delta R.T. 0.011 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:178 Resp: 3766056

Ion	Ratio	Lower	Upper
178	100		
179	16.8	0.0	44.9
176	19.4	0.0	49.1

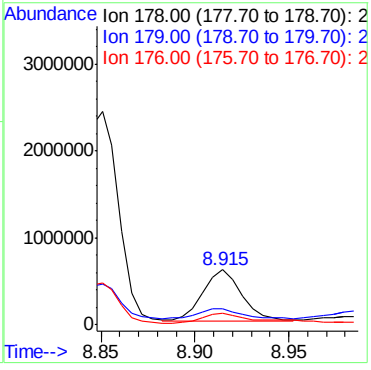


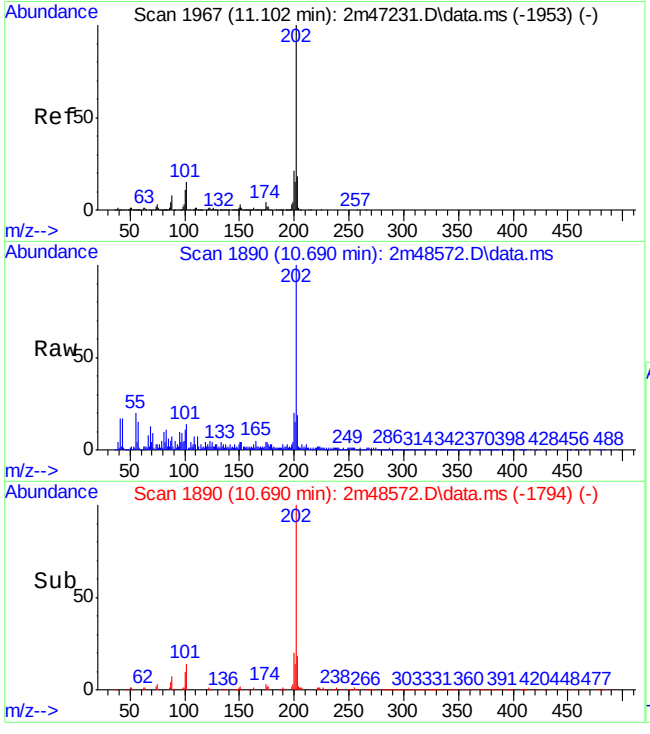


#78
Anthracene
Concen: 21.31 ppb
RT: 8.915 min Scan# 1558
Delta R.T. 0.005 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:178 Resp: 833627

Ion	Ratio	Lower	Upper
178	100		
179	20.0	0.0	44.3
176	16.4	0.0	48.3

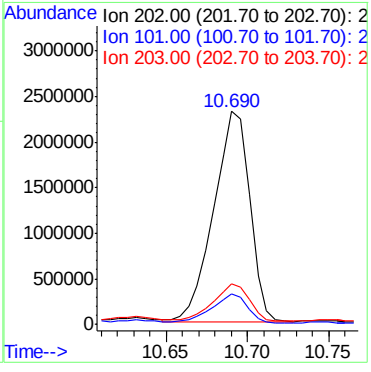




#81
Fluoranthene
Concen: 92.05 ppb
RT: 10.690 min Scan# 1890
Delta R.T. 0.016 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:202 Resp: 3583422

Ion	Ratio	Lower	Upper
202	100		
101	13.5	0.0	43.8
203	17.2	0.0	47.5



9.1.10

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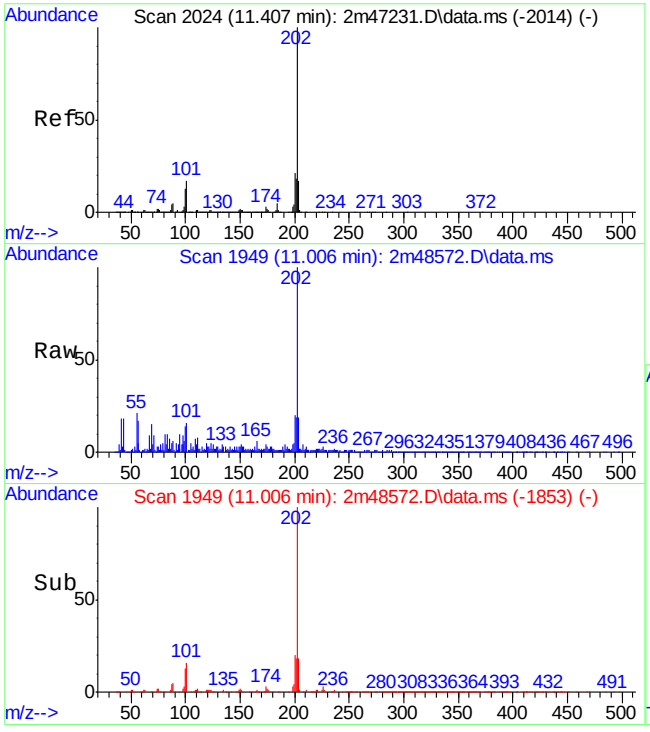
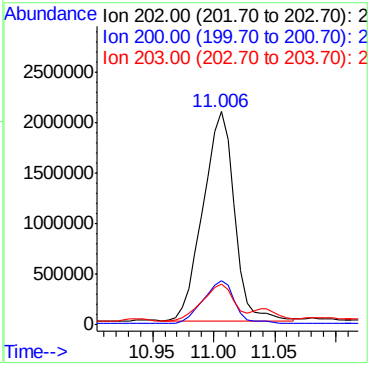
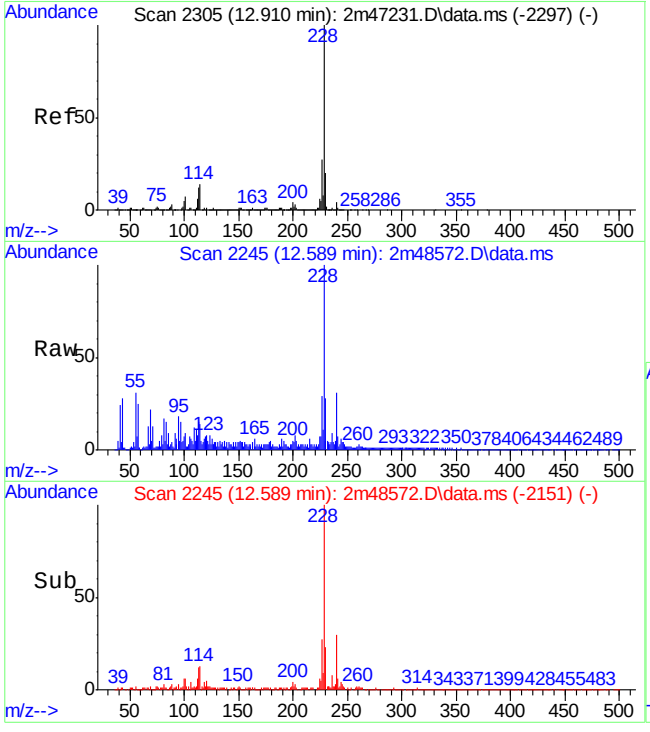


#84
Pyrene
Concen: 82.68 ppb
RT: 11.006 min Scan# 1949
Delta R.T. 0.016 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:202 Resp: 3682897

Ion	Ratio	Lower	Upper
202	100		
200	20.3	0.0	51.3
203	17.3	0.0	47.6

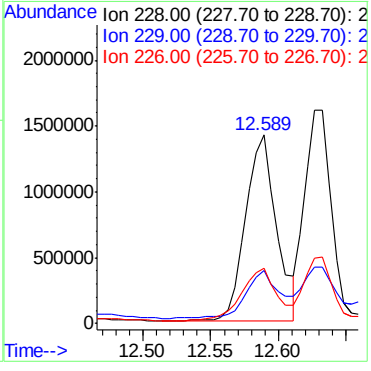




#88
Benzo[a]anthracene
Concen: 52.91 ppb
RT: 12.589 min Scan# 2245
Delta R.T. 0.005 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

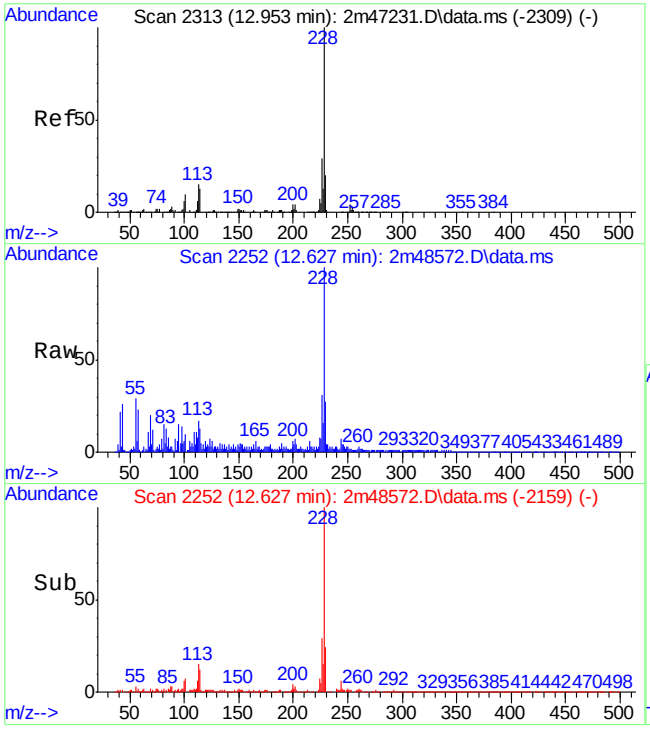
Tgt Ion:228 Resp: 2241527

Ion	Ratio	Lower	Upper
228	100		
229	22.2	0.0	49.3
226	27.1	0.0	56.0



9.1.10

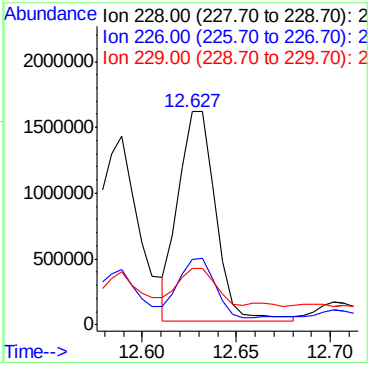
9

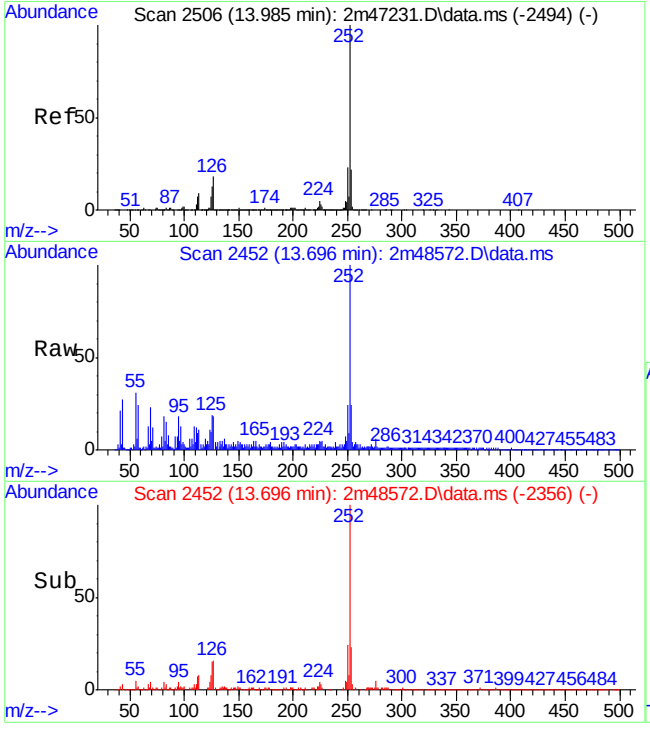


#90
Chrysene
Concen: 52.12 ppb
RT: 12.627 min Scan# 2252
Delta R.T. 0.000 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:228 Resp: 2188986

Ion	Ratio	Lower	Upper
228	100		
226	28.3	0.0	57.7
229	18.0	0.0	49.3

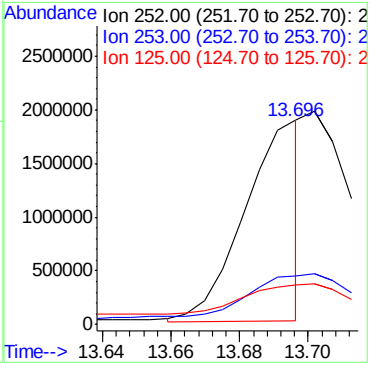


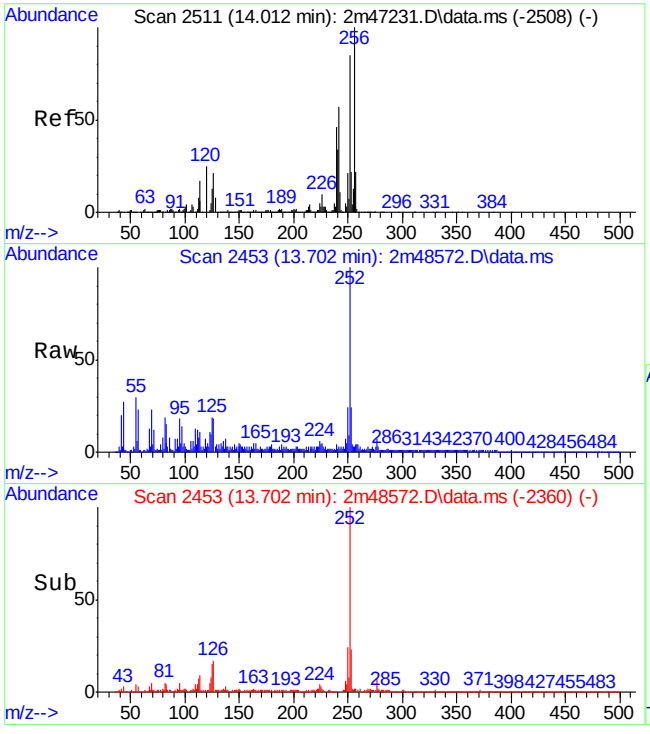


#94
Benzo[b]fluoranthene
Concen: 42.28 ppb m
RT: 13.696 min Scan# 2452
Delta R.T. 0.016 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:252 Resp: 2167897

Ion	Ratio	Lower	Upper
252	100		
253	23.7	0.0	51.6
125	19.2	0.0	40.1

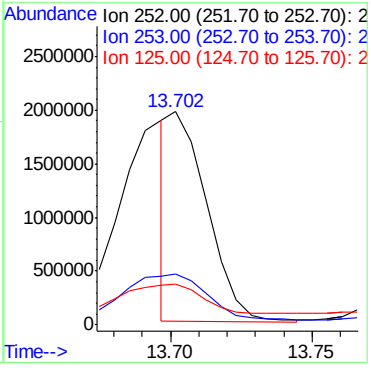


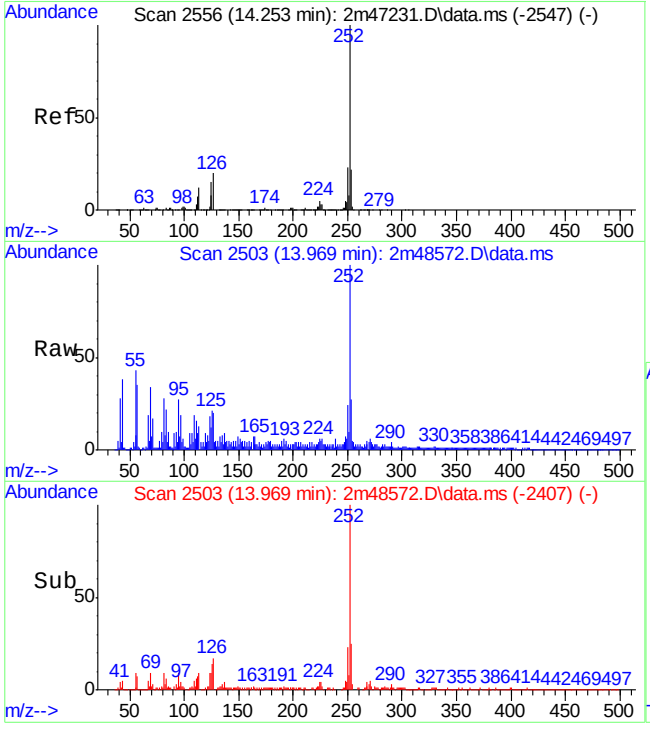


#95
Benzo[k]fluoranthene
Concen: 39.38 ppb m
RT: 13.702 min Scan# 2453
Delta R.T. 0.000 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:252 Resp: 1817087

Ion	Ratio	Lower	Upper
252	100		
253	23.7	0.0	52.7
125	19.2	0.0	42.9

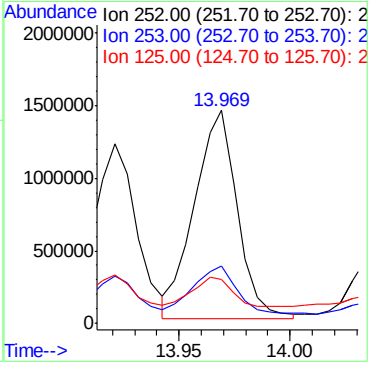


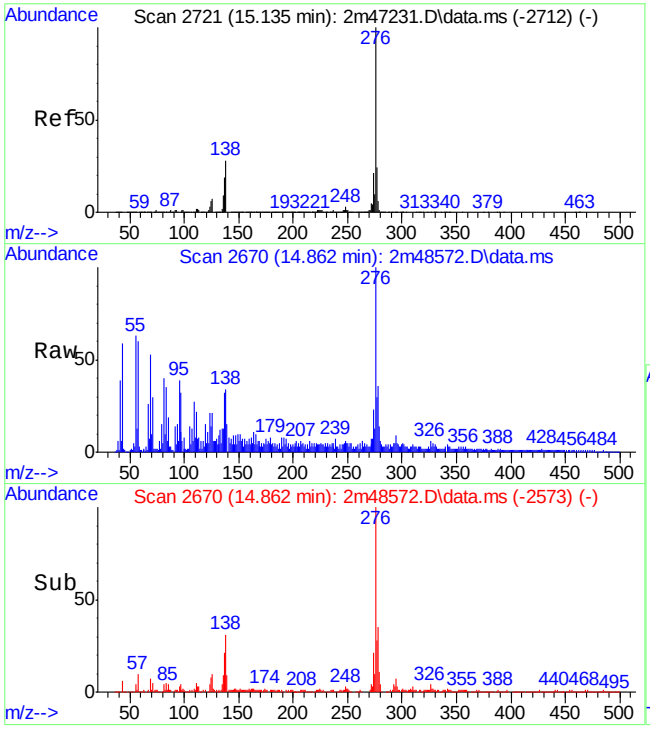


#96
Benzo[a]pyrene
Concen: 44.35 ppb
RT: 13.969 min Scan# 2503
Delta R.T. 0.016 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:252 Resp: 1931600

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	52.4
125	13.5	0.0	42.7

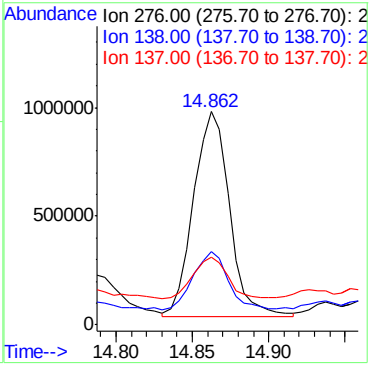


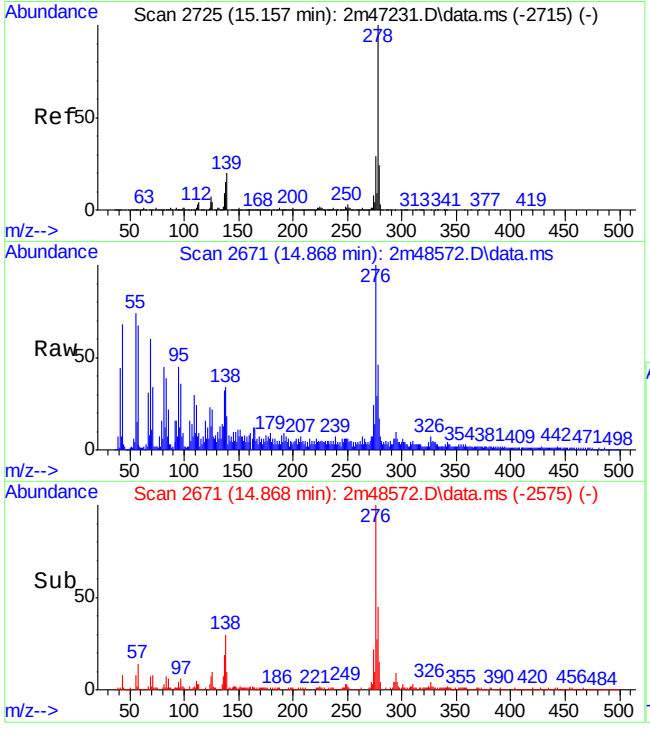


#97
Indeno[1,2,3-cd]pyrene
Concen: 30.60 ppb
RT: 14.862 min Scan# 2670
Delta R.T. 0.021 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:276 Resp: 1547674

Ion	Ratio	Lower	Upper
276	100		
138	28.6	0.0	57.6
137	19.5	0.0	48.9

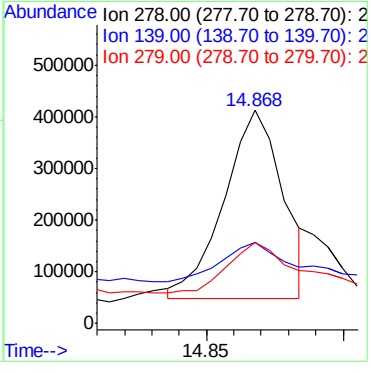


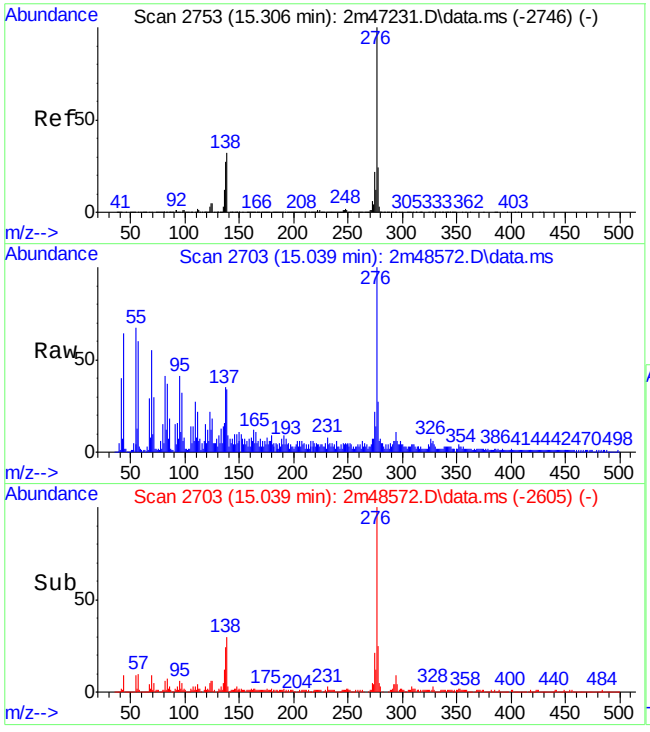


#99
Dibenz[a,h]anthracene
Concen: 12.87 ppb m
RT: 14.868 min Scan# 2671
Delta R.T. 0.016 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:278 Resp: 546833

Ion	Ratio	Lower	Upper
278	100		
139	38.2	0.0	52.4
279	38.0	0.0	54.1

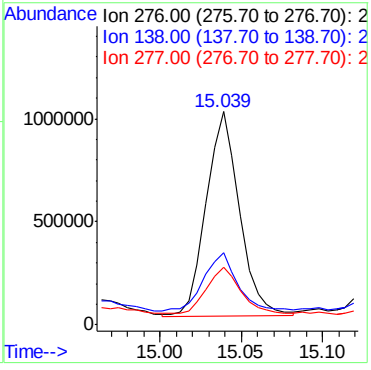




#101
Benzo[g,h,i]perylene
Concen: 32.94 ppb
RT: 15.039 min Scan# 2703
Delta R.T. 0.027 min
Lab File: 2m48572.D
Acq: 17 Dec 2012 7:05 pm

Tgt Ion:276 Resp: 1422341

Ion	Ratio	Lower	Upper
276	100		
138	28.4	0.1	60.1
277	23.0	0.0	53.2



9.1.10

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48588.D
Acq On : 18 Dec 2012 3:06 pm
Operator : olgaa
Sample : jb22822-8
Misc : op62037,e2m2081,35.1,,,1,5
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 19 11:56:25 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.389	152	277668	40.00	ppb	0.00
24) Naphthalene-d8	3.914	136	1304682	40.00	ppb	0.00
47) Acenaphthene-d10	6.476	164	811436	40.00	ppb	0.00
69) Phenanthrene-d10	8.706	188	1399078	40.00	ppb	0.00
83) Chrysene-d12	12.530	240	1652313	40.00	ppb	0.00
92) Perylene-d12	13.942	264	1191140	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.389	152	277668	40.00	ppb	0.00
104) Acenaphthene-d10a	6.476	164	811436	40.00	ppb	0.00
106) Chrysene-d12a	12.530	240	1652313	40.00	ppb	0.00
108) Phenanthrene-d10a	8.706	188	1399078	40.00	ppb	0.00
110) Chrysene-d12b	12.530	240	1652313	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.443	112	38257	3.79	ppb	0.02
Spiked Amount 50.000			Recovery	=	7.58%	
8) Phenol-d5	2.240	99	70645	5.22	ppb	0.02
Spiked Amount 50.000			Recovery	=	10.44%	
25) Nitrobenzene-d5	3.074	82	47681	3.41	ppb	0.01
Spiked Amount 50.000			Recovery	=	6.82%	
51) 2-Fluorobiphenyl	5.556	172	157683	5.91	ppb	0.00
Spiked Amount 50.000			Recovery	=	11.82%	
73) 2,4,6-Tribromophenol	7.743	330	27217	8.28	ppb	0.00
Spiked Amount 50.000			Recovery	=	16.56%	
85) Terphenyl-d14	11.295	244	263069	7.88	ppb	0.00
Spiked Amount 50.000			Recovery	=	15.76%	

Target Compounds						Qvalue
38) Naphthalene	3.935	128	168407	4.64	ppb	97
44) 2-Methylnaphthalene	4.930	141	292205	13.12	ppb	94
56) Acenaphthylene	6.240	152	52508	1.34	ppb	95
59) Acenaphthene	6.518	153	94055	3.73	ppb	97
66) Fluorene	7.299	166	162763	5.97	ppb	99
77) Phenanthrene	8.738	178	1447963	33.81	ppb	99
78) Anthracene	8.808	178	307720	7.25	ppb	98
81) Fluoranthene	10.594	202	2363008	55.93	ppb	97
84) Pyrene	10.910	202	2116300	39.60	ppb	99
88) Benzo[a]anthracene	12.520	228	1089724	21.44	ppb	97
90) Chrysene	12.557	228	1024325	20.33	ppb	98
94) Benzo[b]fluoranthene	13.621	252	1065755m	25.70	ppb	
95) Benzo[k]fluoranthene	13.627	252	506882m	13.58	ppb	
96) Benzo[a]pyrene	13.894	252	832463	23.63	ppb	96
97) Indeno[1,2,3-cd]pyrene	14.777	276	517057	12.64	ppb	92
99) Dibenz[a,h]anthracene	14.787	278	194768m	5.67	ppb	
101) Benzo[g,h,i]perylene	14.953	276	441089	12.63	ppb	89

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

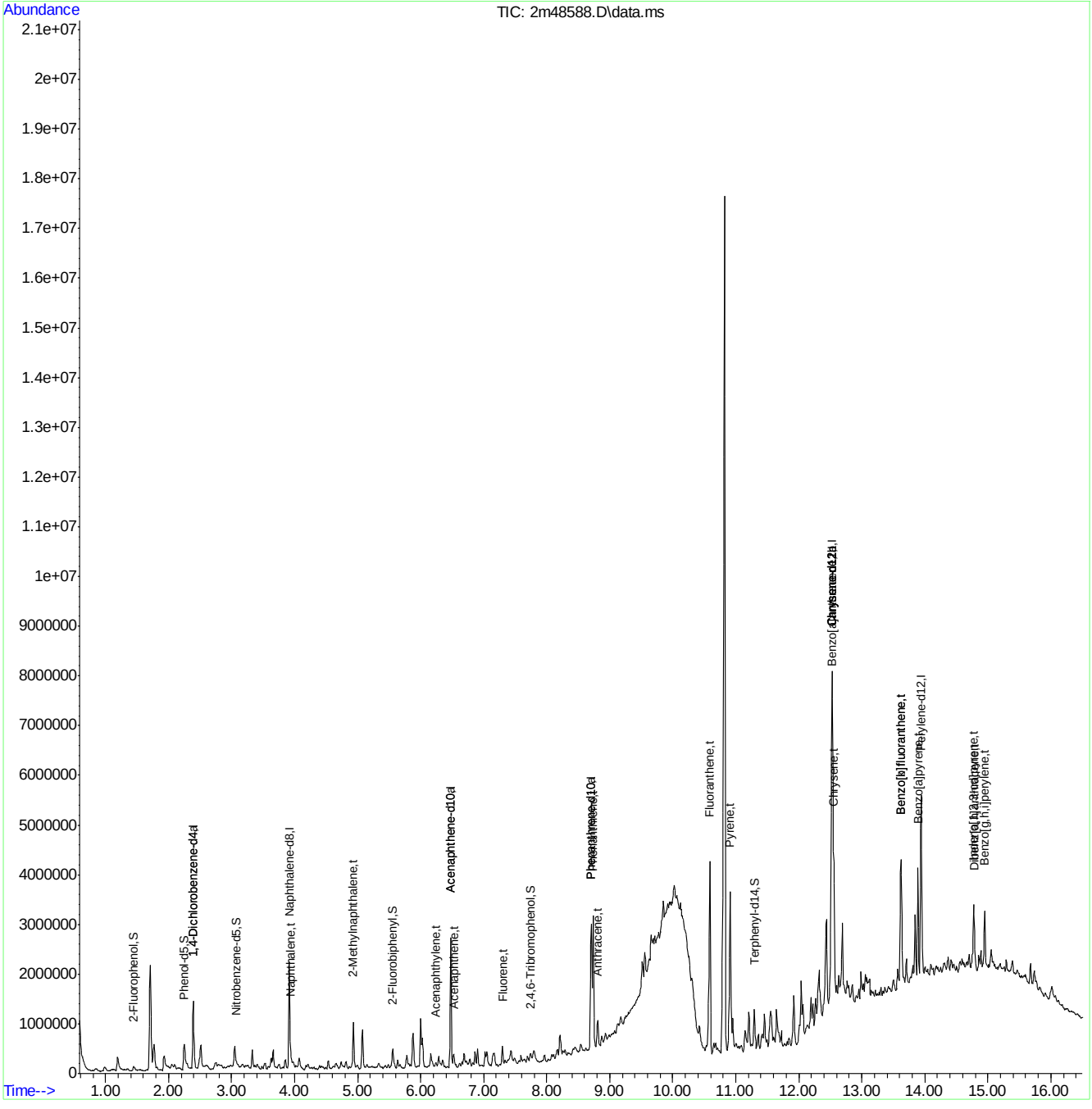
9.1.11

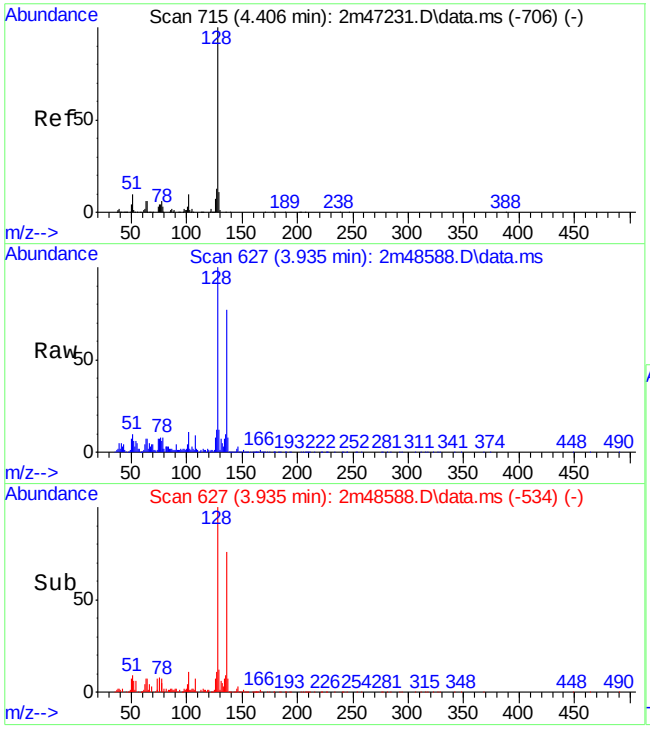
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48588.D
Acq On : 18 Dec 2012 3:06 pm
Operator : olgaa
Sample : jb22822-8
Misc : op62037,e2m2081,35.1,,,1,5
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 19 11:56:25 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

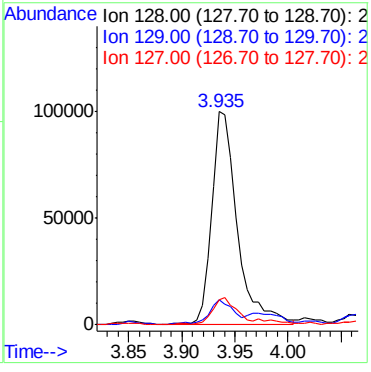


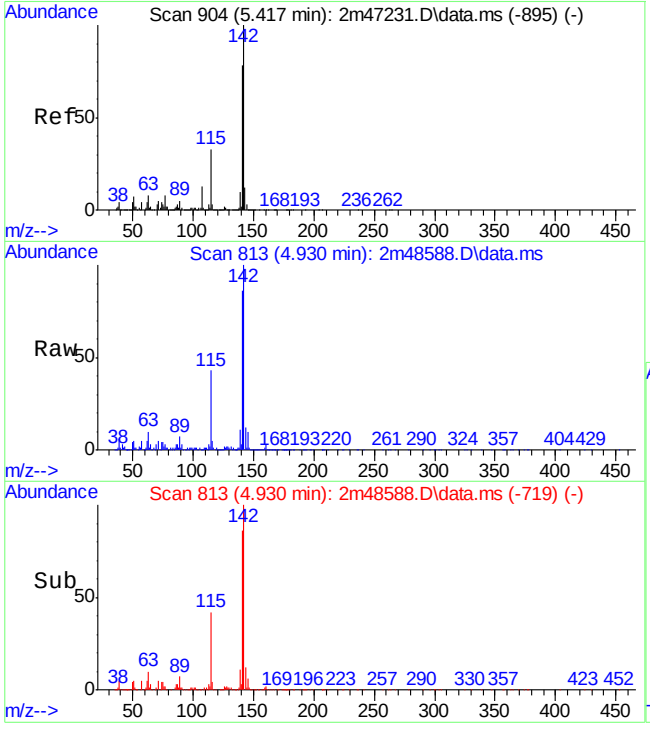


#38
Naphthalene
Concen: 4.64 ppb
RT: 3.935 min Scan# 627
Delta R.T. -0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:128 Resp: 168407

Ion	Ratio	Lower	Upper
128	100		
129	11.4	0.0	40.9
127	11.5	0.0	43.3

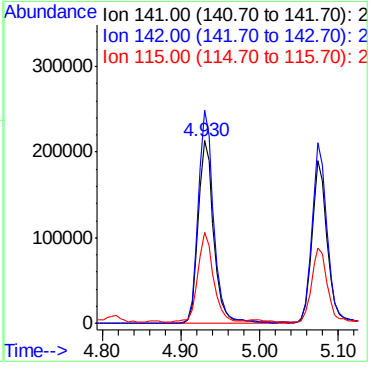




#44
2-Methylnaphthalene
Concen: 13.12 ppb
RT: 4.930 min Scan# 813
Delta R.T. 0.000 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

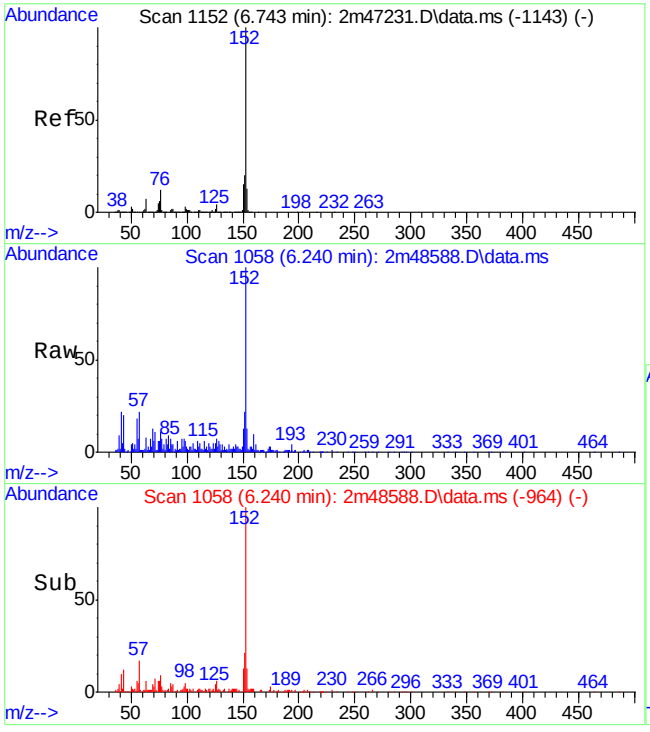
Tgt Ion:141 Resp: 292205

Ion	Ratio	Lower	Upper
141	100		
142	116.5	81.7	141.7
115	49.3	12.0	72.0



9.1.11

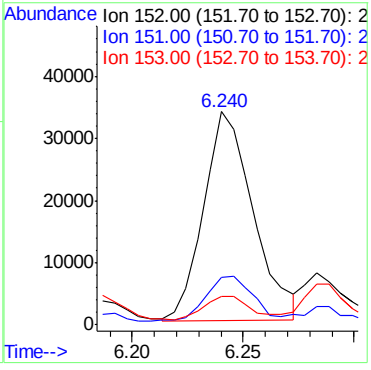
9

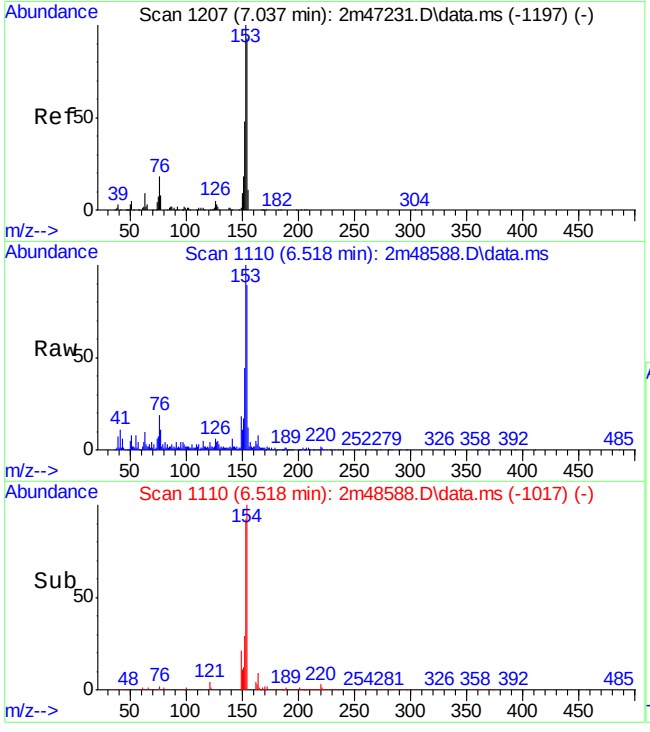


#56
Acenaphthylene
Concen: 1.34 ppb
RT: 6.240 min Scan# 1058
Delta R.T. 0.000 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:152 Resp: 52508

Ion	Ratio	Lower	Upper
152	100		
151	20.3	0.0	49.4
153	9.5	0.0	43.0

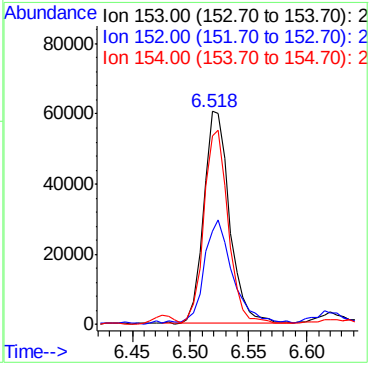




#59
Acenaphthene
Concen: 3.73 ppb
RT: 6.518 min Scan# 1110
Delta R.T. -0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

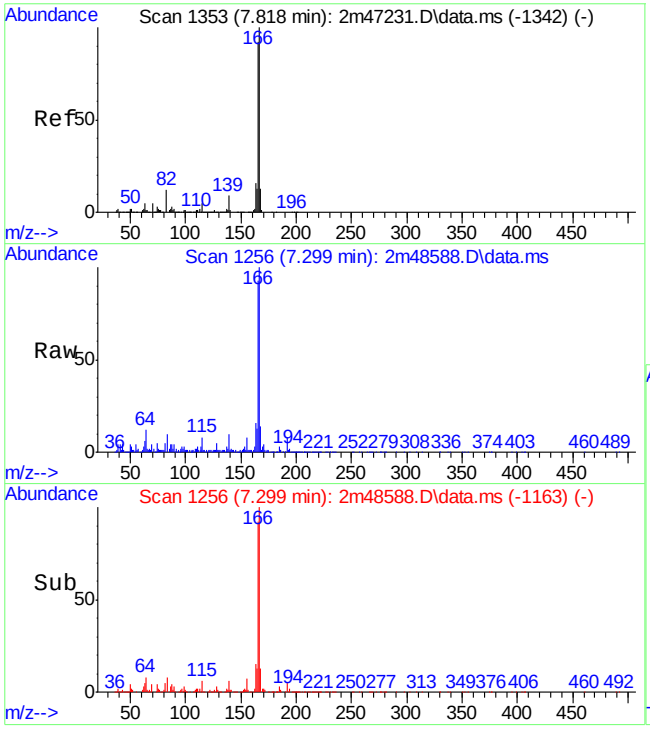
Tgt Ion:153 Resp: 94055

Ion	Ratio	Lower	Upper
153	100		
152	43.2	15.8	75.8
154	86.7	59.7	119.7



9.1.11

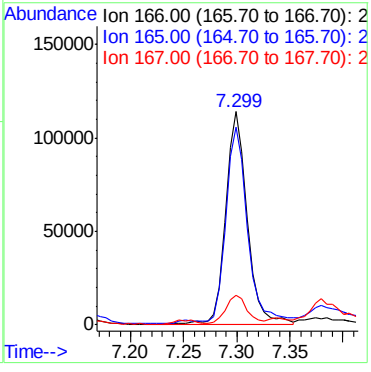
9

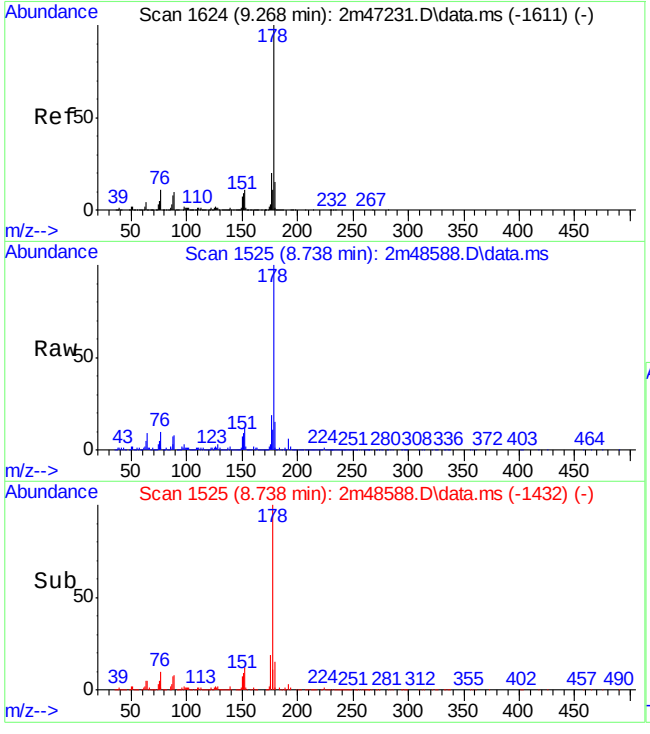


#66
Fluorene
Concen: 5.97 ppb
RT: 7.299 min Scan# 1256
Delta R.T. -0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:166 Resp: 162763

Ion	Ratio	Lower	Upper
166	100		
165	91.4	61.9	121.9
167	12.8	0.0	43.1

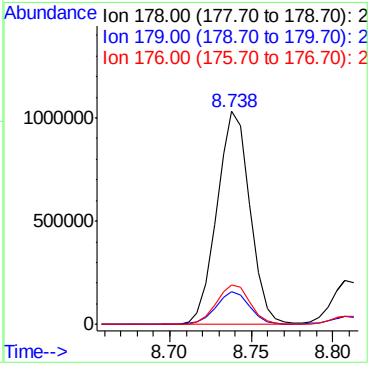




#77
Phenanthrene
Concen: 33.81 ppb
RT: 8.738 min Scan# 1525
Delta R.T. -0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

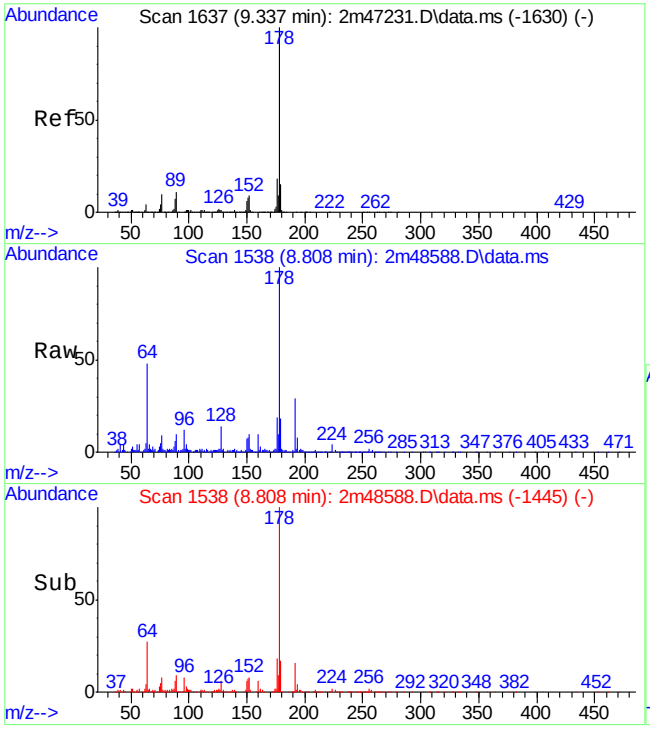
Tgt Ion:178 Resp: 1447963

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	44.9
176	18.8	0.0	49.1



9.1.11

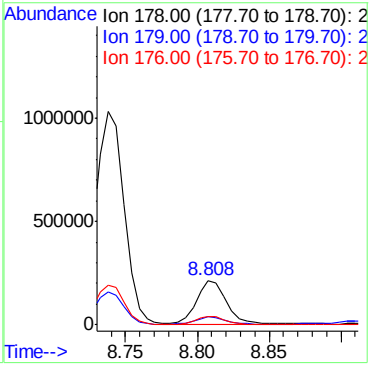
9

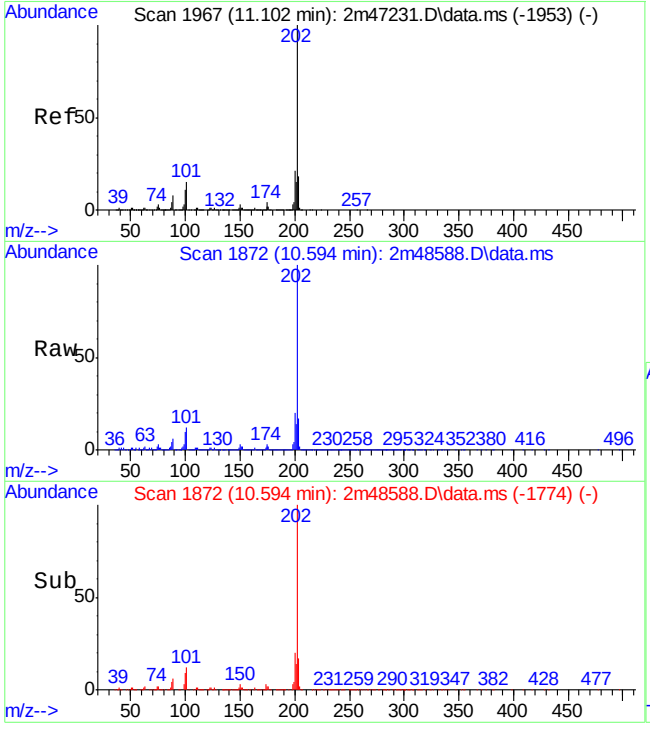


#78
Anthracene
Concen: 7.25 ppb
RT: 8.808 min Scan# 1538
Delta R.T. -0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:178 Resp: 307720

Ion	Ratio	Lower	Upper
178	100		
179	16.4	0.0	44.3
176	18.3	0.0	48.3

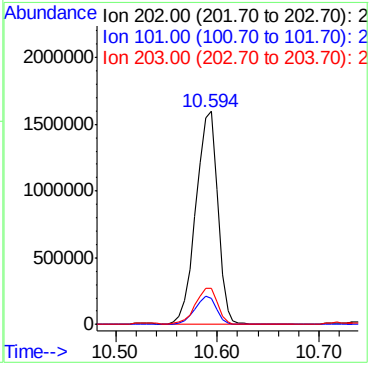


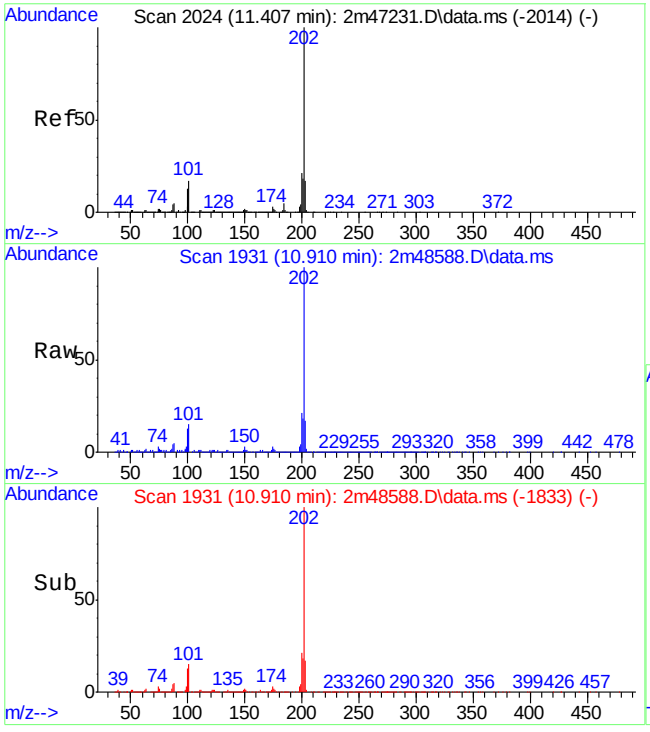


#81
Fluoranthene
Concen: 55.93 ppb
RT: 10.594 min Scan# 1872
Delta R.T. 0.022 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:202 Resp: 2363008

Ion	Ratio	Lower	Upper
202	100		
101	12.3	0.0	43.8
203	16.8	0.0	47.5

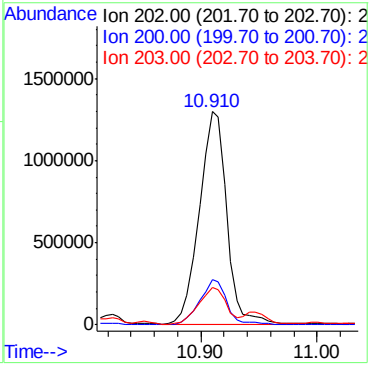


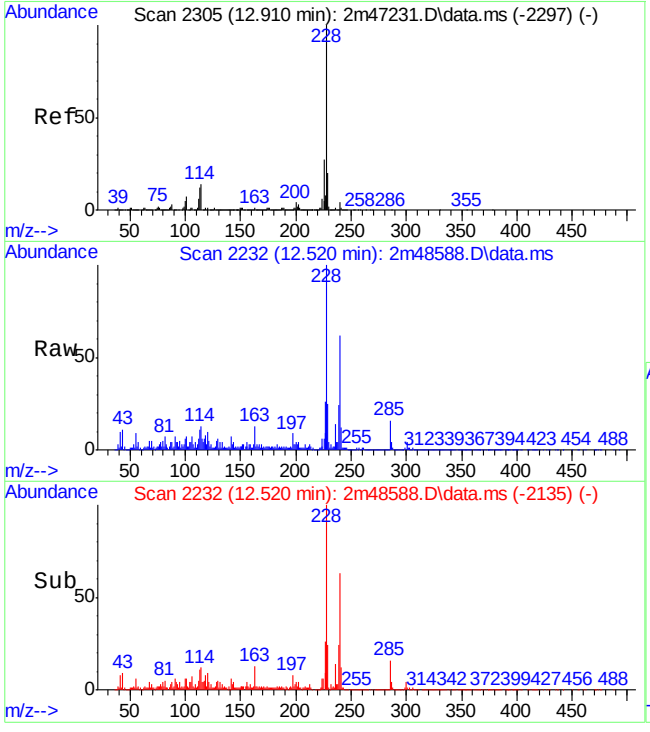


#84
Pyrene
Concen: 39.60 ppb
RT: 10.910 min Scan# 1931
Delta R.T. 0.022 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:202 Resp: 2116300

Ion	Ratio	Lower	Upper
202	100		
200	21.0	0.0	51.3
203	17.0	0.0	47.6

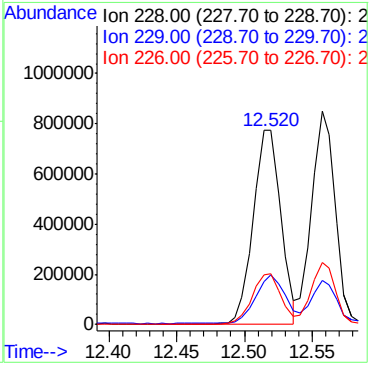


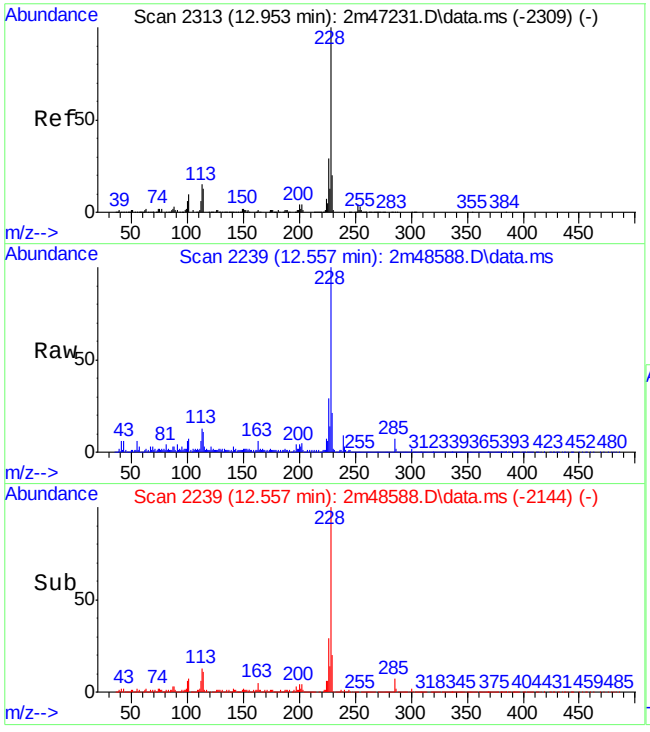


#88
Benzo[a]anthracene
Concen: 21.44 ppb
RT: 12.520 min Scan# 2232
Delta R.T. 0.016 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:228 Resp: 1089724

Ion	Ratio	Lower	Upper
228	100		
229	22.7	0.0	49.3
226	25.8	0.0	56.0

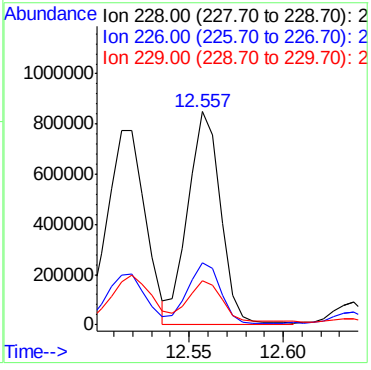


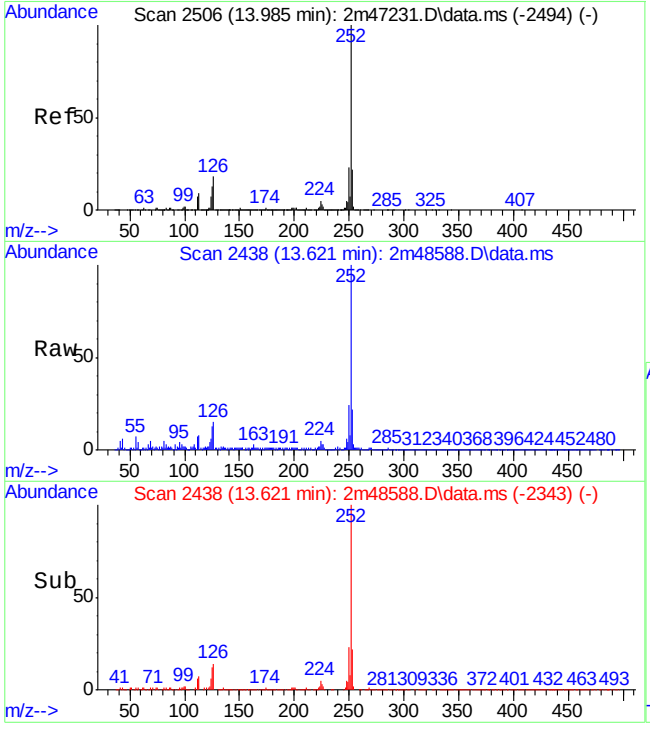


#90
Chrysene
Concen: 20.33 ppb
RT: 12.557 min Scan# 2239
Delta R.T. 0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:228 Resp: 1024325

Ion	Ratio	Lower	Upper
228	100		
226	28.3	0.0	57.7
229	17.4	0.0	49.3

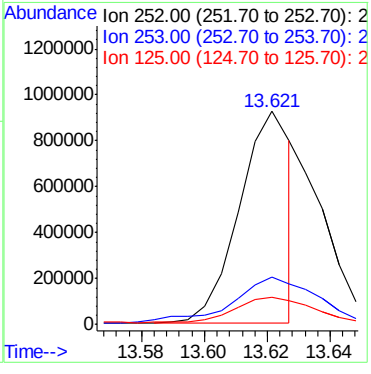


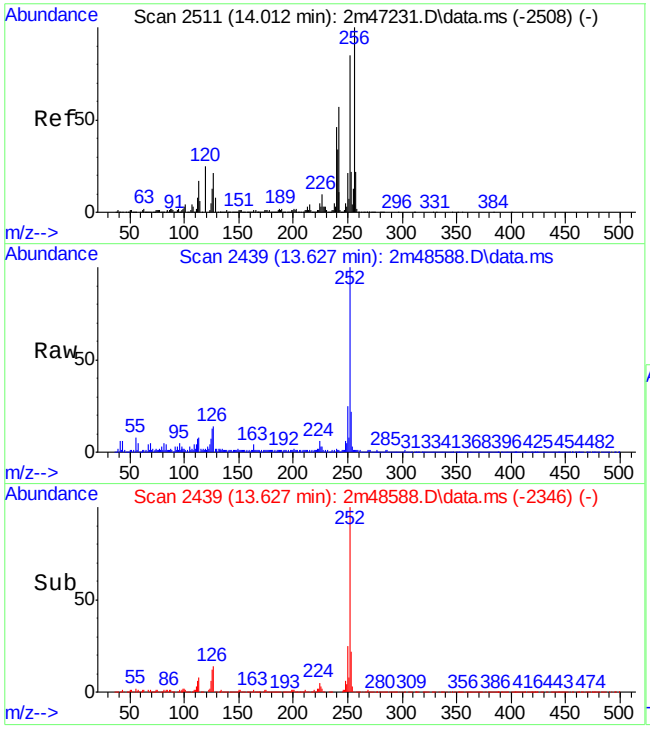


#94
Benzo[b]fluoranthene
Concen: 25.70 ppb m
RT: 13.621 min Scan# 2438
Delta R.T. 0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:252 Resp: 1065755

Ion	Ratio	Lower	Upper
252	100		
253	22.1	0.0	51.6
125	13.0	0.0	40.1

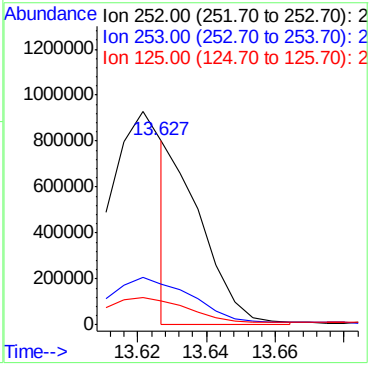


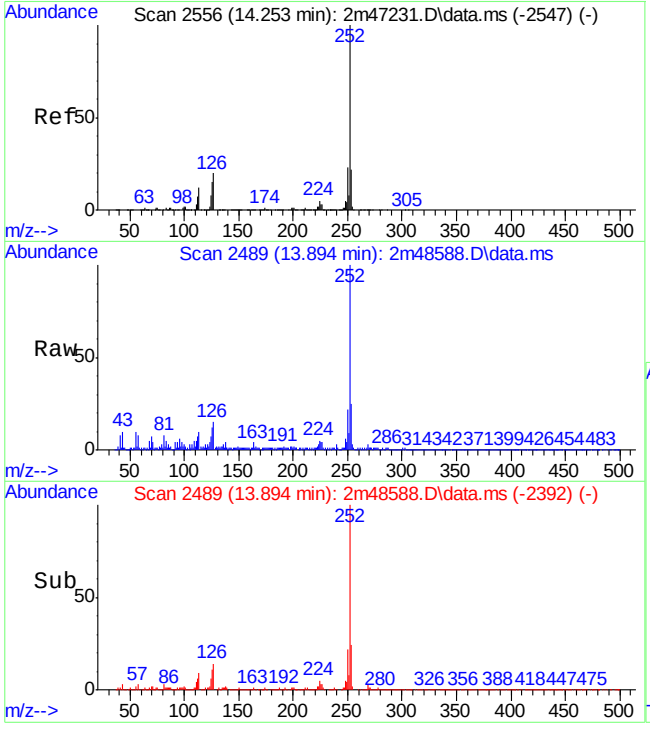


#95
Benzo[k]fluoranthene
Concen: 13.58 ppb m
RT: 13.627 min Scan# 2439
Delta R.T. -0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:252 Resp: 506882

Ion	Ratio	Lower	Upper
252	100		
253	21.9	0.0	52.7
125	12.8	0.0	42.9

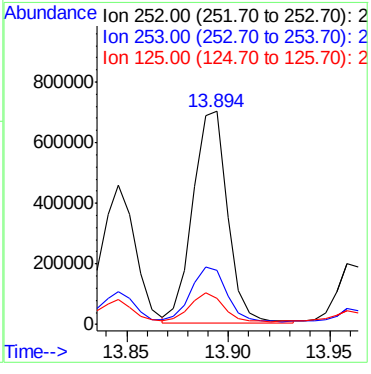




#96
Benzo[a]pyrene
Concen: 23.63 ppb
RT: 13.894 min Scan# 2489
Delta R.T. 0.016 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:252 Resp: 832463

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	52.4
125	10.5	0.0	42.7



9.1.11

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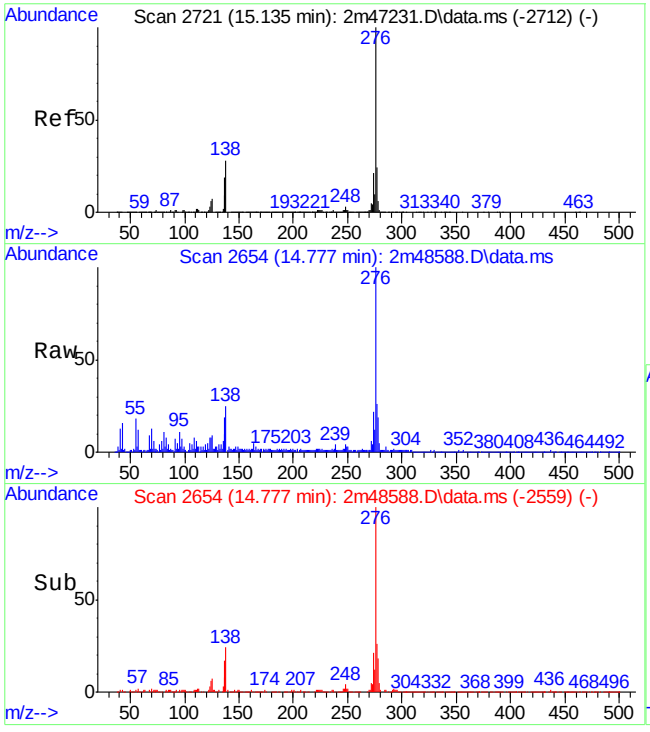
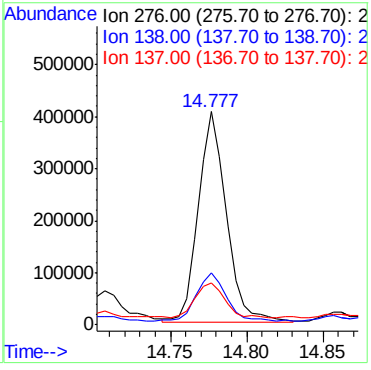
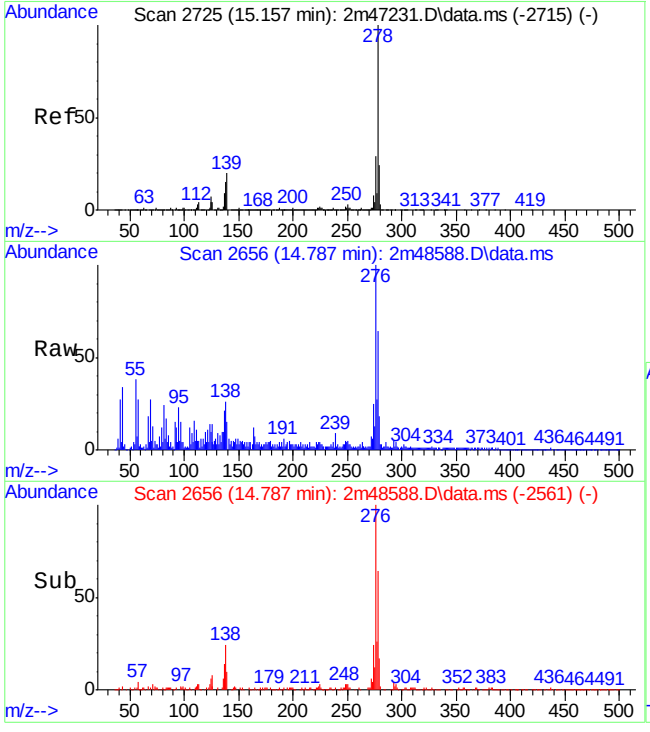


#97
Indeno[1,2,3-cd]pyrene
Concen: 12.64 ppb
RT: 14.777 min Scan# 2654
Delta R.T. 0.005 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:276 Resp: 517057

Ion	Ratio	Lower	Upper
276	100		
138	23.0	0.0	57.6
137	15.9	0.0	48.9

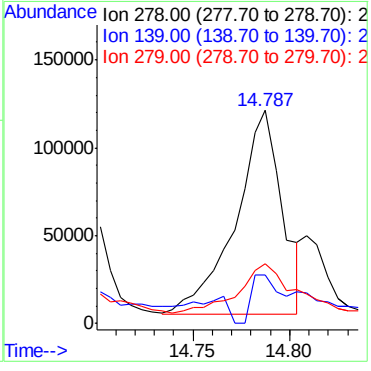


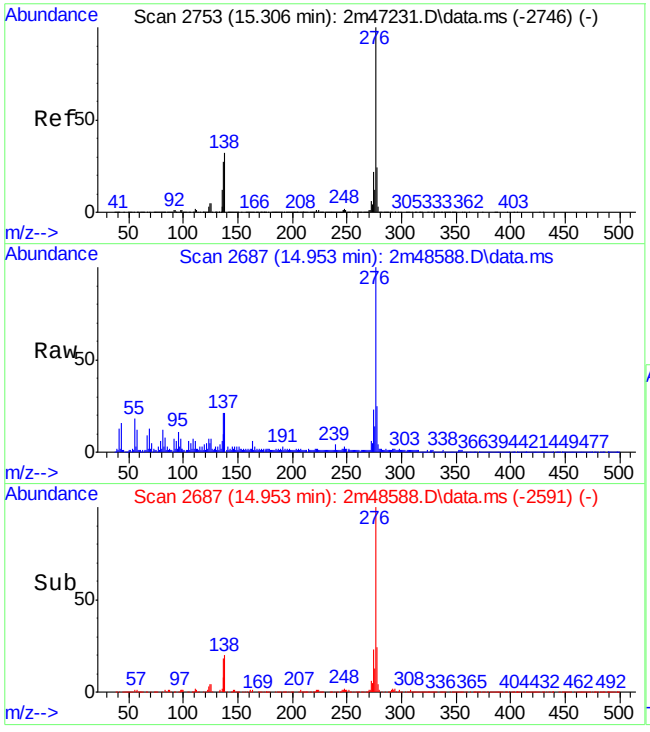


#99
Dibenz[a,h]anthracene
Concen: 5.67 ppb m
RT: 14.787 min Scan# 2656
Delta R.T. 0.006 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:278 Resp: 194768

Ion	Ratio	Lower	Upper
278	100		
139	22.9	0.0	52.4
279	27.9	0.0	54.1

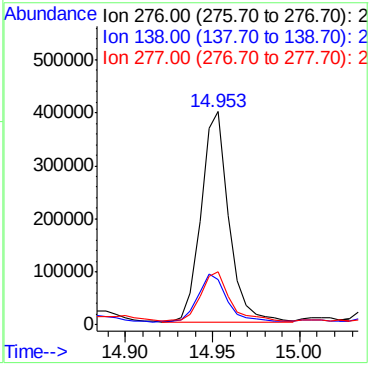




#101
Benzo[g,h,i]perylene
Concen: 12.63 ppb
RT: 14.953 min Scan# 2687
Delta R.T. 0.011 min
Lab File: 2m48588.D
Acq: 18 Dec 2012 3:06 pm

Tgt Ion:276 Resp: 441089

Ion	Ratio	Lower	Upper
276	100		
138	19.9	0.1	60.1
277	23.4	0.0	53.2



9.1.11

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:49

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48574.D
Acq On : 17 Dec 2012 7:51 pm
Operator : olgaa
Sample : jb22822-9
Misc : op62037,e2m2080,33.8
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 21 14:26:24 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 18 15:53:34 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.416	152	197063	40.00	ppb	0.00
24) Naphthalene-d8	3.946	136	1020021	40.00	ppb	-0.02
47) Acenaphthene-d10	6.518	164	683047	40.00	ppb	0.00
69) Phenanthrene-d10	8.765	188	1113804	40.00	ppb	-0.03
83) Chrysene-d12	12.605	240	1466388	40.00	ppb	-0.04
92) Perylene-d12	14.017	264	1188753	40.00	ppb	-0.04
102) 1,4-Dichlorobenzene-d4a	2.416	152	197063	40.00	ppb	0.00
104) Acenaphthene-d10a	6.518	164	683047	40.00	ppb	0.00
106) Chrysene-d12a	12.605	240	1466388	40.00	ppb	-0.04
108) Phenanthrene-d10a	8.765	188	1113804	40.00	ppb	-0.03
110) Chrysene-d12b	12.605	240	1466388	40.00	ppb	-0.04
System Monitoring Compounds						
5) 2-Fluorophenol	1.453	112	137688	19.20	ppb	0.00
Spiked Amount 50.000			Recovery	=	38.40%	
8) Phenol-d5	2.272	99	266508	27.73	ppb	0.01
Spiked Amount 50.000			Recovery	=	55.46%	
25) Nitrobenzene-d5	3.090	82	246081	22.49	ppb	-0.01
Spiked Amount 50.000			Recovery	=	44.98%	
51) 2-Fluorobiphenyl	5.593	172	652327	29.04	ppb	0.00
Spiked Amount 50.000			Recovery	=	58.08%	
73) 2,4,6-Tribromophenol	7.786	330	98386	37.59	ppb	0.00
Spiked Amount 50.000			Recovery	=	75.18%	
85) Terphenyl-d14	11.348	244	971864	32.80	ppb	-0.02
Spiked Amount 50.000			Recovery	=	65.60%	
Target Compounds						Qvalue
38) Naphthalene	3.972	128	224447	7.91	ppb	99
44) 2-Methylnaphthalene	4.973	141	83310	4.79	ppb	95
56) Acenaphthylene	6.283	152	282683	8.57	ppb	98
59) Acenaphthene	6.567	153	574627	27.10	ppb	99
66) Fluorene	7.347	166	529750	23.07	ppb	97
77) Phenanthrene	8.818	178	11696197	343.01	ppb	99
78) Anthracene	8.872	178	2232063	66.04	ppb	92
81) Fluoranthene	10.680	202	23671362	703.73	ppb	94
84) Pyrene	11.001	202	21485867	453.02	ppb	98
88) Benzo[a]anthracene	12.589	228	13351356	296.02	ppb	90
90) Chrysene	12.637	228	12687910m	283.75	ppb	
94) Benzo[b]fluoranthene	13.707	252	13356535m	322.74	ppb	
95) Benzo[k]fluoranthene	13.712	252	11759920m	315.71	ppb	
96) Benzo[a]pyrene	13.985	252	13231238	376.37	ppb	91
97) Indeno[1,2,3-cd]pyrene	14.878	276	9969128	244.22	ppb	93
99) Dibenz[a,h]anthracene	14.878	278	4747895	138.45	ppb	97
101) Benzo[g,h,i]perylene	15.060	276	8998194	258.20	ppb	97

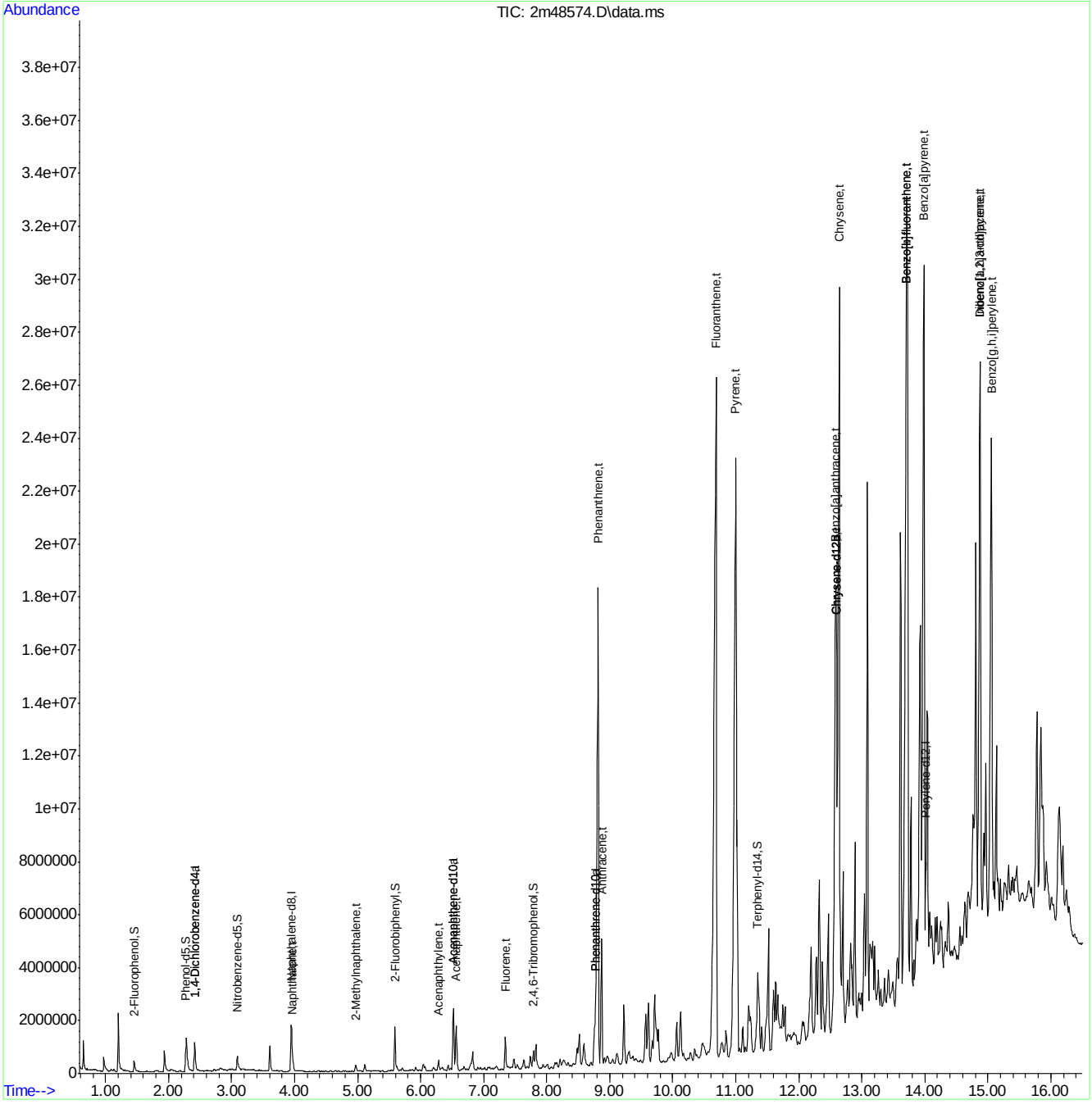
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.12
9

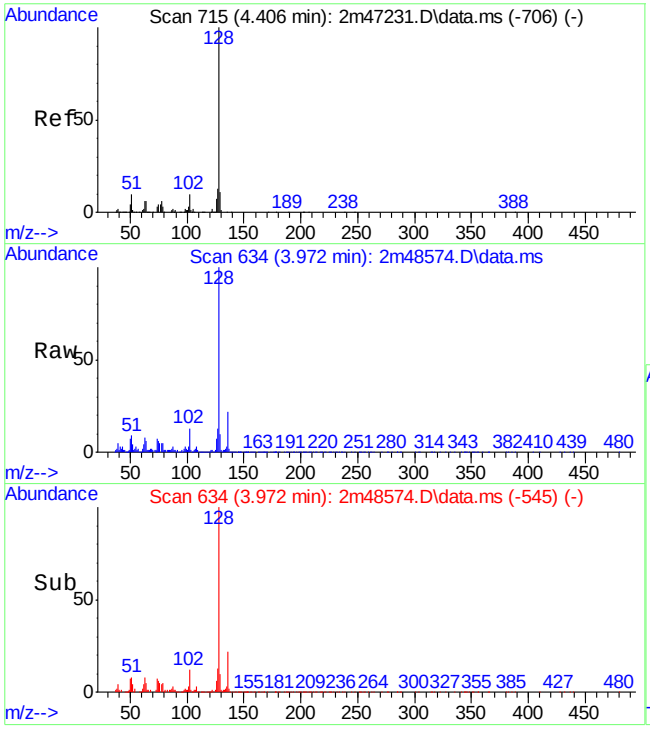
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48574.D
Acq On : 17 Dec 2012 7:51 pm
Operator : olgaa
Sample : jb22822-9
Misc : op62037,e2m2080,33.8
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Dec 21 14:26:24 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 18 15:53:34 2012
Response via : Initial Calibration



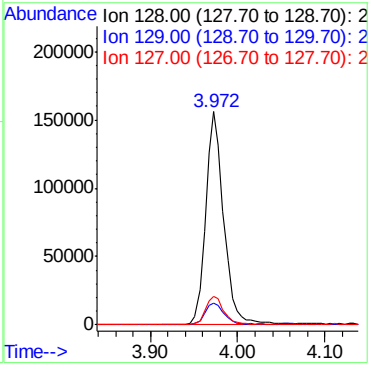
M2M2034.M Fri Dec 21 14:26:45 2012 MS2M Page: 2

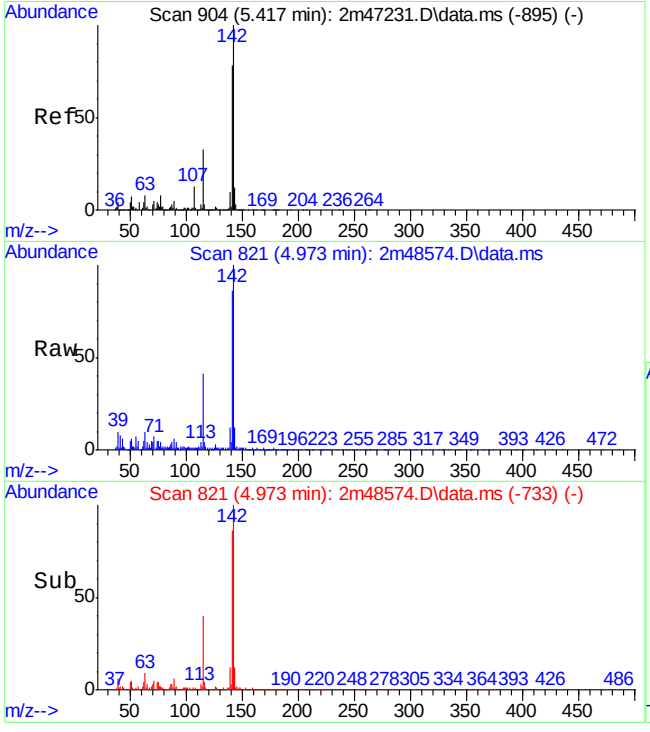


#38
Naphthalene
Concen: 7.91 ppb
RT: 3.972 min Scan# 634
Delta R.T. -0.021 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:128 Resp: 224447

Ion	Ratio	Lower	Upper
128	100		
129	9.9	0.0	40.9
127	13.1	0.0	43.3

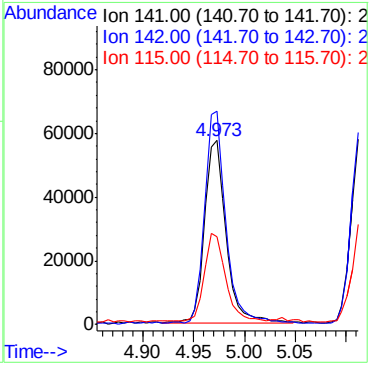




#44
2-Methylnaphthalene
Concen: 4.79 ppb
RT: 4.973 min Scan# 821
Delta R.T. -0.027 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:141 Resp: 83310

Ion	Ratio	Lower	Upper
141	100		
142	116.2	81.7	141.7
115	46.5	12.0	72.0



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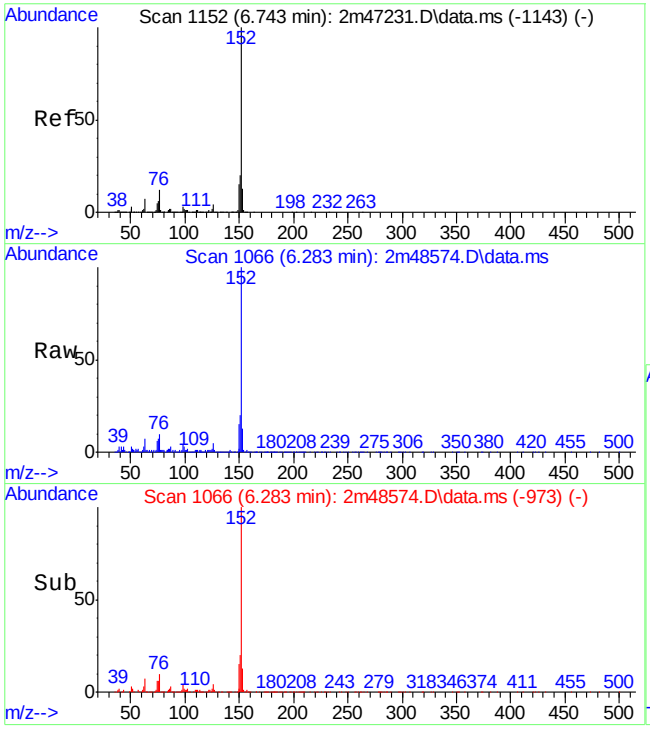
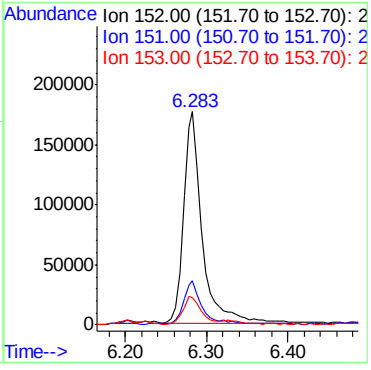
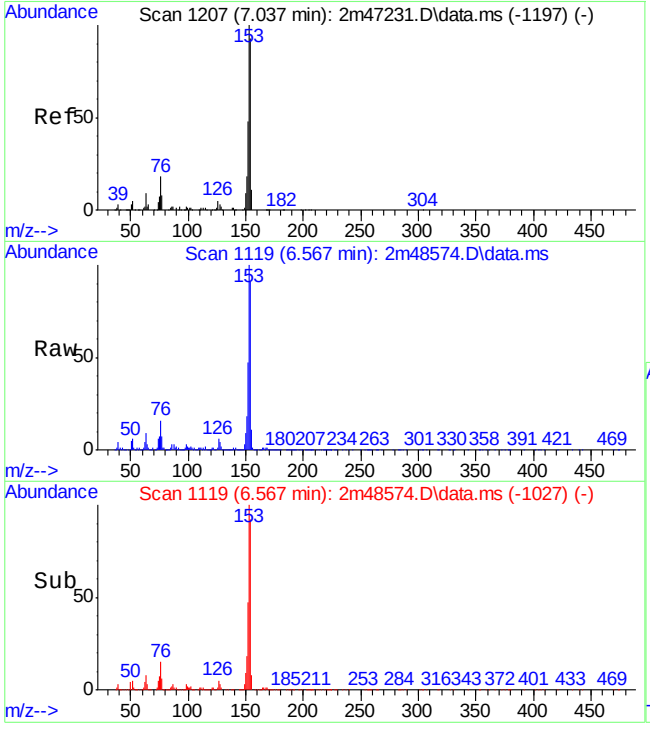


#56
Acenaphthylene
Concen: 8.57 ppb
RT: 6.283 min Scan# 1066
Delta R.T. 0.000 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:152 Resp: 282683

Ion	Ratio	Lower	Upper
152	100		
151	20.2	0.0	49.4
153	12.5	0.0	43.0

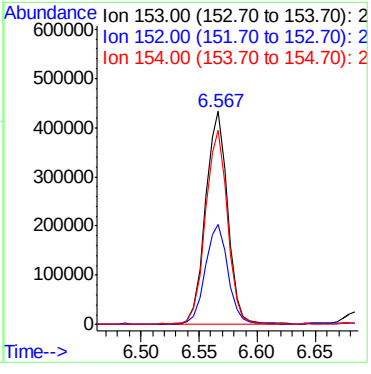




#59
Acenaphthene
Concen: 27.10 ppb
RT: 6.567 min Scan# 1119
Delta R.T. -0.005 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:153 Resp: 574627

Ion	Ratio	Lower	Upper
153	100		
152	46.8	15.8	75.8
154	90.8	59.7	119.7



9.1.12

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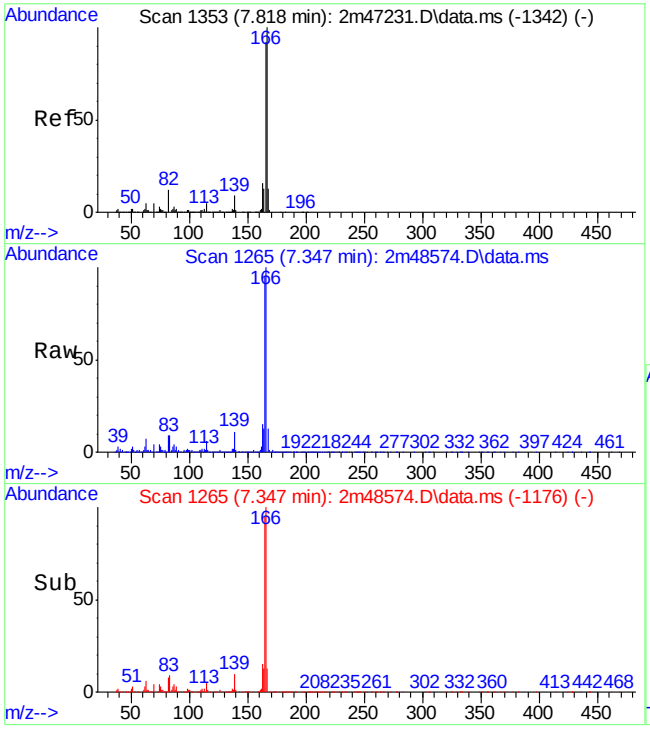
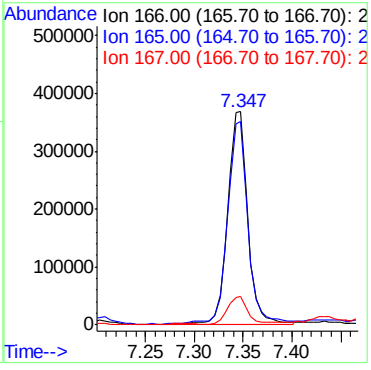
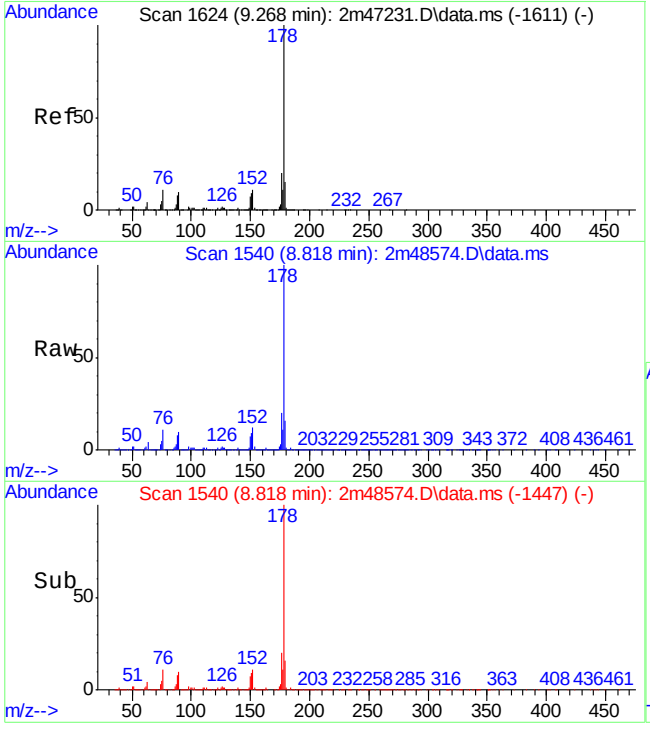


#66
Fluorene
Concen: 23.07 ppb
RT: 7.347 min Scan# 1265
Delta R.T. -0.021 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:166 Resp: 529750

Ion	Ratio	Lower	Upper
166	100		
165	94.8	61.9	121.9
167	12.7	0.0	43.1

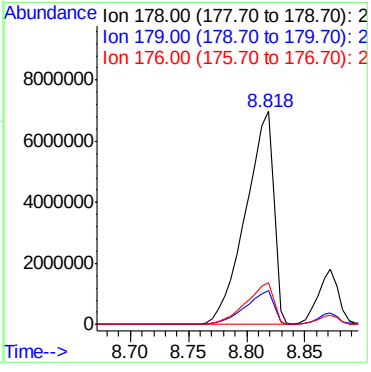




#77
Phenanthrene
Concen: 343.01 ppb
RT: 8.818 min Scan# 1540
Delta R.T. 0.000 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:178 Resp:11696197

Ion	Ratio	Lower	Upper
178	100		
179	15.8	0.0	44.9
176	19.5	0.0	49.1



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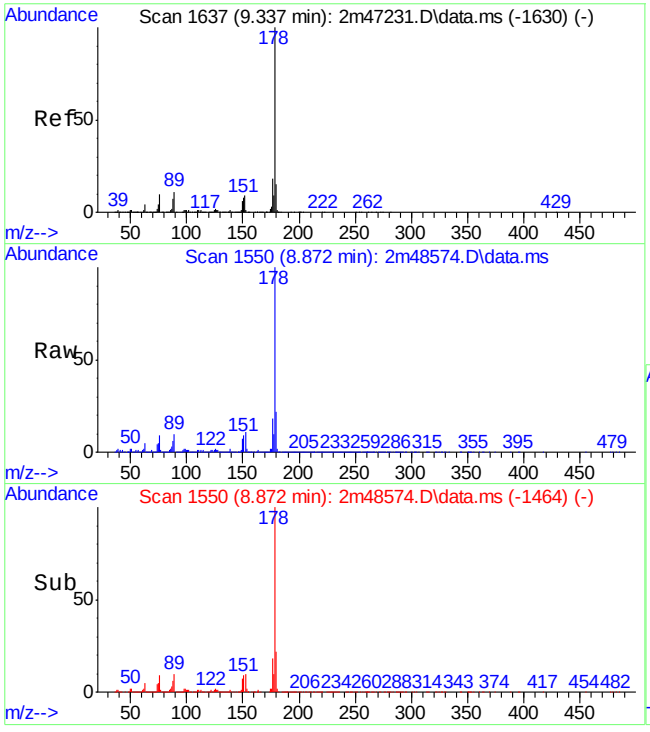
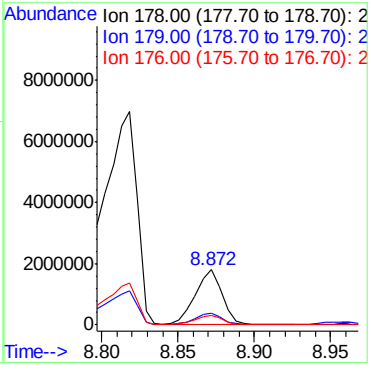
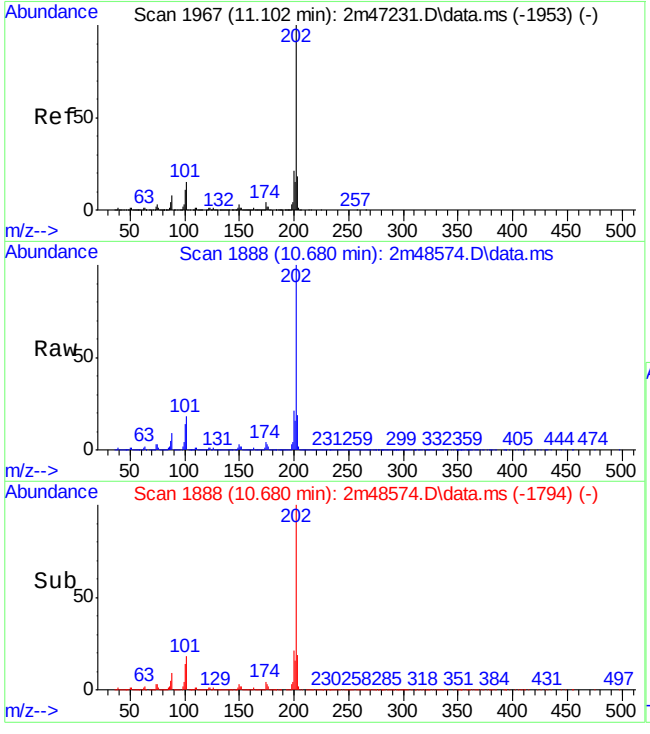


#78
Anthracene
Concen: 66.04 ppb
RT: 8.872 min Scan# 1550
Delta R.T. -0.037 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:178 Resp: 2232063

Ion	Ratio	Lower	Upper
178	100		
179	21.5	0.0	44.3
176	17.8	0.0	48.3

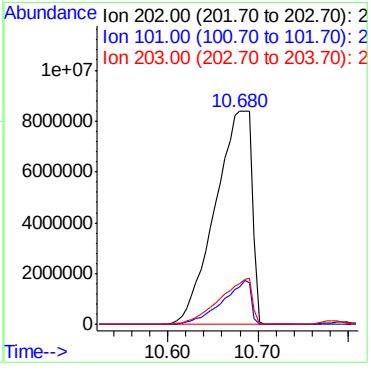




#81
Fluoranthene
Concen: 703.73 ppb
RT: 10.680 min Scan# 1888
Delta R.T. 0.005 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:202 Resp:23671362

Ion	Ratio	Lower	Upper
202	100		
101	17.6	0.0	43.8
203	19.0	0.0	47.5



9.1.12

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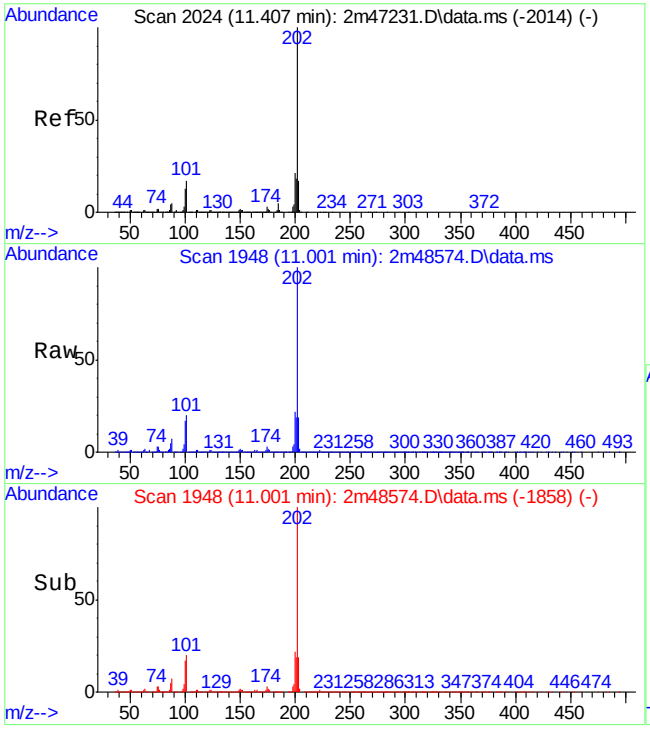
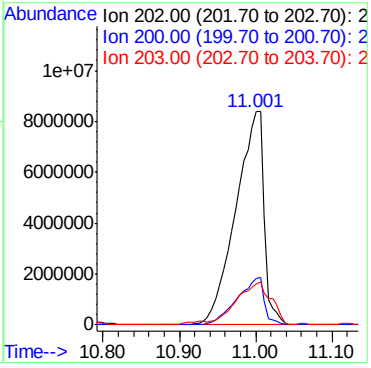
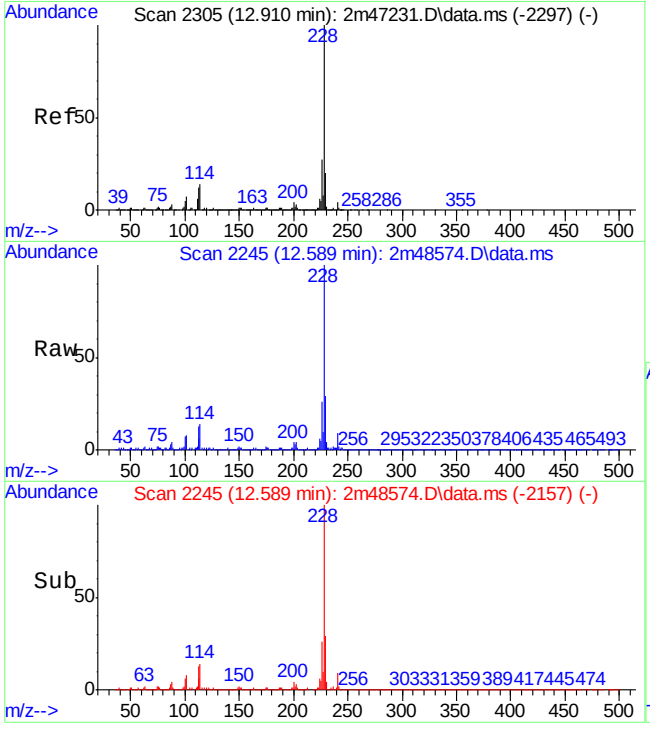


#84
Pyrene
Concen: 453.02 ppb
RT: 11.001 min Scan# 1948
Delta R.T. -0.016 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:202 Resp:21485867

Ion	Ratio	Lower	Upper
202	100		
200	21.6	0.0	51.3
203	19.0	0.0	47.6

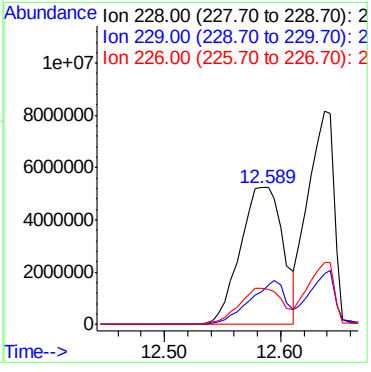




#88
Benzo[a]anthracene
Concen: 296.02 ppb
RT: 12.589 min Scan# 2245
Delta R.T. -0.027 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:228 Resp:13351356

Ion	Ratio	Lower	Upper
228	100		
229	29.4	0.0	49.3
226	25.3	0.0	56.0



9.1.12

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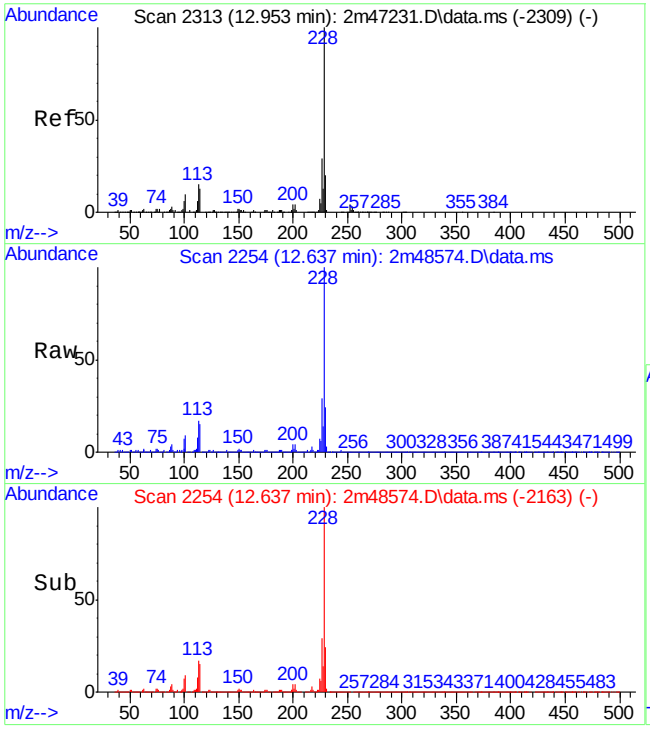
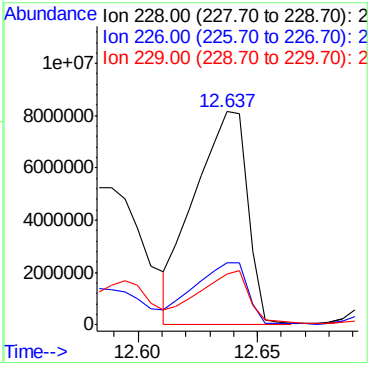
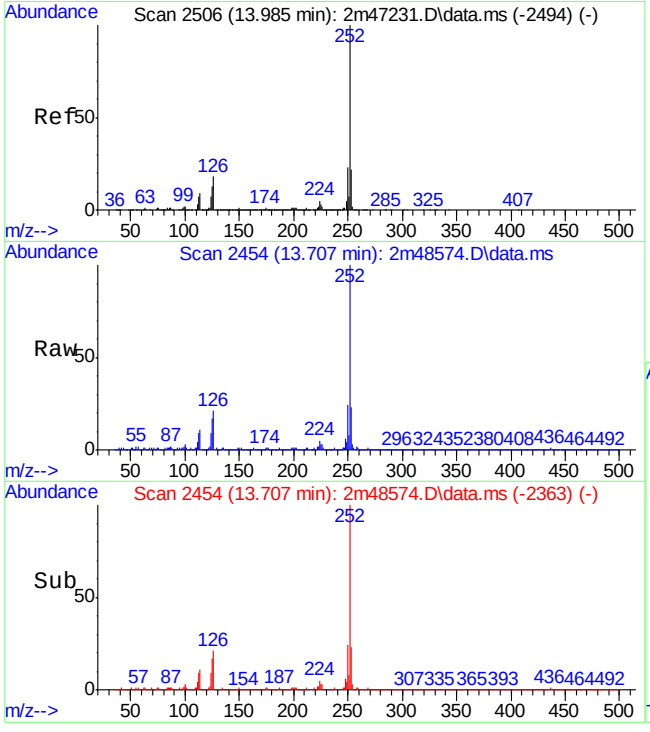


#90
Chrysene
Concen: 283.75 ppb m
RT: 12.637 min Scan# 2254
Delta R.T. -0.011 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:228 Resp:12687910

Ion	Ratio	Lower	Upper
228	100		
226	29.3	0.0	57.7
229	23.8	0.0	49.3

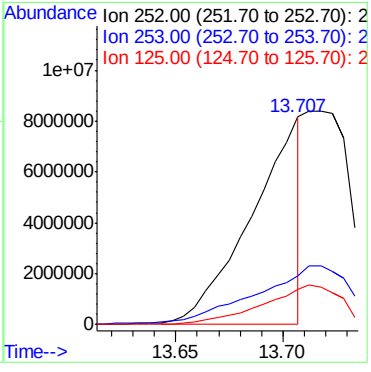


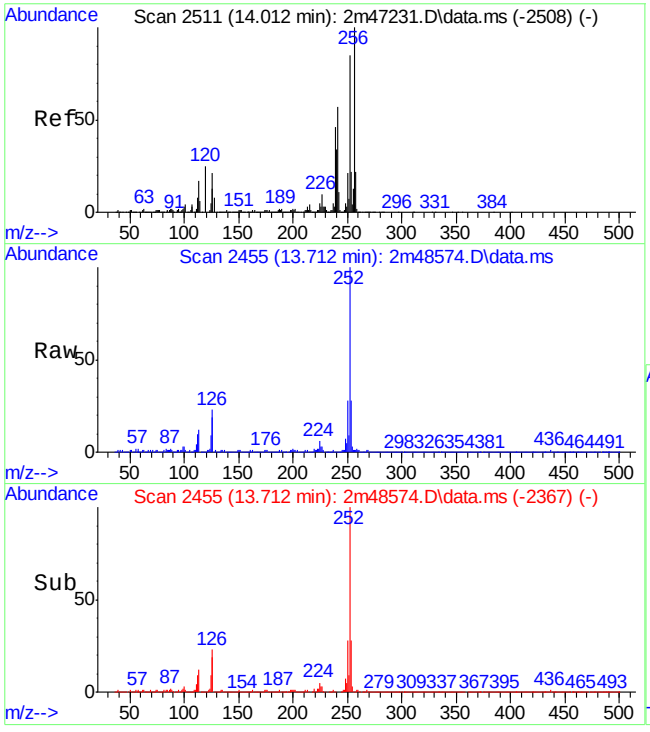


#94
Benzo[b]fluoranthene
Concen: 322.74 ppb m
RT: 13.707 min Scan# 2454
Delta R.T. -0.011 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:252 Resp:13356535

Ion	Ratio	Lower	Upper
252	100		
253	23.4	0.0	51.6
125	17.1	0.0	40.1

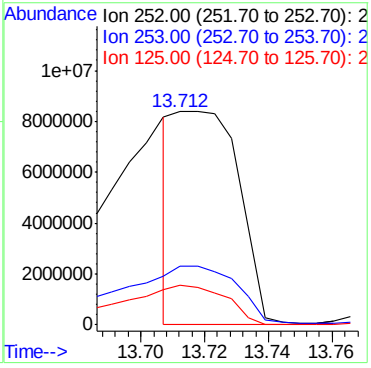


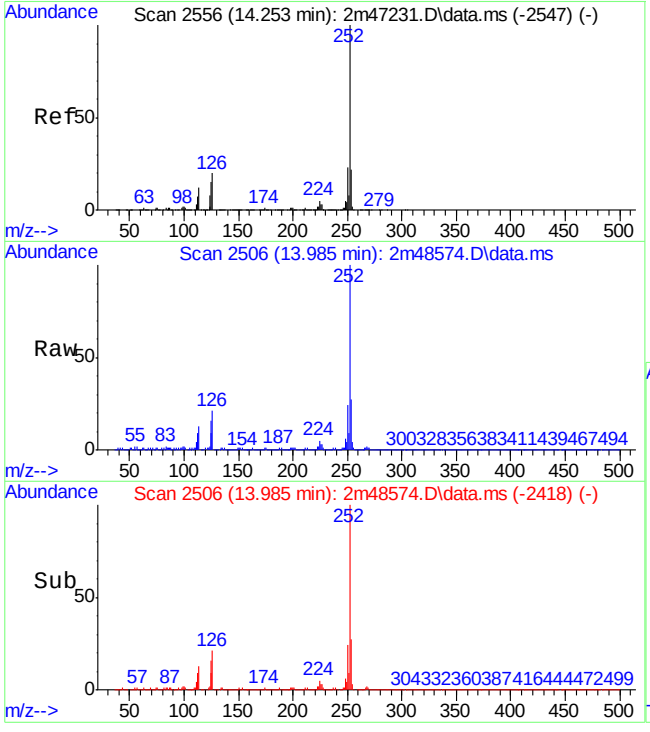


#95
Benzo[k]fluoranthene
Concen: 315.71 ppb m
RT: 13.712 min Scan# 2455
Delta R.T. -0.027 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:252 Resp:11759920

Ion	Ratio	Lower	Upper
252	100		
253	27.7	0.0	52.7
125	18.8	0.0	42.9

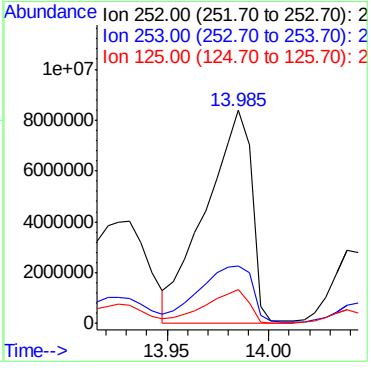




#96
Benzo[a]pyrene
Concen: 376.37 ppb
RT: 13.985 min Scan# 2506
Delta R.T. -0.027 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:252 Resp:13231238

Ion	Ratio	Lower	Upper
252	100		
253	26.8	0.0	52.4
125	15.9	0.0	42.7



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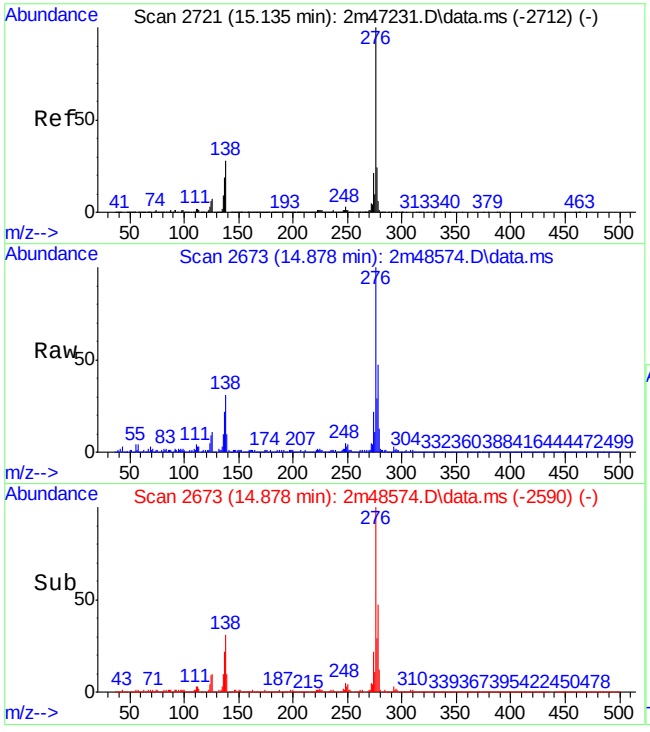
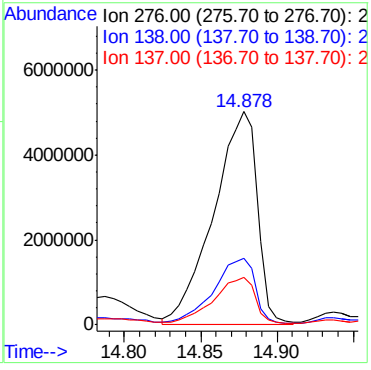
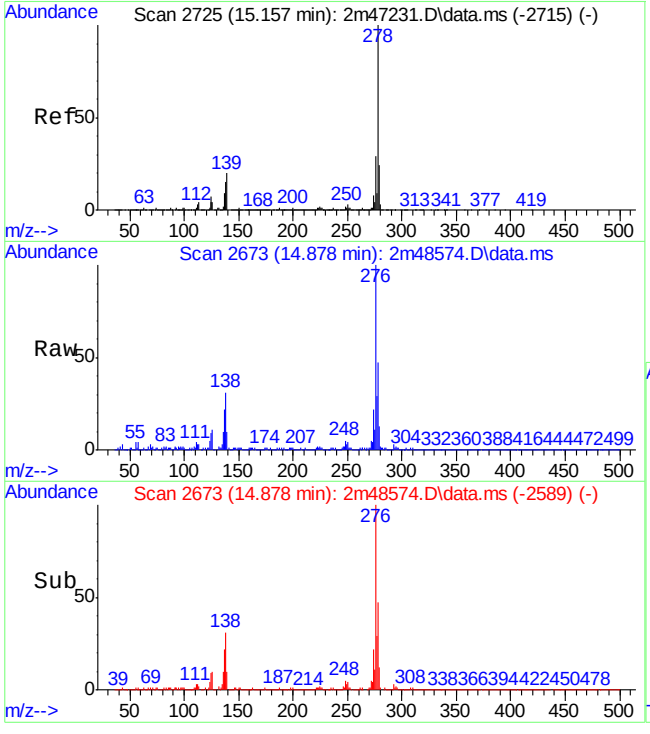


#97
Indeno[1,2,3-cd]pyrene
Concen: 244.22 ppb
RT: 14.878 min Scan# 2673
Delta R.T. -0.053 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:276 Resp: 9969128

Ion	Ratio	Lower	Upper
276	100		
138	31.1	0.0	57.6
137	22.0	0.0	48.9

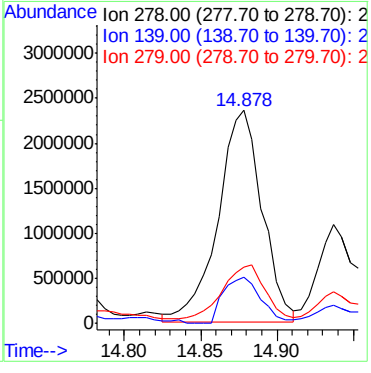


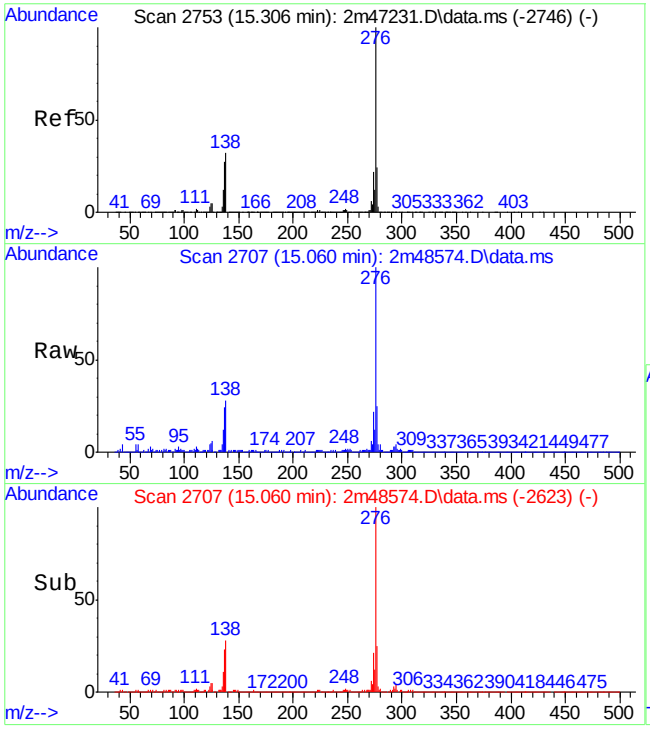


#99
Dibenz[a,h]anthracene
Concen: 138.45 ppb
RT: 14.878 min Scan# 2673
Delta R.T. -0.048 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:278 Resp: 4747895

Ion	Ratio	Lower	Upper
278	100		
139	21.1	0.0	52.4
279	25.5	0.0	54.1

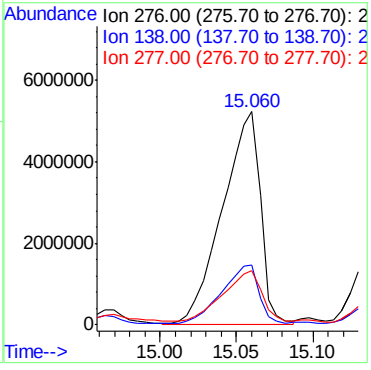




#101
Benzo[g,h,i]perylene
Concen: 258.20 ppb
RT: 15.060 min Scan# 2707
Delta R.T. -0.048 min
Lab File: 2m48574.D
Acq: 17 Dec 2012 7:51 pm

Tgt Ion:276 Resp: 8998194

Ion	Ratio	Lower	Upper
276	100		
138	27.5	0.1	60.1
277	23.8	0.0	53.2



9.1.12

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:49

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48589.D
Acq On : 18 Dec 2012 3:29 pm
Operator : olgaa
Sample : jb22822-9
Misc : op62037,e2m2081,33.8,,,1,20
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 19 11:58:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.395	152	262728	40.00 ppb	0.00
24) Naphthalene-d8	3.914	136	1248395	40.00 ppb	0.00
47) Acenaphthene-d10	6.476	164	776922	40.00 ppb	0.00
69) Phenanthrene-d10	8.706	188	1285247	40.00 ppb	0.00
83) Chrysene-d12	12.520	240	1241222	40.00 ppb	0.00
92) Perylene-d12	13.926	264	1060388	40.00 ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.395	152	262728	40.00 ppb	0.00
104) Acenaphthene-d10a	6.476	164	776922	40.00 ppb	0.00
106) Chrysene-d12a	12.520	240	1241222	40.00 ppb	0.00
108) Phenanthrene-d10a	8.706	188	1285247	40.00 ppb	0.00
110) Chrysene-d12b	12.520	240	1241222	40.00 ppb	0.00

System Monitoring Compounds					
5) 2-Fluorophenol	1.464	112	8155	0.85 ppb	0.04
Spiked Amount 50.000			Recovery	= 1.70%	
8) Phenol-d5	2.277	99	14781	1.15 ppb	0.06
Spiked Amount 50.000			Recovery	= 2.30%	
25) Nitrobenzene-d5	3.106	82	10616	0.79 ppb	0.04
Spiked Amount 50.000			Recovery	= 1.58%	
51) 2-Fluorobiphenyl	5.561	172	38393	1.50 ppb	0.00
Spiked Amount 50.000			Recovery	= 3.00%	
73) 2,4,6-Tribromophenol	7.754	330	5233m	1.73 ppb	0.02
Spiked Amount 50.000			Recovery	= 3.46%	
85) Terphenyl-d14	11.289	244	56629	2.26 ppb	0.00
Spiked Amount 50.000			Recovery	= 4.52%	

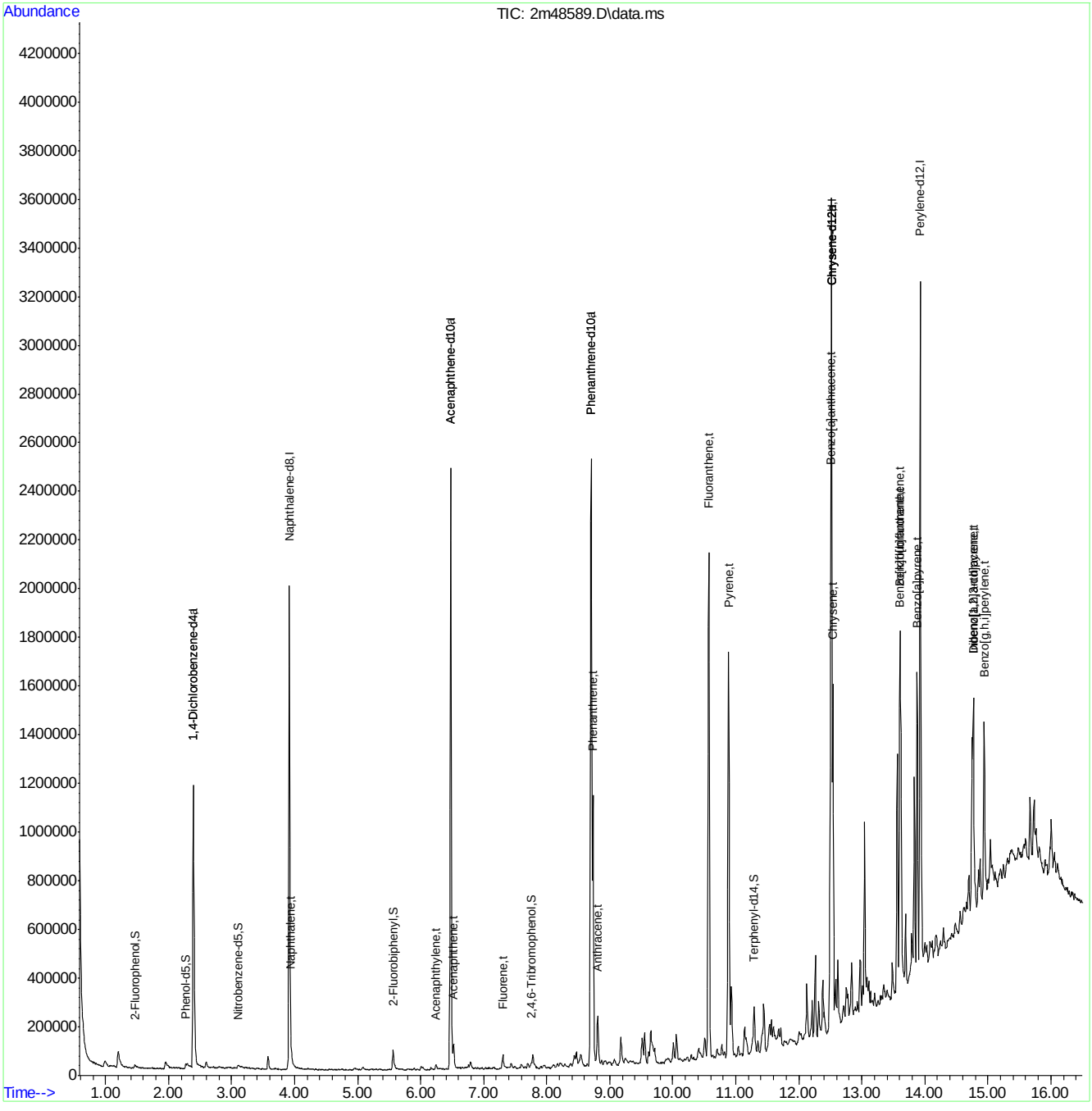
Target Compounds					Qvalue
38) Naphthalene	3.940	128	14984	0.43 ppb	92
56) Acenaphthylene	6.246	152	18153	0.48 ppb	83
59) Acenaphthene	6.519	153	32717	1.36 ppb	88
66) Fluorene	7.305	166	29618	1.13 ppb	98
77) Phenanthrene	8.733	178	592555	15.06 ppb	99
78) Anthracene	8.808	178	122806	3.15 ppb	94
81) Fluoranthene	10.573	202	1209762	31.17 ppb	97
84) Pyrene	10.888	202	1056003	26.30 ppb	99
88) Benzo[a]anthracene	12.504	228	587537	15.39 ppb	92
90) Chrysene	12.546	228	589974	15.59 ppb	99
94) Benzo[b]fluoranthene	13.605	252	727537m	19.71 ppb	
95) Benzo[k]fluoranthene	13.616	252	281495m	8.47 ppb	
96) Benzo[a]pyrene	13.878	252	513414	16.37 ppb	96
97) Indeno[1,2,3-cd]pyrene	14.771	276	349289	9.59 ppb	89
99) Dibenz[a,h]anthracene	14.777	278	133577m	4.37 ppb	
101) Benzo[g,h,i]perylene	14.943	276	309342	9.95 ppb	90

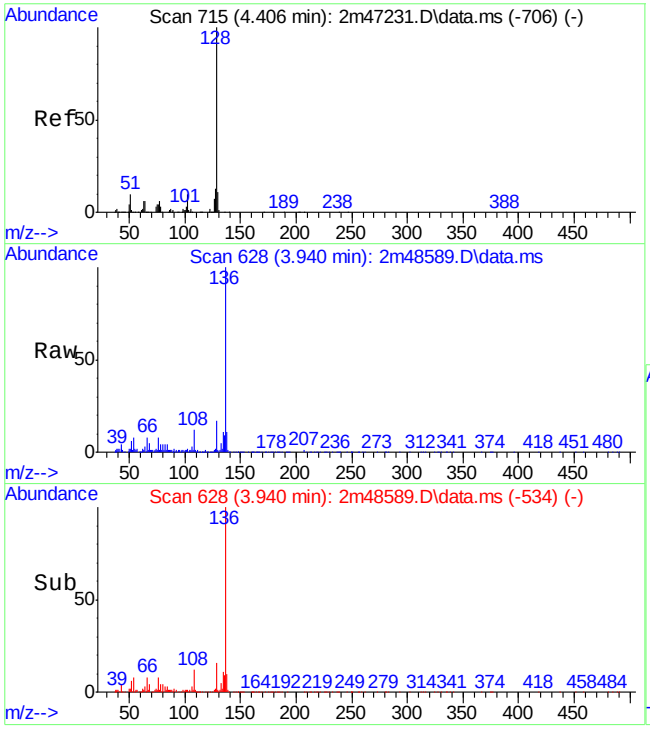
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48589.D
Acq On : 18 Dec 2012 3:29 pm
Operator : olgaa
Sample : jb22822-9
Misc : op62037,e2m2081,33.8,,,1,20
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 19 11:58:07 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 09:59:45 2012
Response via : Initial Calibration

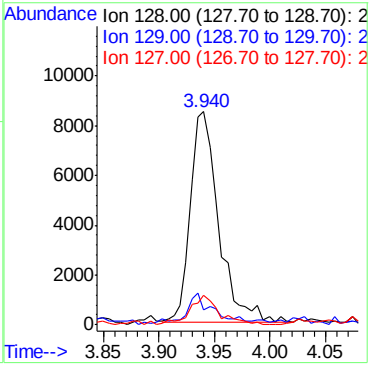


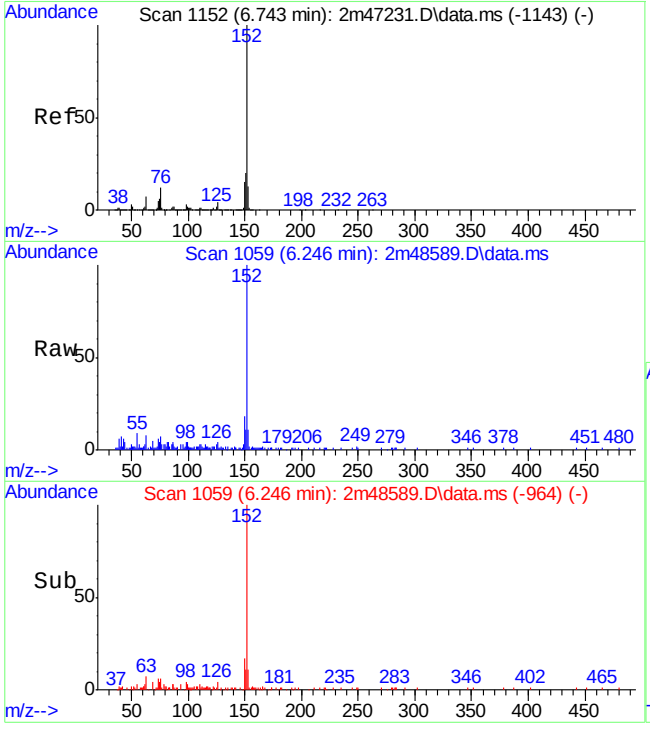


#38
Naphthalene
Concen: 0.43 ppb
RT: 3.940 min Scan# 628
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:128 Resp: 14984

Ion	Ratio	Lower	Upper
128	100		
129	4.1	0.0	40.9
127	13.1	0.0	43.3

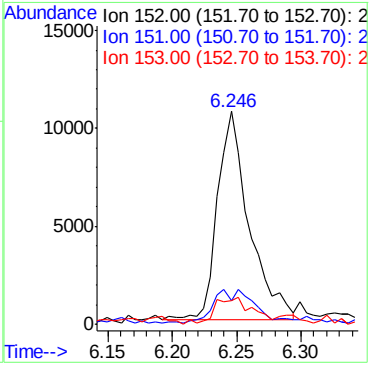




#56
Acenaphthylene
Concen: 0.48 ppb
RT: 6.246 min Scan# 1059
Delta R.T. 0.006 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:152 Resp: 18153

Ion	Ratio	Lower	Upper
152	100		
151	10.2	0.0	49.4
153	7.6	0.0	43.0



9.1.13

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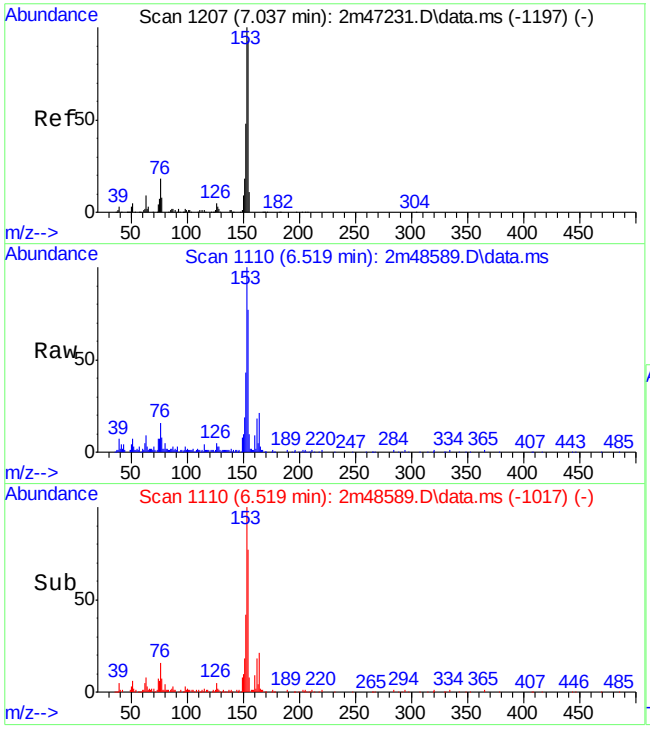
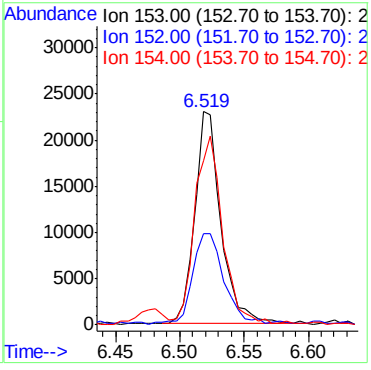
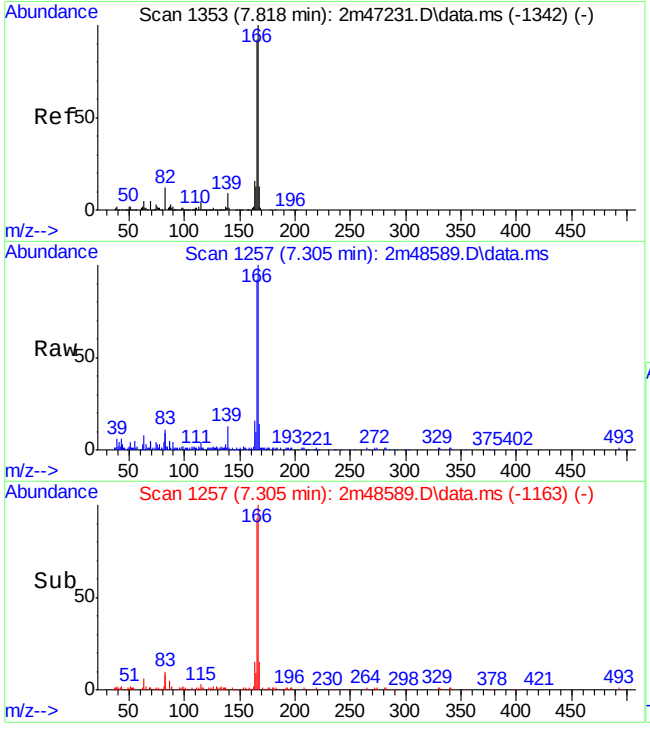


#59
Acenaphthene
Concen: 1.36 ppb
RT: 6.519 min Scan# 1110
Delta R.T. -0.005 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:153 Resp: 32717

Ion	Ratio	Lower	Upper
153	100		
152	42.2	15.8	75.8
154	74.7	59.7	119.7

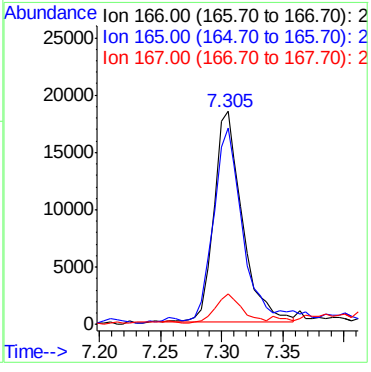




#66
Fluorene
Concen: 1.13 ppb
RT: 7.305 min Scan# 1257
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

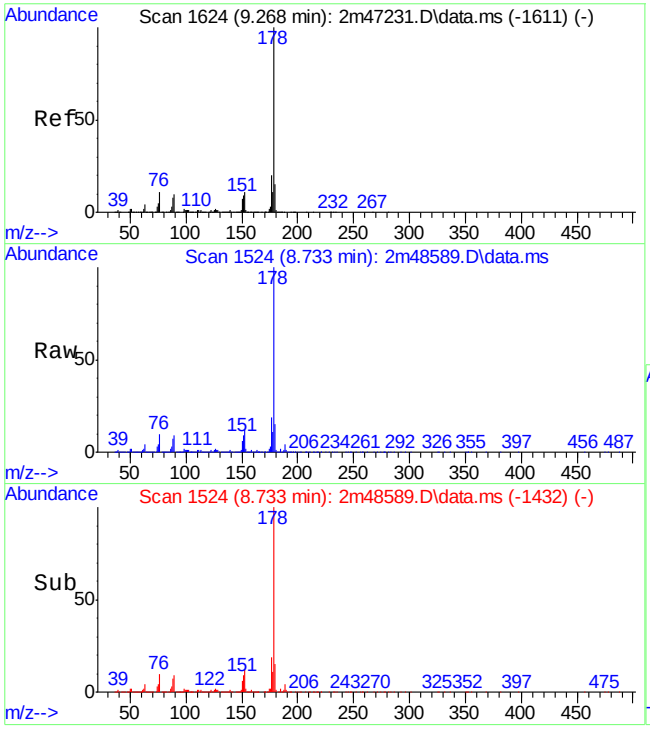
Tgt Ion:166 Resp: 29618

Ion	Ratio	Lower	Upper
166	100		
165	90.3	61.9	121.9
167	13.3	0.0	43.1



9.1.13

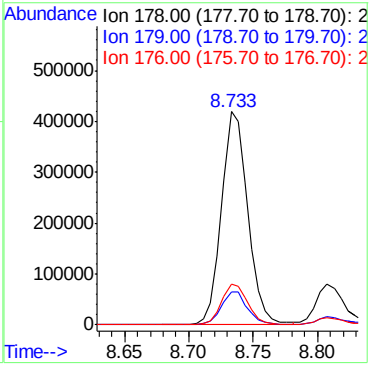
9

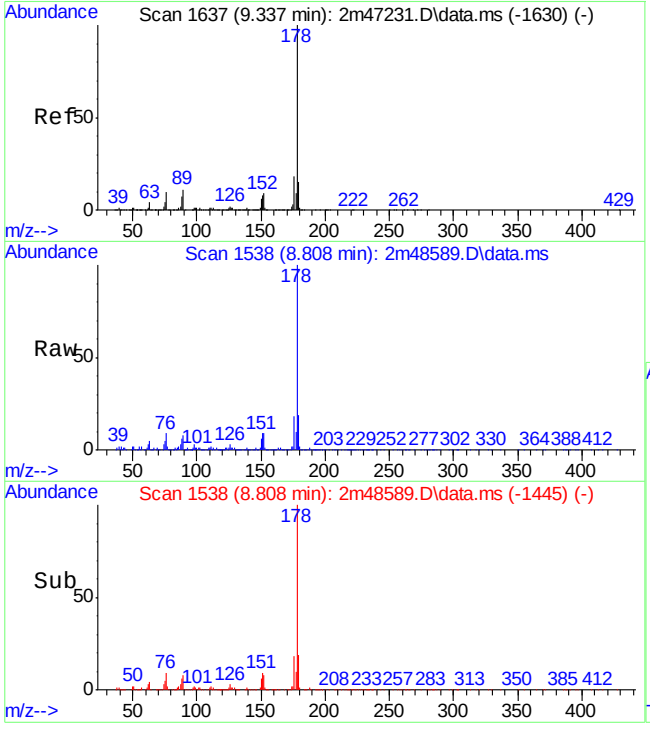


#77
Phenanthrene
Concen: 15.06 ppb
RT: 8.733 min Scan# 1524
Delta R.T. -0.011 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:178 Resp: 592555

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	44.9
176	19.2	0.0	49.1

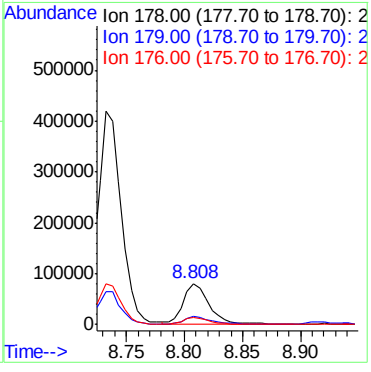




#78
Anthracene
Concen: 3.15 ppb
RT: 8.808 min Scan# 1538
Delta R.T. -0.005 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:178 Resp: 122806

Ion	Ratio	Lower	Upper
178	100		
179	19.2	0.0	44.3
176	17.6	0.0	48.3



9.1.13

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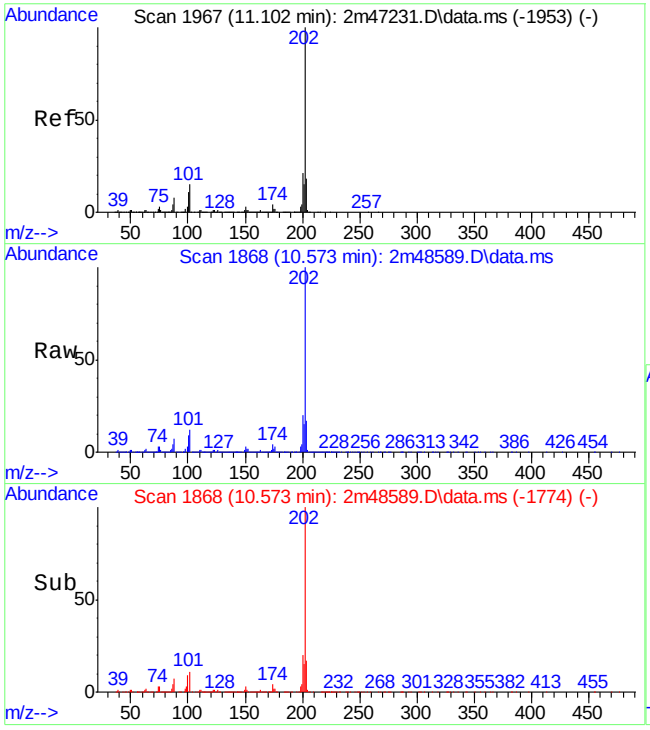
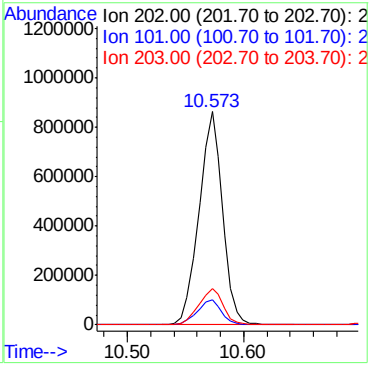
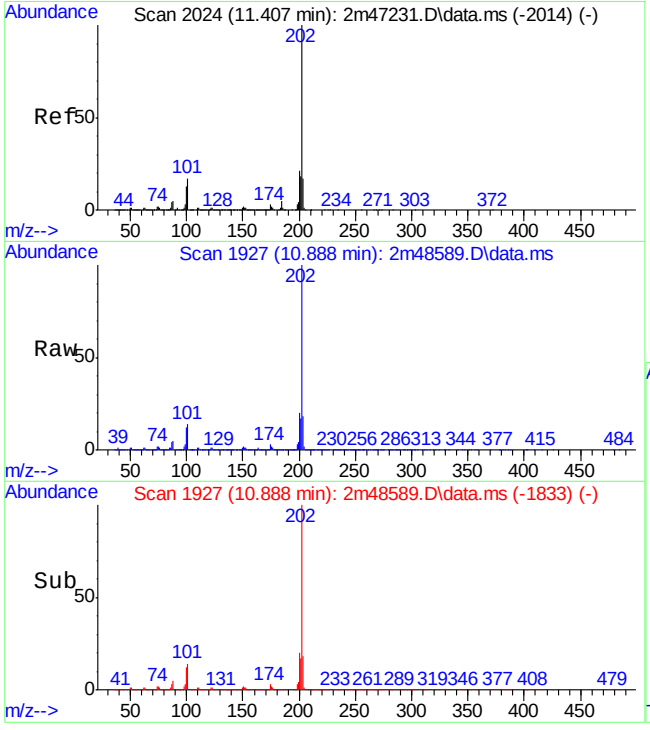


#81
Fluoranthene
Concen: 31.17 ppb
RT: 10.573 min Scan# 1868
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:202 Resp: 1209762

Ion	Ratio	Lower	Upper
202	100		
101	11.5	0.0	43.8
203	17.1	0.0	47.5

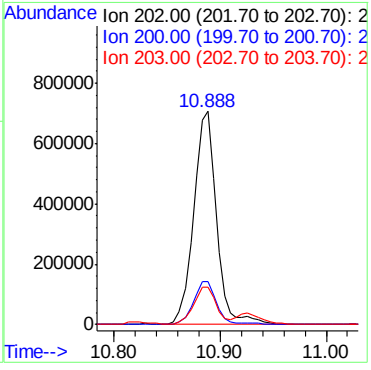




#84
Pyrene
Concen: 26.30 ppb
RT: 10.888 min Scan# 1927
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

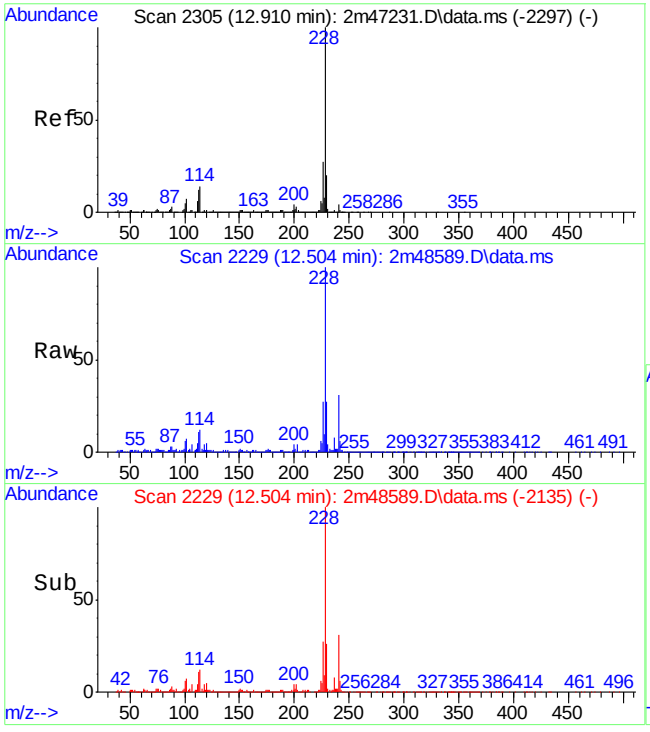
Tgt Ion:202 Resp: 1056003

Ion	Ratio	Lower	Upper
202	100		
200	20.3	0.0	51.3
203	17.4	0.0	47.6



9.1.13

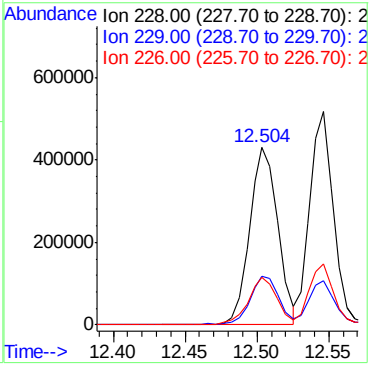
9

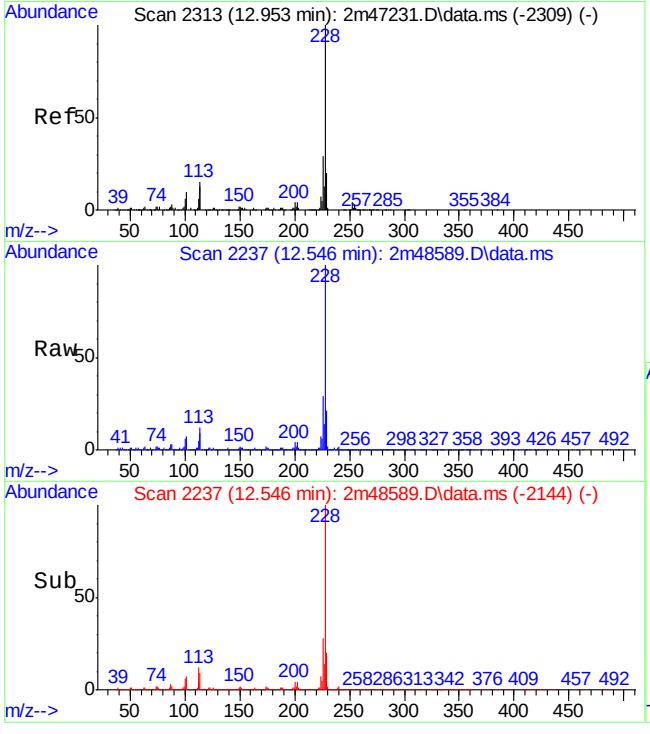


#88
Benzo[a]anthracene
Concen: 15.39 ppb
RT: 12.504 min Scan# 2229
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:228 Resp: 587537

Ion	Ratio	Lower	Upper
228	100		
229	26.9	0.0	49.3
226	26.7	0.0	56.0

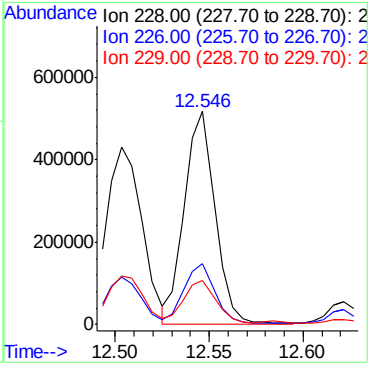




#90
Chrysene
Concen: 15.59 ppb
RT: 12.546 min Scan# 2237
Delta R.T. -0.005 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:228 Resp: 589974

Ion	Ratio	Lower	Upper
228	100		
226	28.6	0.0	57.7
229	19.9	0.0	49.3



9.1.13

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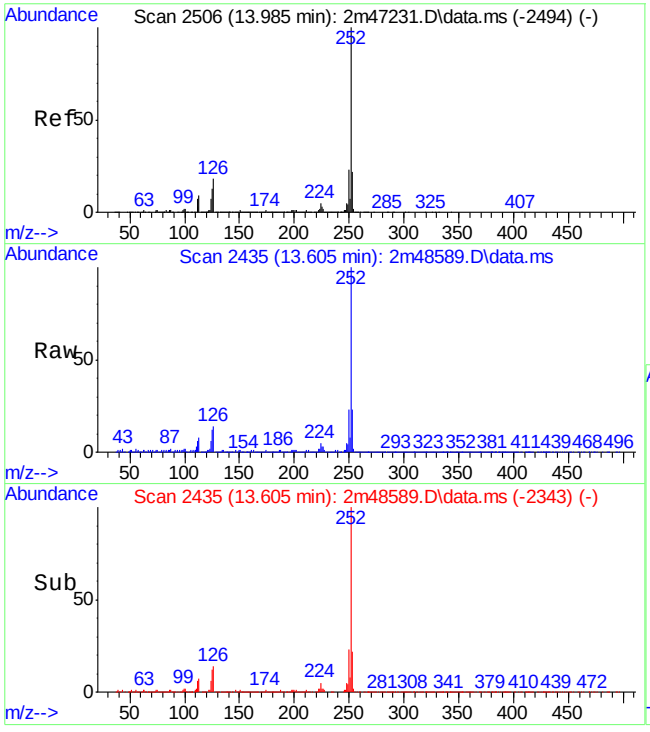
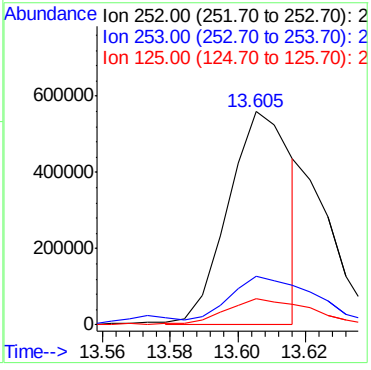
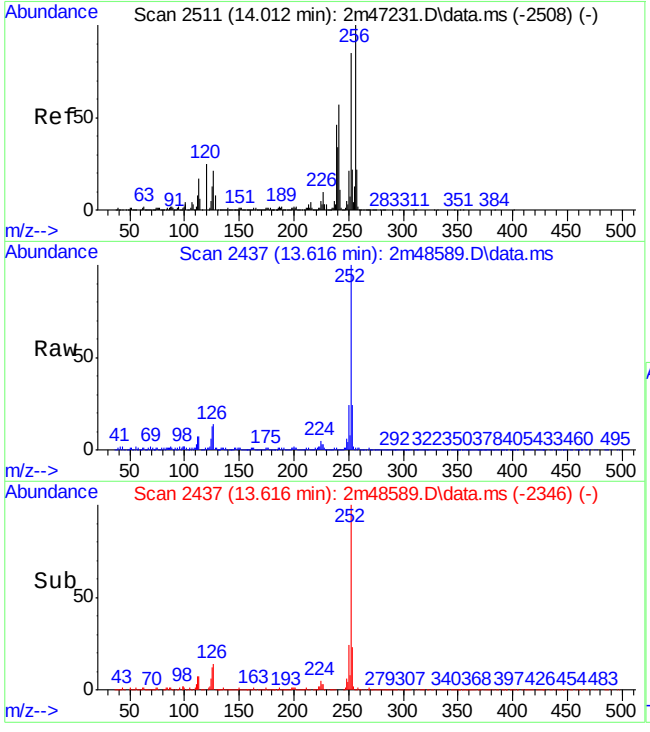


#94
Benzo[b]fluoranthene
Concen: 19.71 ppb m
RT: 13.605 min Scan# 2435
Delta R.T. -0.011 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:252 Resp: 727537

Ion	Ratio	Lower	Upper
252	100		
253	22.5	0.0	51.6
125	12.1	0.0	40.1

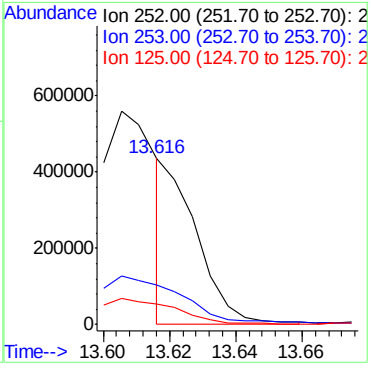




#95
Benzo[k]fluoranthene
Concen: 8.47 ppb m
RT: 13.616 min Scan# 2437
Delta R.T. -0.016 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:252 Resp: 281495

Ion	Ratio	Lower	Upper
252	100		
253	23.6	0.0	52.7
125	12.6	0.0	42.9



9.1.13

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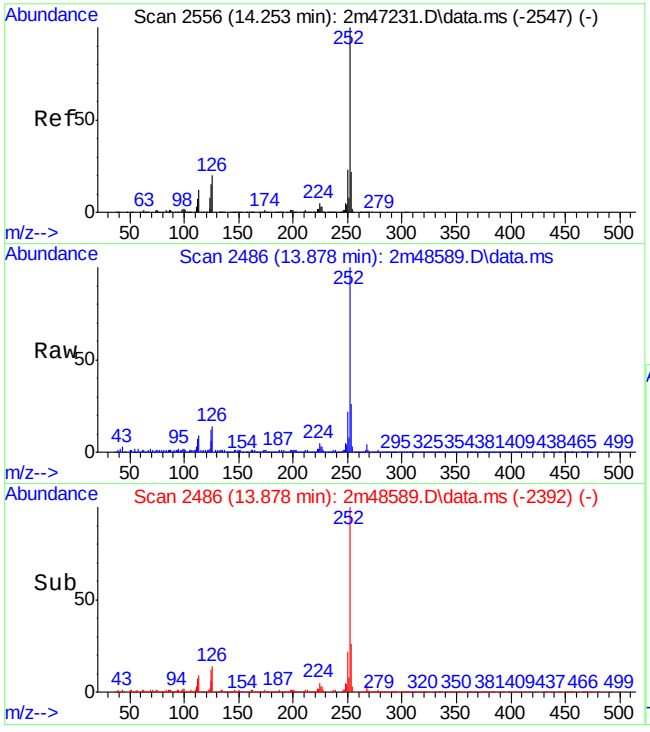
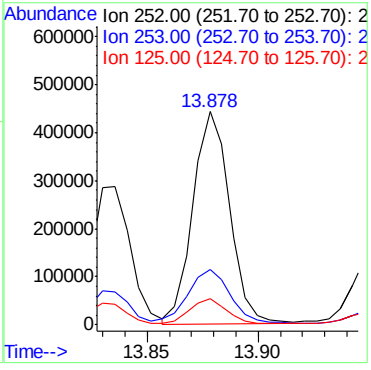
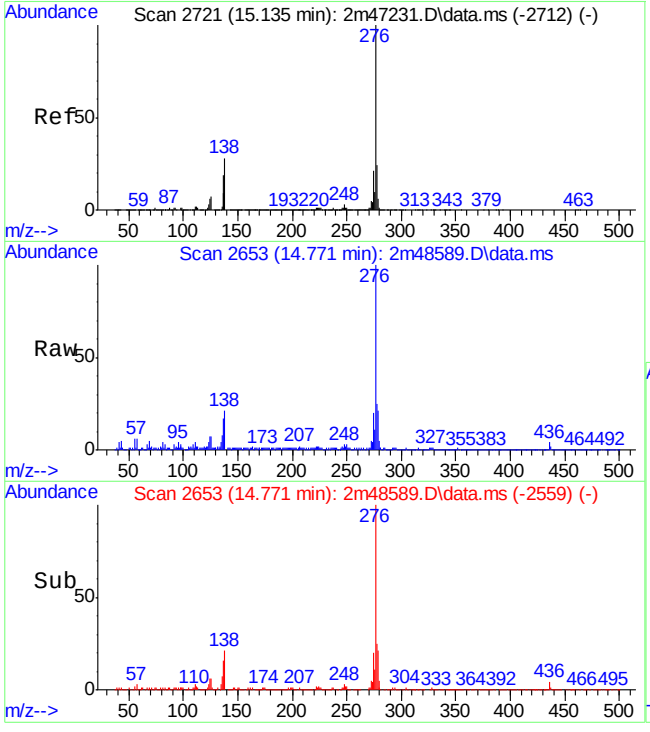


#96
Benzo[a]pyrene
Concen: 16.37 ppb
RT: 13.878 min Scan# 2486
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:252 Resp: 513414

Ion	Ratio	Lower	Upper
252	100		
253	24.4	0.0	52.4
125	11.5	0.0	42.7

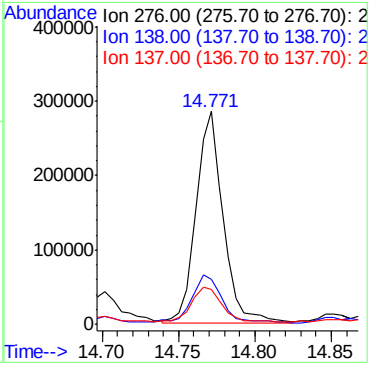




#97
Indeno[1,2,3-cd]pyrene
Concen: 9.59 ppb
RT: 14.771 min Scan# 2653
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:276 Resp: 349289

Ion	Ratio	Lower	Upper
276	100		
138	20.3	0.0	57.6
137	15.6	0.0	48.9



9.1.13

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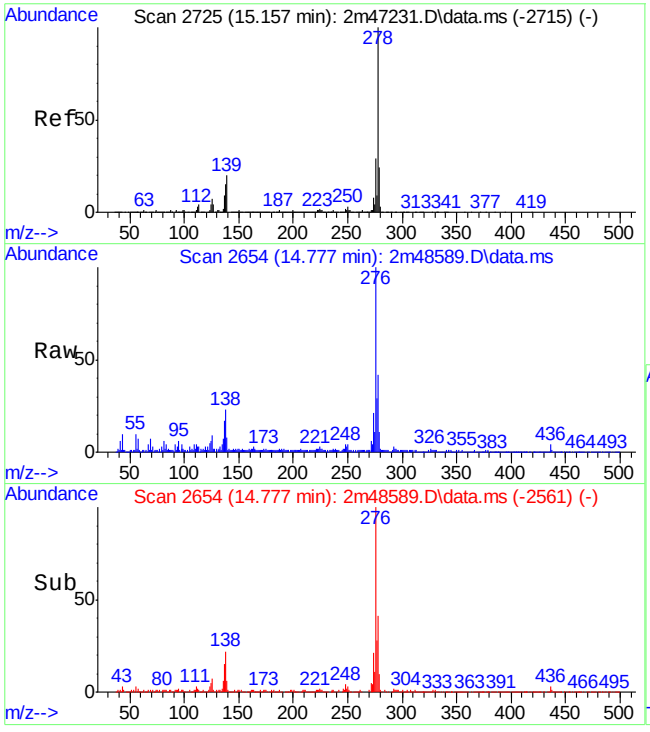
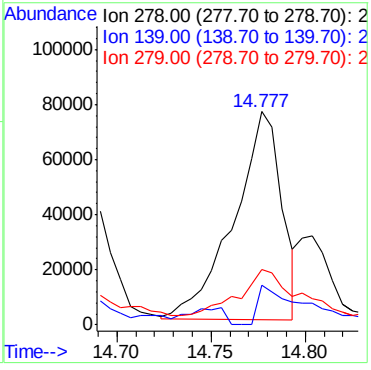
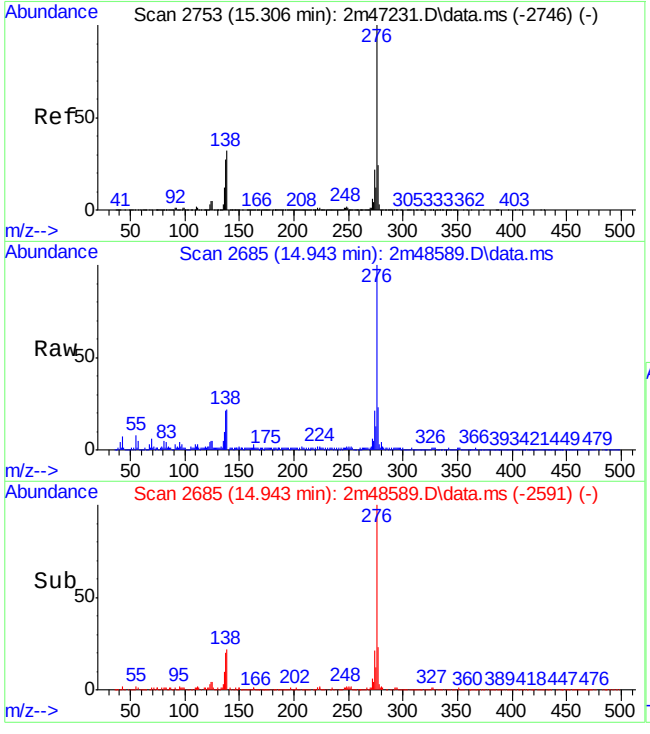


#99
Dibenz[a,h]anthracene
Concen: 4.37 ppb m
RT: 14.777 min Scan# 2654
Delta R.T. -0.005 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:278 Resp: 133577

Ion	Ratio	Lower	Upper
278	100		
139	18.4	0.0	52.4
279	26.0	0.0	54.1

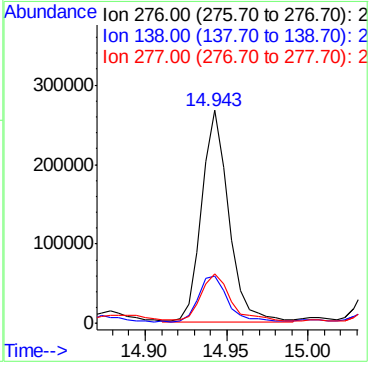




#101
Benzo[g,h,i]perylene
Concen: 9.95 ppb
RT: 14.943 min Scan# 2685
Delta R.T. 0.000 min
Lab File: 2m48589.D
Acq: 18 Dec 2012 3:29 pm

Tgt Ion:276 Resp: 309342

Ion	Ratio	Lower	Upper
276	100		
138	21.5	0.1	60.1
277	21.9	0.0	53.2



9.1.13

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48575.D
Acq On : 17 Dec 2012 8:14 pm
Operator : olgaa
Sample : jb22822-10
Misc : op62037,e2m2080,32.2,,,5
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Dec 18 16:04:45 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.427	152	316292	40.00	ppb	-0.04
24) Naphthalene-d8	4.010	136	1726854	40.00	ppb	0.00
47) Acenaphthene-d10	6.620	164	1044489	40.00	ppb	0.04
69) Phenanthrene-d10	8.802	188	1190904	40.00	ppb	0.00
83) Chrysene-d12	12.605	240	1474615	40.00	ppb	0.00
92) Perylene-d12	14.028	264	1581993	40.00	ppb	0.03
102) 1,4-Dichlorobenzene-d4a	2.427	152	316292	40.00	ppb	-0.04
104) Acenaphthene-d10a	6.620	164	1044489	40.00	ppb	0.04
106) Chrysene-d12a	12.605	240	1474615	40.00	ppb	0.00
108) Phenanthrene-d10a	8.802	188	1190904	40.00	ppb	0.00
110) Chrysene-d12b	12.605	240	1474615	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.459	112	22101	1.92	ppb	-0.02
Spiked Amount 50.000			Recovery	=	3.84%	
8) Phenol-d5	2.282	99	56887	3.69	ppb	0.00
Spiked Amount 50.000			Recovery	=	7.38%	
25) Nitrobenzene-d5	3.122	82	58426m	3.15	ppb	-0.02
Spiked Amount 50.000			Recovery	=	6.30%	
51) 2-Fluorobiphenyl	5.668	172	283514	8.25	ppb	0.02
Spiked Amount 50.000			Recovery	=	16.50%	
73) 2,4,6-Tribromophenol	7.850	330	31093	11.11	ppb	0.02
Spiked Amount 50.000			Recovery	=	22.22%	
85) Terphenyl-d14	11.370	244	243070	8.16	ppb	-0.01
Spiked Amount 50.000			Recovery	=	16.32%	

Target Compounds							Qvalue
44) 2-Methylnaphthalene	5.069	141	552230m	18.74	ppb		
59) Acenaphthene	6.668	153	299208	9.23	ppb	#	65
66) Fluorene	7.422	166	249419	7.10	ppb		96
77) Phenanthrene	8.829	178	364225	9.99	ppb		95
78) Anthracene	8.899	178	98197	2.72	ppb		83
81) Fluoranthene	10.664	202	192209	5.34	ppb		85
84) Pyrene	10.985	202	1000251	20.97	ppb		98
88) Benzo[a]anthracene	12.589	228	287136	6.33	ppb		81
90) Chrysene	12.627	228	758185m	16.86	ppb		
94) Benzo[b]fluoranthene	13.702	252	293100m	5.32	ppb		
95) Benzo[k]fluoranthene	13.707	252	163492m	3.30	ppb		
96) Benzo[a]pyrene	13.974	252	385586	8.24	ppb		83
97) Indeno[1,2,3-cd]pyrene	14.878	276	209208m	3.85	ppb		
99) Dibenz[a,h]anthracene	14.878	278	144984m	3.18	ppb		
101) Benzo[g,h,i]perylene	15.055	276	385837	8.32	ppb		92

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

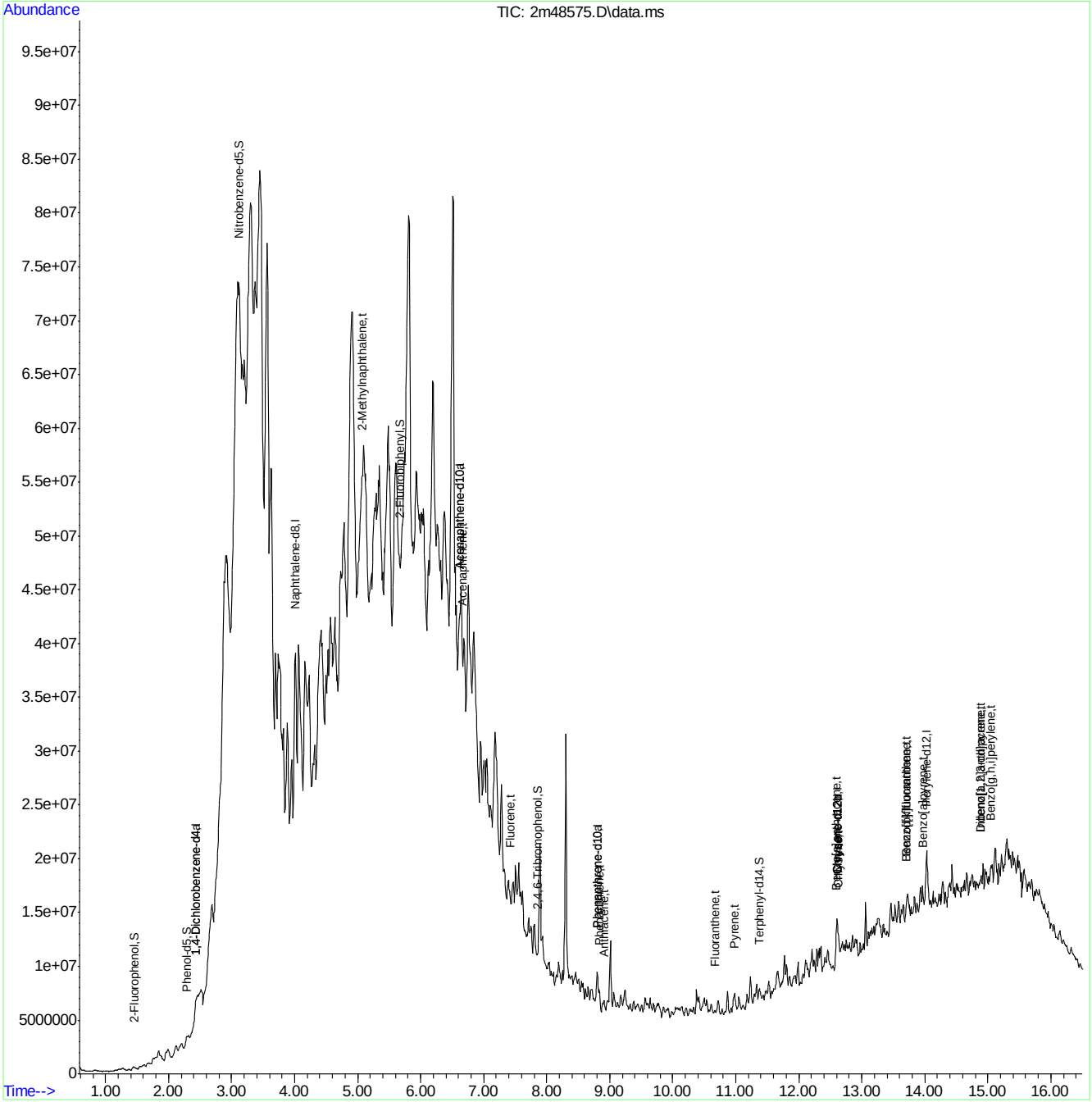
9.1.14

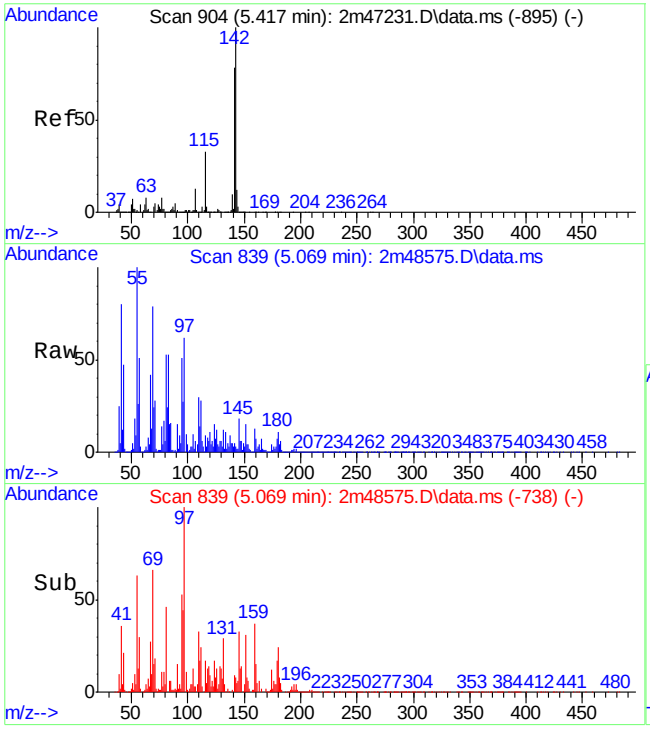
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48575.D
Acq On : 17 Dec 2012 8:14 pm
Operator : olgaa
Sample : jb22822-10
Misc : op62037,e2m2080,32.2,,,5
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Dec 18 16:04:45 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

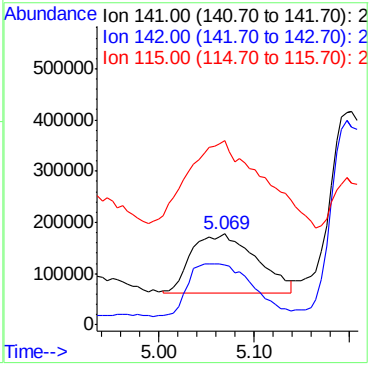


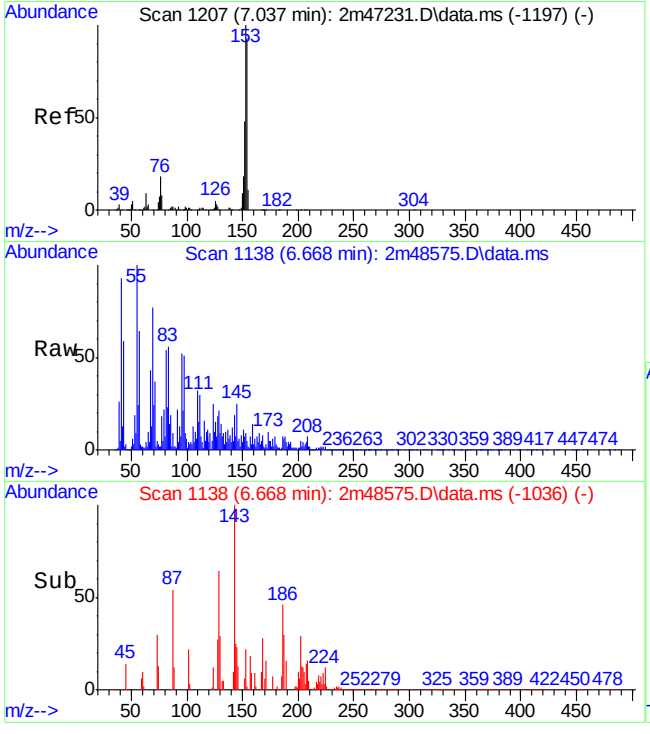


#44
2-Methylnaphthalene
Concen: 18.74 ppb m
RT: 5.069 min Scan# 839
Delta R.T. 0.043 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:141 Resp: 552230

Ion	Ratio	Lower	Upper
141	100		
142	66.1	81.7	141.7#
115	202.0	12.0	72.0#

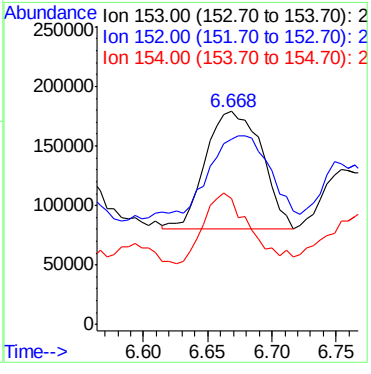




#59
Acenaphthene
Concen: 9.23 ppb
RT: 6.668 min Scan# 1138
Delta R.T. 0.048 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:153 Resp: 299208

Ion	Ratio	Lower	Upper
153	100		
152	62.7	15.8	75.8
154	51.9	59.7	119.7#



9.1.14

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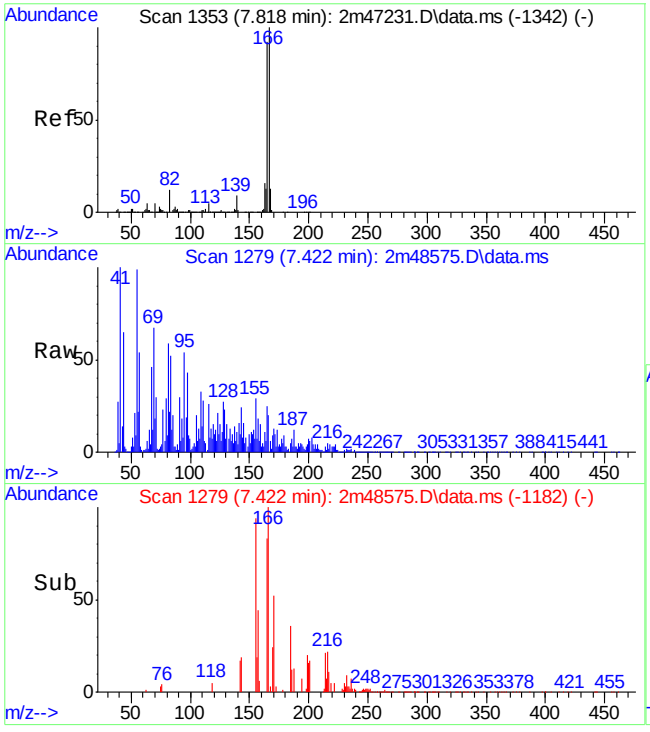
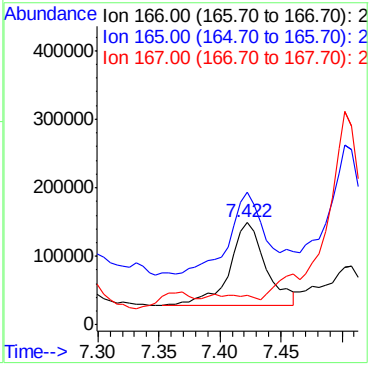
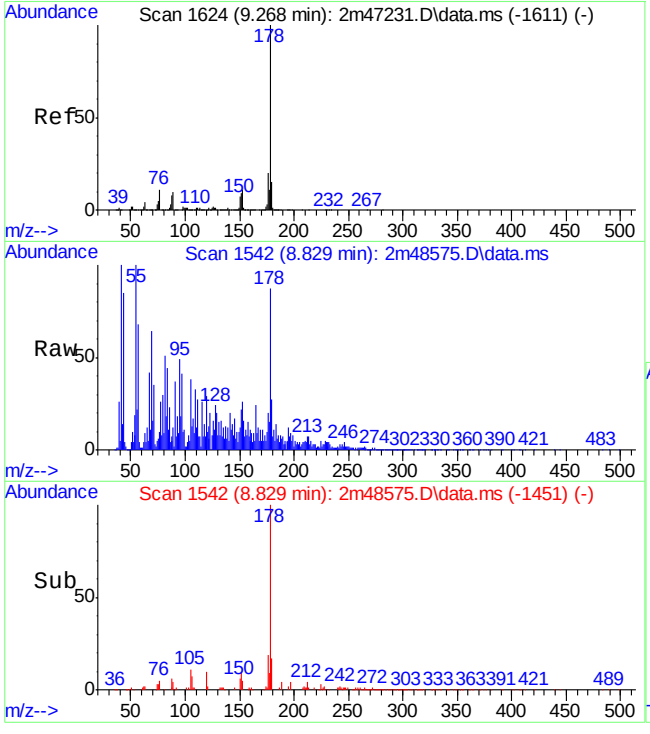


#66
Fluorene
Concen: 7.10 ppb
RT: 7.422 min Scan# 1279
Delta R.T. 0.021 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:166 Resp: 249419

Ion	Ratio	Lower	Upper
166	100		
165	91.5	61.9	121.9
167	0.0	0.0	43.1

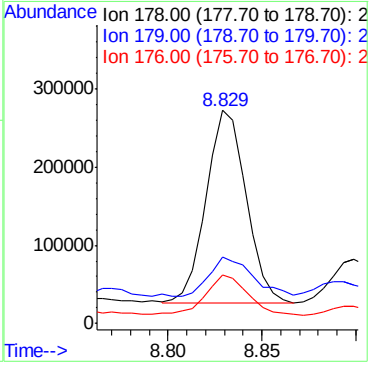




#77
Phenanthrene
Concen: 9.99 ppb
RT: 8.829 min Scan# 1542
Delta R.T. -0.011 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:178 Resp: 364225

Ion	Ratio	Lower	Upper
178	100		
179	19.1	0.0	44.9
176	19.9	0.0	49.1



9.1.14

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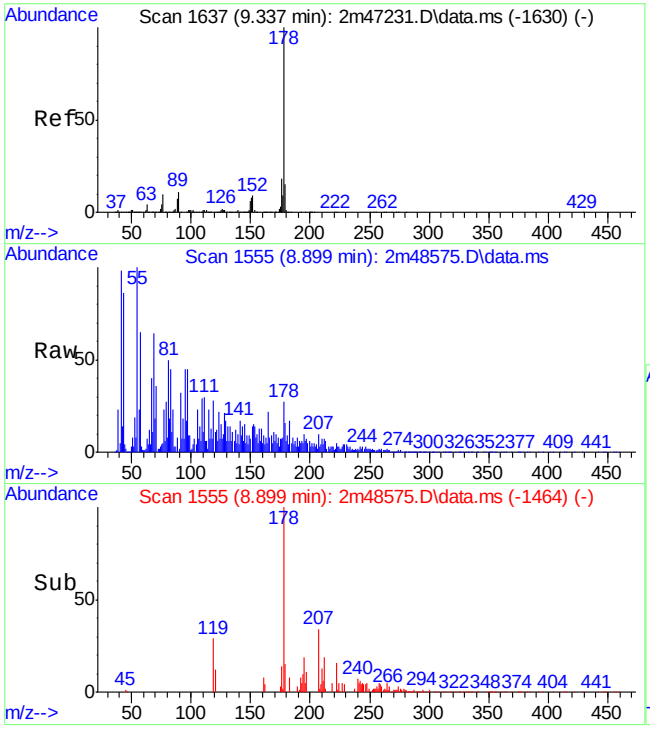
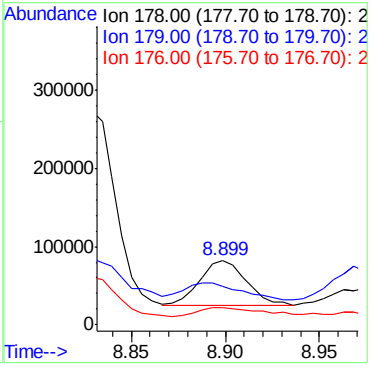
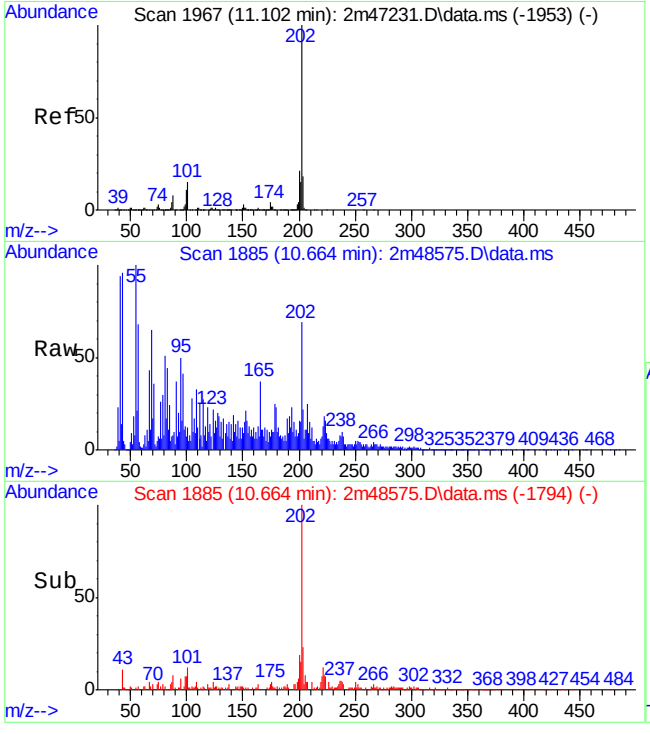


#78
Anthracene
Concen: 2.72 ppb
RT: 8.899 min Scan# 1555
Delta R.T. -0.011 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:178 Resp: 98197

Ion	Ratio	Lower	Upper
178	100		
179	25.7	0.0	44.3
176	14.8	0.0	48.3

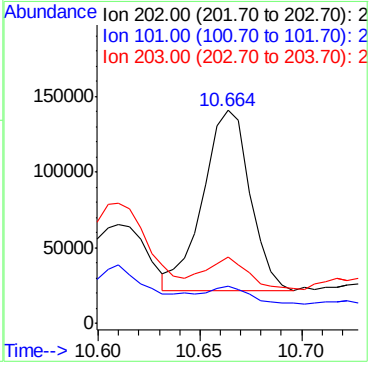




#81
Fluoranthene
Concen: 5.34 ppb
RT: 10.664 min Scan# 1885
Delta R.T. -0.011 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:202 Resp: 192209

Ion	Ratio	Lower	Upper
202	100		
101	7.2	0.0	43.8
203	11.7	0.0	47.5



9.1.14

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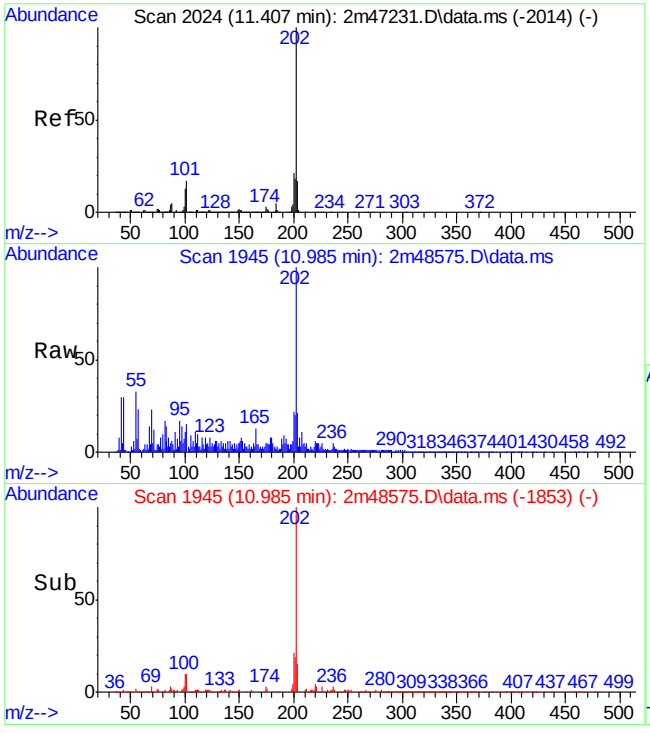
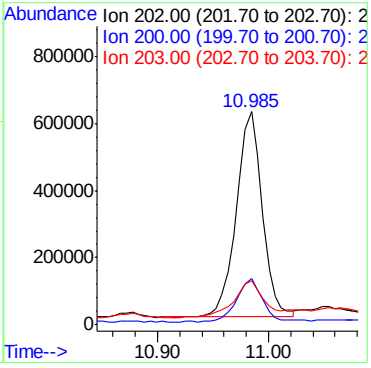
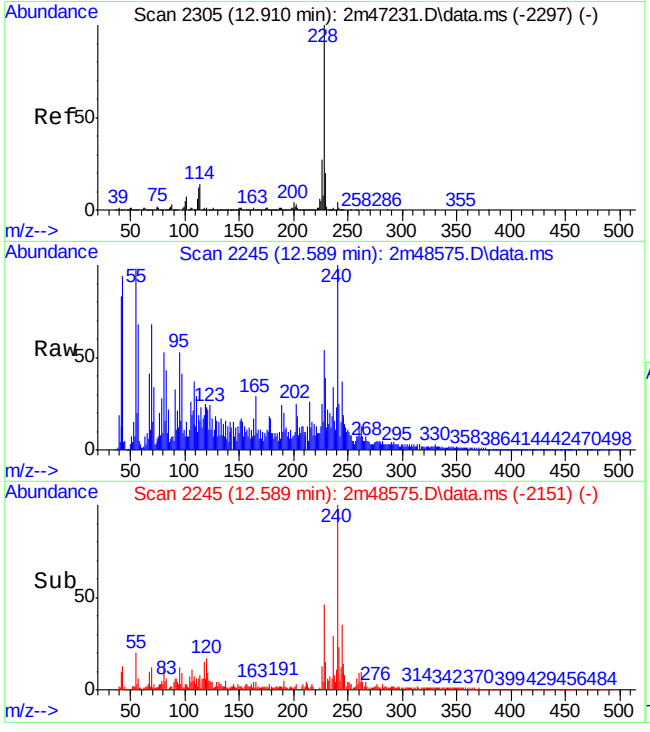


#84
Pyrene
Concen: 20.97 ppb
RT: 10.985 min Scan# 1945
Delta R.T. -0.005 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:202 Resp: 1000251

Ion	Ratio	Lower	Upper
202	100		
200	20.8	0.0	51.3
203	16.1	0.0	47.6

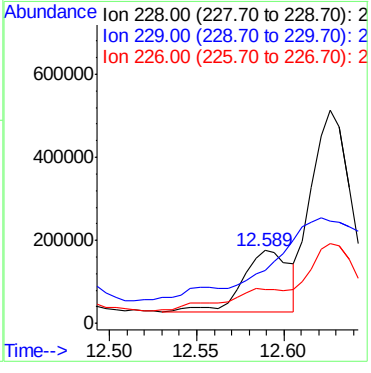




#88
Benzo[a]anthracene
Concen: 6.33 ppb
RT: 12.589 min Scan# 2245
Delta R.T. 0.005 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:228 Resp: 287136

Ion	Ratio	Lower	Upper
228	100		
229	0.0	0.0	49.3
226	27.0	0.0	56.0



9.1.14

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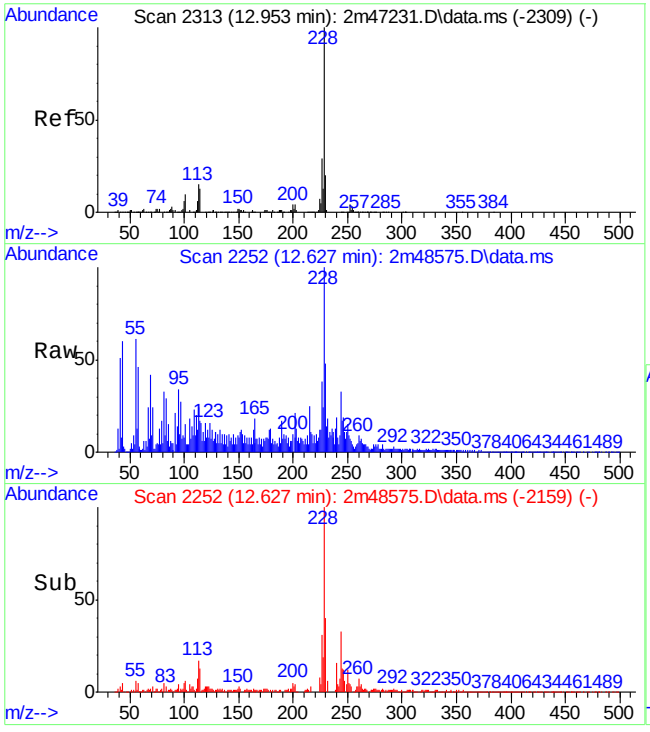
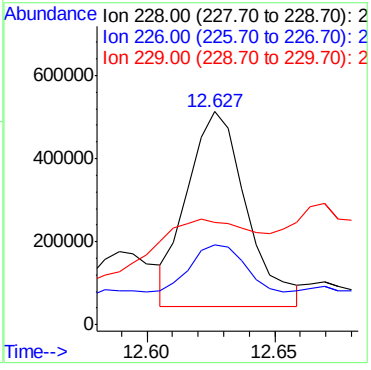
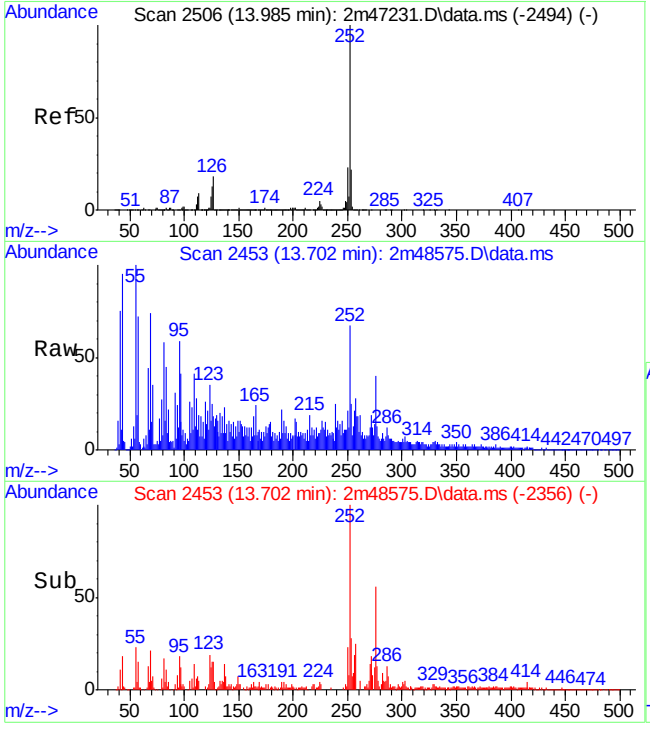


#90
Chrysene
Concen: 16.86 ppb m
RT: 12.627 min Scan# 2252
Delta R.T. -0.000 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:228 Resp: 758185

Ion	Ratio	Lower	Upper
228	100		
226	37.5	0.0	57.7
229	47.9	0.0	49.3

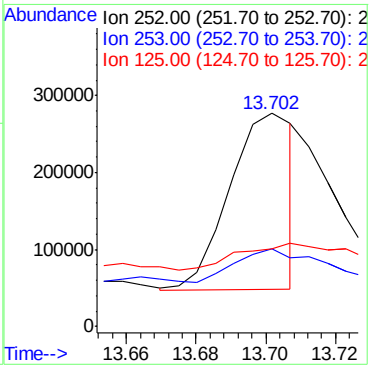




#94
Benzo[b]fluoranthene
Concen: 5.32 ppb m
RT: 13.702 min Scan# 2453
Delta R.T. 0.021 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:252 Resp: 293100

Ion	Ratio	Lower	Upper
252	100		
253	36.6	0.0	51.6
125	36.6	0.0	40.1



9.1.14

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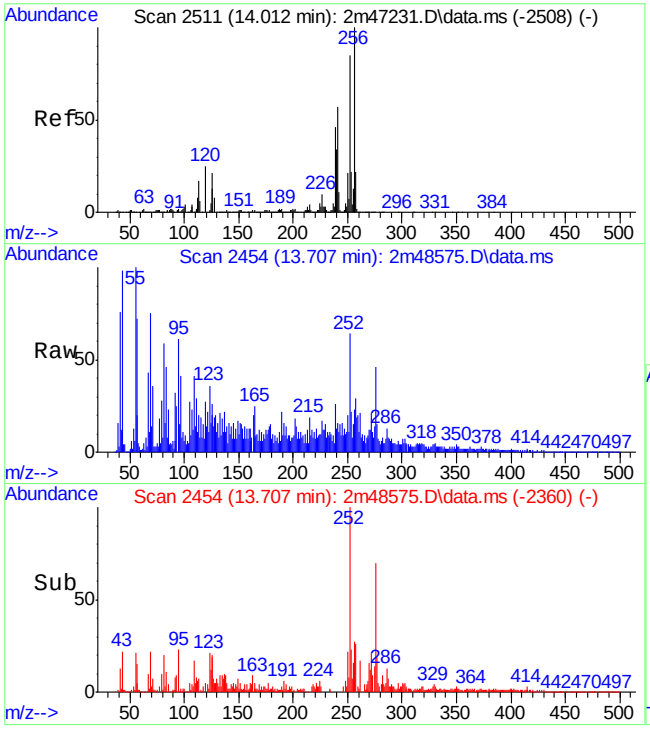
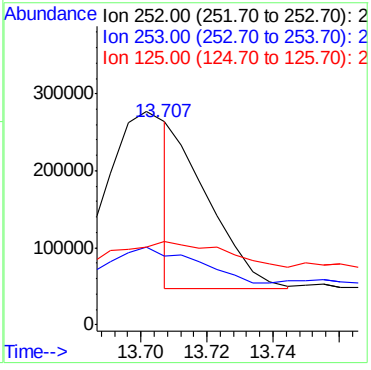
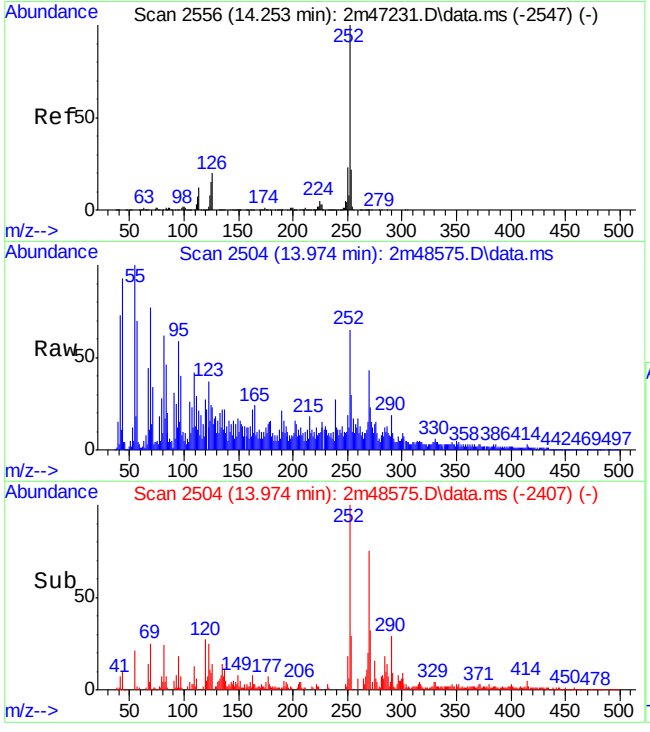


#95
Benzo[k]fluoranthene
Concen: 3.30 ppb m
RT: 13.707 min Scan# 2454
Delta R.T. 0.005 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:252 Resp: 163492

Ion	Ratio	Lower	Upper
252	100		
253	33.8	0.0	52.7
125	41.1	0.0	42.9

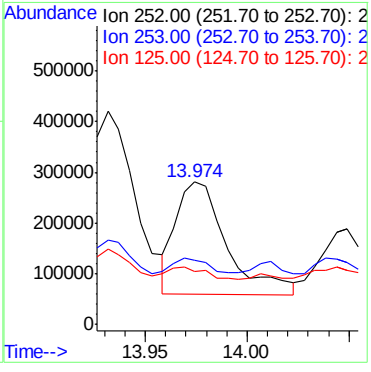




#96
Benzo[a]pyrene
Concen: 8.24 ppb
RT: 13.974 min Scan# 2504
Delta R.T. 0.021 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:252 Resp: 385586

Ion	Ratio	Lower	Upper
252	100		
253	14.7	0.0	52.4
125	5.1	0.0	42.7



9.1.14

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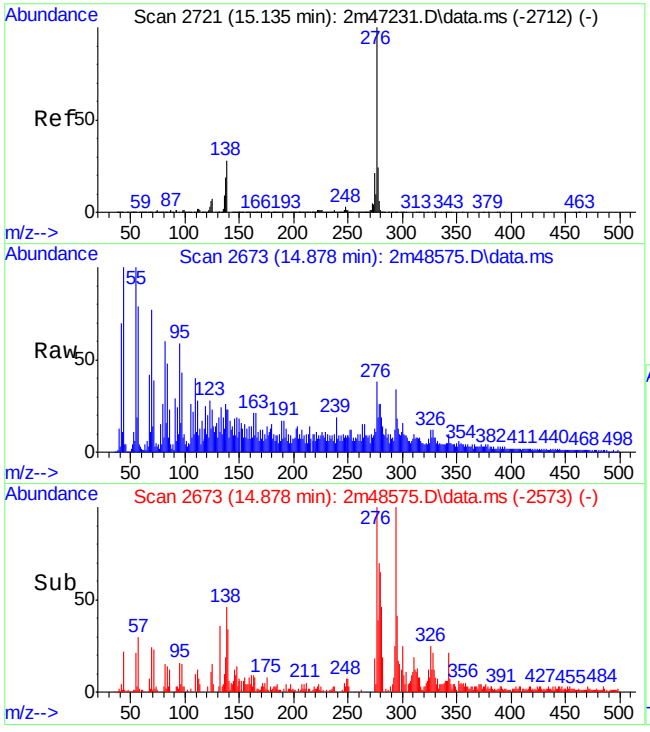
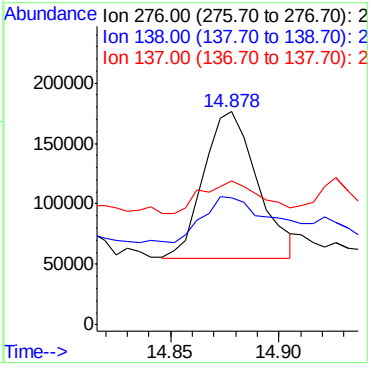
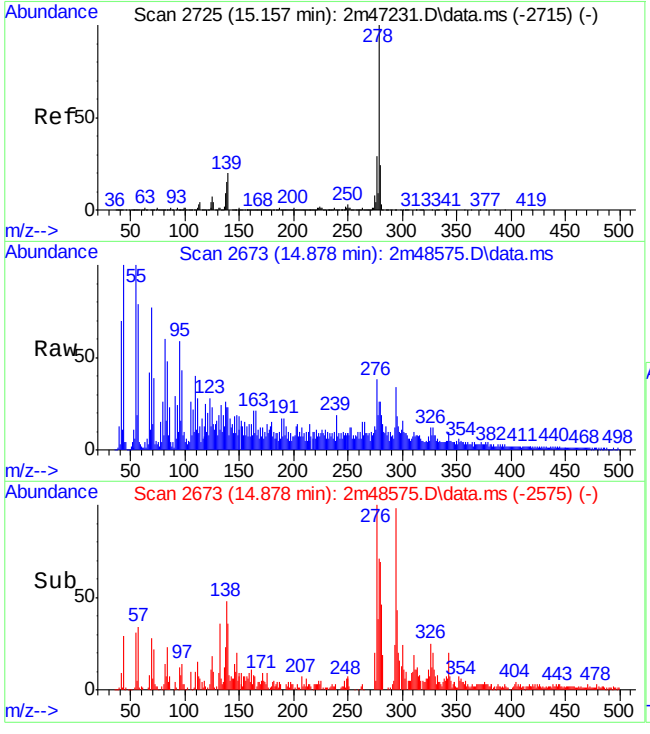


#97
Indeno[1,2,3-cd]pyrene
Concen: 3.85 ppb m
RT: 14.878 min Scan# 2673
Delta R.T. 0.037 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:276 Resp: 209208

Ion	Ratio	Lower	Upper
276	100		
138	59.6	0.0	57.6#
137	67.2	0.0	48.9#

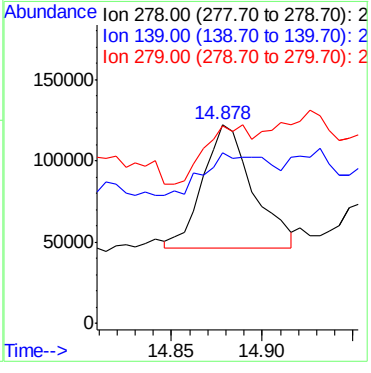




#99
Dibenz[a,h]anthracene
Concen: 3.18 ppb m
RT: 14.878 min Scan# 2673
Delta R.T. 0.027 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:278 Resp: 144984

Ion	Ratio	Lower	Upper
278	100		
139	85.7	0.0	52.4#
279	99.4	0.0	54.1#



9.1.14

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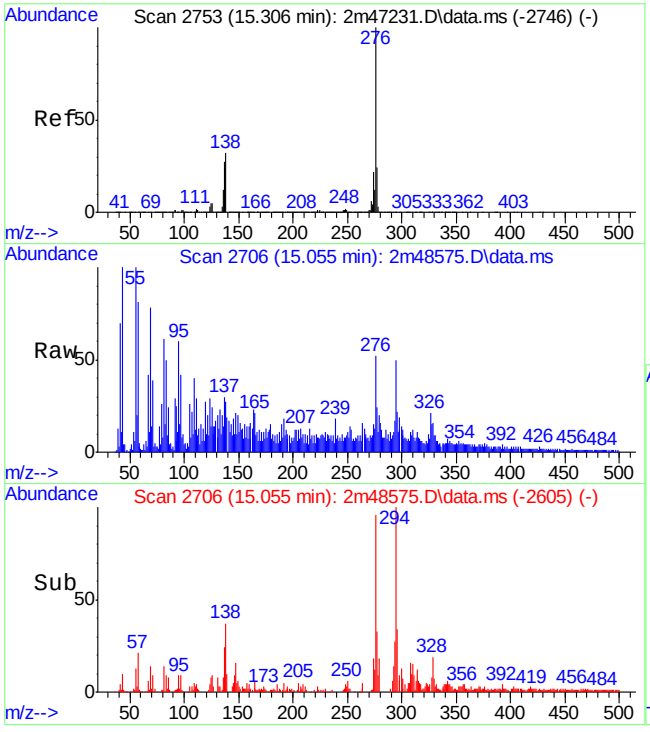
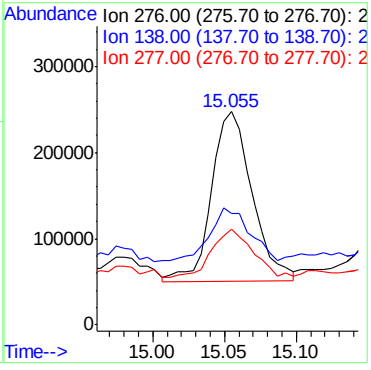


#101
Benzo[g,h,i]perylene
Concen: 8.32 ppb
RT: 15.055 min Scan# 2706
Delta R.T. 0.043 min
Lab File: 2m48575.D
Acq: 17 Dec 2012 8:14 pm

Tgt Ion:276 Resp: 385837

Ion	Ratio	Lower	Upper
276	100		
138	27.3	0.1	60.1
277	28.9	0.0	53.2



9.1.14

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48590.D
Acq On : 18 Dec 2012 3:53 pm
Operator : olgaa
Sample : jb22822-11
Misc : op62037,e2m2081,32.6,,,1,5
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 19 12:01:39 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 11:59:53 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.400	152	364577	40.00	ppb	0.00
24) Naphthalene-d8	3.972	136	1776973	40.00	ppb	0.00
47) Acenaphthene-d10	6.534	164	975943	40.00	ppb	0.00
69) Phenanthrene-d10	8.722	188	1282239	40.00	ppb	0.00
83) Chrysene-d12	12.525	240	1232260	40.00	ppb	0.00
92) Perylene-d12	13.937	264	1074267	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.400	152	364577	40.00	ppb	0.00
104) Acenaphthene-d10a	6.534	164	975943	40.00	ppb	0.00
106) Chrysene-d12a	12.525	240	1232260	40.00	ppb	0.00
108) Phenanthrene-d10a	8.722	188	1282239	40.00	ppb	0.00
110) Chrysene-d12b	12.525	240	1232260	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.448	112	46469	3.50	ppb	0.00
Spiked Amount 50.000			Recovery	=	7.00%	
8) Phenol-d5	2.250	99	95557	5.37	ppb	0.00
Spiked Amount 50.000			Recovery	=	10.74%	
25) Nitrobenzene-d5	3.095	82	113942m	5.98	ppb	0.00
Spiked Amount 50.000			Recovery	=	11.96%	
51) 2-Fluorobiphenyl	5.609	172	273719	8.53	ppb	0.00
Spiked Amount 50.000			Recovery	=	17.06%	
73) 2,4,6-Tribromophenol	7.770	330	30158	10.01	ppb	0.00
Spiked Amount 50.000			Recovery	=	20.02%	
85) Terphenyl-d14	11.295	244	225461	9.05	ppb	0.00
Spiked Amount 50.000			Recovery	=	18.10%	

Target Compounds						Qvalue
59) Acenaphthene	6.593	153	157695m	5.20	ppb	
66) Fluorene	7.337	166	128729	3.92	ppb	87
77) Phenanthrene	8.754	178	163325	4.16	ppb	98
78) Anthracene	8.824	178	21920	0.56	ppb	65
81) Fluoranthene	10.583	202	36752	0.95	ppb	80
84) Pyrene	10.899	202	143510	3.60	ppb	95
88) Benzo[a]anthracene	12.514	228	39639	1.05	ppb	86
90) Chrysene	12.552	228	59289	1.58	ppb	82
94) Benzo[b]fluoranthene	13.611	252	27149m	0.73	ppb	
95) Benzo[k]fluoranthene	13.621	252	10414m	0.31	ppb	
96) Benzo[a]pyrene	13.889	252	27567	0.87	ppb	72
97) Indeno[1,2,3-cd]pyrene	14.777	276	18025	0.49	ppb	79
101) Benzo[g,h,i]perylene	14.953	276	24463	0.78	ppb	82

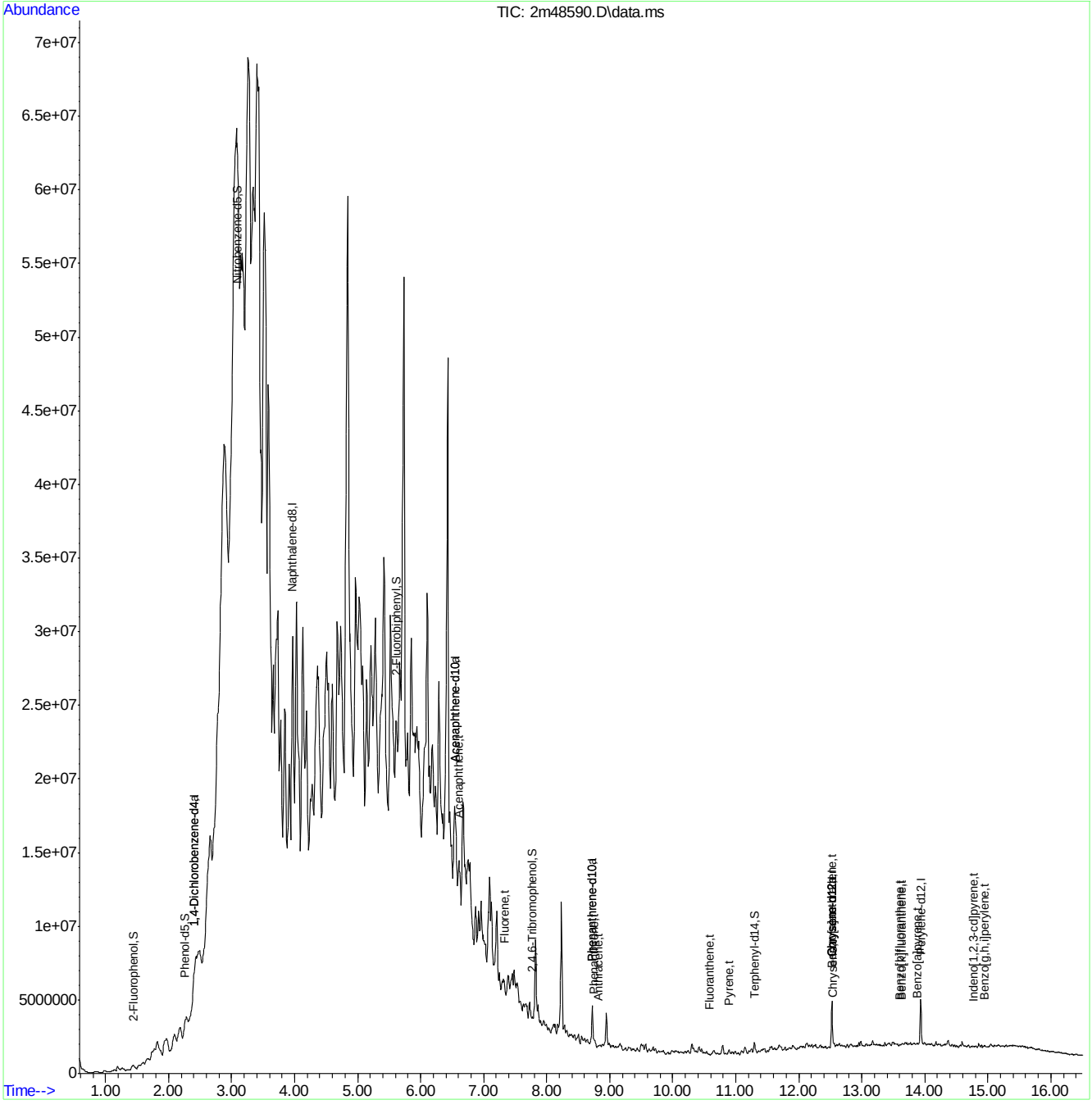
(#) = qualifier out of range (m) = manual integration (+) = signals summed

9.1.15
9

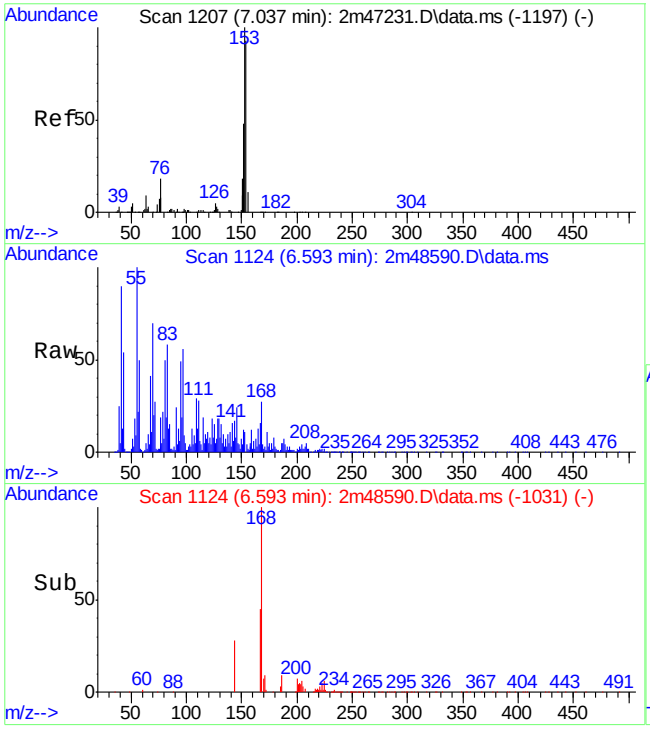
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48590.D
Acq On : 18 Dec 2012 3:53 pm
Operator : olgaa
Sample : jb22822-11
Misc : op62037,e2m2081,32.6,,,1,5
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 19 12:01:39 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 11:59:53 2012
Response via : Initial Calibration



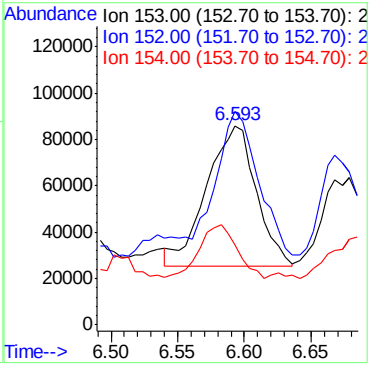
M2M2034.M Wed Dec 19 12:01:51 2012 MS2M Page: 2

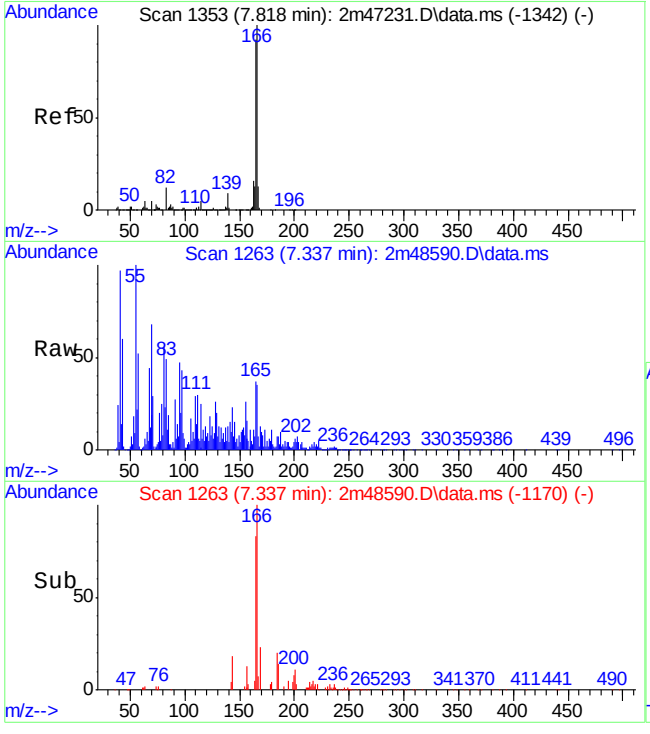


#59
Acenaphthene
Concen: 5.20 ppb m
RT: 6.593 min Scan# 1124
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:153 Resp: 157695

Ion	Ratio	Lower	Upper
153	100		
152	107.1	15.8	75.8#
154	40.0	59.7	119.7#

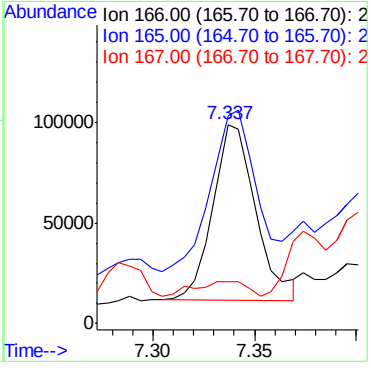


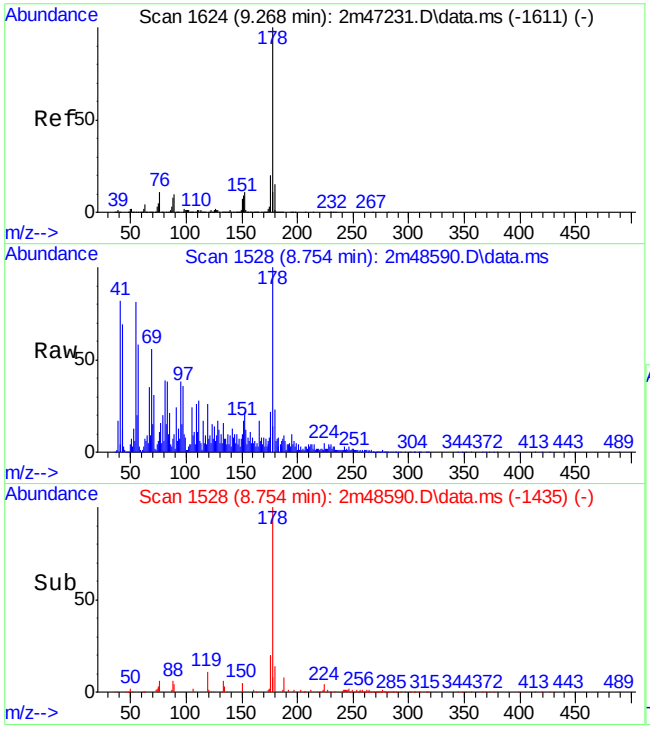


#66
Fluorene
Concen: 3.92 ppb
RT: 7.337 min Scan# 1263
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:166 Resp: 128729

Ion	Ratio	Lower	Upper
166	100		
165	82.1	61.9	121.9
167	0.0	0.0	43.1

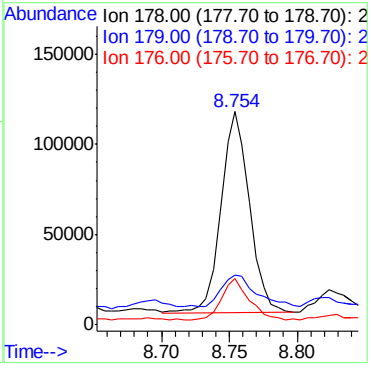


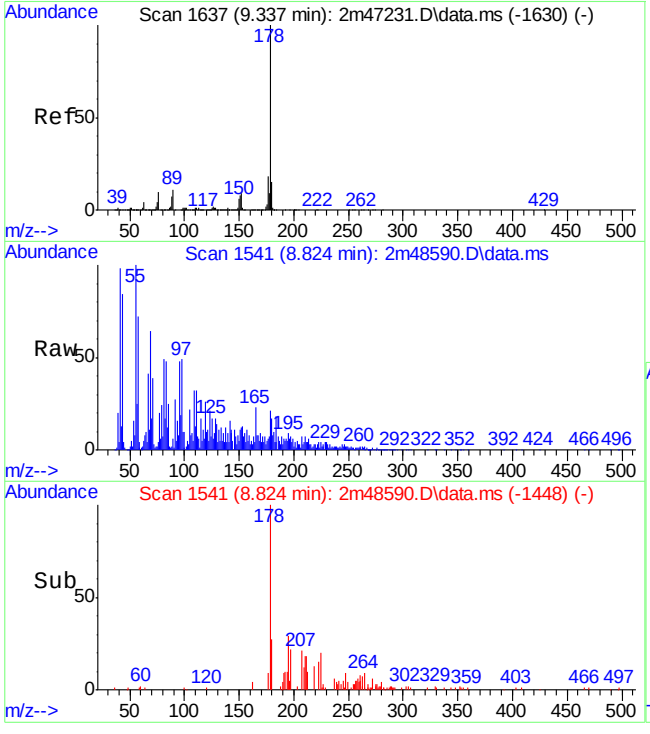


#77
Phenanthrene
Concen: 4.16 ppb
RT: 8.754 min Scan# 1528
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:178 Resp: 163325

Ion	Ratio	Lower	Upper
178	100		
179	14.2	0.0	44.9
176	19.9	0.0	49.1

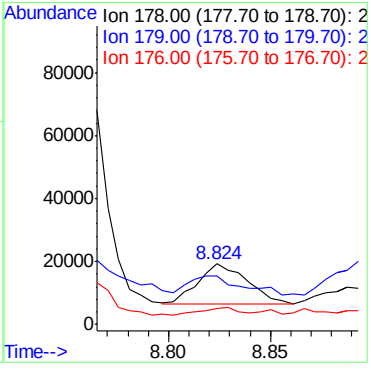




#78
Anthracene
Concen: 0.56 ppb
RT: 8.824 min Scan# 1541
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:178 Resp: 21920

Ion	Ratio	Lower	Upper
178	100		
179	40.4	0.0	44.3
176	12.9	0.0	48.3



9.1.15

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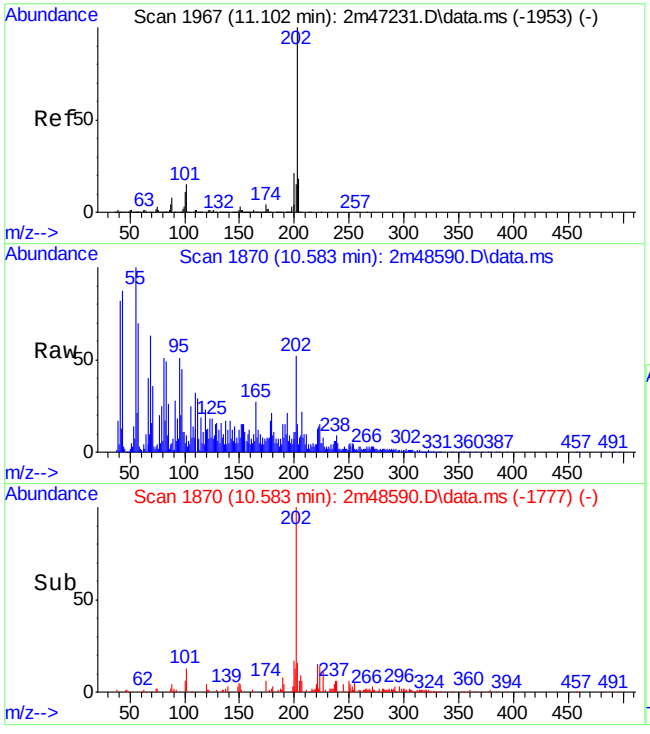
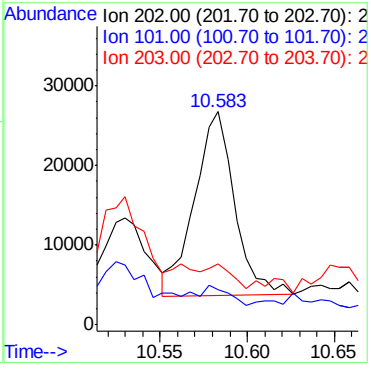
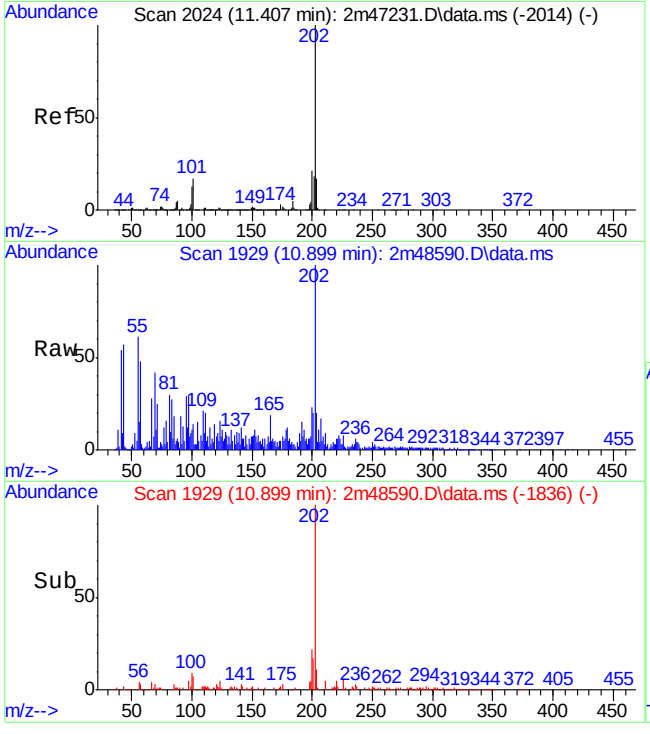


#81
Fluoranthene
Concen: 0.95 ppb
RT: 10.583 min Scan# 1870
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:202 Resp: 36752

Ion	Ratio	Lower	Upper
202	100		
101	2.4	0.0	43.8
203	11.3	0.0	47.5

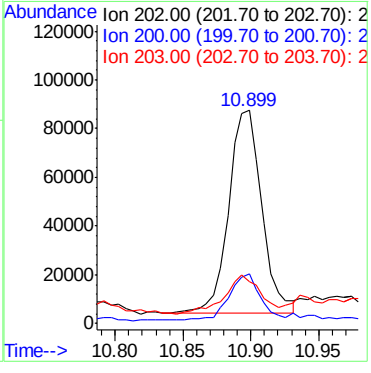




#84
Pyrene
Concen: 3.60 ppb
RT: 10.899 min Scan# 1929
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:202 Resp: 143510

Ion	Ratio	Lower	Upper
202	100		
200	21.7	0.0	51.3
203	13.5	0.0	47.6



9.1.15

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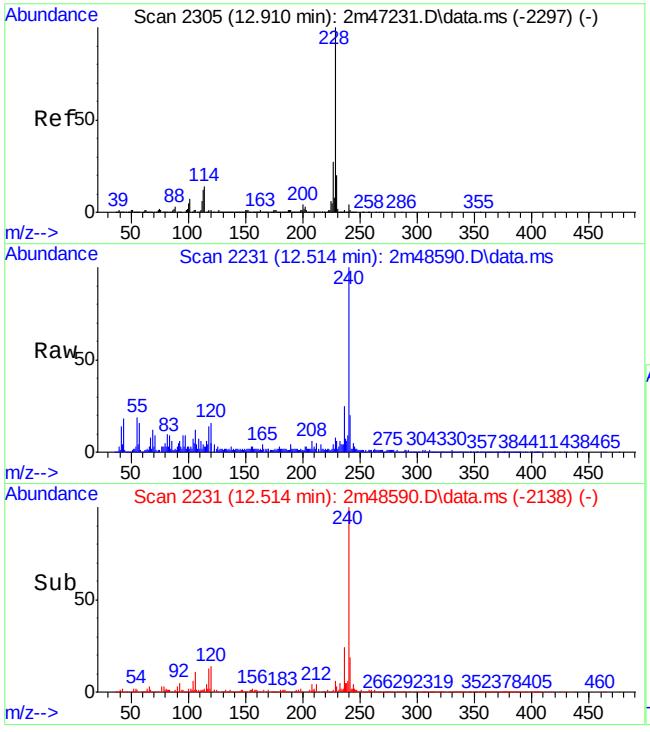
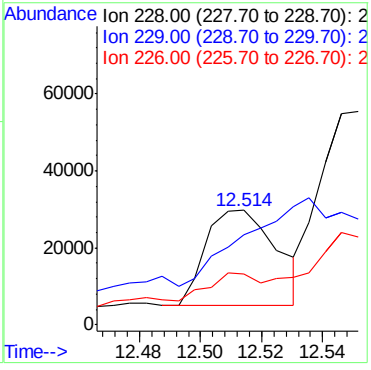
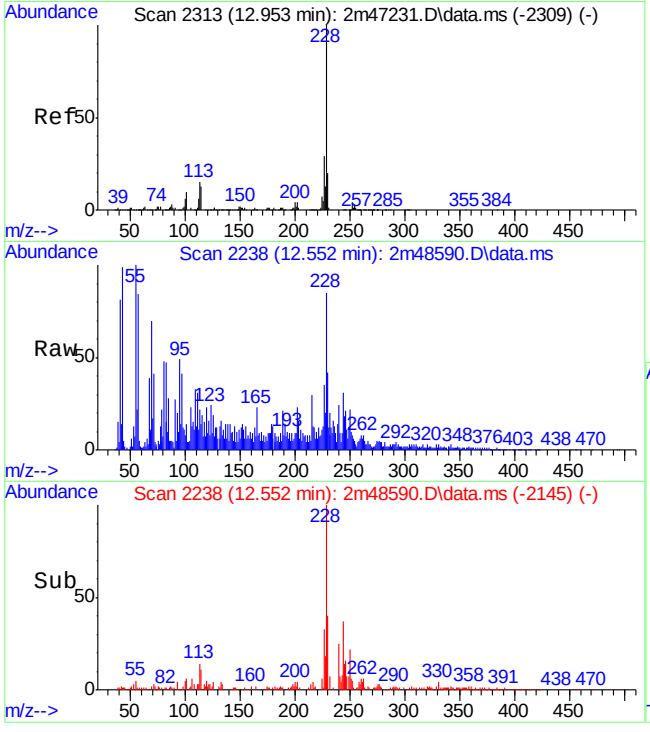


#88
Benzo[a]anthracene
Concen: 1.05 ppb
RT: 12.514 min Scan# 2231
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:228 Resp: 39639

Ion	Ratio	Lower	Upper
228	100		
229	9.9	0.0	49.3
226	21.0	0.0	56.0

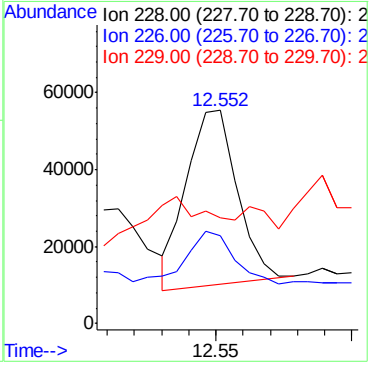




#90
Chrysene
Concen: 1.58 ppb
RT: 12.552 min Scan# 2238
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:228 Resp: 59289

Ion	Ratio	Lower	Upper
228	100		
226	27.7	0.0	57.7
229	0.0	0.0	49.3



9.1.15

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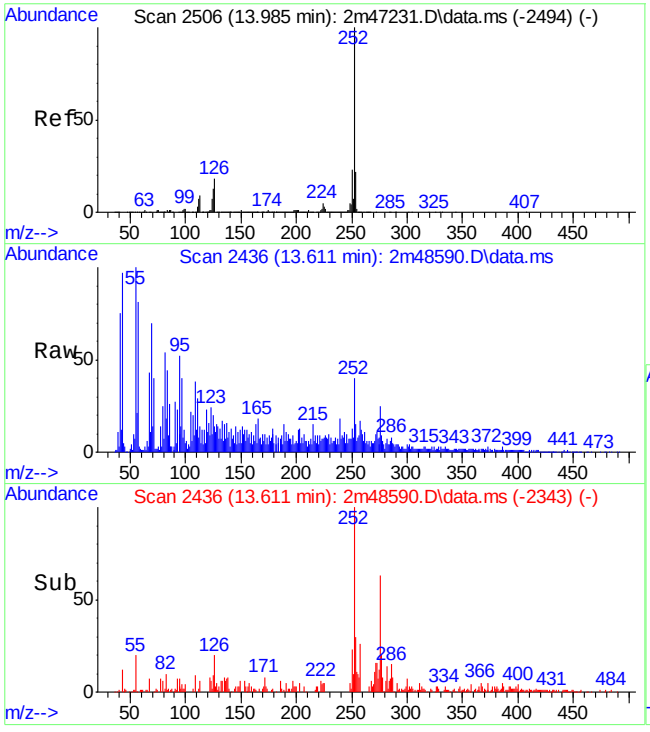
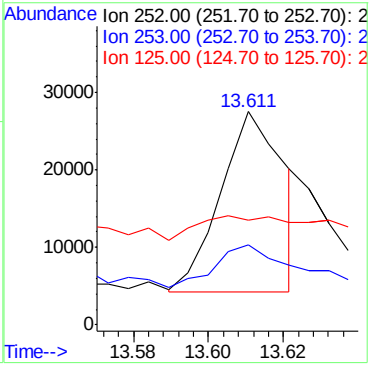
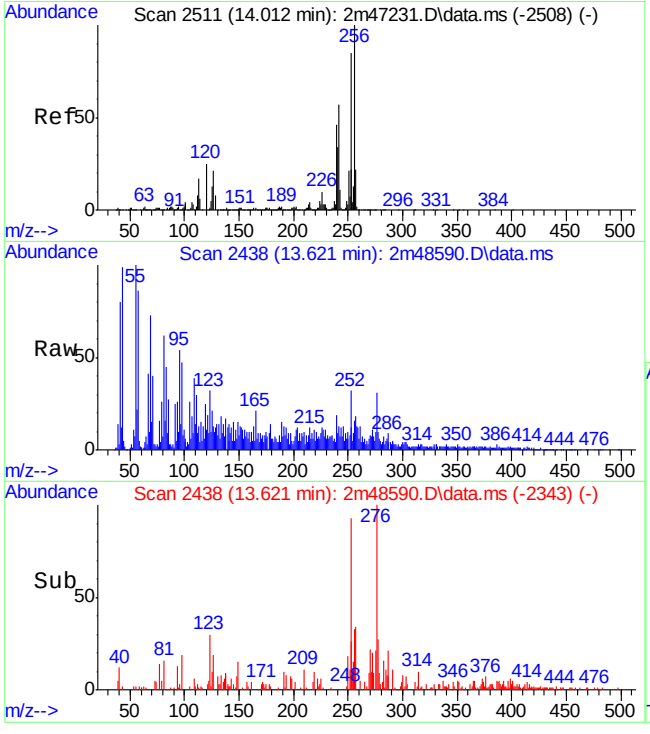


#94
Benzo[b]fluoranthene
Concen: 0.73 ppb m
RT: 13.611 min Scan# 2436
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:252 Resp: 27149

Ion	Ratio	Lower	Upper
252	100		
253	37.6	0.0	51.6
125	49.0	0.0	40.1#

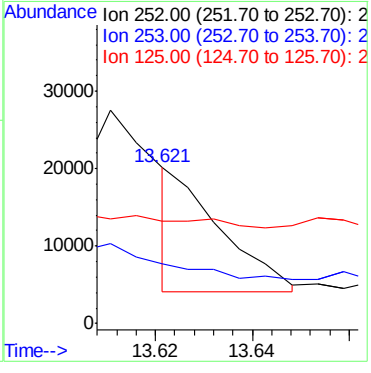




#95
Benzo[k]fluoranthene
Concen: 0.31 ppb m
RT: 13.621 min Scan# 2438
Delta R.T. 0.011 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

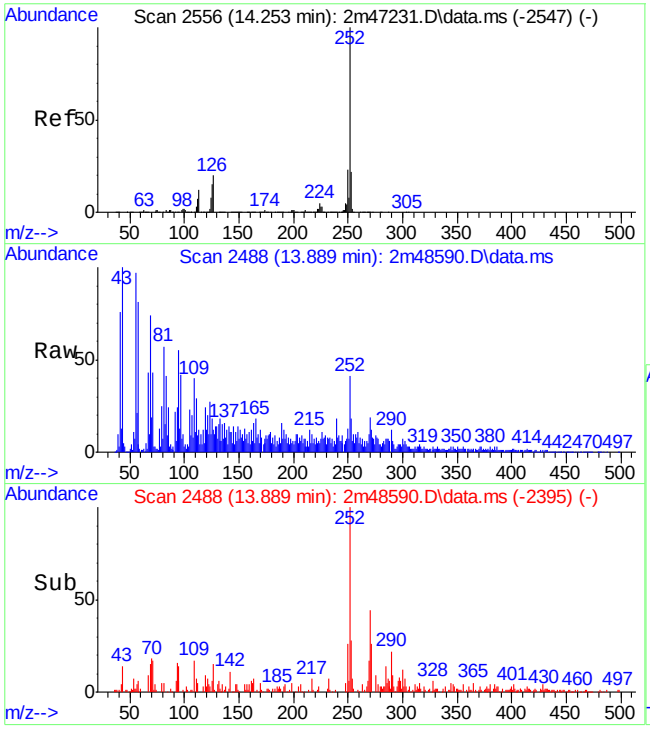
Tgt Ion:252 Resp: 10414

Ion	Ratio	Lower	Upper
252	100		
253	38.1	0.0	52.7
125	65.3	0.0	42.9#



9.1.15

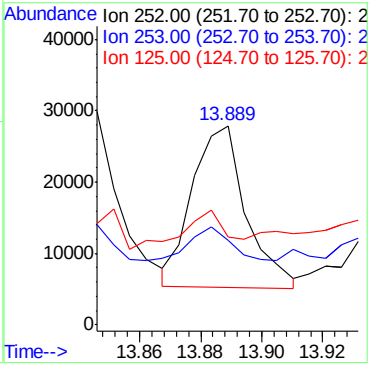
9

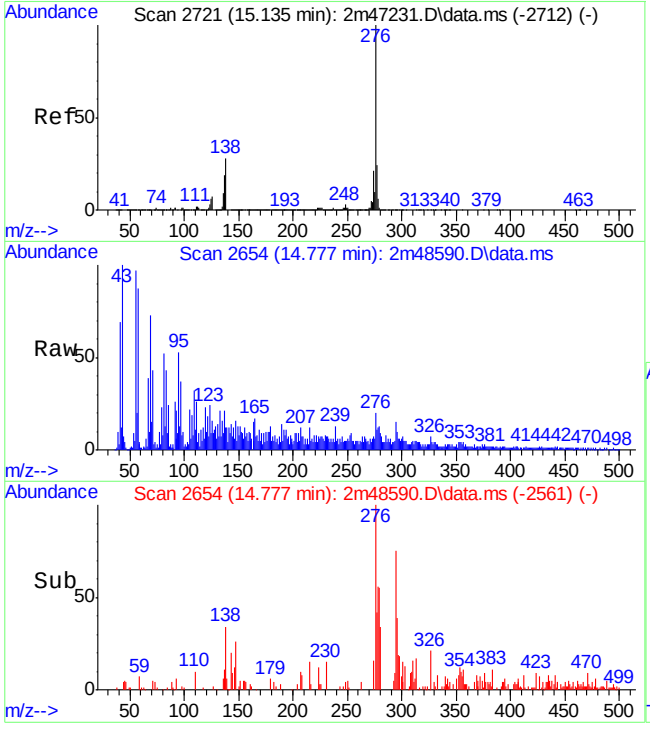


#96
Benzo[a]pyrene
Concen: 0.87 ppb
RT: 13.889 min Scan# 2488
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:252 Resp: 27567

Ion	Ratio	Lower	Upper
252	100		
253	9.3	0.0	52.4
125	0.7	0.0	42.7

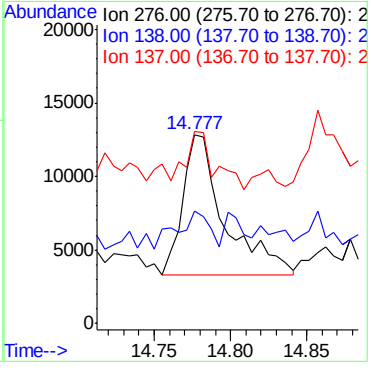




#97
Indeno[1,2,3-cd]pyrene
Concen: 0.49 ppb
RT: 14.777 min Scan# 2654
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:276 Resp: 18025

Ion	Ratio	Lower	Upper
276	100		
138	17.8	0.0	57.6
137	30.0	0.0	48.9



9.1.15

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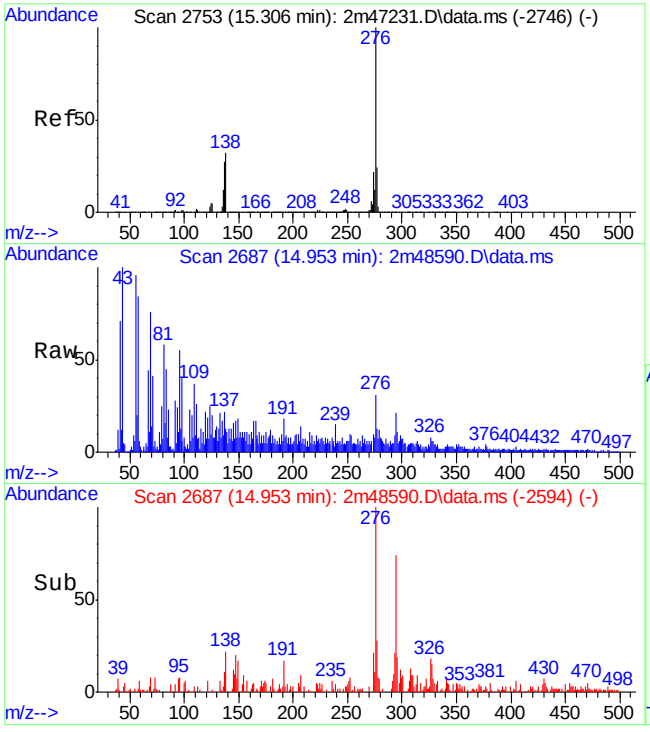
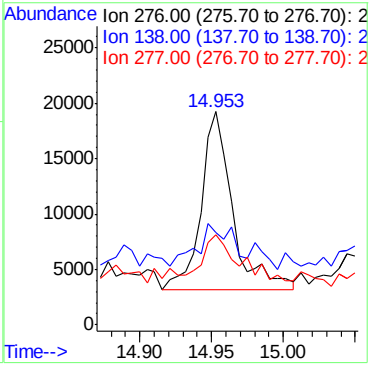


#101
Benzo[g,h,i]perylene
Concen: 0.78 ppb
RT: 14.953 min Scan# 2687
Delta R.T. 0.000 min
Lab File: 2m48590.D
Acq: 18 Dec 2012 3:53 pm

Tgt Ion:276 Resp: 24463

Ion	Ratio	Lower	Upper
276	100		
138	15.6	0.1	60.1
277	26.0	0.0	53.2



9.1.15

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90325.D Vial: 18
Acq On : 17 Dec 2012 6:07 pm Operator: olgaa
Sample : jb22822-12 Inst : MSM
Misc : op62037,em3659,33.9 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:28 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 09:02:41 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.18	152	122108	40.00	ppb	0.00
24) Naphthalene-d8	5.15	136	374367	40.00	ppb	0.03
47) Acenaphthene-d10	8.41	164	221335	40.00	ppb	0.06
69) Phenanthrene-d10	11.18	188	359276	40.00	ppb	0.05
83) Chrysene-d12	16.14	240	391817	40.00	ppb	0.09
92) Perylene-d12	17.99	264	330925	40.00	ppb	0.12
102) 1,4-Dichlorobenzene-d4a	3.18	152	122108	40.00	ppb	0.00
104) Acenaphthene-d10a	8.41	164	220903	40.00	ppb	0.06
106) Phenanthrene-d10a	11.18	188	359276	40.00	ppb	0.05
108) Chrysene-d12a	16.14	240	391817	40.00	ppb	0.09

System Monitoring Compounds						
5) 2-Fluorophenol	1.91	112	90108	22.79	ppb	0.00
Spiked Amount 50.000			Recovery = 45.58%			
8) Phenol-d5	2.94	99	115663	23.14	ppb	0.00
Spiked Amount 50.000			Recovery = 46.28%			
25) Nitrobenzene-d5	4.03	82	137370	36.38	ppb	0.00
Spiked Amount 50.000			Recovery = 72.76%			
51) 2-Fluorobiphenyl	7.23	172	215919	30.73	ppb	0.04
Spiked Amount 50.000			Recovery = 61.46%			
73) 2,4,6-Tribromophenol	9.96	330	26170	41.00	ppb	0.05
Spiked Amount 50.000			Recovery = 82.00%			
86) Terphenyl-d14	14.46	244	286095	35.72	ppb	0.07
Spiked Amount 50.000			Recovery = 71.44%			

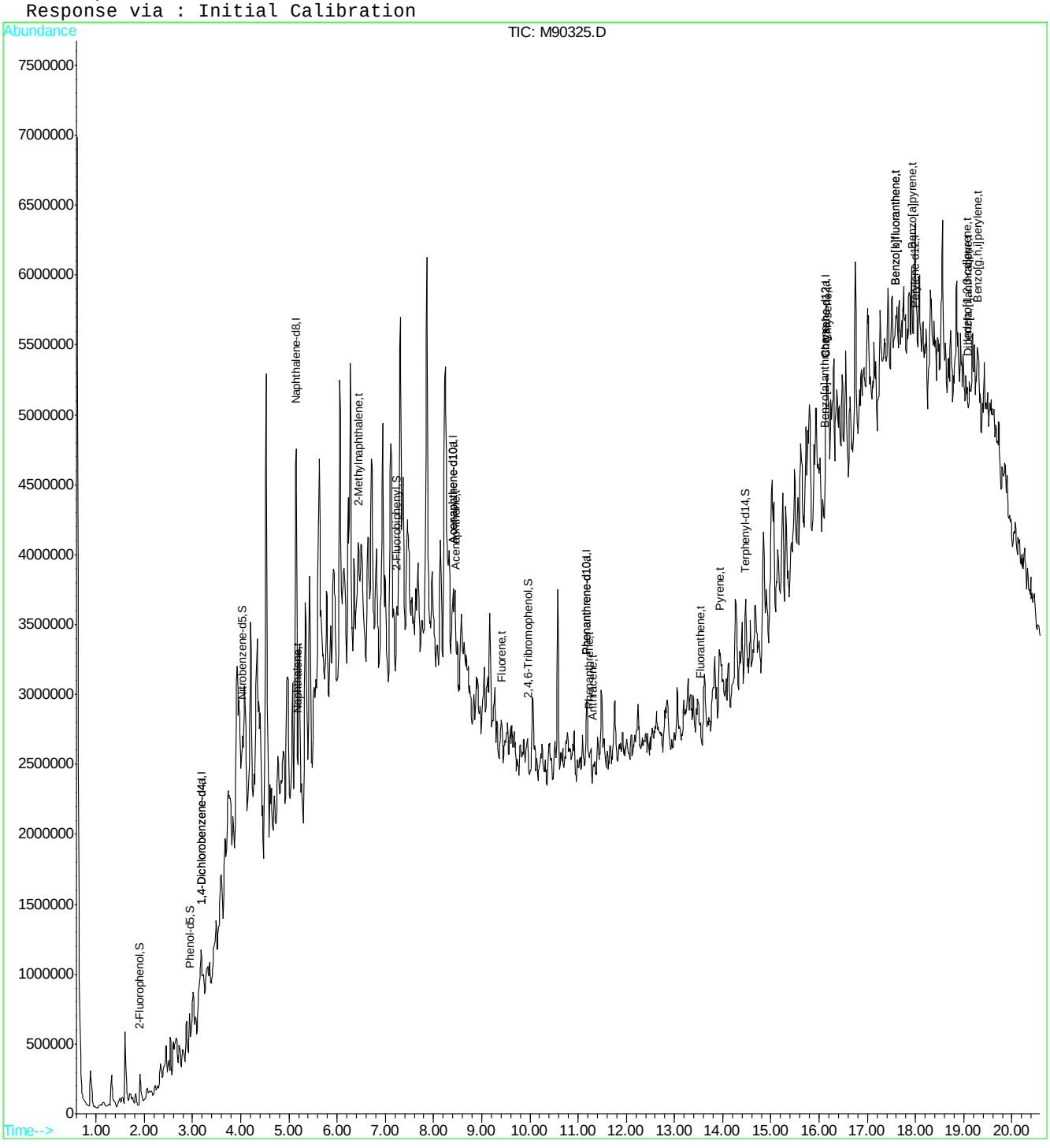
Target Compounds						Qvalue
38) Naphthalene	5.18	128	28847	2.81	ppb	92
44) 2-Methylnaphthalene	6.45	141	30827m	4.88	ppb	
59) Acenaphthene	8.46	153	17917	2.90	ppb	90
66) Fluorene	9.42	166	15696m	2.23	ppb	
77) Phenanthrene	11.22	178	50561	5.56	ppb	88
78) Anthracene	11.31	178	54601	6.22	ppb	84
81) Fluoranthene	13.53	202	78289m	6.88	ppb	
84) Pyrene	13.93	202	513989	43.56	ppb	100
88) Benzo[a]anthracene	16.12	228	158887	13.86	ppb	94
90) Chrysene	16.17	228	297305	28.70	ppb	88
94) Benzo[b]fluoranthene	17.58	252	100816m	9.26	ppb	
95) Benzo[k]fluoranthene	17.58	252	85845m	8.36	ppb	
96) Benzo[a]pyrene	17.93	252	205653	21.74	ppb	85
97) Indeno[1,2,3-cd]pyrene	19.07	276	97606m	9.44	ppb	
99) Dibenz[a,h]anthracene	19.08	278	68088m	8.04	ppb	
101) Benzo[g,h,i]perylene	19.29	276	180665m	21.27	ppb	

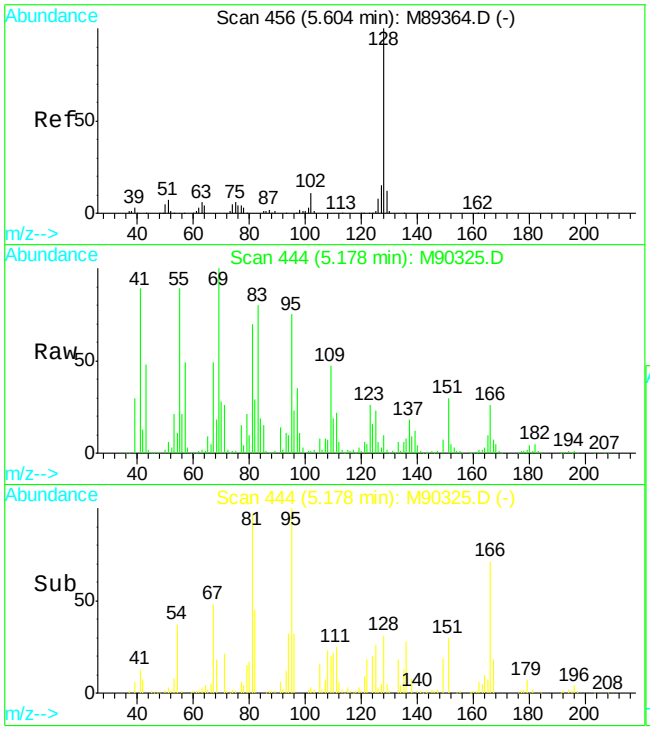
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90325.D Vial: 18
Acq On : 17 Dec 2012 6:07 pm Operator: olgaa
Sample : jb22822-12 Inst : MSM
Misc : op62037,em3659,33.9 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:28 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

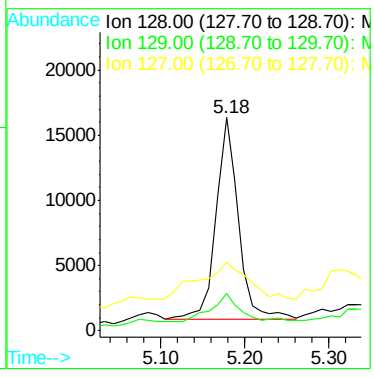


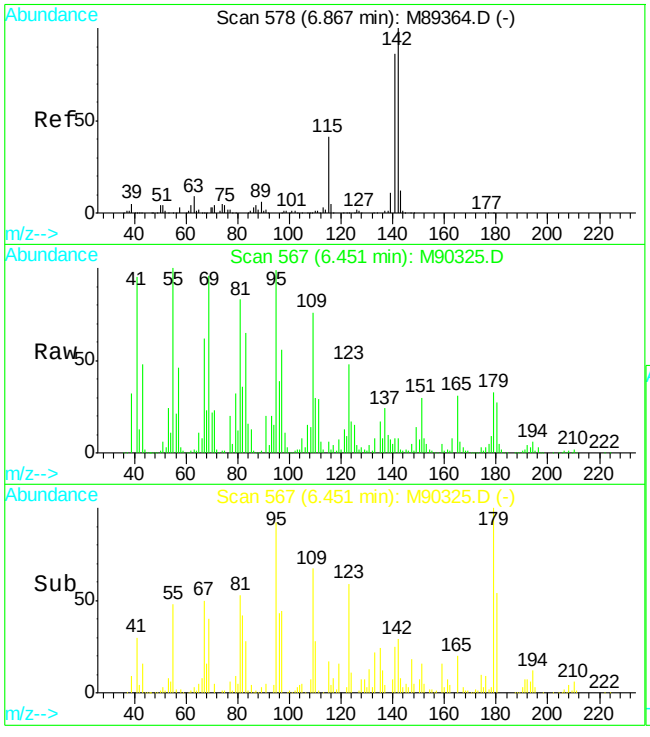


#38
Naphthalene
Concen: 2.81 ppb
RT: 5.18 min Scan# 444
Delta R.T. 0.03 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:128 Resp: 28847

Ion	Ratio	Lower	Upper
128	100		
129	13.7	0.0	41.7
127	18.6	0.0	44.6

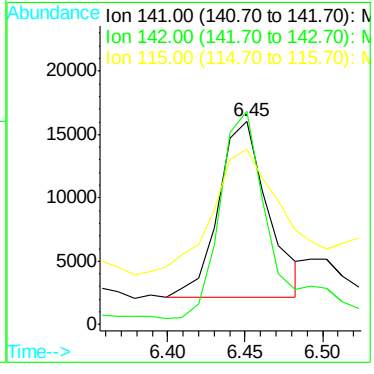




#44
2-Methylnaphthalene
Concen: 4.88 ppb m
RT: 6.45 min Scan# 567
Delta R.T. 0.05 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:141 Resp: 30827

Ion	Ratio	Lower	Upper
141	100		
142	104.8	84.8	144.8
115	85.9	9.3	69.3#



9.1.16

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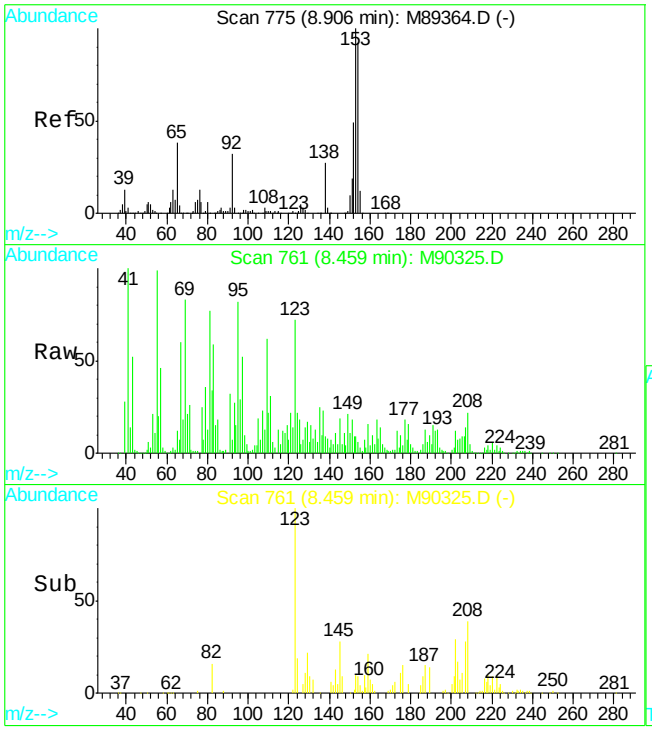
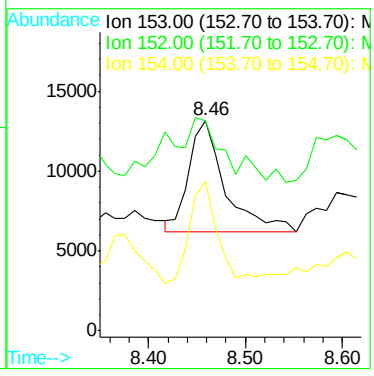
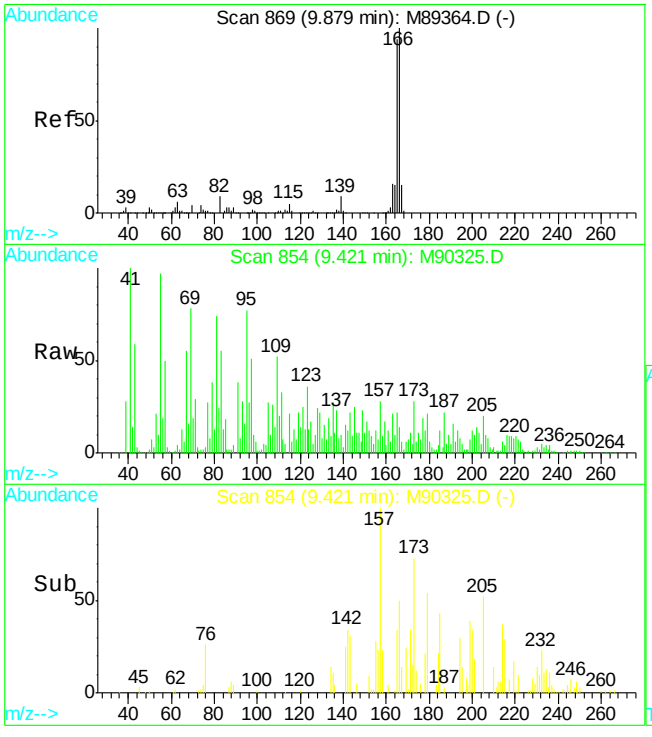


#59
Acenaphthene
Concen: 2.90 ppb
RT: 8.46 min Scan# 761
Delta R.T. 0.06 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:153 Resp: 17917

Ion	Ratio	Lower	Upper
153	100		
152	33.7	18.9	78.9
154	89.1	62.4	122.4

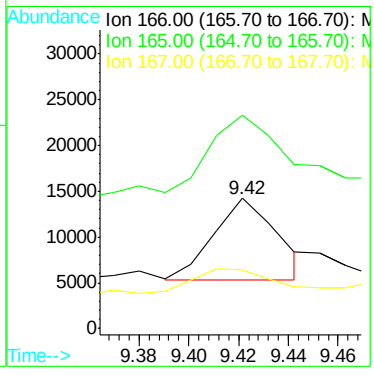


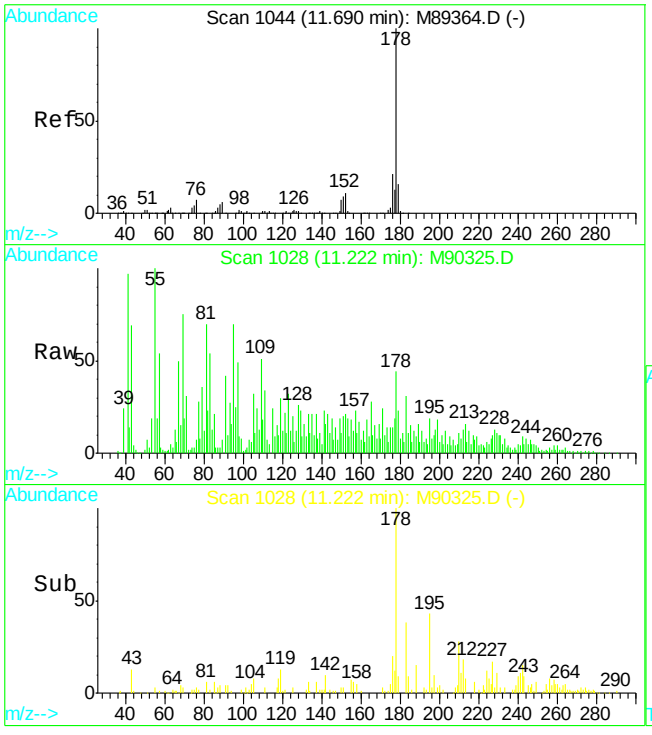


#66
Fluorene
Concen: 2.23 ppb m
RT: 9.42 min Scan# 854
Delta R.T. 0.04 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:166 Resp: 15696

Ion	Ratio	Lower	Upper
166	100		
165	163.6	62.0	122.0#
167	45.4	0.0	44.4#

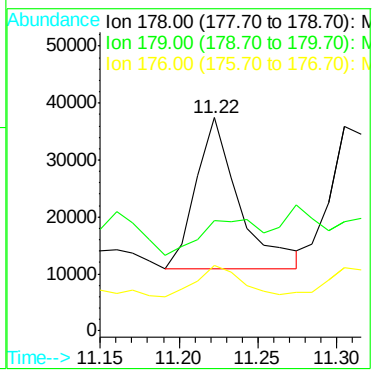


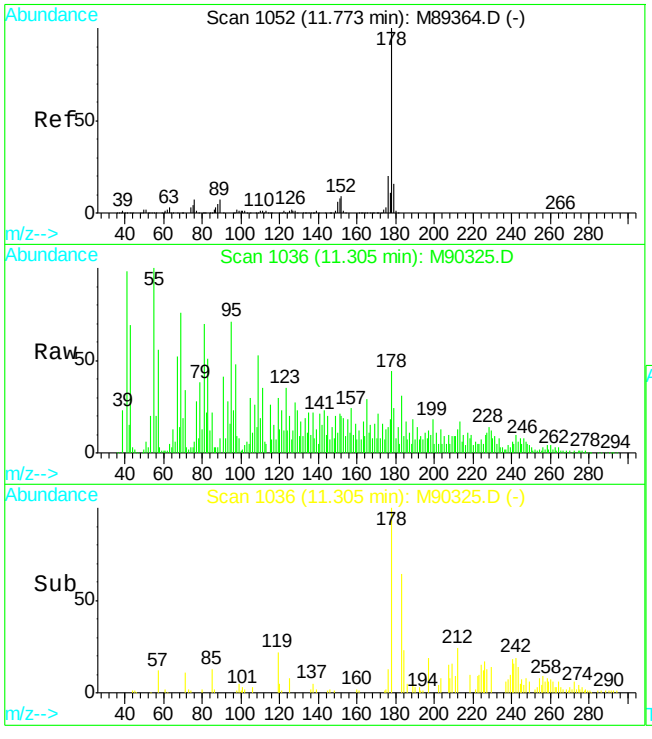


#77
Phenanthrene
Concen: 5.56 ppb
RT: 11.22 min Scan# 1028
Delta R.T. 0.05 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:178 Resp: 50561

Ion	Ratio	Lower	Upper
178	100		
179	6.2	0.0	45.5
176	20.7	0.0	48.9

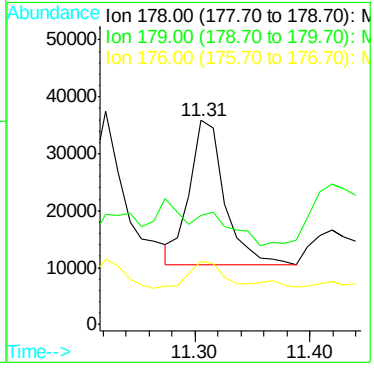




#78
Anthracene
Concen: 6.22 ppb
RT: 11.31 min Scan# 1036
Delta R.T. 0.05 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:178 Resp: 54601

Ion	Ratio	Lower	Upper
178	100		
179	2.7	0.0	46.2
176	18.4	0.0	49.6



9.1.16

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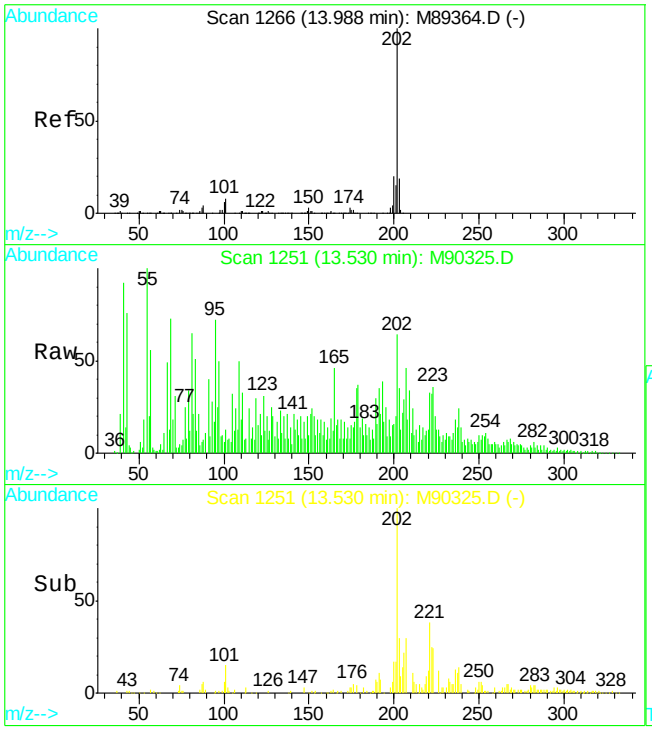
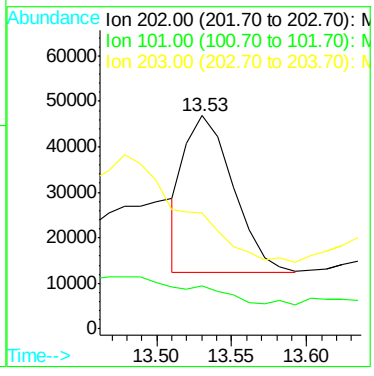
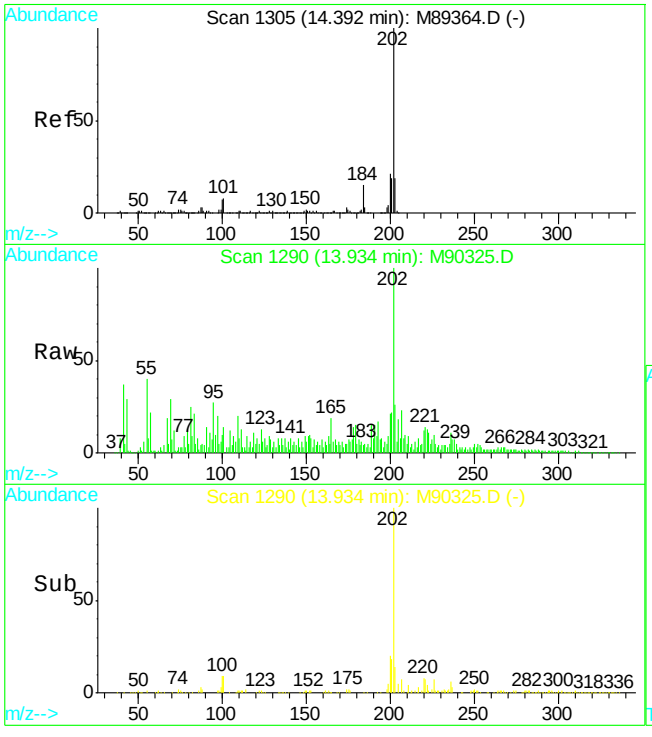


#81
Fluoranthene
Concen: 6.88 ppb m
RT: 13.53 min Scan# 1251
Delta R.T. 0.07 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:202 Resp: 78289

Ion	Ratio	Lower	Upper
202	100		
101	20.2	0.0	40.6
203	54.2	0.0	48.6#

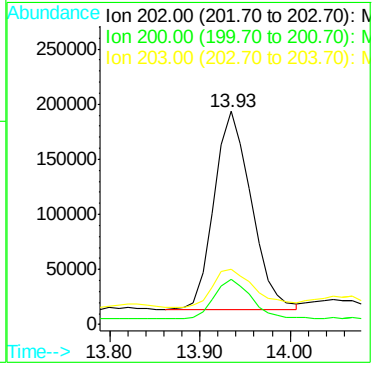




#84
Pyrene
Concen: 43.56 ppb
RT: 13.93 min Scan# 1290
Delta R.T. 0.08 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

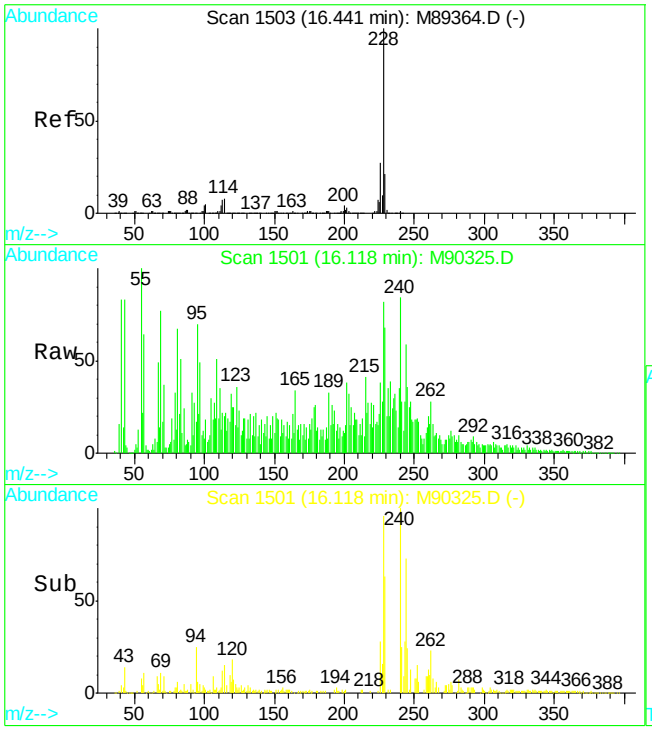
Tgt Ion:202 Resp: 513989

Ion	Ratio	Lower	Upper
202	100		
200	20.2	0.0	50.2
203	18.4	0.0	48.3



9.1.16

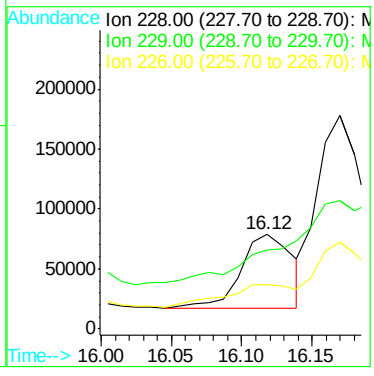
9

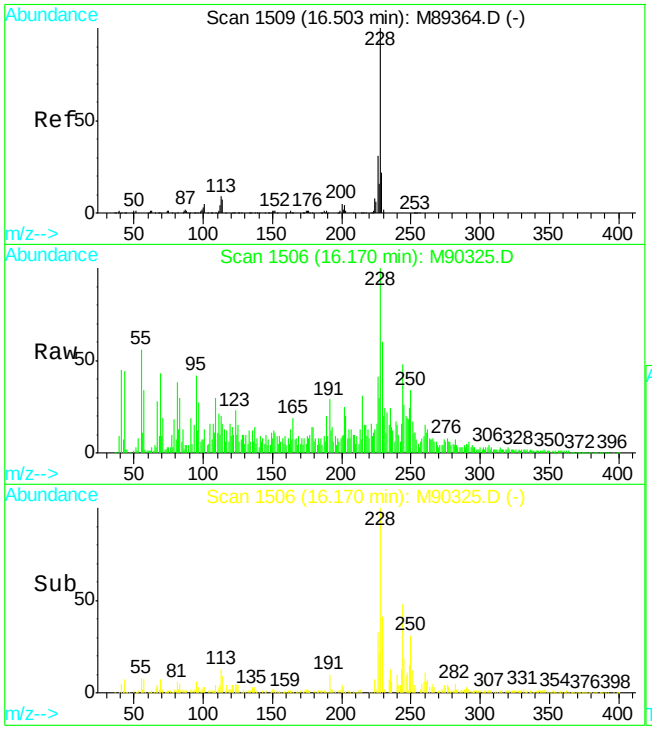


#88
Benzo[a]anthracene
Concen: 13.86 ppb
RT: 16.12 min Scan# 1501
Delta R.T. 0.09 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:228 Resp: 158887

Ion	Ratio	Lower	Upper
228	100		
229	25.1	0.0	50.9
226	28.5	0.0	56.8

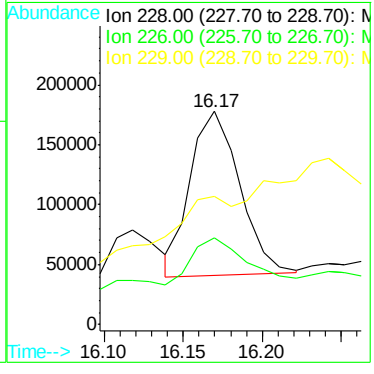




#90
Chrysene
Concen: 28.70 ppb
RT: 16.17 min Scan# 1506
Delta R.T. 0.09 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:228 Resp: 297305

Ion	Ratio	Lower	Upper
228	100		
226	29.4	0.8	60.8
229	8.4	0.0	50.6



9.1.16

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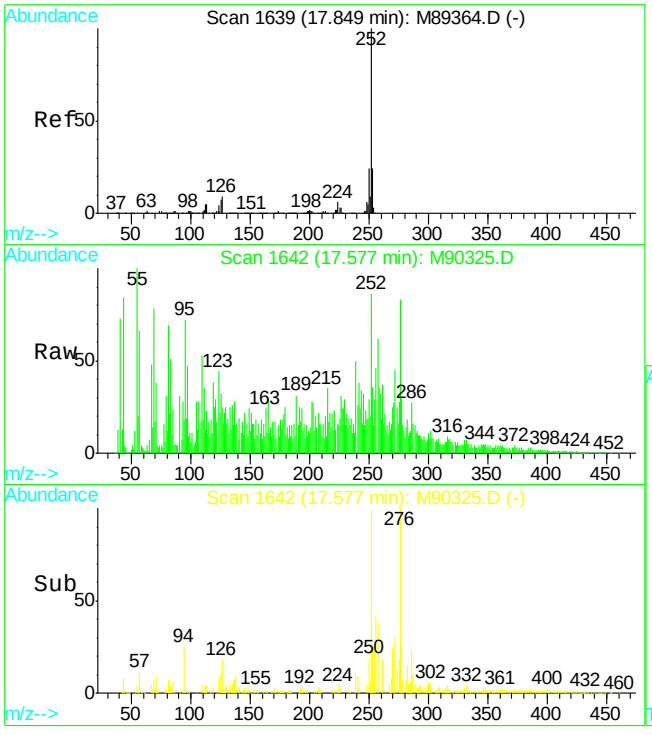
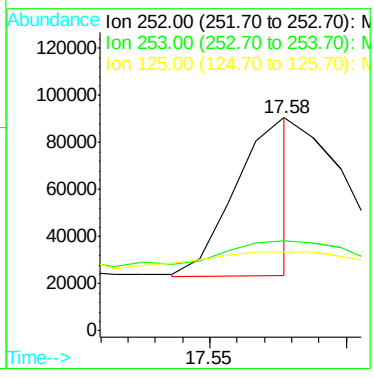
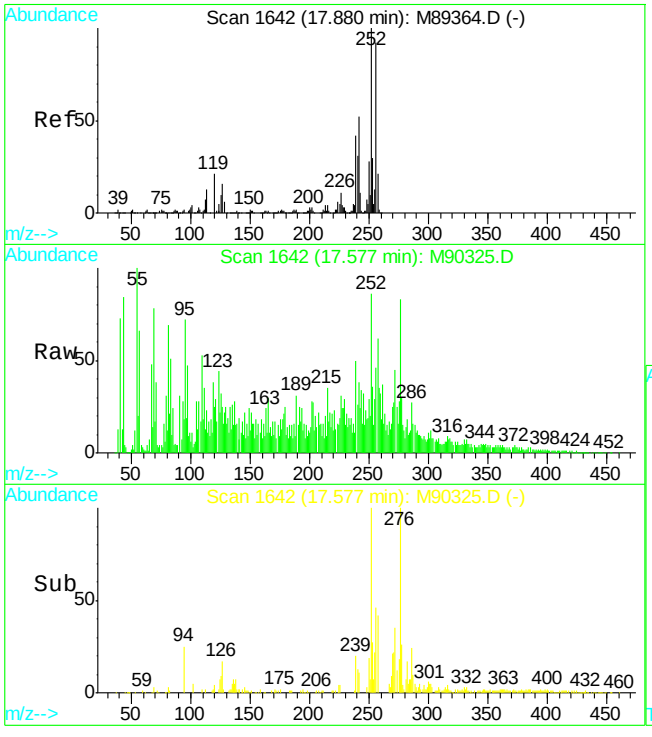


#94
Benzo[b]fluoranthene
Concen: 9.26 ppb m
RT: 17.58 min Scan# 1642
Delta R.T. 0.12 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:252 Resp: 100816

Ion	Ratio	Lower	Upper
252	100		
253	42.3	0.0	53.5
125	36.7	0.0	38.3

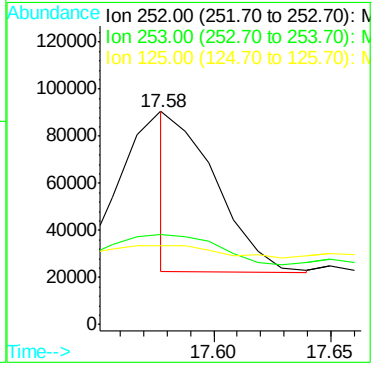




#95
Benzo[k]fluoranthene
Concen: 8.36 ppb m
RT: 17.58 min Scan# 1642
Delta R.T. 0.09 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

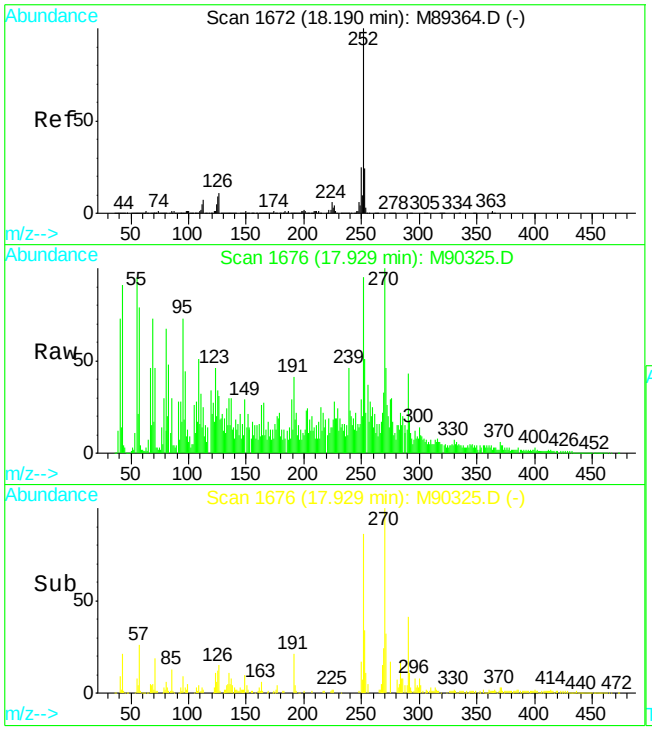
Tgt Ion:252 Resp: 85845

Ion	Ratio	Lower	Upper
252	100		
253	42.3	0.0	56.8
125	36.7	0.0	40.7



9.1.16

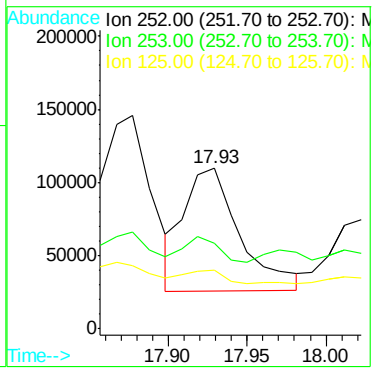
9

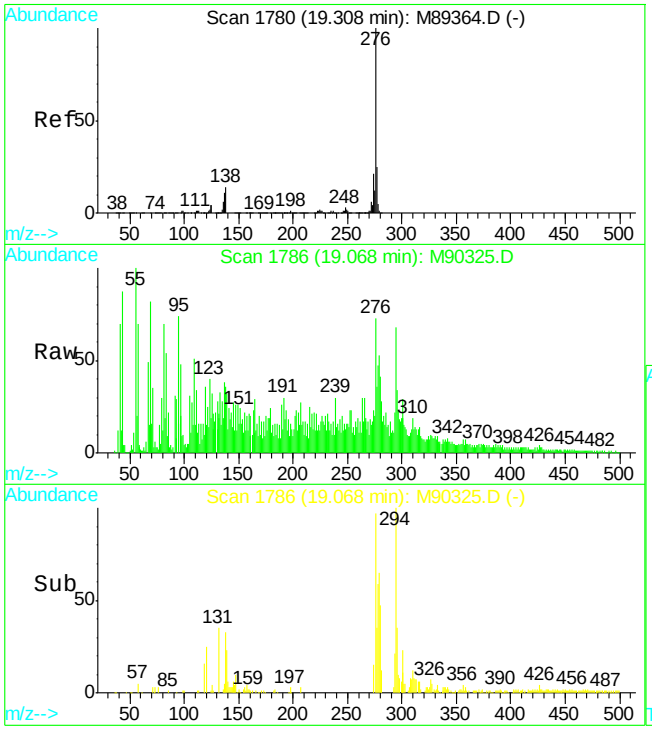


#96
Benzo[a]pyrene
Concen: 21.74 ppb
RT: 17.93 min Scan# 1676
Delta R.T. 0.13 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:252 Resp: 205653

Ion	Ratio	Lower	Upper
252	100		
253	13.5	0.0	54.3
125	12.1	0.0	42.1

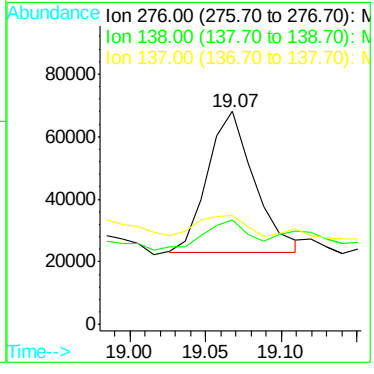




#97
Indeno[1,2,3-cd]pyrene
Concen: 9.44 ppb m
RT: 19.07 min Scan# 1786
Delta R.T. 0.14 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:276 Resp: 97606

Ion	Ratio	Lower	Upper
276	100		
138	49.1	0.0	49.6
137	51.1	0.0	44.0#



9.1.16

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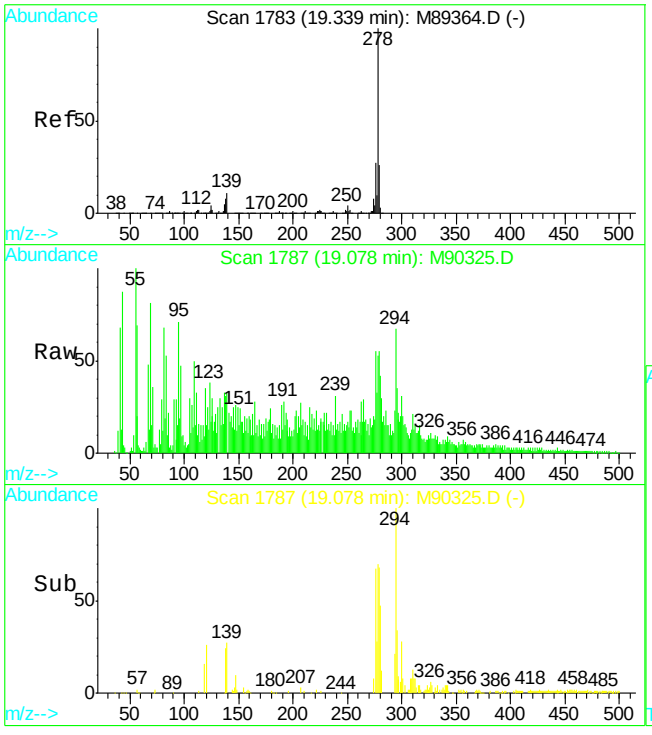
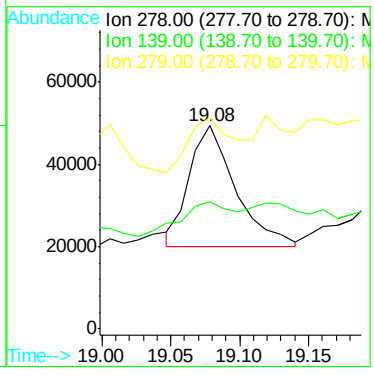
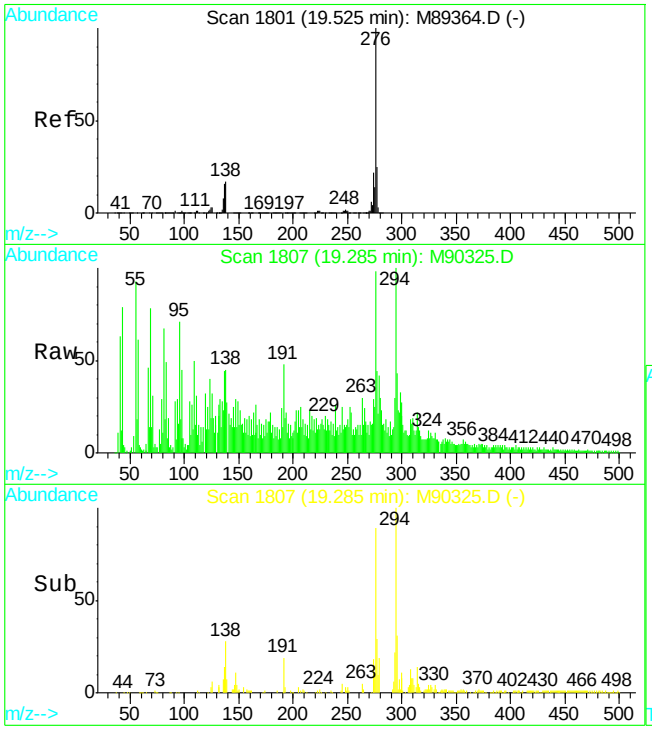


#99
Dibenz[a,h]anthracene
Concen: 8.04 ppb m
RT: 19.08 min Scan# 1787
Delta R.T. 0.12 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:278 Resp: 68088

Ion	Ratio	Lower	Upper
278	100		
139	62.6	0.0	42.5#
279	103.8	0.0	55.9#

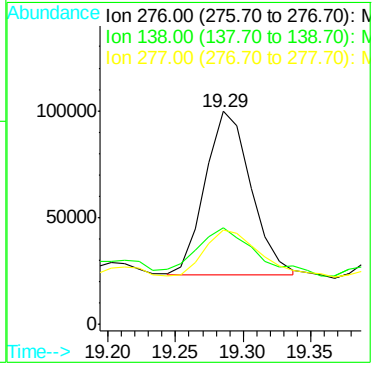




#101
Benzo[g,h,i]perylene
Concen: 21.27 ppb m
RT: 19.29 min Scan# 1807
Delta R.T. 0.14 min
Lab File: M90325.D
Acq: 17 Dec 2012 6:07 pm

Tgt Ion:276 Resp: 180665

Ion	Ratio	Lower	Upper
276	100		
138	45.4	0.0	51.8
277	44.4	0.0	55.2



Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90326.D Vial: 19
Acq On : 17 Dec 2012 6:36 pm Operator: olgaa
Sample : jb22822-13 Inst : MSM
Misc : op62037,em3659,34.7 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:32 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 09:02:41 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.22	152	100287	40.00	ppb	0.05
24) Naphthalene-d8	5.18	136	326776	40.00	ppb	0.06
47) Acenaphthene-d10	8.40	164	220413	40.00	ppb	0.05
69) Phenanthrene-d10	11.19	188	366958	40.00	ppb	0.06
83) Chrysene-d12	16.12	240	353300	40.00	ppb	0.07
92) Perylene-d12	17.94	264	324466	40.00	ppb	0.07
102) 1,4-Dichlorobenzene-d4a	3.22	152	100287	40.00	ppb	0.05
104) Acenaphthene-d10a	8.40	164	220413	40.00	ppb	0.05
106) Phenanthrene-d10a	11.19	188	366958	40.00	ppb	0.06
108) Chrysene-d12a	16.12	240	353300	40.00	ppb	0.07
System Monitoring Compounds						
5) 2-Fluorophenol	1.93	112	75853	23.36	ppb	0.02
Spiked Amount 50.000			Recovery = 46.72%			
8) Phenol-d5	3.00	99	104060	25.35	ppb	0.06
Spiked Amount 50.000			Recovery = 50.70%			
25) Nitrobenzene-d5	4.08	82	80109m	24.30	ppb	0.06
Spiked Amount 50.000			Recovery = 48.60%			
51) 2-Fluorobiphenyl	7.24	172	241682	34.54	ppb	0.05
Spiked Amount 50.000			Recovery = 69.08%			
73) 2,4,6-Tribromophenol	9.96	330	36928	56.64	ppb	0.05
Spiked Amount 50.000			Recovery = 113.28%			
86) Terphenyl-d14	14.45	244	386003	53.45	ppb	0.06
Spiked Amount 50.000			Recovery = 106.90%			

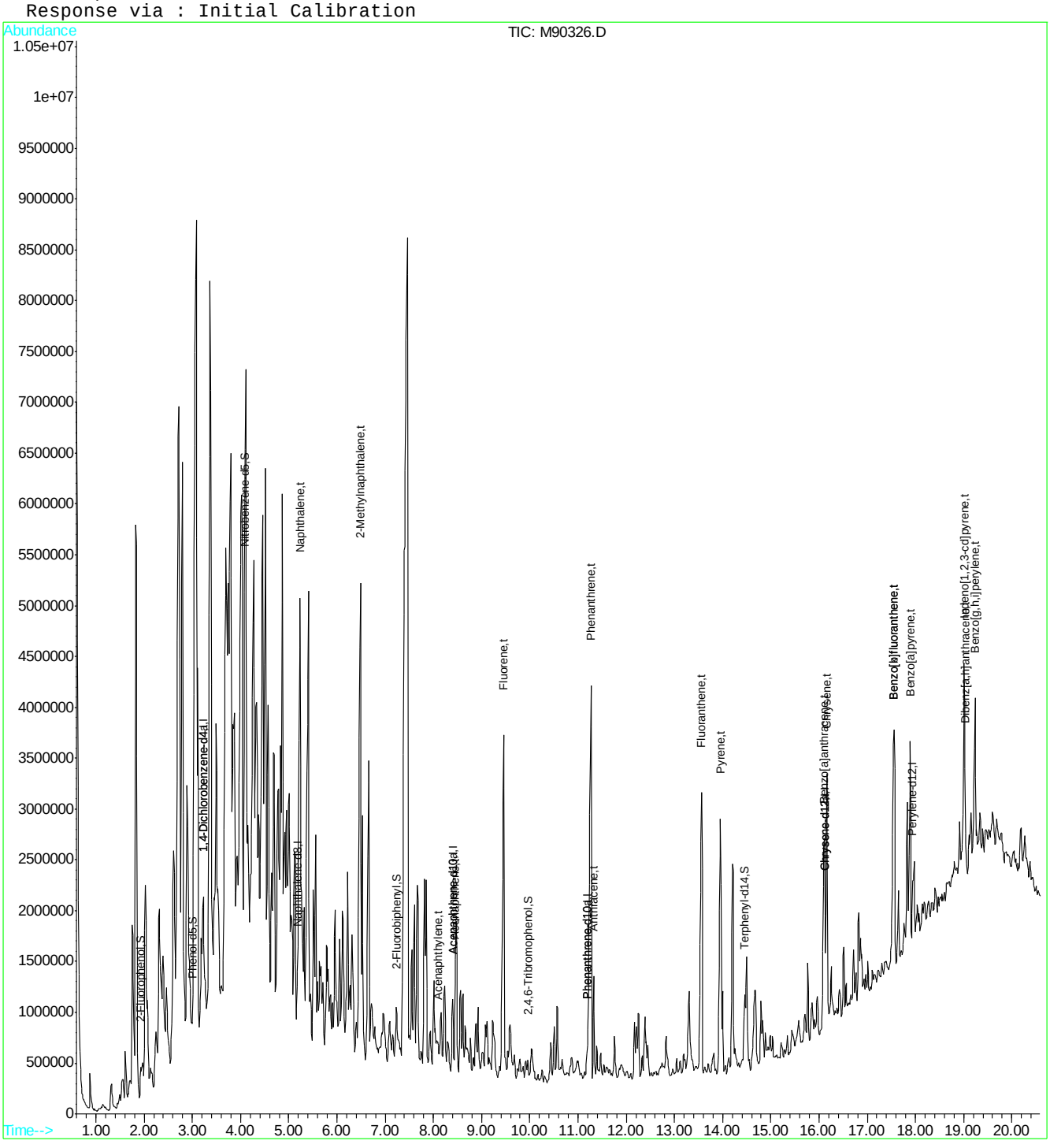
Target Compounds						Qvalue
38) Naphthalene	5.23	128	2968440	331.14	ppb	73
44) 2-Methylnaphthalene	6.48	141	2261259	409.81	ppb	96
56) Acenaphthylene	8.10	152	83080	8.66	ppb	98
59) Acenaphthene	8.45	153	277231	45.01	ppb	96
66) Fluorene	9.46	166	2342991	334.16	ppb	97
77) Phenanthrene	11.27	178	3600592	387.33	ppb	77
78) Anthracene	11.33	178	630002	70.22	ppb	98
81) Fluoranthene	13.56	202	2798348	240.73	ppb	87
84) Pyrene	13.96	202	2555251	240.17	ppb	87
88) Benzo[a]anthracene	16.10	228	1511641	146.29	ppb	87
90) Chrysene	16.16	228	1528324	163.60	ppb	89
94) Benzo[b]fluoranthene	17.55	252	1490557m	139.61	ppb	
95) Benzo[k]fluoranthene	17.55	252	953066m	94.64	ppb	
96) Benzo[a]pyrene	17.89	252	1207074	130.16	ppb	94
97) Indeno[1,2,3-cd]pyrene	19.01	276	1015760	100.24	ppb	87
99) Dibenz[a,h]anthracene	19.03	278	454012m	54.66	ppb	
101) Benzo[g,h,i]perylene	19.24	276	925930	111.20	ppb	95

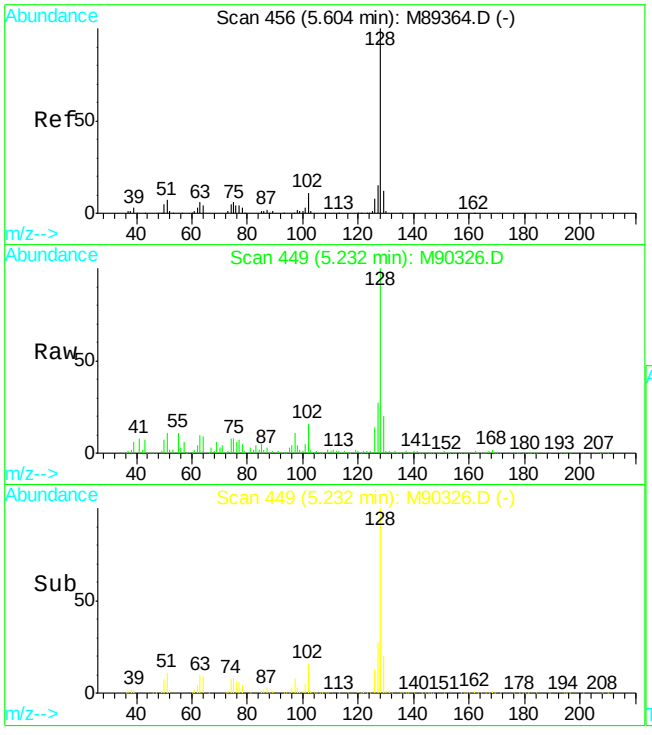
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90326.D Vial: 19
Acq On : 17 Dec 2012 6:36 pm Operator: olgaa
Sample : jb22822-13 Inst : MSM
Misc : op62037,em3659,34.7 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:32 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

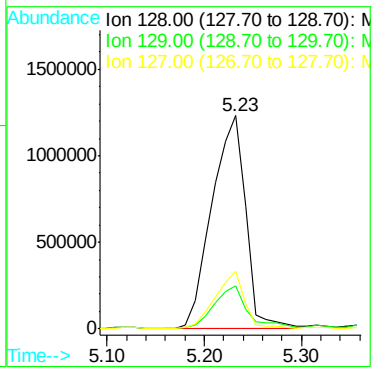


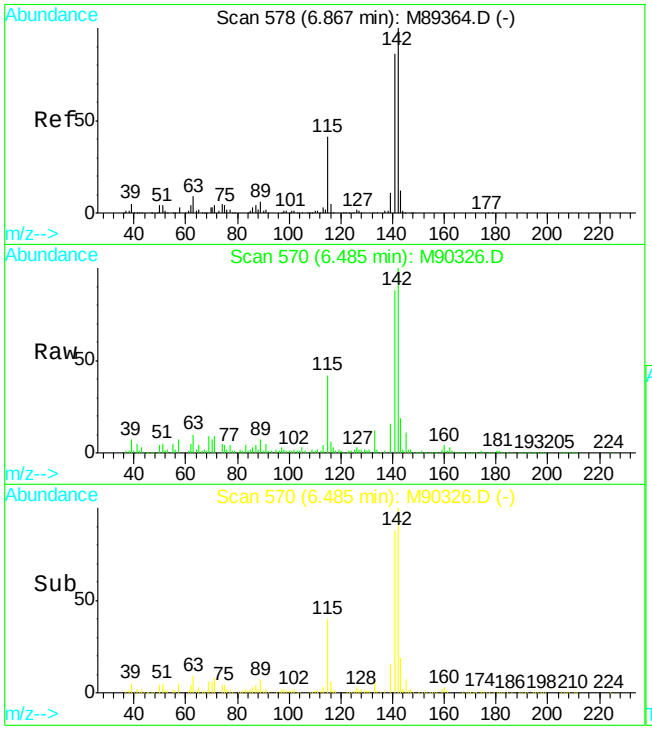


#38
Naphthalene
Concen: 331.14 ppb
RT: 5.23 min Scan# 449
Delta R.T. 0.08 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:128 Resp: 2968440

Ion	Ratio	Lower	Upper
128	100		
129	20.1	0.0	41.7
127	27.1	0.0	44.6

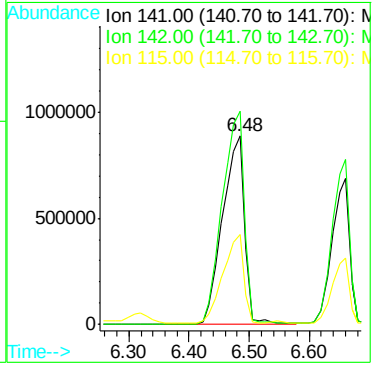


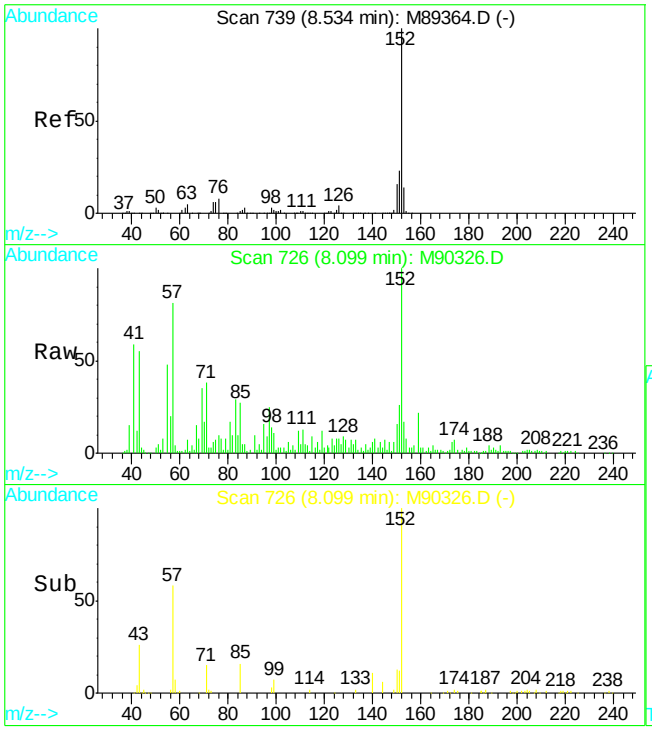


#44
2-Methylnaphthalene
Concen: 409.81 ppb
RT: 6.48 min Scan# 570
Delta R.T. 0.08 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:141 Resp: 2261259

Ion	Ratio	Lower	Upper
141	100		
142	113.3	84.8	144.8
115	47.5	9.3	69.3

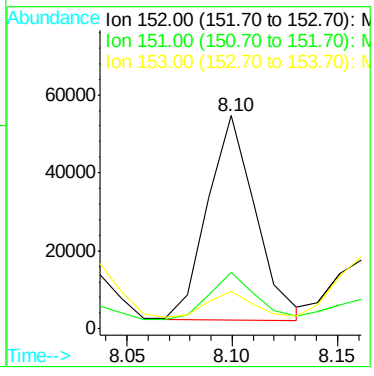


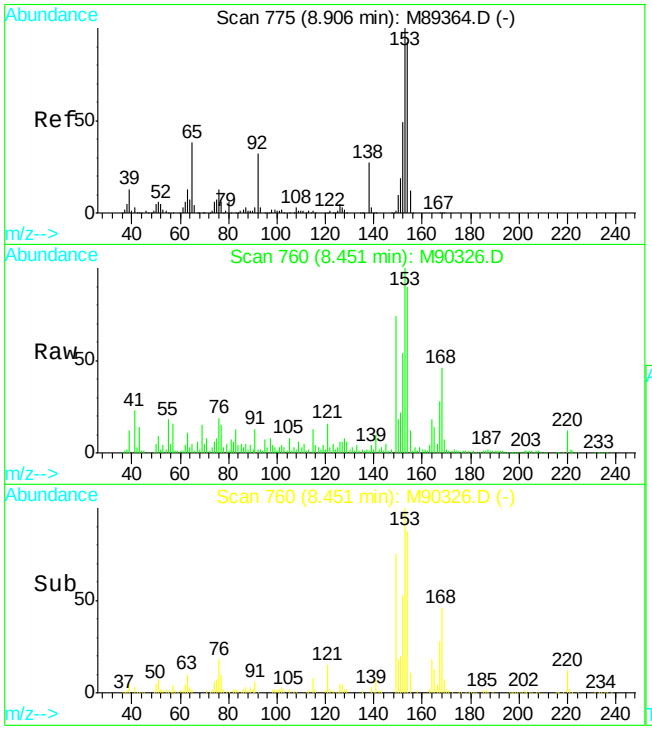


#56
Acenaphthylene
Concen: 8.66 ppb
RT: 8.10 min Scan# 726
Delta R.T. 0.05 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:152 Resp: 83080

Ion	Ratio	Lower	Upper
152	100		
151	22.9	0.0	51.4
153	12.8	0.0	43.2

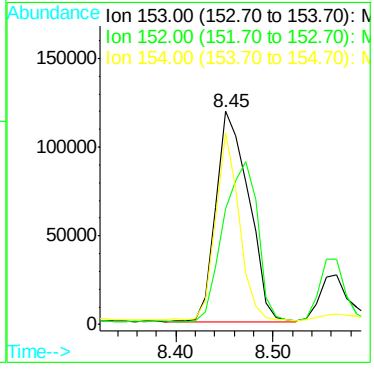




#59
Acenaphthene
Concen: 45.01 ppb
RT: 8.45 min Scan# 760
Delta R.T. 0.05 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:153 Resp: 277231

Ion	Ratio	Lower	Upper
153	100		
152	53.2	18.9	78.9
154	89.5	62.4	122.4



9.1.17

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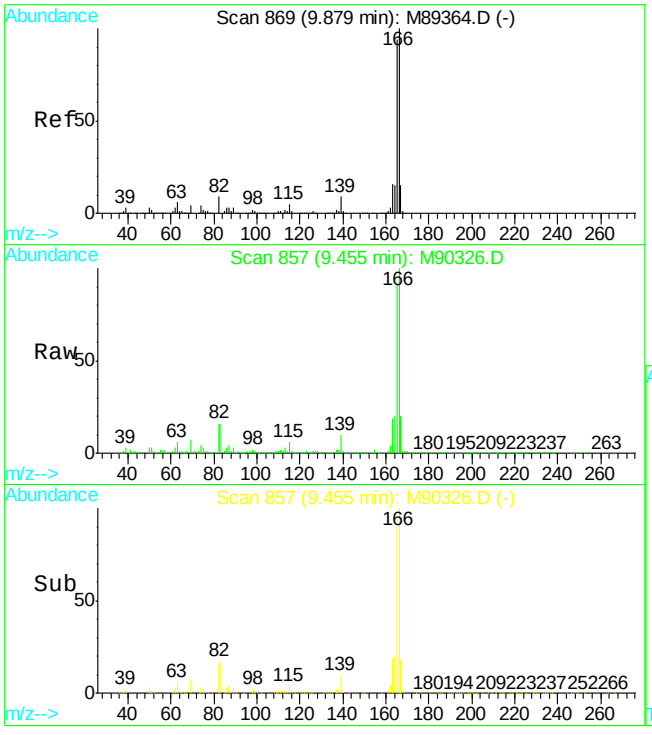
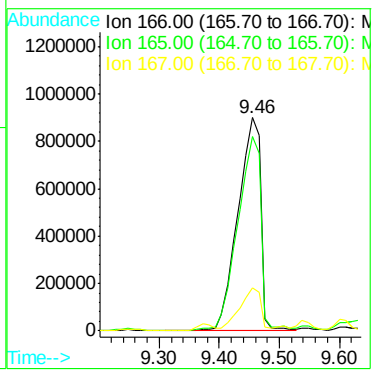
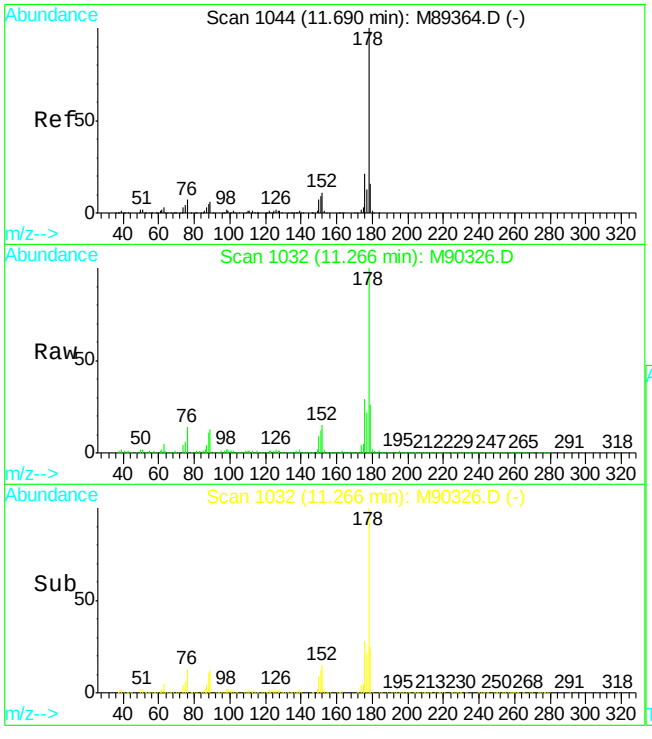


#66
Fluorene
Concen: 334.16 ppb
RT: 9.46 min Scan# 857
Delta R.T. 0.07 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:166 Resp: 2342991

Ion	Ratio	Lower	Upper
166	100		
165	90.9	62.0	122.0
167	19.3	0.0	44.4

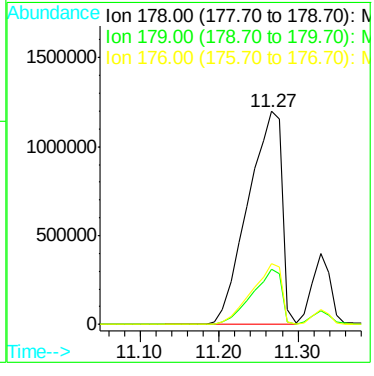


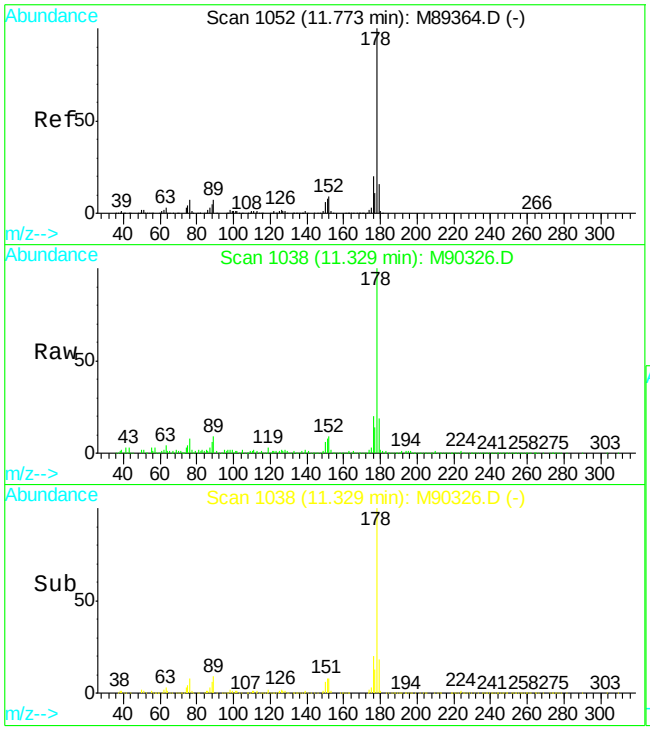


#77
Phenanthrene
Concen: 387.33 ppb
RT: 11.27 min Scan# 1032
Delta R.T. 0.09 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:178 Resp: 3600592

Ion	Ratio	Lower	Upper
178	100		
179	25.8	0.0	45.5
176	28.6	0.0	48.9

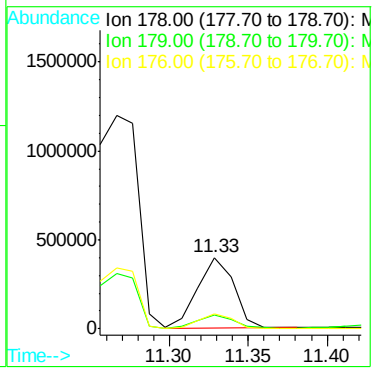


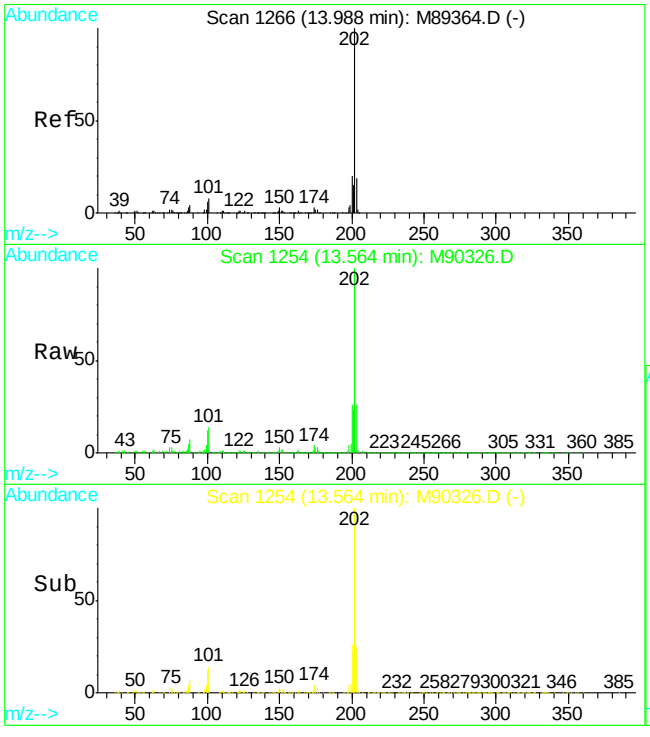


#78
Anthracene
Concen: 70.22 ppb
RT: 11.33 min Scan# 1038
Delta R.T. 0.07 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:178 Resp: 630002

Ion	Ratio	Lower	Upper
178	100		
179	17.9	0.0	46.2
176	20.1	0.0	49.6

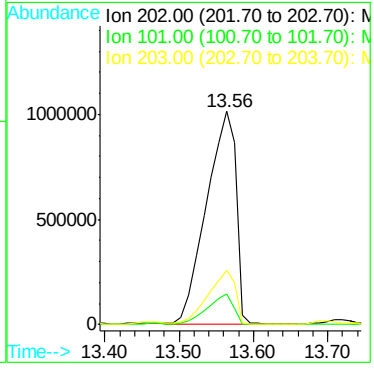


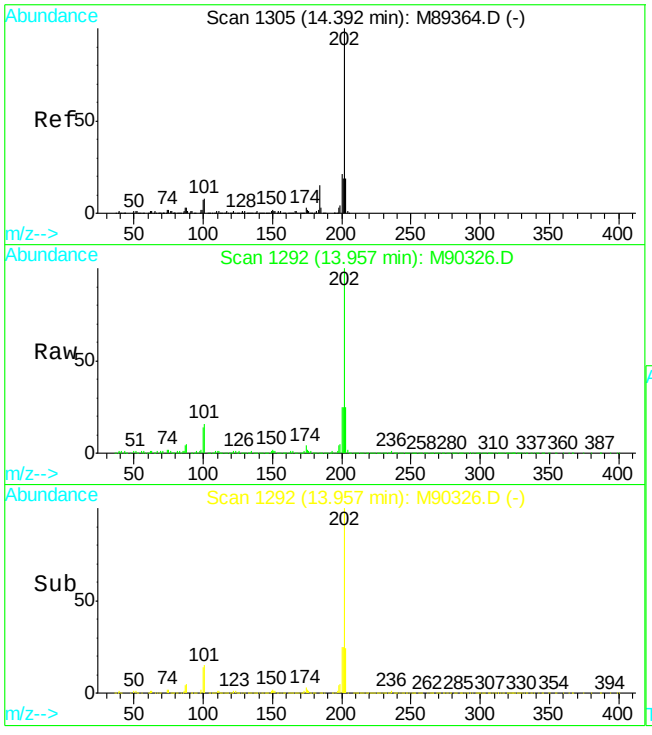


#81
Fluoranthene
Concen: 240.73 ppb
RT: 13.56 min Scan# 1254
Delta R.T. 0.11 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:202 Resp: 2798348

Ion	Ratio	Lower	Upper
202	100		
101	14.3	0.0	40.6
203	25.1	0.0	48.6

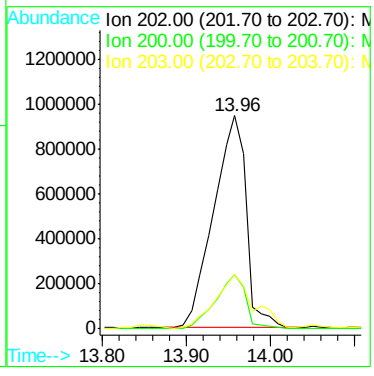


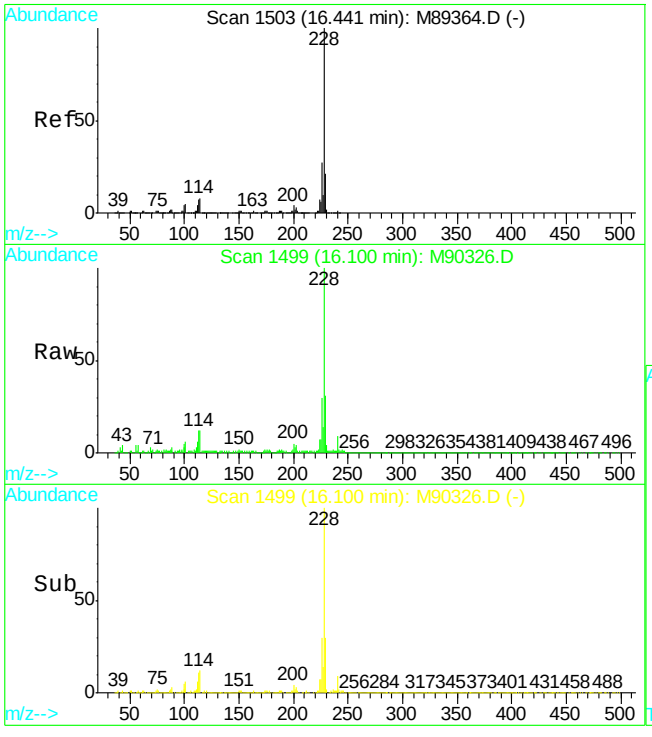


#84
Pyrene
Concen: 240.17 ppb
RT: 13.96 min Scan# 1292
Delta R.T. 0.11 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:202 Resp: 2555251

Ion	Ratio	Lower	Upper
202	100		
200	25.5	0.0	50.2
203	24.7	0.0	48.3

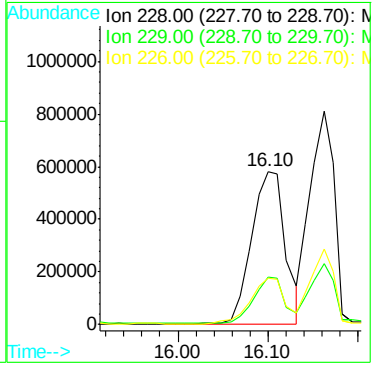




#88
Benzo[a]anthracene
Concen: 146.29 ppb
RT: 16.10 min Scan# 1499
Delta R.T. 0.07 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:228 Resp: 1511641

Ion	Ratio	Lower	Upper
228	100		
229	30.5	0.0	50.9
226	30.1	0.0	56.8



9.1.17

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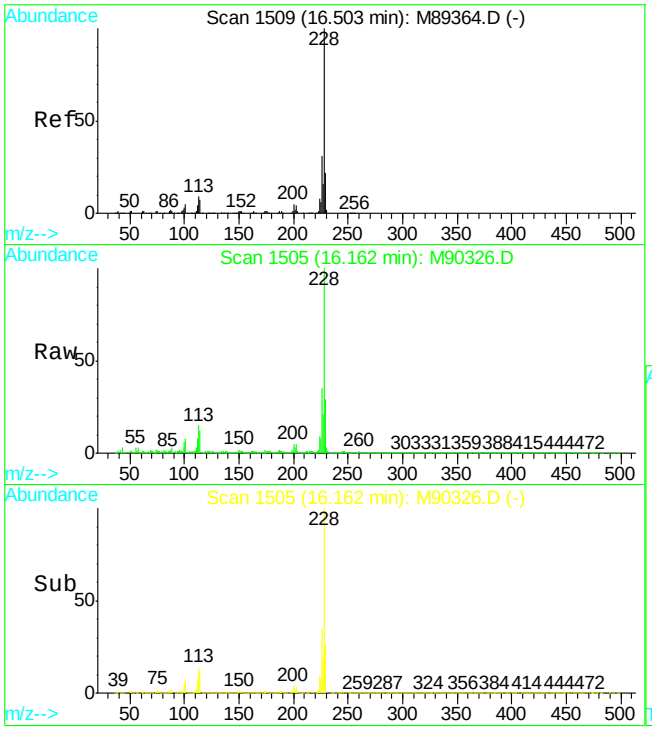
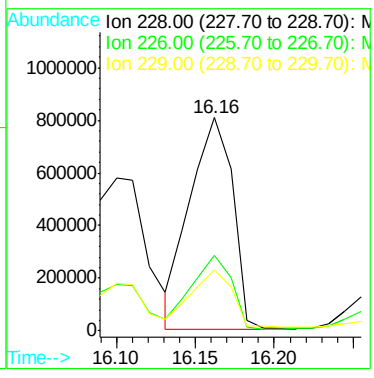
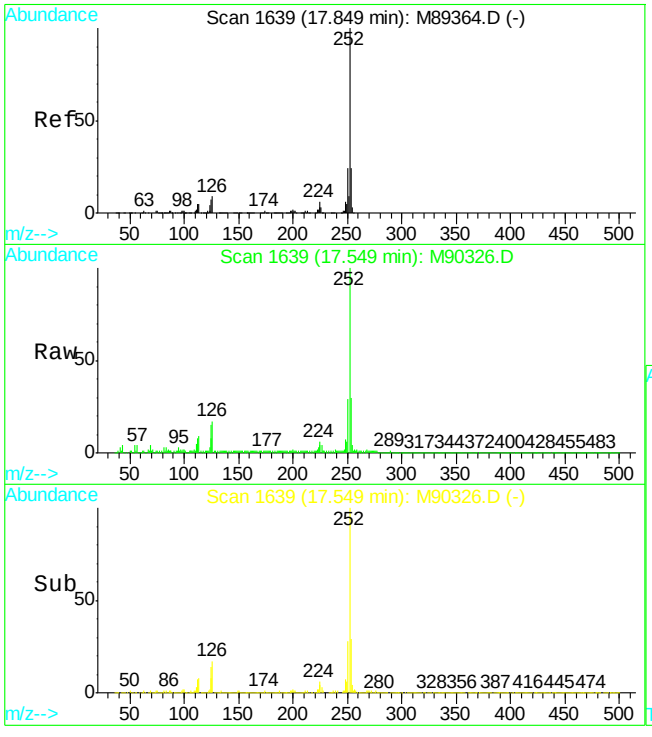


#90
Chrysene
Concen: 163.60 ppb
RT: 16.16 min Scan# 1505
Delta R.T. 0.08 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:228 Resp: 1528324

Ion	Ratio	Lower	Upper
228	100		
226	35.3	0.8	60.8
229	27.6	0.0	50.6

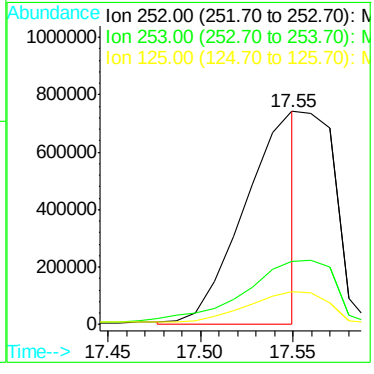




#94
Benzo[b]fluoranthene
Concen: 139.61 ppb m
RT: 17.55 min Scan# 1639
Delta R.T. 0.09 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

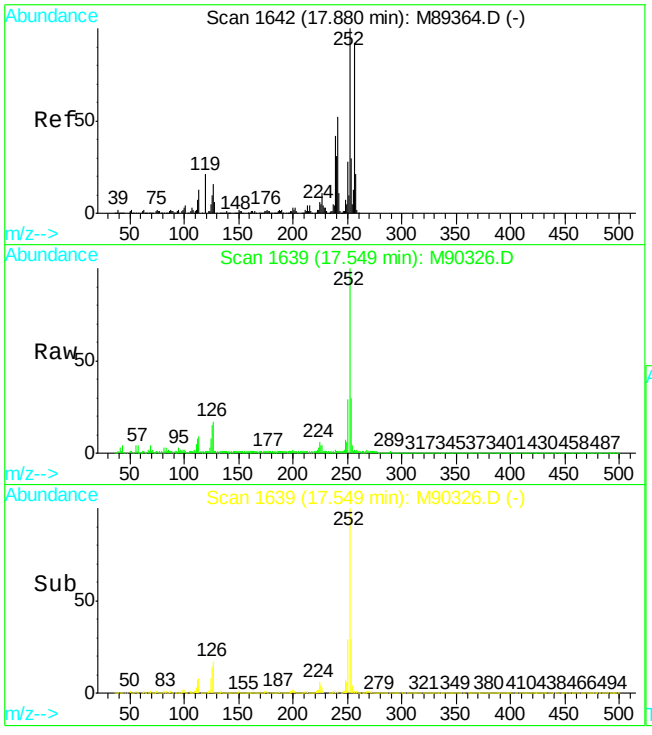
Tgt Ion:252 Resp: 1490557

Ion	Ratio	Lower	Upper
252	100		
253	29.7	0.0	53.5
125	15.3	0.0	38.3



9.1.17

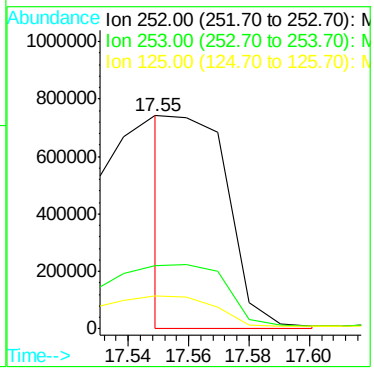
9

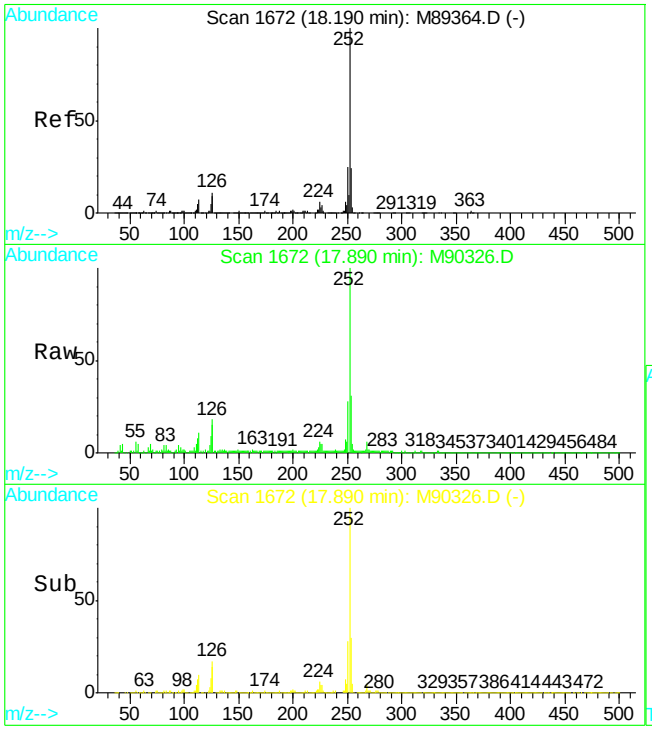


#95
Benzo[k]fluoranthene
Concen: 94.64 ppb m
RT: 17.55 min Scan# 1639
Delta R.T. 0.06 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:252 Resp: 953066

Ion	Ratio	Lower	Upper
252	100		
253	29.7	0.0	56.8
125	15.3	0.0	40.7

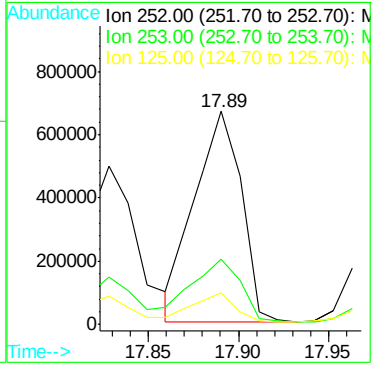




#96
Benzo[a]pyrene
Concen: 130.16 ppb
RT: 17.89 min Scan# 1672
Delta R.T. 0.09 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

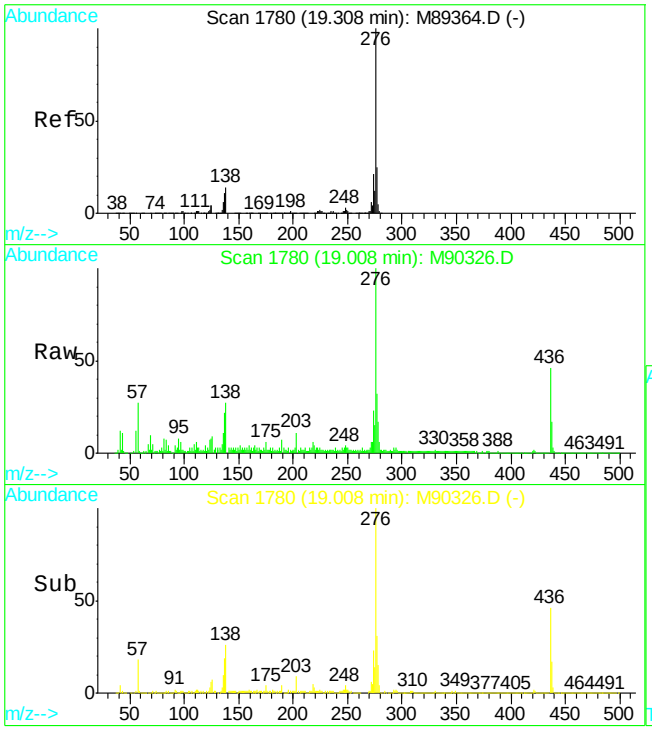
Tgt Ion:252 Resp: 1207074

Ion	Ratio	Lower	Upper
252	100		
253	28.1	0.0	54.3
125	13.6	0.0	42.1



9.1.17

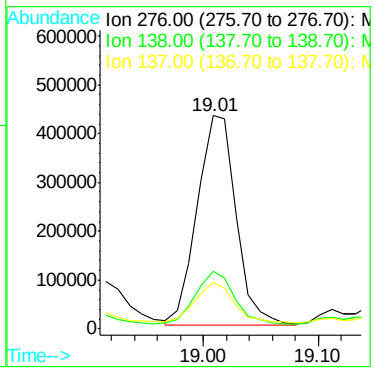
9

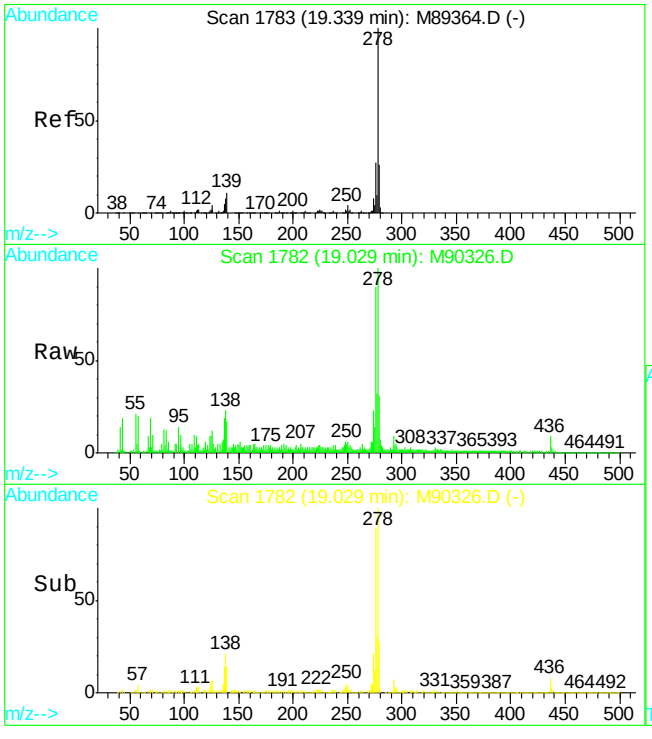


#97
Indeno[1,2,3-cd]pyrene
Concen: 100.24 ppb
RT: 19.01 min Scan# 1780
Delta R.T. 0.08 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:276 Resp: 1015760

Ion	Ratio	Lower	Upper
276	100		
138	25.6	0.0	49.6
137	18.9	0.0	44.0

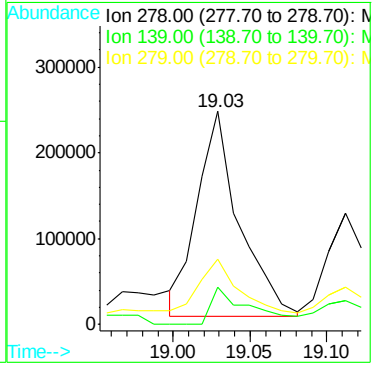


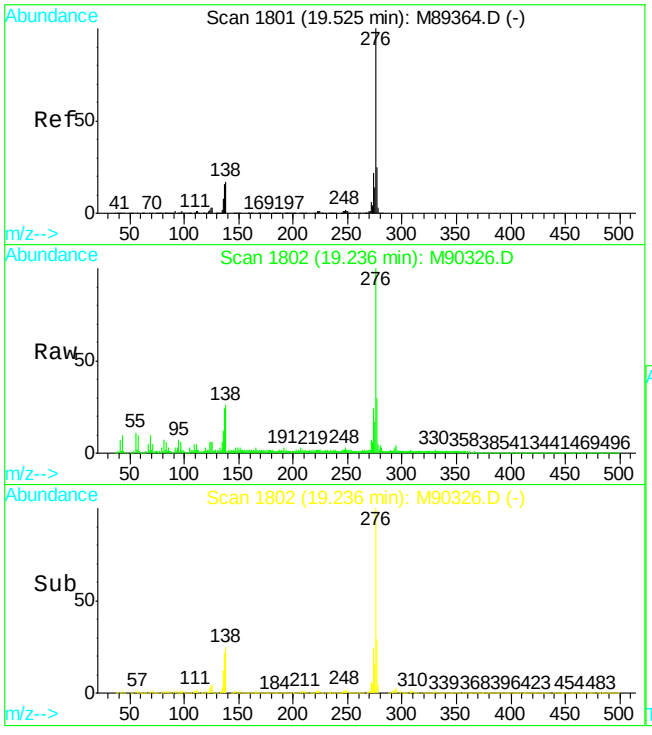


#99
Dibenz[a,h]anthracene
Concen: 54.66 ppb m
RT: 19.03 min Scan# 1782
Delta R.T. 0.07 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:278 Resp: 454012

Ion	Ratio	Lower	Upper
278	100		
139	17.3	0.0	42.5
279	30.9	0.0	55.9

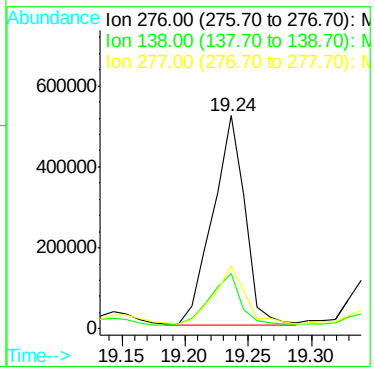




#101
Benzo[g,h,i]perylene
Concen: 111.20 ppb
RT: 19.24 min Scan# 1802
Delta R.T. 0.09 min
Lab File: M90326.D
Acq: 17 Dec 2012 6:36 pm

Tgt Ion:276 Resp: 925930

Ion	Ratio	Lower	Upper
276	100		
138	24.7	0.0	51.8
277	27.6	0.0	55.2



9.1.17

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3660\M90339.D Vial: 6
Acq On : 18 Dec 2012 11:30 am Operator: olgaa
Sample : jb22822-13 Inst : MSM
Misc : op62037,em3660,34.7,,,1,10 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:52 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.16	152	78743	40.00	ppb	-0.10
24) Naphthalene-d8	5.10	136	293442	40.00	ppb	-0.12
47) Acenaphthene-d10	8.34	164	198695	40.00	ppb	-0.12
69) Phenanthrene-d10	11.12	188	369063	40.00	ppb	-0.13
83) Chrysene-d12	16.05	240	362137	40.00	ppb	-0.10
92) Perylene-d12	17.87	264	303024	40.00	ppb	-0.09
102) 1,4-Dichlorobenzene-d4a	3.16	152	78743	40.00	ppb	-0.10
104) Acenaphthene-d10a	8.34	164	198695	40.00	ppb	-0.12
106) Phenanthrene-d10a	11.12	188	369063	40.00	ppb	-0.13
108) Chrysene-d12a	16.05	240	362137	40.00	ppb	-0.10
System Monitoring Compounds						
5) 2-Fluorophenol	1.90	112	7307	2.87	ppb	-0.06
Spiked Amount 50.000			Recovery	=	5.74%	
8) Phenol-d5	2.94	99	11480	3.56	ppb	-0.04
Spiked Amount 50.000			Recovery	=	7.12%	
25) Nitrobenzene-d5	4.02	82	13396m	4.53	ppb	-0.09
Spiked Amount 50.000			Recovery	=	9.06%	
51) 2-Fluorobiphenyl	7.18	172	26238	4.16	ppb	-0.12
Spiked Amount 50.000			Recovery	=	8.32%	
73) 2,4,6-Tribromophenol	9.90	330	3385	5.16	ppb	-0.11
Spiked Amount 50.000			Recovery	=	10.32%	
86) Terphenyl-d14	14.38	244	46881	6.33	ppb	-0.12
Spiked Amount 50.000			Recovery	=	12.66%	

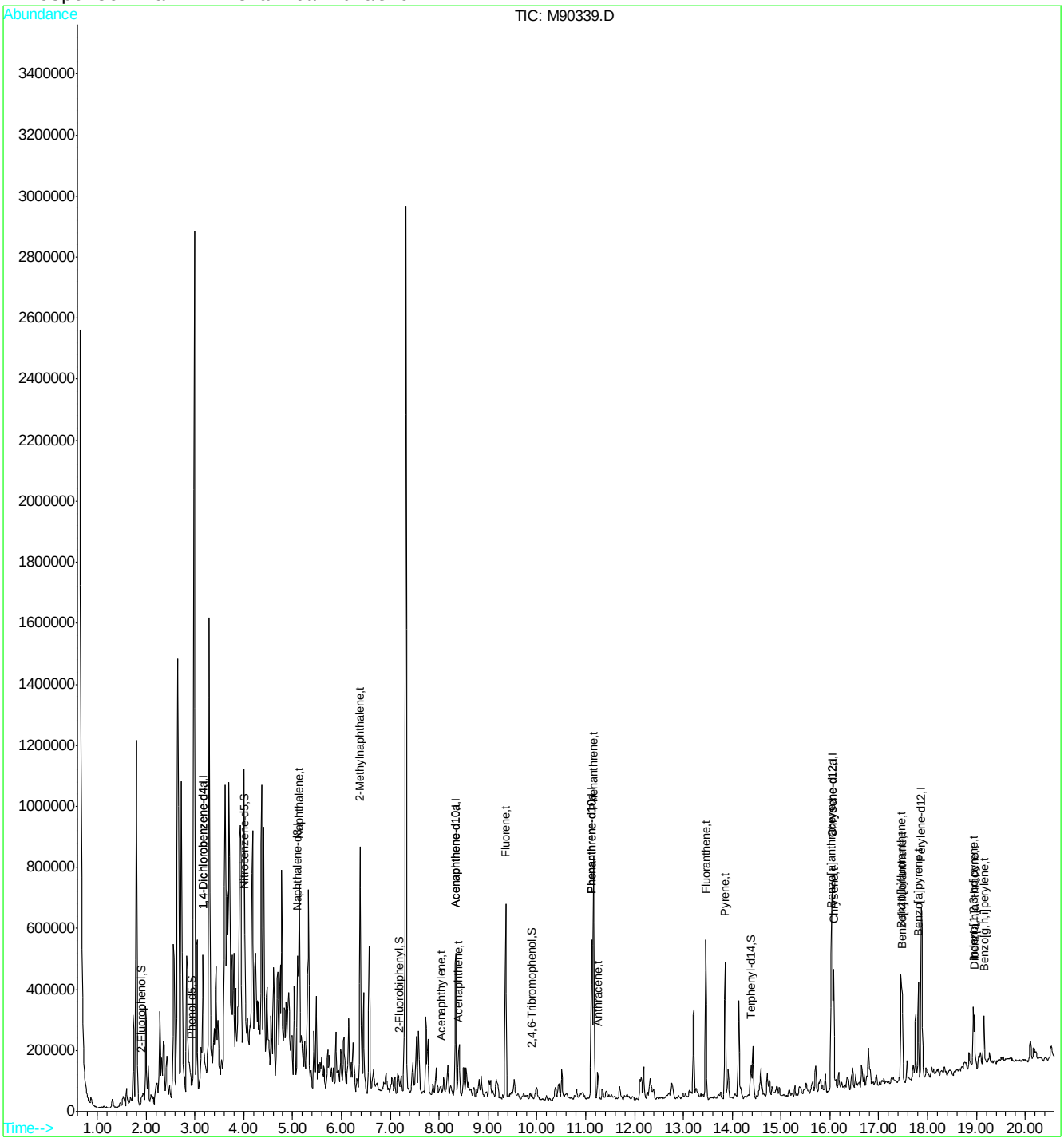
Target Compounds							Qvalue
38) Naphthalene	5.13	128	465700	57.85	ppb		98
44) 2-Methylnaphthalene	6.38	141	318336	64.25	ppb	#	75
56) Acenaphthylene	8.04	152	8284	0.96	ppb		95
59) Acenaphthene	8.39	153	29285	5.27	ppb		95
66) Fluorene	9.36	166	314357	49.73	ppb		98
77) Phenanthrene	11.16	178	546897	58.50	ppb		99
78) Anthracene	11.25	178	74713	8.28	ppb		98
81) Fluoranthene	13.46	202	425504m	36.40	ppb		
84) Pyrene	13.86	202	388455	35.62	ppb		97
88) Benzo[a]anthracene	16.03	228	201793	19.05	ppb		98
90) Chrysene	16.08	228	222682	23.25	ppb		95
94) Benzo[b]fluoranthene	17.46	252	264577m	26.53	ppb		
95) Benzo[k]fluoranthene	17.48	252	70825m	7.53	ppb		
96) Benzo[a]pyrene	17.81	252	162031	18.71	ppb		93
97) Indeno[1,2,3-cd]pyrene	18.94	276	110286	11.65	ppb		95
99) Dibenz[a,h]anthracene	18.96	278	38638m	4.98	ppb		
101) Benzo[g,h,i]perylene	19.15	276	99873	12.84	ppb		91

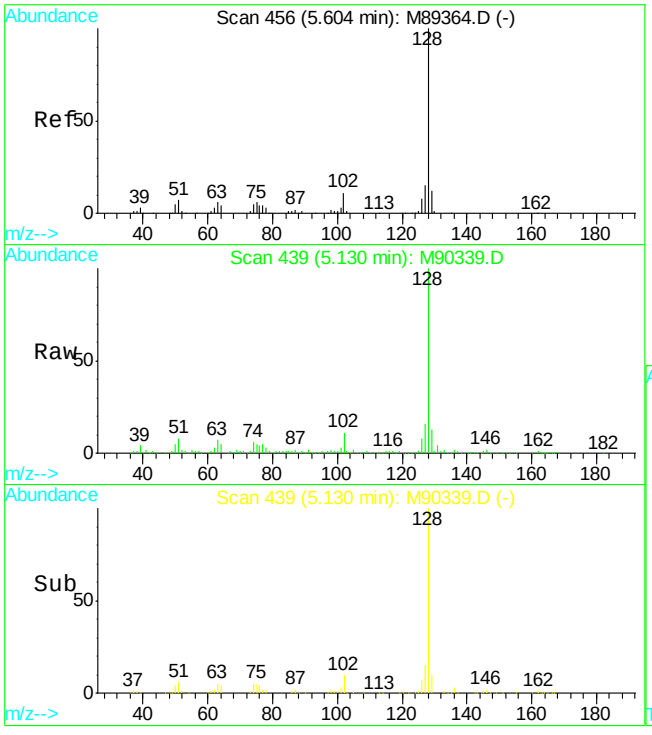
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3660\M90339.D Vial: 6
Acq On : 18 Dec 2012 11:30 am Operator: olgaa
Sample : jb22822-13 Inst : MSM
Misc : op62037,em3660,34.7,,,1,10 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:52 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 13:47:52 2012
Response via : Initial Calibration

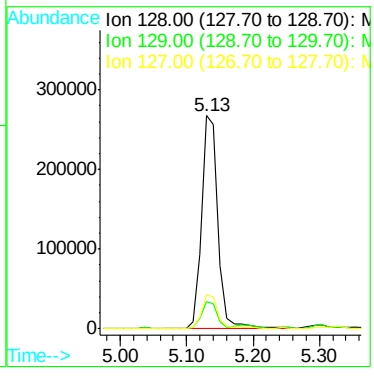


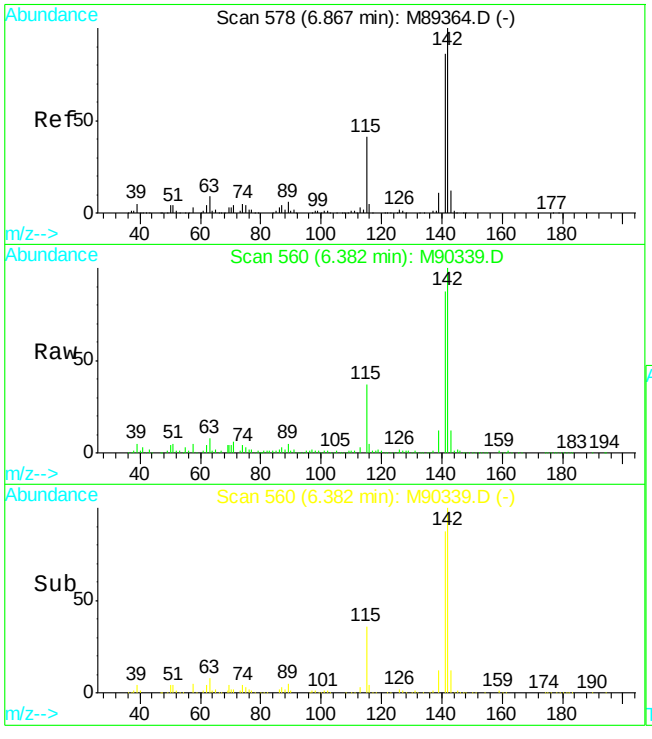


#38
Naphthalene
Concen: 57.85 ppb
RT: 5.13 min Scan# 439
Delta R.T. -0.12 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:128 Resp: 465700

Ion	Ratio	Lower	Upper
128	100		
129	12.8	0.0	42.1
127	15.8	0.0	45.2

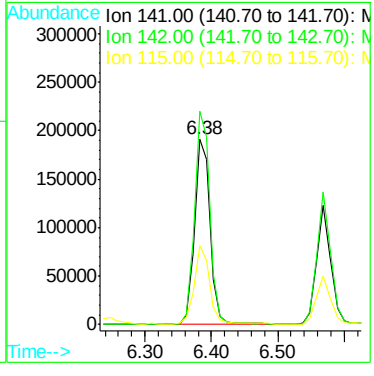




#44
2-Methylnaphthalene
Concen: 64.25 ppb
RT: 6.38 min Scan# 560
Delta R.T. -0.12 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:141 Resp: 318336

Ion	Ratio	Lower	Upper
141	100		
142	114.8	126.0	186.0#
115	42.2	13.5	73.5



9.1.18

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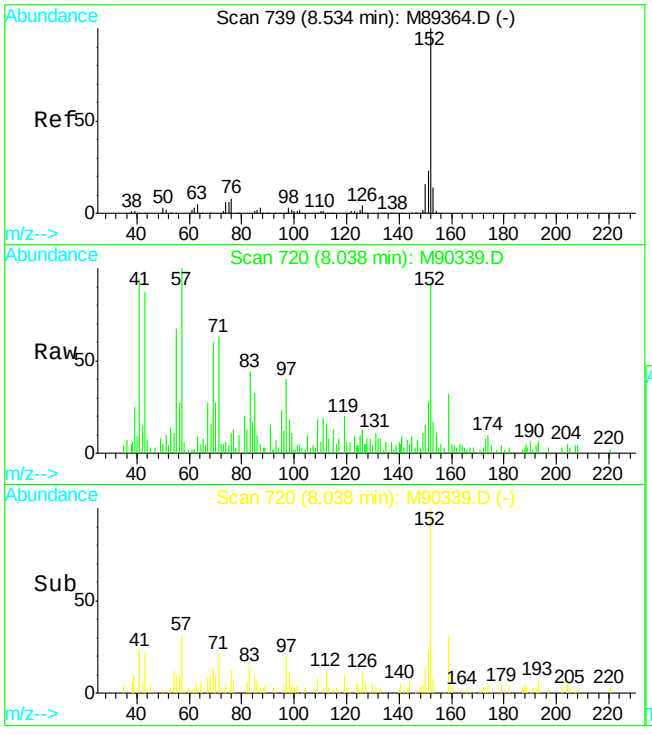
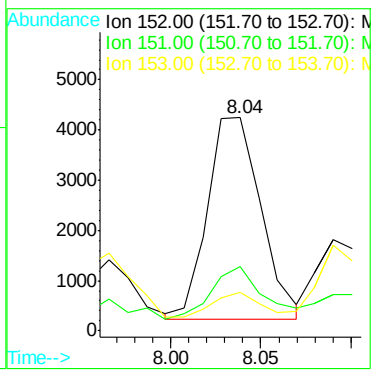
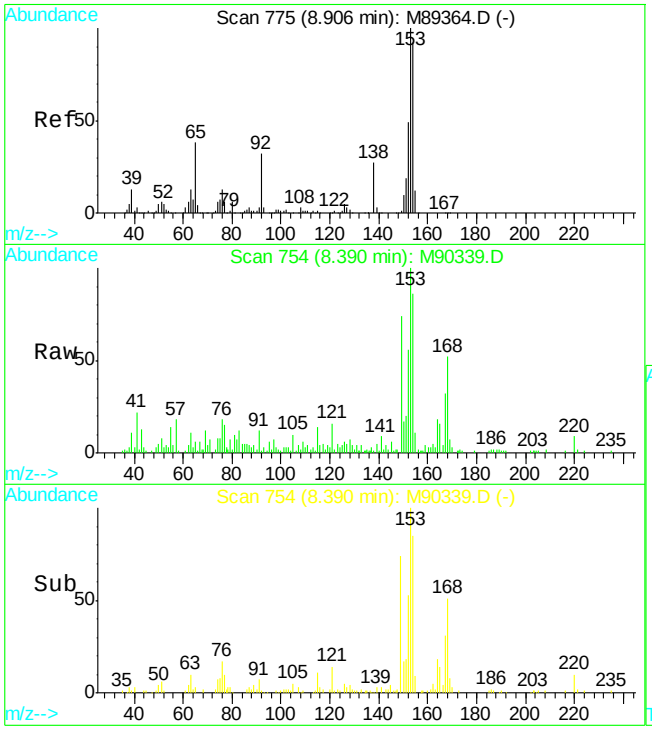


#56
Acenaphthylene
Concen: 0.96 ppb
RT: 8.04 min Scan# 720
Delta R.T. -0.11 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:152 Resp: 8284

Ion	Ratio	Lower	Upper
152	100		
151	24.2	0.0	52.4
153	11.5	0.0	44.5

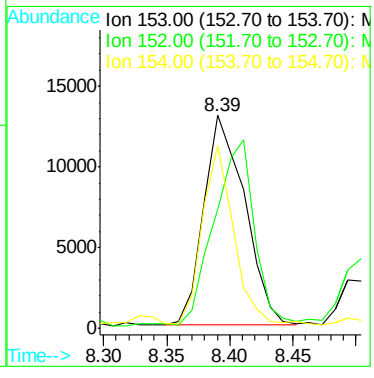




#59
Acenaphthene
Concen: 5.27 ppb
RT: 8.39 min Scan# 754
Delta R.T. -0.12 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:153 Resp: 29285

Ion	Ratio	Lower	Upper
153	100		
152	54.2	17.5	77.5
154	84.6	56.4	116.4



9.1.18

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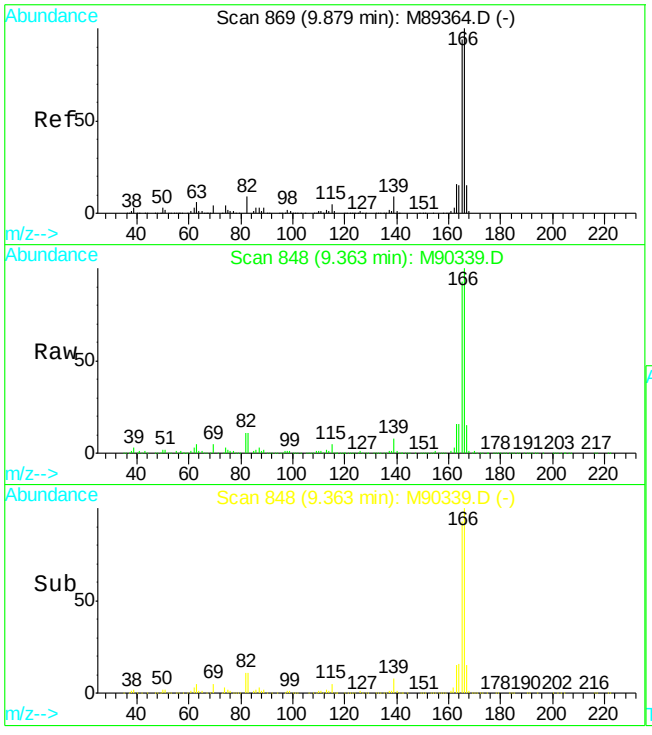
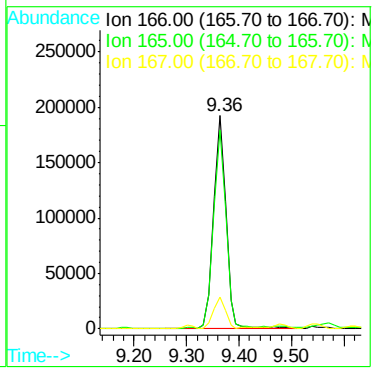
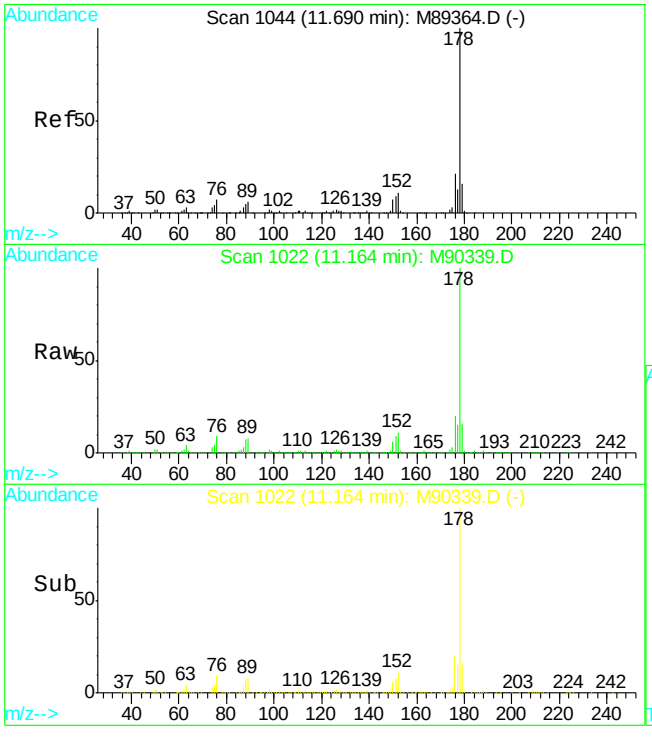


#66
Fluorene
Concen: 49.73 ppb
RT: 9.36 min Scan# 848
Delta R.T. -0.12 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:166 Resp: 314357

Ion	Ratio	Lower	Upper
166	100		
165	93.2	61.7	121.7
167	14.8	0.0	45.5

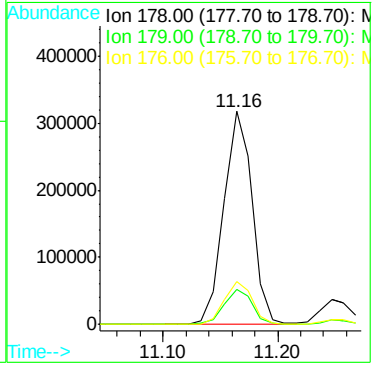




#77
Phenanthrene
Concen: 58.50 ppb
RT: 11.16 min Scan# 1022
Delta R.T. -0.13 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:178 Resp: 546897

Ion	Ratio	Lower	Upper
178	100		
179	16.4	0.0	47.4
176	20.3	0.0	50.3



9.1.18

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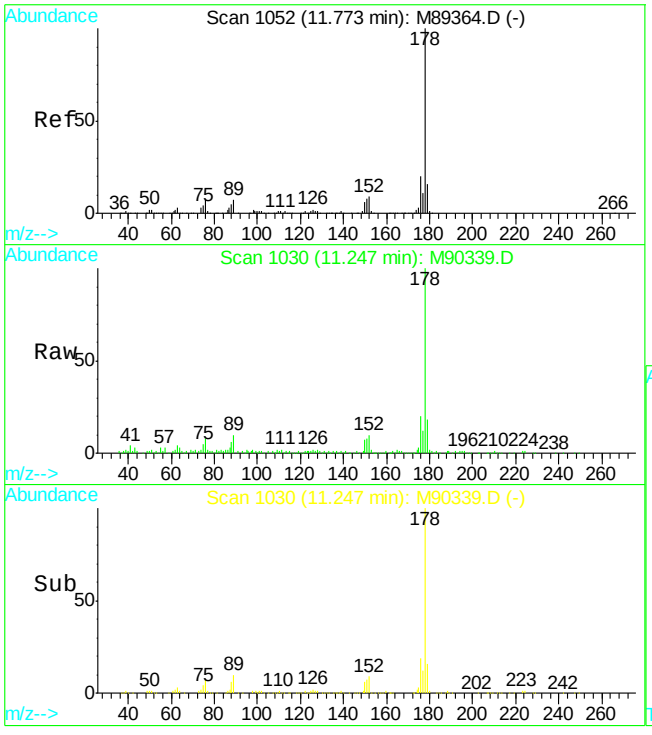
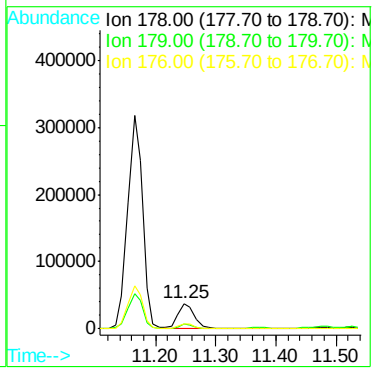
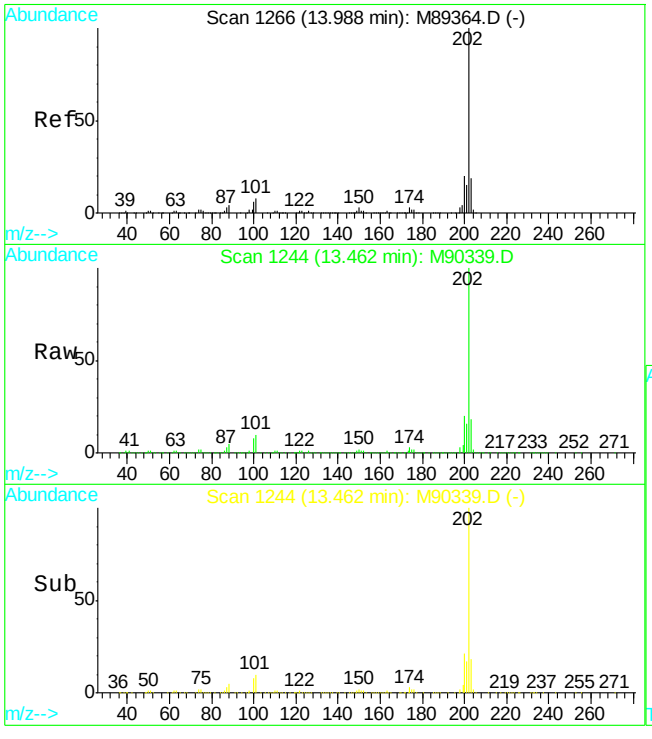


#78
Anthracene
Concen: 8.28 ppb
RT: 11.25 min Scan# 1030
Delta R.T. -0.13 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:178 Resp: 74713

Ion	Ratio	Lower	Upper
178	100		
179	16.1	0.0	47.3
176	19.4	0.0	50.3

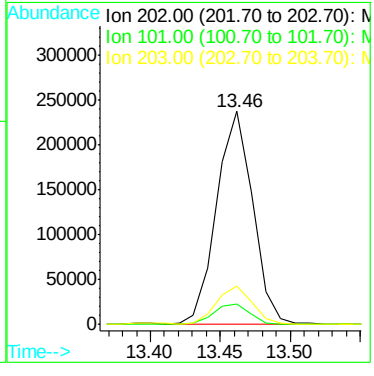




#81
Fluoranthene
Concen: 36.40 ppb m
RT: 13.46 min Scan# 1244
Delta R.T. -0.12 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

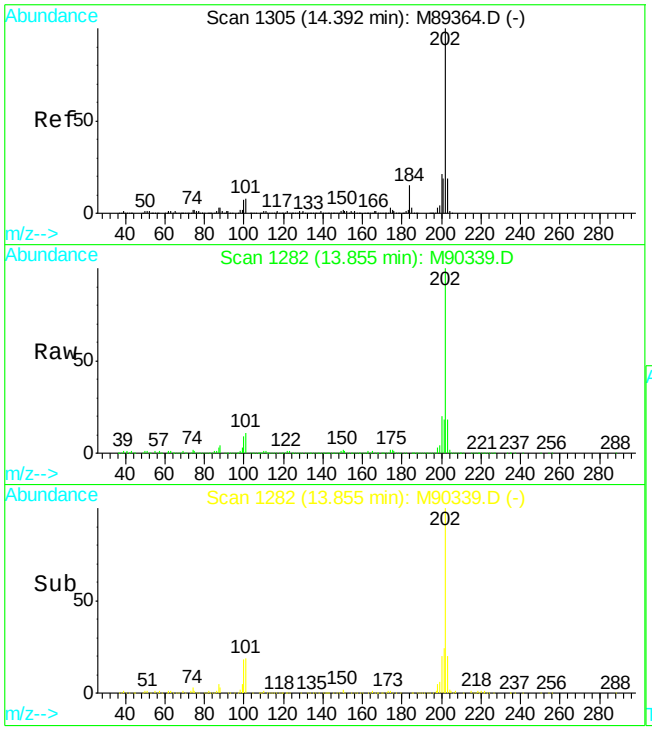
Tgt Ion:202 Resp: 425504

Ion	Ratio	Lower	Upper
202	100		
101	9.7	0.0	40.6
203	17.9	0.0	50.3



9.1.18

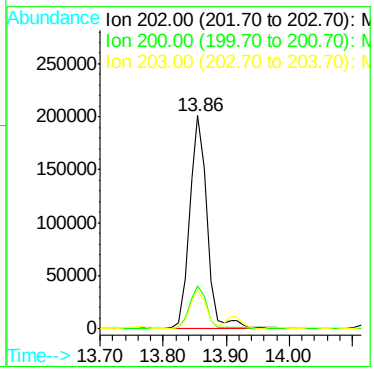
9

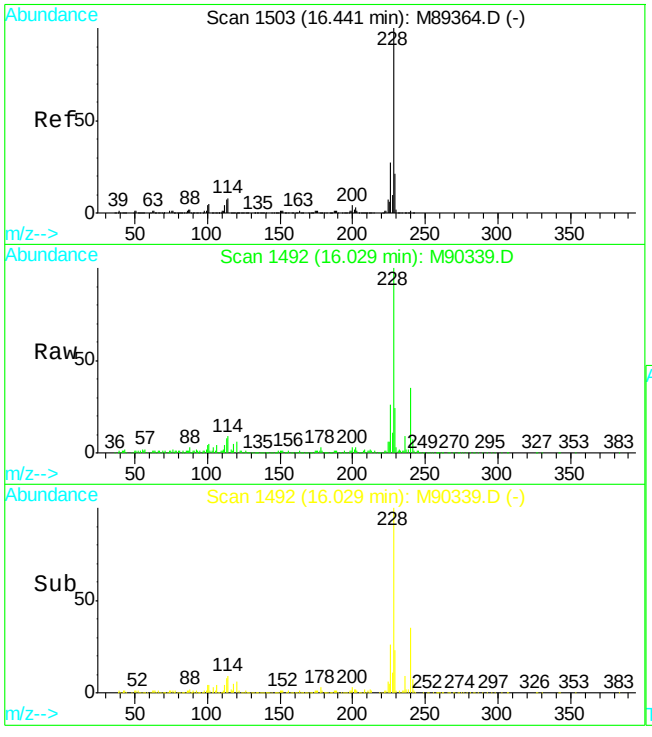


#84
Pyrene
Concen: 35.62 ppb
RT: 13.86 min Scan# 1282
Delta R.T. -0.12 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:202 Resp: 388455

Ion	Ratio	Lower	Upper
202	100		
200	19.9	0.0	51.0
203	18.0	0.0	50.0

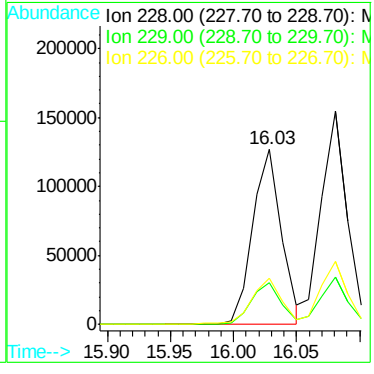


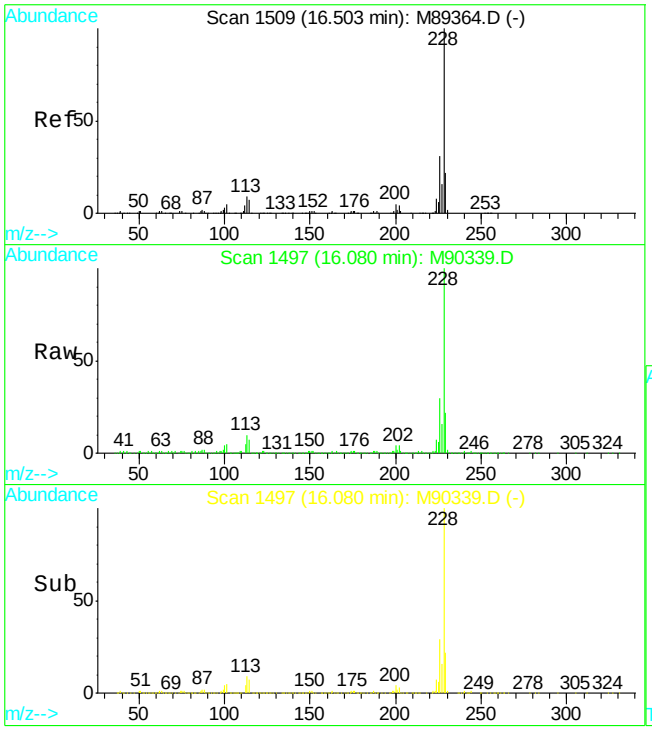


#88
Benzo[a]anthracene
Concen: 19.05 ppb
RT: 16.03 min Scan# 1492
Delta R.T. -0.09 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:228 Resp: 201793

Ion	Ratio	Lower	Upper
228	100		
229	23.2	0.0	53.2
226	26.4	0.0	58.3

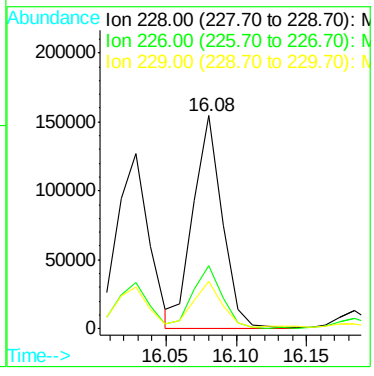


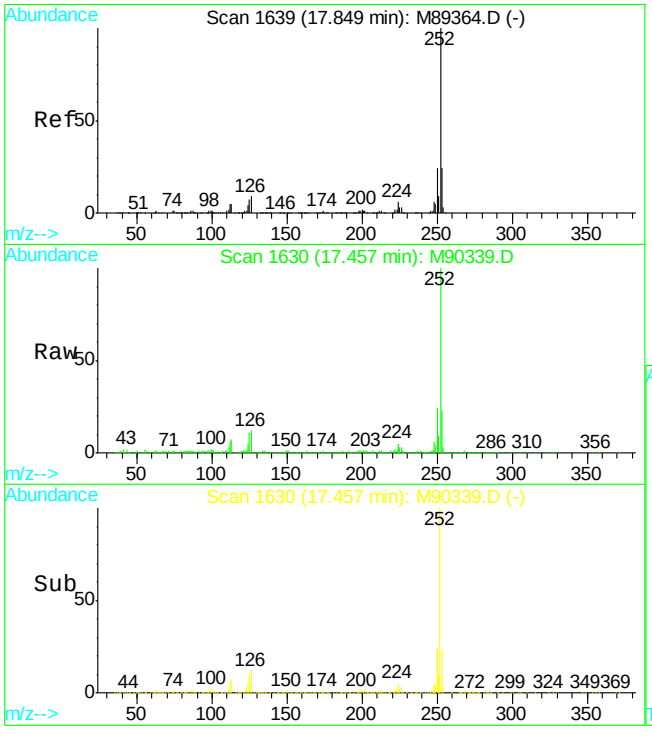


#90
Chrysene
Concen: 23.25 ppb
RT: 16.08 min Scan# 1497
Delta R.T. -0.10 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:228 Resp: 222682

Ion	Ratio	Lower	Upper
228	100		
226	29.9	2.3	62.3
229	21.3	0.0	54.2

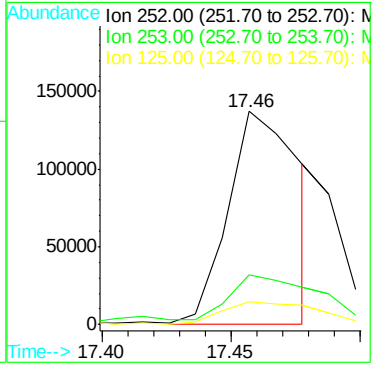




#94
Benzo[b]fluoranthene
Concen: 26.53 ppb m
RT: 17.46 min Scan# 1630
Delta R.T. -0.09 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:252 Resp: 264577

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	55.6
125	10.7	0.0	40.3



9.1.18

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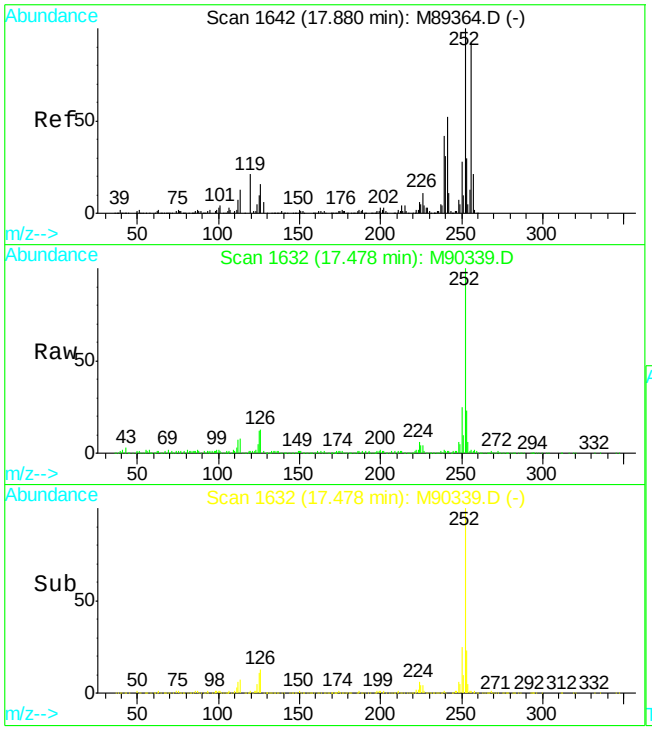
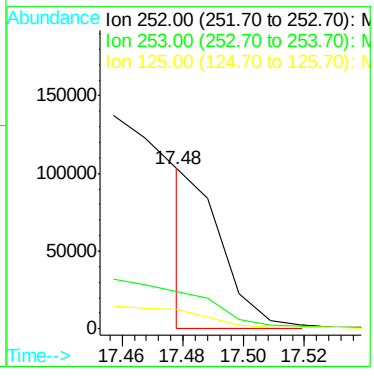
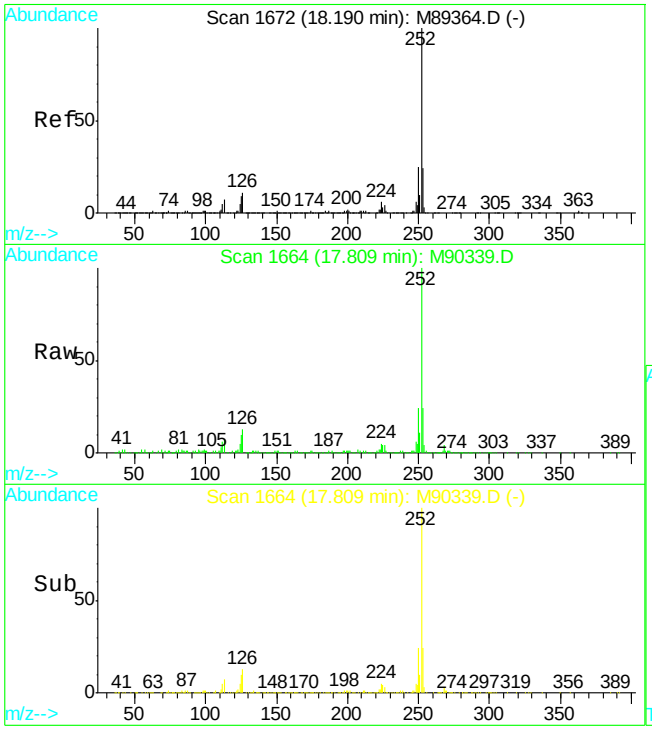


#95
Benzo[k]fluoranthene
Concen: 7.53 ppb m
RT: 17.48 min Scan# 1632
Delta R.T. -0.10 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:252 Resp: 70825

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	58.9
125	11.9	0.0	43.1

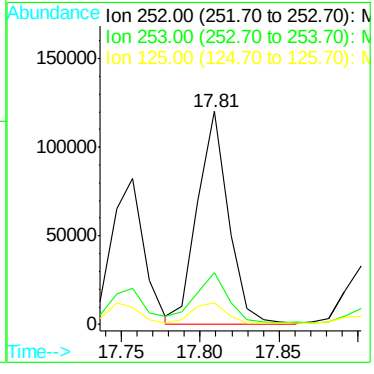




#96
Benzo[a]pyrene
Concen: 18.71 ppb
RT: 17.81 min Scan# 1664
Delta R.T. -0.08 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

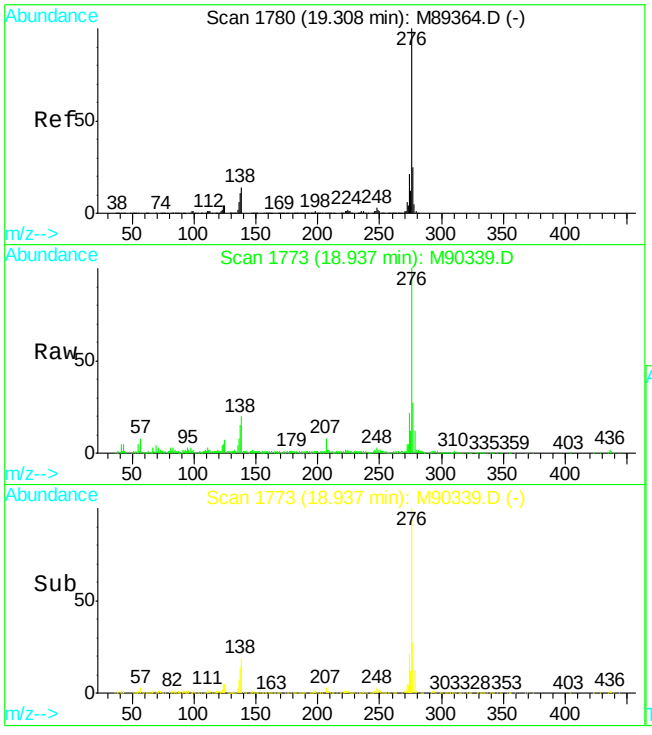
Tgt Ion:252 Resp: 162031

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	55.8
125	9.8	0.0	42.8



9.1.18

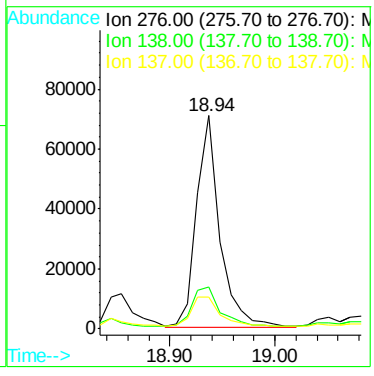
9

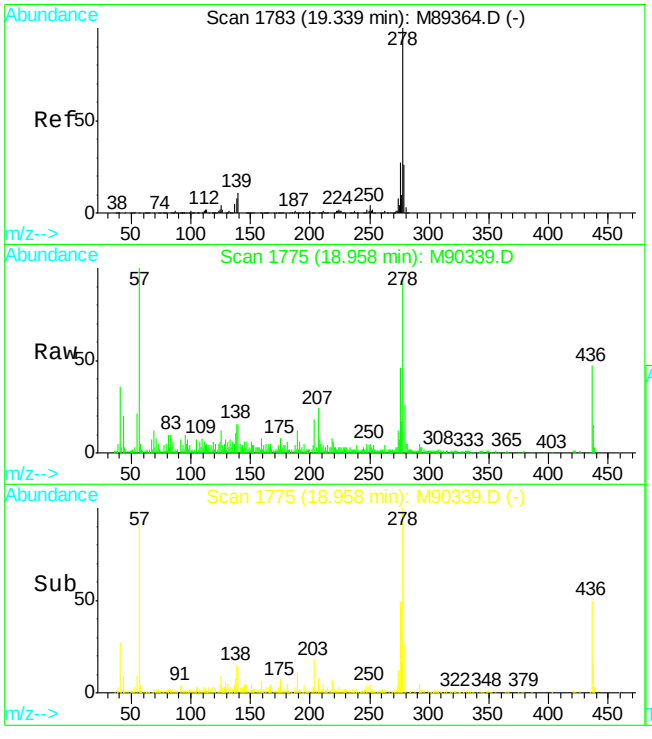


#97
Indeno[1,2,3-cd]pyrene
Concen: 11.65 ppb
RT: 18.94 min Scan# 1773
Delta R.T. -0.07 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:276 Resp: 110286

Ion	Ratio	Lower	Upper
276	100		
138	18.9	0.0	51.4
137	14.0	0.0	45.7

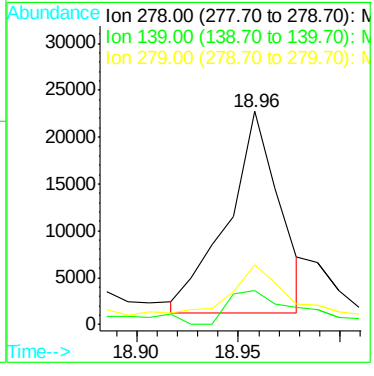




#99
Dibenz[a,h]anthracene
Concen: 4.98 ppb m
RT: 18.96 min Scan# 1775
Delta R.T. -0.08 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

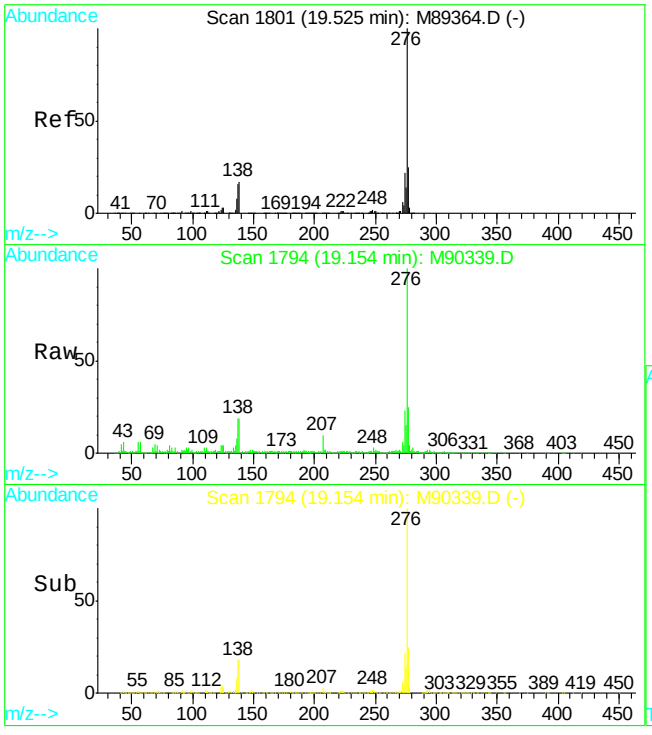
Tgt Ion:278 Resp: 38638

Ion	Ratio	Lower	Upper
278	100		
139	16.0	0.0	45.4
279	27.8	0.0	58.2



9.1.18

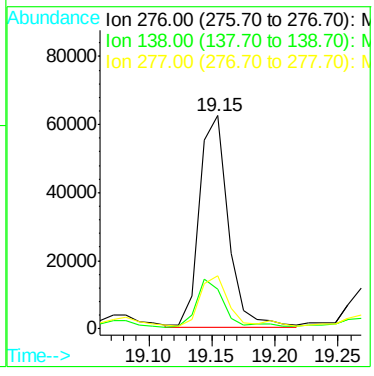
9



#101
Benzo[g,h,i]perylene
Concen: 12.84 ppb
RT: 19.15 min Scan# 1794
Delta R.T. -0.07 min
Lab File: M90339.D
Acq: 18 Dec 2012 11:30 am

Tgt Ion:276 Resp: 99873

Ion	Ratio	Lower	Upper
276	100		
138	17.9	0.0	53.9
277	23.8	0.0	57.2



9.1.18

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90327.D Vial: 20
Acq On : 17 Dec 2012 7:06 pm Operator: olgaa
Sample : jb22822-14 Inst : MSM
Misc : op62037,em3659,31.2 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:34 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.19	152	105092	40.00	ppb	-0.07
24) Naphthalene-d8	5.14	136	413260	40.00	ppb	-0.08
47) Acenaphthene-d10	8.38	164	265367	40.00	ppb	-0.08
69) Phenanthrene-d10	11.18	188	434820	40.00	ppb	-0.07
83) Chrysene-d12	16.12	240	408901	40.00	ppb	-0.03
92) Perylene-d12	17.96	264	375829	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	3.19	152	105092	40.00	ppb	-0.07
104) Acenaphthene-d10a	8.38	164	265367	40.00	ppb	-0.08
106) Phenanthrene-d10a	11.18	188	434820	40.00	ppb	-0.07
108) Chrysene-d12a	16.12	240	408901	40.00	ppb	-0.03
System Monitoring Compounds						
5) 2-Fluorophenol	1.93	112	64264	18.89	ppb	-0.03
Spiked Amount 50.000			Recovery = 37.78%			
8) Phenol-d5	2.97	99	94935	22.07	ppb	0.00
Spiked Amount 50.000			Recovery = 44.14%			
25) Nitrobenzene-d5	4.04	82	71244	17.09	ppb	-0.07
Spiked Amount 50.000			Recovery = 34.18%			
51) 2-Fluorobiphenyl	7.21	172	210034	24.93	ppb	-0.09
Spiked Amount 50.000			Recovery = 49.86%			
73) 2,4,6-Tribromophenol	9.95	330	28749	37.22	ppb	-0.06
Spiked Amount 50.000			Recovery = 74.44%			
86) Terphenyl-d14	14.46	244	271691	32.51	ppb	-0.05
Spiked Amount 50.000			Recovery = 65.02%			

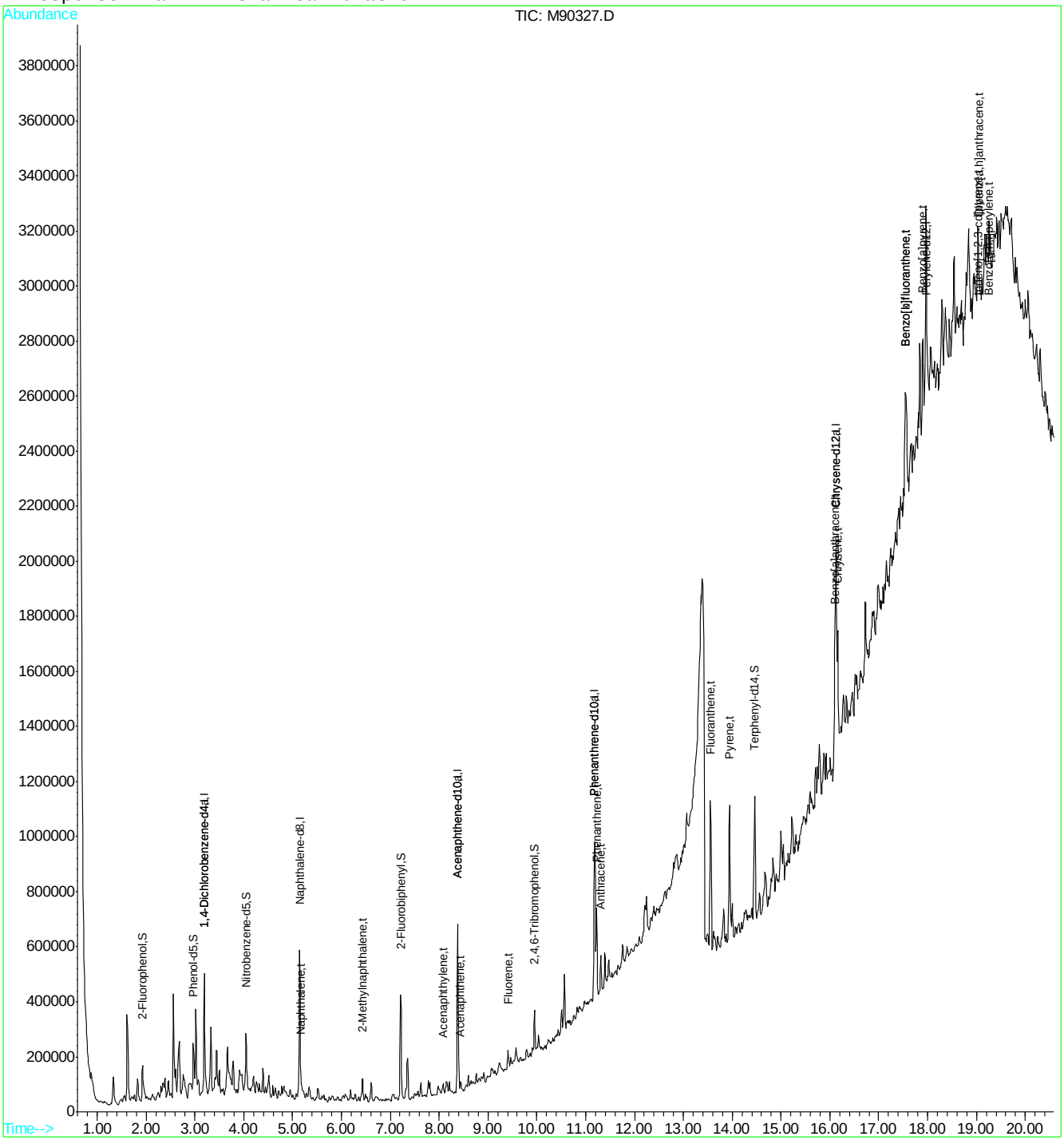
Target Compounds							Qvalue
38) Naphthalene	5.17	128	39928	3.52	ppb		96
44) 2-Methylnaphthalene	6.42	141	33789	4.84	ppb	#	69
56) Acenaphthylene	8.08	152	32878	2.85	ppb		94
59) Acenaphthene	8.43	153	17190	2.32	ppb		93
66) Fluorene	9.41	166	38824	4.60	ppb		98
77) Phenanthrene	11.23	178	215509	19.56	ppb		97
78) Anthracene	11.31	178	85787	8.07	ppb		96
81) Fluoranthene	13.55	202	424285	30.80	ppb		97
84) Pyrene	13.95	202	397370	32.27	ppb		97
88) Benzo[a]anthracene	16.10	228	217711	18.20	ppb		95
90) Chrysene	16.16	228	245682	22.72	ppb		92
94) Benzo[b]fluoranthene	17.55	252	198043m	16.01	ppb		
95) Benzo[k]fluoranthene	17.55	252	176741m	15.15	ppb		
96) Benzo[a]pyrene	17.90	252	182680	17.01	ppb		95
97) Indeno[1,2,3-cd]pyrene	19.03	276	138782	11.82	ppb		99
99) Dibenz[a,h]anthracene	19.05	278	57501m	5.98	ppb		
101) Benzo[g,h,i]perylene	19.26	276	134948	13.99	ppb		92

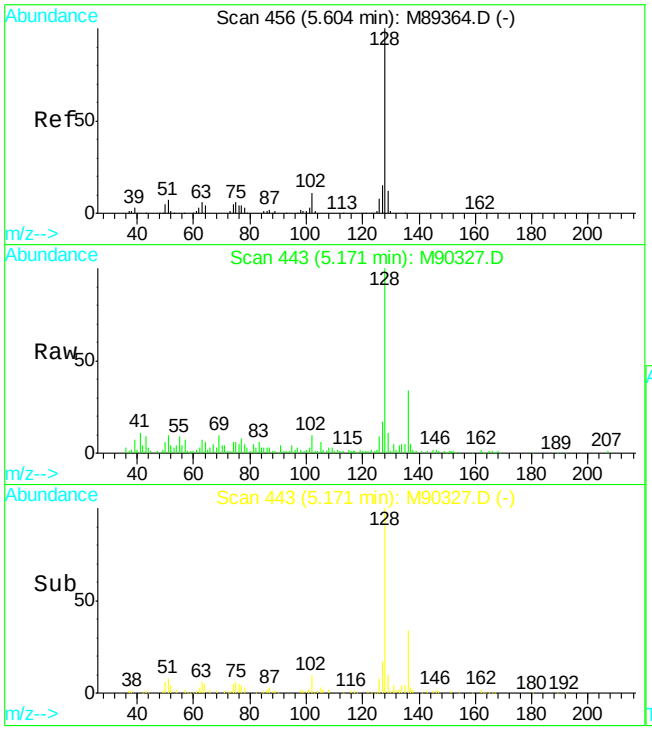
(#) = qualifier out of range (m) = manual integration
M90327.D MM3617.M Tue Dec 18 13:34:33 2012 GCMSM

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90327.D Vial: 20
Acq On : 17 Dec 2012 7:06 pm Operator: olgaa
Sample : jb22822-14 Inst : MSM
Misc : op62037,em3659,31.2 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:34 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

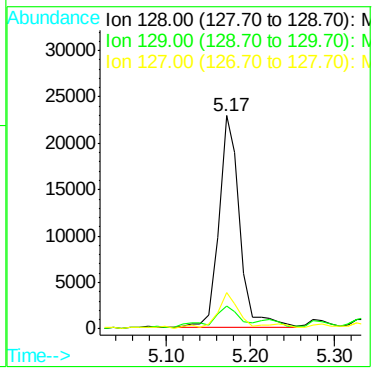


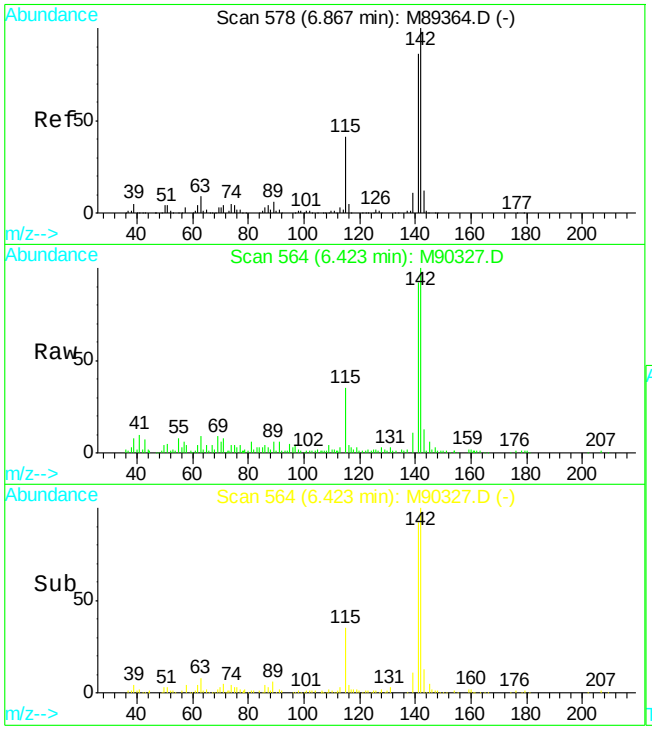


#38
Naphthalene
Concen: 3.52 ppb
RT: 5.17 min Scan# 443
Delta R.T. -0.08 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:128 Resp: 39928

Ion	Ratio	Lower	Upper
128	100		
129	10.0	0.0	42.1
127	16.5	0.0	45.2

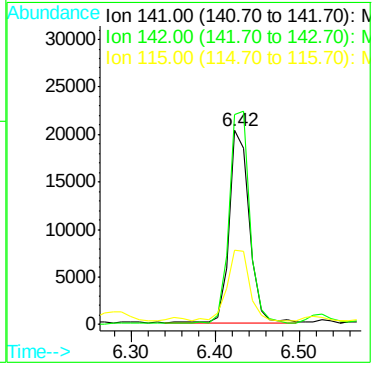


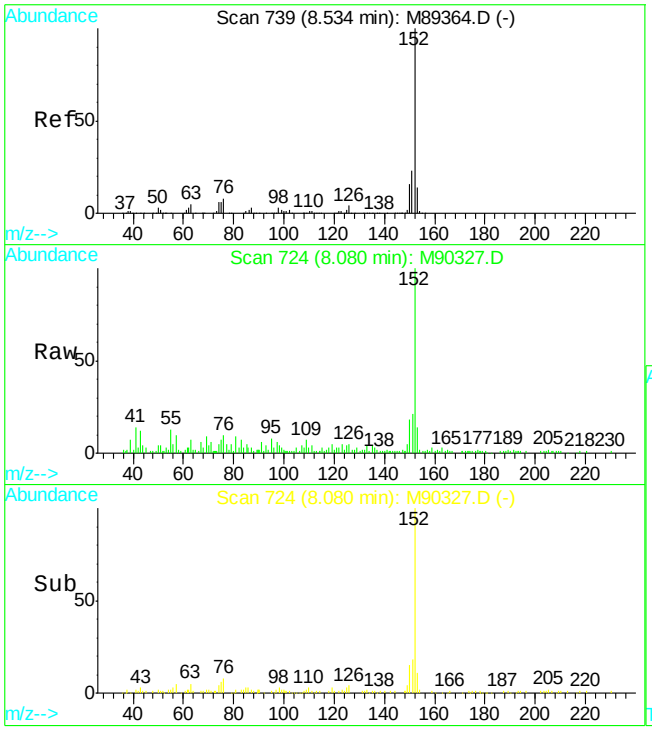


#44
2-Methylnaphthalene
Concen: 4.84 ppb
RT: 6.42 min Scan# 564
Delta R.T. -0.08 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:141 Resp: 33789

Ion	Ratio	Lower	Upper
141	100		
142	108.7	126.0	186.0#
115	36.2	13.5	73.5

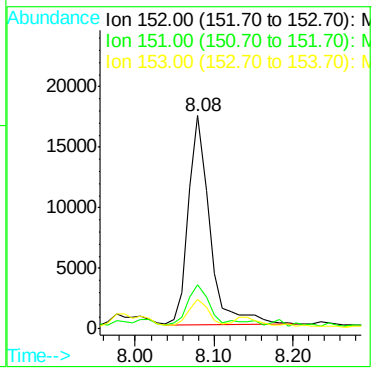


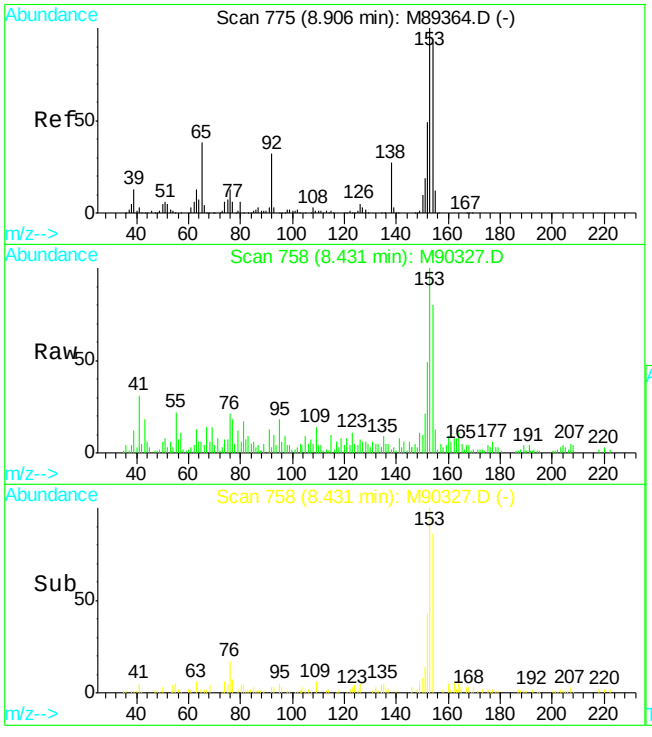


#56
Acenaphthylene
Concen: 2.85 ppb
RT: 8.08 min Scan# 724
Delta R.T. -0.07 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:152 Resp: 32878

Ion	Ratio	Lower	Upper
152	100		
151	19.1	0.0	52.4
153	12.6	0.0	44.5

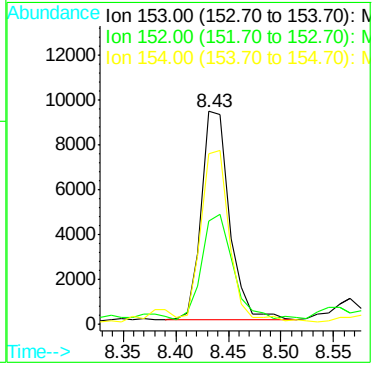




#59
Acenaphthene
Concen: 2.32 ppb
RT: 8.43 min Scan# 758
Delta R.T. -0.08 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

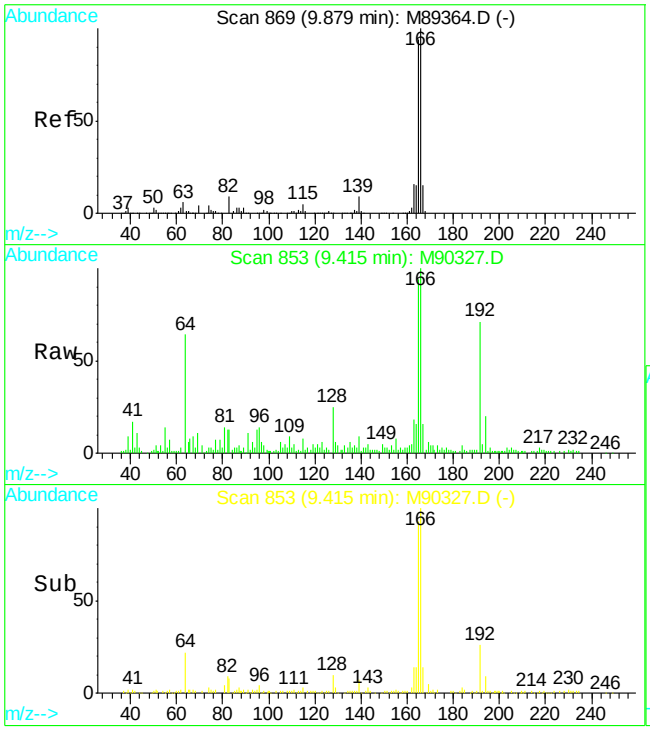
Tgt Ion:153 Resp: 17190

Ion	Ratio	Lower	Upper
153	100		
152	46.1	17.5	77.5
154	76.8	56.4	116.4



9.1.19

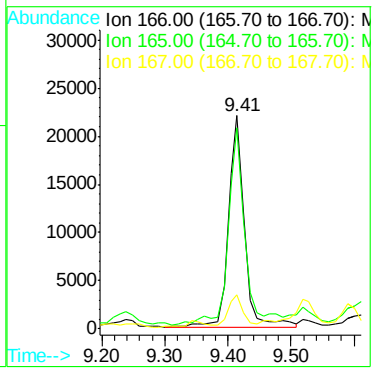
9

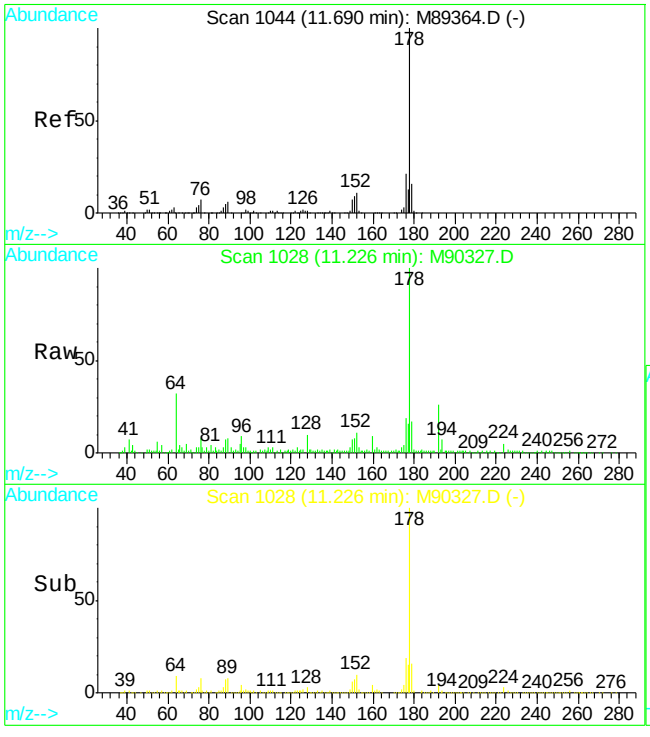


#66
Fluorene
Concen: 4.60 ppb
RT: 9.41 min Scan# 853
Delta R.T. -0.07 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:166 Resp: 38824

Ion	Ratio	Lower	Upper
166	100		
165	90.9	61.7	121.7
167	11.8	0.0	45.5

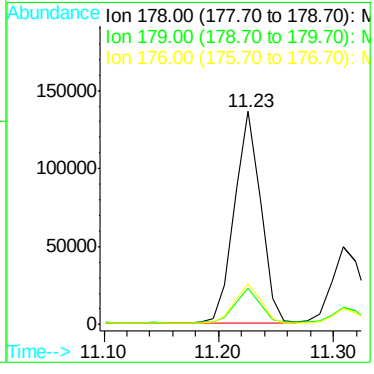




#77
Phenanthrene
Concen: 19.56 ppb
RT: 11.23 min Scan# 1028
Delta R.T. -0.07 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:178 Resp: 215509

Ion	Ratio	Lower	Upper
178	100		
179	15.9	0.0	47.4
176	18.8	0.0	50.3



9.1.19

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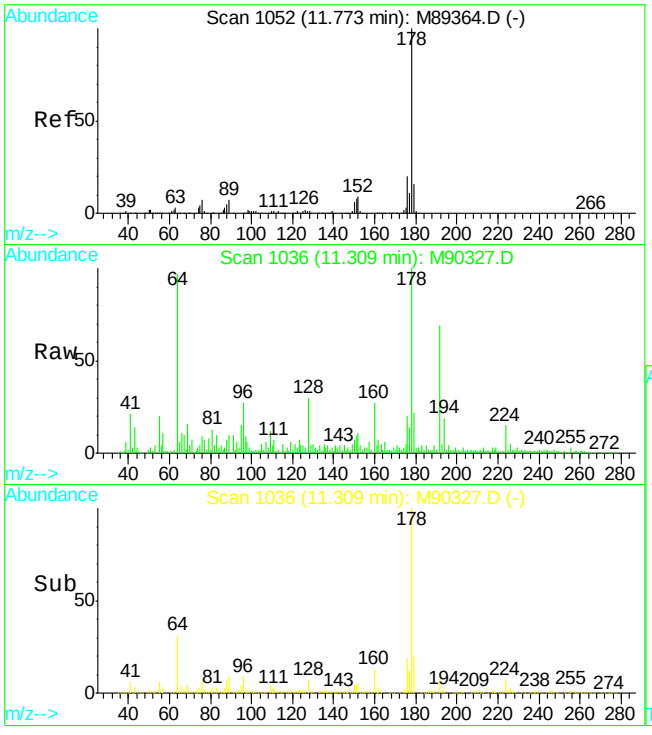
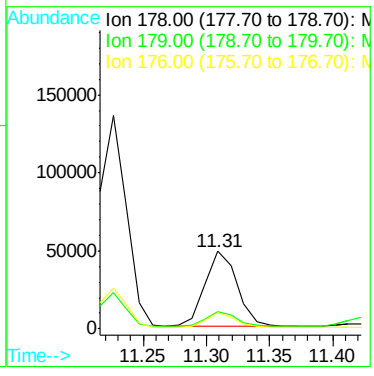
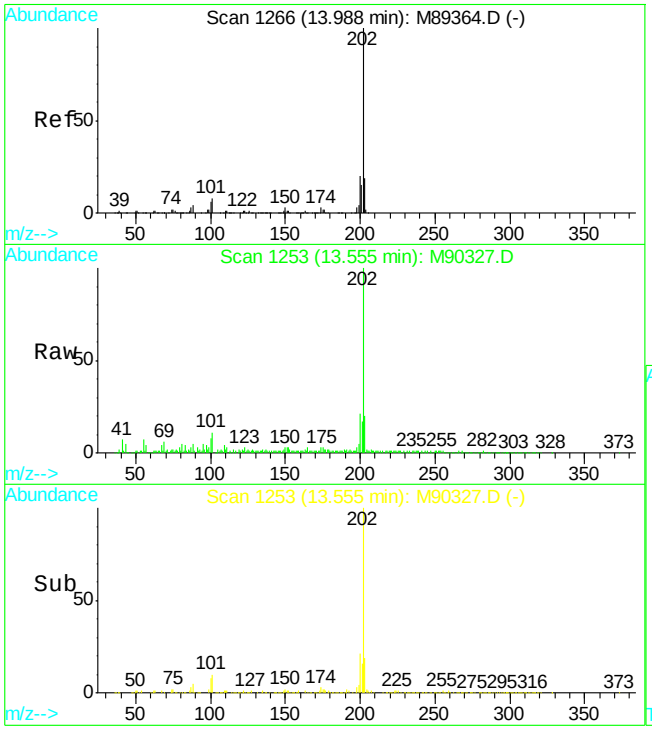


#78
Anthracene
Concen: 8.07 ppb
RT: 11.31 min Scan# 1036
Delta R.T. -0.07 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:178 Resp: 85787

Ion	Ratio	Lower	Upper
178	100		
179	19.7	0.0	47.3
176	19.4	0.0	50.3

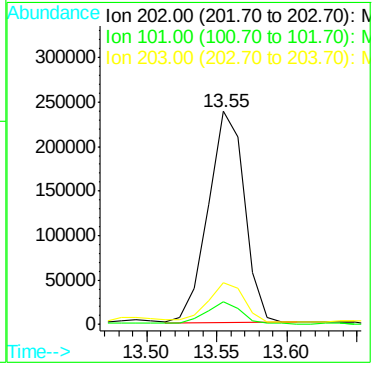


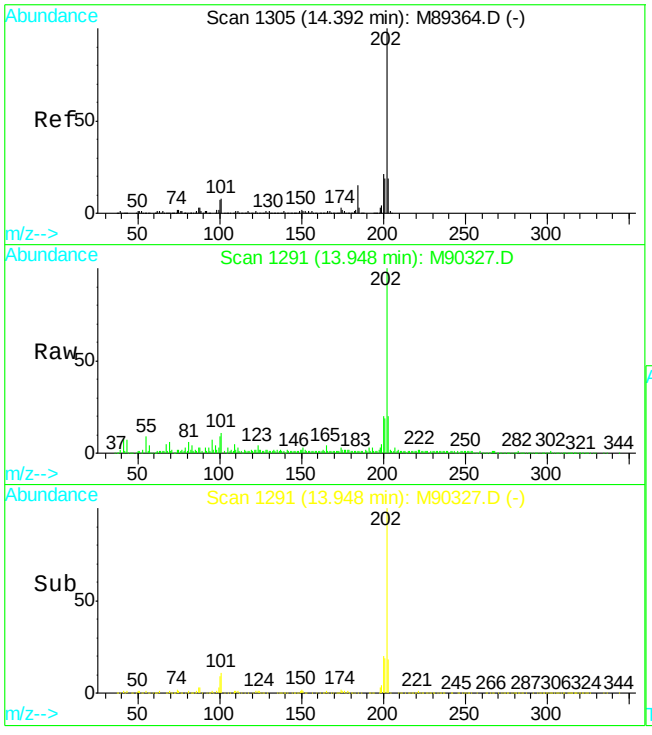


#81
Fluoranthene
Concen: 30.80 ppb
RT: 13.55 min Scan# 1253
Delta R.T. -0.03 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:202 Resp: 424285

Ion	Ratio	Lower	Upper
202	100		
101	10.3	0.0	40.6
203	18.1	0.0	50.3

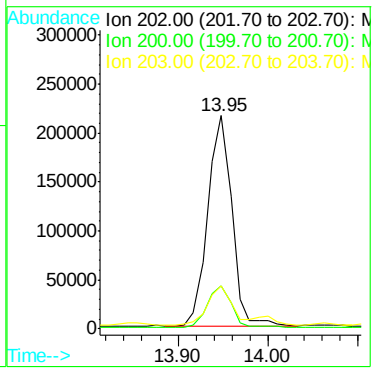


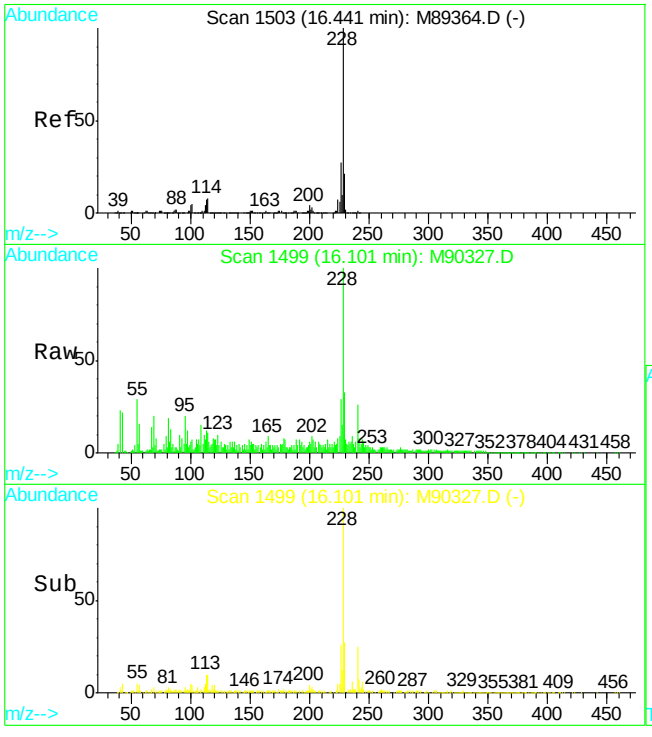


#84
Pyrene
Concen: 32.27 ppb
RT: 13.95 min Scan# 1291
Delta R.T. -0.03 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:202 Resp: 397370

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	51.0
203	18.7	0.0	50.0

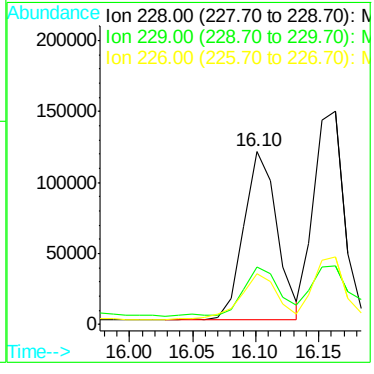


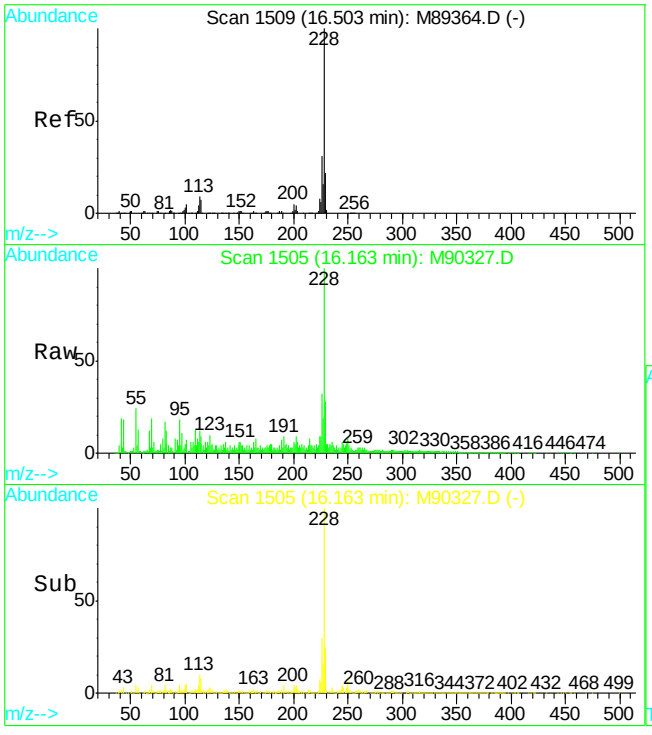


#88
Benzo[a]anthracene
Concen: 18.20 ppb
RT: 16.10 min Scan# 1499
Delta R.T. -0.02 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:228 Resp: 217711

Ion	Ratio	Lower	Upper
228	100		
229	27.2	0.0	53.2
226	26.9	0.0	58.3

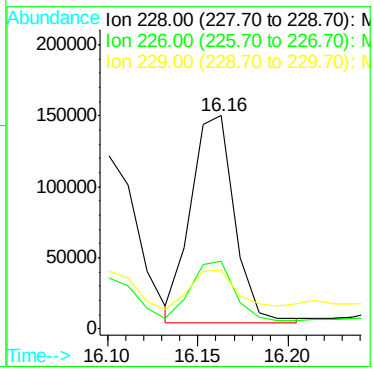


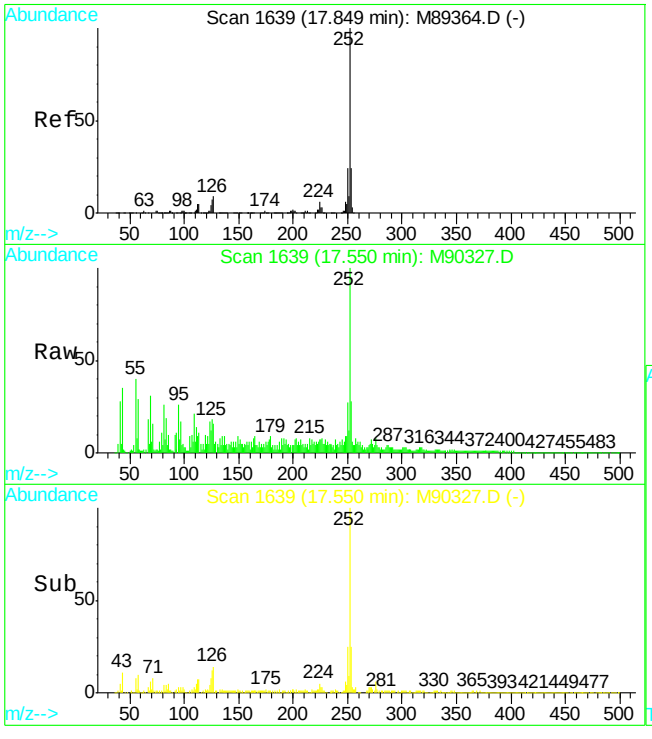


#90
Chrysene
Concen: 22.72 ppb
RT: 16.16 min Scan# 1505
Delta R.T. -0.02 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:228 Resp: 245682

Ion	Ratio	Lower	Upper
228	100		
226	29.5	2.3	62.3
229	18.6	0.0	54.2

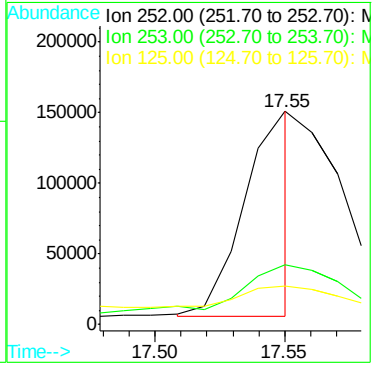


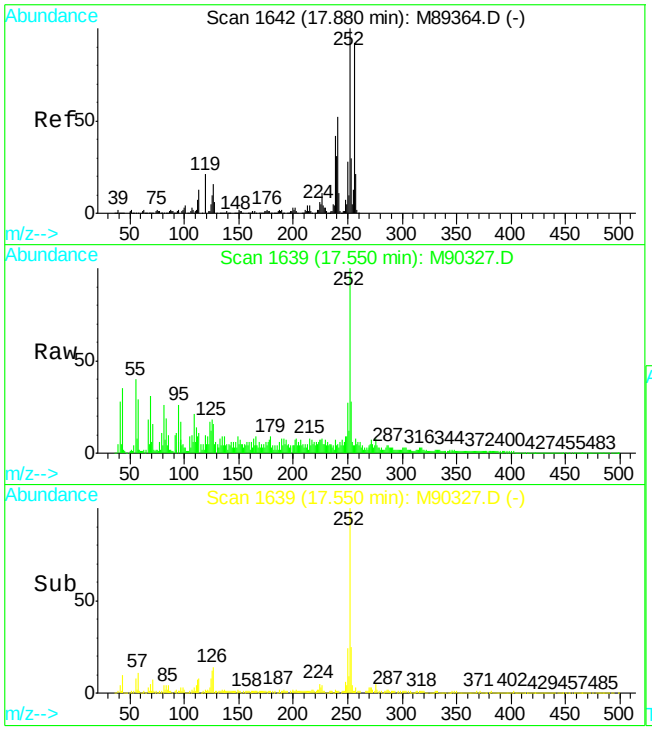


#94
Benzo[b]fluoranthene
Concen: 16.01 ppb m
RT: 17.55 min Scan# 1639
Delta R.T. 0.00 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:252 Resp: 198043

Ion	Ratio	Lower	Upper
252	100		
253	28.1	0.0	55.6
125	18.2	0.0	40.3

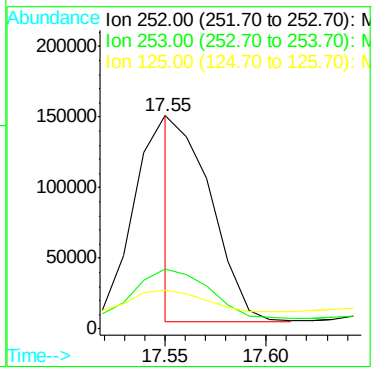


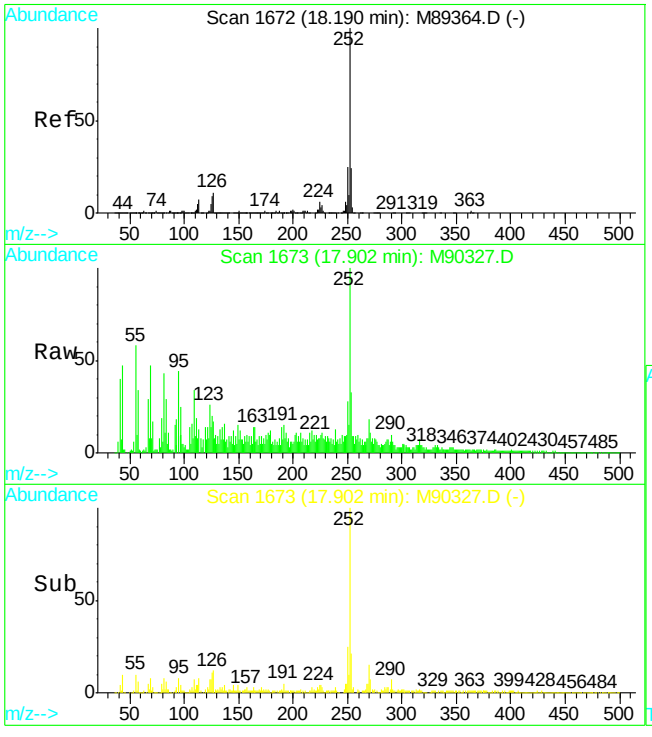


#95
Benzo[k]fluoranthene
Concen: 15.15 ppb m
RT: 17.55 min Scan# 1639
Delta R.T. -0.03 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:252 Resp: 176741

Ion	Ratio	Lower	Upper
252	100		
253	28.1	0.0	58.9
125	18.2	0.0	43.1

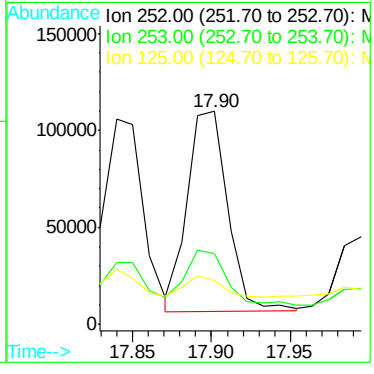


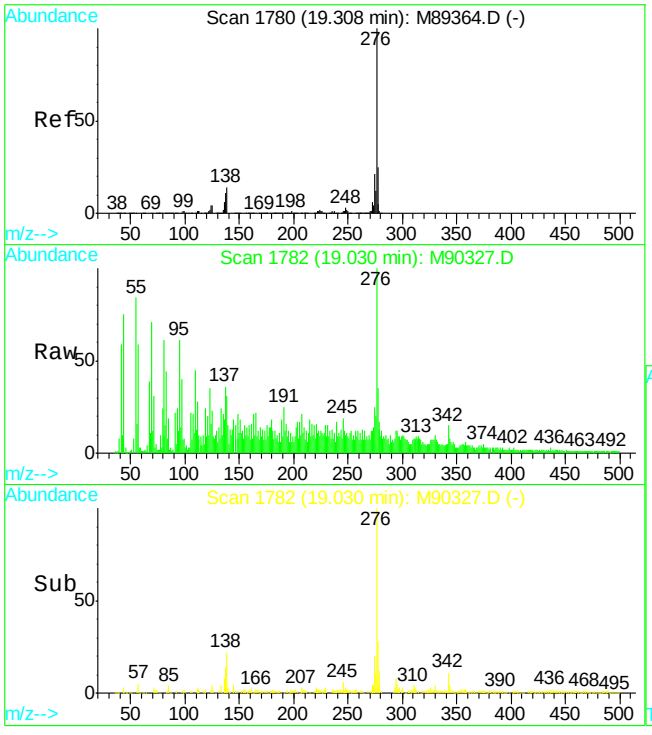


#96
Benzo[a]pyrene
Concen: 17.01 ppb
RT: 17.90 min Scan# 1673
Delta R.T. 0.01 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:252 Resp: 182680

Ion	Ratio	Lower	Upper
252	100		
253	25.2	0.0	55.8
125	8.0	0.0	42.8

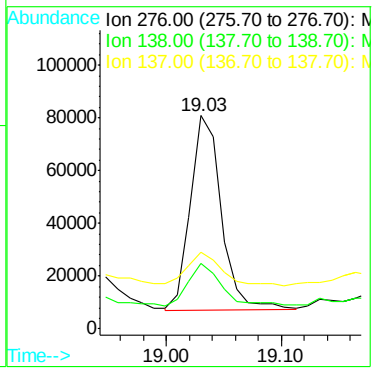


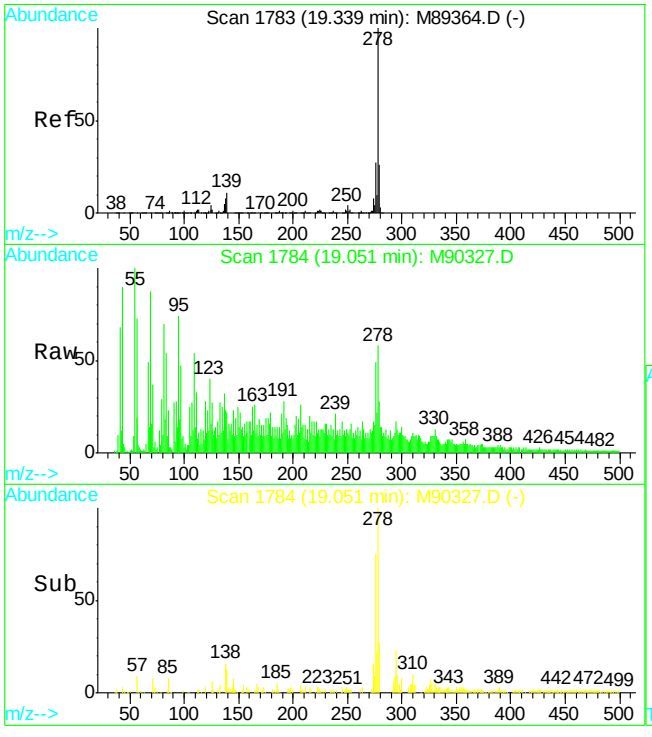


#97
Indeno[1,2,3-cd]pyrene
Concen: 11.82 ppb
RT: 19.03 min Scan# 1782
Delta R.T. 0.02 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:276 Resp: 138782

Ion	Ratio	Lower	Upper
276	100		
138	22.0	0.0	51.4
137	16.2	0.0	45.7

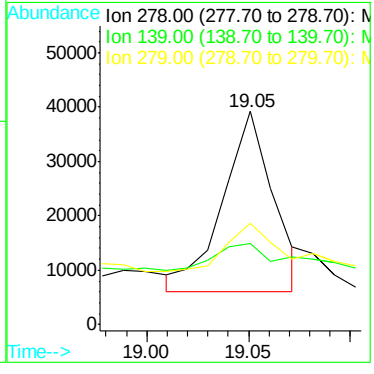


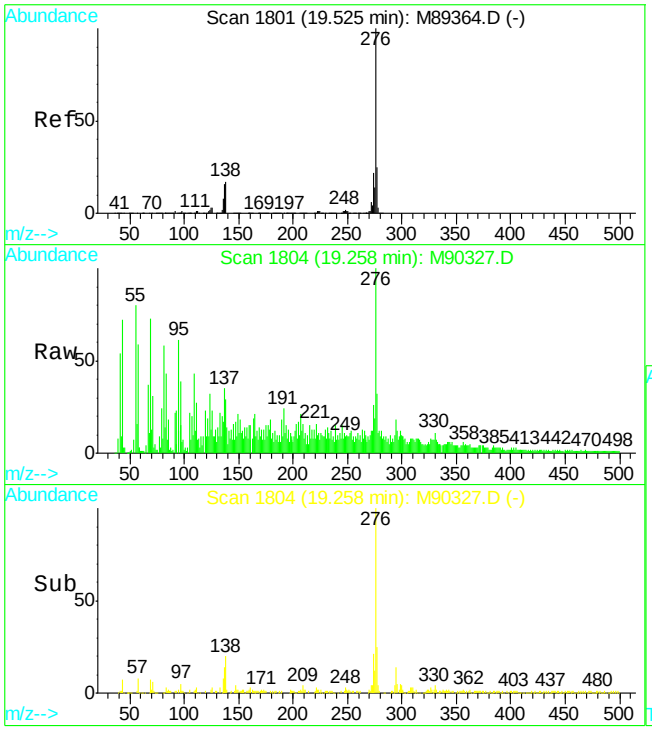


#99
Dibenz[a,h]anthracene
Concen: 5.98 ppb m
RT: 19.05 min Scan# 1784
Delta R.T. 0.01 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:278 Resp: 57501

Ion	Ratio	Lower	Upper
278	100		
139	37.9	0.0	45.4
279	47.6	0.0	58.2

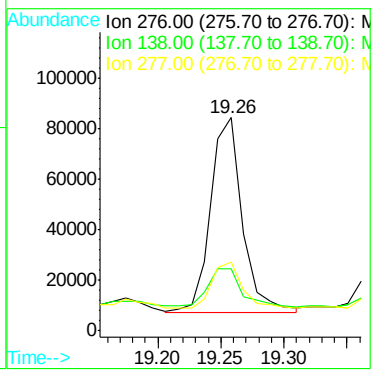




#101
Benzo[g,h,i]perylene
Concen: 13.99 ppb
RT: 19.26 min Scan# 1804
Delta R.T. 0.03 min
Lab File: M90327.D
Acq: 17 Dec 2012 7:06 pm

Tgt Ion:276 Resp: 134948

Ion	Ratio	Lower	Upper
276	100		
138	19.5	0.0	53.9
277	23.9	0.0	57.2



9.1.19

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90328.D Vial: 21
Acq On : 17 Dec 2012 7:35 pm Operator: olgaa
Sample : jb22822-15 Inst : MSM
Misc : op62037,em3659,32.2 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:35 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.19	152	87711	40.00	ppb	-0.07
24) Naphthalene-d8	5.15	136	331647	40.00	ppb	-0.07
47) Acenaphthene-d10	8.39	164	214224	40.00	ppb	-0.07
69) Phenanthrene-d10	11.19	188	362826	40.00	ppb	-0.06
83) Chrysene-d12	16.11	240	347068	40.00	ppb	-0.04
92) Perylene-d12	17.93	264	308508	40.00	ppb	-0.03
102) 1,4-Dichlorobenzene-d4a	3.19	152	87711	40.00	ppb	-0.07
104) Acenaphthene-d10a	8.39	164	214224	40.00	ppb	-0.07
106) Phenanthrene-d10a	11.19	188	362826	40.00	ppb	-0.06
108) Chrysene-d12a	16.11	240	347068	40.00	ppb	-0.04
System Monitoring Compounds						
5) 2-Fluorophenol	1.93	112	74728	26.31	ppb	-0.03
Spiked Amount 50.000			Recovery = 52.62%			
8) Phenol-d5	2.97	99	107645	29.98	ppb	0.00
Spiked Amount 50.000			Recovery = 59.96%			
25) Nitrobenzene-d5	4.05	82	73177	21.88	ppb	-0.06
Spiked Amount 50.000			Recovery = 43.76%			
51) 2-Fluorobiphenyl	7.22	172	211103	31.04	ppb	-0.08
Spiked Amount 50.000			Recovery = 62.08%			
73) 2,4,6-Tribromophenol	9.96	330	27531	42.71	ppb	-0.05
Spiked Amount 50.000			Recovery = 85.42%			
86) Terphenyl-d14	14.45	244	303003	42.71	ppb	-0.05
Spiked Amount 50.000			Recovery = 85.42%			

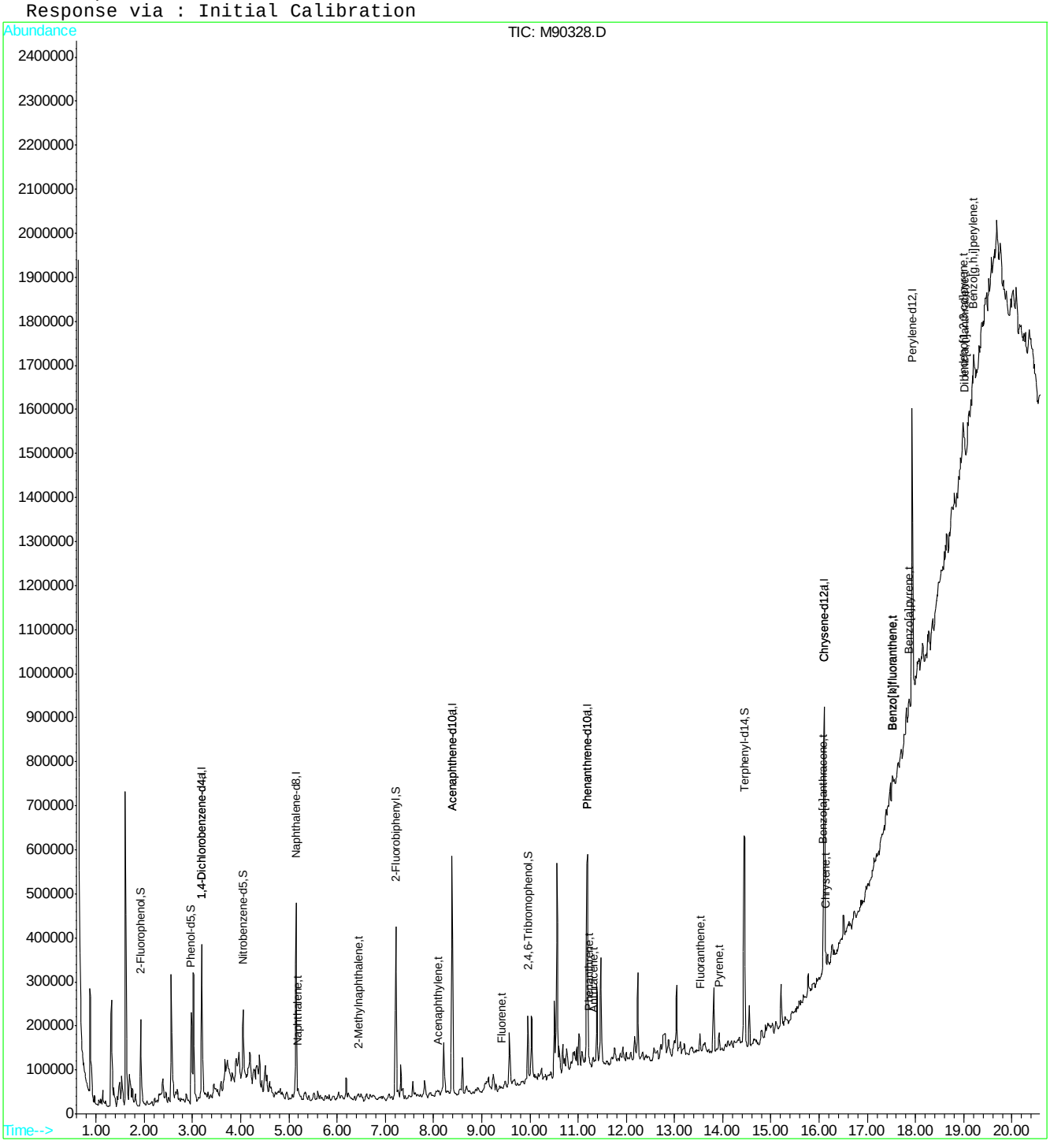
Target Compounds						Qvalue
38) Naphthalene	5.18	128	4284	0.47	ppb	98
44) 2-Methylnaphthalene	6.44	141	3443	0.61	ppb #	63
56) Acenaphthylene	8.09	152	4445	0.48	ppb	89
66) Fluorene	9.42	166	4412	0.65	ppb	84
77) Phenanthrene	11.22	178	14412	1.57	ppb	95
78) Anthracene	11.32	178	8664	0.98	ppb	97
81) Fluoranthene	13.53	202	26845	2.34	ppb	94
84) Pyrene	13.92	202	30644	2.93	ppb	94
88) Benzo[a]anthracene	16.09	228	16459	1.62	ppb	90
90) Chrysene	16.14	228	22917	2.50	ppb	89
94) Benzo[b]fluoranthene	17.52	252	27642m	2.72	ppb	
95) Benzo[k]fluoranthene	17.53	252	11713m	1.22	ppb	
96) Benzo[a]pyrene	17.87	252	18801	2.13	ppb	87
97) Indeno[1,2,3-cd]pyrene	18.99	276	20127	2.09	ppb	96
99) Dibenz[a,h]anthracene	19.01	278	6723m	0.85	ppb	
101) Benzo[g,h,i]perylene	19.20	276	22610	2.86	ppb	94

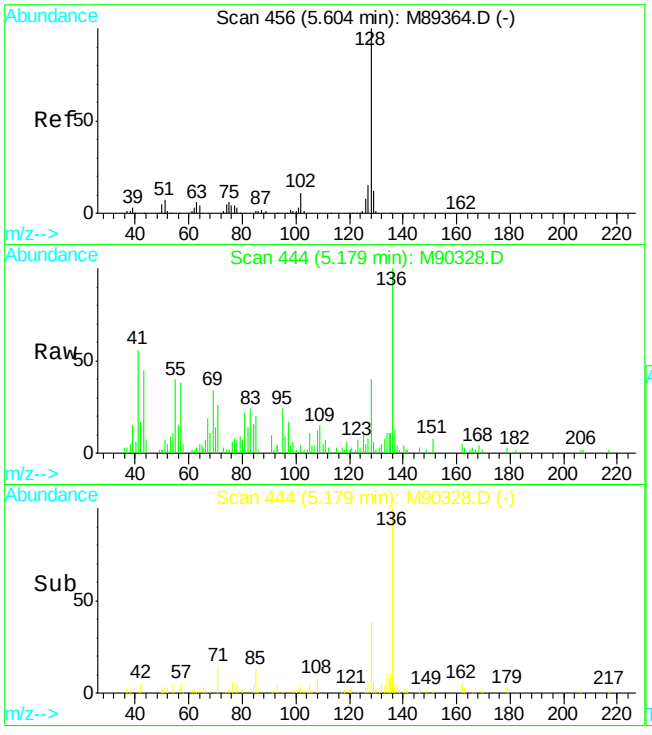
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90328.D Vial: 21
Acq On : 17 Dec 2012 7:35 pm Operator: olgaa
Sample : jb22822-15 Inst : MSM
Misc : op62037,em3659,32.2 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:35 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

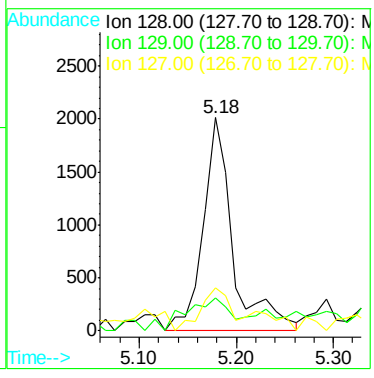


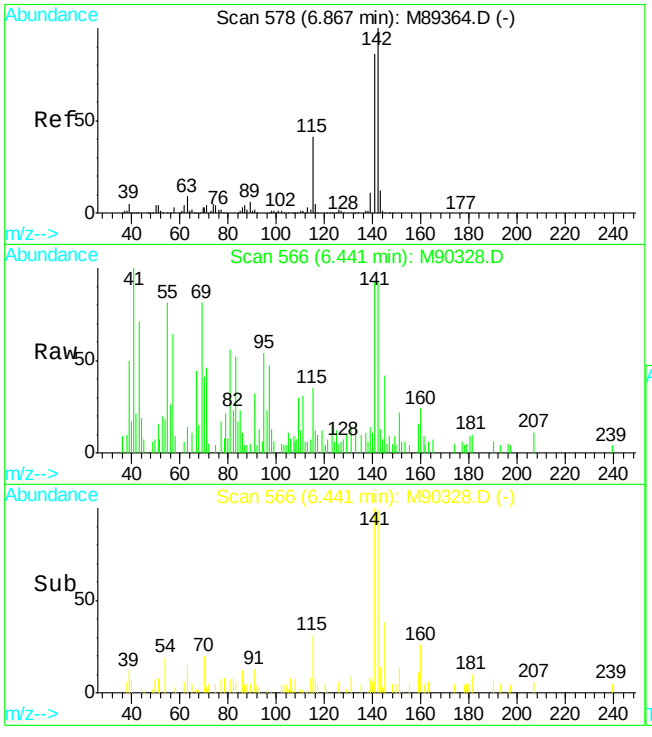


#38
Naphthalene
Concen: 0.47 ppb
RT: 5.18 min Scan# 444
Delta R.T. -0.07 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:128 Resp: 4284

Ion	Ratio	Lower	Upper
128	100		
129	10.9	0.0	42.1
127	15.9	0.0	45.2

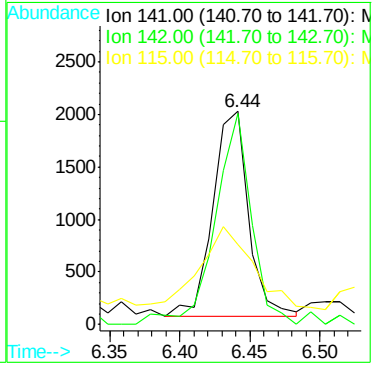




#44
2-Methylnaphthalene
Concen: 0.61 ppb
RT: 6.44 min Scan# 566
Delta R.T. -0.06 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:141 Resp: 3443

Ion	Ratio	Lower	Upper
141	100		
142	102.0	126.0	186.0#
115	29.2	13.5	73.5



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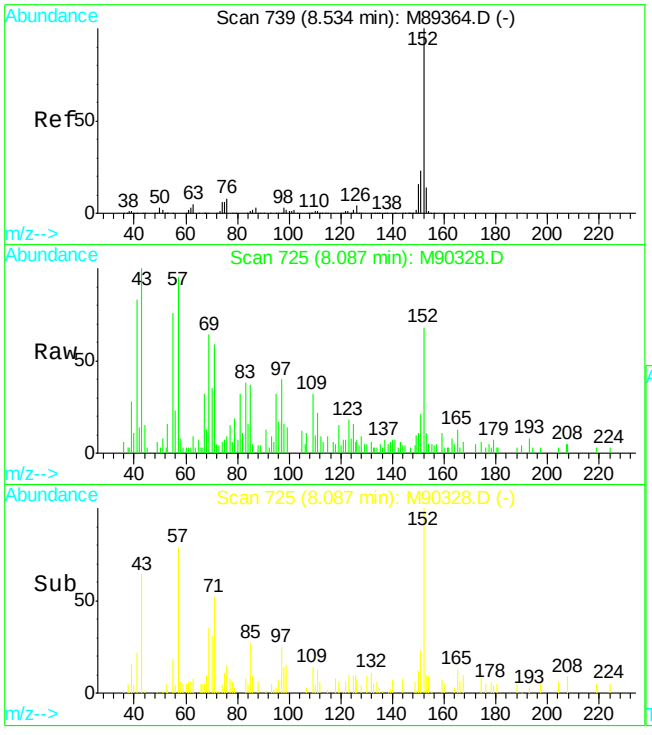
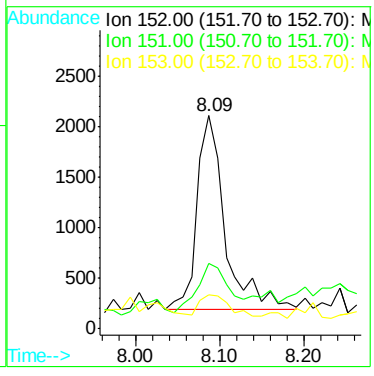
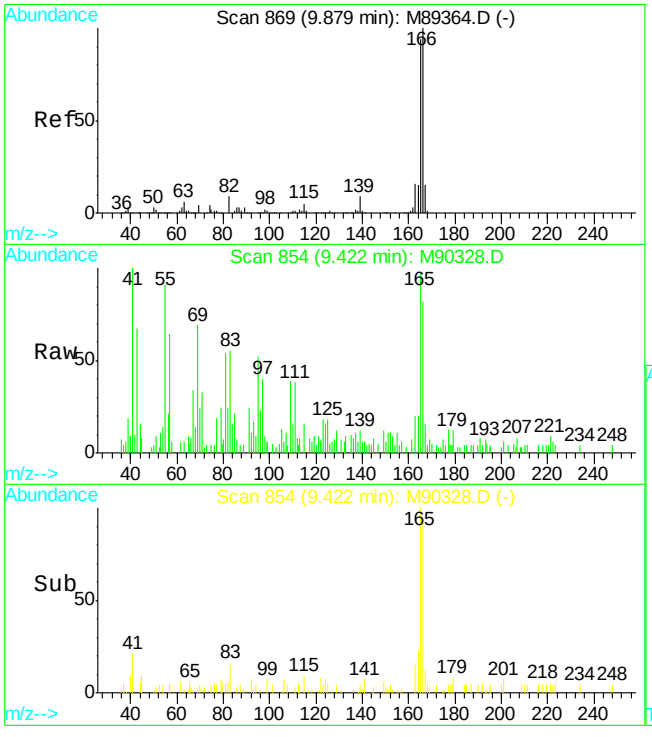


#56
Acenaphthylene
Concen: 0.48 ppb
RT: 8.09 min Scan# 725
Delta R.T. -0.06 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:152 Resp: 4445

Ion	Ratio	Lower	Upper
152	100		
151	19.4	0.0	52.4
153	7.1	0.0	44.5

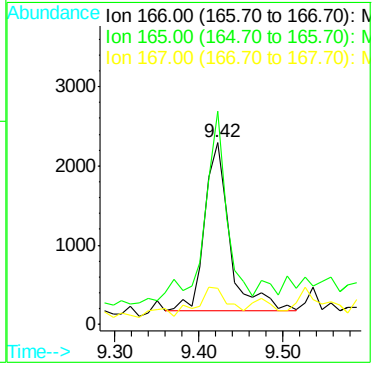




#66
Fluorene
Concen: 0.65 ppb
RT: 9.42 min Scan# 854
Delta R.T. -0.06 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:166 Resp: 4412

Ion	Ratio	Lower	Upper
166	100		
165	106.9	61.7	121.7
167	9.9	0.0	45.5



9.1.20

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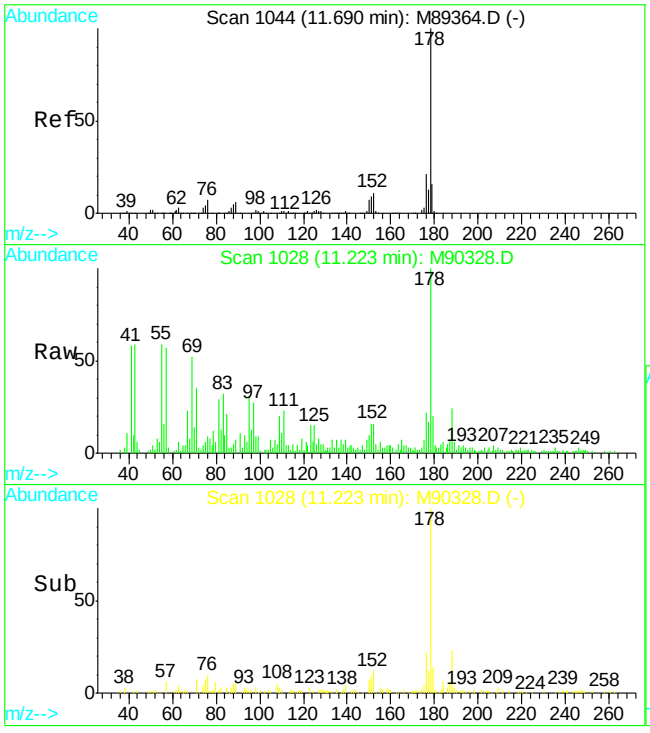
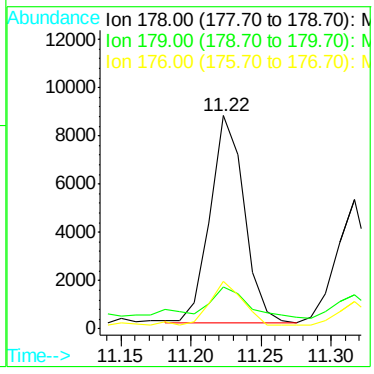
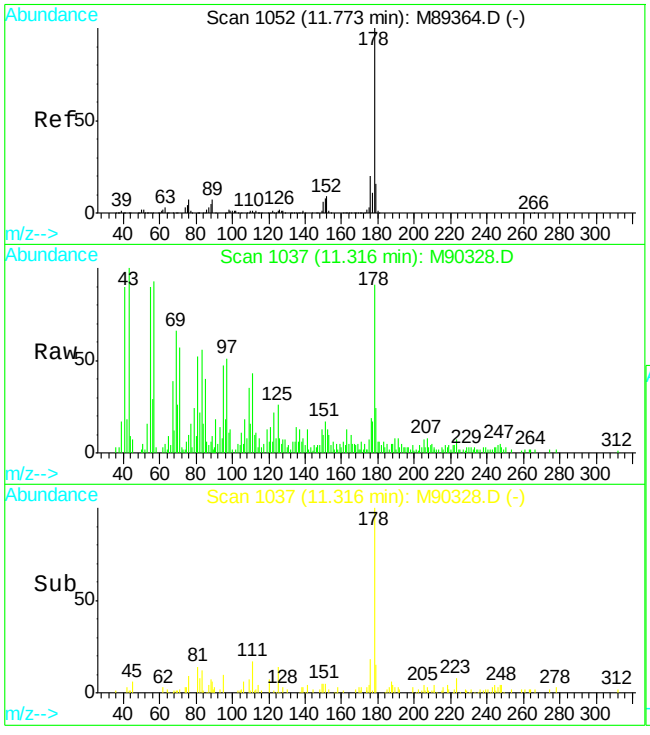


#77
Phenanthrene
Concen: 1.57 ppb
RT: 11.22 min Scan# 1028
Delta R.T. -0.07 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:178 Resp: 14412

Ion	Ratio	Lower	Upper
178	100		
179	13.1	0.0	47.4
176	20.4	0.0	50.3

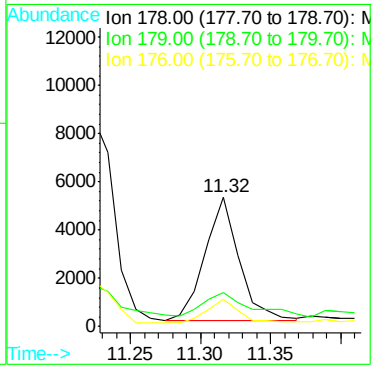




#78
Anthracene
Concen: 0.98 ppb
RT: 11.32 min Scan# 1037
Delta R.T. -0.06 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:178 Resp: 8664

Ion	Ratio	Lower	Upper
178	100		
179	18.0	0.0	47.3
176	18.5	0.0	50.3



9.1.20

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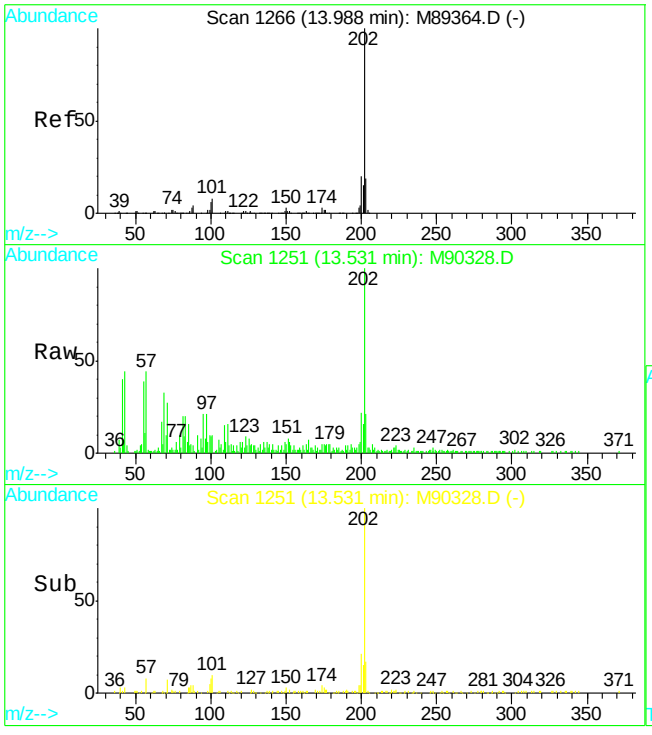
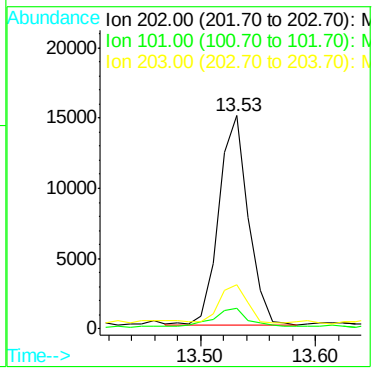
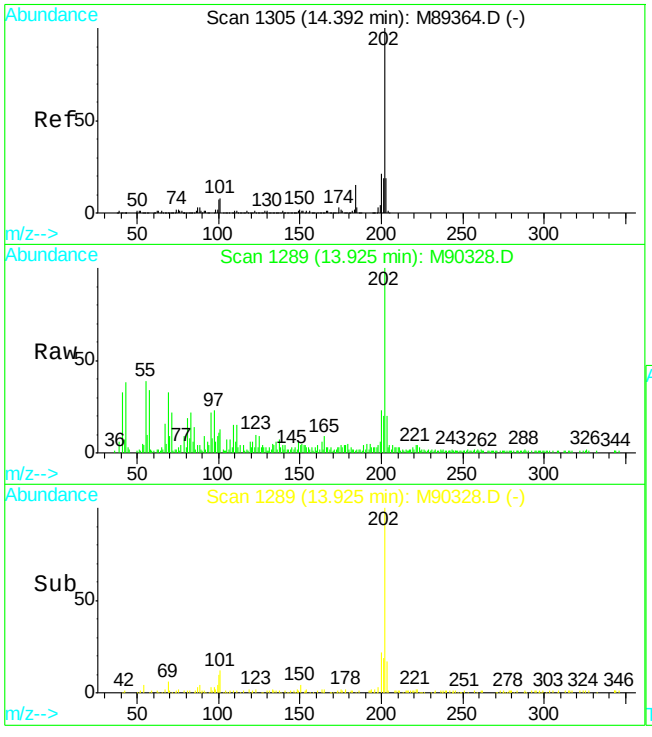


#81
Fluoranthene
Concen: 2.34 ppb
RT: 13.53 min Scan# 1251
Delta R.T. -0.05 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:202 Resp: 26845

Ion	Ratio	Lower	Upper
202	100		
101	8.1	0.0	40.6
203	17.5	0.0	50.3

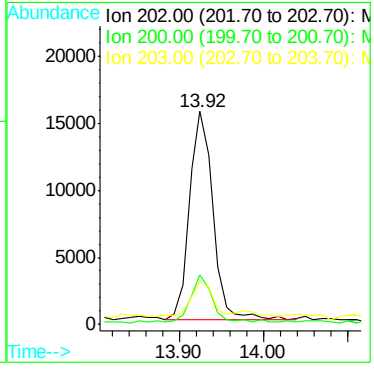




#84
Pyrene
Concen: 2.93 ppb
RT: 13.92 min Scan# 1289
Delta R.T. -0.05 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:202 Resp: 30644

Ion	Ratio	Lower	Upper
202	100		
200	22.4	0.0	51.0
203	15.9	0.0	50.0



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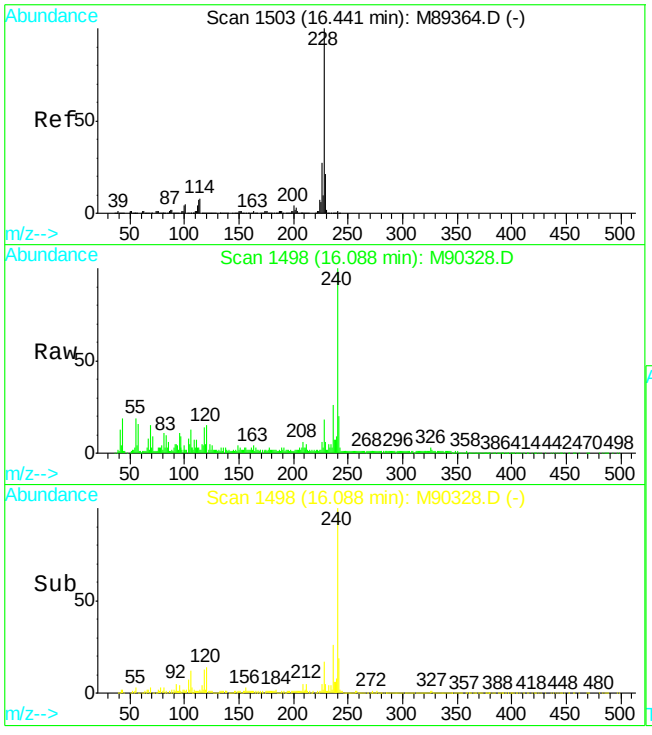
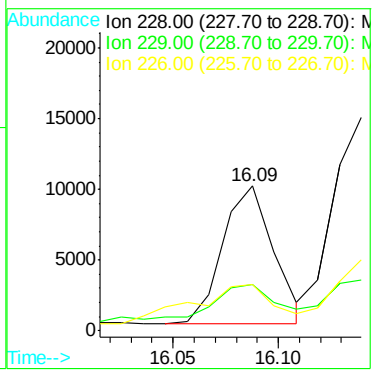
9

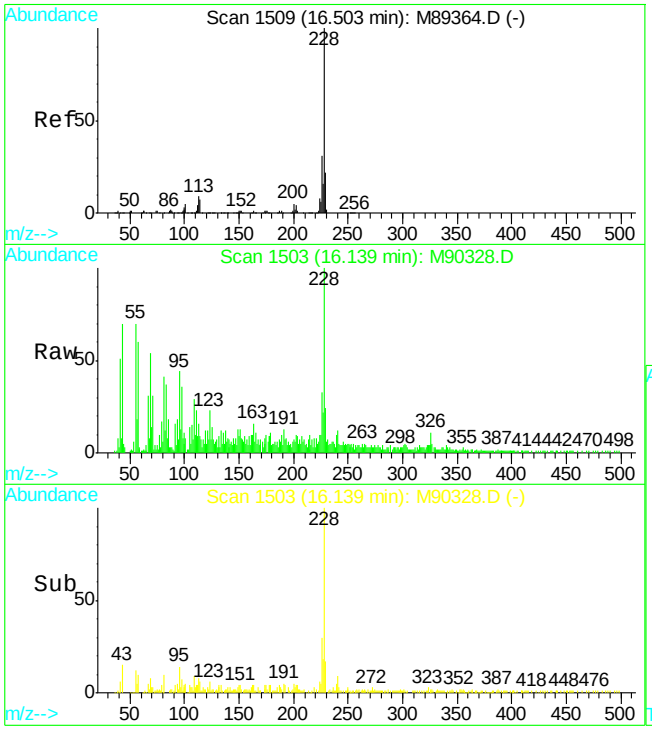


#88
Benzo[a]anthracene
Concen: 1.62 ppb
RT: 16.09 min Scan# 1498
Delta R.T. -0.03 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:228 Resp: 16459

Ion	Ratio	Lower	Upper
228	100		
229	22.2	0.0	53.2
226	19.9	0.0	58.3

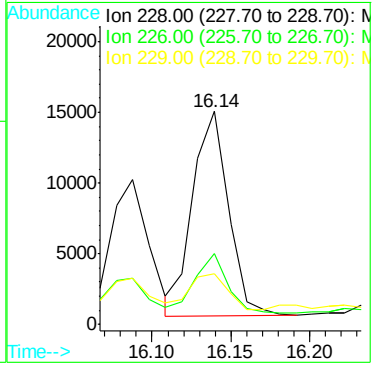




#90
Chrysene
Concen: 2.50 ppb
RT: 16.14 min Scan# 1503
Delta R.T. -0.04 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:228 Resp: 22917

Ion	Ratio	Lower	Upper
228	100		
226	29.0	2.3	62.3
229	15.6	0.0	54.2



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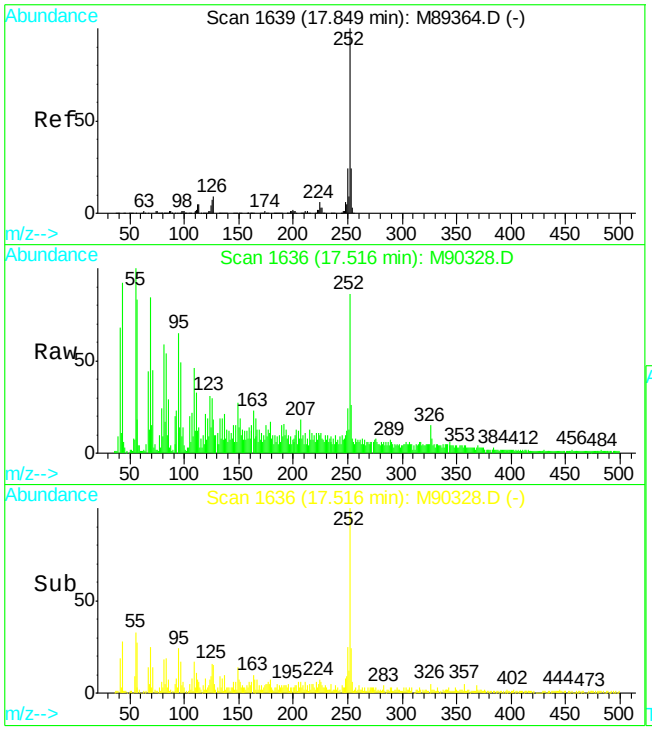
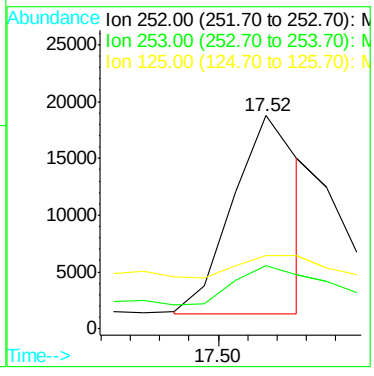
9

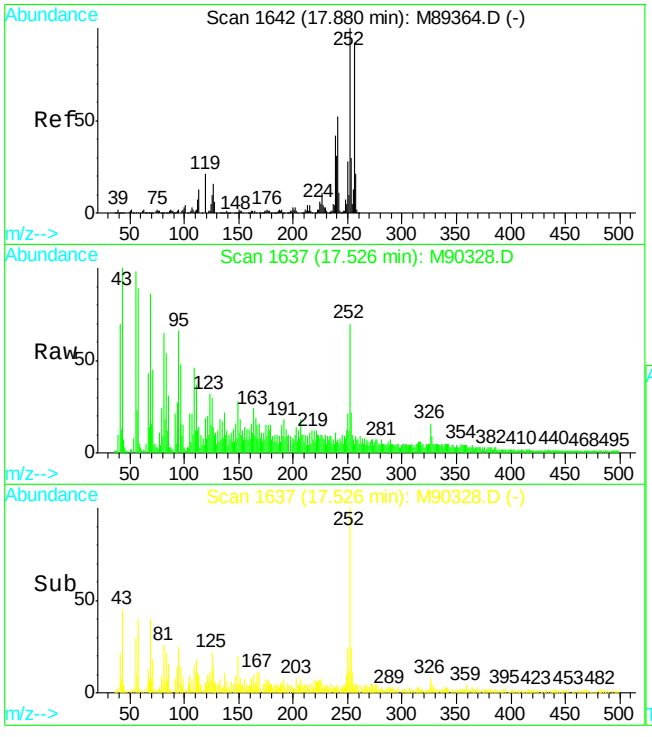


#94
Benzo[b]fluoranthene
Concen: 2.72 ppb m
RT: 17.52 min Scan# 1636
Delta R.T. -0.03 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:252 Resp: 27642

Ion	Ratio	Lower	Upper
252	100		
253	29.8	0.0	55.6
125	34.3	0.0	40.3

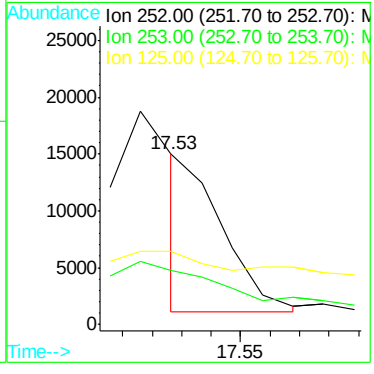




#95
Benzo[k]fluoranthene
Concen: 1.22 ppb m
RT: 17.53 min Scan# 1637
Delta R.T. -0.05 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:252 Resp: 11713

Ion	Ratio	Lower	Upper
252	100		
253	31.5	0.0	58.9
125	42.9	0.0	43.1



9.1.20

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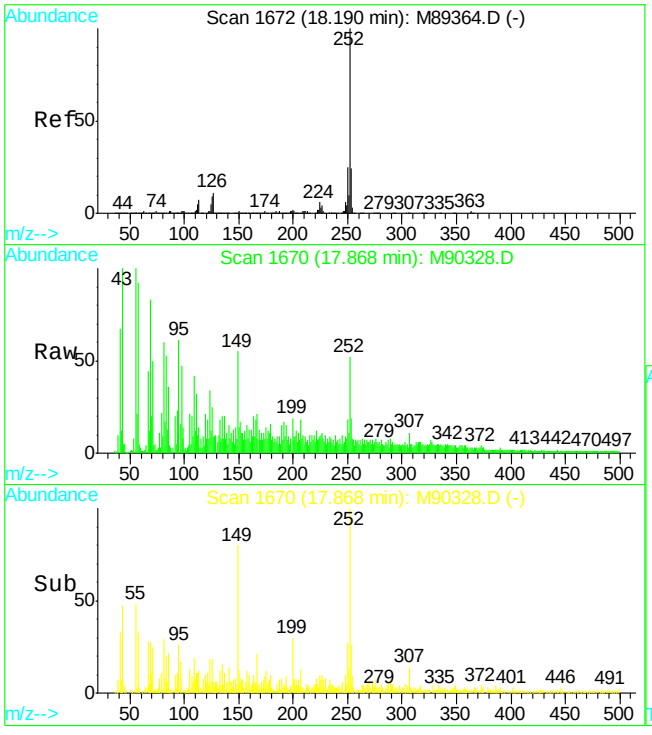
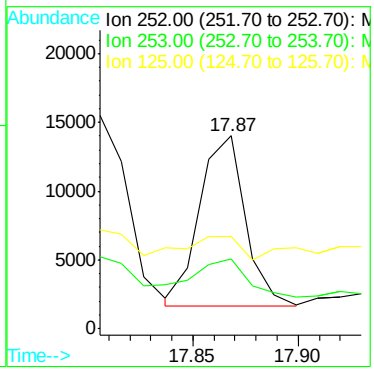
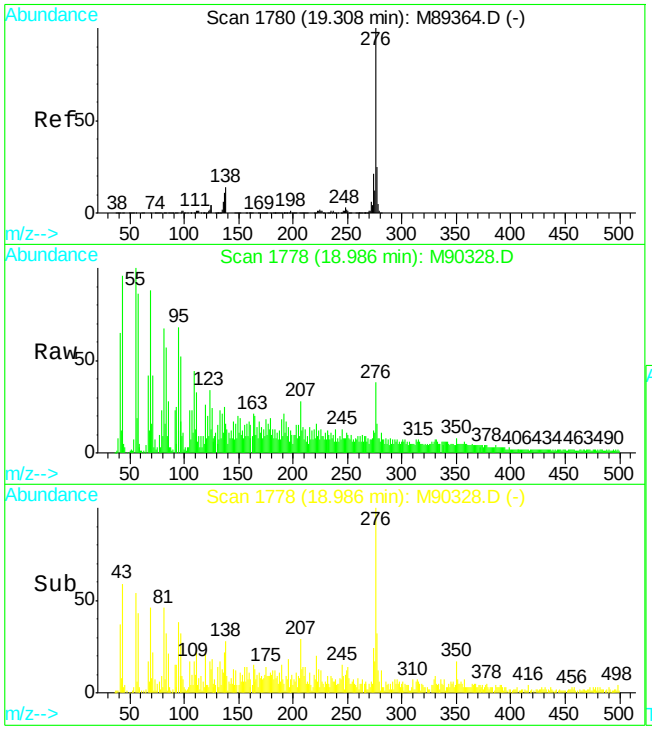


#96
Benzo[a]pyrene
Concen: 2.13 ppb
RT: 17.87 min Scan# 1670
Delta R.T. -0.02 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:252 Resp: 18801

Ion	Ratio	Lower	Upper
252	100		
253	19.3	0.0	55.8
125	7.0	0.0	42.8

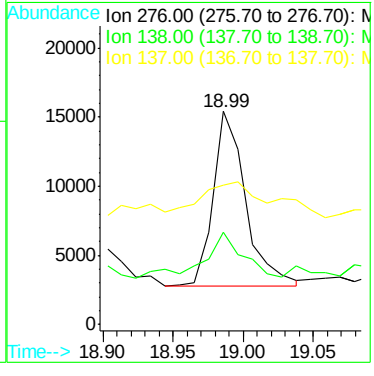




#97
Indeno[1,2,3-cd]pyrene
Concen: 2.09 ppb
RT: 18.99 min Scan# 1778
Delta R.T. -0.02 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:276 Resp: 20127

Ion	Ratio	Lower	Upper
276	100		
138	20.8	0.0	51.4
137	12.2	0.0	45.7



9.1.20

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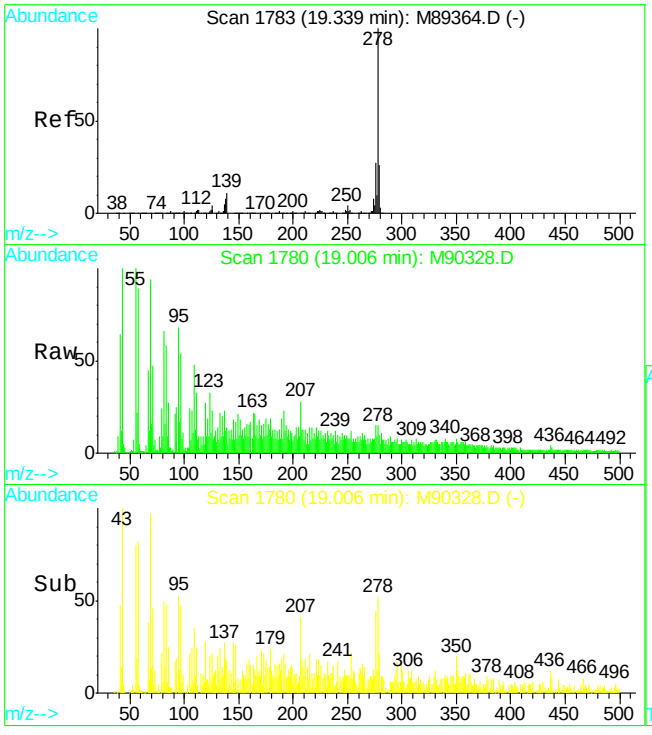
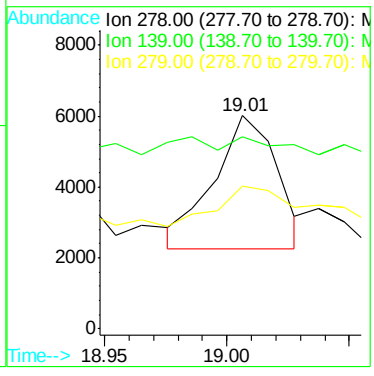
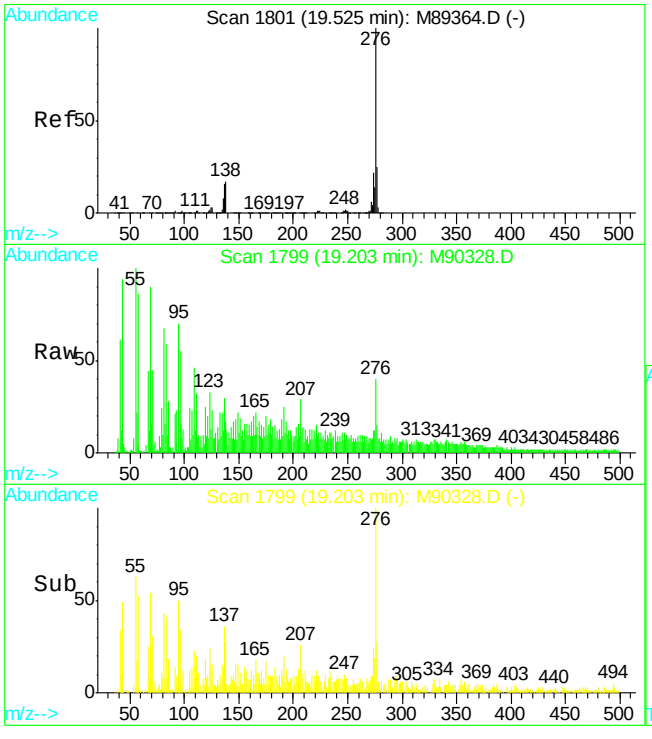


#99
Dibenz[a,h]anthracene
Concen: 0.85 ppb m
RT: 19.01 min Scan# 1780
Delta R.T. -0.03 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:278 Resp: 6723

Ion	Ratio	Lower	Upper
278	100		
139	89.9	0.0	45.4#
279	66.8	0.0	58.2#

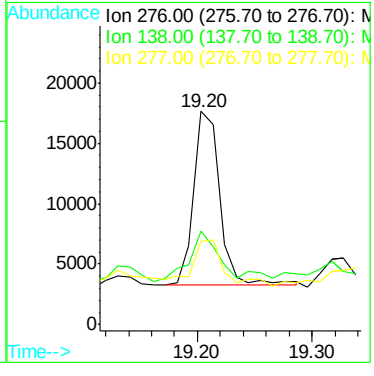




#101
Benzo[g,h,i]perylene
Concen: 2.86 ppb
RT: 19.20 min Scan# 1799
Delta R.T. -0.02 min
Lab File: M90328.D
Acq: 17 Dec 2012 7:35 pm

Tgt Ion:276 Resp: 22610

Ion	Ratio	Lower	Upper
276	100		
138	26.1	0.0	53.9
277	23.3	0.0	57.2



9.1.20

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90330.D Vial: 23
Acq On : 17 Dec 2012 8:34 pm Operator: olgaa
Sample : jb22822-16 Inst : MSM
Misc : op62037,em3659,33.7,,,1,2 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:39 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 09:02:41 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.20	152	109684	40.00	ppb	0.03
24) Naphthalene-d8	5.15	136	422791	40.00	ppb	0.03
47) Acenaphthene-d10	8.39	164	270293	40.00	ppb	0.04
69) Phenanthrene-d10	11.20	188	455750	40.00	ppb	0.07
83) Chrysene-d12	16.13	240	403346	40.00	ppb	0.08
92) Perylene-d12	17.96	264	348126	40.00	ppb	0.09
102) 1,4-Dichlorobenzene-d4a	3.20	152	109684	40.00	ppb	0.03
104) Acenaphthene-d10a	8.39	164	270293	40.00	ppb	0.04
106) Phenanthrene-d10a	11.20	188	455750	40.00	ppb	0.07
108) Chrysene-d12a	16.13	240	403346	40.00	ppb	0.08
System Monitoring Compounds						
5) 2-Fluorophenol	1.93	112	41605	11.72	ppb	0.02
Spiked Amount 50.000			Recovery = 23.44%			
8) Phenol-d5	2.97	99	60187	13.40	ppb	0.04
Spiked Amount 50.000			Recovery = 26.80%			
25) Nitrobenzene-d5	4.05	82	45650	10.70	ppb	0.03
Spiked Amount 50.000			Recovery = 21.40%			
51) 2-Fluorobiphenyl	7.22	172	116569	13.59	ppb	0.03
Spiked Amount 50.000			Recovery = 27.18%			
73) 2,4,6-Tribromophenol	9.96	330	14737	18.20	ppb	0.05
Spiked Amount 50.000			Recovery = 36.40%			
86) Terphenyl-d14	14.45	244	155107	18.81	ppb	0.06
Spiked Amount 50.000			Recovery = 37.62%			

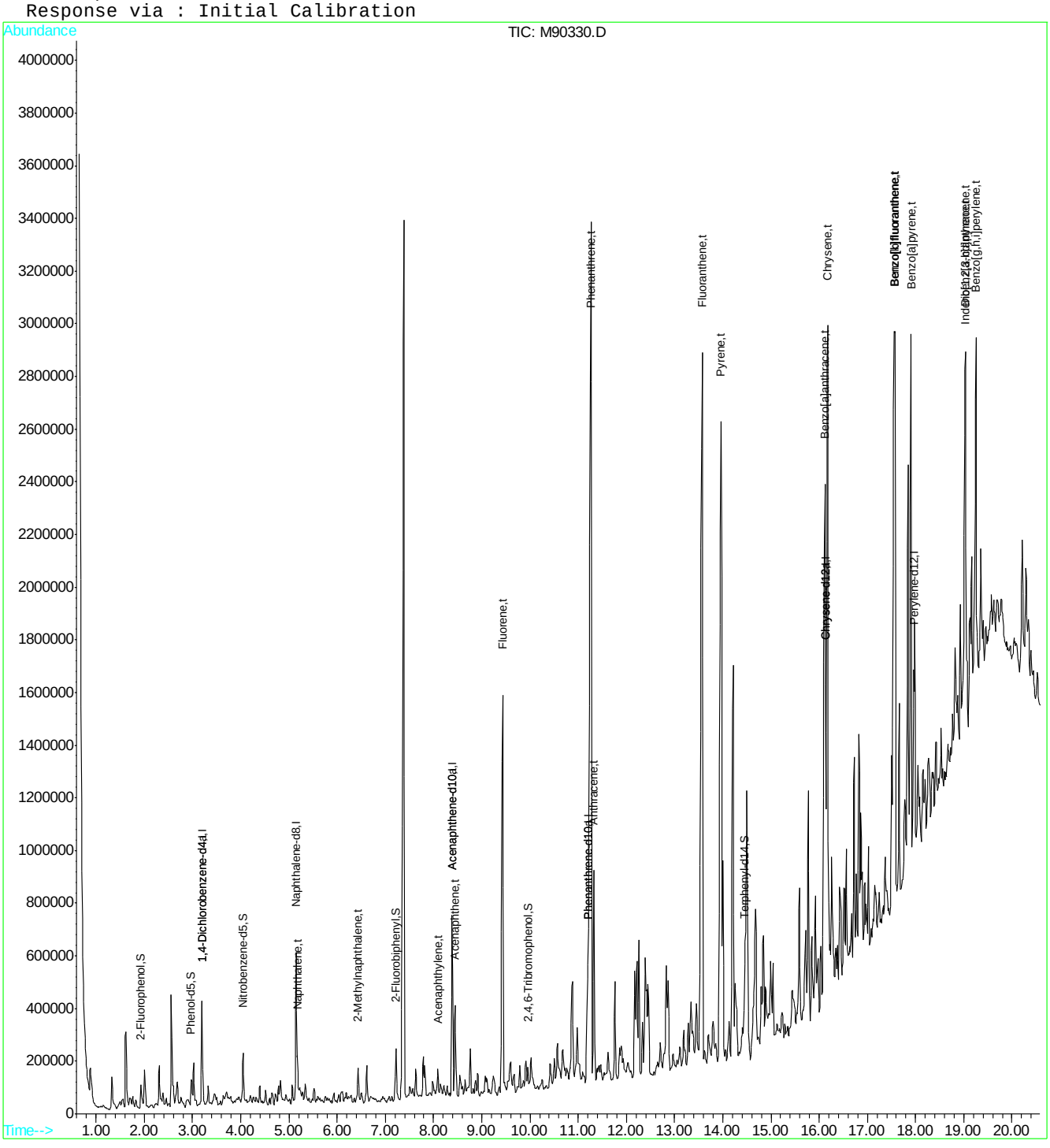
Target Compounds						Qvalue
38) Naphthalene	5.18	128	118557	10.22	ppb	99
44) 2-Methylnaphthalene	6.43	141	47753	6.69	ppb	94
56) Acenaphthylene	8.09	152	86972	7.39	ppb	99
59) Acenaphthene	8.45	153	136891	18.12	ppb	96
66) Fluorene	9.43	166	841760	97.90	ppb	99
77) Phenanthrene	11.26	178	2919645	252.89	ppb	82
78) Anthracene	11.33	178	545866	48.99	ppb	94
81) Fluoranthene	13.57	202	2729206	189.04	ppb	88
84) Pyrene	13.96	202	2517692	207.28	ppb	87
88) Benzo[a]anthracene	16.12	228	1466498	124.31	ppb	84
90) Chrysene	16.18	228	1621604	152.04	ppb	87
94) Benzo[b]fluoranthene	17.56	252	1738222m	151.74	ppb	
95) Benzo[k]fluoranthene	17.57	252	567180m	52.50	ppb	
96) Benzo[a]pyrene	17.91	252	1169244	117.51	ppb	94
97) Indeno[1,2,3-cd]pyrene	19.03	276	897046	82.51	ppb	88
99) Dibenz[a,h]anthracene	19.04	278	355301m	39.87	ppb	
101) Benzo[g,h,i]perylene	19.25	276	787607	88.16	ppb	98

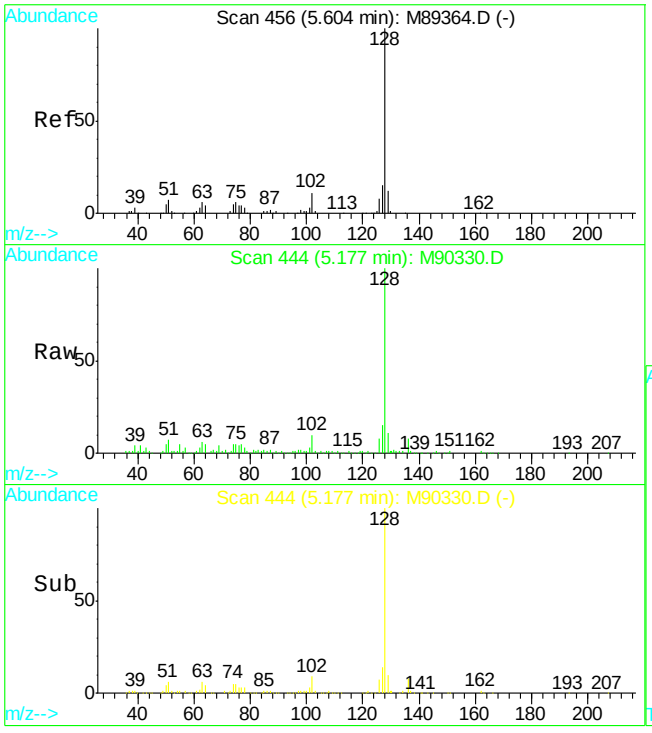
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90330.D Vial: 23
Acq On : 17 Dec 2012 8:34 pm Operator: olgaa
Sample : jb22822-16 Inst : MSM
Misc : op62037,em3659,33.7,,,1,2 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:39 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

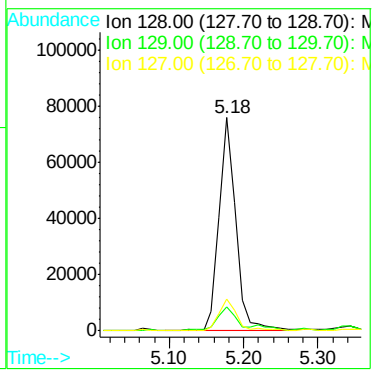


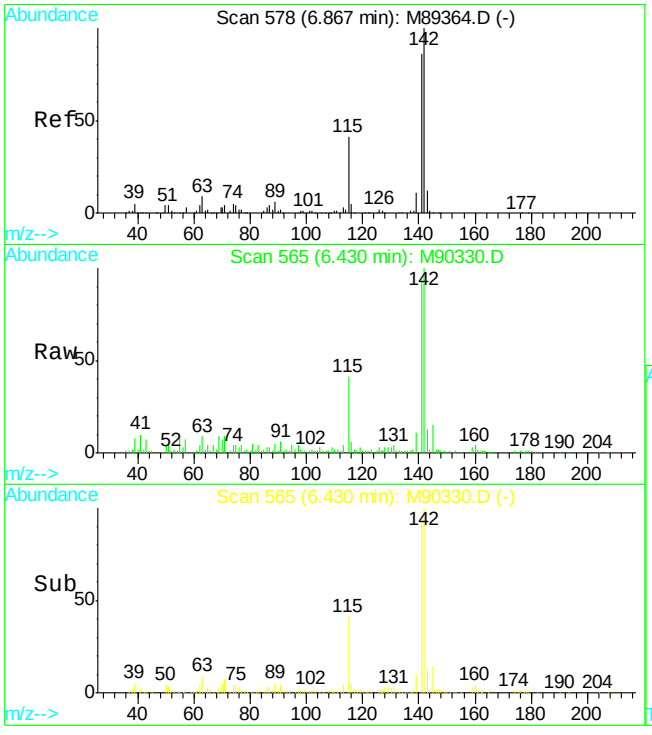


#38
Naphthalene
Concen: 10.22 ppb
RT: 5.18 min Scan# 444
Delta R.T. 0.03 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:128 Resp: 118557

Ion	Ratio	Lower	Upper
128	100		
129	10.9	0.0	41.7
127	14.4	0.0	44.6

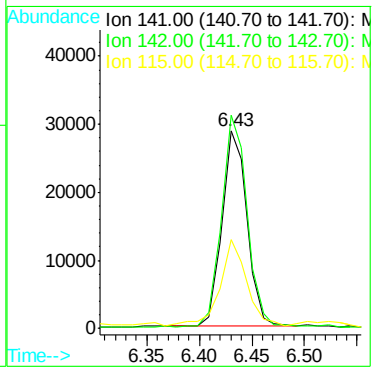




#44
2-Methylnaphthalene
Concen: 6.69 ppb
RT: 6.43 min Scan# 565
Delta R.T. 0.03 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:141 Resp: 47753

Ion	Ratio	Lower	Upper
141	100		
142	108.0	84.8	144.8
115	43.1	9.3	69.3



9.1.21

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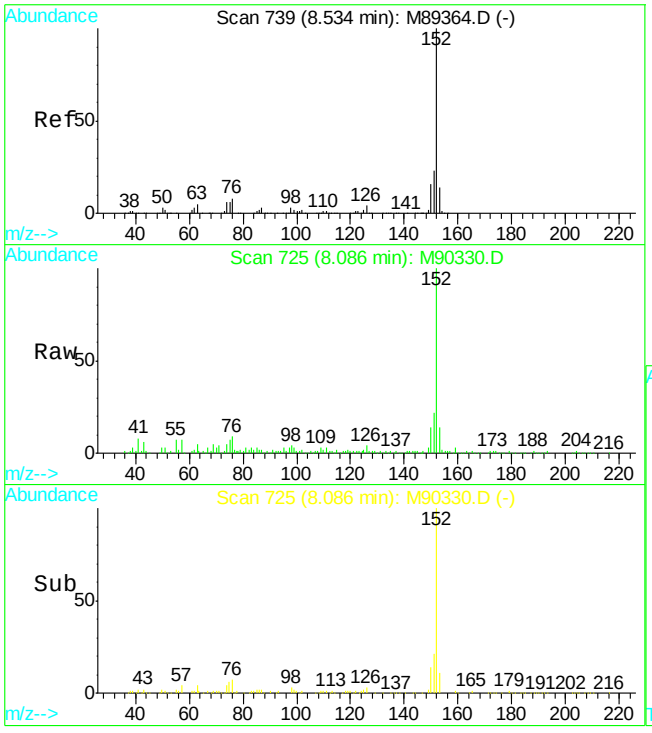
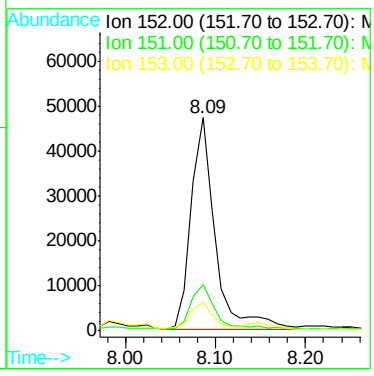
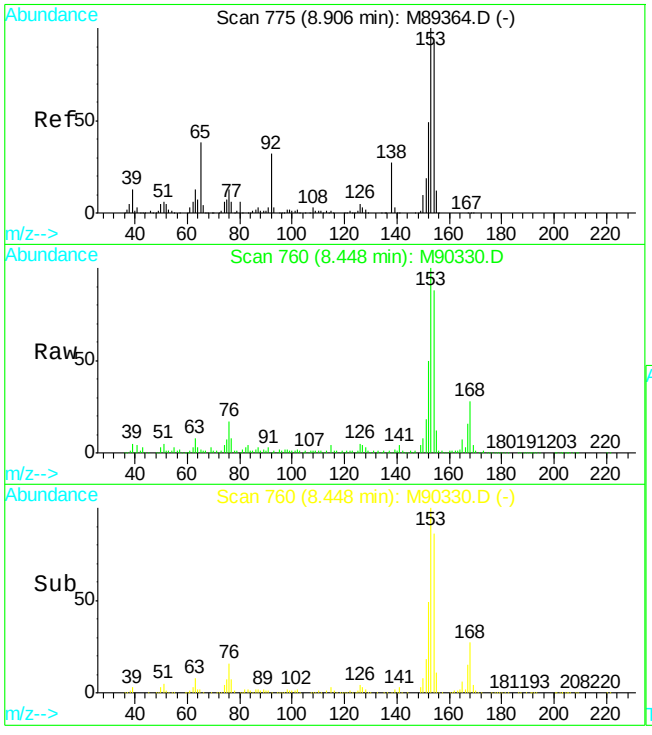


#56
Acenaphthylene
Concen: 7.39 ppb
RT: 8.09 min Scan# 725
Delta R.T. 0.04 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:152 Resp: 86972

Ion	Ratio	Lower	Upper
152	100		
151	21.2	0.0	51.4
153	12.8	0.0	43.2

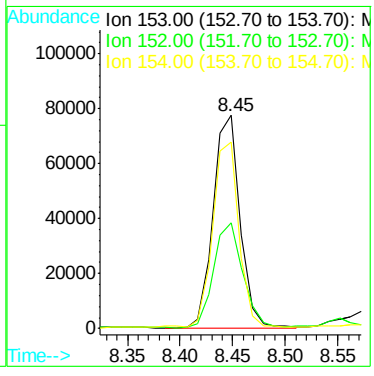




#59
Acenaphthene
Concen: 18.12 ppb
RT: 8.45 min Scan# 760
Delta R.T. 0.05 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

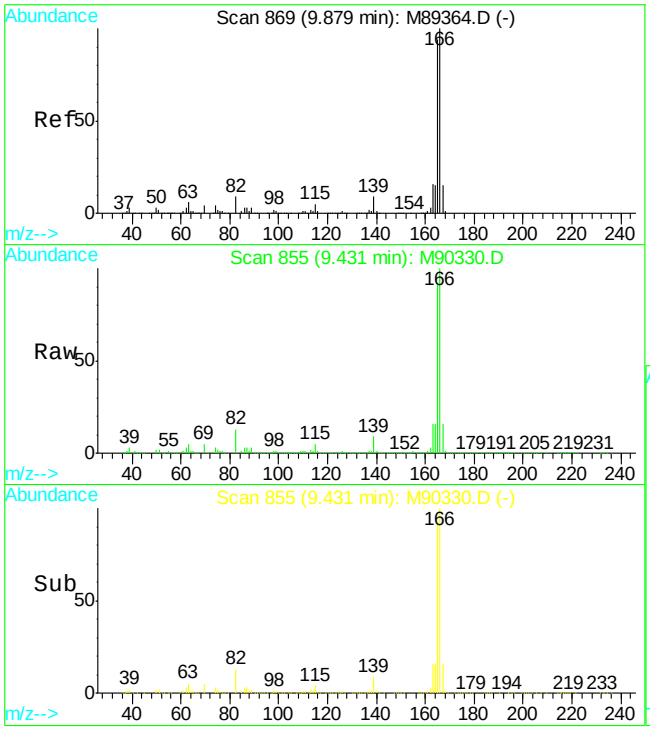
Tgt Ion:153 Resp: 136891

Ion	Ratio	Lower	Upper
153	100		
152	49.1	18.9	78.9
154	87.0	62.4	122.4



9.1.21

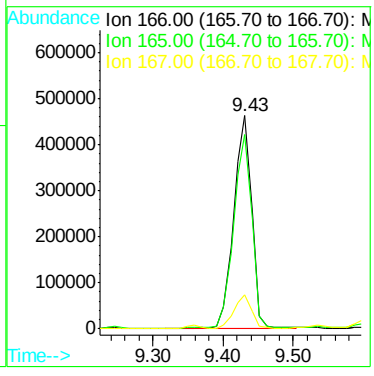
9

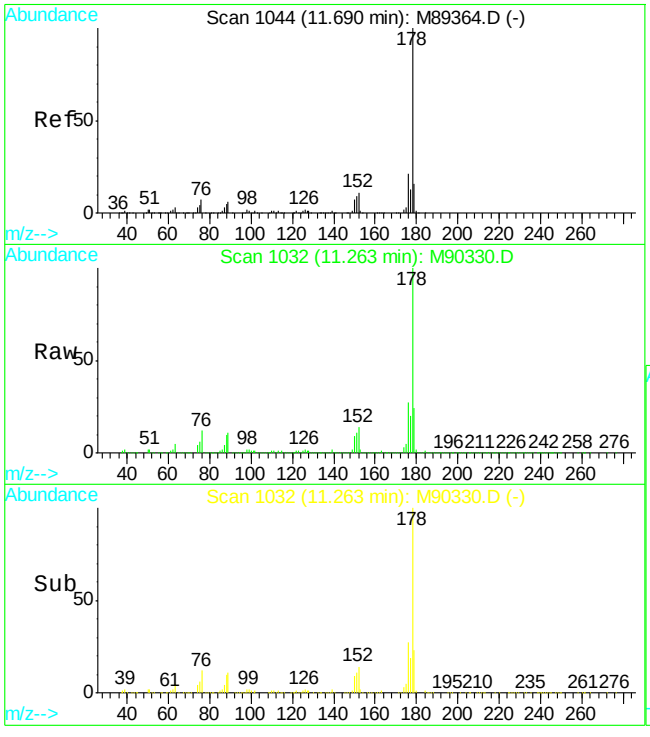


#66
Fluorene
Concen: 97.90 ppb
RT: 9.43 min Scan# 855
Delta R.T. 0.05 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:166 Resp: 841760

Ion	Ratio	Lower	Upper
166	100		
165	91.2	62.0	122.0
167	15.9	0.0	44.4

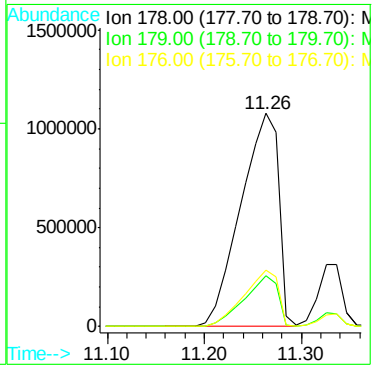


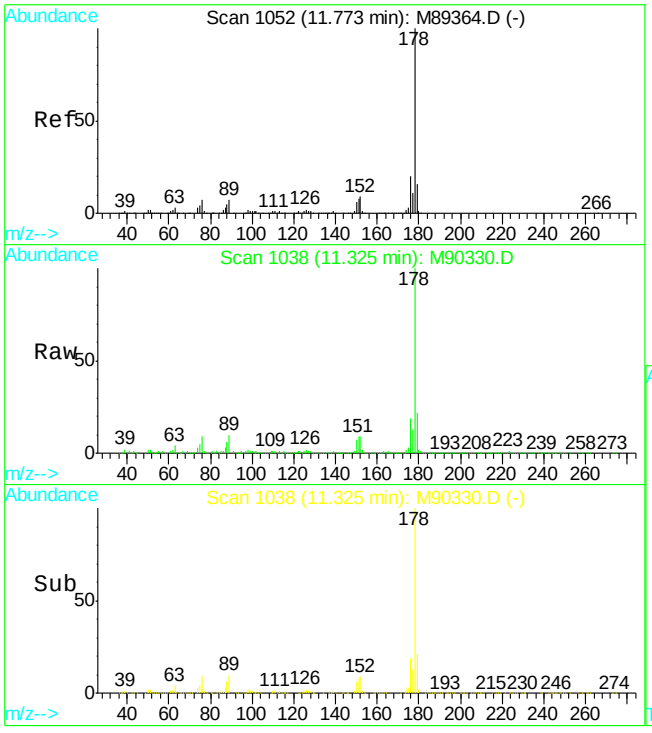


#77
Phenanthrene
Concen: 252.89 ppb
RT: 11.26 min Scan# 1032
Delta R.T. 0.09 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:178 Resp: 2919645

Ion	Ratio	Lower	Upper
178	100		
179	23.6	0.0	45.5
176	26.6	0.0	48.9

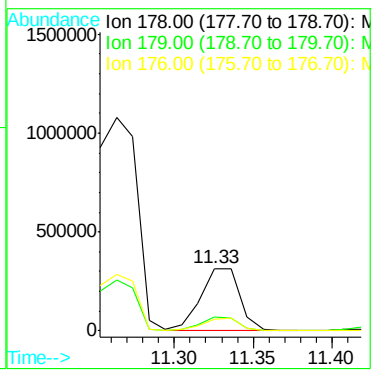


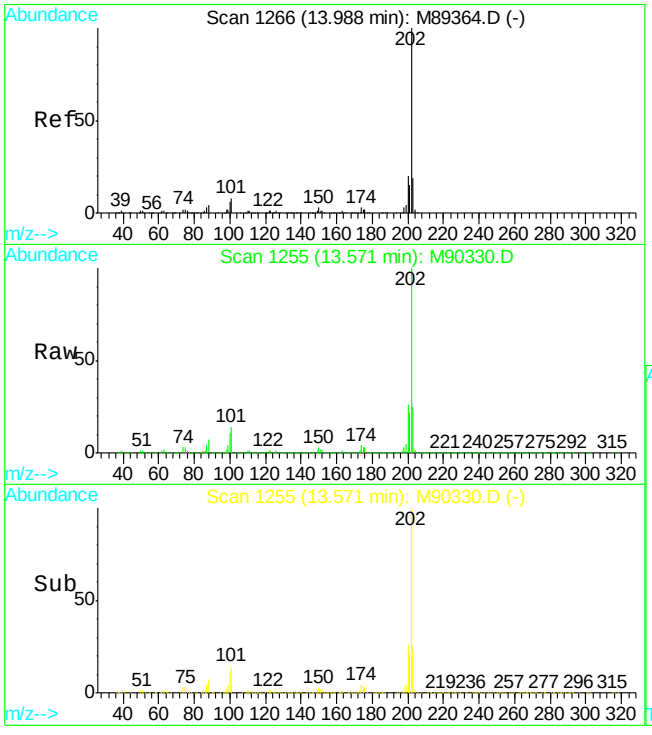


#78
Anthracene
Concen: 48.99 ppb
RT: 11.33 min Scan# 1038
Delta R.T. 0.07 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:178 Resp: 545866

Ion	Ratio	Lower	Upper
178	100		
179	21.4	0.0	46.2
176	19.1	0.0	49.6

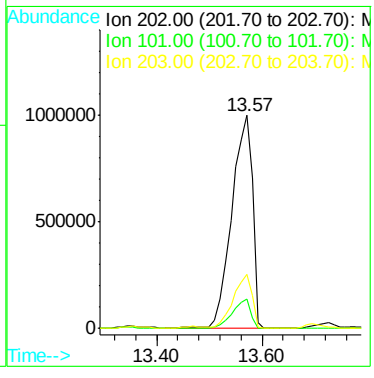


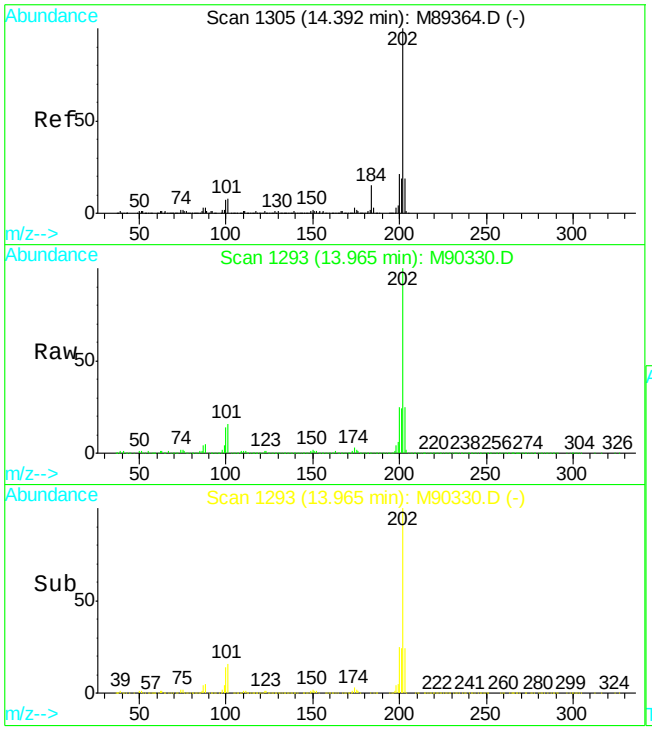


#81
Fluoranthene
Concen: 189.04 ppb
RT: 13.57 min Scan# 1255
Delta R.T. 0.11 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:202 Resp: 2729206

Ion	Ratio	Lower	Upper
202	100		
101	13.8	0.0	40.6
203	25.1	0.0	48.6

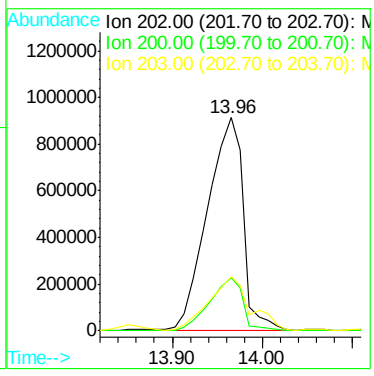


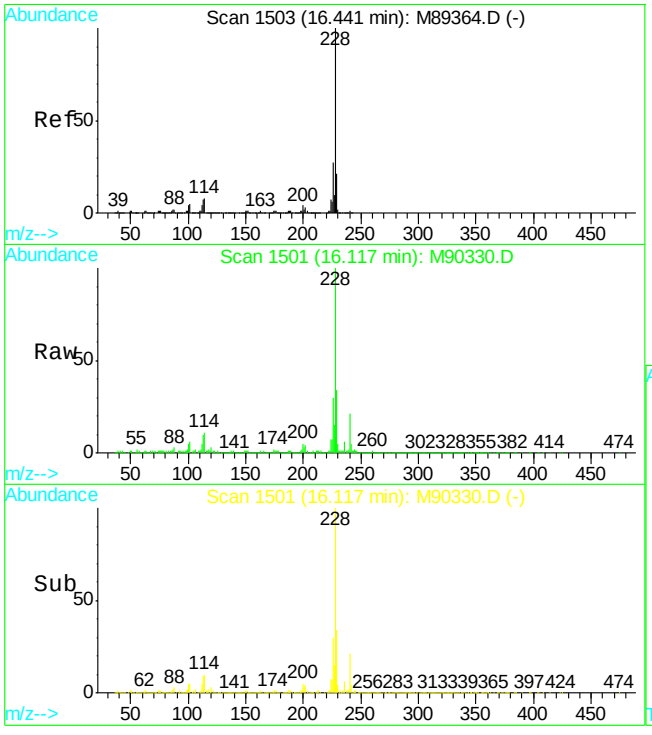


#84
Pyrene
Concen: 207.28 ppb
RT: 13.96 min Scan# 1293
Delta R.T. 0.11 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:202 Resp: 2517692

Ion	Ratio	Lower	Upper
202	100		
200	25.0	0.0	50.2
203	25.0	0.0	48.3

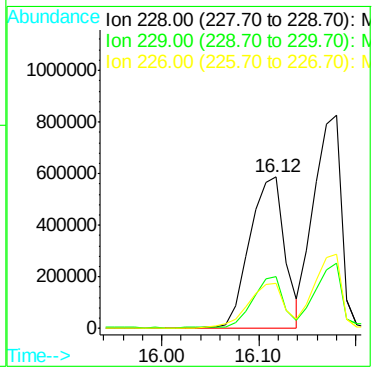




#88
Benzo[a]anthracene
Concen: 124.31 ppb
RT: 16.12 min Scan# 1501
Delta R.T. 0.09 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:228 Resp: 1466498

Ion	Ratio	Lower	Upper
228	100		
229	34.6	0.0	50.9
226	29.6	0.0	56.8



9.1.21

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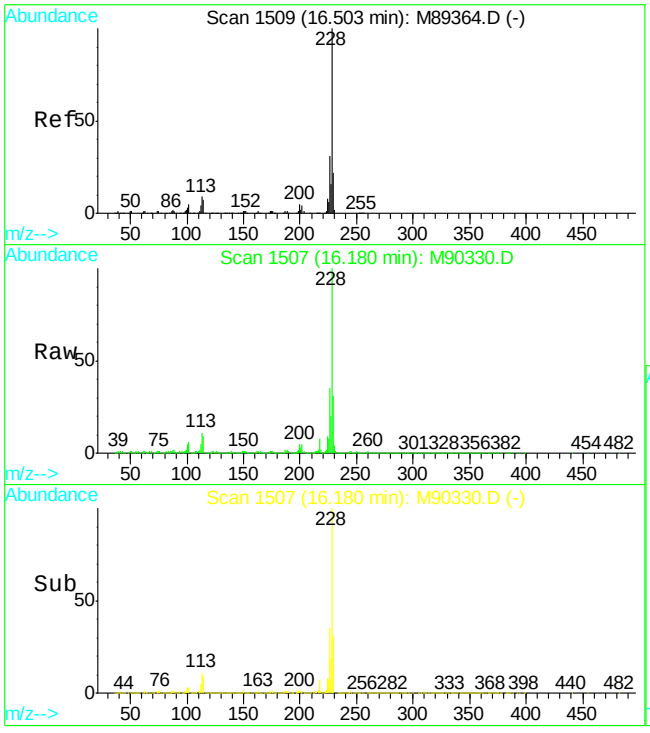
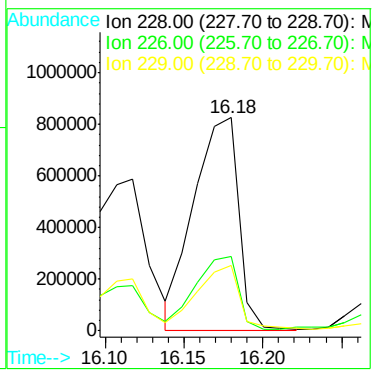
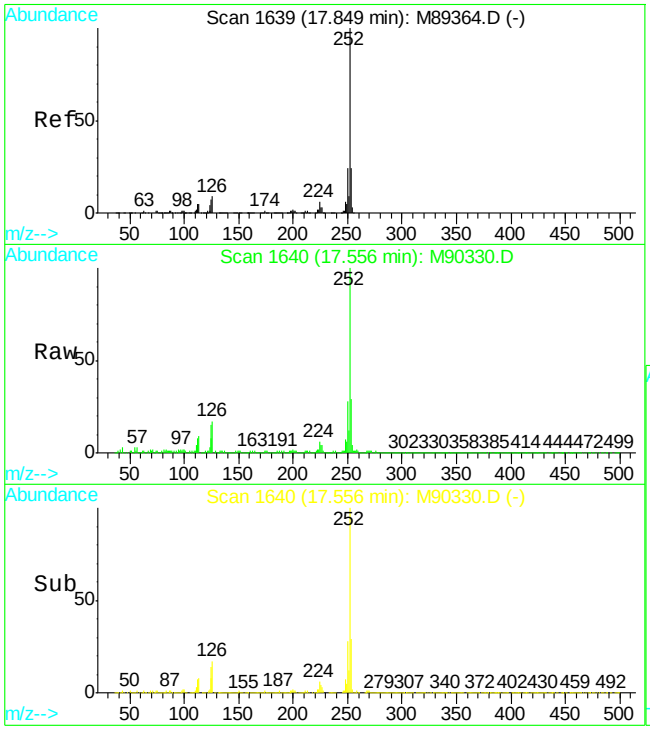


#90
Chrysene
Concen: 152.04 ppb
RT: 16.18 min Scan# 1507
Delta R.T. 0.10 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:228 Resp: 1621604

Ion	Ratio	Lower	Upper
228	100		
226	34.7	0.8	60.8
229	30.3	0.0	50.6

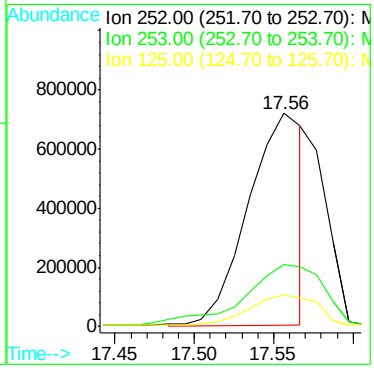




#94
Benzo[b]fluoranthene
Concen: 151.74 ppb m
RT: 17.56 min Scan# 1640
Delta R.T. 0.10 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

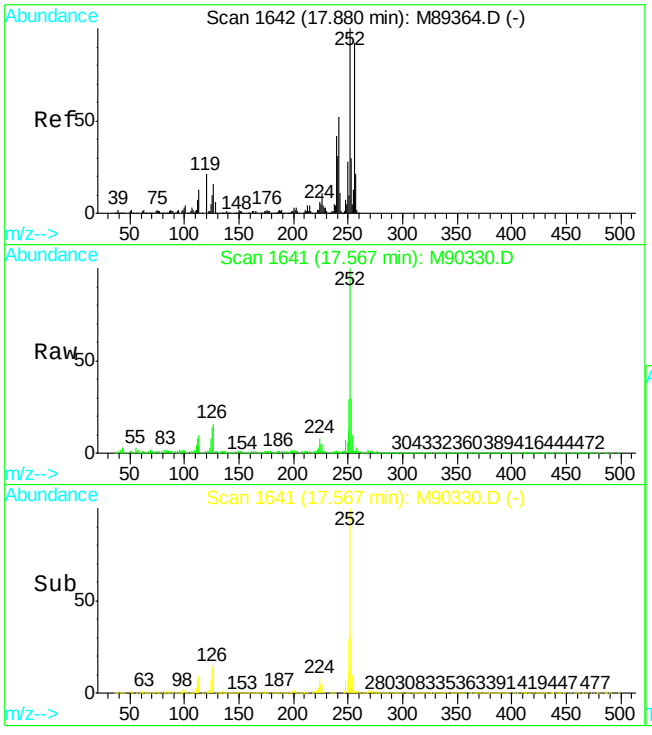
Tgt Ion:252 Resp: 1738222

Ion	Ratio	Lower	Upper
252	100		
253	29.3	0.0	53.5
125	14.9	0.0	38.3



9.1.21

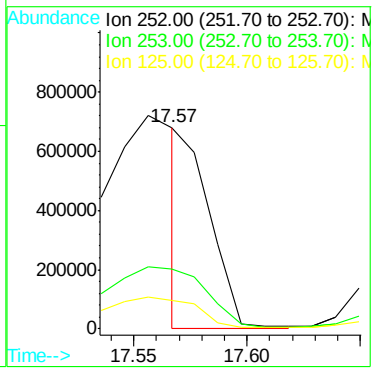
9

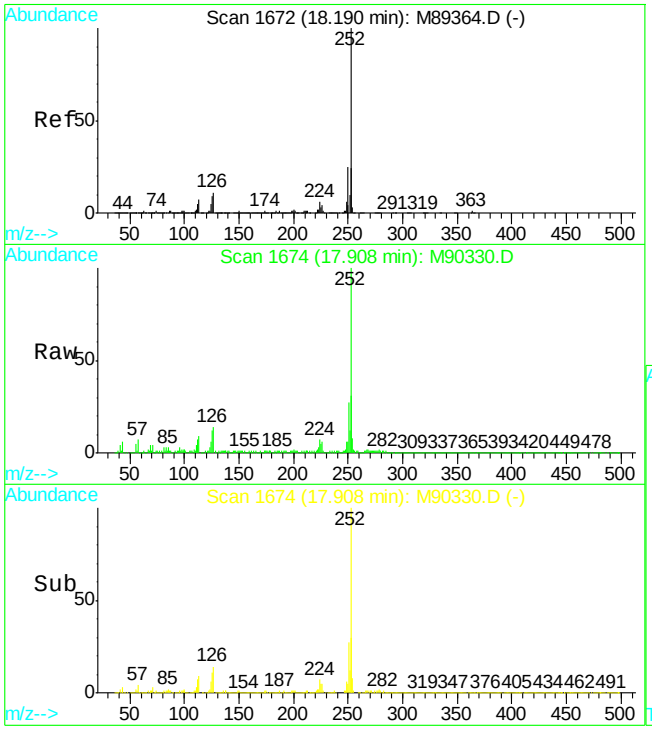


#95
Benzo[k]fluoranthene
Concen: 52.50 ppb m
RT: 17.57 min Scan# 1641
Delta R.T. 0.08 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:252 Resp: 567180

Ion	Ratio	Lower	Upper
252	100		
253	29.9	0.0	56.8
125	14.0	0.0	40.7

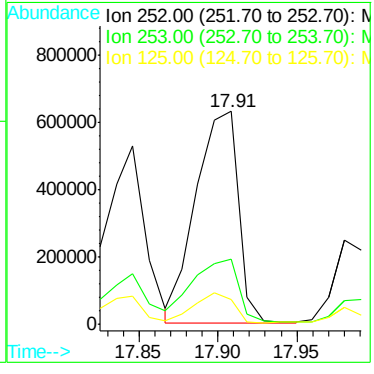




#96
Benzo[a]pyrene
Concen: 117.51 ppb
RT: 17.91 min Scan# 1674
Delta R.T. 0.11 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:252 Resp: 1169244

Ion	Ratio	Lower	Upper
252	100		
253	28.0	0.0	54.3
125	10.7	0.0	42.1



9.1.21

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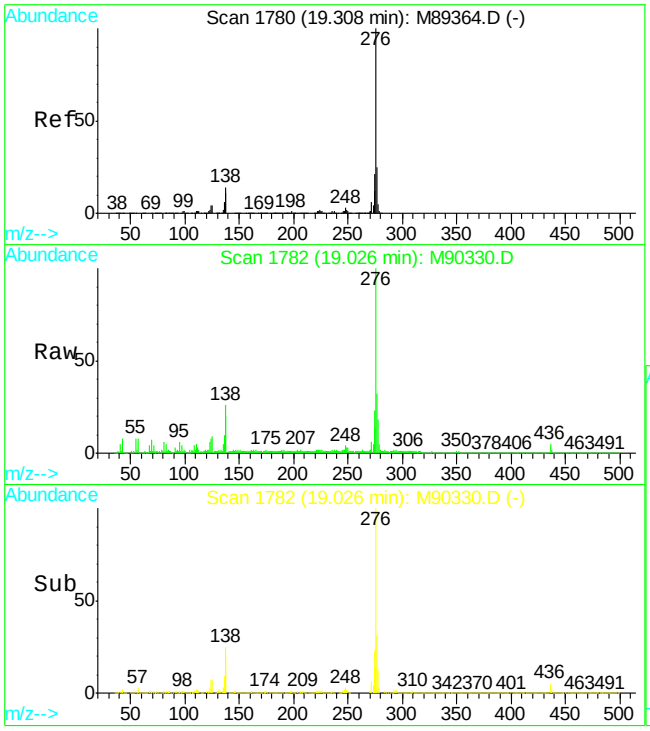
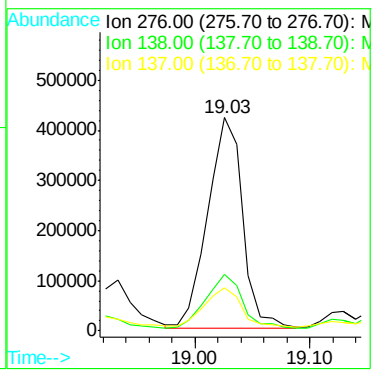
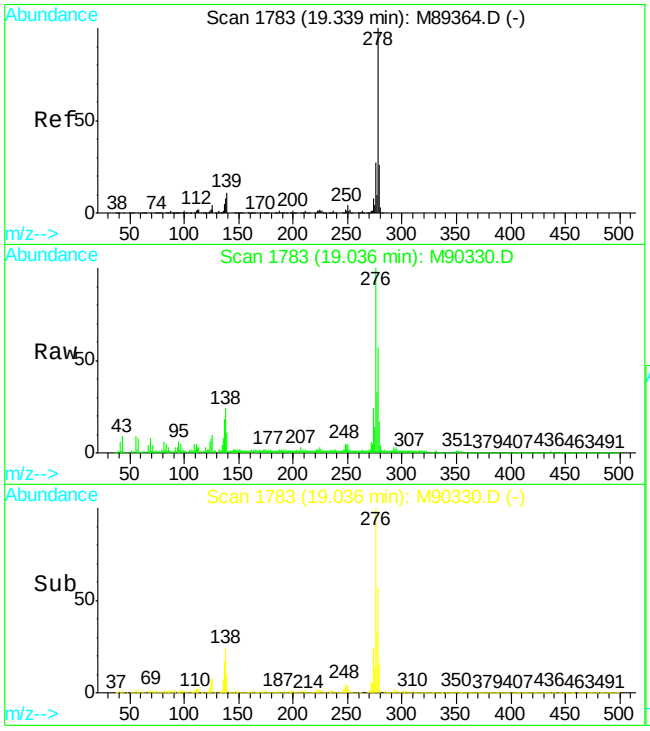


#97
Indeno[1,2,3-cd]pyrene
Concen: 82.51 ppb
RT: 19.03 min Scan# 1782
Delta R.T. 0.10 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:276 Resp: 897046

Ion	Ratio	Lower	Upper
276	100		
138	25.4	0.0	49.6
137	18.6	0.0	44.0

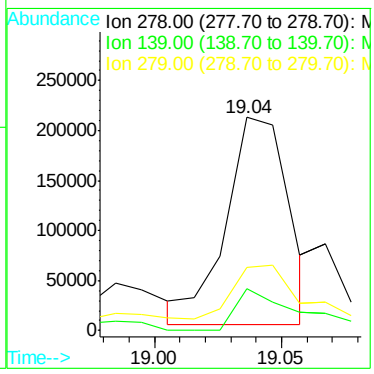




#99
Dibenz[a,h]anthracene
Concen: 39.87 ppb m
RT: 19.04 min Scan# 1783
Delta R.T. 0.08 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:278 Resp: 355301

Ion	Ratio	Lower	Upper
278	100		
139	19.7	0.0	42.5
279	29.7	0.0	55.9



9.1.21

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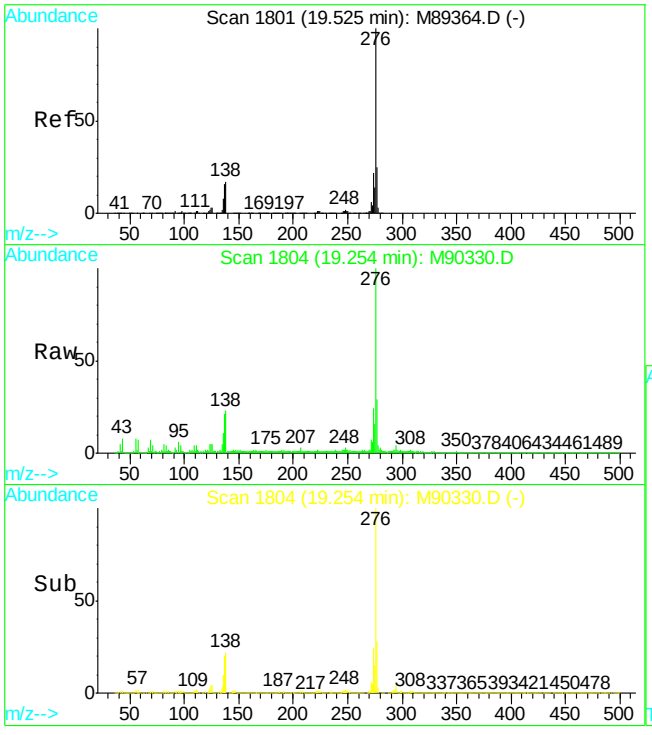
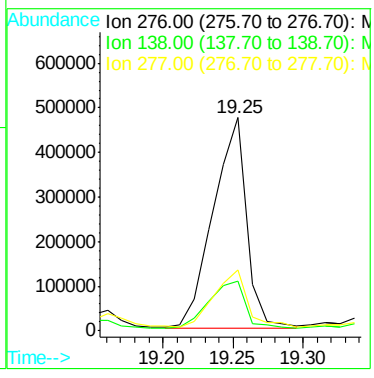


#101
Benzo[g,h,i]perylene
Concen: 88.16 ppb
RT: 19.25 min Scan# 1804
Delta R.T. 0.11 min
Lab File: M90330.D
Acq: 17 Dec 2012 8:34 pm

Tgt Ion:276 Resp: 787607

Ion	Ratio	Lower	Upper
276	100		
138	22.2	0.0	51.8
277	27.1	0.0	55.2



9.1.21

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3660\M90340.D Vial: 7
Acq On : 18 Dec 2012 11:56 am Operator: olgaa
Sample : jb22822-16 Inst : MSM
Misc : op62037,em3660,33.7,,,1,20 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:54 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 13:01:15 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.16	152	108591	40.00	ppb	0.00
24) Naphthalene-d8	5.11	136	420089	40.00	ppb	0.00
47) Acenaphthene-d10	8.33	164	278607	40.00	ppb	0.00
69) Phenanthrene-d10	11.12	188	492007	40.00	ppb	-0.01
83) Chrysene-d12	16.05	240	469364	40.00	ppb	-0.01
92) Perylene-d12	17.88	264	386345	40.00	ppb	-0.01
102) 1,4-Dichlorobenzene-d4a	3.16	152	108591	40.00	ppb	0.00
104) Acenaphthene-d10a	8.33	164	278607	40.00	ppb	0.00
106) Phenanthrene-d10a	11.12	188	492007	40.00	ppb	-0.01
108) Chrysene-d12a	16.05	240	469364	40.00	ppb	-0.01
System Monitoring Compounds						
5) 2-Fluorophenol	1.91	112	3596	1.02	ppb	0.00
Spiked Amount 50.000			Recovery	=	2.04%	
8) Phenol-d5	2.94	99	6017	1.35	ppb	0.02
Spiked Amount 50.000			Recovery	=	2.70%	
25) Nitrobenzene-d5	4.03	82	5151	1.22	ppb	0.02
Spiked Amount 50.000			Recovery	=	2.44%	
51) 2-Fluorobiphenyl	7.18	172	11198	1.27	ppb	0.00
Spiked Amount 50.000			Recovery	=	2.54%	
73) 2,4,6-Tribromophenol	9.90	330	1634	1.87	ppb	-0.01
Spiked Amount 50.000			Recovery	=	3.74%	
86) Terphenyl-d14	14.38	244	19357	2.02	ppb	-0.01
Spiked Amount 50.000			Recovery	=	4.04%	

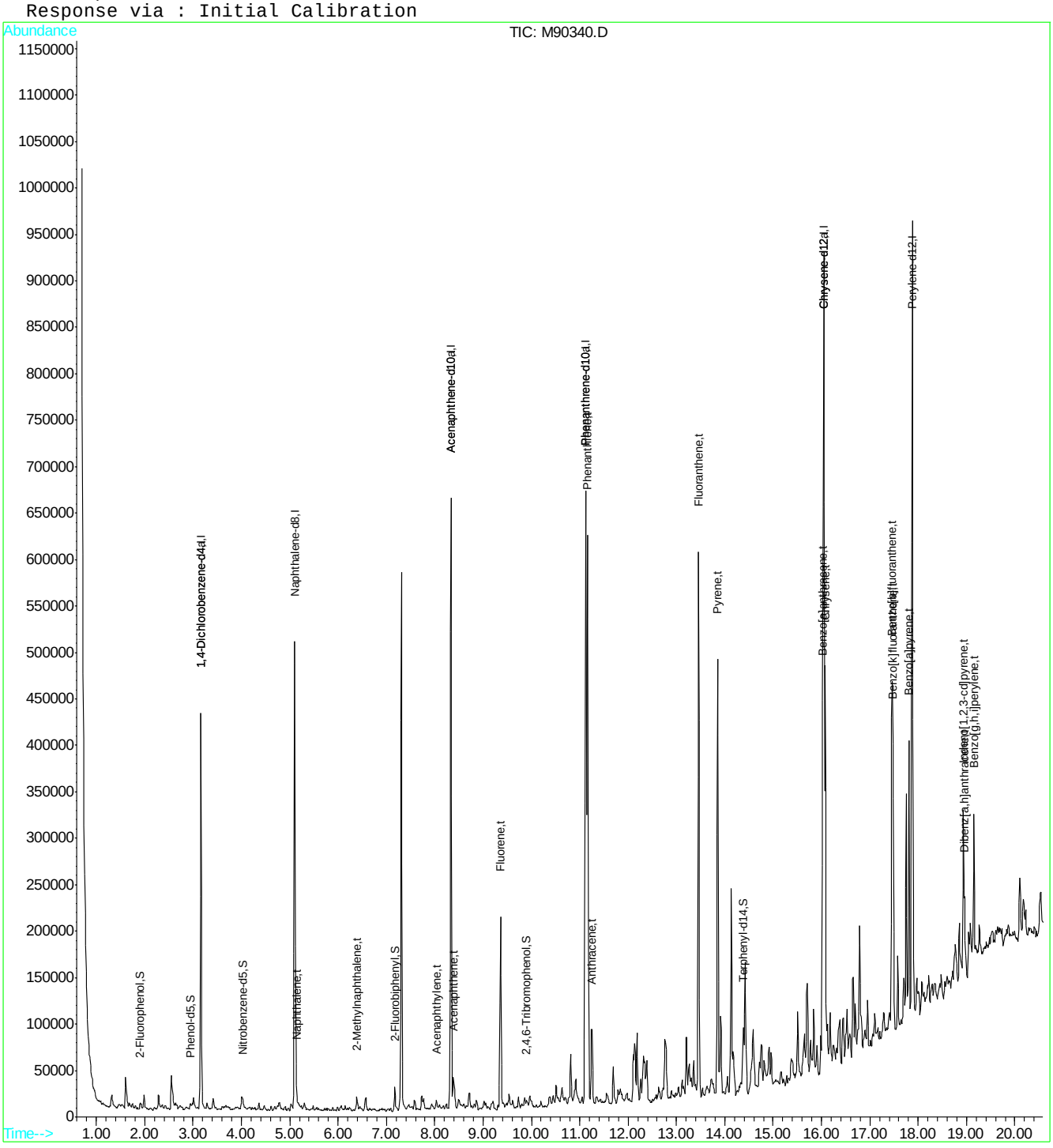
Target Compounds							Qvalue
38) Naphthalene	5.14	128	12092	1.05	ppb		97
44) 2-Methylnaphthalene	6.39	141	5085	0.72	ppb	#	65
56) Acenaphthylene	8.03	152	9084	0.75	ppb		97
59) Acenaphthene	8.39	153	14097	1.81	ppb		98
66) Fluorene	9.36	166	104804	11.83	ppb		99
77) Phenanthrene	11.16	178	434889	34.89	ppb		98
78) Anthracene	11.25	178	63290	5.26	ppb		95
81) Fluoranthene	13.46	202	433471	27.81	ppb		97
84) Pyrene	13.85	202	391253	27.68	ppb		97
88) Benzo[a]anthracene	16.02	228	209181	15.24	ppb		96
90) Chrysene	16.08	228	237906	19.17	ppb		95
94) Benzo[b]fluoranthene	17.46	252	247716m	19.49	ppb		
95) Benzo[k]fluoranthene	17.47	252	85832m	7.16	ppb		
96) Benzo[a]pyrene	17.81	252	163206	14.78	ppb		93
97) Indeno[1,2,3-cd]pyrene	18.93	276	101962	8.45	ppb		98
99) Dibenz[a,h]anthracene	18.95	278	23683m	2.39	ppb		
101) Benzo[g,h,i]perylene	19.15	276	88345	8.91	ppb		92

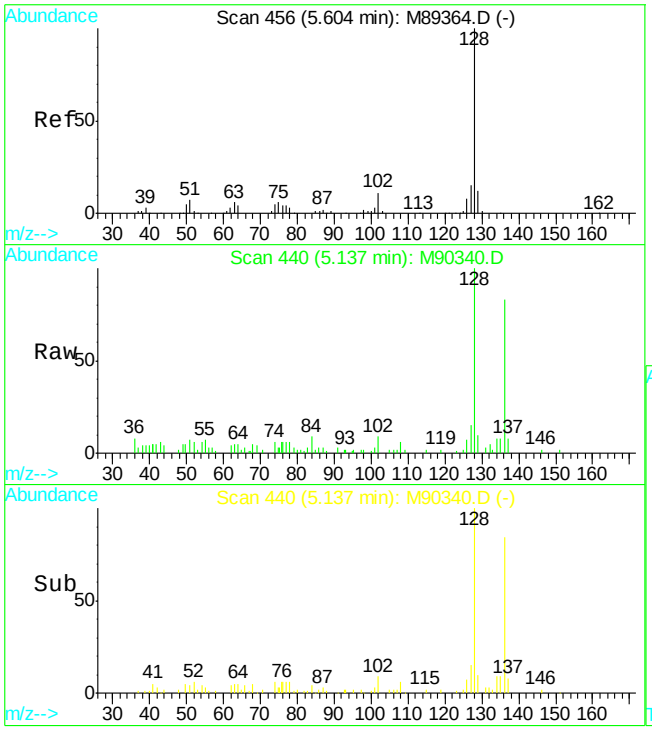
(#) = qualifier out of range (m) = manual integration
M90340.D MM3617.M Tue Dec 18 13:54:21 2012 GCMSM

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3660\M90340.D Vial: 7
Acq On : 18 Dec 2012 11:56 am Operator: olgaa
Sample : jb22822-16 Inst : MSM
Misc : op62037,em3660,33.7,,,1,20 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:54 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 13:47:52 2012
Response via : Initial Calibration

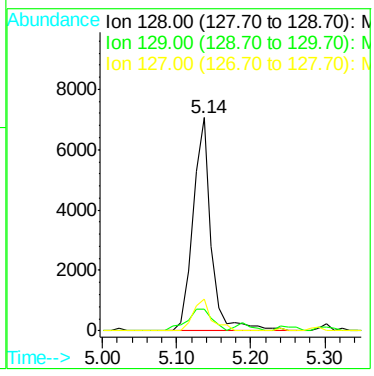


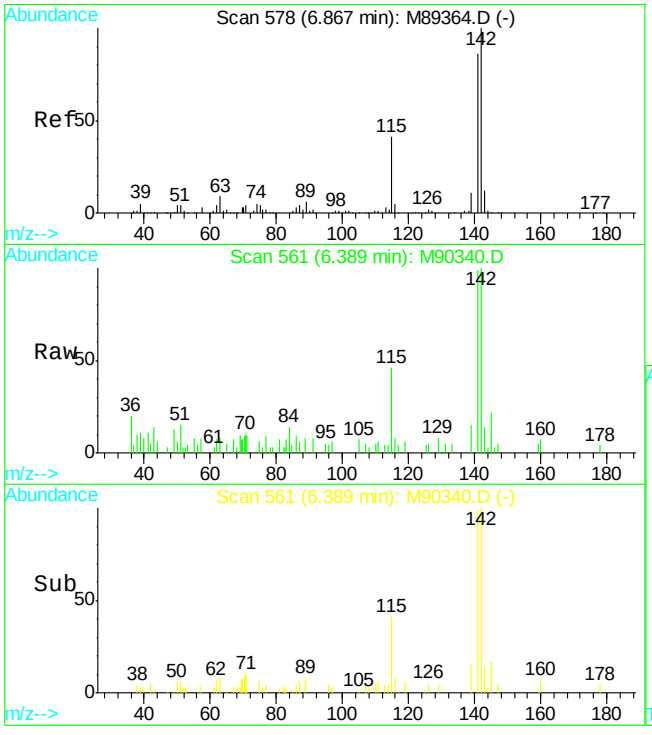


#38
Naphthalene
Concen: 1.05 ppb
RT: 5.14 min Scan# 440
Delta R.T. -0.00 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:128 Resp: 12092

Ion	Ratio	Lower	Upper
128	100		
129	9.4	0.0	42.1
127	15.1	0.0	45.2

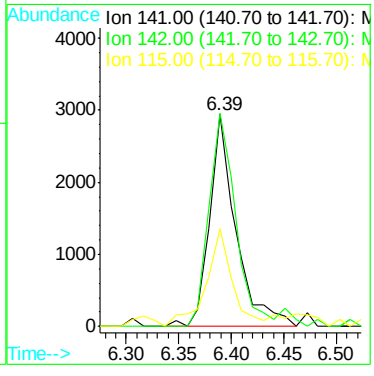




#44
2-Methylnaphthalene
Concen: 0.72 ppb
RT: 6.39 min Scan# 561
Delta R.T. -0.00 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

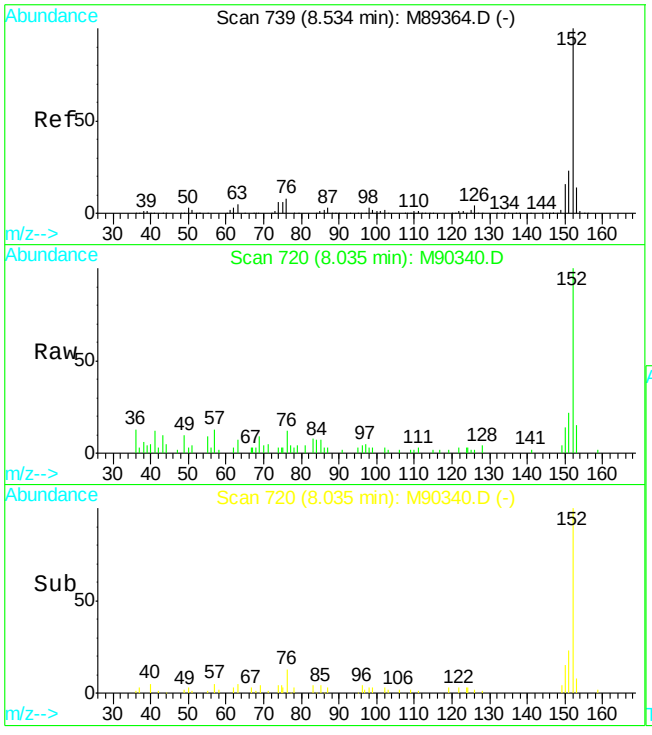
Tgt Ion:141 Resp: 5085

Ion	Ratio	Lower	Upper
141	100		
142	98.9	126.0	186.0#
115	42.8	13.5	73.5



9.1.22

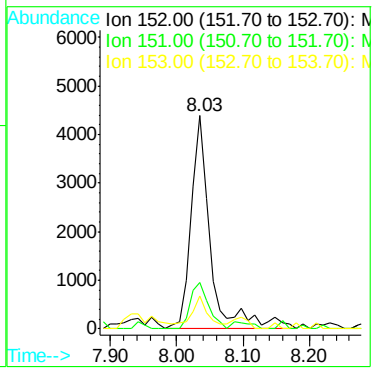
9

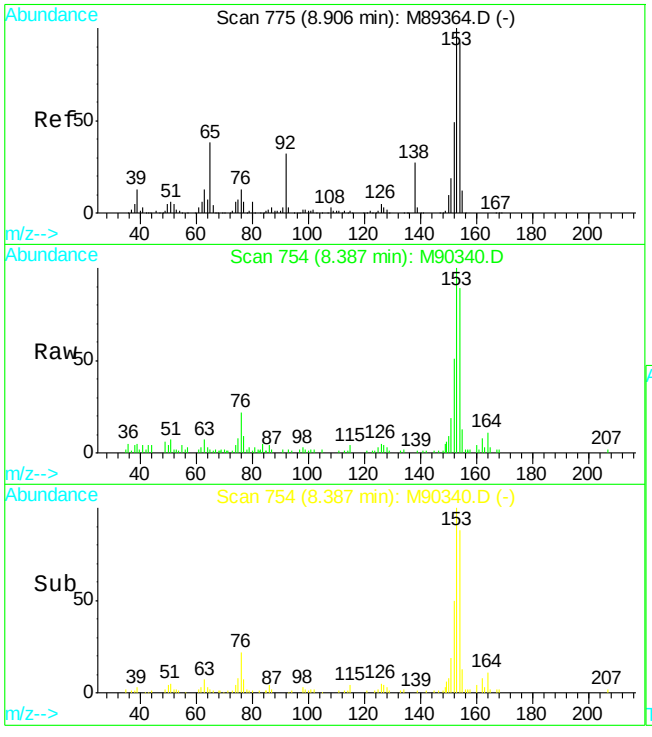


#56
Acenaphthylene
Concen: 0.75 ppb
RT: 8.03 min Scan# 720
Delta R.T. -0.00 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:152 Resp: 9084

Ion	Ratio	Lower	Upper
152	100		
151	21.6	0.0	52.4
153	12.4	0.0	44.5

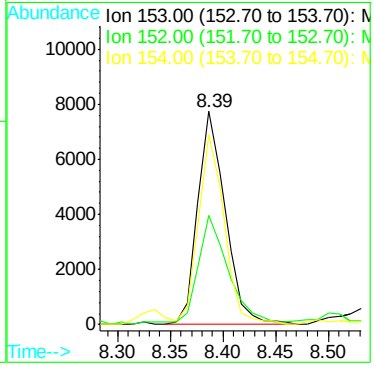




#59
Acenaphthene
Concen: 1.81 ppb
RT: 8.39 min Scan# 754
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

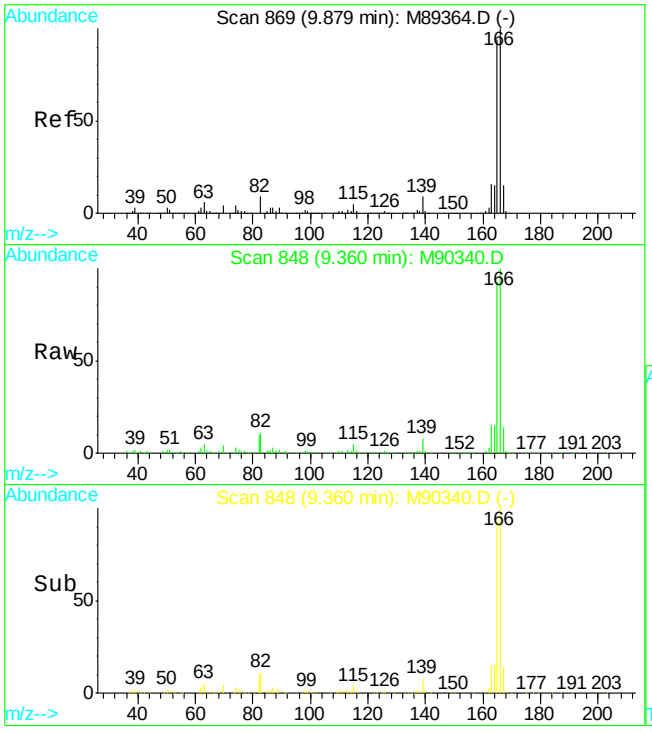
Tgt Ion:153 Resp: 14097

Ion	Ratio	Lower	Upper
153	100		
152	49.9	17.5	77.5
154	87.1	56.4	116.4



9.1.22

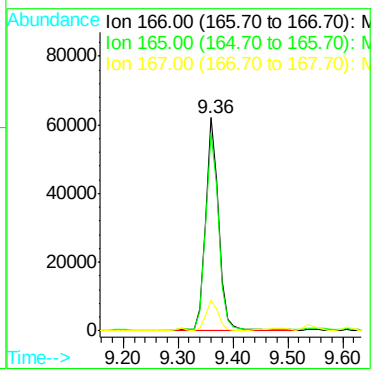
9

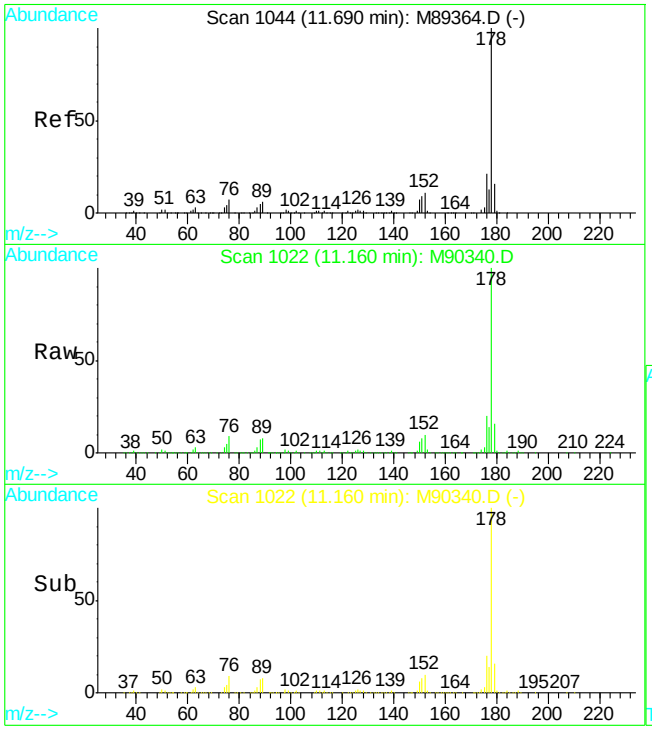


#66
Fluorene
Concen: 11.83 ppb
RT: 9.36 min Scan# 848
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:166 Resp: 104804

Ion	Ratio	Lower	Upper
166	100		
165	92.7	61.7	121.7
167	14.3	0.0	45.5

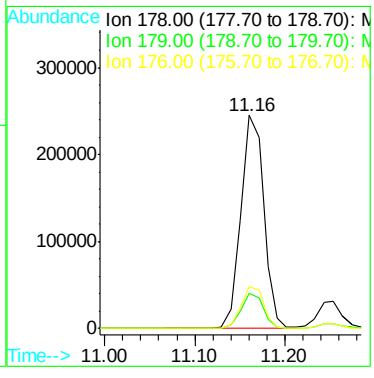


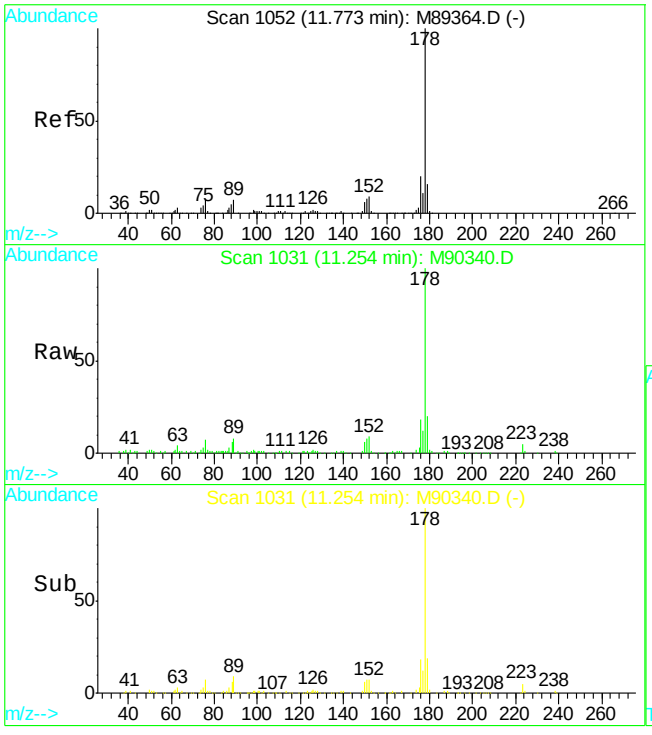


#77
Phenanthrene
Concen: 34.89 ppb
RT: 11.16 min Scan# 1022
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:178 Resp: 434889

Ion	Ratio	Lower	Upper
178	100		
179	16.5	0.0	47.4
176	19.9	0.0	50.3

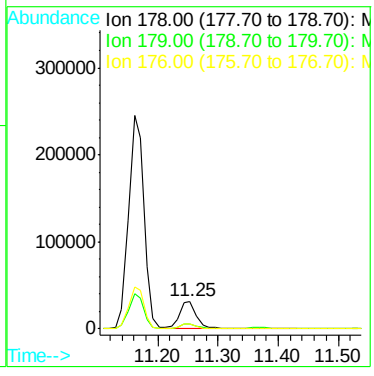


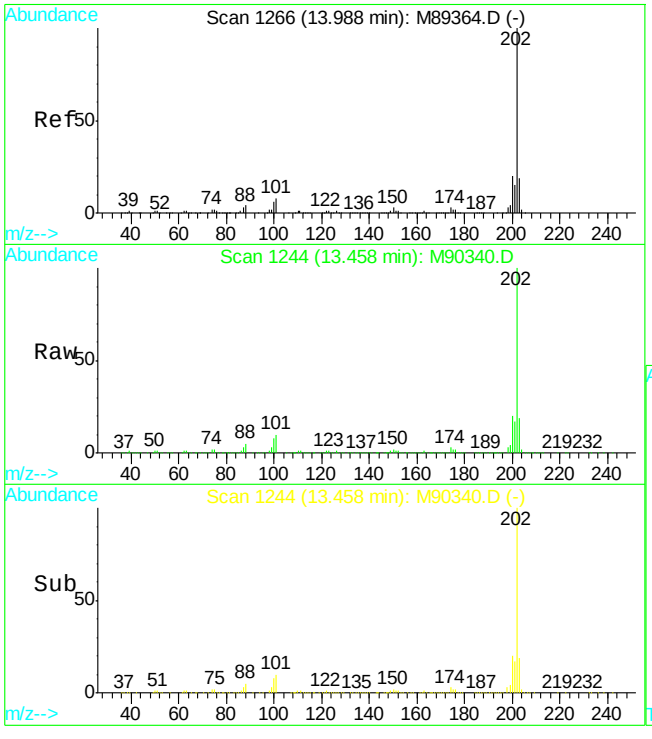


#78
Anthracene
Concen: 5.26 ppb
RT: 11.25 min Scan# 1031
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:178 Resp: 63290

Ion	Ratio	Lower	Upper
178	100		
179	19.5	0.0	47.3
176	18.1	0.0	50.3

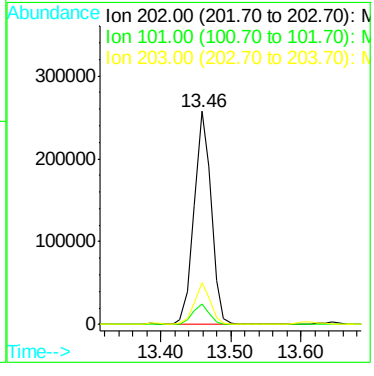


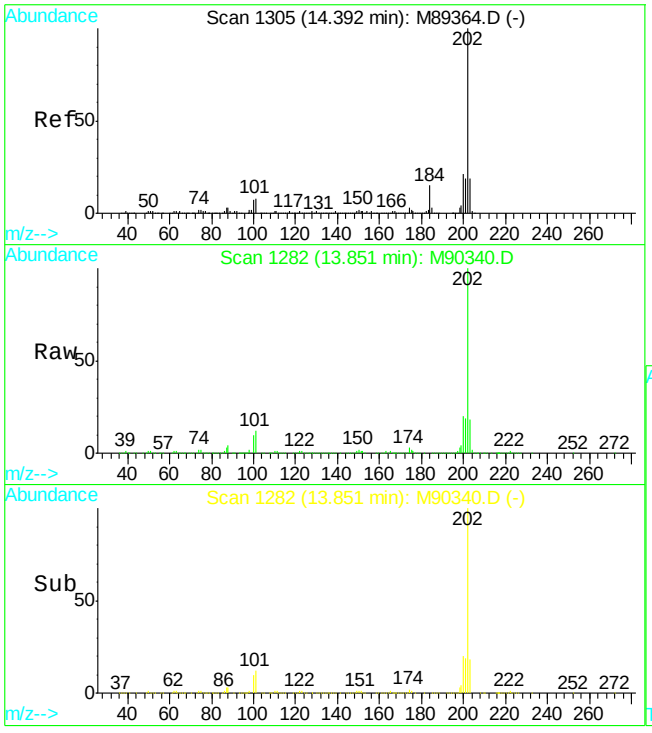


#81
Fluoranthene
Concen: 27.81 ppb
RT: 13.46 min Scan# 1244
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:202 Resp: 433471

Ion	Ratio	Lower	Upper
202	100		
101	9.7	0.0	40.6
203	19.1	0.0	50.3

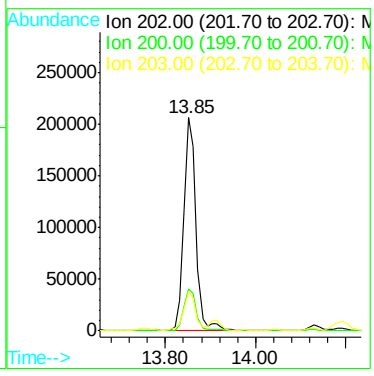


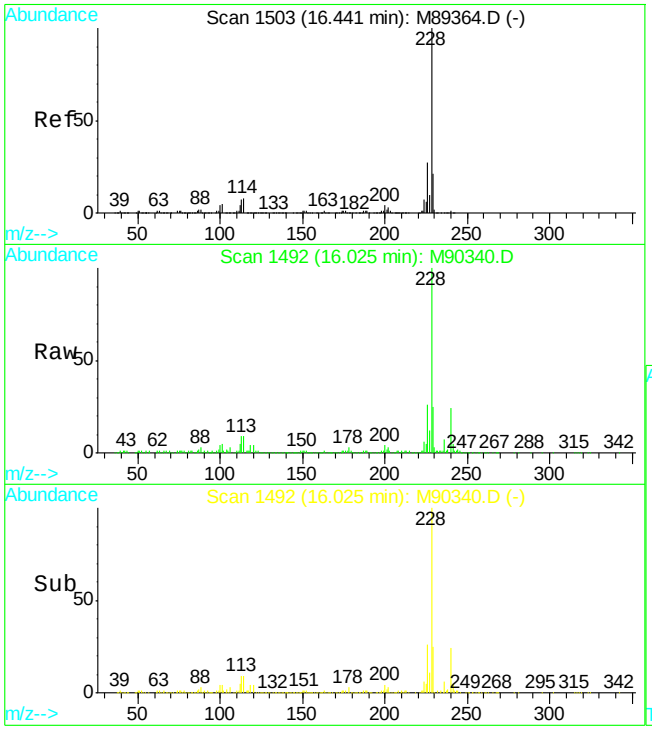


#84
Pyrene
Concen: 27.68 ppb
RT: 13.85 min Scan# 1282
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:202 Resp: 391253

Ion	Ratio	Lower	Upper
202	100		
200	19.7	0.0	51.0
203	18.1	0.0	50.0

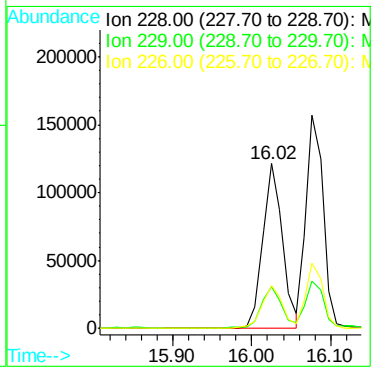




#88
Benzo[a]anthracene
Concen: 15.24 ppb
RT: 16.02 min Scan# 1492
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:228 Resp: 209181

Ion	Ratio	Lower	Upper
228	100		
229	24.7	0.0	53.2
226	25.7	0.0	58.3



9.1.22

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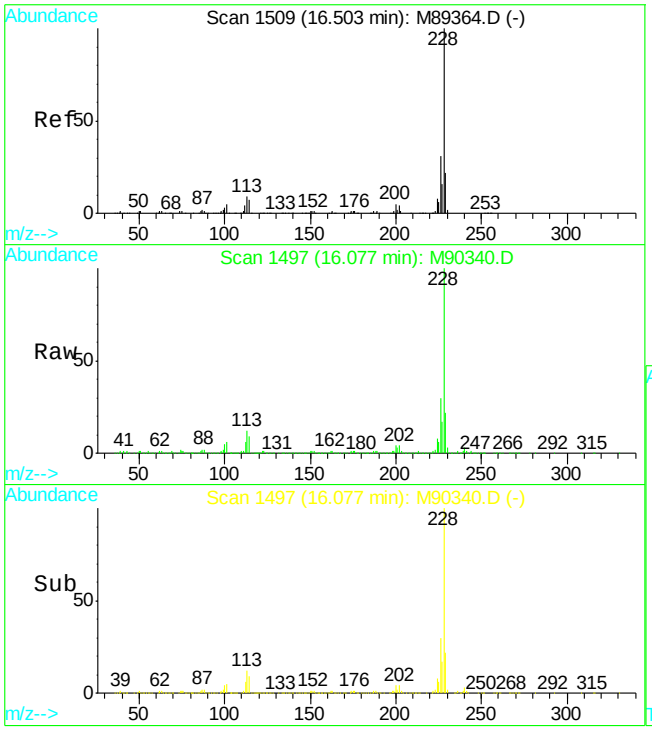
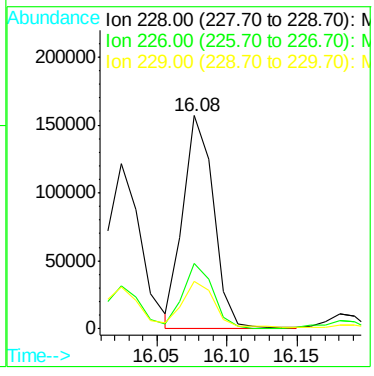
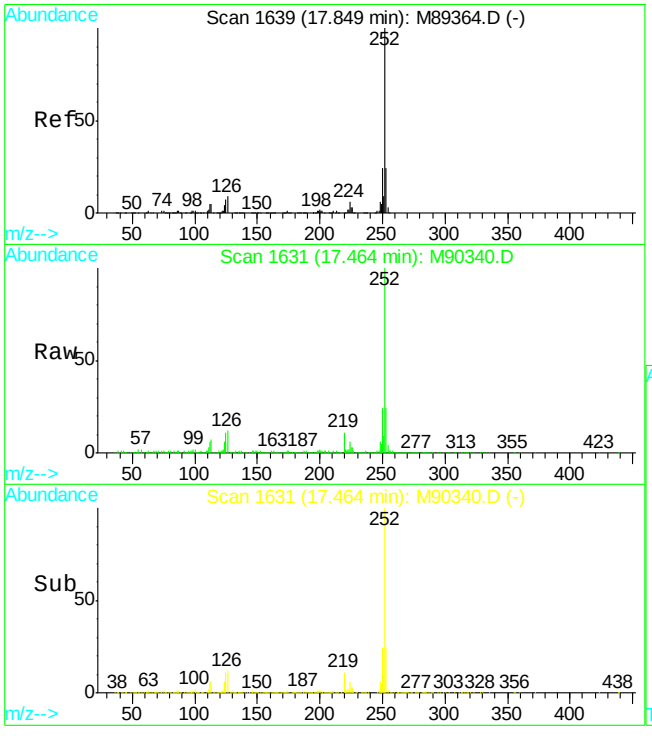


#90
Chrysene
Concen: 19.17 ppb
RT: 16.08 min Scan# 1497
Delta R.T. -0.02 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:228 Resp: 237906

Ion	Ratio	Lower	Upper
228	100		
226	30.2	2.3	62.3
229	21.1	0.0	54.2

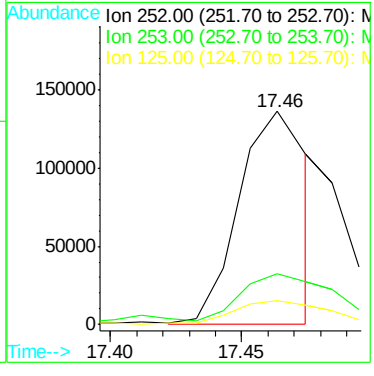


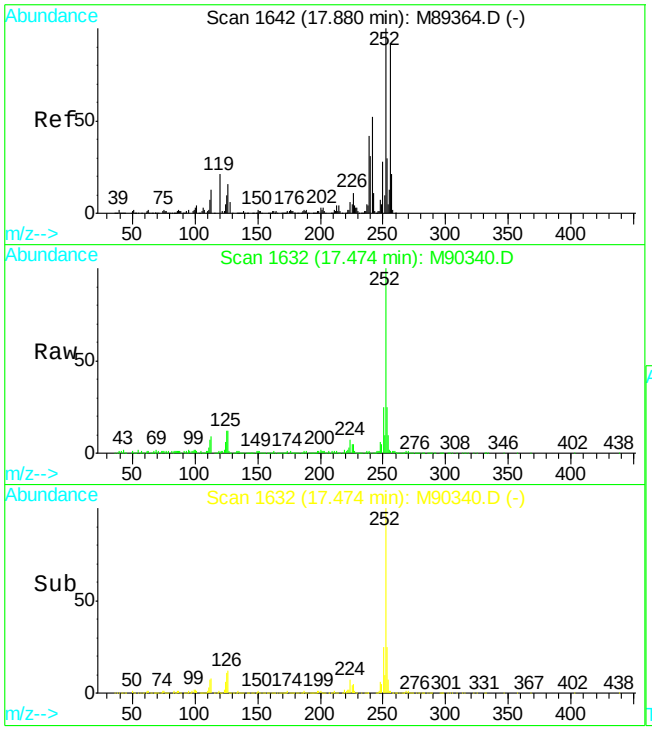


#94
Benzo[b]fluoranthene
Concen: 19.49 ppb m
RT: 17.46 min Scan# 1631
Delta R.T. -0.04 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:252 Resp: 247716

Ion	Ratio	Lower	Upper
252	100		
253	23.8	0.0	55.6
125	11.0	0.0	40.3

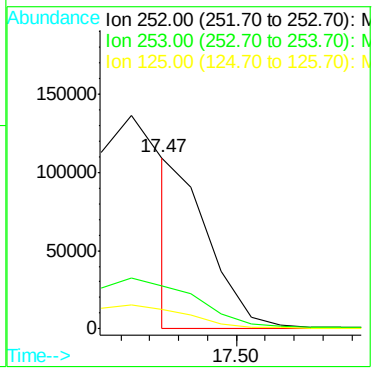


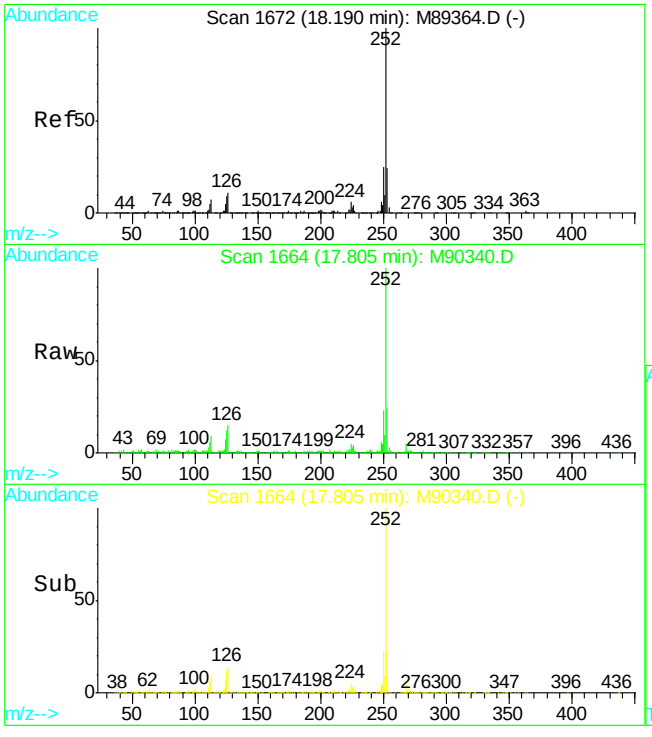


#95
Benzo[k]fluoranthene
Concen: 7.16 ppb m
RT: 17.47 min Scan# 1632
Delta R.T. -0.03 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:252 Resp: 85832

Ion	Ratio	Lower	Upper
252	100		
253	25.1	0.0	58.9
125	11.7	0.0	43.1

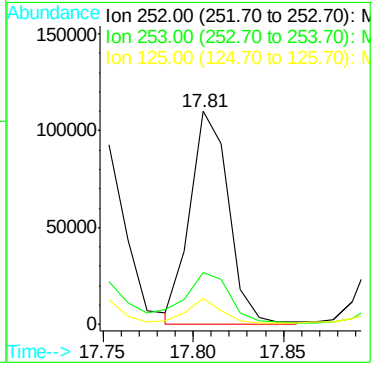




#96
Benzo[a]pyrene
Concen: 14.78 ppb
RT: 17.81 min Scan# 1664
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

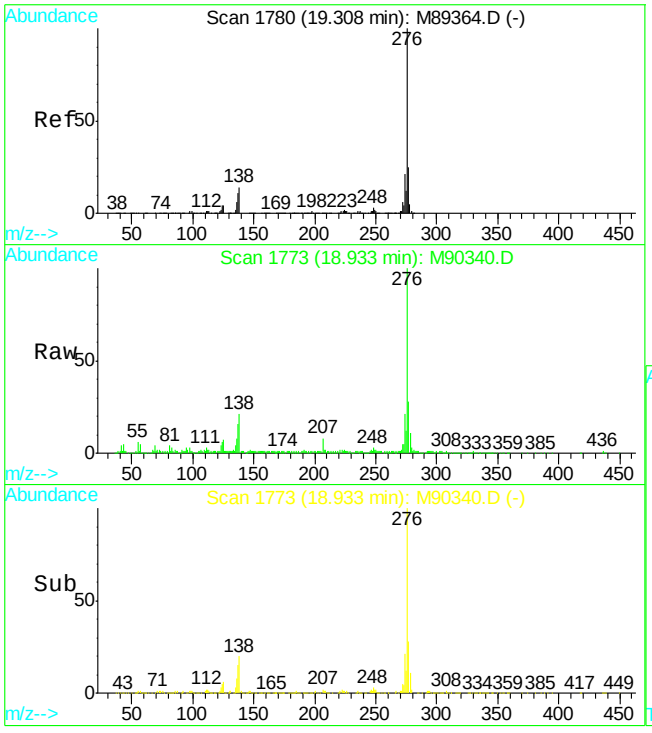
Tgt Ion:252 Resp: 163206

Ion	Ratio	Lower	Upper
252	100		
253	21.1	0.0	55.8
125	11.3	0.0	42.8



9.1.22

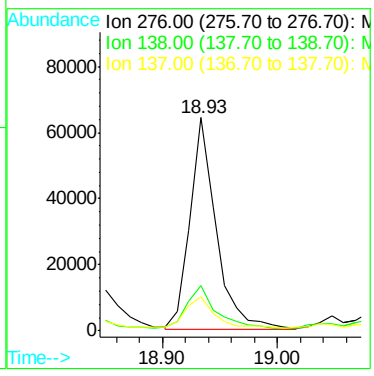
9

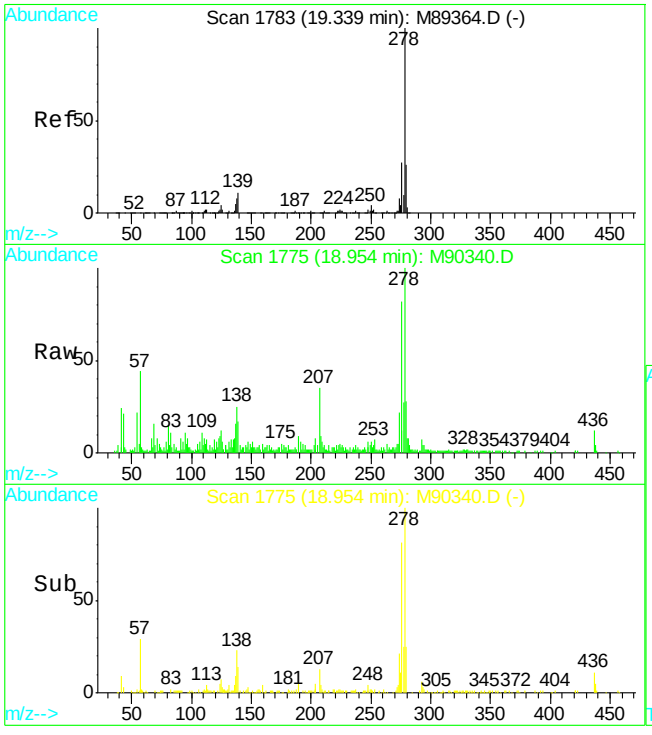


#97
Indeno[1,2,3-cd]pyrene
Concen: 8.45 ppb
RT: 18.93 min Scan# 1773
Delta R.T. -0.01 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:276 Resp: 101962

Ion	Ratio	Lower	Upper
276	100		
138	20.2	0.0	51.4
137	14.7	0.0	45.7

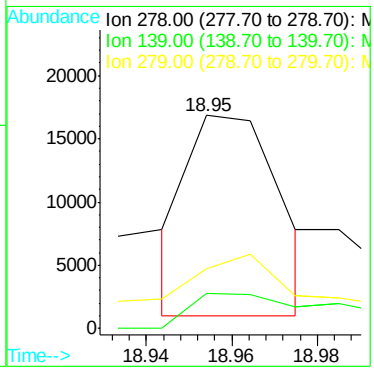


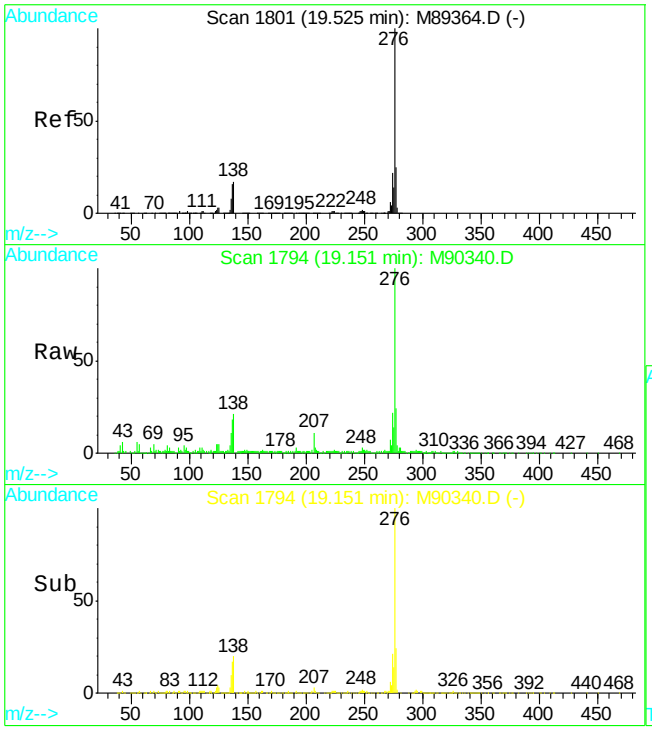


#99
Dibenz[a,h]anthracene
Concen: 2.39 ppb m
RT: 18.95 min Scan# 1775
Delta R.T. -0.02 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:278 Resp: 23683

Ion	Ratio	Lower	Upper
278	100		
139	16.6	0.0	45.4
279	28.1	0.0	58.2

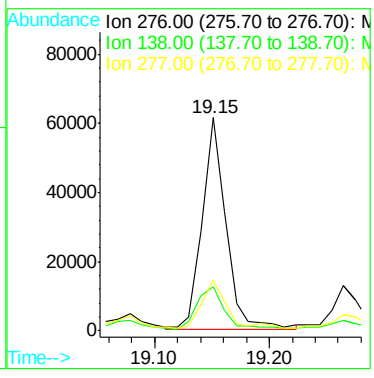




#101
Benzo[g,h,i]perylene
Concen: 8.91 ppb
RT: 19.15 min Scan# 1794
Delta R.T. -0.02 min
Lab File: M90340.D
Acq: 18 Dec 2012 11:56 am

Tgt Ion:276 Resp: 88345

Ion	Ratio	Lower	Upper
276	100		
138	20.0	0.0	53.9
277	23.1	0.0	57.2



9.1.22

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90329.D Vial: 22
Acq On : 17 Dec 2012 8:05 pm Operator: olgaa
Sample : jb22822-17 Inst : MSM
Misc : op62037,em3659,34.3 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:38 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.19	152	89369	40.00	ppb	-0.07
24) Naphthalene-d8	5.15	136	346322	40.00	ppb	-0.07
47) Acenaphthene-d10	8.39	164	221832	40.00	ppb	-0.07
69) Phenanthrene-d10	11.19	188	370948	40.00	ppb	-0.06
83) Chrysene-d12	16.11	240	326037	40.00	ppb	-0.04
92) Perylene-d12	17.94	264	298733	40.00	ppb	-0.02
102) 1,4-Dichlorobenzene-d4a	3.19	152	89369	40.00	ppb	-0.07
104) Acenaphthene-d10a	8.39	164	221832	40.00	ppb	-0.07
106) Phenanthrene-d10a	11.19	188	370948	40.00	ppb	-0.06
108) Chrysene-d12a	16.11	240	326037	40.00	ppb	-0.04
System Monitoring Compounds						
5) 2-Fluorophenol	1.94	112	67406	23.30	ppb	-0.02
Spiked Amount 50.000			Recovery = 46.60%			
8) Phenol-d5	2.98	99	94779	25.91	ppb	0.01
Spiked Amount 50.000			Recovery = 51.82%			
25) Nitrobenzene-d5	4.05	82	67162	19.23	ppb	-0.06
Spiked Amount 50.000			Recovery = 38.46%			
51) 2-Fluorobiphenyl	7.22	172	152433	21.65	ppb	-0.08
Spiked Amount 50.000			Recovery = 43.30%			
73) 2,4,6-Tribromophenol	9.96	330	18365	27.87	ppb	-0.05
Spiked Amount 50.000			Recovery = 55.74%			
86) Terphenyl-d14	14.45	244	180069	27.02	ppb	-0.05
Spiked Amount 50.000			Recovery = 54.04%			

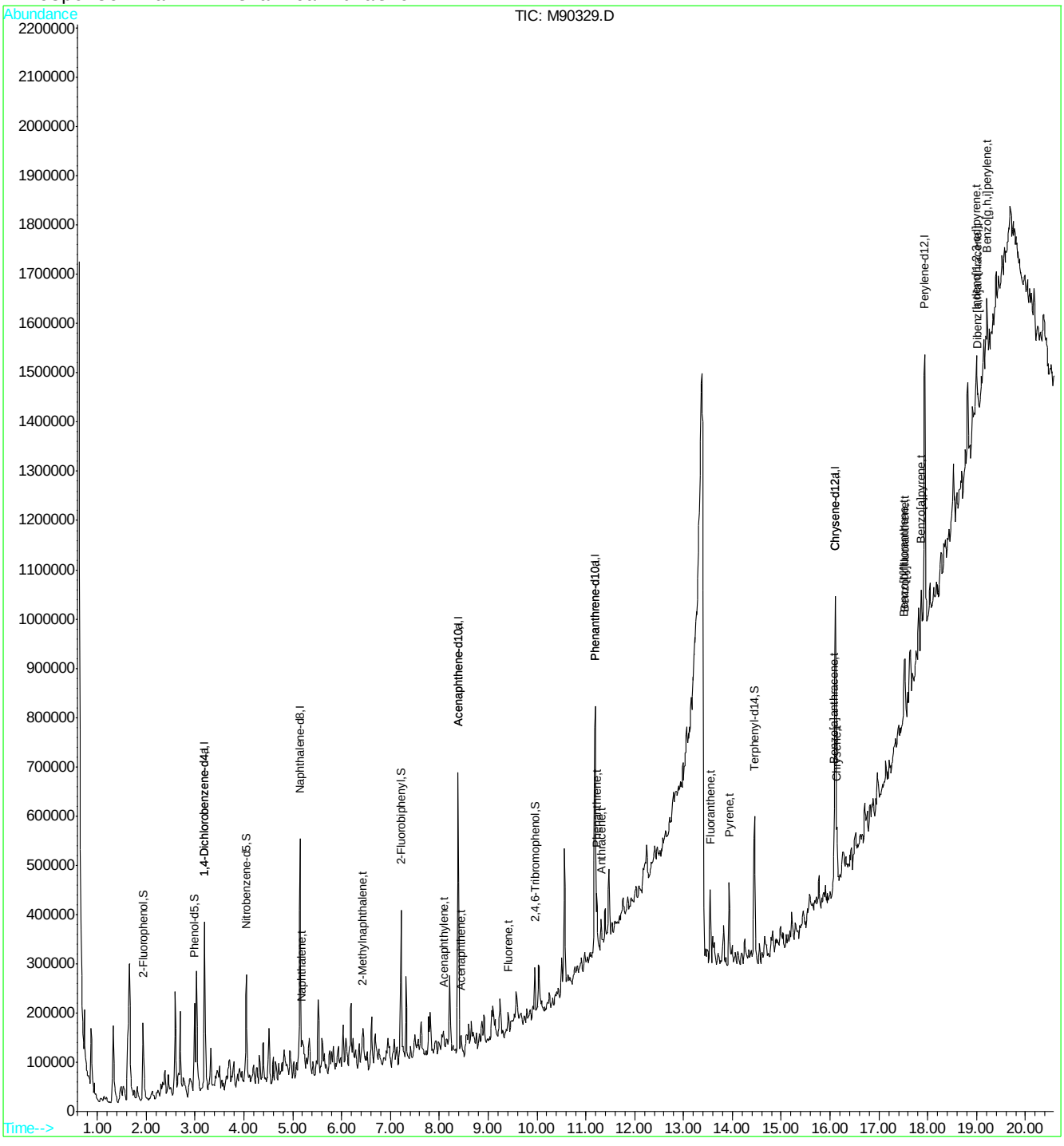
Target Compounds						Qvalue
38) Naphthalene	5.18	128	22766m	2.40	ppb	
44) 2-Methylnaphthalene	6.43	141	15874	2.71	ppb #	76
56) Acenaphthylene	8.09	152	27657	2.86	ppb	97
59) Acenaphthene	8.44	153	19738	3.18	ppb	91
66) Fluorene	9.42	166	24339	3.45	ppb	97
77) Phenanthrene	11.22	178	85836	9.13	ppb	97
78) Anthracene	11.32	178	37033	4.08	ppb	93
81) Fluoranthene	13.55	202	133323	11.35	ppb	94
84) Pyrene	13.93	202	125603	12.79	ppb	96
88) Benzo[a]anthracene	16.09	228	63730	6.68	ppb	96
90) Chrysene	16.14	228	71661	8.31	ppb	91
94) Benzo[b]fluoranthene	17.52	252	92582m	9.42	ppb	
95) Benzo[k]fluoranthene	17.54	252	19070m	2.06	ppb	
96) Benzo[a]pyrene	17.87	252	65980	7.73	ppb	92
97) Indeno[1,2,3-cd]pyrene	19.00	276	57924	6.21	ppb	95
99) Dibenz[a,h]anthracene	19.02	278	19453m	2.54	ppb	
101) Benzo[g,h,i]perylene	19.21	276	66438	8.67	ppb	93

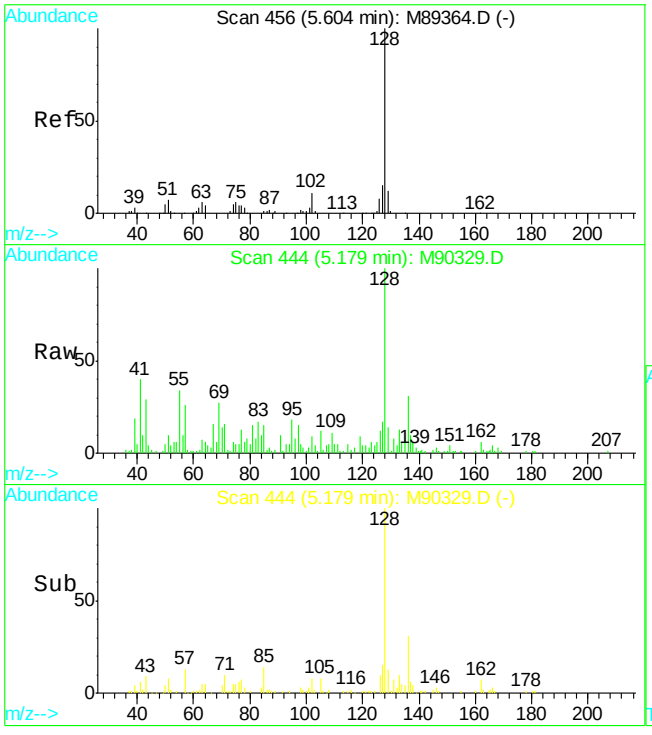
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90329.D Vial: 22
Acq On : 17 Dec 2012 8:05 pm Operator: olgaa
Sample : jb22822-17 Inst : MSM
Misc : op62037,em3659,34.3 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:38 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

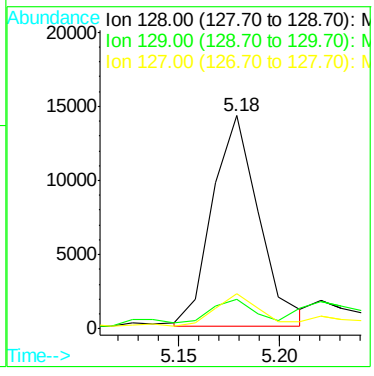


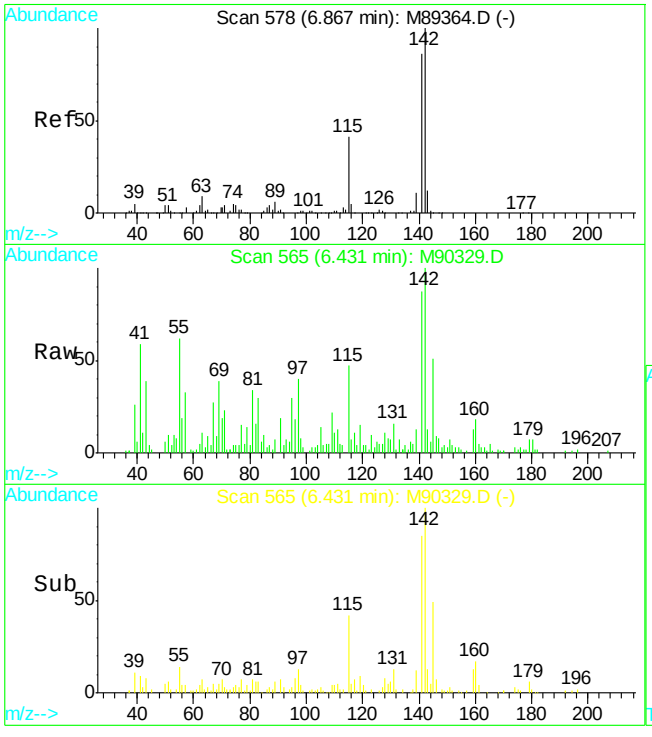


#38
Naphthalene
Concen: 2.40 ppb m
RT: 5.18 min Scan# 444
Delta R.T. -0.07 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:128 Resp: 22766

Ion	Ratio	Lower	Upper
128	100		
129	13.7	0.0	42.1
127	16.6	0.0	45.2

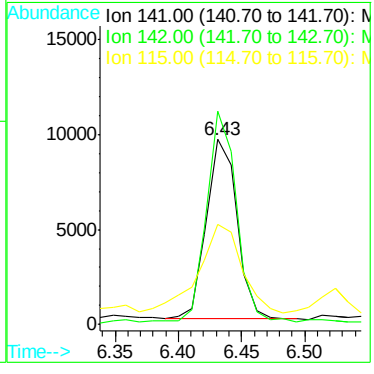




#44
2-Methylnaphthalene
Concen: 2.71 ppb
RT: 6.43 min Scan# 565
Delta R.T. -0.07 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

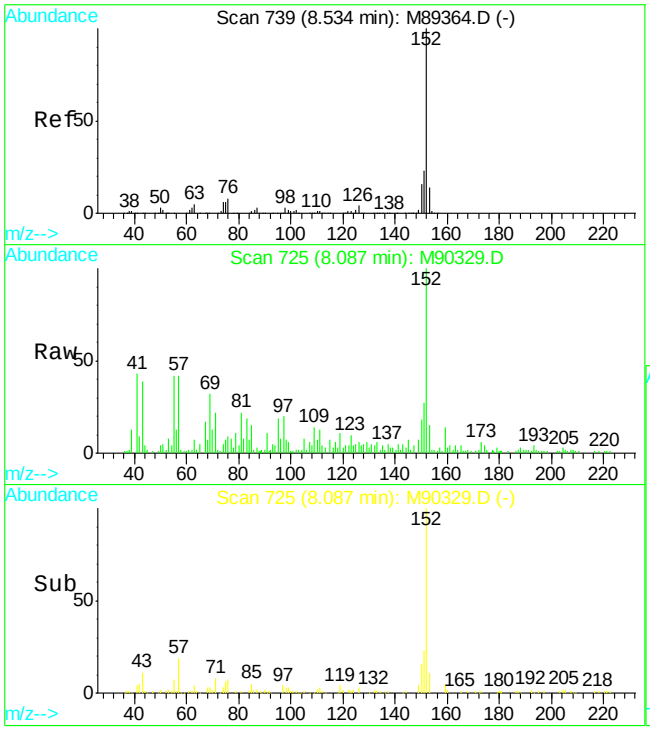
Tgt Ion:141 Resp: 15874

Ion	Ratio	Lower	Upper
141	100		
142	117.0	126.0	186.0#
115	45.8	13.5	73.5



9.1.23

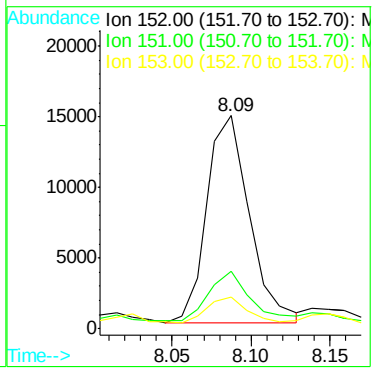
9

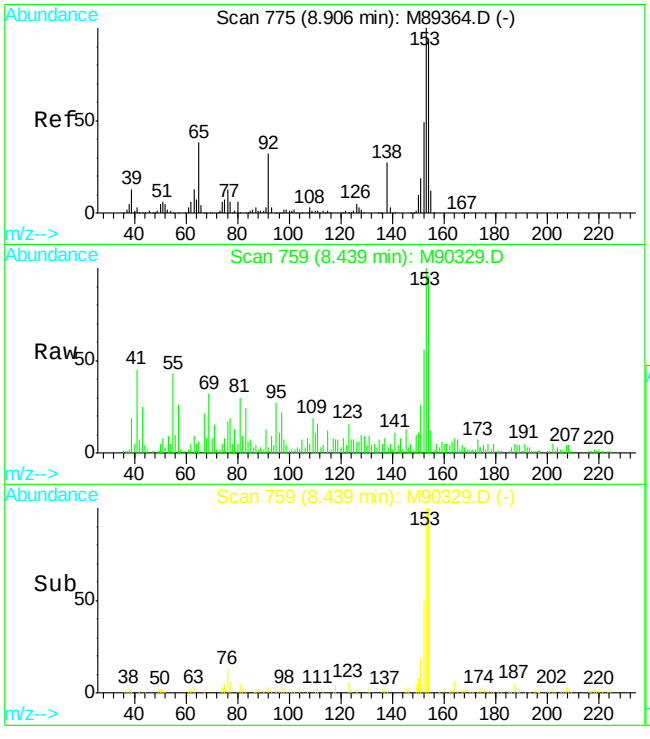


#56
Acenaphthylene
Concen: 2.86 ppb
RT: 8.09 min Scan# 725
Delta R.T. -0.06 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:152 Resp: 27657

Ion	Ratio	Lower	Upper
152	100		
151	22.9	0.0	52.4
153	12.2	0.0	44.5

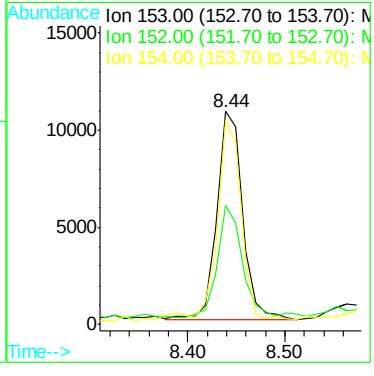




#59
Acenaphthene
Concen: 3.18 ppb
RT: 8.44 min Scan# 759
Delta R.T. -0.07 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:153 Resp: 19738

Ion	Ratio	Lower	Upper
153	100		
152	53.0	17.5	77.5
154	94.8	56.4	116.4



9.1.23

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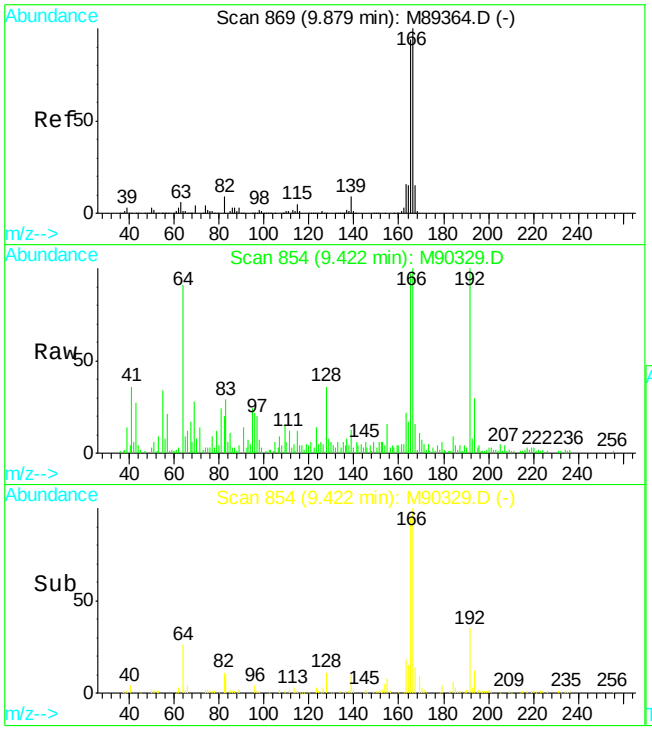
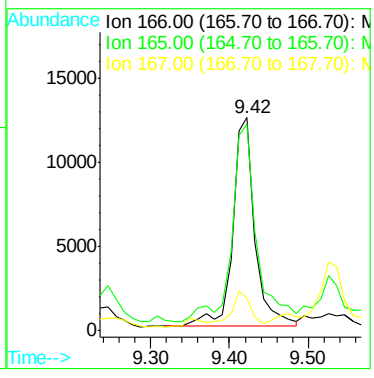
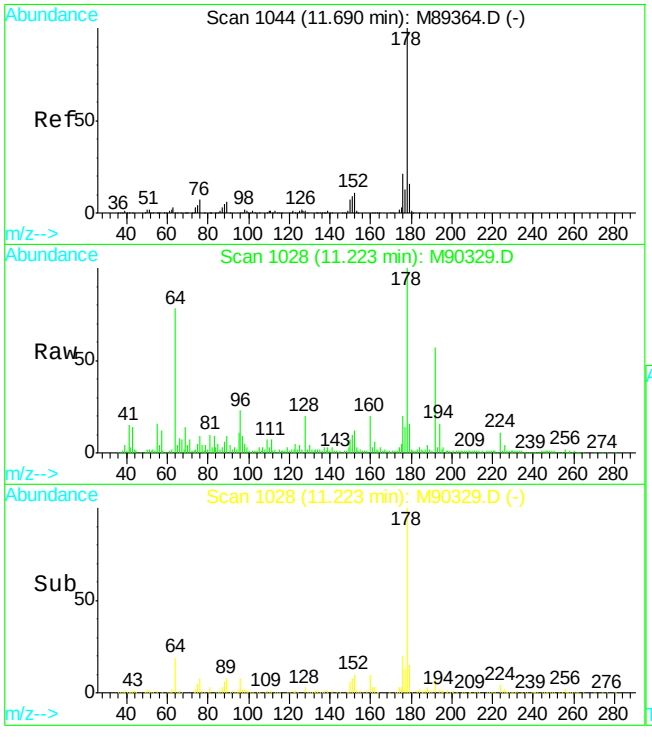


#66
Fluorene
Concen: 3.45 ppb
RT: 9.42 min Scan# 854
Delta R.T. -0.06 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:166 Resp: 24339

Ion	Ratio	Lower	Upper
166	100		
165	93.9	61.7	121.7
167	12.0	0.0	45.5

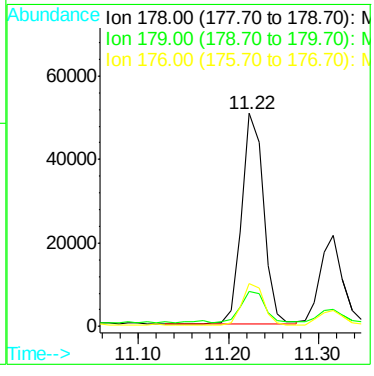




#77
Phenanthrene
Concen: 9.13 ppb
RT: 11.22 min Scan# 1028
Delta R.T. -0.07 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:178 Resp: 85836

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	47.4
176	19.8	0.0	50.3



9.1.23

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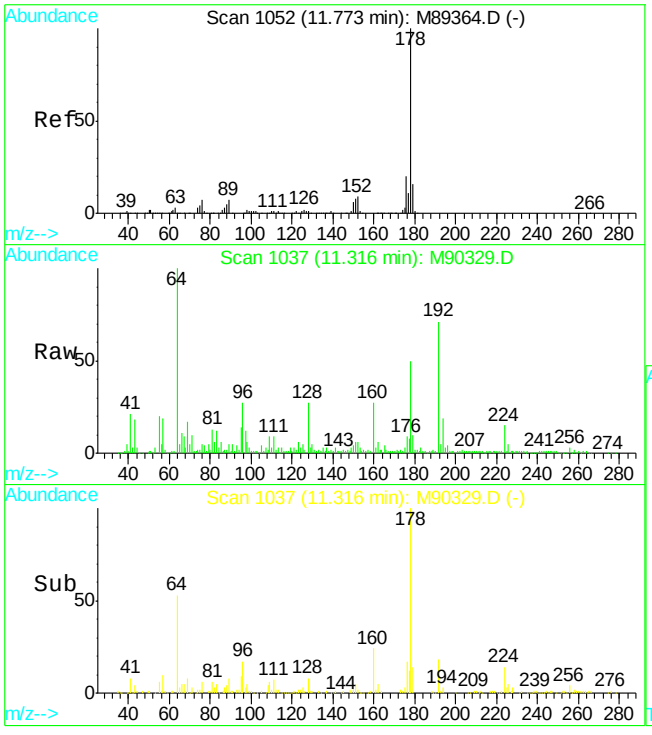
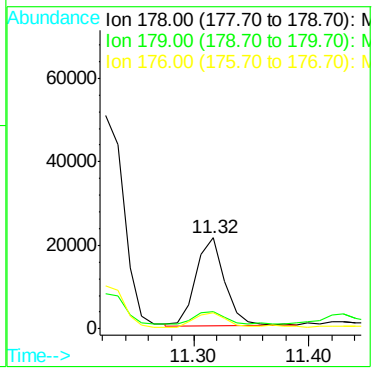
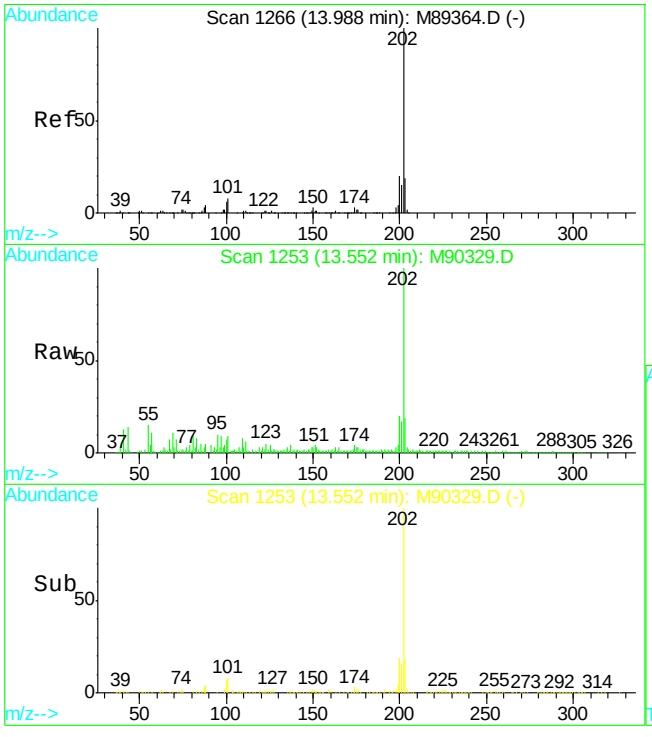


#78
Anthracene
Concen: 4.08 ppb
RT: 11.32 min Scan# 1037
Delta R.T. -0.06 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:178 Resp: 37033

Ion	Ratio	Lower	Upper
178	100		
179	14.4	0.0	47.3
176	16.6	0.0	50.3

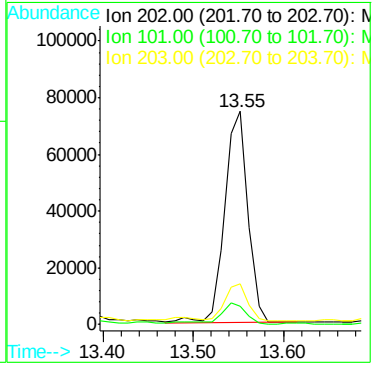


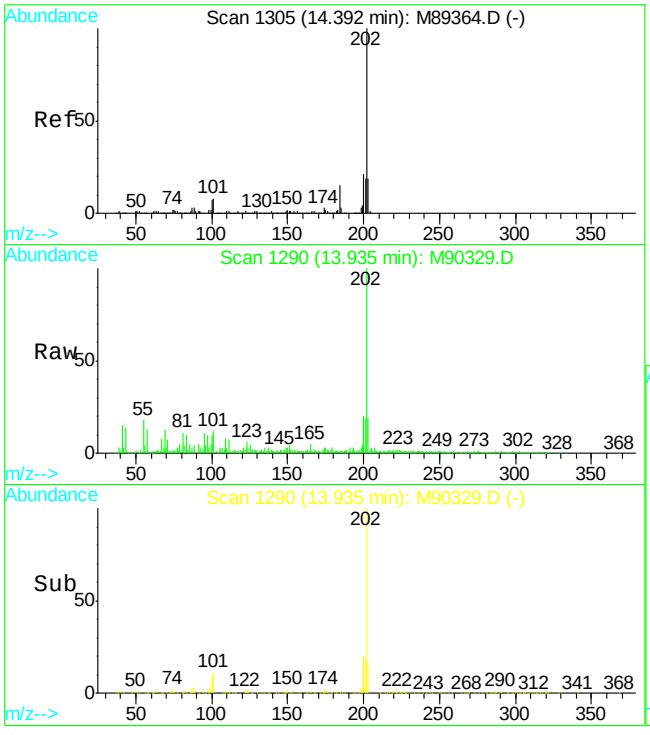


#81
Fluoranthene
Concen: 11.35 ppb
RT: 13.55 min Scan# 1253
Delta R.T. -0.03 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:202 Resp: 133323

Ion	Ratio	Lower	Upper
202	100		
101	8.1	0.0	40.6
203	17.4	0.0	50.3

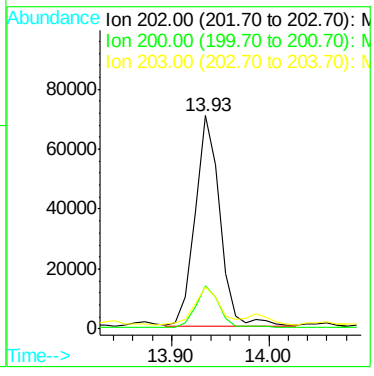


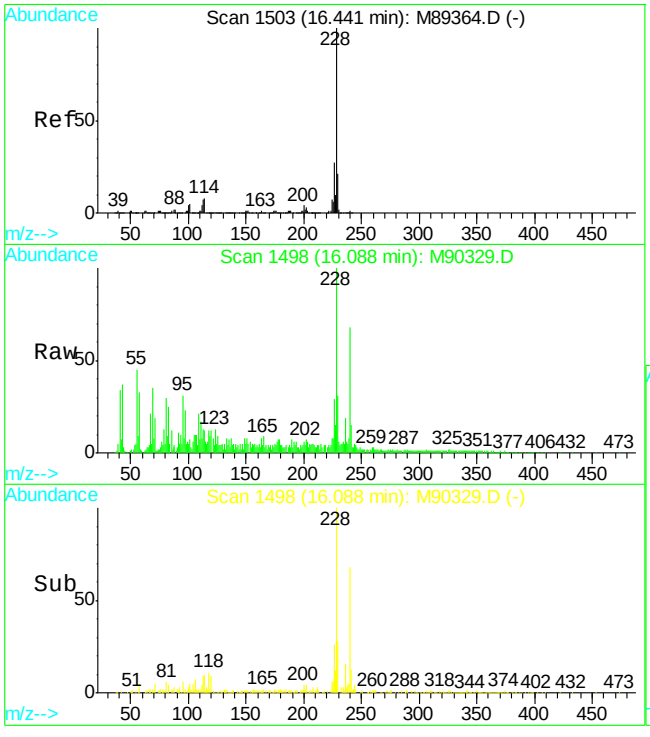


#84
Pyrene
Concen: 12.79 ppb
RT: 13.93 min Scan# 1290
Delta R.T. -0.04 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:202 Resp: 125603

Ion	Ratio	Lower	Upper
202	100		
200	19.9	0.0	51.0
203	17.7	0.0	50.0

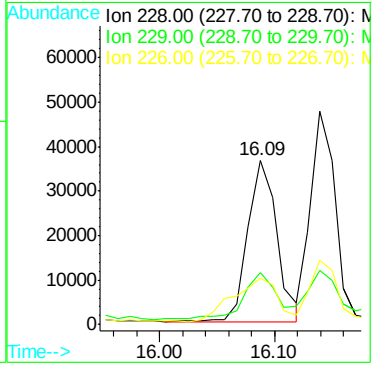




#88
Benzo[a]anthracene
Concen: 6.68 ppb
RT: 16.09 min Scan# 1498
Delta R.T. -0.03 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:228 Resp: 63730

Ion	Ratio	Lower	Upper
228	100		
229	25.8	0.0	53.2
226	26.5	0.0	58.3



9.1.23

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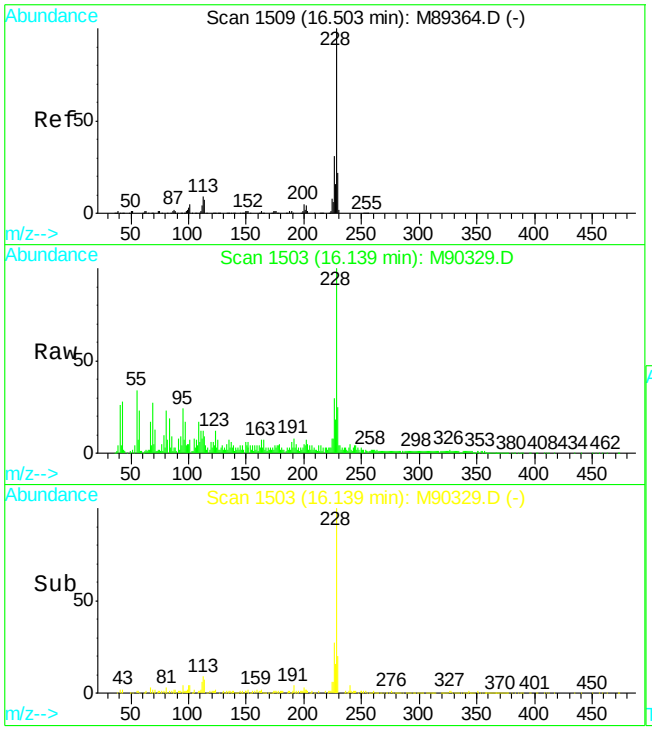
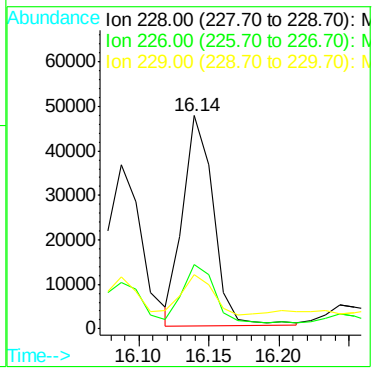
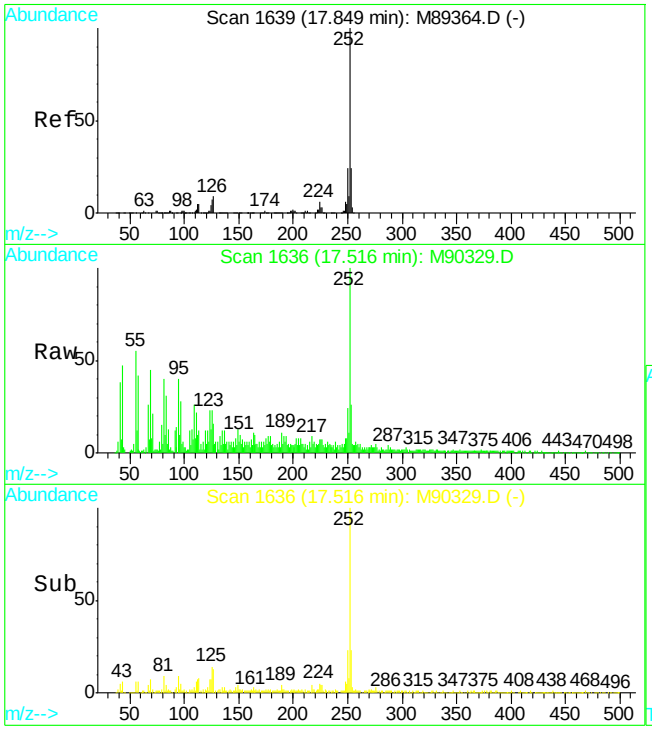


#90
Chrysene
Concen: 8.31 ppb
RT: 16.14 min Scan# 1503
Delta R.T. -0.04 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:228 Resp: 71661

Ion	Ratio	Lower	Upper
228	100		
226	28.2	2.3	62.3
229	18.2	0.0	54.2

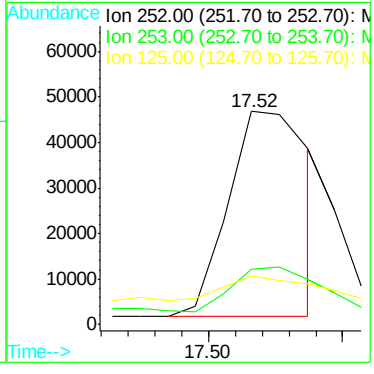


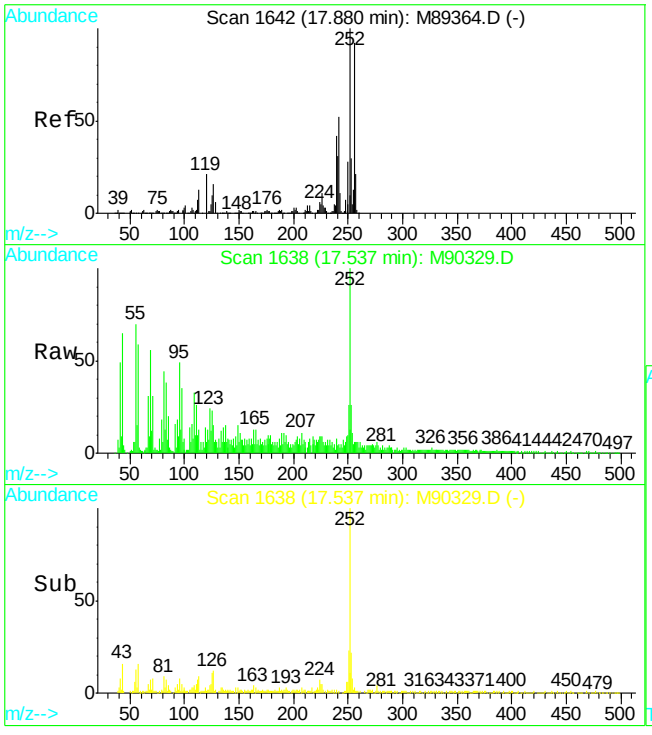


#94
Benzo[b]fluoranthene
Concen: 9.42 ppb m
RT: 17.52 min Scan# 1636
Delta R.T. -0.03 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:252 Resp: 92582

Ion	Ratio	Lower	Upper
252	100		
253	26.1	0.0	55.6
125	22.6	0.0	40.3

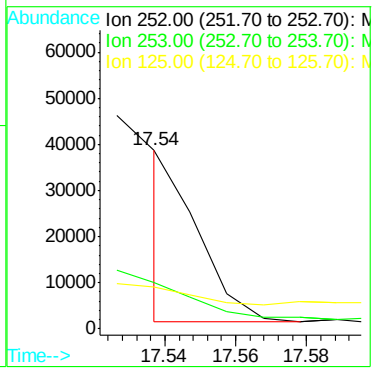


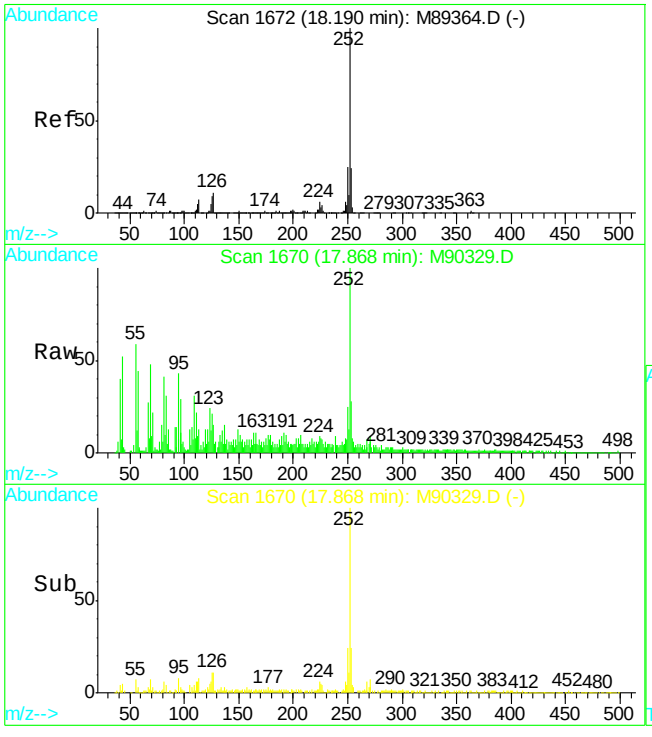


#95
Benzo[k]fluoranthene
Concen: 2.06 ppb m
RT: 17.54 min Scan# 1638
Delta R.T. -0.04 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:252 Resp: 19070

Ion	Ratio	Lower	Upper
252	100		
253	25.7	0.0	58.9
125	23.3	0.0	43.1

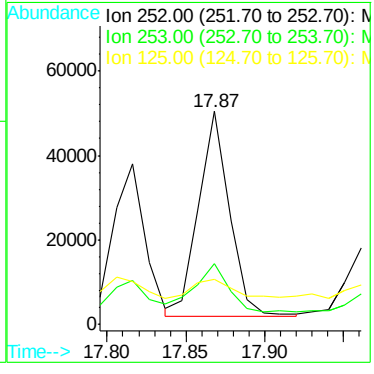


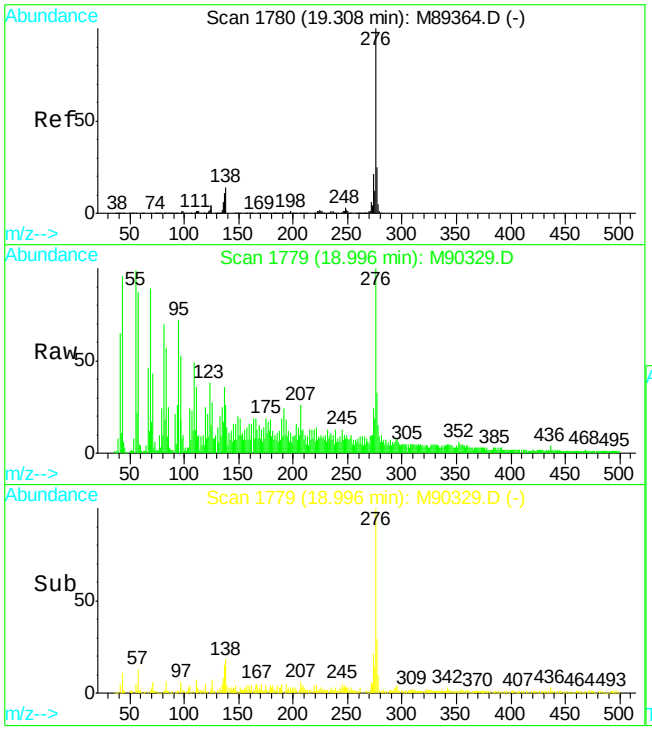


#96
Benzo[a]pyrene
Concen: 7.73 ppb
RT: 17.87 min Scan# 1670
Delta R.T. -0.02 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:252 Resp: 65980

Ion	Ratio	Lower	Upper
252	100		
253	22.1	0.0	55.8
125	8.7	0.0	42.8

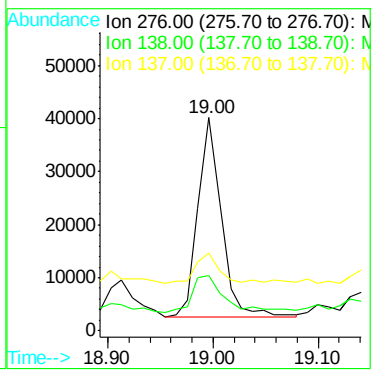


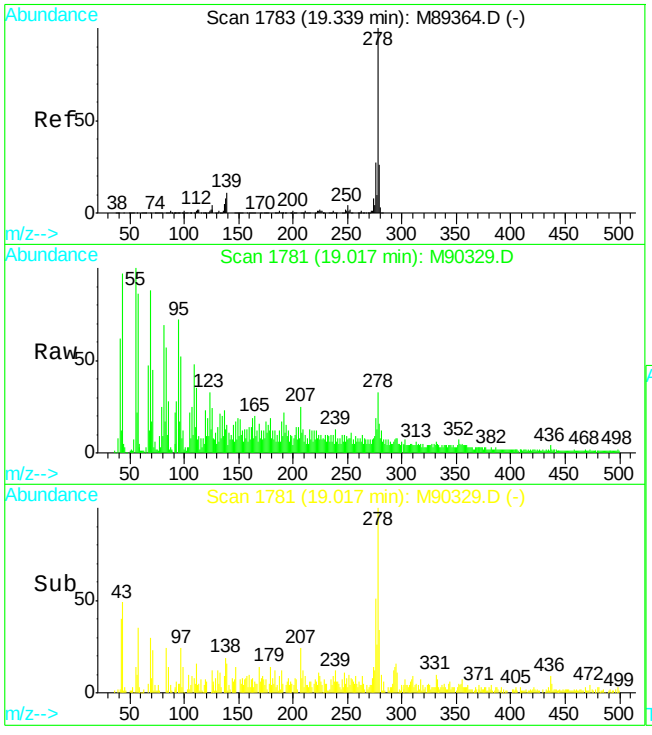


#97
Indeno[1,2,3-cd]pyrene
Concen: 6.21 ppb
RT: 19.00 min Scan# 1779
Delta R.T. -0.01 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:276 Resp: 57924

Ion	Ratio	Lower	Upper
276	100		
138	17.8	0.0	51.4
137	15.1	0.0	45.7

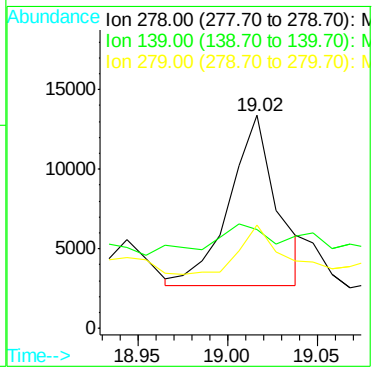




#99
Dibenz[a,h]anthracene
Concen: 2.54 ppb m
RT: 19.02 min Scan# 1781
Delta R.T. -0.02 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:278 Resp: 19453

Ion	Ratio	Lower	Upper
278	100		
139	46.6	0.0	45.4#
279	48.7	0.0	58.2



9.1.23

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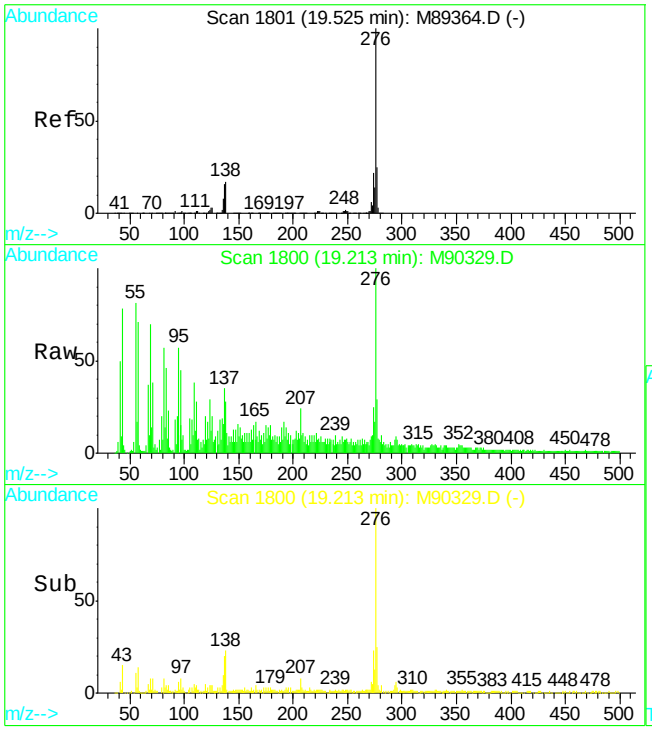
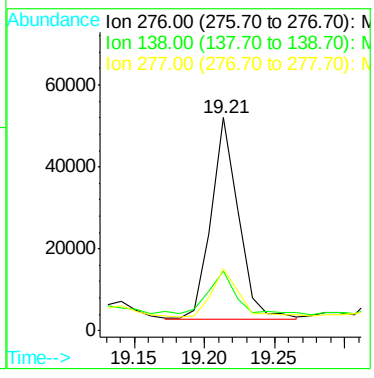


#101
Benzo[g,h,i]perylene
Concen: 8.67 ppb
RT: 19.21 min Scan# 1800
Delta R.T. -0.01 min
Lab File: M90329.D
Acq: 17 Dec 2012 8:05 pm

Tgt Ion:276 Resp: 66438

Ion	Ratio	Lower	Upper
276	100		
138	20.5	0.0	53.9
277	23.5	0.0	57.2



9.1.23

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90331.D Vial: 24
Acq On : 17 Dec 2012 8:49 pm Operator: olgaa
Sample : jb22822-18 Inst : MSM
Misc : op62037,em3659,34.4 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:41 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.19	152	95775	40.00	ppb	-0.07
24) Naphthalene-d8	5.15	136	380356	40.00	ppb	-0.07
47) Acenaphthene-d10	8.39	164	224812	40.00	ppb	-0.07
69) Phenanthrene-d10	11.19	188	364062	40.00	ppb	-0.06
83) Chrysene-d12	16.11	240	346226	40.00	ppb	-0.04
92) Perylene-d12	17.94	264	304520	40.00	ppb	-0.02
102) 1,4-Dichlorobenzene-d4a	3.19	152	95775	40.00	ppb	-0.07
104) Acenaphthene-d10a	8.39	164	224812	40.00	ppb	-0.07
106) Phenanthrene-d10a	11.19	188	364062	40.00	ppb	-0.06
108) Chrysene-d12a	16.11	240	346226	40.00	ppb	-0.04
System Monitoring Compounds						
5) 2-Fluorophenol	1.93	112	57289	18.48	ppb	-0.03
Spiked Amount 50.000			Recovery	=	36.96%	
8) Phenol-d5	2.98	99	91945	23.45	ppb	0.00
Spiked Amount 50.000			Recovery	=	46.90%	
25) Nitrobenzene-d5	4.05	82	58552	15.26	ppb	-0.06
Spiked Amount 50.000			Recovery	=	30.52%	
51) 2-Fluorobiphenyl	7.22	172	196993	27.60	ppb	-0.08
Spiked Amount 50.000			Recovery	=	55.20%	
73) 2,4,6-Tribromophenol	9.96	330	26964	41.69	ppb	-0.05
Spiked Amount 50.000			Recovery	=	83.38%	
86) Terphenyl-d14	14.45	244	306955	43.38	ppb	-0.05
Spiked Amount 50.000			Recovery	=	86.76%	

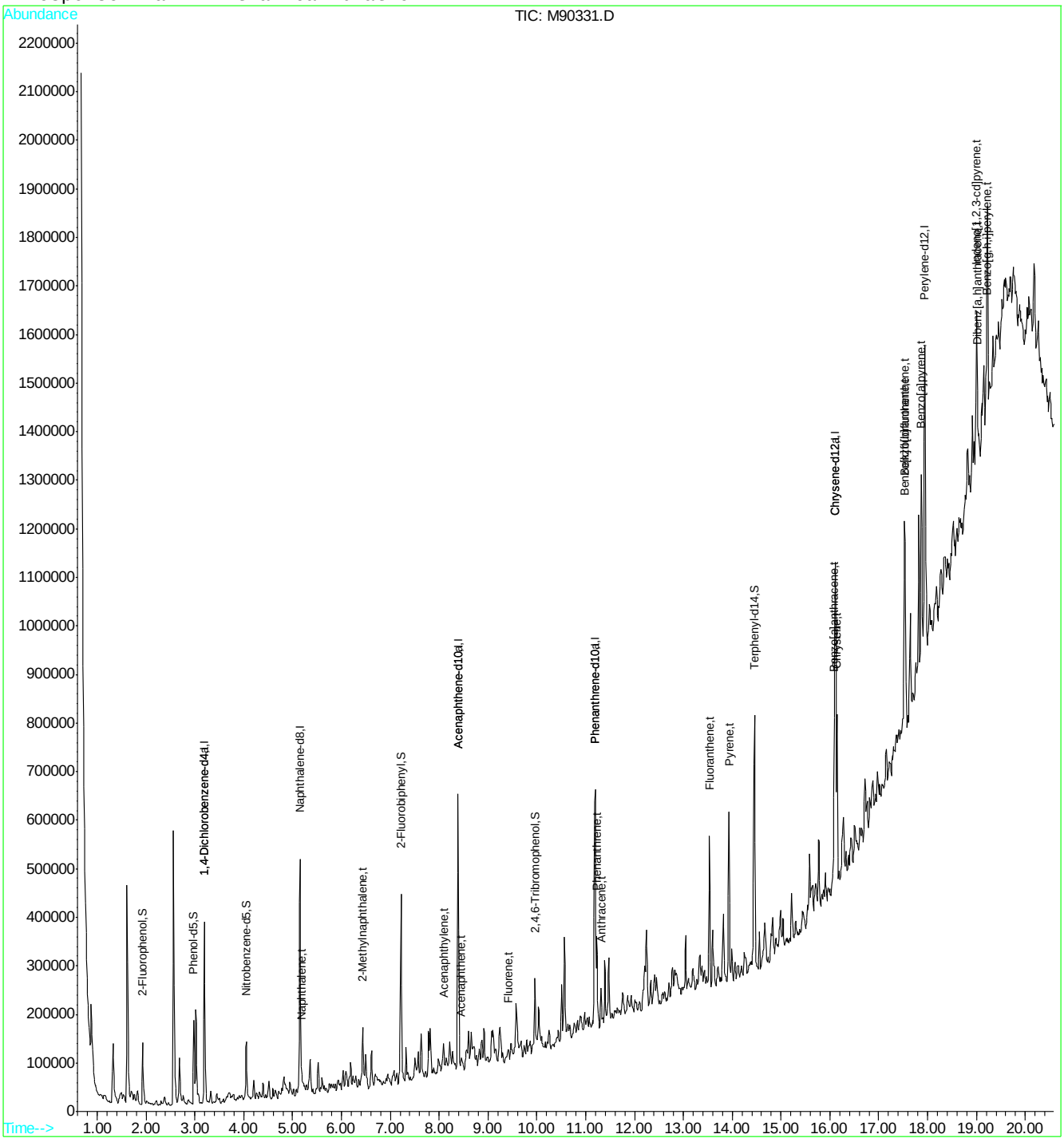
Target Compounds							Qvalue
38) Naphthalene	5.18	128	32258	3.09	ppb		96
44) 2-Methylnaphthalene	6.43	141	39620	6.17	ppb	#	73
56) Acenaphthylene	8.09	152	50014	5.11	ppb		97
59) Acenaphthene	8.44	153	8067	1.28	ppb		97
66) Fluorene	9.42	166	13564m	1.90	ppb		
77) Phenanthrene	11.23	178	131972	14.31	ppb		96
78) Anthracene	11.32	178	58557	6.58	ppb		97
81) Fluoranthene	13.53	202	239241	20.74	ppb		94
84) Pyrene	13.94	202	306444	29.39	ppb		96
88) Benzo[a]anthracene	16.09	228	186964	18.46	ppb		97
90) Chrysene	16.14	228	209557	22.89	ppb		95
94) Benzo[b]fluoranthene	17.53	252	274855m	27.43	ppb		
95) Benzo[k]fluoranthene	17.54	252	94014m	9.95	ppb		
96) Benzo[a]pyrene	17.87	252	222906	25.61	ppb		93
97) Indeno[1,2,3-cd]pyrene	19.00	276	183029	19.25	ppb		98
99) Dibenz[a,h]anthracene	19.02	278	66763m	8.56	ppb		
101) Benzo[g,h,i]perylene	19.23	276	224233	28.69	ppb		94

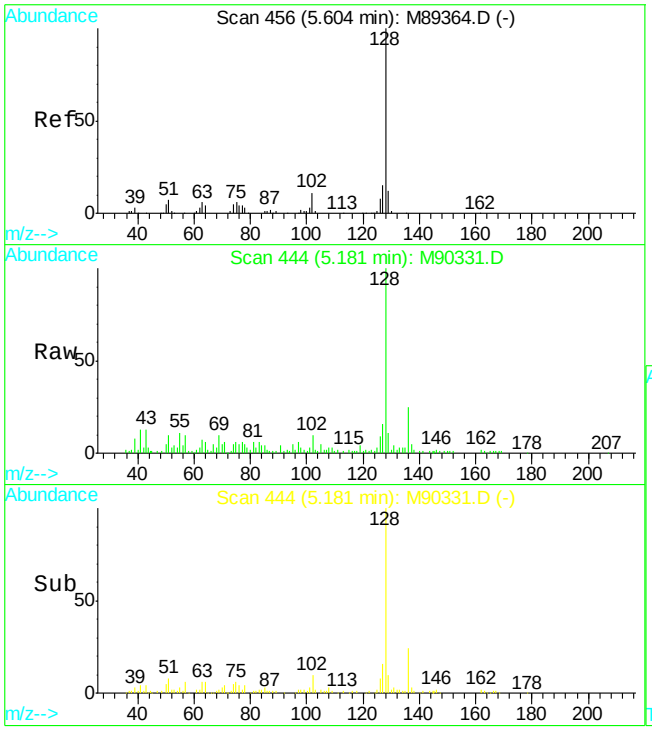
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90331.D Vial: 24
Acq On : 17 Dec 2012 8:49 pm Operator: olgaa
Sample : jb22822-18 Inst : MSM
Misc : op62037,em3659,34.4 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:41 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

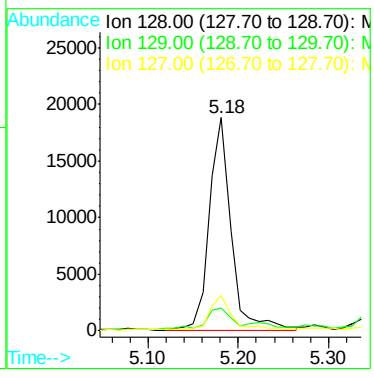


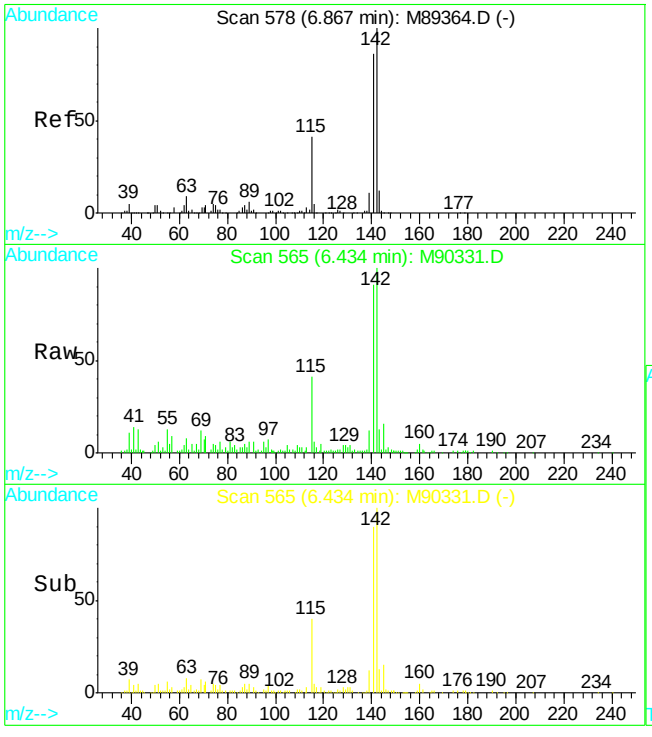


#38
Naphthalene
Concen: 3.09 ppb
RT: 5.18 min Scan# 444
Delta R.T. -0.07 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:128 Resp: 32258

Ion	Ratio	Lower	Upper
128	100		
129	9.3	0.0	42.1
127	15.8	0.0	45.2

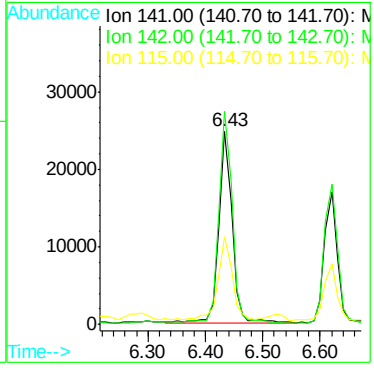




#44
2-Methylnaphthalene
Concen: 6.17 ppb
RT: 6.43 min Scan# 565
Delta R.T. -0.07 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

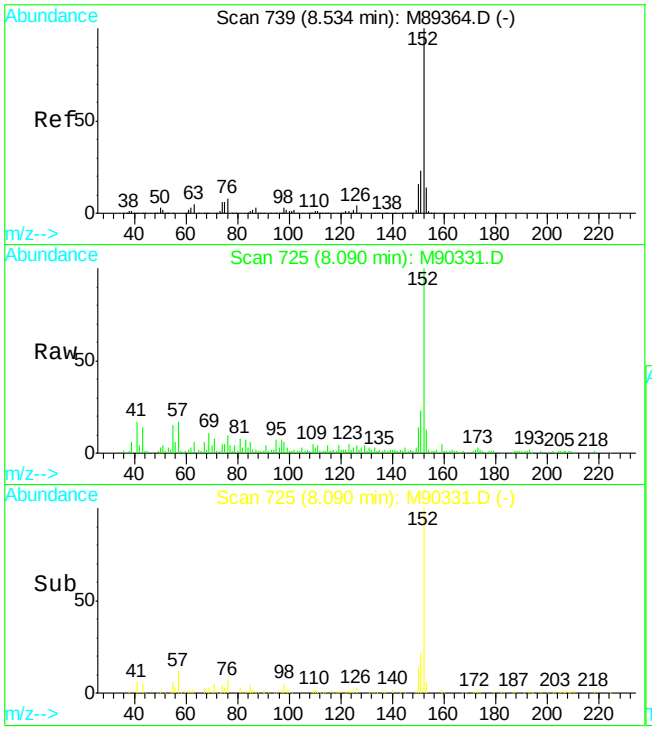
Tgt Ion:141 Resp: 39620

Ion	Ratio	Lower	Upper
141	100		
142	110.5	126.0	186.0#
115	43.2	13.5	73.5



9.1.24

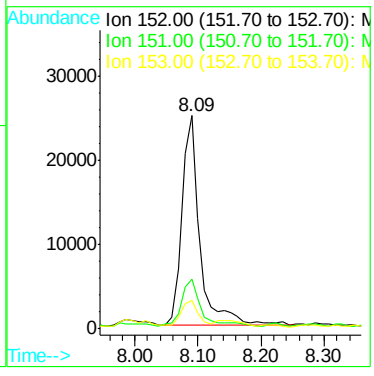
9

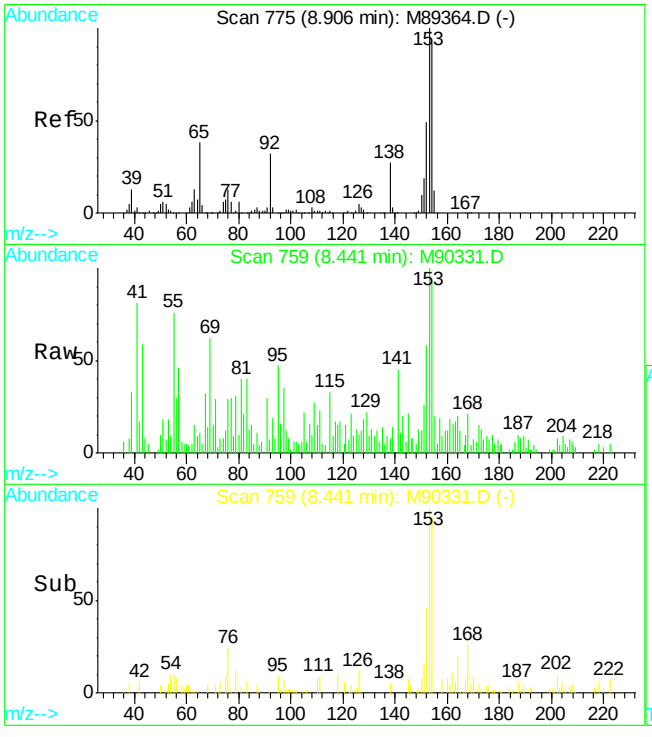


#56
Acenaphthylene
Concen: 5.11 ppb
RT: 8.09 min Scan# 725
Delta R.T. -0.06 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:152 Resp: 50014

Ion	Ratio	Lower	Upper
152	100		
151	21.8	0.0	52.4
153	12.1	0.0	44.5

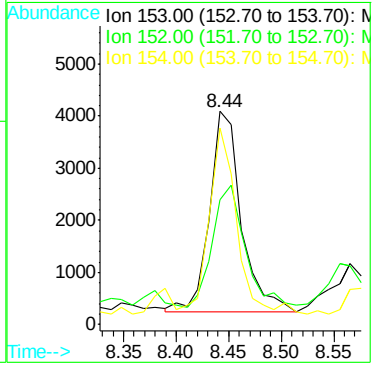


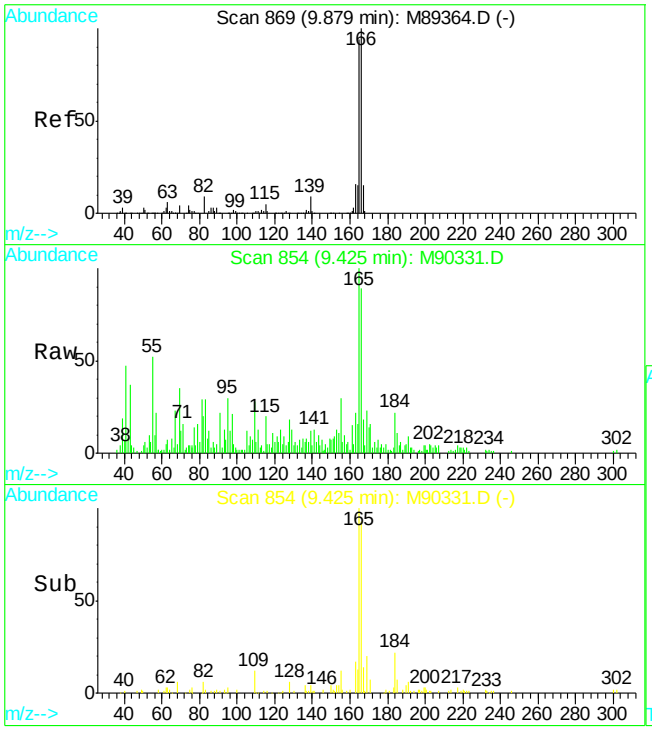


#59
Acenaphthene
Concen: 1.28 ppb
RT: 8.44 min Scan# 759
Delta R.T. -0.07 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:153 Resp: 8067

Ion	Ratio	Lower	Upper
153	100		
152	52.1	17.5	77.5
154	86.0	56.4	116.4

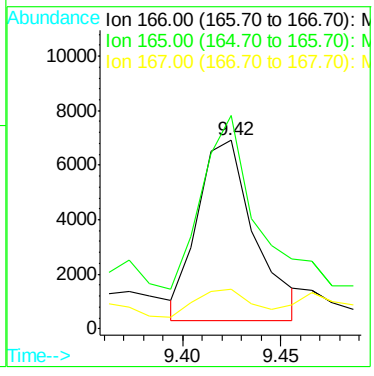


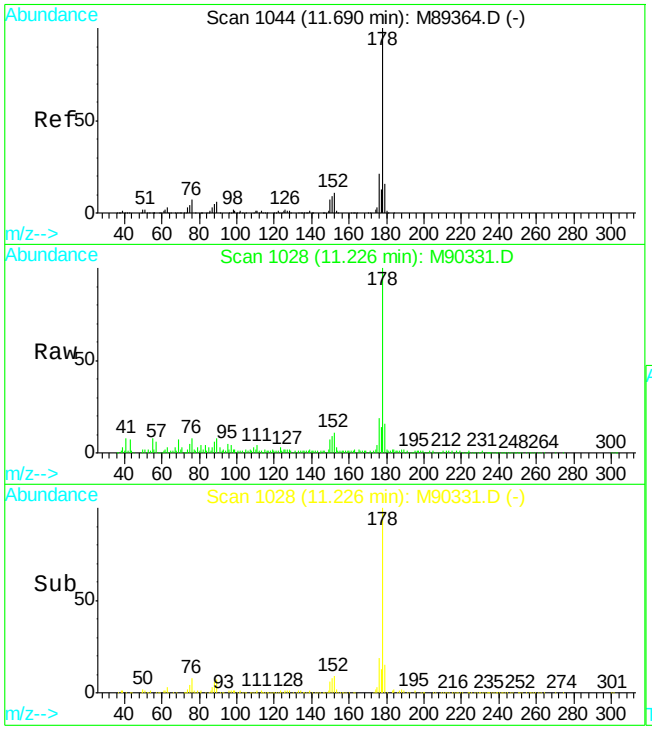


#66
Fluorene
Concen: 1.90 ppb m
RT: 9.42 min Scan# 854
Delta R.T. -0.06 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:166 Resp: 13564

Ion	Ratio	Lower	Upper
166	100		
165	112.7	61.7	121.7
167	20.6	0.0	45.5

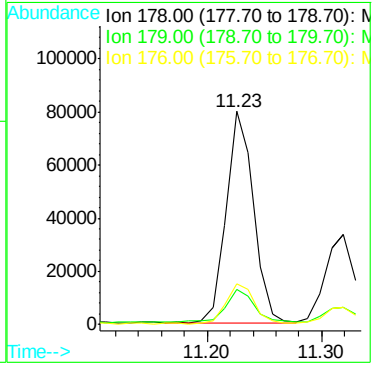




#77
Phenanthrene
Concen: 14.31 ppb
RT: 11.23 min Scan# 1028
Delta R.T. -0.07 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:178 Resp: 131972

Ion	Ratio	Lower	Upper
178	100		
179	15.3	0.0	47.4
176	18.7	0.0	50.3



9.1.24

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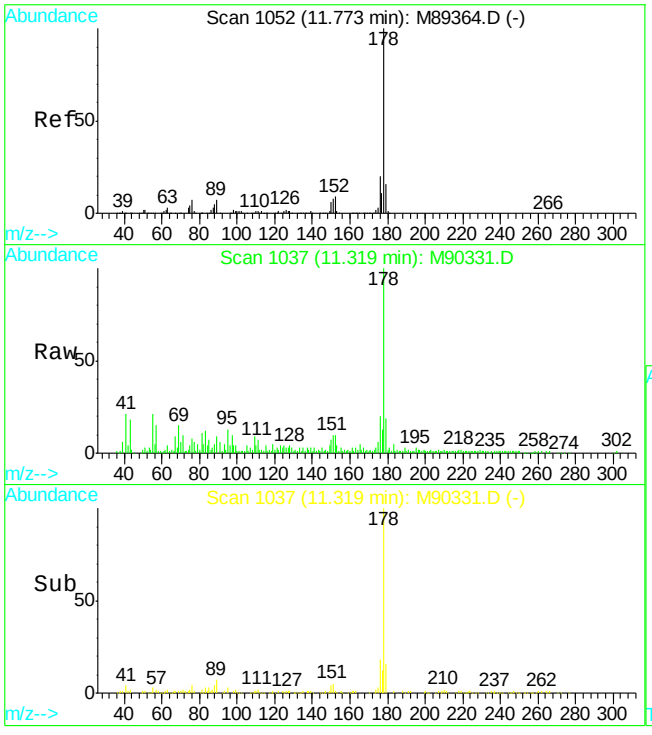
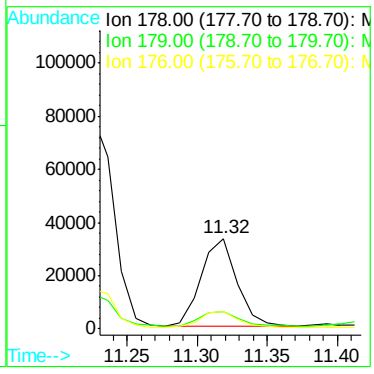
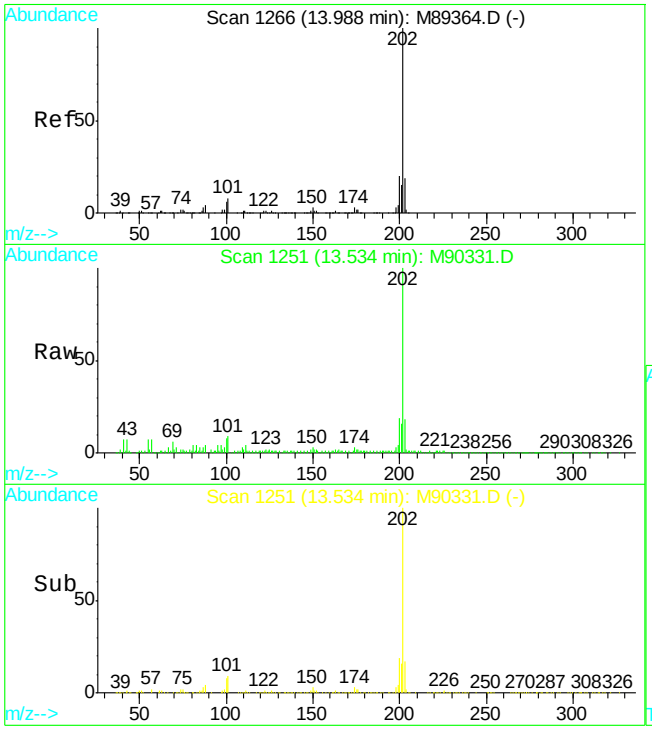


#78
Anthracene
Concen: 6.58 ppb
RT: 11.32 min Scan# 1037
Delta R.T. -0.06 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:178 Resp: 58557

Ion	Ratio	Lower	Upper
178	100		
179	16.4	0.0	47.3
176	18.4	0.0	50.3

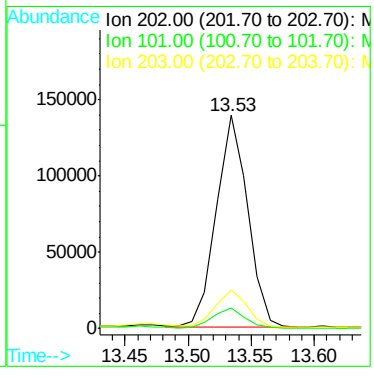


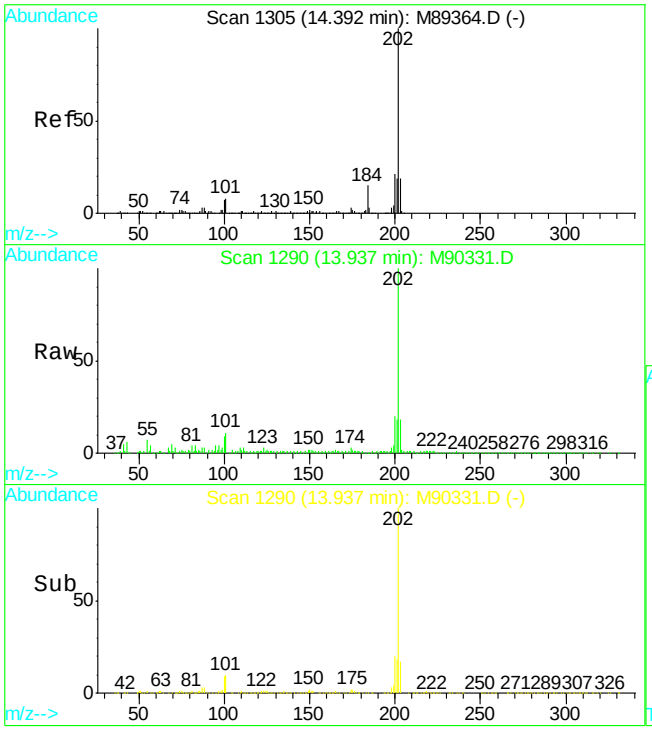


#81
Fluoranthene
Concen: 20.74 ppb
RT: 13.53 min Scan# 1251
Delta R.T. -0.05 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:202 Resp: 239241

Ion	Ratio	Lower	Upper
202	100		
101	9.1	0.0	40.6
203	17.1	0.0	50.3

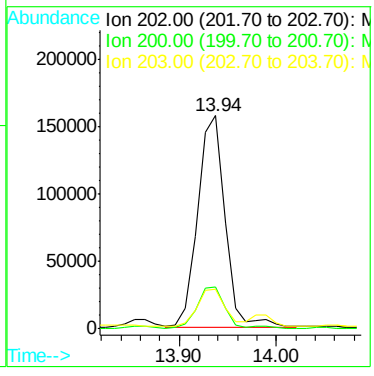


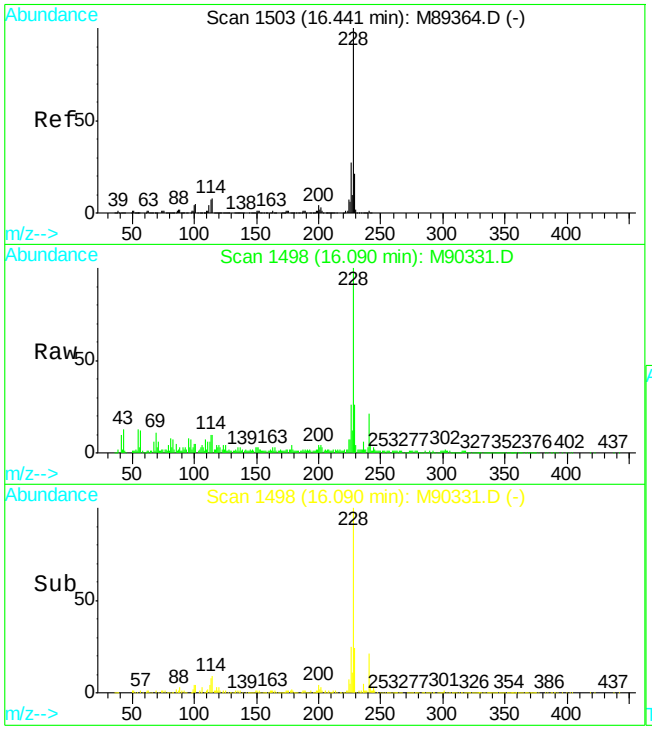


#84
Pyrene
Concen: 29.39 ppb
RT: 13.94 min Scan# 1290
Delta R.T. -0.04 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:202 Resp: 306444

Ion	Ratio	Lower	Upper
202	100		
200	19.7	0.0	51.0
203	17.6	0.0	50.0

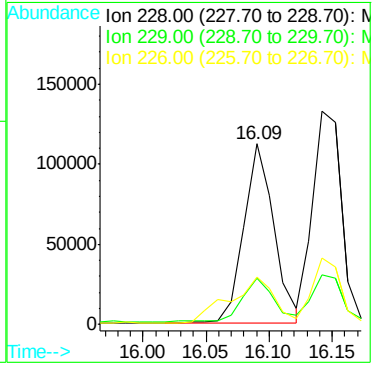


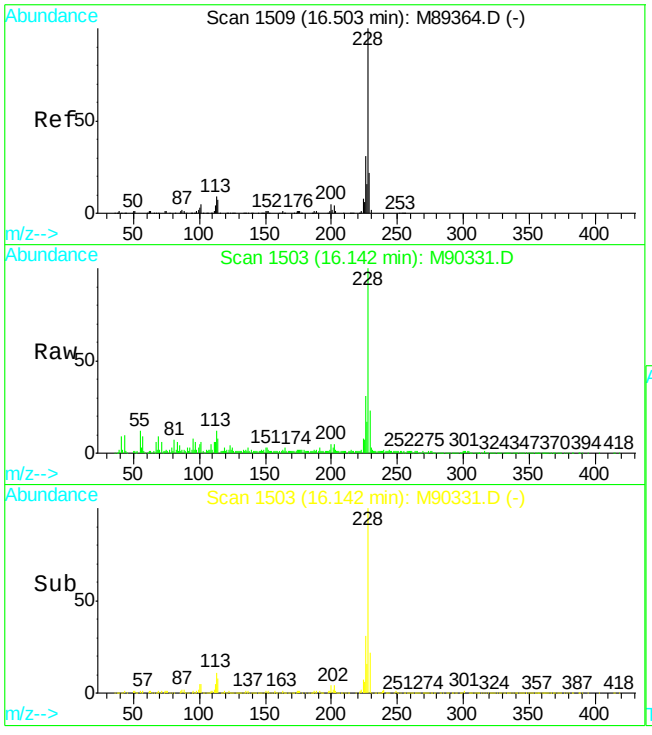


#88
Benzo[a]anthracene
Concen: 18.46 ppb
RT: 16.09 min Scan# 1498
Delta R.T. -0.03 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:228 Resp: 186964

Ion	Ratio	Lower	Upper
228	100		
229	23.5	0.0	53.2
226	25.5	0.0	58.3

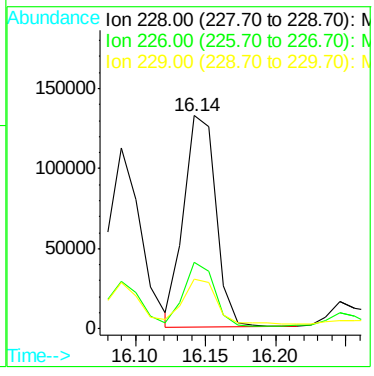


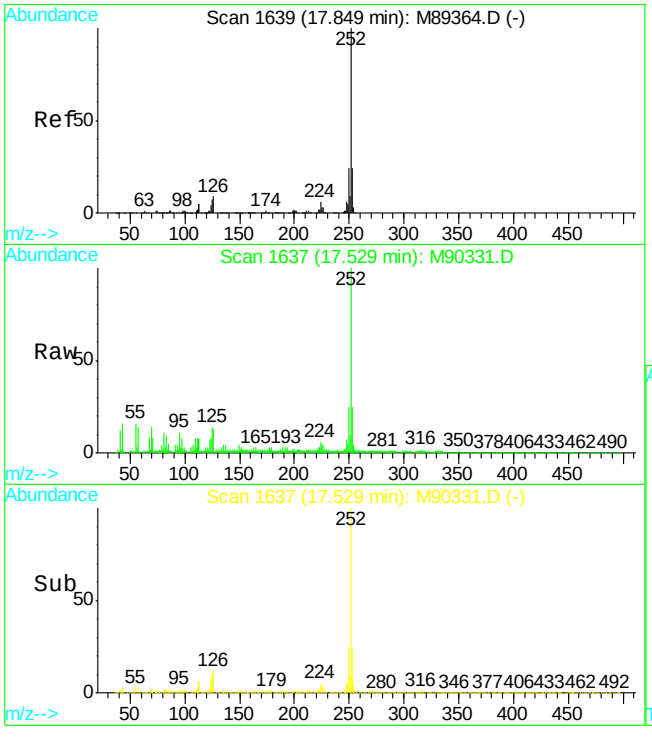


#90
Chrysene
Concen: 22.89 ppb
RT: 16.14 min Scan# 1503
Delta R.T. -0.04 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:228 Resp: 209557

Ion	Ratio	Lower	Upper
228	100		
226	30.5	2.3	62.3
229	20.8	0.0	54.2

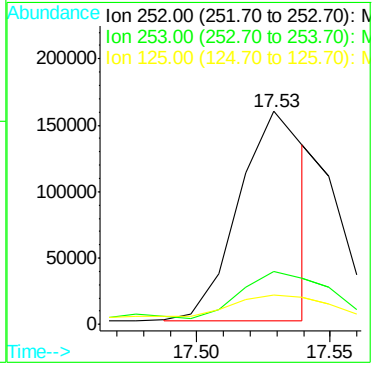




#94
Benzo[b]fluoranthene
Concen: 27.43 ppb m
RT: 17.53 min Scan# 1637
Delta R.T. -0.02 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

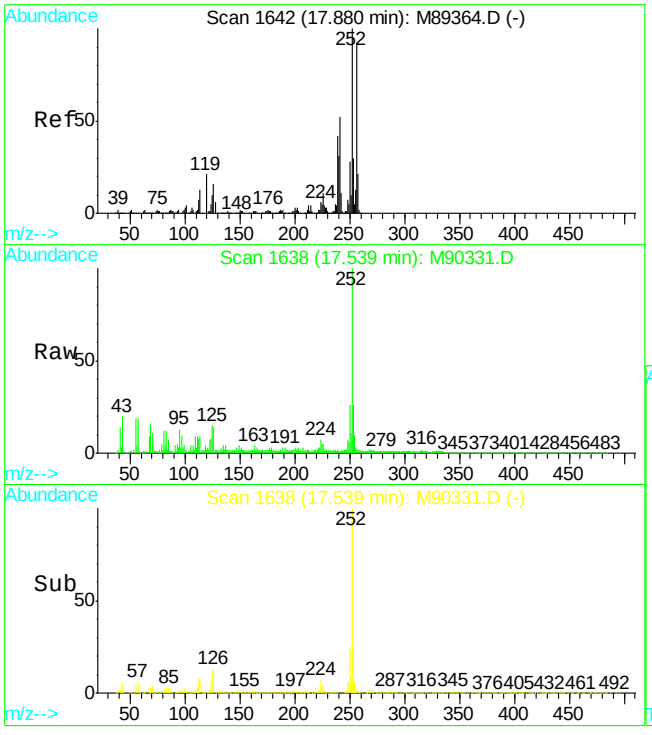
Tgt Ion:252 Resp: 274855

Ion	Ratio	Lower	Upper
252	100		
253	25.0	0.0	55.6
125	13.7	0.0	40.3



9.1.24

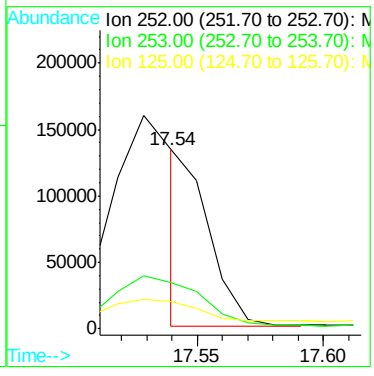
9

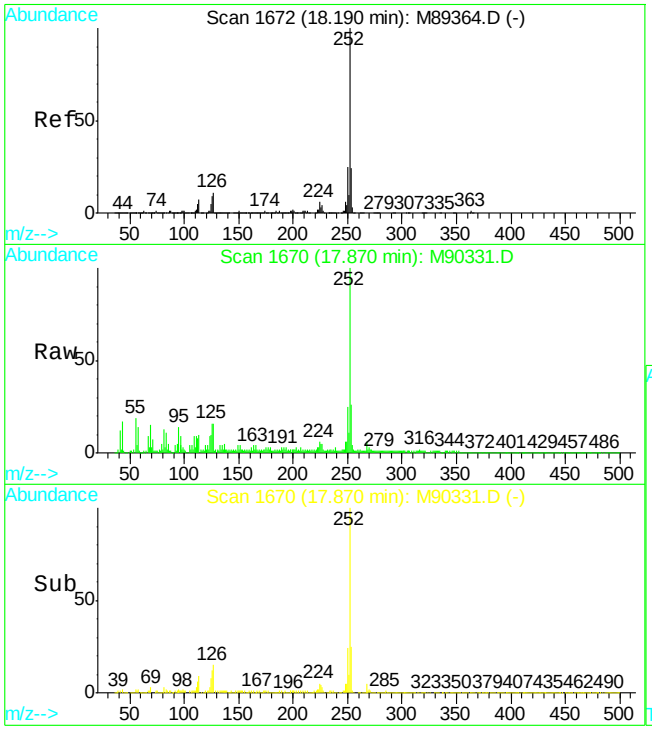


#95
Benzo[k]fluoranthene
Concen: 9.95 ppb m
RT: 17.54 min Scan# 1638
Delta R.T. -0.04 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:252 Resp: 94014

Ion	Ratio	Lower	Upper
252	100		
253	25.5	0.0	58.9
125	15.3	0.0	43.1

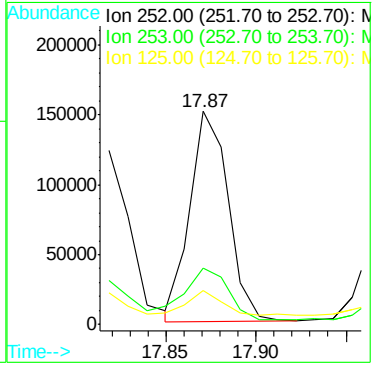




#96
Benzo[a]pyrene
Concen: 25.61 ppb
RT: 17.87 min Scan# 1670
Delta R.T. -0.02 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

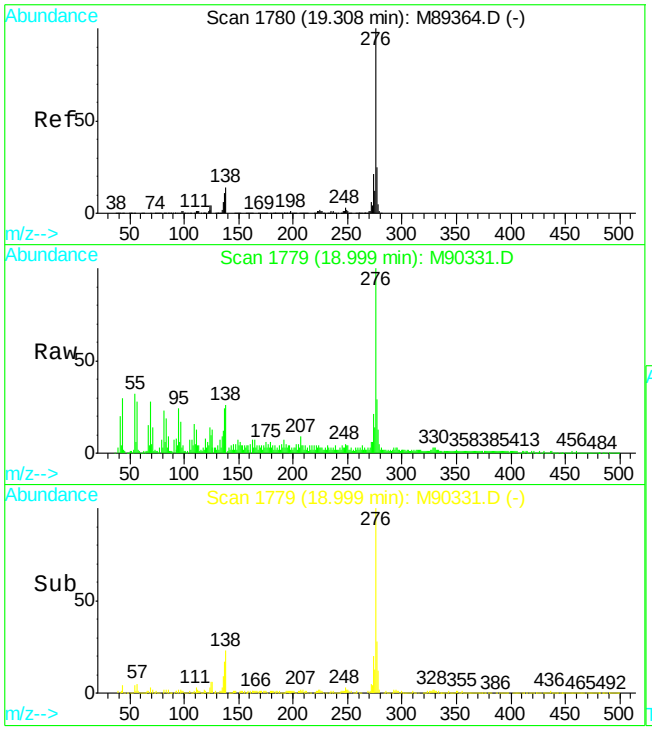
Tgt Ion:252 Resp: 222906

Ion	Ratio	Lower	Upper
252	100		
253	21.7	0.0	55.8
125	11.5	0.0	42.8



9.1.24

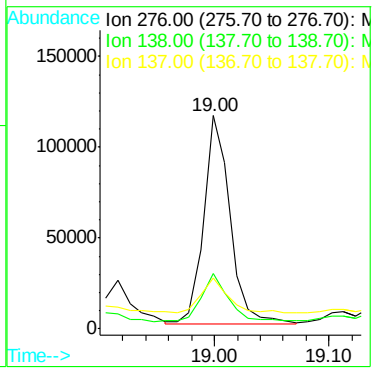
9

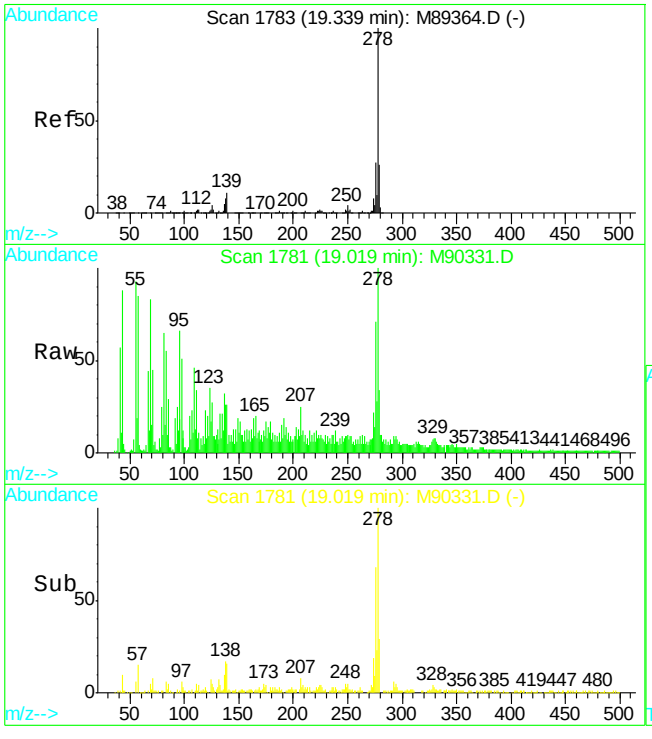


#97
Indeno[1,2,3-cd]pyrene
Concen: 19.25 ppb
RT: 19.00 min Scan# 1779
Delta R.T. -0.01 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:276 Resp: 183029

Ion	Ratio	Lower	Upper
276	100		
138	22.7	0.0	51.4
137	16.5	0.0	45.7

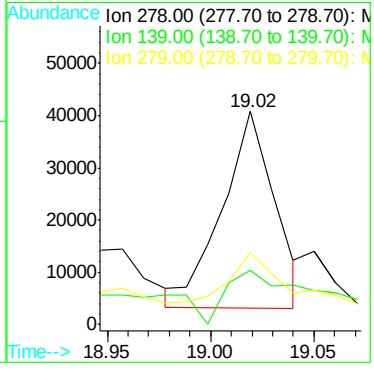


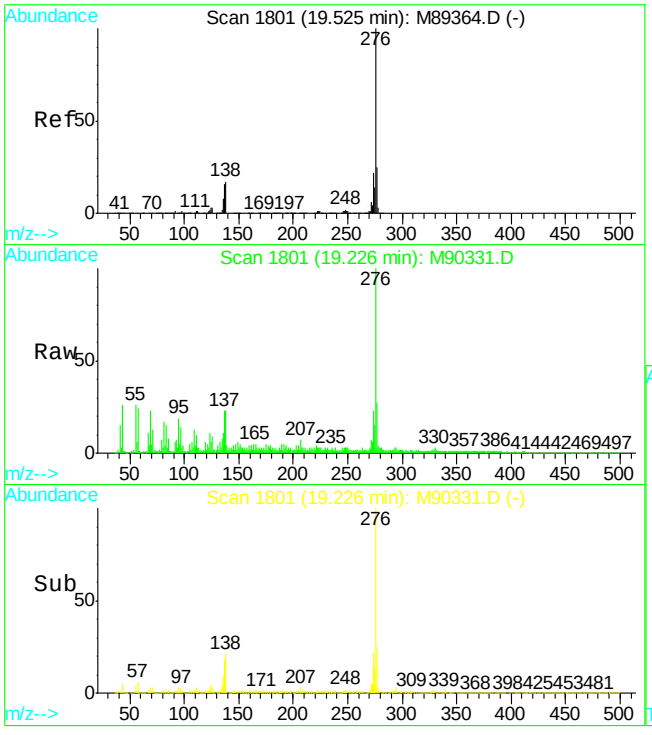


#99
Dibenz[a,h]anthracene
Concen: 8.56 ppb m
RT: 19.02 min Scan# 1781
Delta R.T. -0.02 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:278 Resp: 66763

Ion	Ratio	Lower	Upper
278	100		
139	25.5	0.0	45.4
279	33.8	0.0	58.2

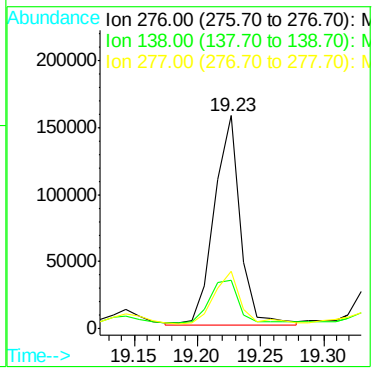




#101
Benzo[g,h,i]perylene
Concen: 28.69 ppb
RT: 19.23 min Scan# 1801
Delta R.T. 0.00 min
Lab File: M90331.D
Acq: 17 Dec 2012 8:49 pm

Tgt Ion:276 Resp: 224233

Ion	Ratio	Lower	Upper
276	100		
138	20.2	0.0	53.9
277	24.7	0.0	57.2



9.1.24

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90332.D Vial: 25
Acq On : 17 Dec 2012 9:19 pm Operator: olgaa
Sample : jb22822-19 Inst : MSM
Misc : op62037,em3659,33.4 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:43 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.19	152	104859	40.00	ppb	-0.07
24) Naphthalene-d8	5.15	136	378805	40.00	ppb	-0.07
47) Acenaphthene-d10	8.39	164	226708	40.00	ppb	-0.07
69) Phenanthrene-d10	11.20	188	367859	40.00	ppb	-0.06
83) Chrysene-d12	16.12	240	364723	40.00	ppb	-0.03
92) Perylene-d12	17.95	264	320647	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	3.19	152	104859	40.00	ppb	-0.07
104) Acenaphthene-d10a	8.39	164	226708	40.00	ppb	-0.07
106) Phenanthrene-d10a	11.20	188	367859	40.00	ppb	-0.06
108) Chrysene-d12a	16.12	240	364723	40.00	ppb	-0.03
System Monitoring Compounds						
5) 2-Fluorophenol	1.94	112	62709	18.47	ppb	-0.02
Spiked Amount 50.000			Recovery = 36.94%			
8) Phenol-d5	2.98	99	97947	22.82	ppb	0.00
Spiked Amount 50.000			Recovery = 45.64%			
25) Nitrobenzene-d5	4.05	82	63214	16.54	ppb	-0.06
Spiked Amount 50.000			Recovery = 33.08%			
51) 2-Fluorobiphenyl	7.22	172	184367	25.62	ppb	-0.08
Spiked Amount 50.000			Recovery = 51.24%			
73) 2,4,6-Tribromophenol	9.96	330	28960	44.31	ppb	-0.05
Spiked Amount 50.000			Recovery = 88.62%			
86) Terphenyl-d14	14.46	244	290563	38.98	ppb	-0.05
Spiked Amount 50.000			Recovery = 77.96%			

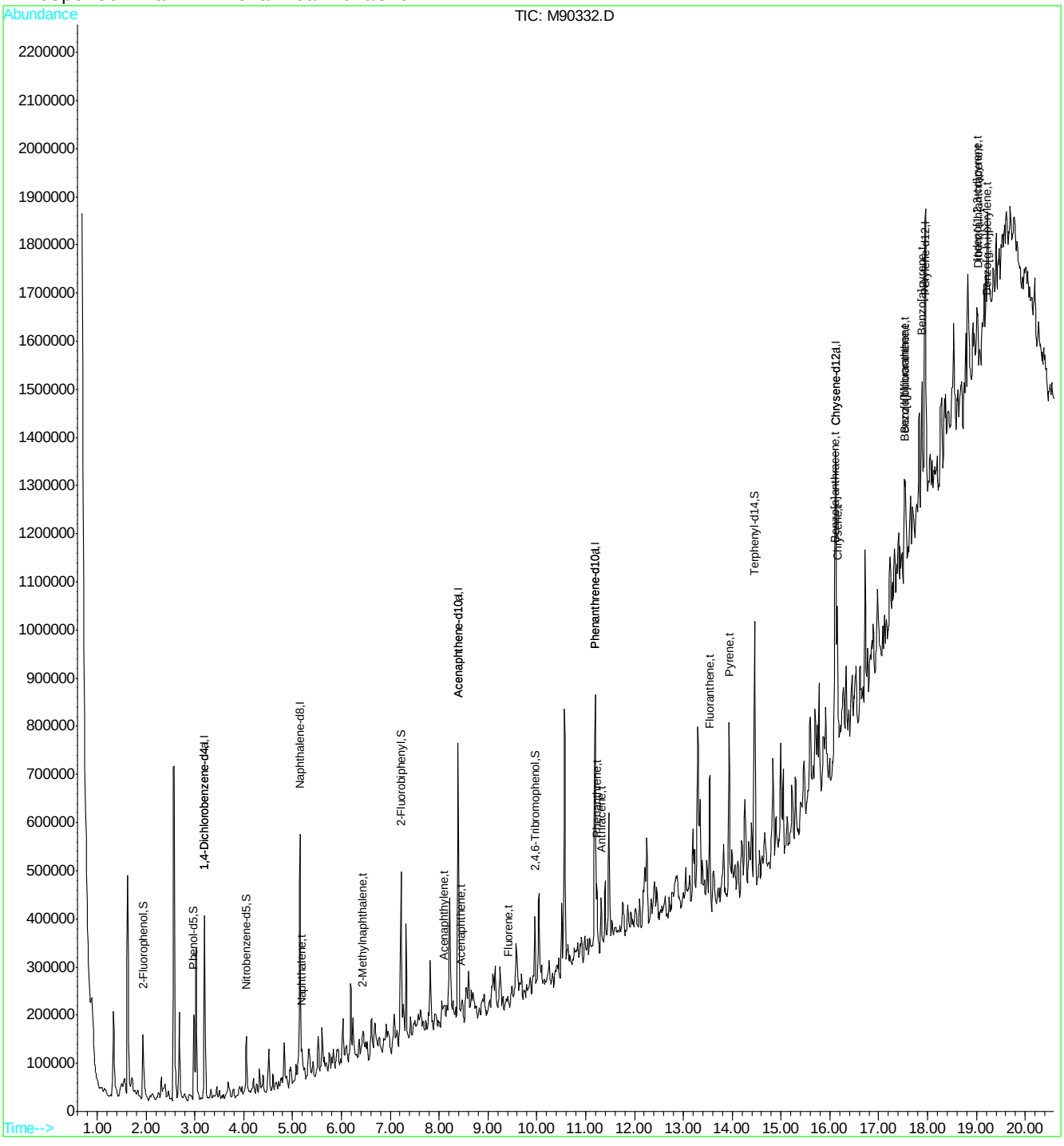
Target Compounds							Qvalue
38) Naphthalene	5.18	128	23549	2.27	ppb		96
44) 2-Methylnaphthalene	6.43	141	8975	1.40	ppb	#	81
56) Acenaphthylene	8.09	152	22912	2.32	ppb		97
59) Acenaphthene	8.44	153	11676	1.84	ppb		84
66) Fluorene	9.43	166	13096	1.82	ppb		96
77) Phenanthrene	11.23	178	90299	9.69	ppb		98
78) Anthracene	11.32	178	61035	6.79	ppb		96
81) Fluoranthene	13.54	202	238250	20.45	ppb		93
84) Pyrene	13.94	202	280254	25.52	ppb		95
88) Benzo[a]anthracene	16.10	228	120565	11.30	ppb		97
90) Chrysene	16.15	228	165886	17.20	ppb		92
94) Benzo[b]fluoranthene	17.53	252	121941m	11.56	ppb		
95) Benzo[k]fluoranthene	17.54	252	59395m	5.97	ppb		
96) Benzo[a]pyrene	17.88	252	126782	13.83	ppb		91
97) Indeno[1,2,3-cd]pyrene	19.01	276	84925	8.48	ppb		96
99) Dibenz[a,h]anthracene	19.03	278	31346m	3.82	ppb		
101) Benzo[g,h,i]perylene	19.23	276	104007	12.64	ppb		94

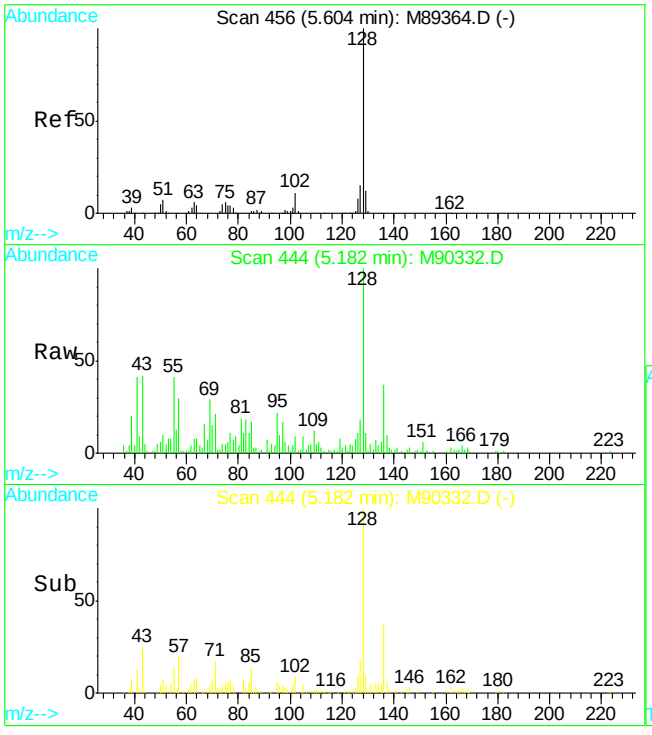
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90332.D Vial: 25
Acq On : 17 Dec 2012 9:19 pm Operator: olgaa
Sample : jb22822-19 Inst : MSM
Misc : op62037,em3659,33.4 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:43 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

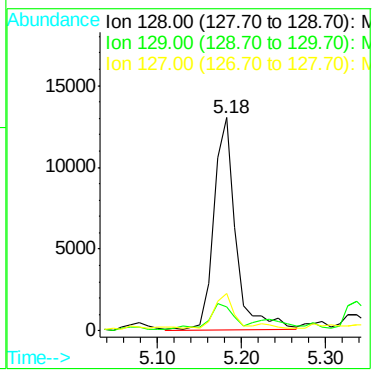


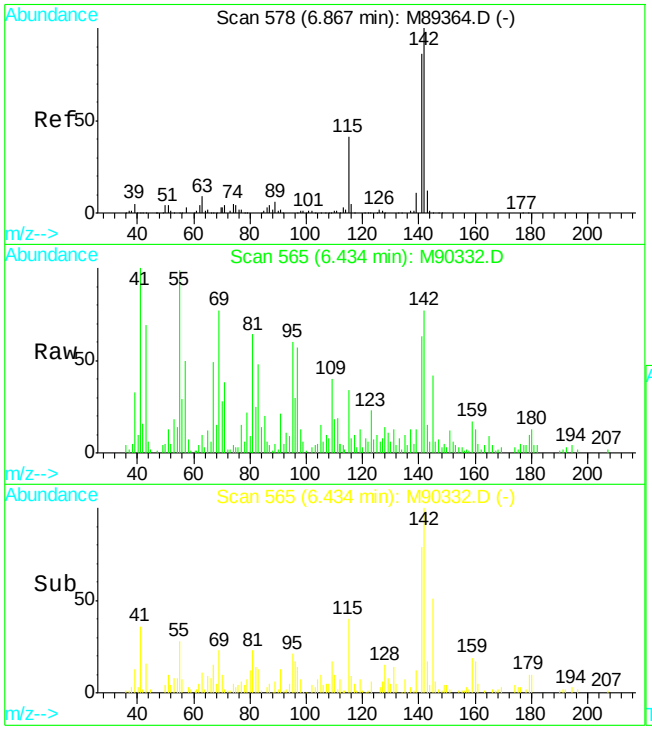


#38
Naphthalene
Concen: 2.27 ppb
RT: 5.18 min Scan# 444
Delta R.T. -0.07 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:128 Resp: 23549

Ion	Ratio	Lower	Upper
128	100		
129	9.9	0.0	42.1
127	16.3	0.0	45.2

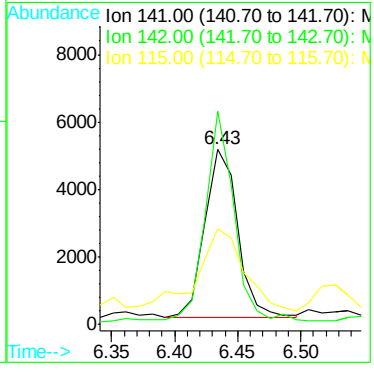


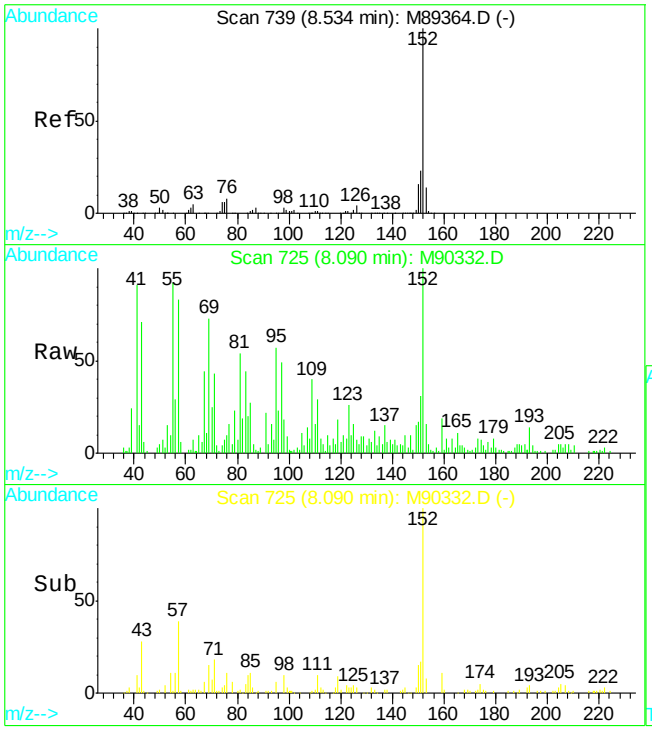


#44
2-Methylnaphthalene
Concen: 1.40 ppb
RT: 6.43 min Scan# 565
Delta R.T. -0.07 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:141 Resp: 8975

Ion	Ratio	Lower	Upper
141	100		
142	124.6	126.0	186.0#
115	43.5	13.5	73.5

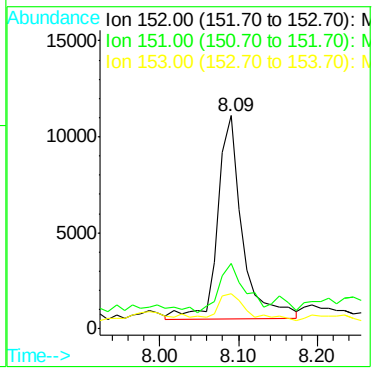


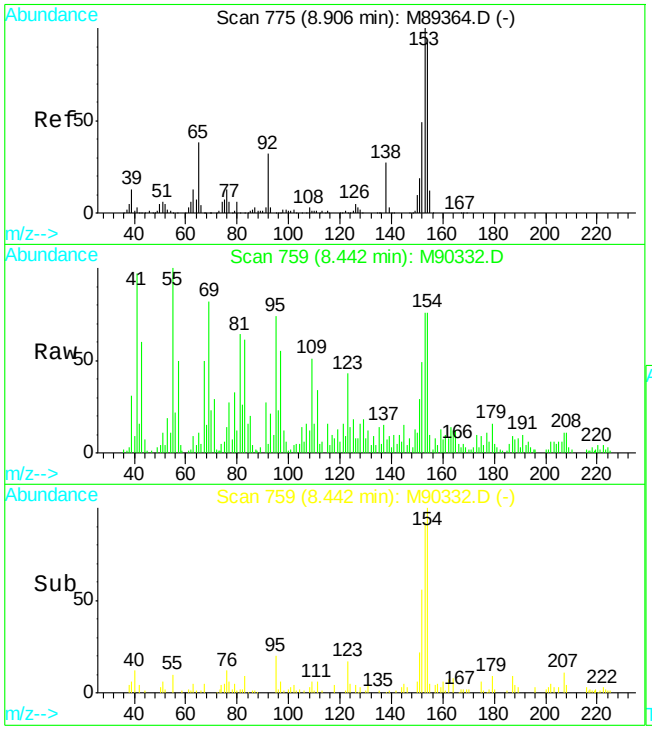


#56
Acenaphthylene
Concen: 2.32 ppb
RT: 8.09 min Scan# 725
Delta R.T. -0.06 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:152 Resp: 22912

Ion	Ratio	Lower	Upper
152	100		
151	23.3	0.0	52.4
153	12.1	0.0	44.5

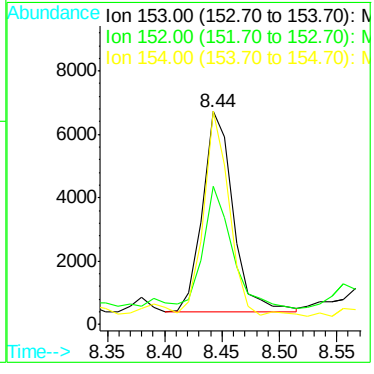


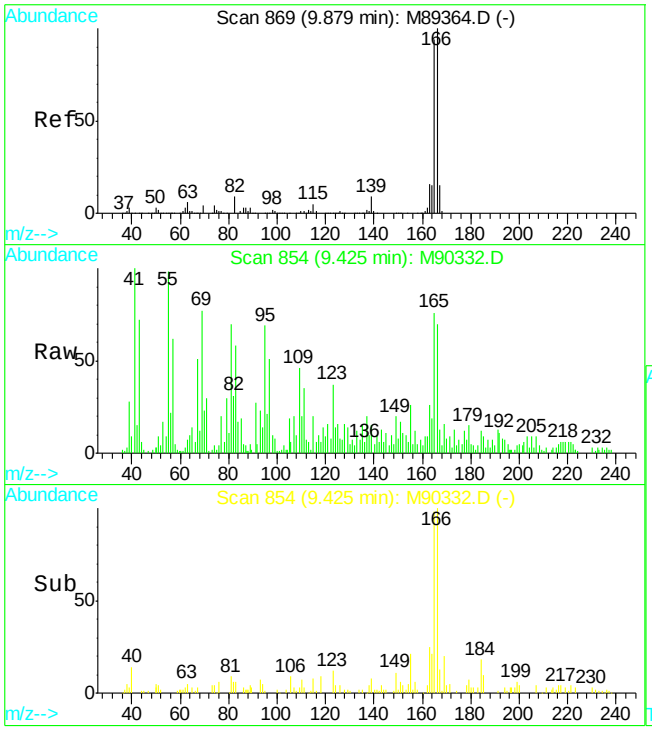


#59
Acenaphthene
Concen: 1.84 ppb
RT: 8.44 min Scan# 759
Delta R.T. -0.07 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:153 Resp: 11676

Ion	Ratio	Lower	Upper
153	100		
152	59.8	17.5	77.5
154	100.4	56.4	116.4

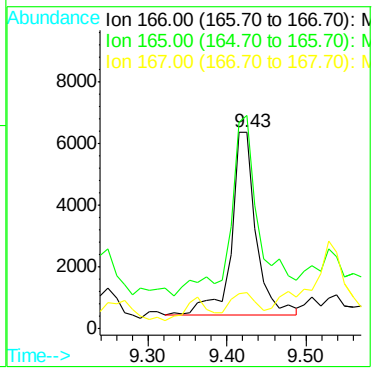


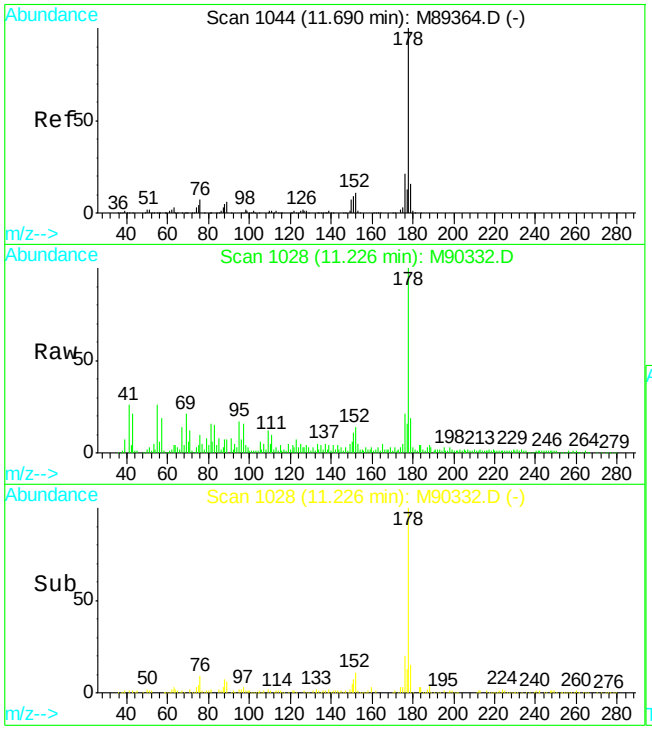


#66
Fluorene
Concen: 1.82 ppb
RT: 9.43 min Scan# 854
Delta R.T. -0.06 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:166 Resp: 13096

Ion	Ratio	Lower	Upper
166	100		
165	93.8	61.7	121.7
167	9.4	0.0	45.5

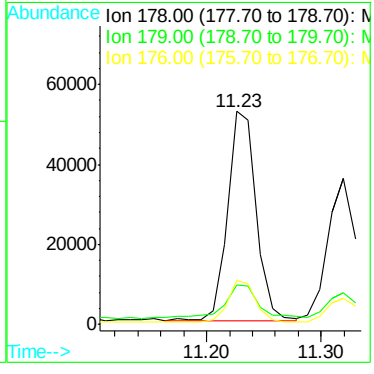


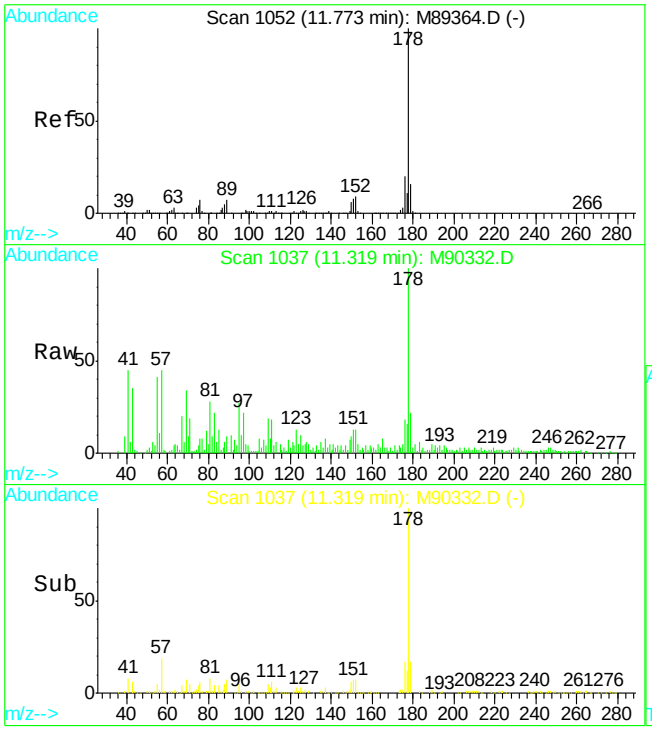


#77
Phenanthrene
Concen: 9.69 ppb
RT: 11.23 min Scan# 1028
Delta R.T. -0.07 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:178 Resp: 90299

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	47.4
176	20.1	0.0	50.3

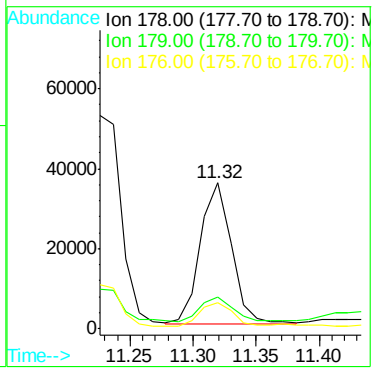


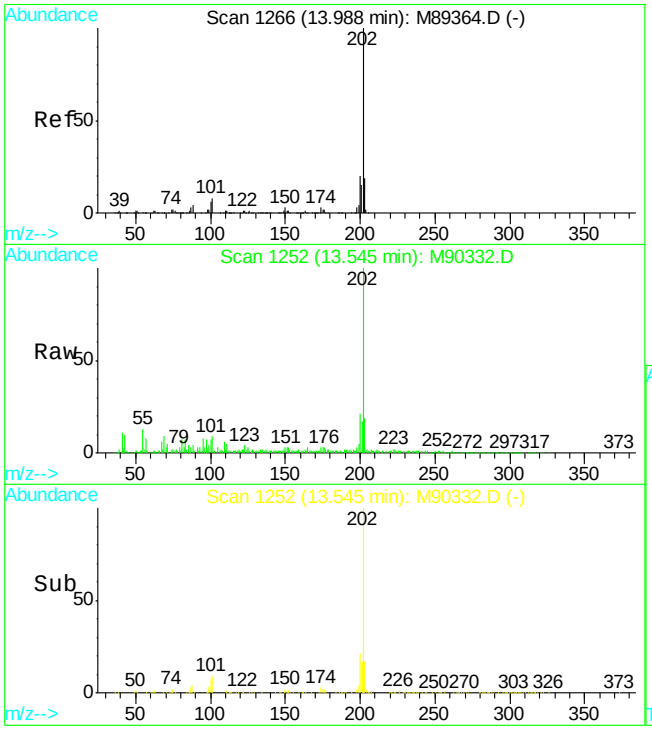


#78
Anthracene
Concen: 6.79 ppb
RT: 11.32 min Scan# 1037
Delta R.T. -0.06 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:178 Resp: 61035

Ion	Ratio	Lower	Upper
178	100		
179	16.9	0.0	47.3
176	16.8	0.0	50.3

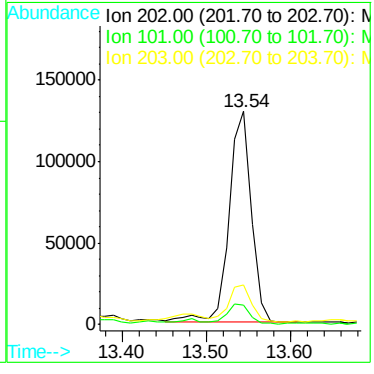


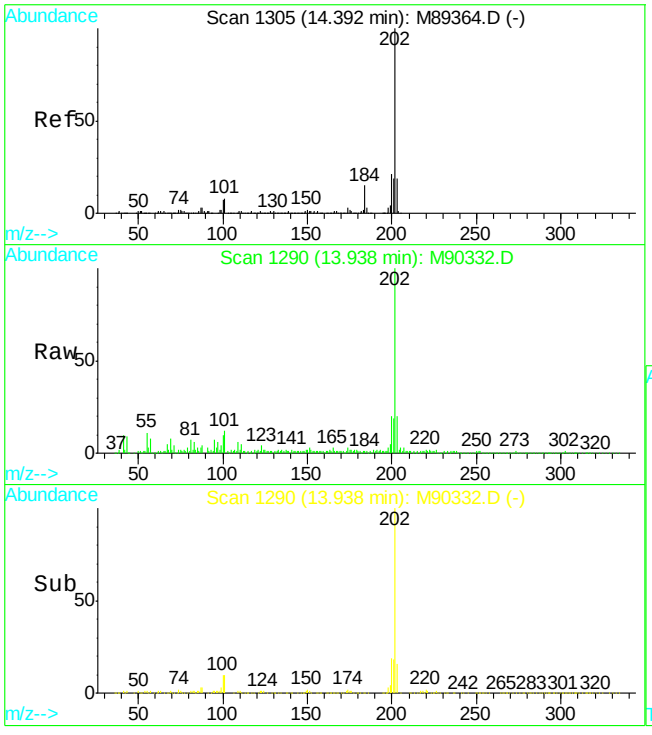


#81
Fluoranthene
Concen: 20.45 ppb
RT: 13.54 min Scan# 1252
Delta R.T. -0.04 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:202 Resp: 238250

Ion	Ratio	Lower	Upper
202	100		
101	8.6	0.0	40.6
203	16.8	0.0	50.3

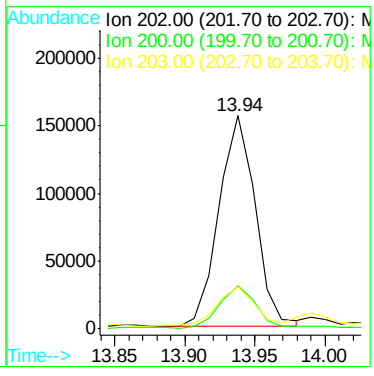


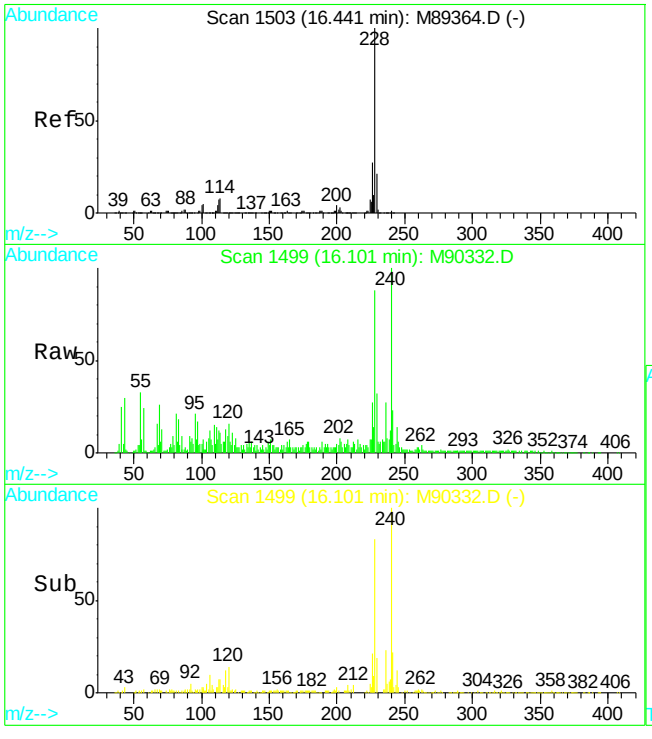


#84
Pyrene
Concen: 25.52 ppb
RT: 13.94 min Scan# 1290
Delta R.T. -0.04 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:202 Resp: 280254

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	51.0
203	16.5	0.0	50.0

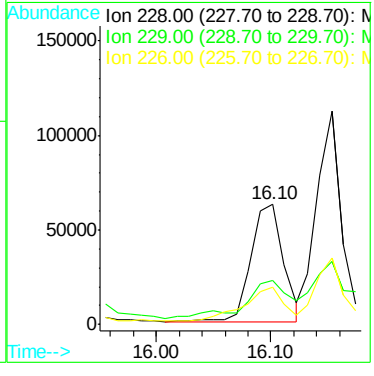




#88
Benzo[a]anthracene
Concen: 11.30 ppb
RT: 16.10 min Scan# 1499
Delta R.T. -0.02 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:228 Resp: 120565

Ion	Ratio	Lower	Upper
228	100		
229	26.7	0.0	53.2
226	28.2	0.0	58.3



9.1.25

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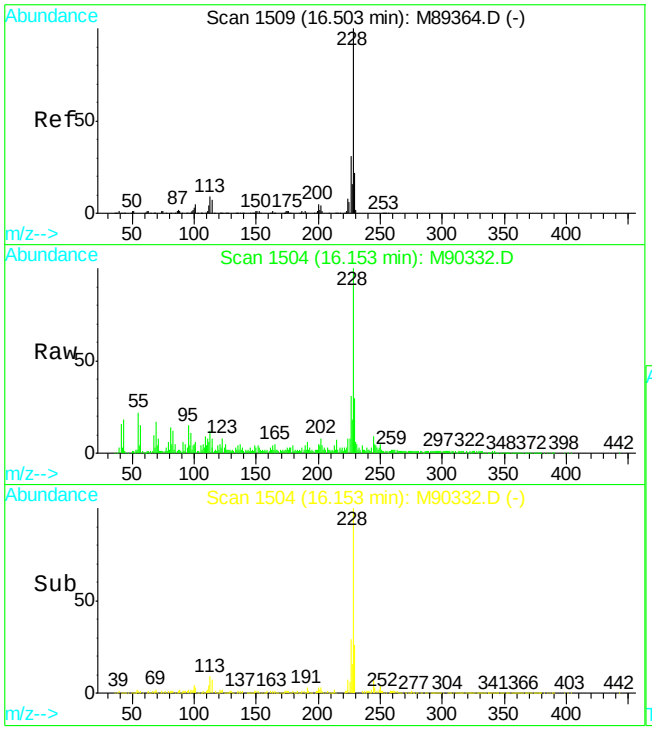
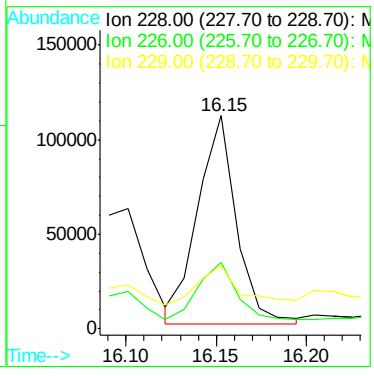
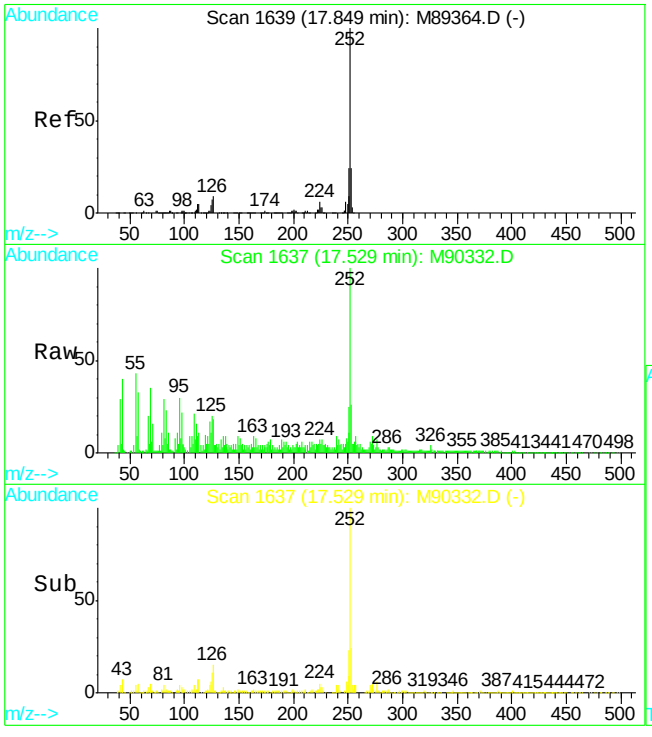


#90
Chrysene
Concen: 17.20 ppb
RT: 16.15 min Scan# 1504
Delta R.T. -0.03 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:228 Resp: 165886

Ion	Ratio	Lower	Upper
228	100		
226	28.6	2.3	62.3
229	18.8	0.0	54.2

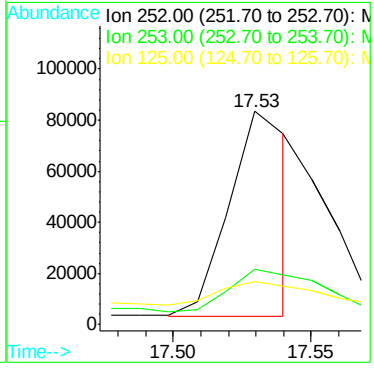




#94
Benzo[b]fluoranthene
Concen: 11.56 ppb m
RT: 17.53 min Scan# 1637
Delta R.T. -0.02 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:252 Resp: 121941

Ion	Ratio	Lower	Upper
252	100		
253	26.2	0.0	55.6
125	20.0	0.0	40.3



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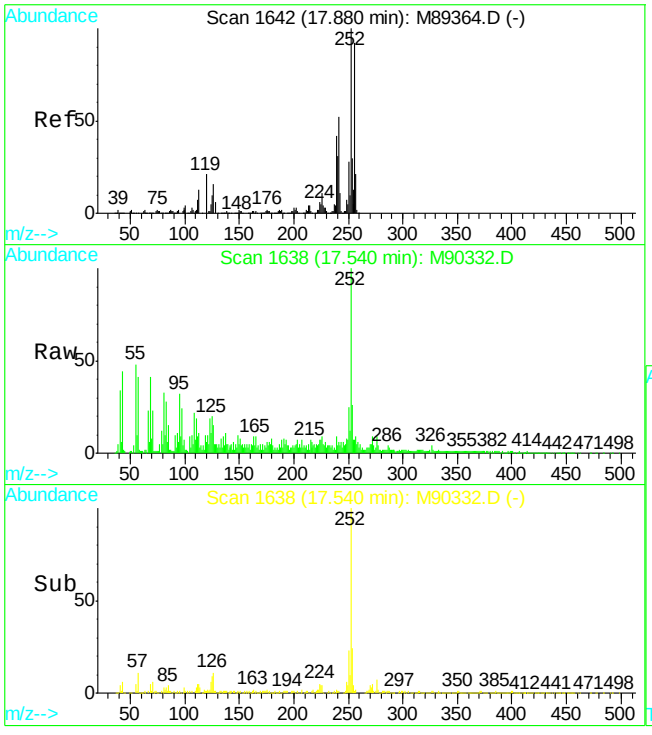
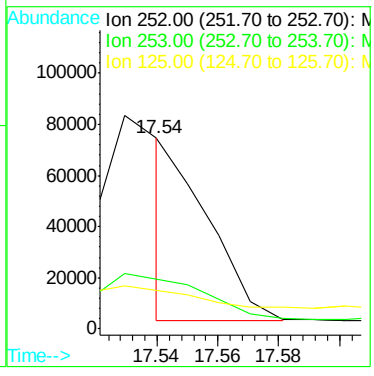
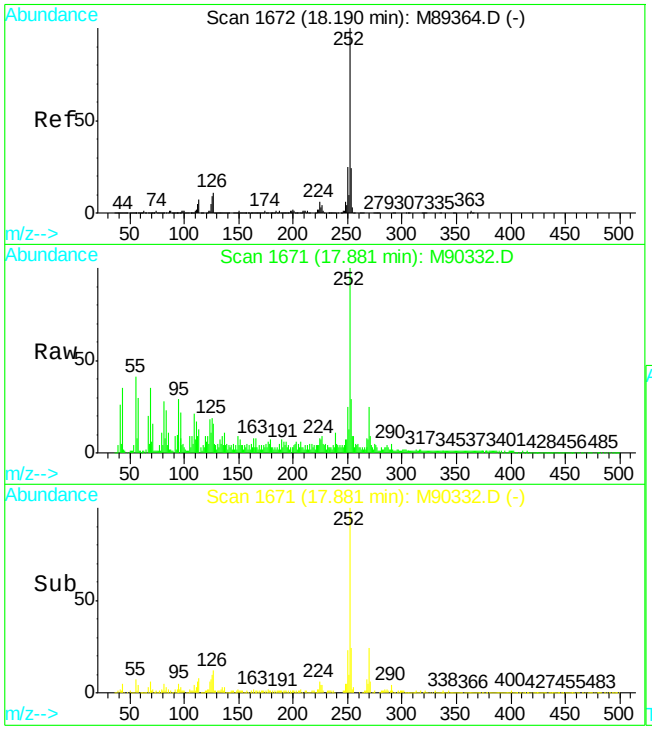


#95
Benzo[k]fluoranthene
Concen: 5.97 ppb m
RT: 17.54 min Scan# 1638
Delta R.T. -0.04 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:252 Resp: 59395

Ion	Ratio	Lower	Upper
252	100		
253	26.3	0.0	58.9
125	20.0	0.0	43.1

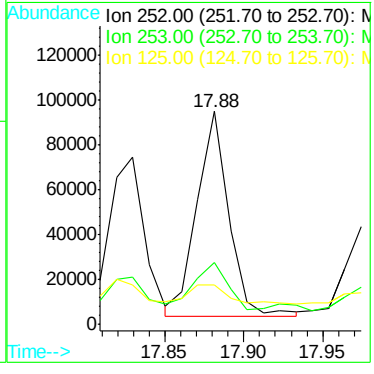


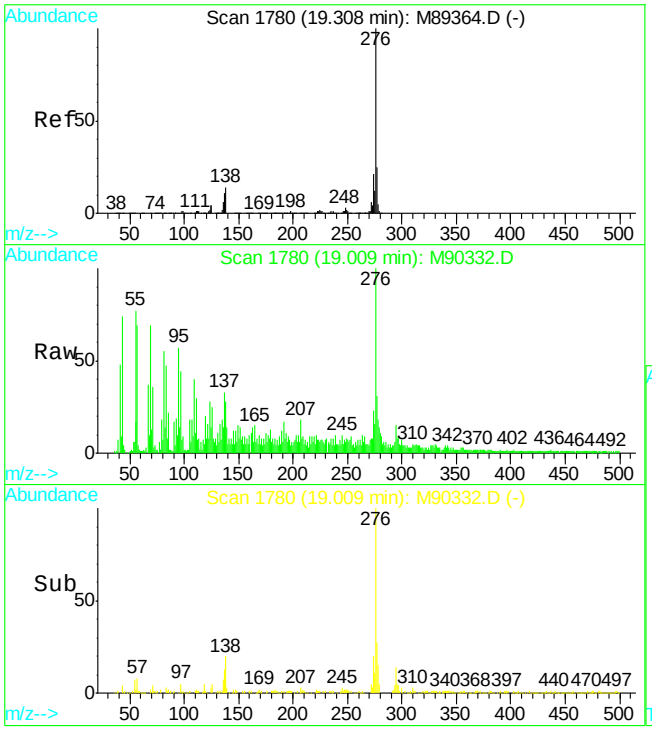


#96
Benzo[a]pyrene
Concen: 13.83 ppb
RT: 17.88 min Scan# 1671
Delta R.T. -0.01 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:252 Resp: 126782

Ion	Ratio	Lower	Upper
252	100		
253	21.7	0.0	55.8
125	9.0	0.0	42.8

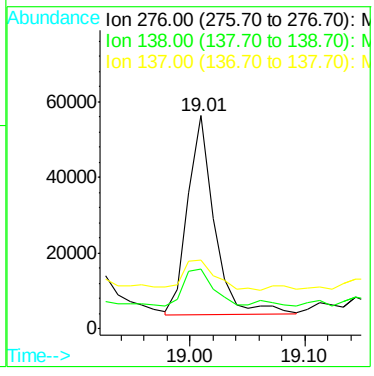


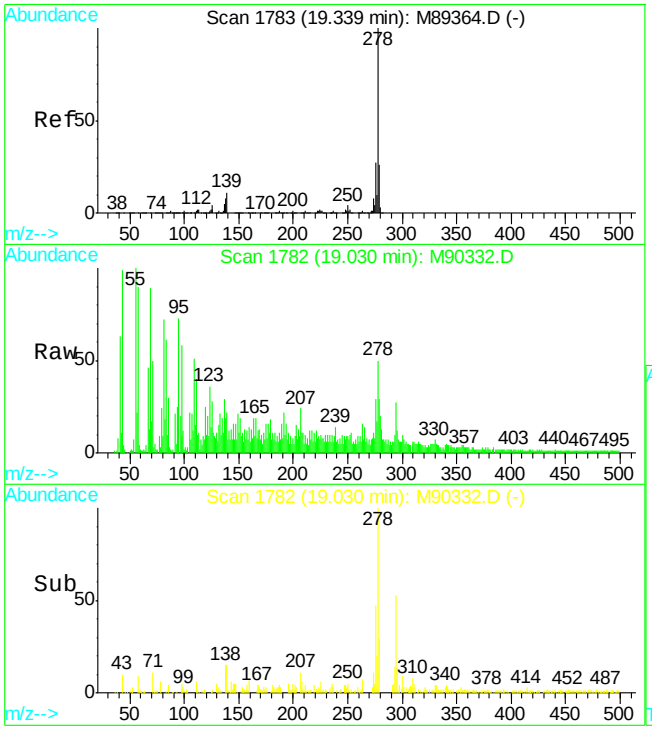


#97
Indeno[1,2,3-cd]pyrene
Concen: 8.48 ppb
RT: 19.01 min Scan# 1780
Delta R.T. 0.00 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:276 Resp: 84925

Ion	Ratio	Lower	Upper
276	100		
138	18.8	0.0	51.4
137	14.6	0.0	45.7

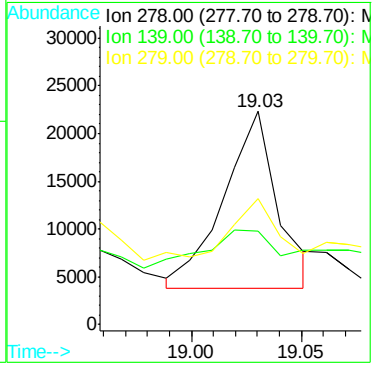


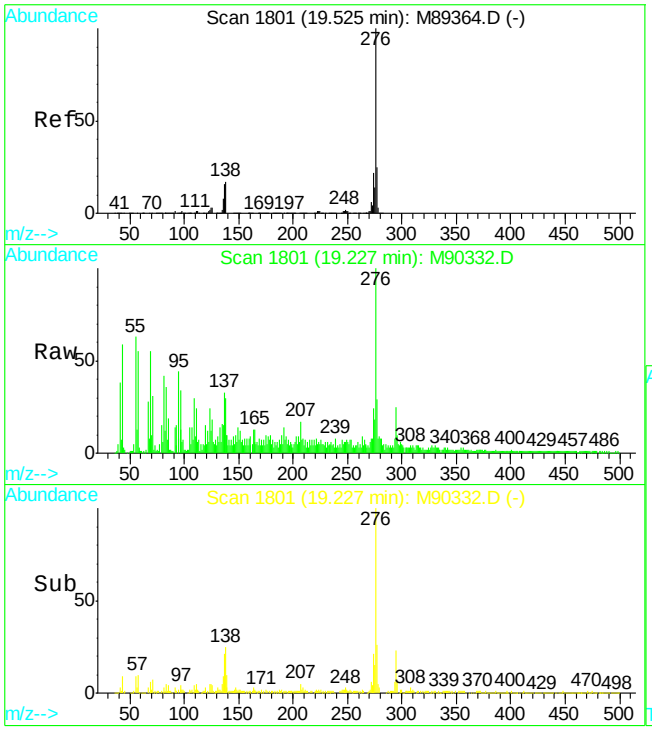


#99
Dibenz[a,h]anthracene
Concen: 3.82 ppb m
RT: 19.03 min Scan# 1782
Delta R.T. -0.01 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:278 Resp: 31346

Ion	Ratio	Lower	Upper
278	100		
139	43.6	0.0	45.4
279	58.9	0.0	58.2#

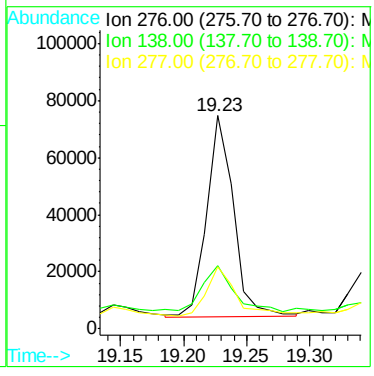




#101
Benzo[g,h,i]perylene
Concen: 12.64 ppb
RT: 19.23 min Scan# 1801
Delta R.T. 0.00 min
Lab File: M90332.D
Acq: 17 Dec 2012 9:19 pm

Tgt Ion:276 Resp: 104007

Ion	Ratio	Lower	Upper
276	100		
138	21.8	0.0	53.9
277	23.5	0.0	57.2



9.1.25

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90333.D Vial: 26
Acq On : 17 Dec 2012 9:48 pm Operator: olgaa
Sample : jb22822-20 Inst : MSM
Misc : op62037,em3659,35.7 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:44 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.20	152	103836	40.00	ppb	-0.06
24) Naphthalene-d8	5.16	136	366374	40.00	ppb	-0.06
47) Acenaphthene-d10	8.42	164	227545	40.00	ppb	-0.04
69) Phenanthrene-d10	11.21	188	398903	40.00	ppb	-0.04
83) Chrysene-d12	16.14	240	383003	40.00	ppb	0.00
92) Perylene-d12	17.97	264	347710	40.00	ppb	0.01
102) 1,4-Dichlorobenzene-d4a	3.20	152	103836	40.00	ppb	-0.06
104) Acenaphthene-d10a	8.42	164	226278	40.00	ppb	-0.04
106) Phenanthrene-d10a	11.21	188	398903	40.00	ppb	-0.04
108) Chrysene-d12a	16.14	240	383003	40.00	ppb	0.00
System Monitoring Compounds						
5) 2-Fluorophenol	1.93	112	86318	25.68	ppb	-0.03
Spiked Amount 50.000			Recovery = 51.36%			
8) Phenol-d5	2.97	99	118390	27.85	ppb	0.00
Spiked Amount 50.000			Recovery = 55.70%			
25) Nitrobenzene-d5	4.05	82	99011	26.79	ppb	-0.06
Spiked Amount 50.000			Recovery = 53.58%			
51) 2-Fluorobiphenyl	7.24	172	245244	33.95	ppb	-0.06
Spiked Amount 50.000			Recovery = 67.90%			
73) 2,4,6-Tribromophenol	9.99	330	27615	38.97	ppb	-0.02
Spiked Amount 50.000			Recovery = 77.94%			
86) Terphenyl-d14	14.47	244	320683	40.96	ppb	-0.03
Spiked Amount 50.000			Recovery = 81.92%			

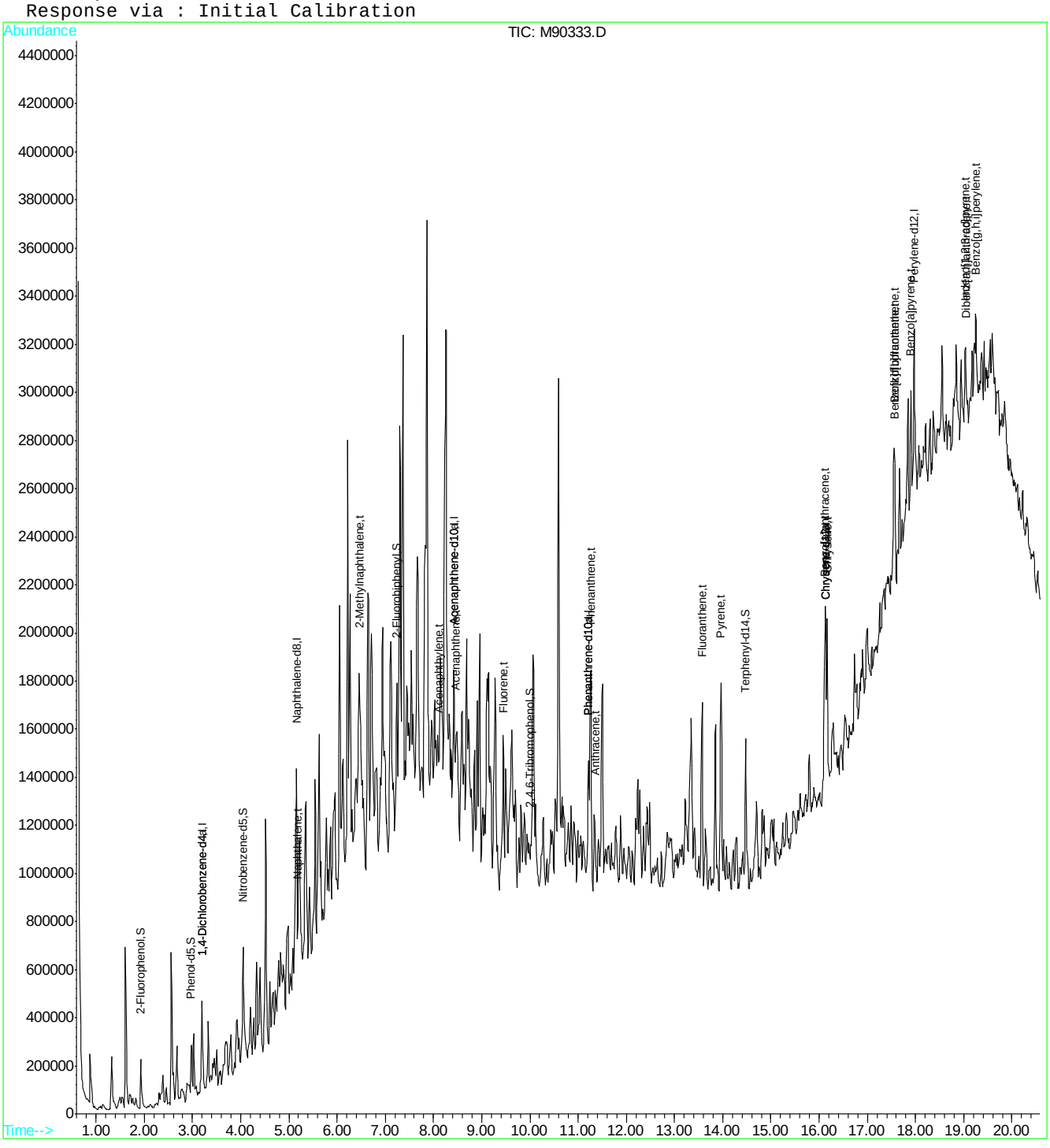
Target Compounds						Qvalue
38) Naphthalene	5.19	128	126035m	12.54	ppb	
44) 2-Methylnaphthalene	6.46	141	156035	25.22	ppb #	72
56) Acenaphthylene	8.12	152	67478	6.81	ppb	82
59) Acenaphthene	8.47	153	118551	18.64	ppb	98
66) Fluorene	9.45	166	296868	41.01	ppb	97
77) Phenanthrene	11.26	178	644223	63.75	ppb	99
78) Anthracene	11.35	178	191599	19.65	ppb	98
81) Fluoranthene	13.57	202	651327	51.54	ppb	97
84) Pyrene	13.97	202	707235	61.32	ppb	98
88) Benzo[a]anthracene	16.12	228	368767	32.92	ppb	97
90) Chrysene	16.17	228	407328	40.22	ppb	95
94) Benzo[b]fluoranthene	17.56	252	434555m	37.98	ppb	
95) Benzo[k]fluoranthene	17.57	252	102666m	9.51	ppb	
96) Benzo[a]pyrene	17.90	252	331112	33.32	ppb	94
97) Indeno[1,2,3-cd]pyrene	19.04	276	217744	20.05	ppb	95
99) Dibenz[a,h]anthracene	19.05	278	73832m	8.29	ppb	
101) Benzo[g,h,i]perylene	19.25	276	214384	24.03	ppb	91

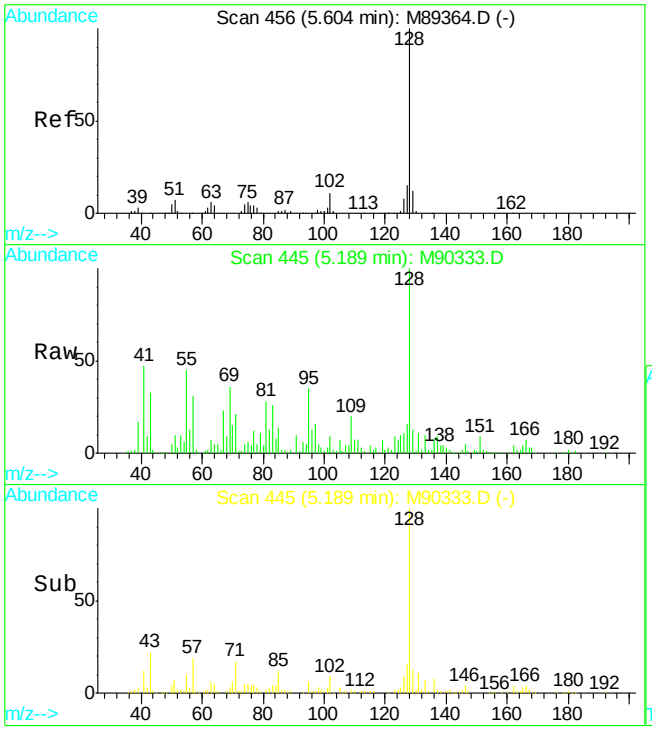
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90333.D Vial: 26
Acq On : 17 Dec 2012 9:48 pm Operator: olgaa
Sample : jb22822-20 Inst : MSM
Misc : op62037,em3659,35.7 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:44 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration

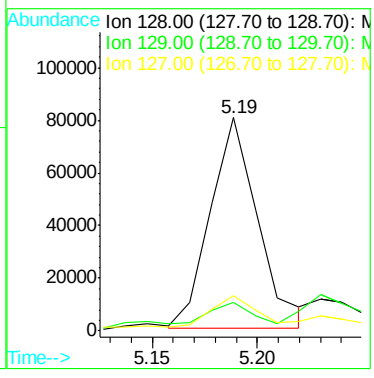


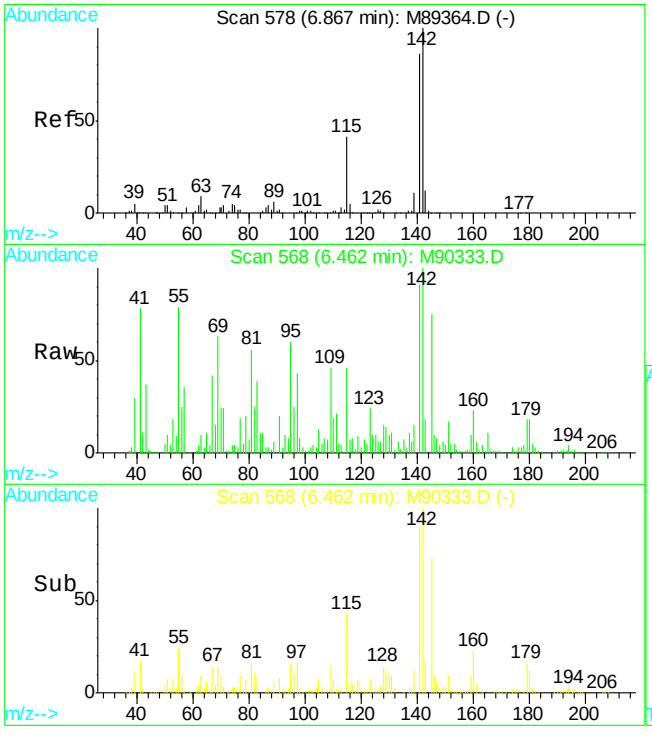


#38
Naphthalene
Concen: 12.54 ppb m
RT: 5.19 min Scan# 445
Delta R.T. -0.06 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:128 Resp: 126035

Ion	Ratio	Lower	Upper
128	100		
129	13.2	0.0	42.1
127	16.4	0.0	45.2

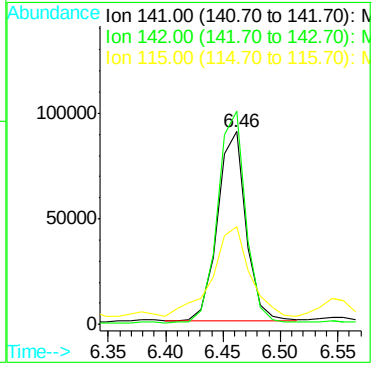




#44
2-Methylnaphthalene
Concen: 25.22 ppb
RT: 6.46 min Scan# 568
Delta R.T. -0.04 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:141 Resp: 156035

Ion	Ratio	Lower	Upper
141	100		
142	111.8	126.0	186.0#
115	47.6	13.5	73.5



9.1.26

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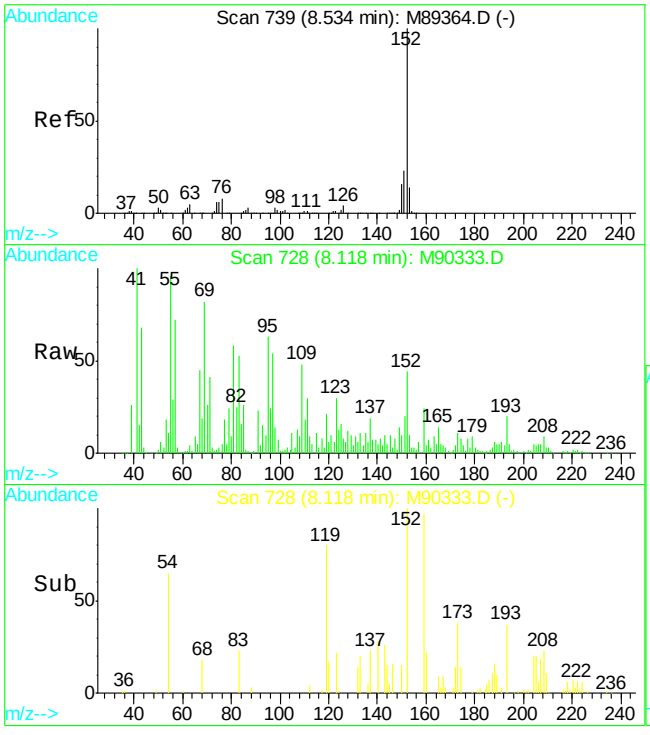
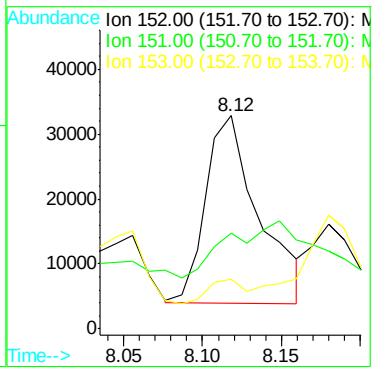
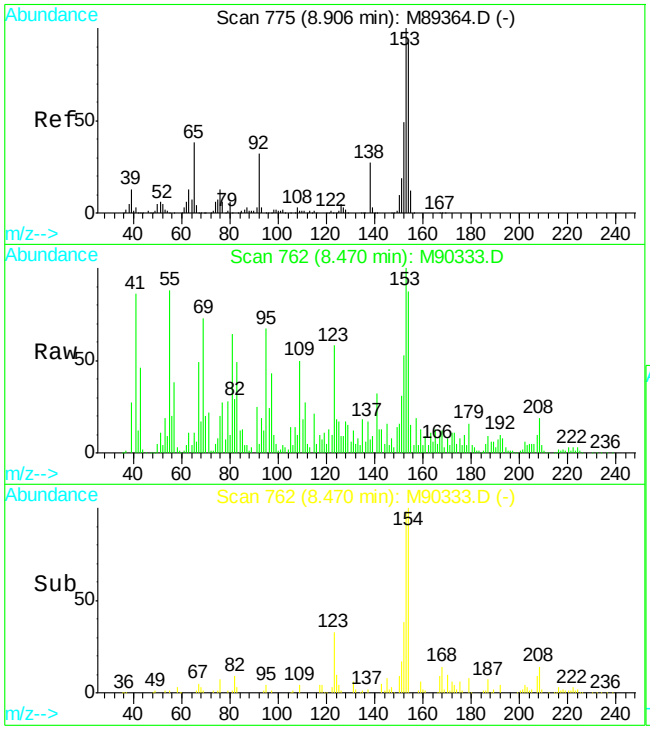


#56
Acenaphthylene
Concen: 6.81 ppb
RT: 8.12 min Scan# 728
Delta R.T. -0.03 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:152 Resp: 67478

Ion	Ratio	Lower	Upper
152	100		
151	13.8	0.0	52.4
153	6.6	0.0	44.5

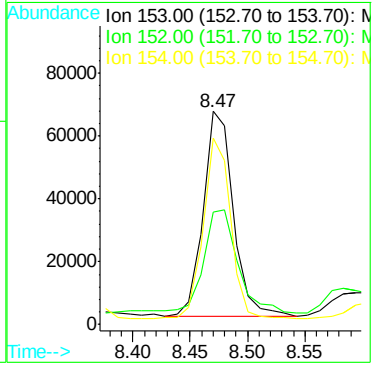




#59
Acenaphthene
Concen: 18.64 ppb
RT: 8.47 min Scan# 762
Delta R.T. -0.04 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:153 Resp: 118551

Ion	Ratio	Lower	Upper
153	100		
152	49.0	17.5	77.5
154	87.9	56.4	116.4



9.1.26

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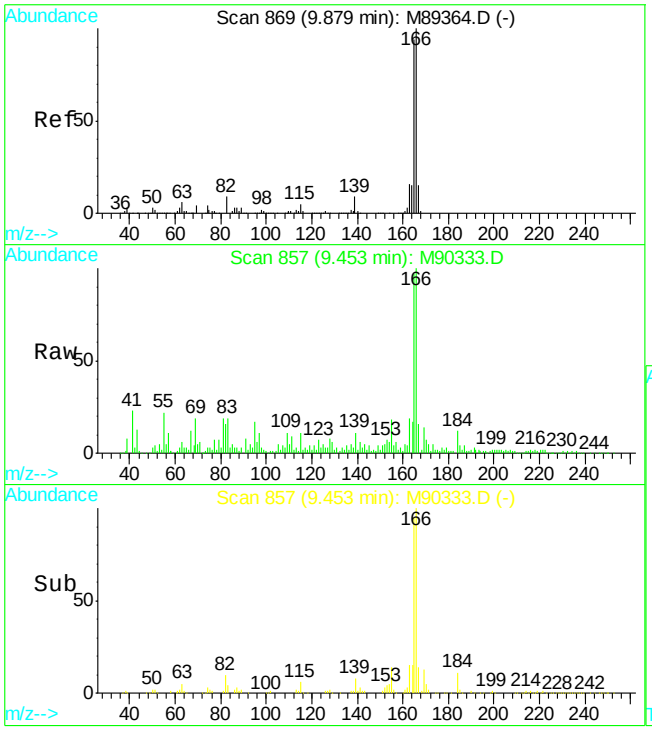
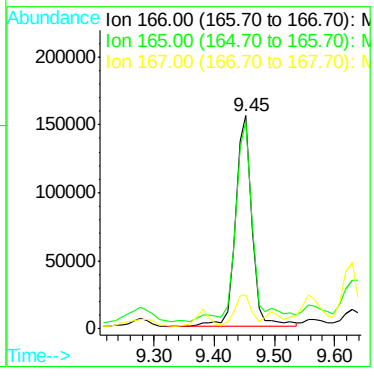
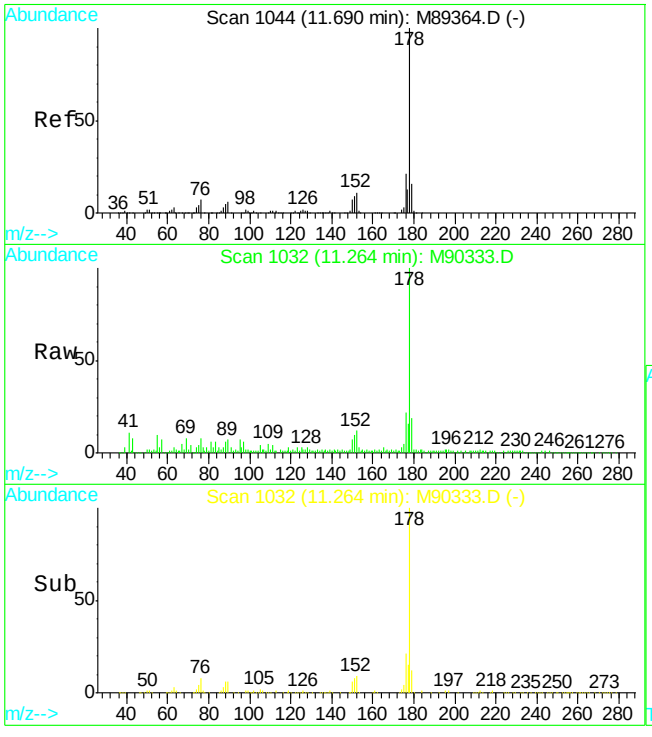


#66
Fluorene
Concen: 41.01 ppb
RT: 9.45 min Scan# 857
Delta R.T. -0.03 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:166 Resp: 296868

Ion	Ratio	Lower	Upper
166	100		
165	93.8	61.7	121.7
167	12.5	0.0	45.5

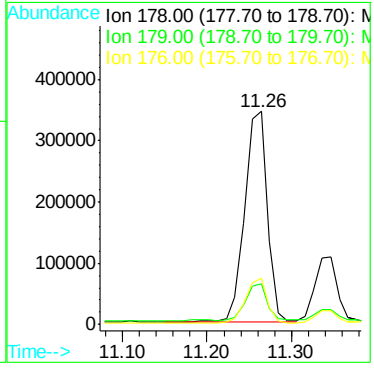




#77
Phenanthrene
Concen: 63.75 ppb
RT: 11.26 min Scan# 1032
Delta R.T. -0.03 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:178 Resp: 644223

Ion	Ratio	Lower	Upper
178	100		
179	17.3	0.0	47.4
176	21.5	0.0	50.3



9.1.26

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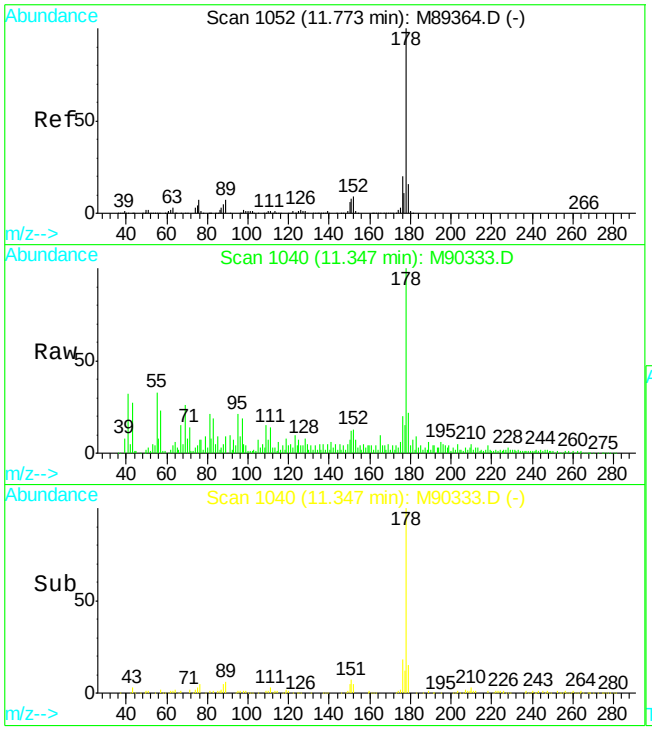
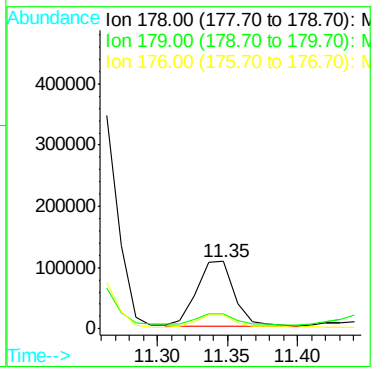
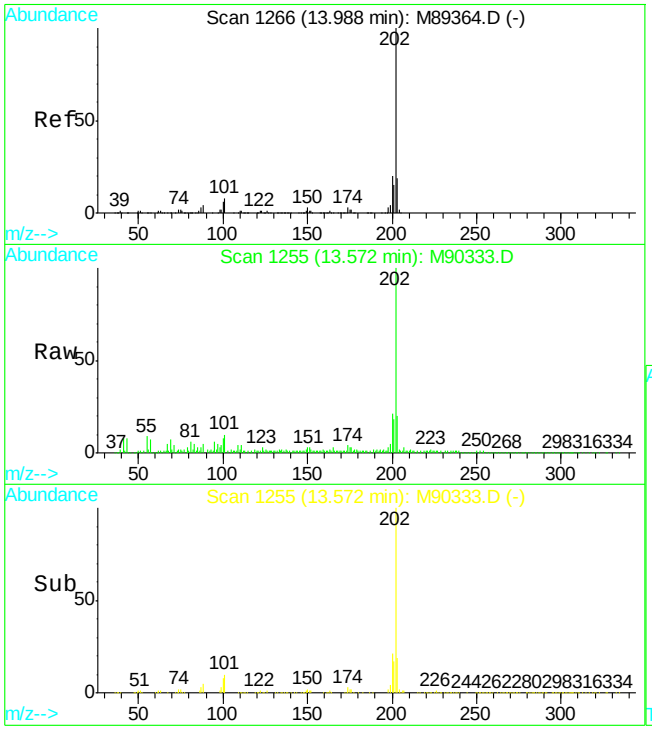


#78
Anthracene
Concen: 19.65 ppb
RT: 11.35 min Scan# 1040
Delta R.T. -0.03 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:178 Resp: 191599

Ion	Ratio	Lower	Upper
178	100		
179	16.7	0.0	47.3
176	18.8	0.0	50.3

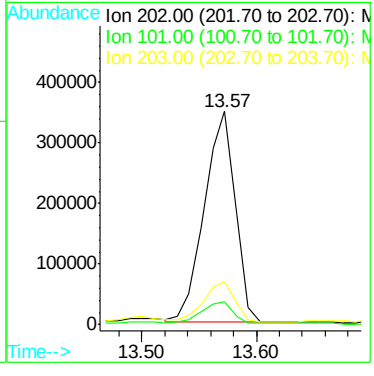


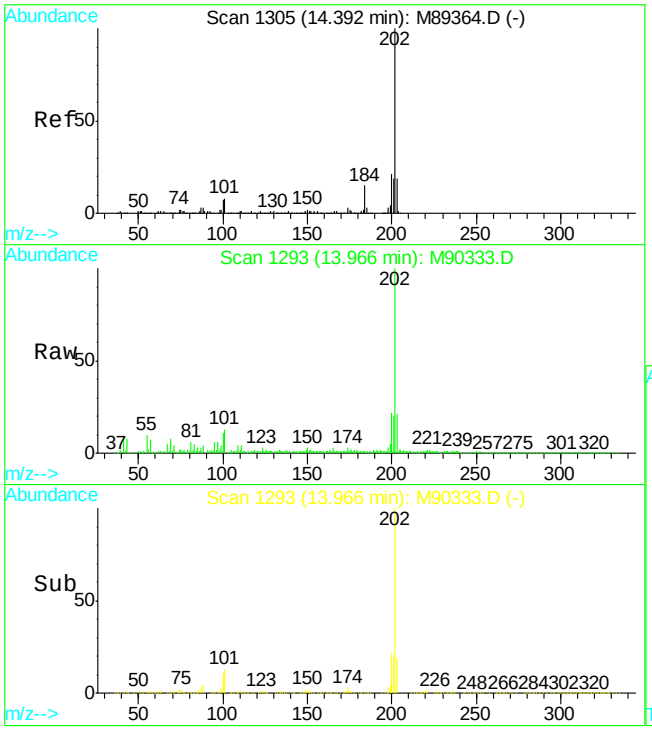


#81
Fluoranthene
Concen: 51.54 ppb
RT: 13.57 min Scan# 1255
Delta R.T. -0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:202 Resp: 651327

Ion	Ratio	Lower	Upper
202	100		
101	9.9	0.0	40.6
203	18.4	0.0	50.3

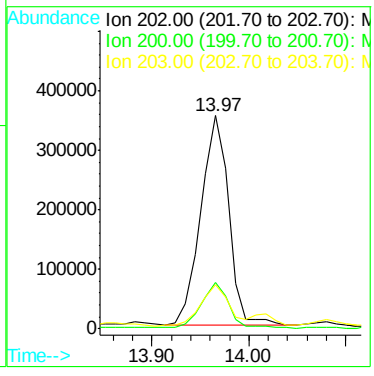


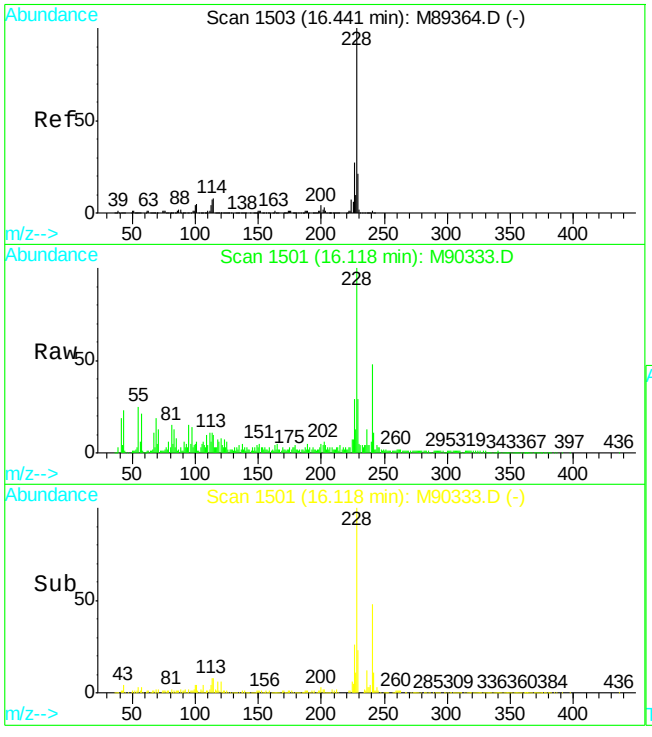


#84
Pyrene
Concen: 61.32 ppb
RT: 13.97 min Scan# 1293
Delta R.T. -0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:202 Resp: 707235

Ion	Ratio	Lower	Upper
202	100		
200	21.8	0.0	51.0
203	19.4	0.0	50.0

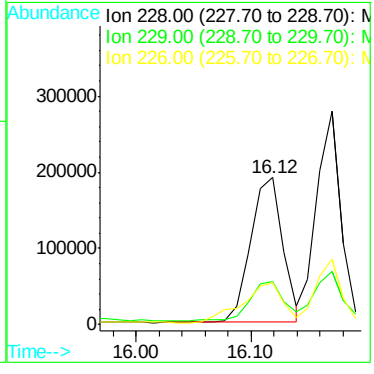




#88
Benzo[a]anthracene
Concen: 32.92 ppb
RT: 16.12 min Scan# 1501
Delta R.T. 0.00 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:228 Resp: 368767

Ion	Ratio	Lower	Upper
228	100		
229	25.4	0.0	53.2
226	27.3	0.0	58.3



9.1.26

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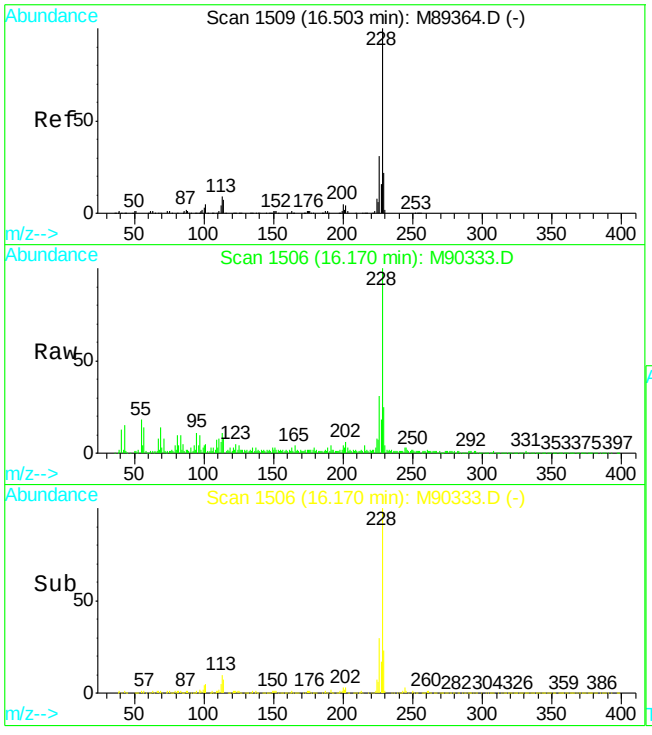
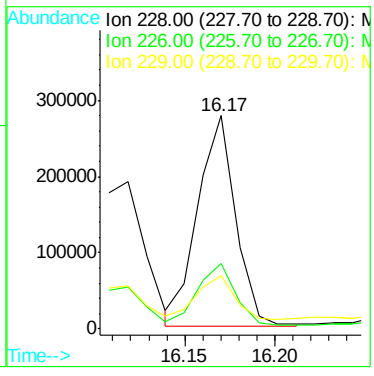
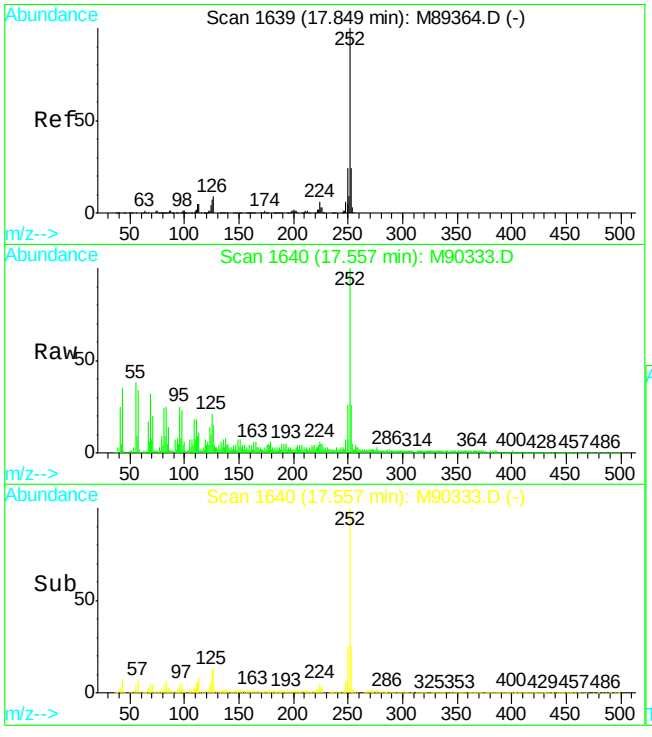


#90
Chrysene
Concen: 40.22 ppb
RT: 16.17 min Scan# 1506
Delta R.T. -0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:228 Resp: 407328

Ion	Ratio	Lower	Upper
228	100		
226	30.0	2.3	62.3
229	20.7	0.0	54.2

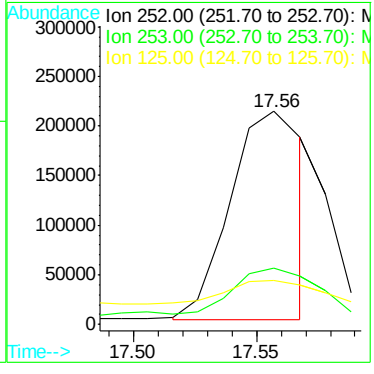




#94
Benzo[b]fluoranthene
Concen: 37.98 ppb m
RT: 17.56 min Scan# 1640
Delta R.T. 0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:252 Resp: 434555

Ion	Ratio	Lower	Upper
252	100		
253	26.3	0.0	55.6
125	20.6	0.0	40.3



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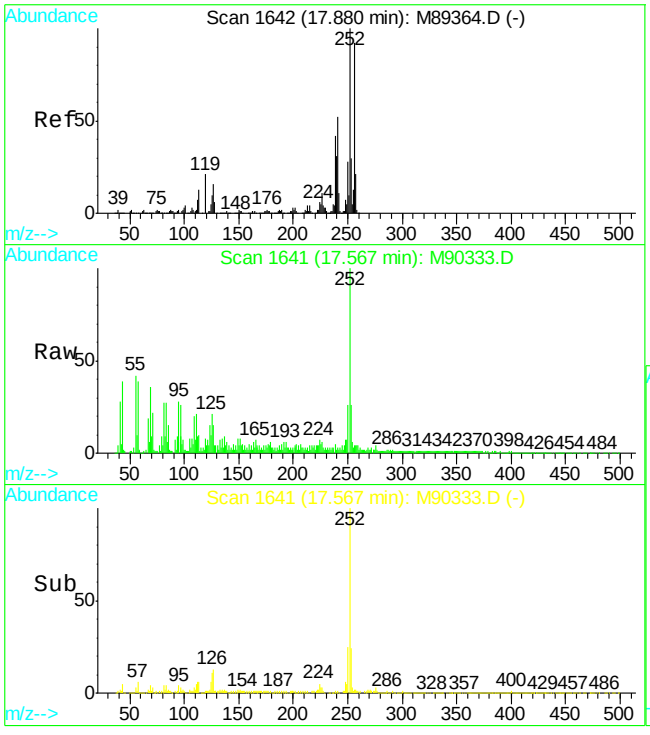
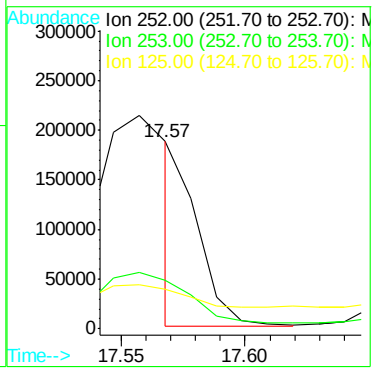
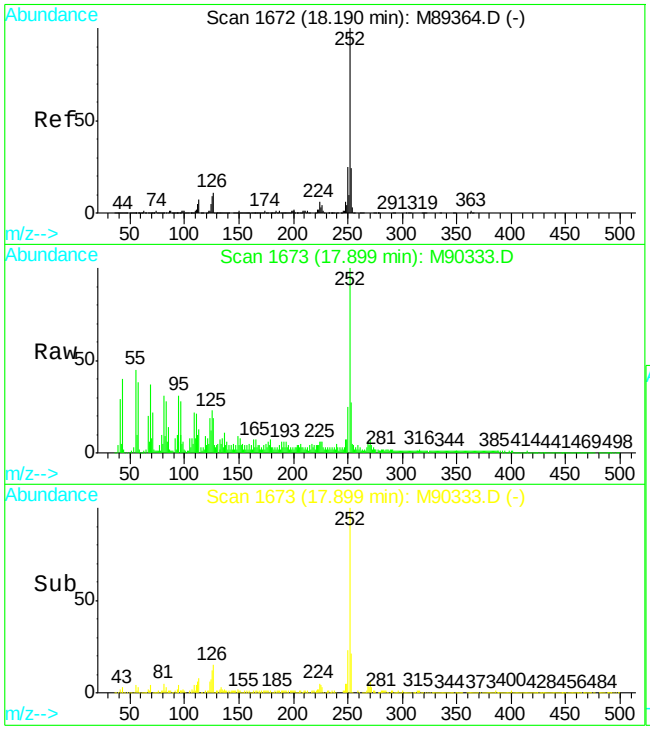


#95
Benzo[k]fluoranthene
Concen: 9.51 ppb m
RT: 17.57 min Scan# 1641
Delta R.T. -0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:252 Resp: 102666

Ion	Ratio	Lower	Upper
252	100		
253	26.1	0.0	58.9
125	21.1	0.0	43.1

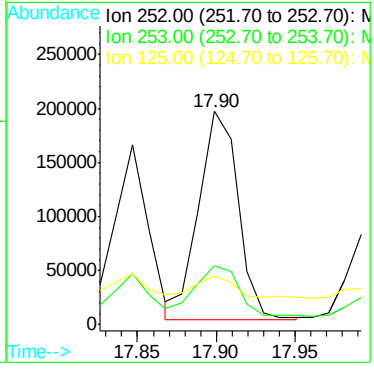


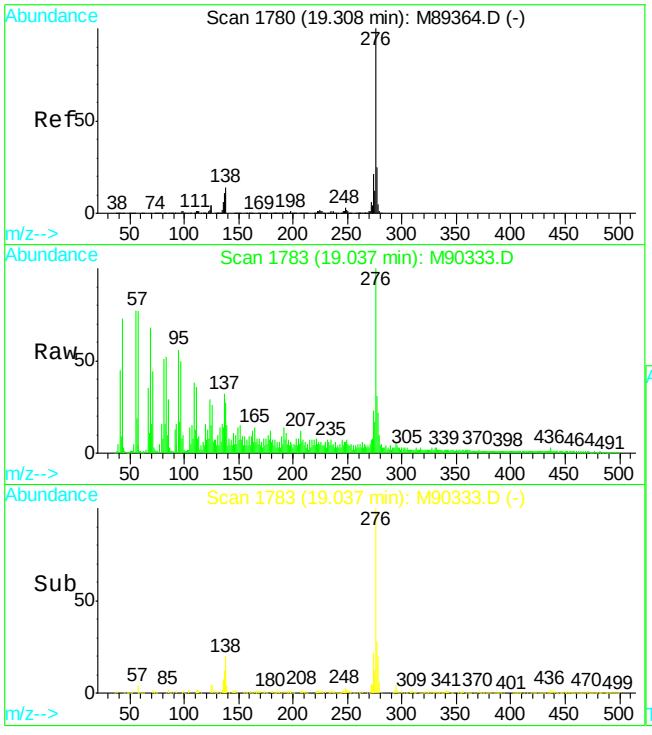


#96
Benzo[a]pyrene
Concen: 33.32 ppb
RT: 17.90 min Scan# 1673
Delta R.T. 0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:252 Resp: 331112

Ion	Ratio	Lower	Upper
252	100		
253	23.0	0.0	55.8
125	10.0	0.0	42.8

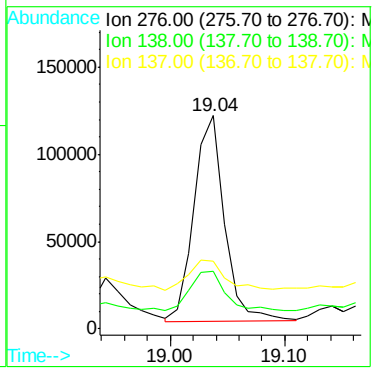


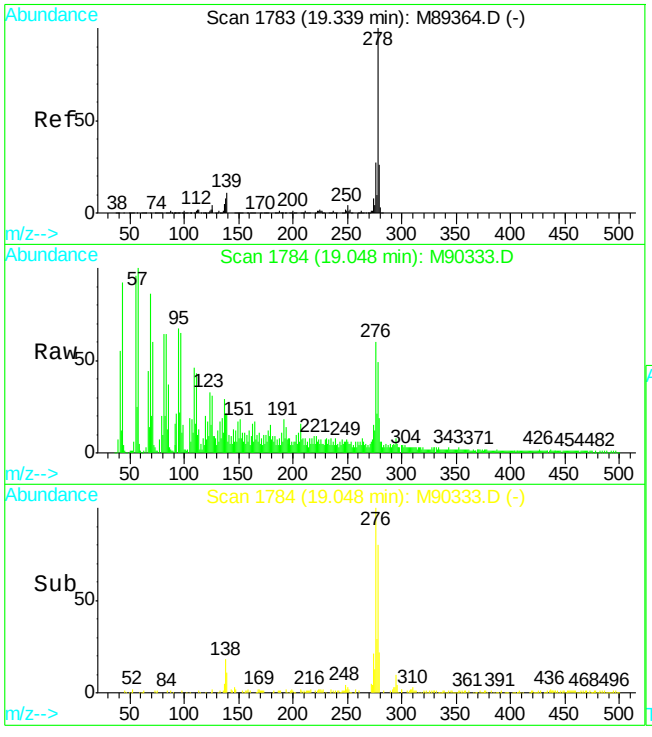


#97
Indeno[1,2,3-cd]pyrene
Concen: 20.05 ppb
RT: 19.04 min Scan# 1783
Delta R.T. 0.03 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:276 Resp: 217744

Ion	Ratio	Lower	Upper
276	100		
138	19.1	0.0	51.4
137	13.6	0.0	45.7

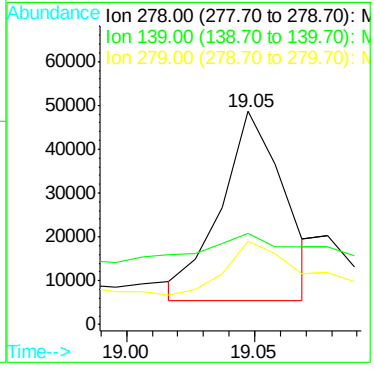




#99
Dibenz[a,h]anthracene
Concen: 8.29 ppb m
RT: 19.05 min Scan# 1784
Delta R.T. 0.01 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:278 Resp: 73832

Ion	Ratio	Lower	Upper
278	100		
139	42.6	0.0	45.4
279	39.0	0.0	58.2



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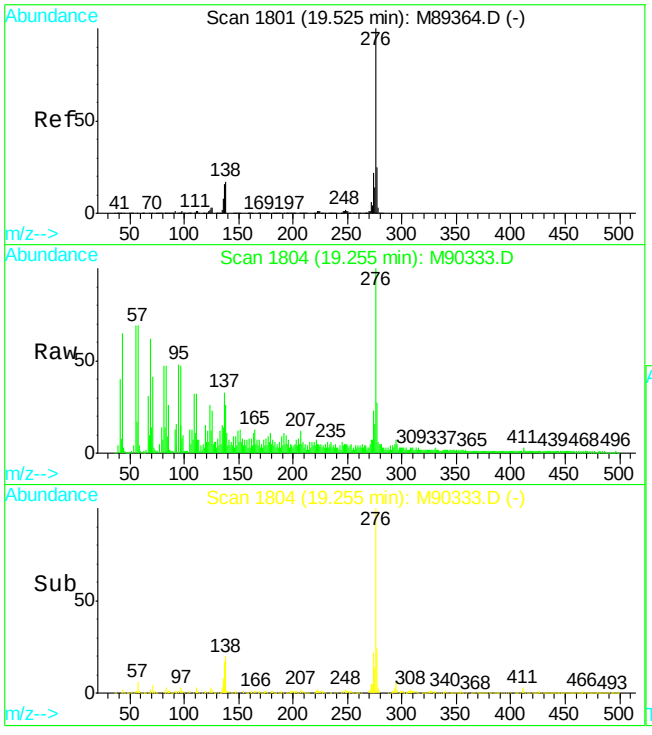
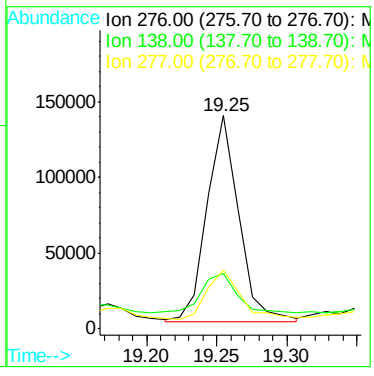


#101
Benzo[g,h,i]perylene
Concen: 24.03 ppb
RT: 19.25 min Scan# 1804
Delta R.T. 0.03 min
Lab File: M90333.D
Acq: 17 Dec 2012 9:48 pm

Tgt Ion:276 Resp: 214384

Ion	Ratio	Lower	Upper
276	100		
138	19.0	0.0	53.9
277	23.4	0.0	57.2



9.1.26

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48577.D
Acq On : 17 Dec 2012 9:00 pm
Operator : olgaa
Sample : jb22822-21
Misc : op62037,e2m2080,34.7
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 18 16:06:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.416	152	194755	40.00	ppb	-0.05
24) Naphthalene-d8	3.951	136	1003546	40.00	ppb	-0.05
47) Acenaphthene-d10	6.529	164	643145	40.00	ppb	-0.05
69) Phenanthrene-d10	8.792	188	1184582	40.00	ppb	-0.02
83) Chrysene-d12	12.611	240	1447538	40.00	ppb	0.01
92) Perylene-d12	14.023	264	1132670	40.00	ppb	0.02
102) 1,4-Dichlorobenzene-d4a	2.416	152	194755	40.00	ppb	-0.05
104) Acenaphthene-d10a	6.529	164	643145	40.00	ppb	-0.05
106) Chrysene-d12a	12.611	240	1447538	40.00	ppb	0.01
108) Phenanthrene-d10a	8.792	188	1184582	40.00	ppb	-0.02
110) Chrysene-d12b	12.611	240	1447538	40.00	ppb	0.01

System Monitoring Compounds						
5) 2-Fluorophenol	1.453	112	146350	20.65	ppb	-0.02
Spiked Amount 50.000			Recovery	=	41.30%	
8) Phenol-d5	2.282	99	290867	30.62	ppb	0.00
Spiked Amount 50.000			Recovery	=	61.24%	
25) Nitrobenzene-d5	3.095	82	260137	24.16	ppb	-0.05
Spiked Amount 50.000			Recovery	=	48.32%	
51) 2-Fluorobiphenyl	5.598	172	641600	30.34	ppb	-0.05
Spiked Amount 50.000			Recovery	=	60.68%	
73) 2,4,6-Tribromophenol	7.797	330	87699	31.50	ppb	-0.03
Spiked Amount 50.000			Recovery	=	63.00%	
85) Terphenyl-d14	11.359	244	929690	31.78	ppb	-0.02
Spiked Amount 50.000			Recovery	=	63.56%	

Target Compounds						Qvalue
38) Naphthalene	3.978	128	497219	17.80	ppb	99
44) 2-Methylnaphthalene	4.973	141	298283	17.42	ppb	92
56) Acenaphthylene	6.294	152	232041	7.47	ppb	99
59) Acenaphthene	6.577	153	1005760	50.37	ppb	97
66) Fluorene	7.358	166	1956426	90.49	ppb	98
77) Phenanthrene	8.834	178	25069534m	691.28	ppb	
78) Anthracene	8.899	178	3987035	110.92	ppb	94
81) Fluoranthene	10.690	202	31803698m	889.01	ppb	
84) Pyrene	11.017	202	27255135	582.15	ppb	93
88) Benzo[a]anthracene	12.600	228	12680544	284.81	ppb	92
90) Chrysene	12.653	228	14151996	320.62	ppb	93
94) Benzo[b]fluoranthene	13.712	252	15704897m	398.27	ppb	
95) Benzo[k]fluoranthene	13.718	252	6379689m	179.75	ppb	
96) Benzo[a]pyrene	13.991	252	11840712	353.49	ppb	94
97) Indeno[1,2,3-cd]pyrene	14.878	276	8515453	218.94	ppb	95
99) Dibenz[a,h]anthracene	14.878	278	3486836	106.71	ppb	97
101) Benzo[g,h,i]perylene	15.055	276	7623015	229.57	ppb	98

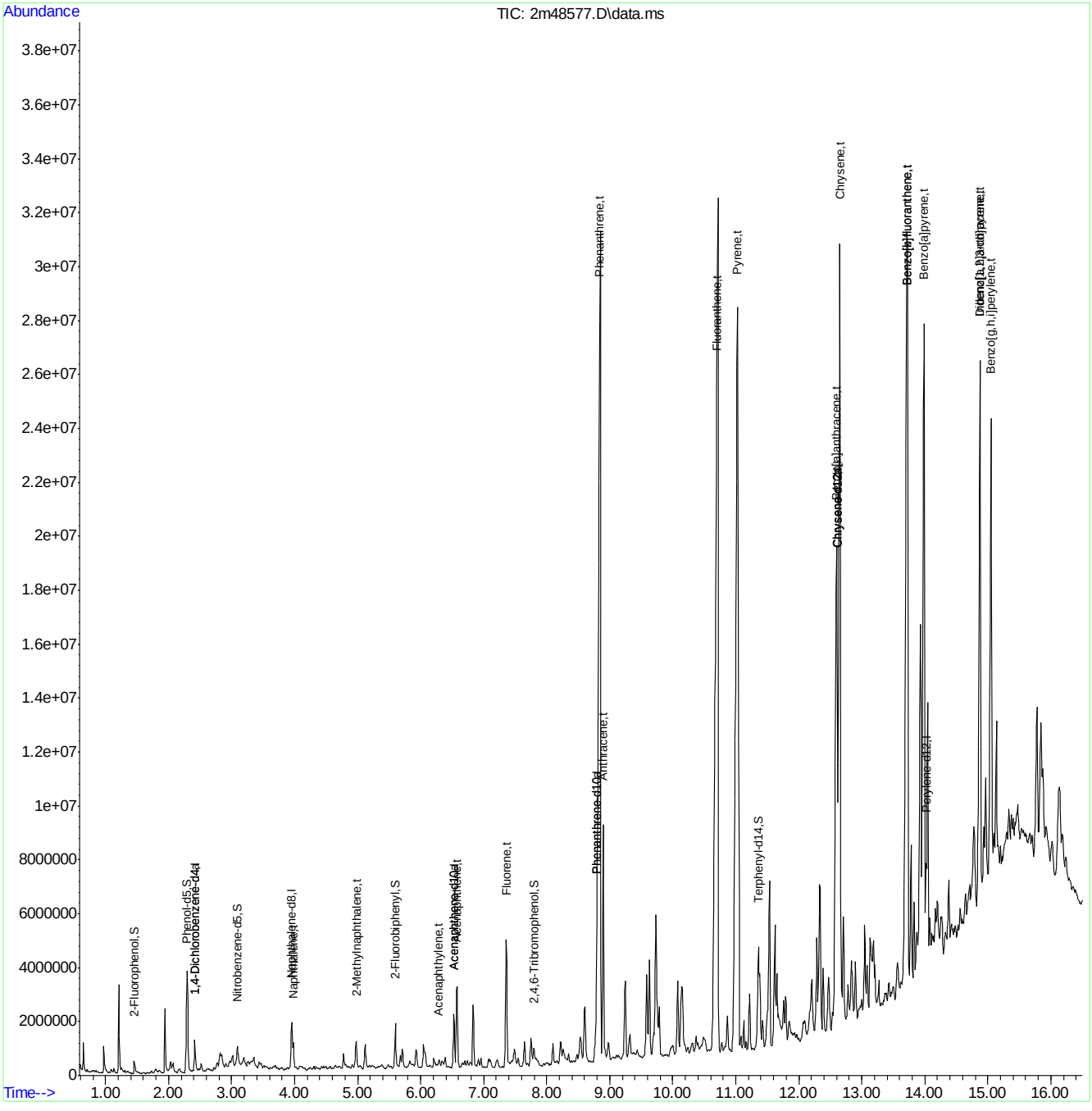
(#) = qualifier out of range (m) = manual integration (+) = signals summed

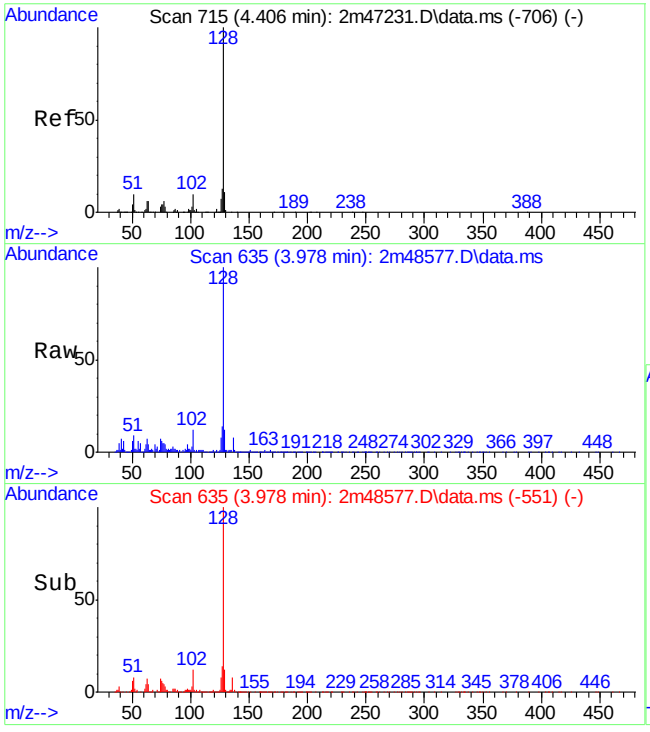
9.1.27
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48577.D
Acq On : 17 Dec 2012 9:00 pm
Operator : olgaa
Sample : jb22822-21
Misc : op62037,e2m2080,34.7
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 18 16:06:47 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

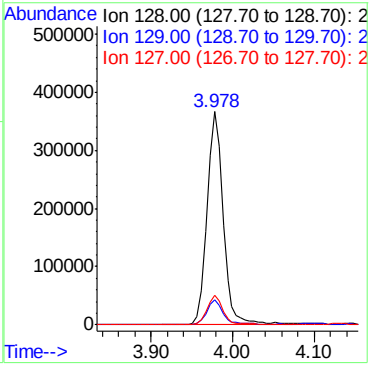


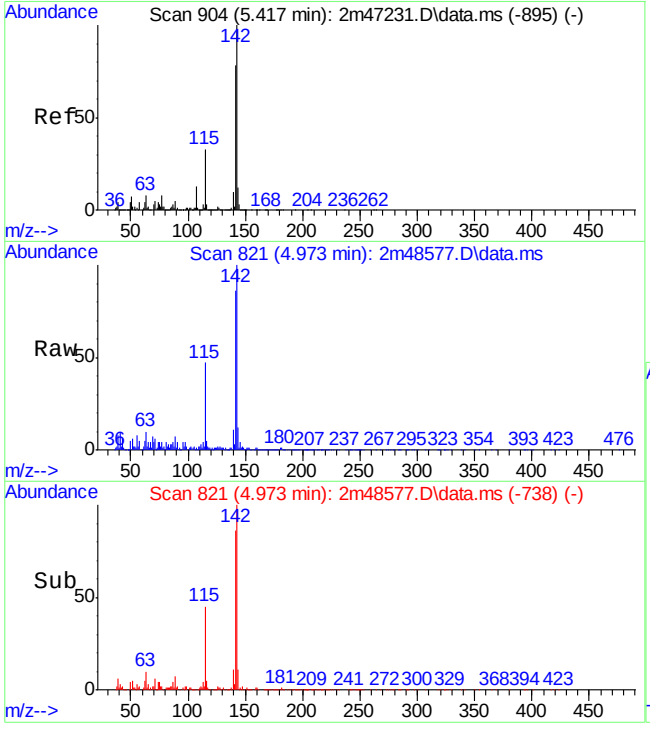


#38
Naphthalene
Concen: 17.80 ppb
RT: 3.978 min Scan# 635
Delta R.T. -0.048 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:128 Resp: 497219

Ion	Ratio	Lower	Upper
128	100		
129	11.6	0.0	40.9
127	13.6	0.0	43.3

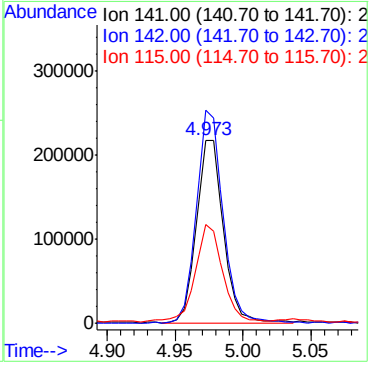


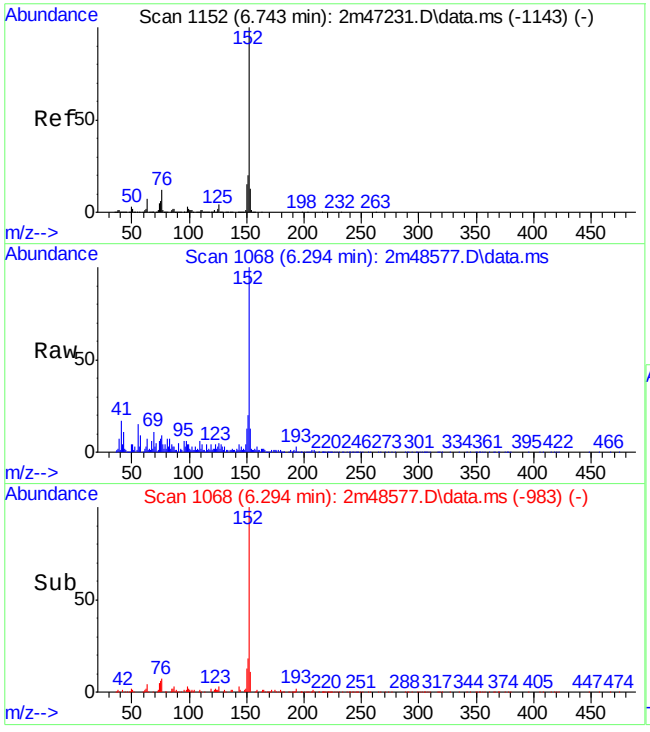


#44
2-Methylnaphthalene
Concen: 17.42 ppb
RT: 4.973 min Scan# 821
Delta R.T. -0.054 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:141 Resp: 298283

Ion	Ratio	Lower	Upper
141	100		
142	116.7	81.7	141.7
115	52.2	12.0	72.0

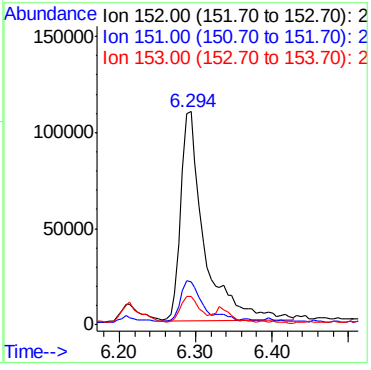


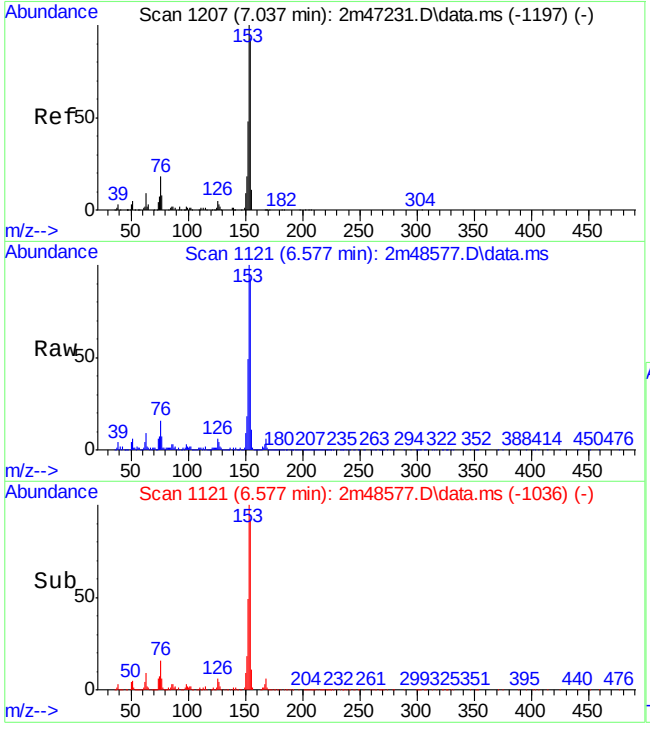


#56
Acenaphthylene
Concen: 7.47 ppb
RT: 6.294 min Scan# 1068
Delta R.T. -0.043 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:152 Resp: 232041

Ion	Ratio	Lower	Upper
152	100		
151	19.2	0.0	49.4
153	12.6	0.0	43.0

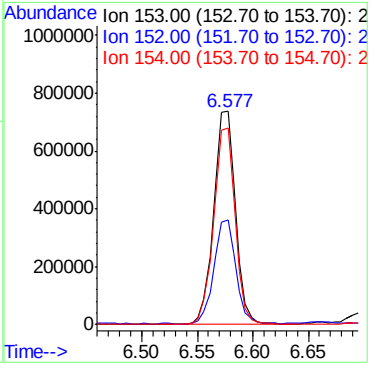




#59
Acenaphthene
Concen: 50.37 ppb
RT: 6.577 min Scan# 1121
Delta R.T. -0.043 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:153 Resp: 1005760

Ion	Ratio	Lower	Upper
153	100		
152	48.9	15.8	75.8
154	91.9	59.7	119.7



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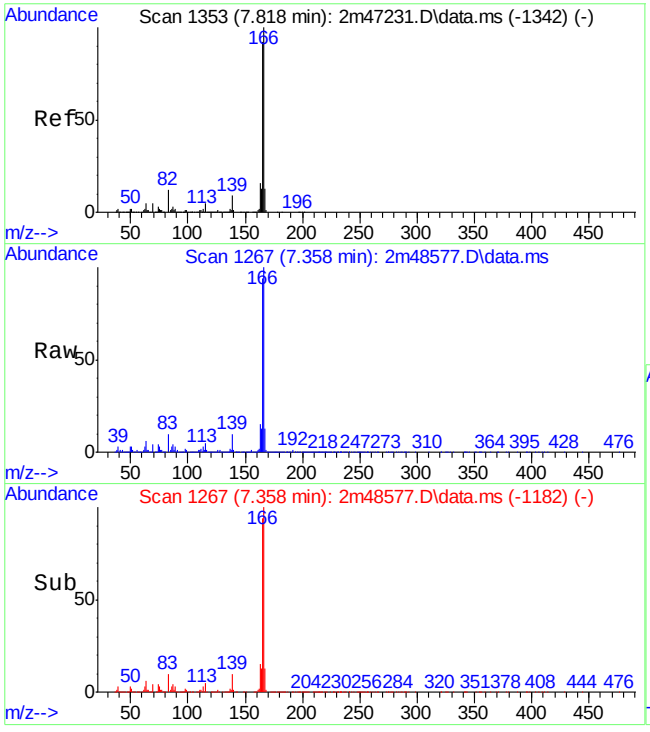
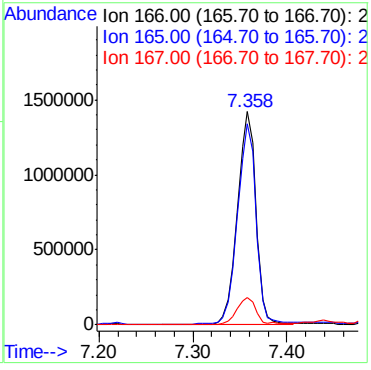
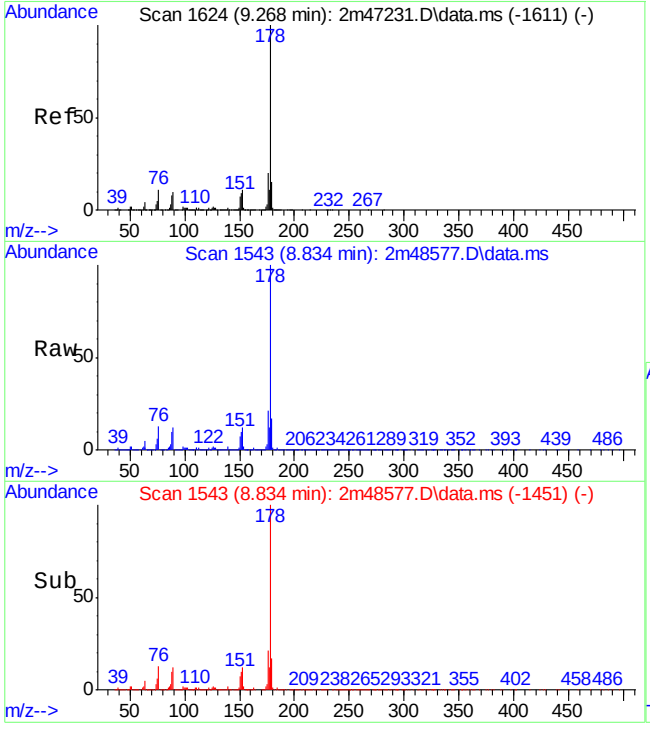


#66
Fluorene
Concen: 90.49 ppb
RT: 7.358 min Scan# 1267
Delta R.T. -0.043 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:166 Resp: 1956426

Ion	Ratio	Lower	Upper
166	100		
165	94.1	61.9	121.9
167	12.7	0.0	43.1

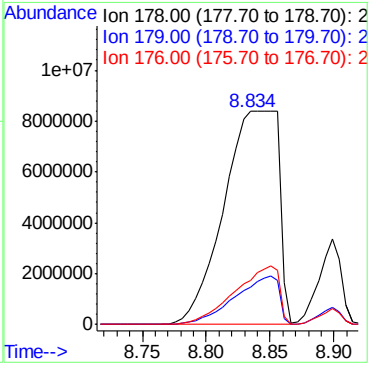




#77
Phenanthrene
Concen: 691.28 ppb m
RT: 8.834 min Scan# 1543
Delta R.T. -0.005 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:178 Resp:25069534

Ion	Ratio	Lower	Upper
178	100		
179	17.4	0.0	44.9
176	20.9	0.0	49.1



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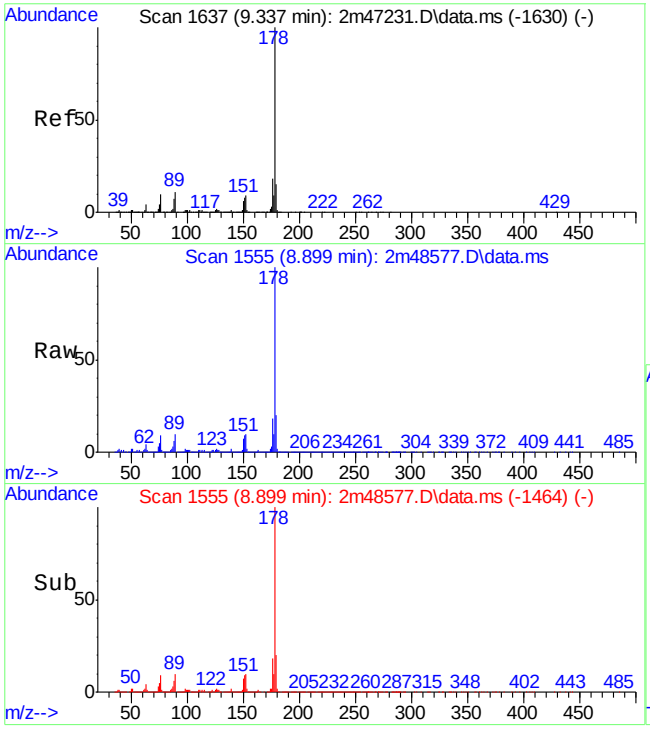
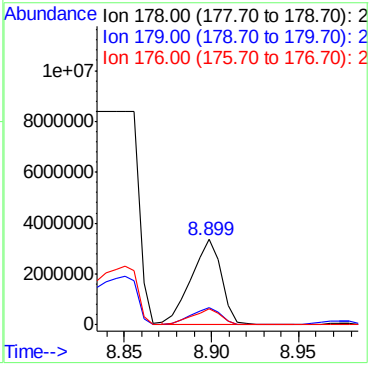
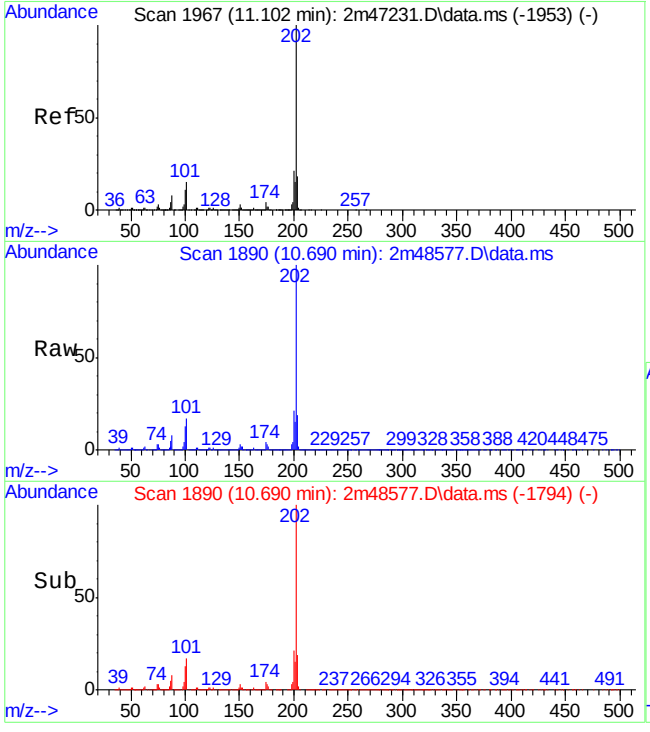


#78
Anthracene
Concen: 110.92 ppb
RT: 8.899 min Scan# 1555
Delta R.T. -0.011 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:178 Resp: 3987035

Ion	Ratio	Lower	Upper
178	100		
179	20.1	0.0	44.3
176	18.2	0.0	48.3

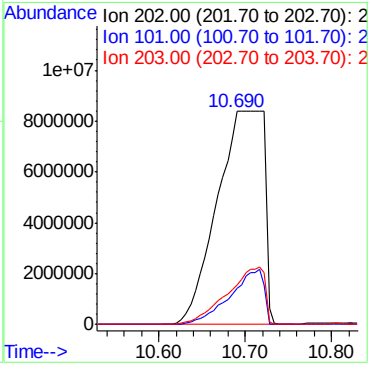


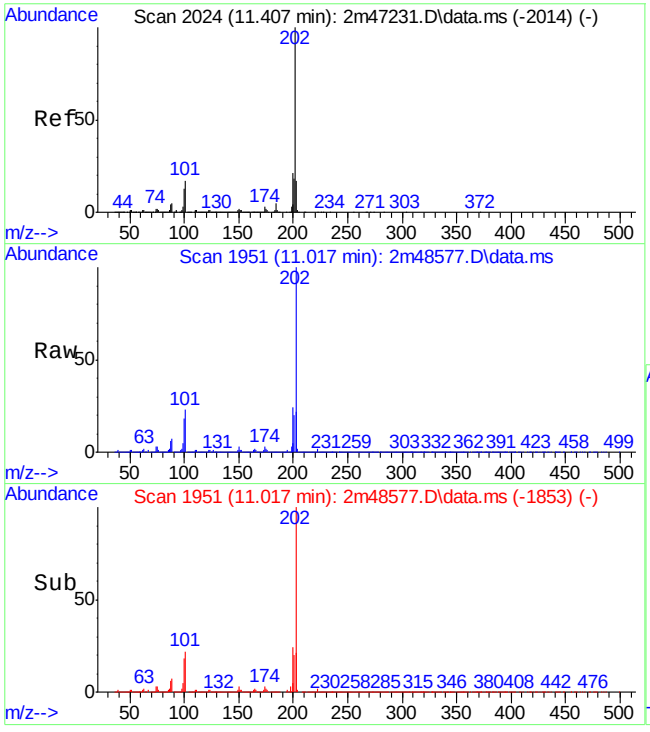


#81
Fluoranthene
Concen: 889.01 ppb m
RT: 10.690 min Scan# 1890
Delta R.T. 0.016 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:202 Resp:31803698

Ion	Ratio	Lower	Upper
202	100		
101	16.9	0.0	43.8
203	18.8	0.0	47.5

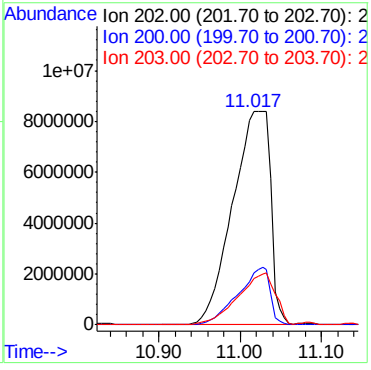


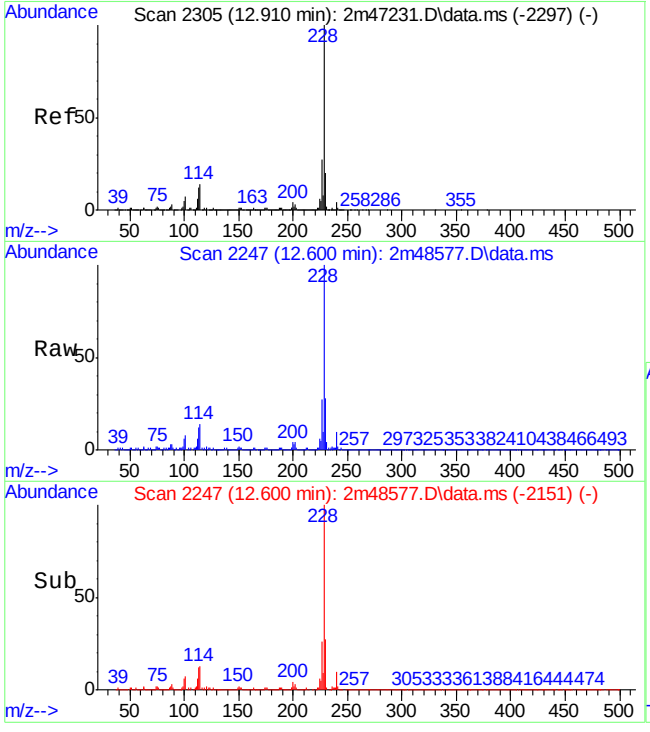


#84
Pyrene
Concen: 582.15 ppb
RT: 11.017 min Scan# 1951
Delta R.T. 0.027 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:202 Resp:27255135

Ion	Ratio	Lower	Upper
202	100		
200	24.1	0.0	51.3
203	21.5	0.0	47.6

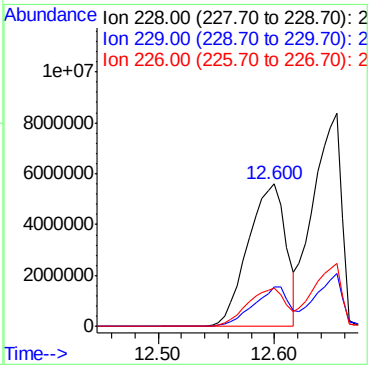


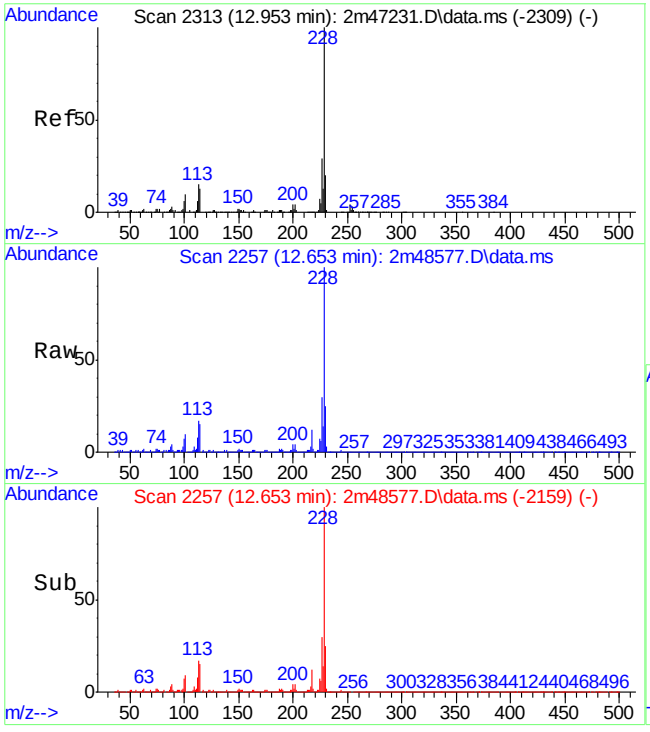


#88
Benzo[a]anthracene
Concen: 284.81 ppb
RT: 12.600 min Scan# 2247
Delta R.T. 0.016 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:228 Resp:12680544

Ion	Ratio	Lower	Upper
228	100		
229	27.6	0.0	49.3
226	26.3	0.0	56.0

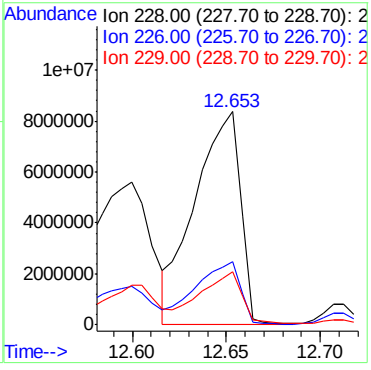


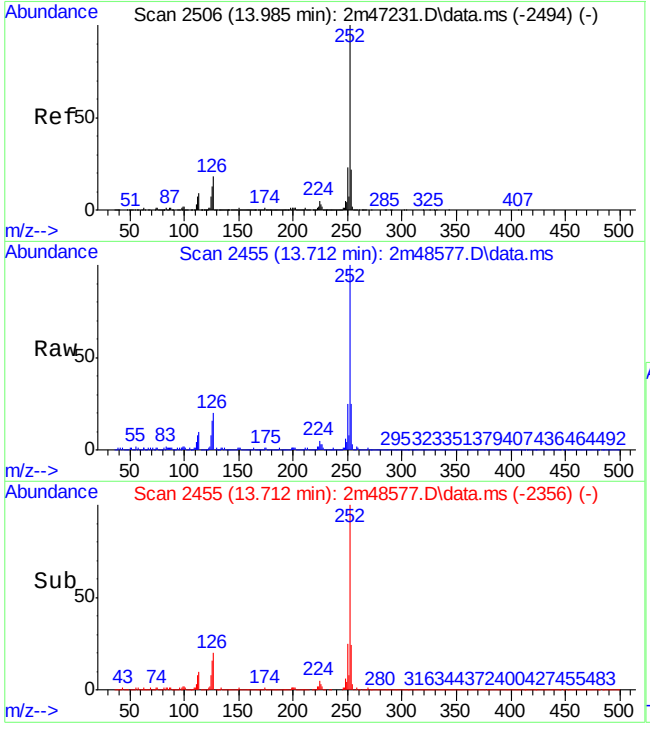


#90
Chrysene
Concen: 320.62 ppb
RT: 12.653 min Scan# 2257
Delta R.T. 0.027 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:228 Resp:14151996

Ion	Ratio	Lower	Upper
228	100		
226	29.7	0.0	57.7
229	24.0	0.0	49.3

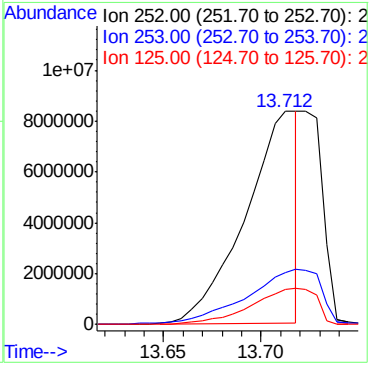


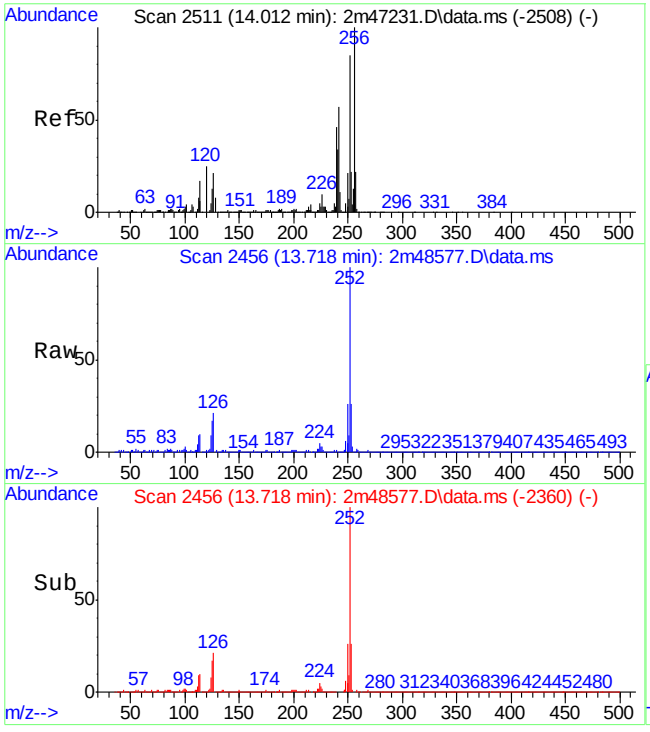


#94
Benzo[b]fluoranthene
Concen: 398.27 ppb m
RT: 13.712 min Scan# 2455
Delta R.T. 0.032 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:252 Resp:15704897

Ion	Ratio	Lower	Upper
252	100		
253	24.6	0.0	51.6
125	16.3	0.0	40.1

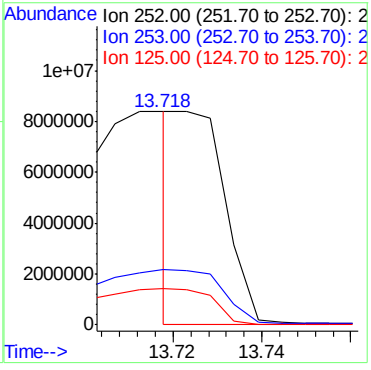


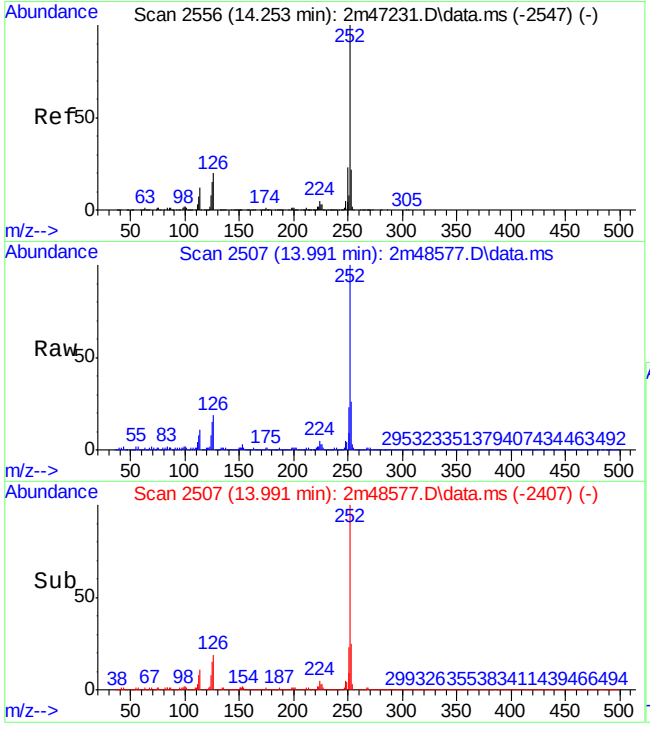


#95
Benzo[k]fluoranthene
Concen: 179.75 ppb m
RT: 13.718 min Scan# 2456
Delta R.T. 0.016 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:252 Resp: 6379689

Ion	Ratio	Lower	Upper
252	100		
253	26.1	0.0	52.7
125	17.0	0.0	42.9

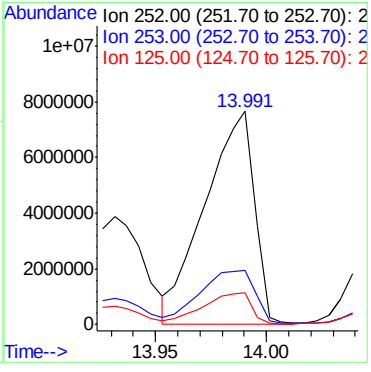


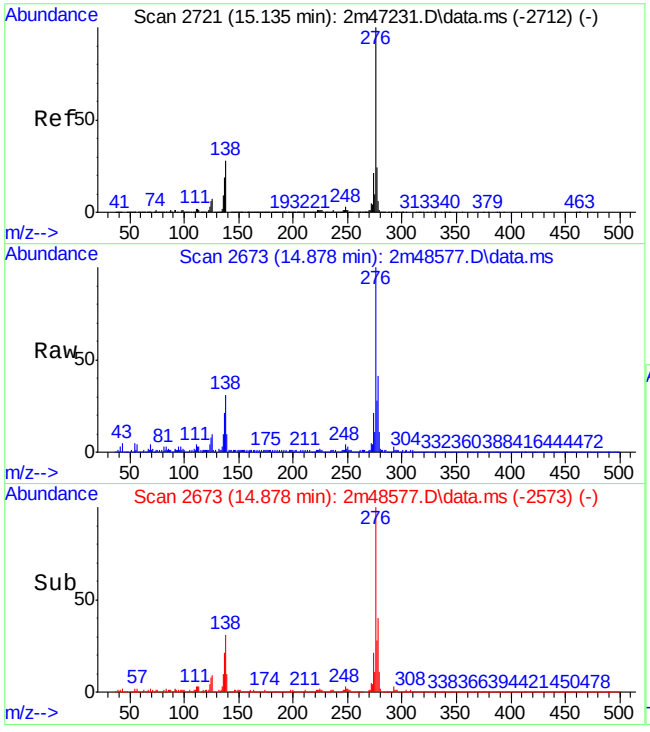


#96
Benzo[a]pyrene
Concen: 353.49 ppb
RT: 13.991 min Scan# 2507
Delta R.T. 0.037 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:252 Resp:11840712

Ion	Ratio	Lower	Upper
252	100		
253	25.3	0.0	52.4
125	14.6	0.0	42.7

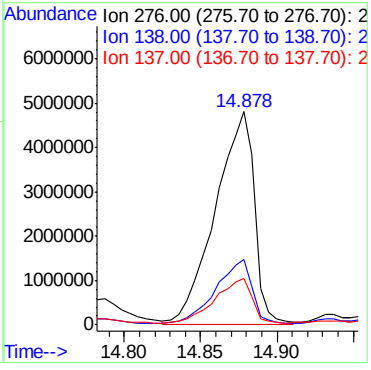


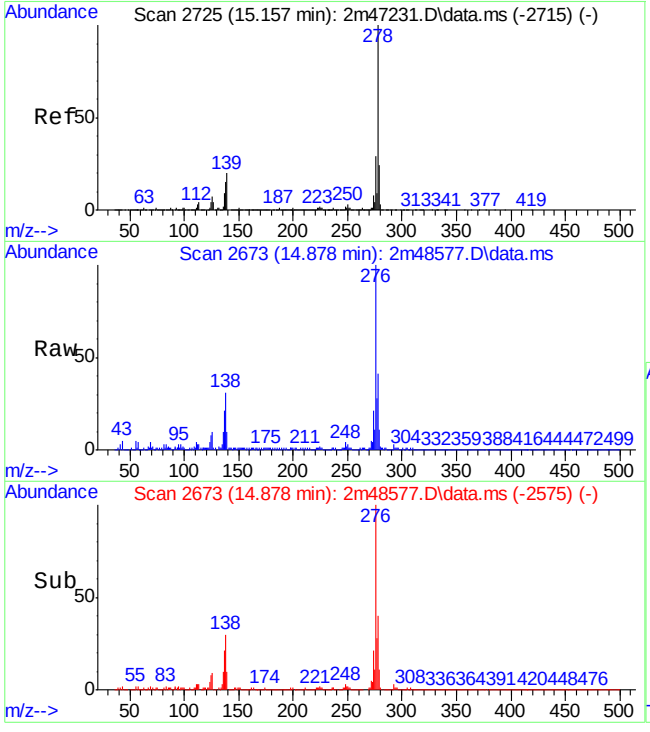


#97
Indeno[1,2,3-cd]pyrene
Concen: 218.94 ppb
RT: 14.878 min Scan# 2673
Delta R.T. 0.037 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:276 Resp: 8515453

Ion	Ratio	Lower	Upper
276	100		
138	30.4	0.0	57.6
137	20.8	0.0	48.9

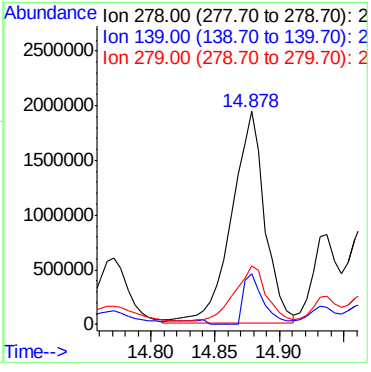


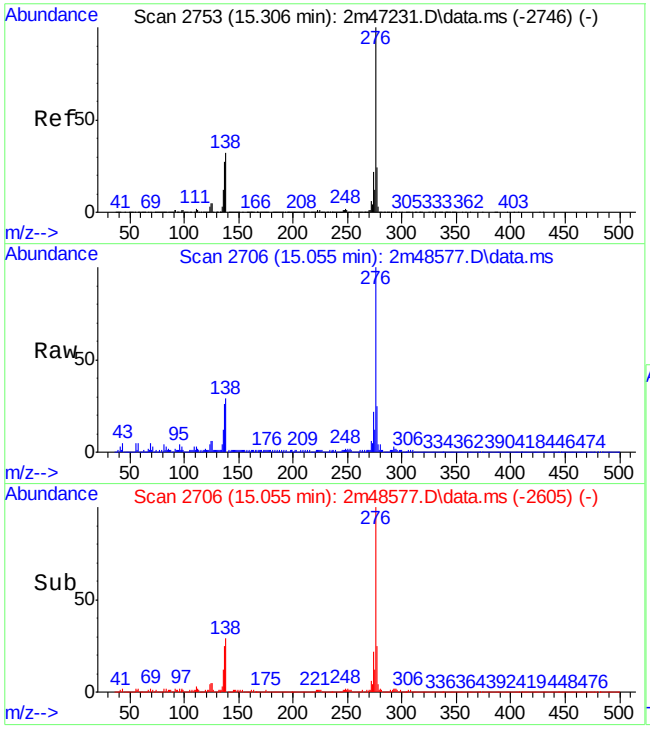


#99
Dibenz[a,h]anthracene
Concen: 106.71 ppb
RT: 14.878 min Scan# 2673
Delta R.T. 0.027 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:278 Resp: 3486836

Ion	Ratio	Lower	Upper
278	100		
139	22.9	0.0	52.4
279	26.3	0.0	54.1

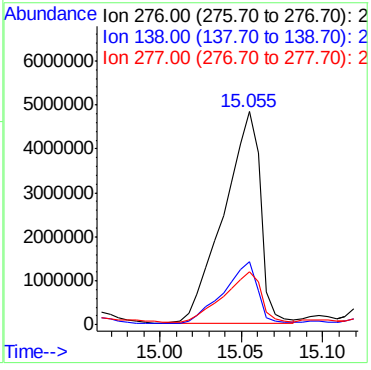




#101
Benzo[g,h,i]perylene
Concen: 229.57 ppb
RT: 15.055 min Scan# 2706
Delta R.T. 0.043 min
Lab File: 2m48577.D
Acq: 17 Dec 2012 9:00 pm

Tgt Ion:276 Resp: 7623015

Ion	Ratio	Lower	Upper
276	100		
138	29.0	0.1	60.1
277	23.9	0.0	53.2



9.1.27

9

Manual Integrations APPROVED (compounds with "m" flag)
Kristi Schollenberger 12/21/12 14:05

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48591.D
Acq On : 18 Dec 2012 4:16 pm
Operator : olgaa
Sample : jb22822-21
Misc : op62037,e2m2081,34.7,,,1,10
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 19 12:03:45 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 12:02:33 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.389	152	279620	40.00	ppb	0.00
24) Naphthalene-d8	3.914	136	1318004	40.00	ppb	0.00
47) Acenaphthene-d10	6.481	164	804818	40.00	ppb	0.00
69) Phenanthrene-d10	8.706	188	1341299	40.00	ppb	0.00
83) Chrysene-d12	12.525	240	1267200	40.00	ppb	0.00
92) Perylene-d12	13.932	264	1060067	40.00	ppb	0.00
102) 1,4-Dichlorobenzene-d4a	2.389	152	279620	40.00	ppb	0.00
104) Acenaphthene-d10a	6.481	164	804818	40.00	ppb	0.00
106) Chrysene-d12a	12.525	240	1267200	40.00	ppb	0.00
108) Phenanthrene-d10a	8.706	188	1341299	40.00	ppb	0.00
110) Chrysene-d12b	12.525	240	1267200	40.00	ppb	0.00

System Monitoring Compounds						
5) 2-Fluorophenol	1.459	112	24091	2.37	ppb	0.03
Spiked Amount 50.000			Recovery	=	4.74%	
8) Phenol-d5	2.255	99	38327	2.81	ppb	0.04
Spiked Amount 50.000			Recovery	=	5.62%	
25) Nitrobenzene-d5	3.084	82	33007	2.33	ppb	0.02
Spiked Amount 50.000			Recovery	=	4.66%	
51) 2-Fluorobiphenyl	5.561	172	81065	3.06	ppb	0.00
Spiked Amount 50.000			Recovery	=	6.12%	
73) 2,4,6-Tribromophenol	7.754	330	7807	2.48	ppb	0.02
Spiked Amount 50.000			Recovery	=	4.96%	
85) Terphenyl-d14	11.289	244	105503	4.12	ppb	0.00
Spiked Amount 50.000			Recovery	=	8.24%	

Target Compounds						Qvalue
38) Naphthalene	3.940	128	67712	1.85	ppb	99
44) 2-Methylnaphthalene	4.935	141	40060	1.78	ppb	92
56) Acenaphthylene	6.246	152	27506	0.71	ppb	95
59) Acenaphthene	6.524	153	122872	4.92	ppb	100
66) Fluorene	7.299	166	223708	8.27	ppb	98
77) Phenanthrene	8.743	178	2935570	71.49	ppb	100
78) Anthracene	8.813	178	435865	10.71	ppb	95
81) Fluoranthene	10.583	202	3748282	92.53	ppb	100
84) Pyrene	10.899	202	2960638	72.24	ppb	100
88) Benzo[a]anthracene	12.509	228	1169556	30.01	ppb	93
90) Chrysene	12.552	228	1269319	32.85	ppb	99
94) Benzo[b]fluoranthene	13.611	252	1114088m	30.19	ppb	
95) Benzo[k]fluoranthene	13.616	252	665723m	20.04	ppb	
96) Benzo[a]pyrene	13.883	252	920773	29.37	ppb	98
97) Indeno[1,2,3-cd]pyrene	14.771	276	576764	15.84	ppb	94
99) Dibenz[a,h]anthracene	14.782	278	188691m	6.17	ppb	
101) Benzo[g,h,i]perylene	14.948	276	523484	16.84	ppb	89

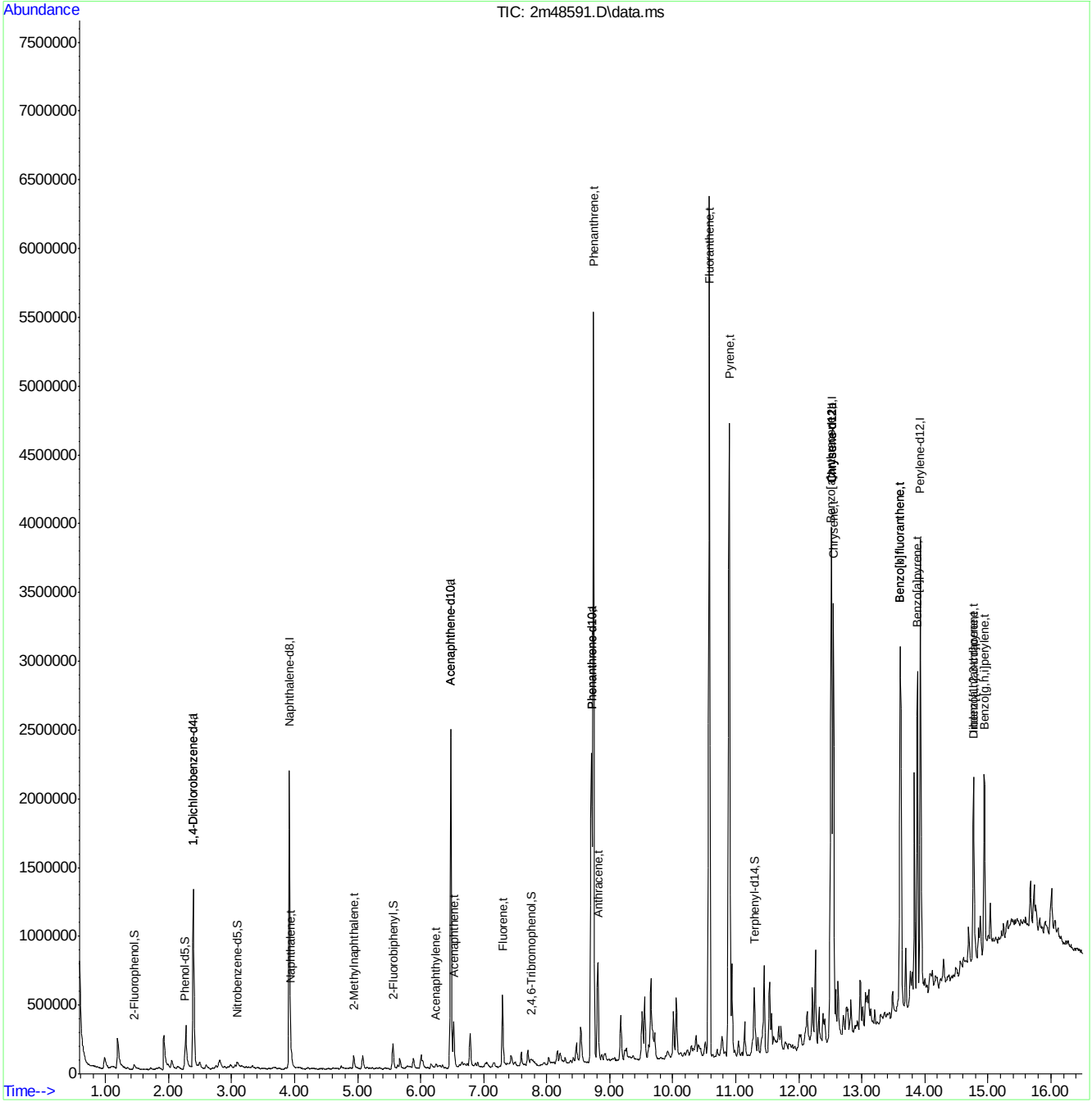
(#) = qualifier out of range (m) = manual integration (+) = signals summed

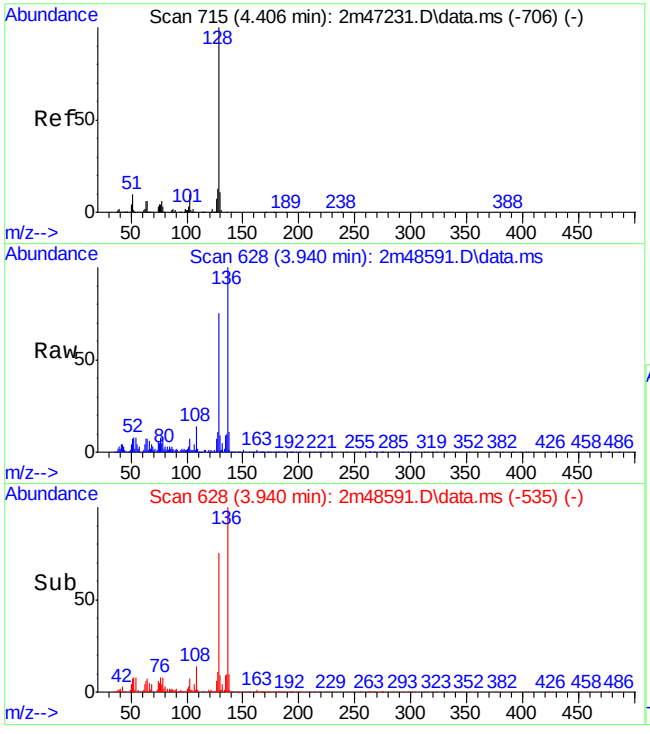
9.1.28
9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2081\
Data File : 2m48591.D
Acq On : 18 Dec 2012 4:16 pm
Operator : olgaa
Sample : jb22822-21
Misc : op62037,e2m2081,34.7,,,1,10
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 19 12:03:45 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Wed Dec 19 12:02:33 2012
Response via : Initial Calibration

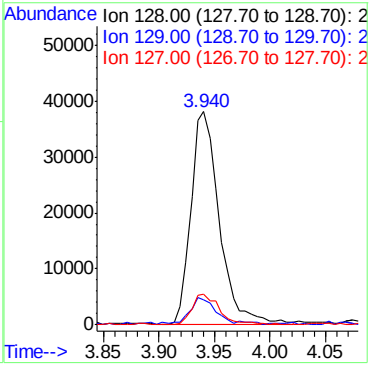


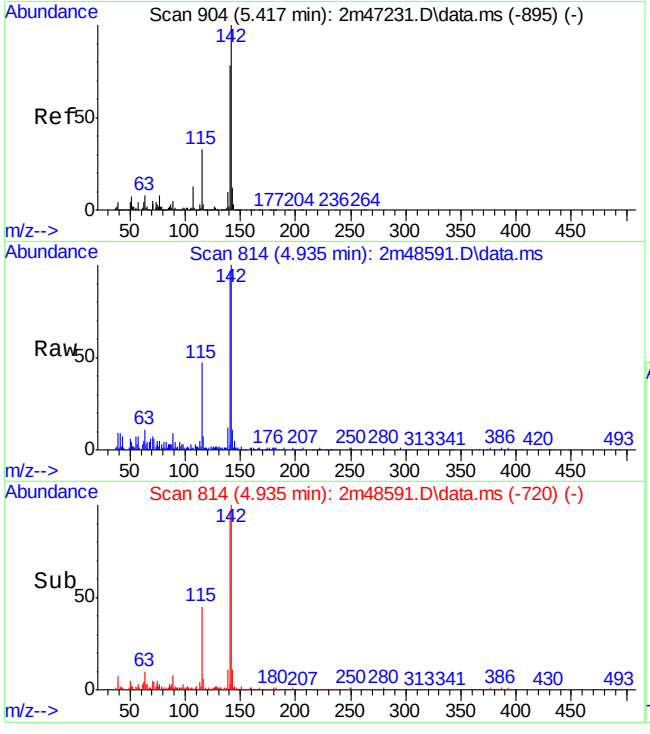


#38
Naphthalene
Concen: 1.85 ppb
RT: 3.940 min Scan# 628
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:128 Resp: 67712

Ion	Ratio	Lower	Upper
128	100		
129	10.4	0.0	40.9
127	13.9	0.0	43.3

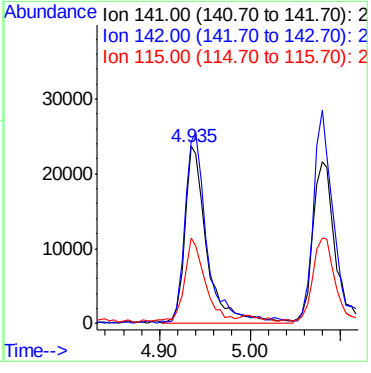




#44
2-Methylnaphthalene
Concen: 1.78 ppb
RT: 4.935 min Scan# 814
Delta R.T. 0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:141 Resp: 40060

Ion	Ratio	Lower	Upper
141	100		
142	102.3	81.7	141.7
115	46.7	12.0	72.0



9.1.28

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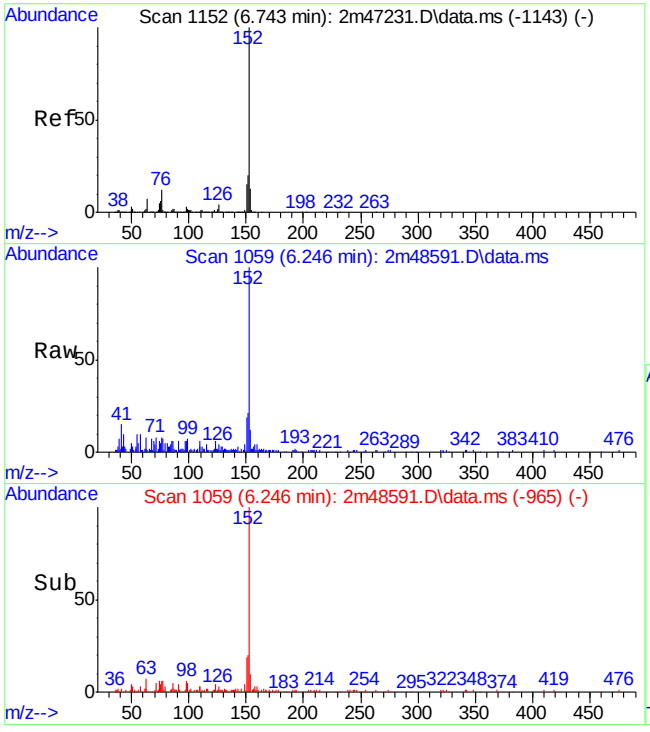
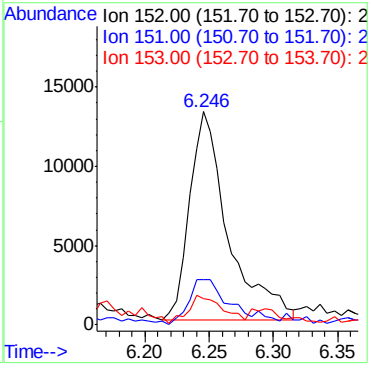
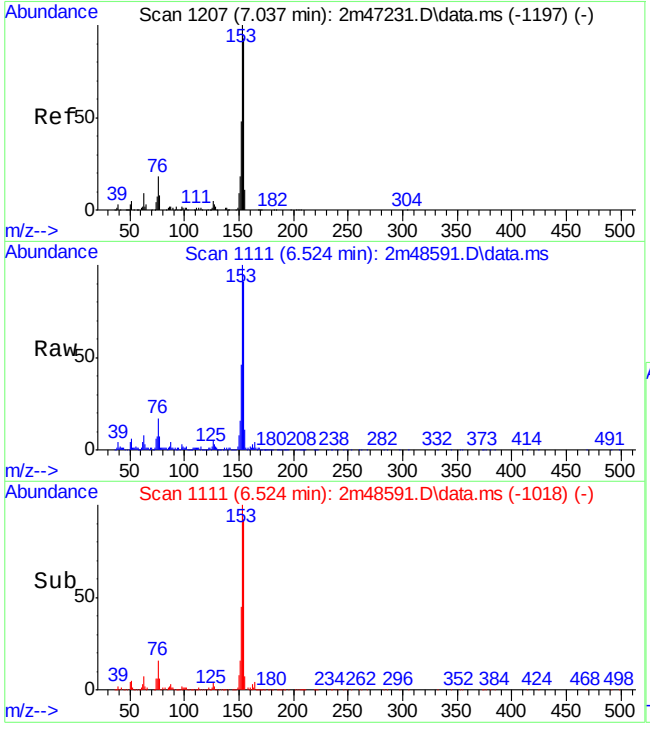


#56
Acenaphthylene
Concen: 0.71 ppb
RT: 6.246 min Scan# 1059
Delta R.T. 0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:152 Resp: 27506

Ion	Ratio	Lower	Upper
152	100		
151	20.2	0.0	49.4
153	9.1	0.0	43.0

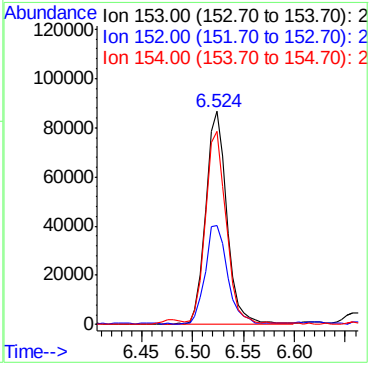




#59
Acenaphthene
Concen: 4.92 ppb
RT: 6.524 min Scan# 1111
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:153 Resp: 122872

Ion	Ratio	Lower	Upper
153	100		
152	46.1	15.8	75.8
154	89.8	59.7	119.7



9.1.28

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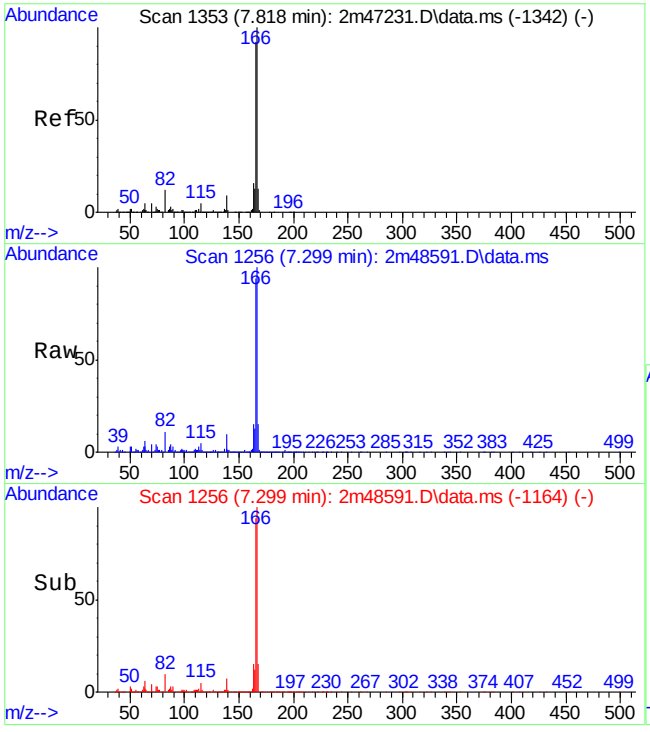
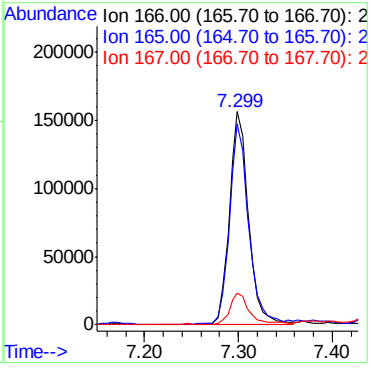
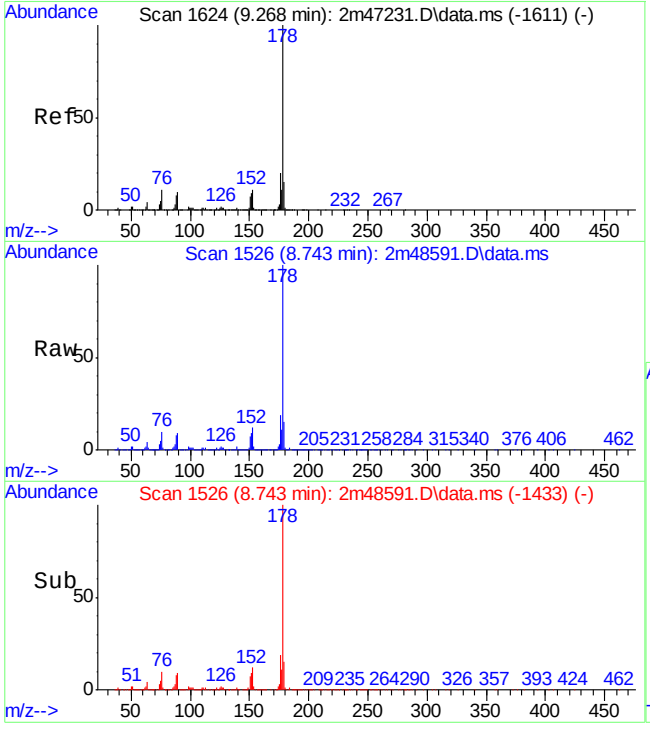


#66
Fluorene
Concen: 8.27 ppb
RT: 7.299 min Scan# 1256
Delta R.T. -0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:166 Resp: 223708

Ion	Ratio	Lower	Upper
166	100		
165	93.7	61.9	121.9
167	14.6	0.0	43.1

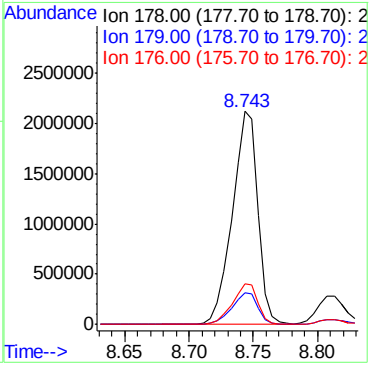




#77
Phenanthrene
Concen: 71.49 ppb
RT: 8.743 min Scan# 1526
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

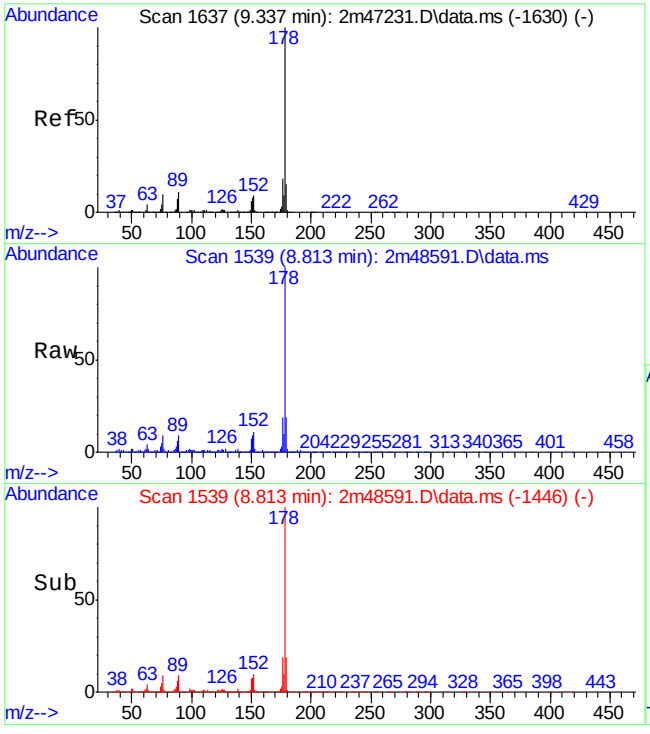
Tgt Ion:178 Resp: 2935570

Ion	Ratio	Lower	Upper
178	100		
179	15.0	0.0	44.9
176	19.2	0.0	49.1



9.1.28

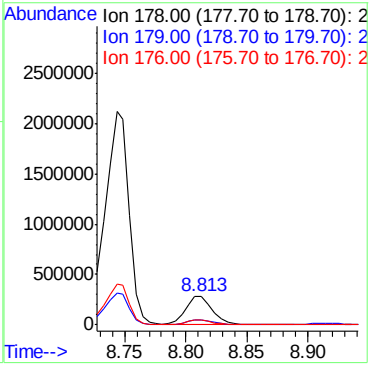
9

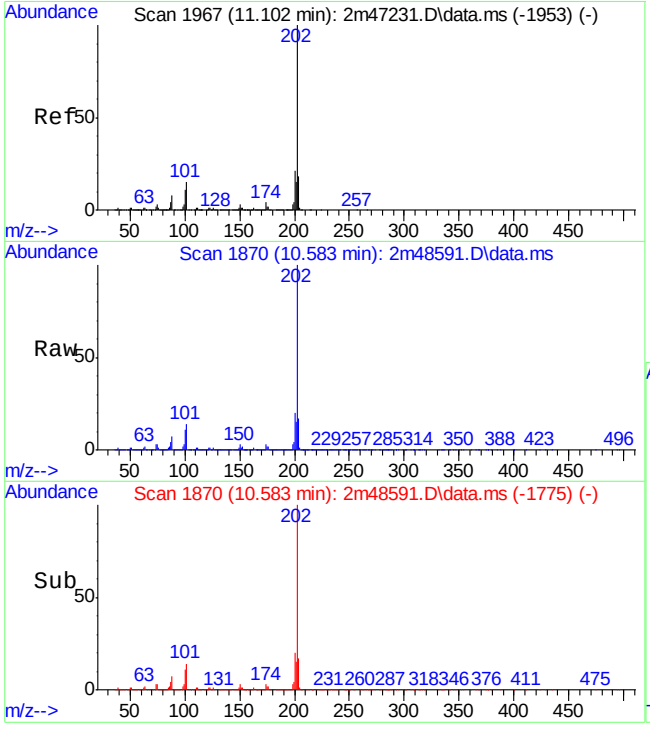


#78
Anthracene
Concen: 10.71 ppb
RT: 8.813 min Scan# 1539
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:178 Resp: 435865

Ion	Ratio	Lower	Upper
178	100		
179	18.3	0.0	44.3
176	19.1	0.0	48.3

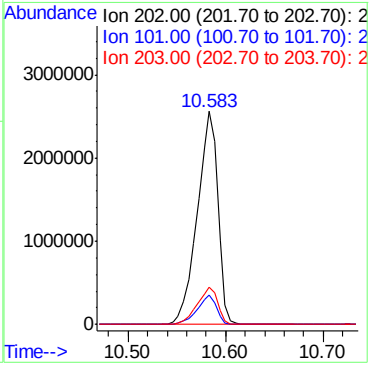




#81
Fluoranthene
Concen: 92.53 ppb
RT: 10.583 min Scan# 1870
Delta R.T. 0.011 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:202 Resp: 3748282

Ion	Ratio	Lower	Upper
202	100		
101	13.8	0.0	43.8
203	17.3	0.0	47.5



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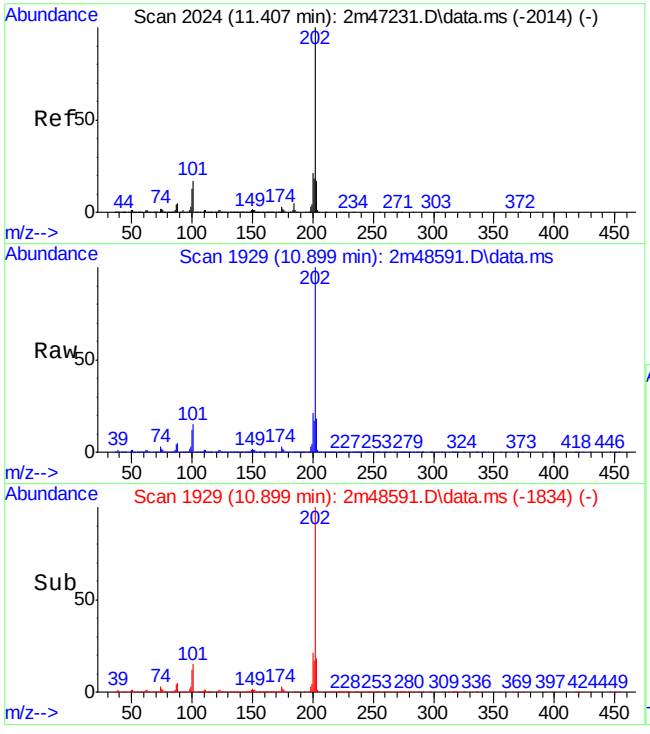
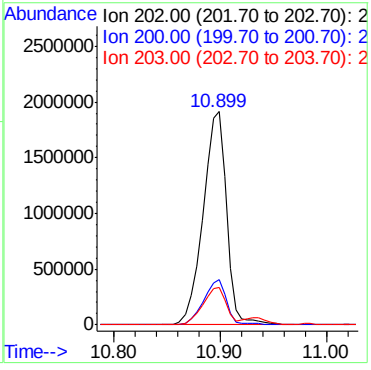
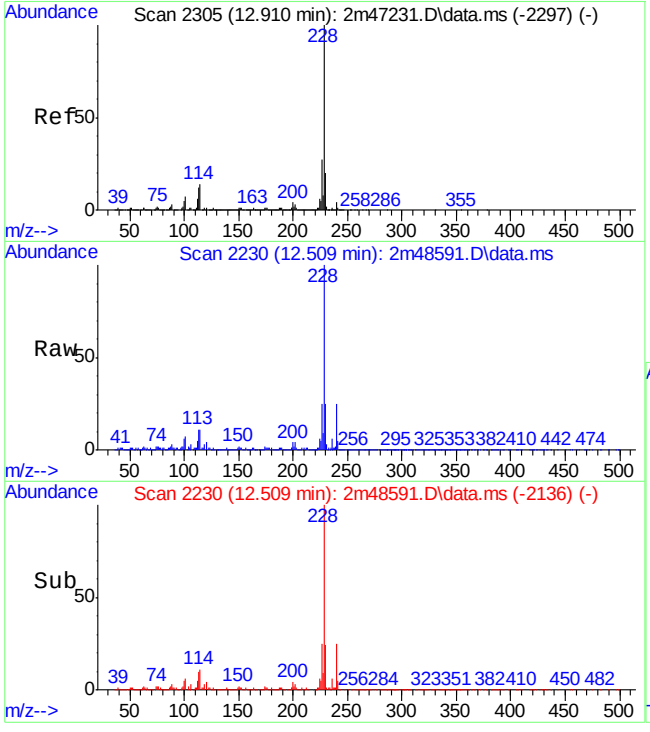


#84
Pyrene
Concen: 72.24 ppb
RT: 10.899 min Scan# 1929
Delta R.T. 0.011 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:202 Resp: 2960638

Ion	Ratio	Lower	Upper
202	100		
200	21.2	0.0	51.3
203	17.4	0.0	47.6

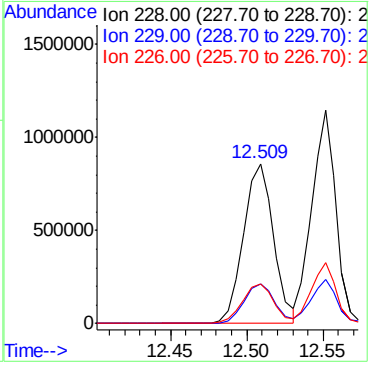




#88
Benzo[a]anthracene
Concen: 30.01 ppb
RT: 12.509 min Scan# 2230
Delta R.T. 0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:228 Resp: 1169556

Ion	Ratio	Lower	Upper
228	100		
229	24.8	0.0	49.3
226	24.5	0.0	56.0



9.1.28

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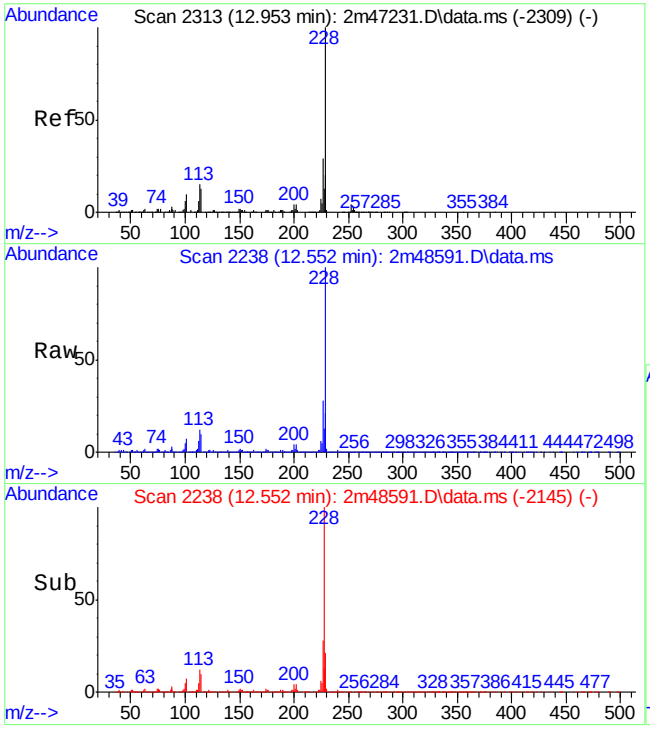
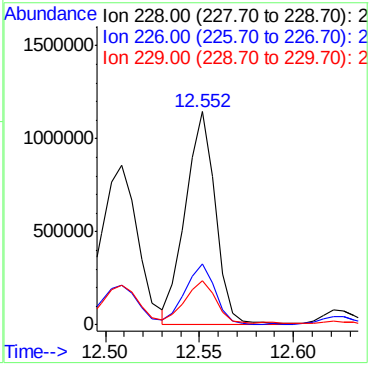
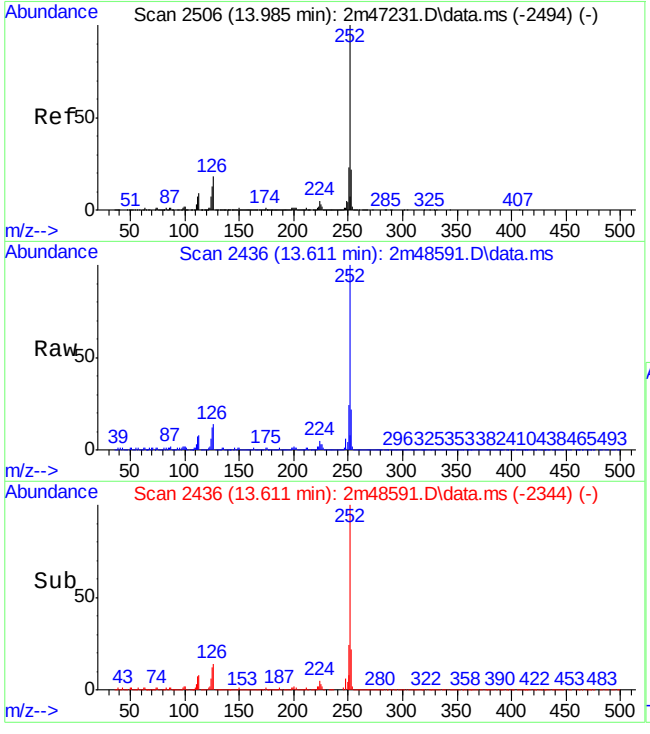


#90
Chrysene
Concen: 32.85 ppb
RT: 12.552 min Scan# 2238
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:228 Resp: 1269319

Ion	Ratio	Lower	Upper
228	100		
226	28.1	0.0	57.7
229	20.1	0.0	49.3

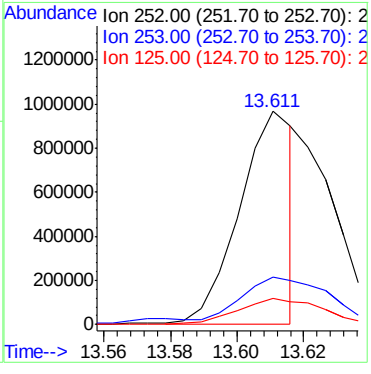




#94
Benzo[b]fluoranthene
Concen: 30.19 ppb m
RT: 13.611 min Scan# 2436
Delta R.T. -0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:252 Resp: 1114088

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	51.6
125	12.5	0.0	40.1



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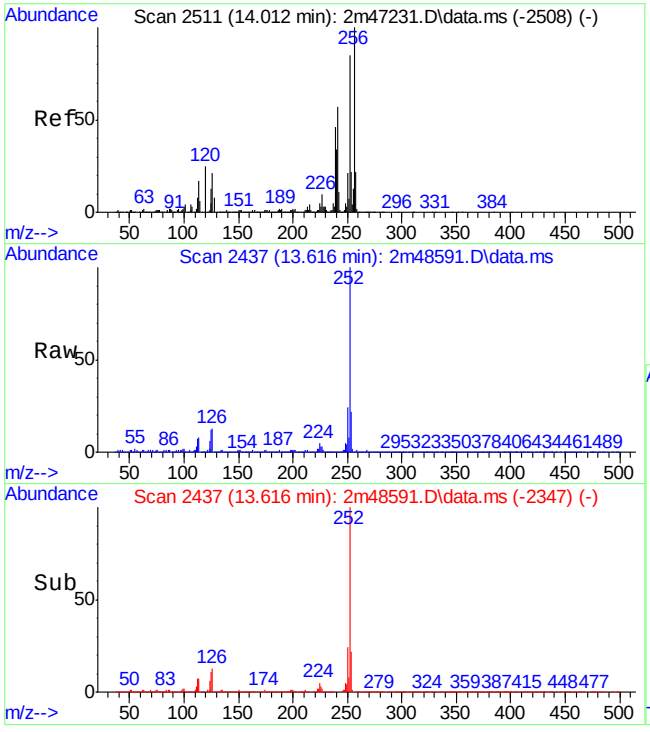
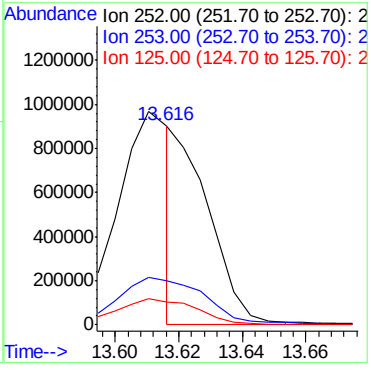
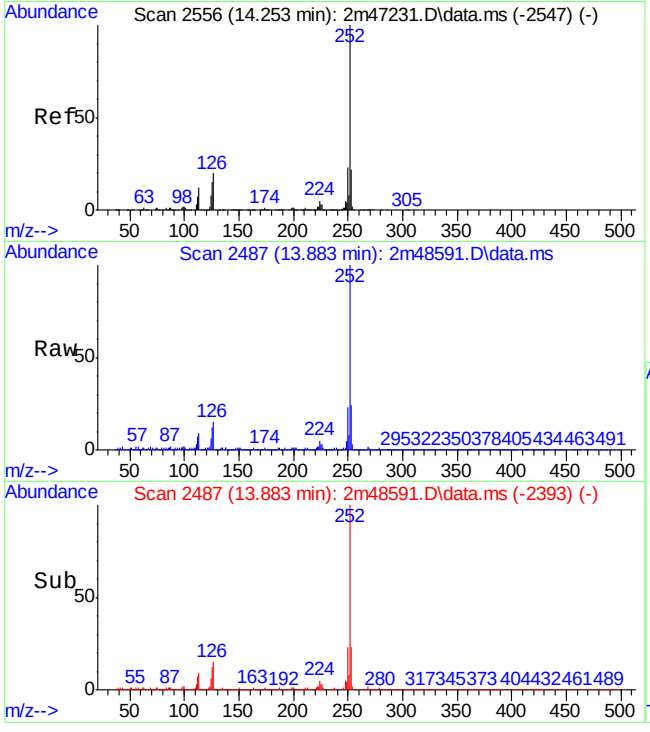


#95
Benzo[k]fluoranthene
Concen: 20.04 ppb m
RT: 13.616 min Scan# 2437
Delta R.T. -0.016 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:252 Resp: 665723

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	52.7
125	11.7	0.0	42.9

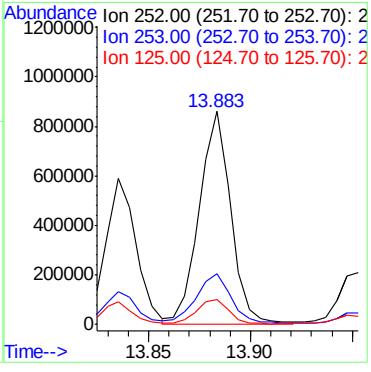




#96
Benzo[a]pyrene
Concen: 29.37 ppb
RT: 13.883 min Scan# 2487
Delta R.T. 0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:252 Resp: 920773

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	52.4
125	11.5	0.0	42.7



9.1.28

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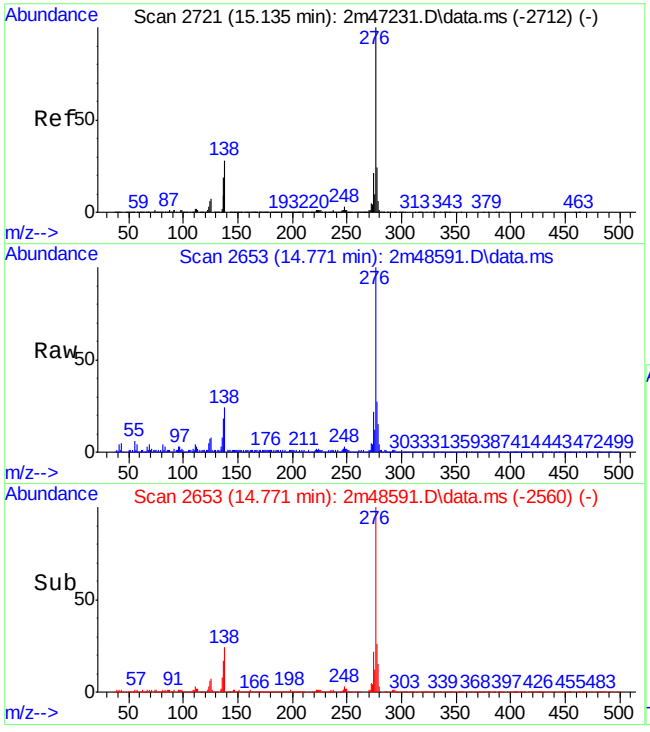
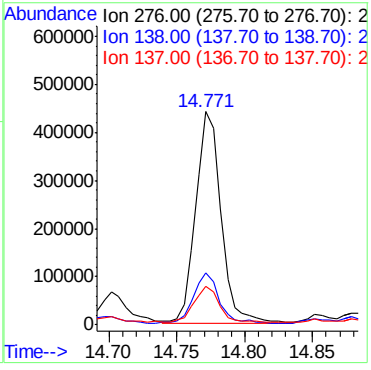
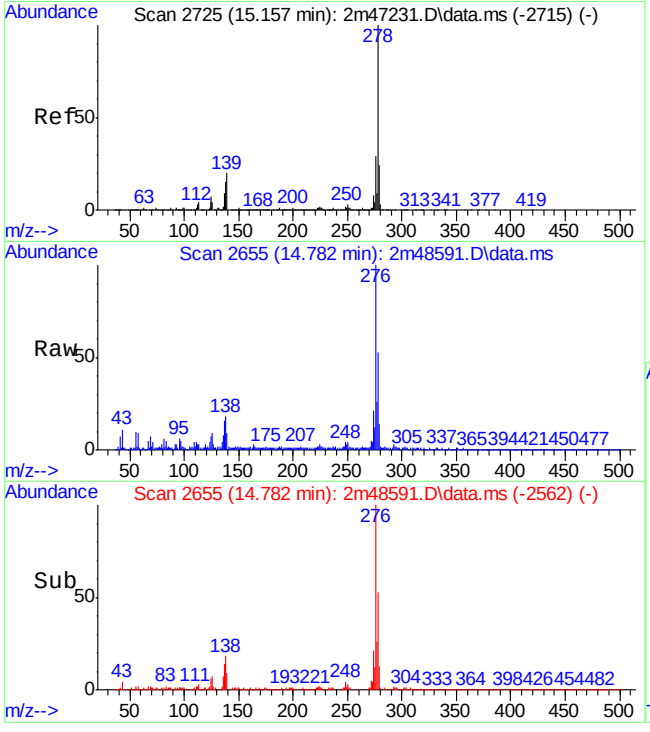


#97
Indeno[1,2,3-cd]pyrene
Concen: 15.84 ppb
RT: 14.771 min Scan# 2653
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:276 Resp: 576764

Ion	Ratio	Lower	Upper
276	100		
138	23.6	0.0	57.6
137	17.1	0.0	48.9

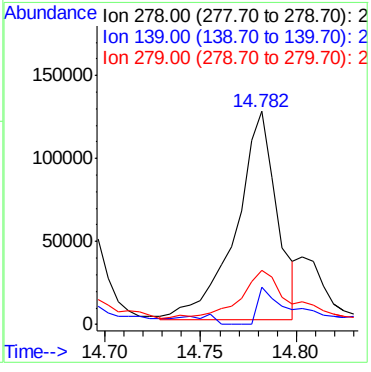


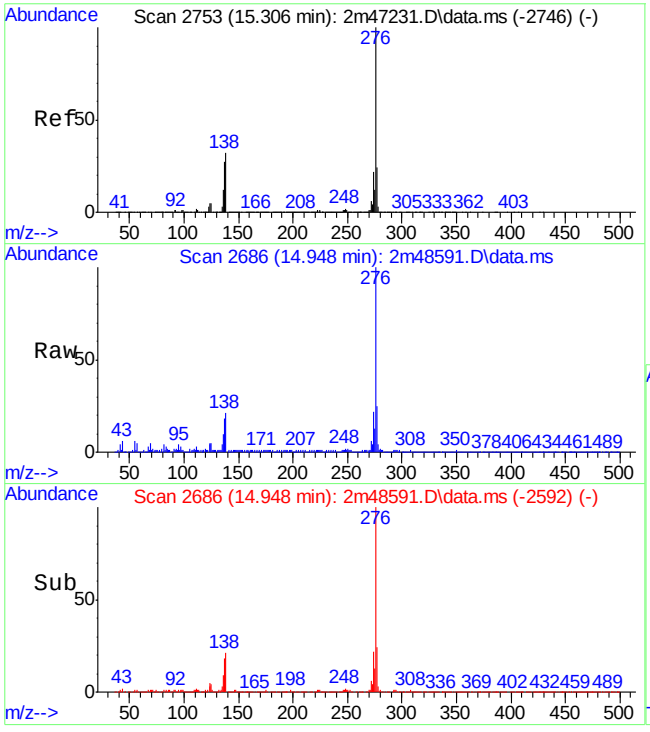


#99
Dibenz[a,h]anthracene
Concen: 6.17 ppb m
RT: 14.782 min Scan# 2655
Delta R.T. -0.000 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:278 Resp: 188691

Ion	Ratio	Lower	Upper
278	100		
139	17.8	0.0	52.4
279	25.5	0.0	54.1

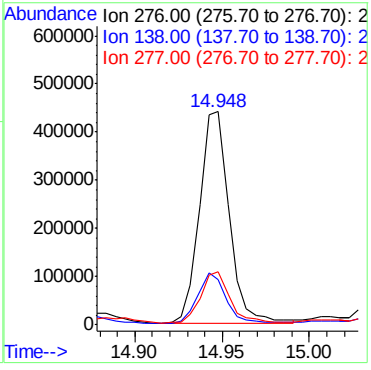




#101
Benzo[g,h,i]perylene
Concen: 16.84 ppb
RT: 14.948 min Scan# 2686
Delta R.T. 0.005 min
Lab File: 2m48591.D
Acq: 18 Dec 2012 4:16 pm

Tgt Ion:276 Resp: 523484

Ion	Ratio	Lower	Upper
276	100		
138	20.5	0.1	60.1
277	23.9	0.0	53.2



9.1.28

9

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48553.D
Acq On : 17 Dec 2012 11:35 am
Operator : olgaa
Sample : op62037-mb1
Misc : op62037,e2m2080,35.0
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 18 09:34:06 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	2.400	152	222169	40.00 ppb	-0.06
24) Naphthalene-d8	3.930	136	968955	40.00 ppb	-0.07
47) Acenaphthene-d10	6.497	164	587983	40.00 ppb	-0.08
69) Phenanthrene-d10	8.722	188	1002578	40.00 ppb	-0.09
83) Chrysene-d12	12.530	240	1172041	40.00 ppb	-0.07
92) Perylene-d12	13.932	264	1142681	40.00 ppb	-0.07
102) 1,4-Dichlorobenzene-d4a	2.400	152	222169	40.00 ppb	-0.06
104) Acenaphthene-d10a	6.497	164	587983	40.00 ppb	-0.08
106) Chrysene-d12a	12.530	240	1172041	40.00 ppb	-0.07
108) Phenanthrene-d10a	8.722	188	1002578	40.00 ppb	-0.09
110) Chrysene-d12b	12.530	240	1172041	40.00 ppb	-0.07

System Monitoring Compounds					
5) 2-Fluorophenol	1.437	112	227760	28.17 ppb	-0.04
Spiked Amount 50.000			Recovery	= 56.34%	
8) Phenol-d5	2.245	99	327560	30.23 ppb	-0.03
Spiked Amount 50.000			Recovery	= 60.46%	
25) Nitrobenzene-d5	3.085	82	257176	24.74 ppb	-0.06
Spiked Amount 50.000			Recovery	= 49.48%	
51) 2-Fluorobiphenyl	5.577	172	649000	33.57 ppb	-0.07
Spiked Amount 50.000			Recovery	= 67.14%	
73) 2,4,6-Tribromophenol	7.759	330	109773	46.59 ppb	-0.07
Spiked Amount 50.000			Recovery	= 93.18%	
85) Terphenyl-d14	11.300	244	1146688	48.42 ppb	-0.08
Spiked Amount 50.000			Recovery	= 96.84%	

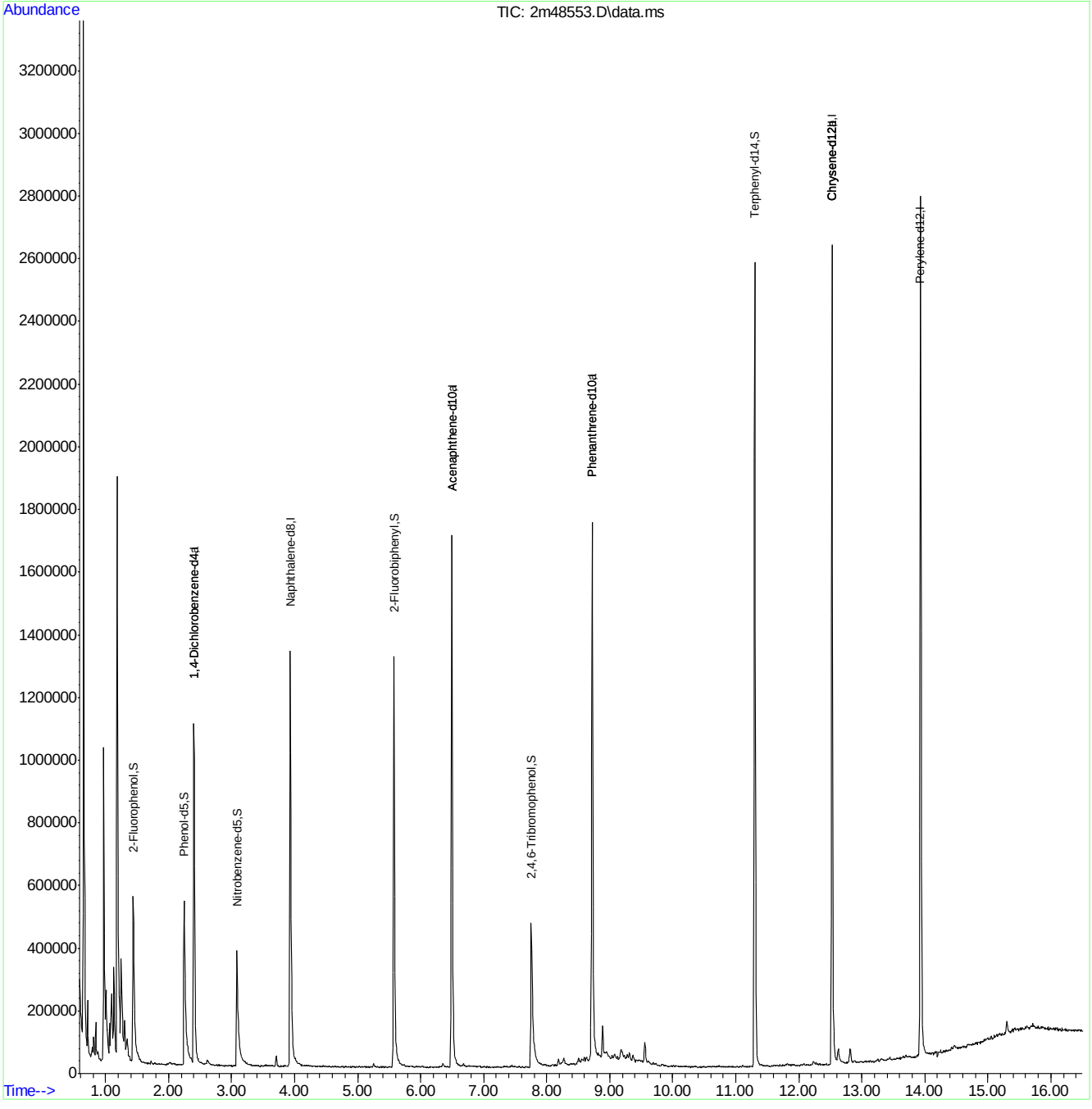
Target Compounds	Qvalue

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\e2m2080\
Data File : 2m48553.D
Acq On : 17 Dec 2012 11:35 am
Operator : olgaa
Sample : op62037-mb1
Misc : op62037,e2m2080,35.0
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 18 09:34:06 2012
Quant Method : C:\MSDCHEM\1\METHODS\M2M2034.M
Quant Title : Semi Volatile GC/MS, ZB-5 15mx .25mmx .25um
QLast Update : Tue Dec 11 16:45:41 2012
Response via : Initial Calibration



M2M2034.M Tue Dec 18 09:34:19 2012 MS2M

Quantitation Report (QT Reviewed)

Data File : C:\HPCHEM\1\DATA\EM3659\M90314.D Vial: 7
Acq On : 17 Dec 2012 1:09 pm Operator: olgaa
Sample : op62037-mb1 Inst : MSM
Misc : op62037,em3659,35.0 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:12 2012 Quant Results File: MM3617.RES

Quant Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 11 16:20:49 2012
Response via : Initial Calibration
DataAcq Meth : MM3617

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	3.17	152	97131	40.00	ppb	-0.09
24) Naphthalene-d8	5.11	136	366950	40.00	ppb	-0.11
47) Acenaphthene-d10	8.34	164	251714	40.00	ppb	-0.12
69) Phenanthrene-d10	11.12	188	465770	40.00	ppb	-0.13
83) Chrysene-d12	16.04	240	487116	40.00	ppb	-0.11
92) Perylene-d12	17.86	264	402844	40.00	ppb	-0.10
102) 1,4-Dichlorobenzene-d4a	3.17	152	97131	40.00	ppb	-0.09
104) Acenaphthene-d10a	8.34	164	251714	40.00	ppb	-0.12
106) Phenanthrene-d10a	11.12	188	465770	40.00	ppb	-0.13
108) Chrysene-d12a	16.04	240	487116	40.00	ppb	-0.11

System Monitoring Compounds

5) 2-Fluorophenol	1.91	112	96339	30.63	ppb	-0.05
Spiked Amount 50.000			Recovery = 61.26%			
8) Phenol-d5	2.94	99	150070	37.74	ppb	-0.04
Spiked Amount 50.000			Recovery = 75.48%			
25) Nitrobenzene-d5	4.02	82	103260	27.90	ppb	-0.09
Spiked Amount 50.000			Recovery = 55.80%			
51) 2-Fluorobiphenyl	7.19	172	294504	36.86	ppb	-0.11
Spiked Amount 50.000			Recovery = 73.72%			
73) 2,4,6-Tribromophenol	9.90	330	43230	52.24	ppb	-0.11
Spiked Amount 50.000			Recovery = 104.48%			
86) Terphenyl-d14	14.38	244	488259	49.04	ppb	-0.12
Spiked Amount 50.000			Recovery = 98.08%			

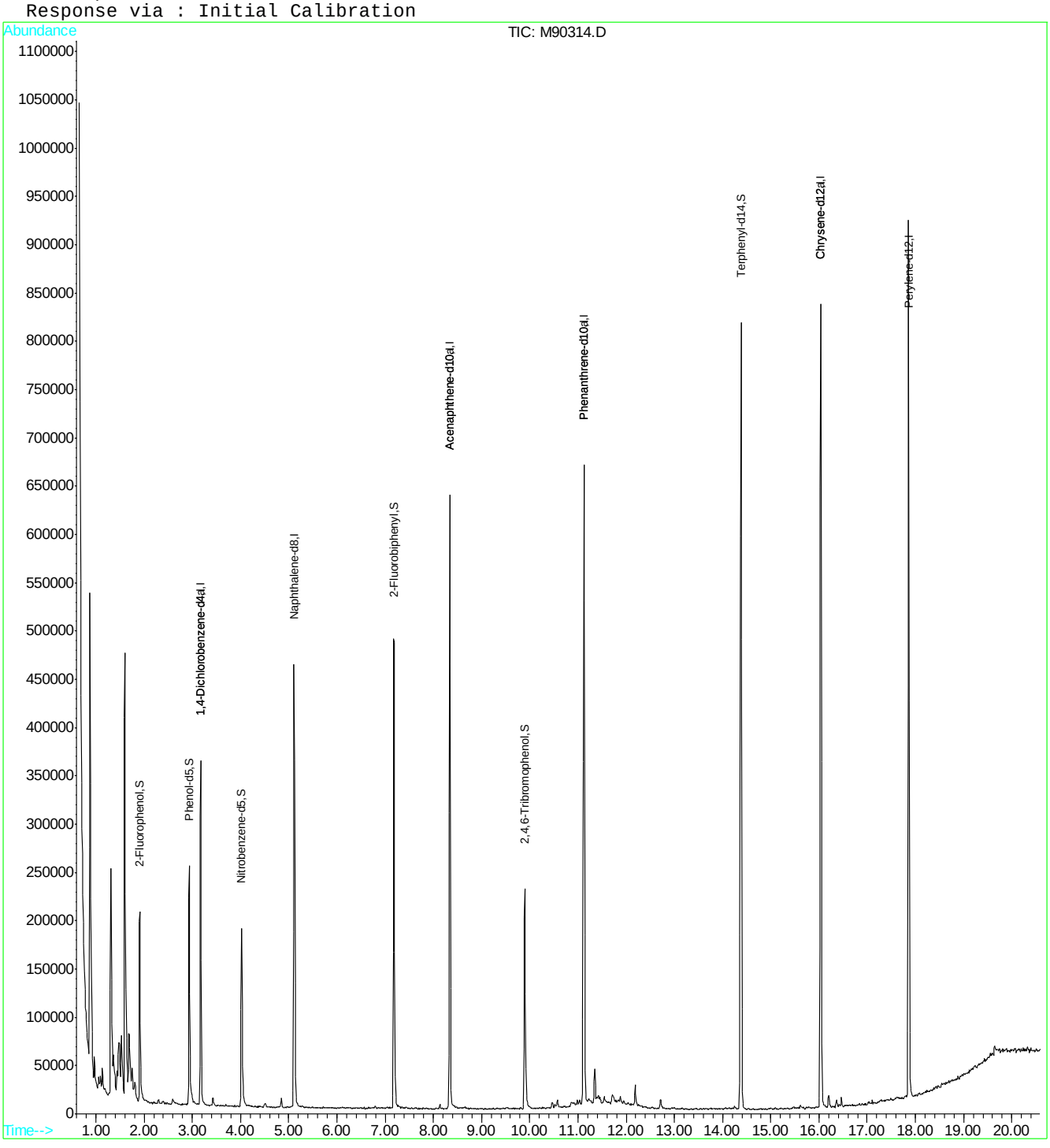
Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration
M90314.D MM3617.M Tue Dec 18 13:12:55 2012 GCMSM Page 1

Quantitation Report

Data File : C:\HPCHEM\1\DATA\EM3659\M90314.D Vial: 7
Acq On : 17 Dec 2012 1:09 pm Operator: olgaa
Sample : op62037-mb1 Inst : MSM
Misc : op62037,em3659,35.0 Multiplr: 1.00
MS Integration Params: LSCINT.P
Quant Time: Dec 18 13:12 2012 Quant Results File: MM3617.RES

Method : C:\HPCHEM\1\METHODS\MM3617.M (RTE Integrator)
Title : Semi Volatile GC/MS, ZB-5MSI 15m x .25mm x .25um
Last Update : Tue Dec 18 13:01:15 2012
Response via : Initial Calibration



M90314.D MM3617.M Tue Dec 18 13:12:56 2012 GCMSM 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: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:14	MA30049-STD1	1		STDA
11:19	MA30049-STD2	1		STDB
11:25	MA30049-STD3	1		STDC
11:31	MA30049-STD4	1		STDD
11:36	MA30049-CCV1	1		
11:42	MA30049-CCB1	1		
11:48	MA30049-CRI1	1		
11:54	MA30049-CRID1	1		
12:00	MA30049-CRIA1	1		
12:09	MA30049-ICV1	1		
12:18	MA30049-ICB1	1		
12:23	MA30049-ICCV1	1		
12:34	MA30049-CCB2	1		
12:48	MA30049-ICSA1	1		
12:54	MA30049-ICSAB1	1		
13:00	ZZZZZZ	1		
13:06	ZZZZZZ	1		
13:12	MA30049-CCV2	1		
13:17	MA30049-CCB3	1		
13:23	MP68388-S1	10		
13:29	MP68388-S2	10		
13:35	JB22548-4	10		(sample used for QC only; not part of login JB22822)
13:41	MP68388-SD1	50		
13:47	ZZZZZZ	5		
13:53	ZZZZZZ	2		
13:59	MP68432-S1	1		
14:05	MP68432-S2	1		
14:11	JB22591-20	1		(sample used for QC only; not part of login JB22822)
14:17	MP68432-SD1	5		
14:22	MA30049-CCV3	1		
14:28	MA30049-CCB4	1		
14:34	ZZZZZZ	2		
14:40	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:46	ZZZZZZ	1		
14:52	ZZZZZZ	1		
14:58	ZZZZZZ	1		
15:04	ZZZZZZ	1		
15:09	ZZZZZZ	1		
15:15	ZZZZZZ	1		
15:21	ZZZZZZ	3		
15:27	ZZZZZZ	10		
15:33	MA30049-CCV4	1		
15:39	MA30049-CCB5	1		
15:45	ZZZZZZ	1		
15:51	ZZZZZZ	10		
15:56	ZZZZZZ	10		
16:02	ZZZZZZ	2		
16:08	ZZZZZZ	1		
16:14	ZZZZZZ	1		
16:20	MP68485-MB1	1		
16:26	ZZZZZZ	1		
16:32	MP68482-MB1	1		
16:37	MP68482-LC1	1		
16:43	MA30049-CCV5	1		
16:49	MA30049-CCB6	1		
16:55	MP68482-S1	1		
17:01	MP68482-S2	1		
17:06	ZZZZZZ	2		
17:12	ZZZZZZ	2		
17:18	MP68484-MB1	1		
17:24	MP68484-LC1	1		
17:30	ZZZZZZ	1		
17:36	JB23066-11	1		(sample used for QC only; not part of login JB22822)
17:41	MP68482-SD1	5		
17:47	MA30049-CCV6	1		
17:53	MA30049-CCB7	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:59	MA30049-CRI2	1		
18:05	MA30049-CRID2	1		
18:11	MA30049-CRIA2	1		
18:17	MA30049-ICSA2	1		
18:23	MA30049-ICSAB2	1		
18:28	MA30049-CCV7	1		
18:34	MA30049-CCB8	1		
18:40	ZZZZZZ	1		
18:46	ZZZZZZ	1		
18:52	ZZZZZZ	1		
18:58	ZZZZZZ	1		
19:04	ZZZZZZ	1		
19:09	ZZZZZZ	1		
19:15	ZZZZZZ	1		
19:21	ZZZZZZ	1		
19:27	MA30049-CCV8	1		
19:33	MA30049-CCB9	1		
19:39	ZZZZZZ	1		
19:44	ZZZZZZ	1		
19:50	ZZZZZZ	1		
19:56	ZZZZZZ	1		
20:02	MP68517-MB1	1		
20:08	MP68517-LC1	1		
20:13	MP68517-B1	1		
20:19	ZZZZZZ	1		
20:25	MA30049-CCV9	1		
20:31	MA30049-CCB10	1		
20:37	ZZZZZZ	1		
20:43	ZZZZZZ	1		
20:48	ZZZZZZ	1		
20:55	MP68517-S1	1		
21:00	MP68517-S2	1		
21:06	JB22974-3	1		(sample used for QC only; not part of login JB22822)

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:12	MP68517-SD1	5		
21:18	MP68517-S3	1		
21:23	MA30049-CCV10	1		
21:29	MA30049-CCB11	1		
21:35	ZZZZZZ	1		
21:41	ZZZZZZ	1		
21:47	JB22974-4	1		(sample used for QC only; not part of login JB22822)
21:52	ZZZZZZ	1		
21:58	ZZZZZZ	1		
22:04	ZZZZZZ	1		
22:10	ZZZZZZ	1		
22:16	ZZZZZZ	1		
22:22	ZZZZZZ	1		
22:28	MA30049-CCV11	1		
22:33	MA30049-CCB12	1		
22:39	MA30049-CRI3	1		
22:45	MA30049-CRID3	1		
22:51	MA30049-CRIA3	1		
22:57	MA30049-ICSA3	1		
23:03	MA30049-ICSAB3	1		
23:09	MA30049-CCV12	1		
23:15	MA30049-CCB13	1		
23:21	ZZZZZZ	1		
23:27	ZZZZZZ	1		
23:32	ZZZZZZ	1		
23:38	ZZZZZZ	1		
23:44	ZZZZZZ	1		
23:50	ZZZZZZ	1		
23:56	ZZZZZZ	1		
00:02	ZZZZZZ	1		
00:08	ZZZZZZ	1		
00:14	ZZZZZZ	1		
00:20	MA30049-CCV13	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:25	MA30049-CCB14	1		
00:31	MP68484-S1	1		High RSD-s
00:37	MP68484-S2	1		High RSD-s
00:43	JB22978-1	1		(sample used for QC only; not part of login JB22822)
00:49	MP68484-SD1	5		
00:54	MP68484-S3	5		wrong Df
01:00	JB22978-3	1		(sample used for QC only; not part of login JB22822)
01:06	ZZZZZZ	1		
01:12	ZZZZZZ	1		
01:18	ZZZZZZ	1		
01:24	ZZZZZZ	1		
01:29	MA30049-CCV14	1		
01:35	MA30049-CCB15	1		
01:41	ZZZZZZ	1		
01:47	ZZZZZZ	1		
01:53	ZZZZZZ	1		
01:59	ZZZZZZ	1		
02:04	ZZZZZZ	1		
02:10	ZZZZZZ	1		
02:16	ZZZZZZ	1		
02:22	ZZZZZZ	1		
02:28	ZZZZZZ	1		
02:34	MP68485-LC1	1		
02:40	MA30049-CCV15	1		
02:45	MA30049-CCB16	1		
02:51	MP68485-S1	1		
02:57	MP68485-S2	1		
03:03	JB22874-5	1		(sample used for QC only; not part of login JB22822)
03:08	MP68485-SD1	5		
03:14	ZZZZZZ	1		
03:20	ZZZZZZ	1		
03:26	ZZZZZZ	1		
03:32	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
03:38	ZZZZZZ	1		
03:44	ZZZZZZ	1		
03:49	MA30049-CCV16	1		
03:55	MA30049-CCB17	1		
04:01	ZZZZZZ	1		
04:07	ZZZZZZ	1		
04:13	ZZZZZZ	1		
04:19	ZZZZZZ	1		
04:24	ZZZZZZ	1		
04:30	ZZZZZZ	1		
04:36	ZZZZZZ	1		
04:42	ZZZZZZ	1		
04:48	ZZZZZZ	1		
04:54	ZZZZZZ	1		
05:00	MA30049-CCV17	1		
05:05	MA30049-CCB18	1		
05:11	ZZZZZZ	1		
05:17	ZZZZZZ	1		
05:23	MP68432-S1	2		
05:29	MP68432-S2	2		
05:35	JB22591-20	2		(sample used for QC only; not part of login JB22822)
05:41	MP68432-SD1	10		
05:47	MP68466-MB1	1		
05:53	MP68466-B1	1		
---------->	Last reportable sample/prep for job JB22822			
05:58	MP68466-S1	1		Ca and Fe high
06:04	MP68466-S2	1		Ca and Fe high
06:10	MA30049-CCV18	1		
06:16	MA30049-CCB19	1		
06:22	JB22822-1	1		Ca and Fe high
06:28	MP68466-SD1	5		Ca and Fe high
06:33	MP68484-MB1	1		
06:39	MA30049-CRI4	1		
06:45	MA30049-CRID4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:51	MA30049-CRIA4	1		
06:57	MA30049-ICSA4	1		
07:03	MA30049-ICSAB4	1		
07:09	MA30049-CCV19	1		
07:15	MA30049-CCB20	1		

----------> Last reportable CCB for job JB22822
Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
11:14	MA30049-STD1	2388 R	130840 R	19781 R	4173 R
11:19	MA30049-STD2	2320	126890	19603	3864
11:25	MA30049-STD3	2279	124450	19499	3745
11:31	MA30049-STD4	2211	120850	19246	3593
11:36	MA30049-CCV1	No results reported for the elements associated with this internal standard.			
11:42	MA30049-CCB1	No results reported for the elements associated with this internal standard.			
11:48	MA30049-CRI1	2364	129610	19964	4086
11:54	MA30049-CRID1	2387	130720	19770	4164
12:00	MA30049-CRIA1	2402	132290	20074	4200
12:09	MA30049-ICV1	2292	124660	19632	3765
12:18	MA30049-ICB1	2398	131810	19788	4204
12:23	MA30049-ICCV1	2284	125140	19599	3755
12:34	MA30049-CCB2	2400	132010	19948	4203
12:48	MA30049-ICSA1	2137	117510	19225	3362
12:54	MA30049-ICSAB1	2134	117420	19154	3362
13:00	ZZZZZZ	2340	129220	19907	4132
13:06	ZZZZZZ	2472	128120	20528	3762
13:12	MA30049-CCV2	2281	125390	19643	3756
13:17	MA30049-CCB3	2377	131270	19935	4170
13:23	MP68388-S1	1992	110230	18902	3179
13:29	MP68388-S2	1996	110230	18918	3184
13:35	JB22548-4	1962	108800	18740	3130
13:41	MP68388-SD1	2187	120880	19447	3599
13:47	ZZZZZZ	2047	113460	18977	3314
13:53	ZZZZZZ	2390	130570	20214	4195
13:59	MP68432-S1	2194	121290	20014	3558
14:05	MP68432-S2	2189	120840	19970	3550
14:11	JB22591-20	2228	122340	20179	3638
14:17	MP68432-SD1	2310	127140	19982	3913
14:22	MA30049-CCV3	2285	125260	19691	3763
14:28	MA30049-CCB4	2379	131330	19999	4175
14:34	ZZZZZZ	2169	121000	19678	3580
14:40	ZZZZZZ	2294	127270	20248	3862

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
14:46	ZZZZZZ	2053	112430	19451	3250
14:52	ZZZZZZ	2041	111840	19497	3228
14:58	ZZZZZZ	2045	112060	19419	3239
15:04	ZZZZZZ	2048	112090	19411	3252
15:09	ZZZZZZ	2015	111680	19156	3174
15:15	ZZZZZZ	2431	134920	20659	4269
15:21	ZZZZZZ	2299	126590	19775	3881
15:27	ZZZZZZ	2304	127110	19714	3932
15:33	MA30049-CCV4	2272	125260	19530	3745
15:39	MA30049-CCB5	2376	130830	19825	4169
15:45	ZZZZZZ	2073	113210	19465	3239
15:51	ZZZZZZ	2276	125320	19643	3795
15:56	ZZZZZZ	2293	126100	19852	3825
16:02	ZZZZZZ	2371	130970	20158	4035
16:08	ZZZZZZ	2487	134740	20579	4392
16:14	ZZZZZZ	2397	133210	20341	4106
16:20	MP68485-MB1	2420	134720	20435	4254
16:26	ZZZZZZ	2386	133340	20167	4198
16:32	MP68482-MB1	2443	136040	20520	4289
16:37	MP68482-LC1	2410	132970	20386	4123
16:43	MA30049-CCV5	2304	125780	19433	3787
16:49	MA30049-CCB6	2402	132450	19838	4210
16:55	MP68482-S1	2252	125750	20097	3699
17:01	MP68482-S2	2256	124140	19798	3704
17:06	ZZZZZZ	2239	125140	19786	3610
17:12	ZZZZZZ	2079	118240	19305	3441
17:18	MP68484-MB1	No results reported for the elements associated with this internal standard.			
17:24	MP68484-LC1	2343	130490	20222	4031
17:30	ZZZZZZ	2003	110510	19405	3132
17:36	JB23066-11	2278	127160	20213	3803
17:41	MP68482-SD1	2354	130580	19974	4050
17:47	MA30049-CCV6	2295	126270	19486	3778
17:53	MA30049-CCB7	2397	132190	19622	4195

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
17:59	MA30049-CRI2	2361	130090	19499	4086
18:05	MA30049-CRID2	2374	130940	19503	4146
18:11	MA30049-CRIA2	2399	132330	19591	4200
18:17	MA30049-ICSA2	2131	117230	18596	3354
18:23	MA30049-ICSAB2	2133	117960	18776	3364
18:28	MA30049-CCV7	2273	125040	19188	3737
18:34	MA30049-CCB8	2411	134060	19682	4232
18:40	ZZZZZZ	2425	134750	20222	4251
18:46	ZZZZZZ	2439	135530	20186	4273
18:52	ZZZZZZ	2405	134130	19997	4226
18:58	ZZZZZZ	2446	135750	20069	4288
19:04	ZZZZZZ	2288	128010	19831	3851
19:09	ZZZZZZ	2442	135400	20230	4281
19:15	ZZZZZZ	2358	130540	20011	3943
19:21	ZZZZZZ	2301	128110	19918	3844
19:27	MA30049-CCV8	2288	126040	19373	3769
19:33	MA30049-CCB9	2392	131590	19551	4193
19:39	ZZZZZZ	2297	128140	19943	3841
19:44	ZZZZZZ	2300	128010	19903	3855
19:50	ZZZZZZ	2443	135920	20309	4283
19:56	ZZZZZZ	2219	123610	19471	3668
20:02	MP68517-MB1	2425	135120	20411	4299
20:08	MP68517-LC1	2362	131840	20060	4053
20:13	MP68517-B1	2317	129120	20079	3942
20:19	ZZZZZZ	2285	127500	20012	3840
20:25	MA30049-CCV9	2269	125180	19222	3743
20:31	MA30049-CCB10	2376	131920	19583	4172
20:37	ZZZZZZ	2017	113000	17759	3217
20:43	ZZZZZZ	2016	112780	19017	3218
20:48	ZZZZZZ	2223	124330	19801	3666
20:55	MP68517-S1	2277	127830	19882	3837
21:00	MP68517-S2	2281	127730	19858	3842
21:06	JB22974-3	2368	131610	20072	4082

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
21:12	MP68517-SD1	2409	134140	20073	4252
21:18	MP68517-S3	2295	128580	19851	3887
21:23	MA30049-CCV10	2271	125900	19248	3745
21:29	MA30049-CCB11	2374	132310	19452	4169
21:35	ZZZZZZ	2424	134820	20198	4237
21:41	ZZZZZZ	2405	134740	20189	4211
21:47	JB22974-4	2392	133970	20094	4203
21:52	ZZZZZZ	2405	134700	20148	4268
21:58	ZZZZZZ	2316	128820	19863	3894
22:04	ZZZZZZ	2325	129100	19570	3924
22:10	ZZZZZZ	2292	127270	19792	3802
22:16	ZZZZZZ	2299	127510	19828	3829
22:22	ZZZZZZ	2088	116960	18970	3484
22:28	MA30049-CCV11	2293	126830	19440	3785
22:33	MA30049-CCB12	2397	132650	19451	4208
22:39	MA30049-CRI3	2363	131160	19294	4097
22:45	MA30049-CRID3	2398	132510	19514	4187
22:51	MA30049-CRIA3	2402	133070	19451	4209
22:57	MA30049-ICSA3	2142	118580	18603	3377
23:03	MA30049-ICSAB3	2142	119110	18622	3377
23:09	MA30049-CCV12	2289	127060	19244	3776
23:15	MA30049-CCB13	2393	132670	19399	4203
23:21	ZZZZZZ	2163	121140	18581	3598
23:27	ZZZZZZ	2176	121090	18683	3605
23:32	ZZZZZZ	2384	132840	19250	4178
23:38	ZZZZZZ	2390	133050	19411	4188
23:44	ZZZZZZ	2393	133130	19391	4227
23:50	ZZZZZZ	2388	133140	19657	4200
23:56	ZZZZZZ	2326	132770	19207	4163
00:02	ZZZZZZ	2393	133480	19359	4192
00:08	ZZZZZZ	2383	133050	19421	4185
00:14	ZZZZZZ	2386	132910	19420	4195
00:20	MA30049-CCV13	2292	127410	19088	3777

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
00:25	MA30049-CCB14	2398	134210	19372	4223
00:31	MP68484-S1	2294	119610	19817	3860
00:37	MP68484-S2	2280	128650	19672	3834
00:43	JB22978-1	2351	131370	19770	4011
00:49	MP68484-SD1	2385	132080	19331	4163
00:54	MP68484-S3	No results reported for the elements associated with this internal standard.			
01:00	JB22978-3	2342	131790	19712	3994
01:06	ZZZZZZ	2233	125820	19374	3705
01:12	ZZZZZZ	2228	125730	19425	3687
01:18	ZZZZZZ	2347	132680	20010	4038
01:24	ZZZZZZ	2294	129050	19751	3845
01:29	MA30049-CCV14	2272	127140	18888	3750
01:35	MA30049-CCB15	2386	134070	19219	4204
01:41	ZZZZZZ	2316	129620	19655	3887
01:47	ZZZZZZ	2310	129340	19620	3875
01:53	ZZZZZZ	2401	135090	19963	4199
01:59	ZZZZZZ	2259	127390	19456	3784
02:04	ZZZZZZ	2181	122200	19361	3543
02:10	ZZZZZZ	2254	126950	19482	3751
02:16	ZZZZZZ	2032	114840	18950	3180
02:22	ZZZZZZ	2172	121970	19250	3537
02:28	ZZZZZZ	2416	136830	19850	4239
02:34	MP68485-LC1	2402	135280	19818	4124
02:40	MA30049-CCV15	2298	128260	18889	3793
02:45	MA30049-CCB16	2391	134110	19316	4210
02:51	MP68485-S1	2264	128650	19463	3780
02:57	MP68485-S2	2271	128610	19390	3788
03:03	JB22874-5	2313	130550	19458	3923
03:08	MP68485-SD1	2385	134000	19617	4138
03:14	ZZZZZZ	2391	135090	19786	4123
03:20	ZZZZZZ	2312	130490	19627	3902
03:26	ZZZZZZ	2392	134770	19768	4121
03:32	ZZZZZZ	2233	126520	19185	3728

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
03:38	ZZZZZZ	2383	135080	20391	3671
03:44	ZZZZZZ	2444	138530	19890	4308
03:49	MA30049-CCV16	2295	128220	18832	3791
03:55	MA30049-CCB17	2401	135440	19413	4235
04:01	ZZZZZZ	2321	131530	19551	3929
04:07	ZZZZZZ	2319	131400	19579	3951
04:13	ZZZZZZ	2364	134640	19568	4079
04:19	ZZZZZZ	2235	127790	19086	3755
04:24	ZZZZZZ	2376	134970	19690	4064
04:30	ZZZZZZ	2436	137700	19744	4296
04:36	ZZZZZZ	2307	131380	19347	3941
04:42	ZZZZZZ	2319	131080	19313	3926
04:48	ZZZZZZ	2329	131820	19330	3965
04:54	ZZZZZZ	2214	124980	18977	3662
05:00	MA30049-CCV17	2294	128230	18802	3788
05:05	MA30049-CCB18	2417	135850	19357	4268
05:11	ZZZZZZ	2207	125420	18978	3650
05:17	ZZZZZZ	2334	132930	19457	4019
05:23	MP68432-S1	2271	127580	19278	3753
05:29	MP68432-S2	2256	127150	19130	3734
05:35	JB22591-20	2285	128510	19171	3810
05:41	MP68432-SD1	2403	134820	19694	4144
05:47	MP68466-MB1	2393	136330	19584	4245
05:53	MP68466-B1	2384	134630	19537	4030
05:58	MP68466-S1	No results reported for the elements associated with this internal standard.			
06:04	MP68466-S2	No results reported for the elements associated with this internal standard.			
06:10	MA30049-CCV18	2294	128420	18681	3790
06:16	MA30049-CCB19	2401	134920	18965	4238
06:22	JB22822-1	No results reported for the elements associated with this internal standard.			
06:28	MP68466-SD1	No results reported for the elements associated with this internal standard.			
06:33	MP68484-MB1	2435	137720	19662	4340
06:39	MA30049-CRI4	2354	132040	18818	4105
06:45	MA30049-CRID4	2389	133920	18970	4200

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30049
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:51	MA30049-CRIA4	2400	134900	18951	4229
06:57	MA30049-ICSA4	2147	119860	18182	3389
07:03	MA30049-ICSAB4	2142	120320	18132	3386
07:09	MA30049-CCV19	2284	129540	18743	3772
07:15	MA30049-CCB20	2423	136110	19034	4273

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: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:			12:18		12:34		13:17		14:28	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.60	<3.0	-0.30	<3.0	-1.0	<3.0	-1.1	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:			15:39		16:49		17:53		18:34	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.60	<3.0	-0.90	<3.0	-1.2	<3.0	-0.50	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

10.1.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:			19:33		20:31		21:29		22:33	
Sample ID:			CCB9		CCB10		CCB11		CCB12	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.70	<3.0	-0.30	<3.0	-0.20	<3.0	-0.50	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:			23:15		00:25		01:35		02:45	
Sample ID:			CCB13		CCB14		CCB15		CCB16	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.50	<3.0	-0.40	<3.0	-0.90	<3.0	-0.60	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:			03:55		05:05		06:16		07:15	
Sample ID:			CCB17		CCB18		CCB19		CCB20	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.60	<3.0	-0.40	<3.0	-0.50	<3.0	-0.70	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		12:23	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	2000	100.0
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum	anr		
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin	anr		
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.1.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		12:09			13:12			14:22	
Sample ID:	ICV	ICV1		CCV	CCV2		CCV	CCV3	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2010	100.5	2000	1990	99.5	2000	1990	99.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		15:33			16:43			17:47	
Sample ID:	CCV	CCV4		CCV	CCV5		CCV	CCV6	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1990	99.5	2000	1990	99.5	2000	1970	98.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		18:28			19:27			20:25	
Sample ID:	CCV	CCV7		CCV	CCV8		CCV	CCV9	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2000	100.0	2000	1990	99.5	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		21:23			22:28			23:09	
Sample ID:	CCV	CCV10		CCV	CCV11		CCV	CCV12	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1980	99.0	2000	1960	98.0	2000	1970	98.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.1.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		00:20			01:29			02:40	
Sample ID:	CCV	CCV13		CCV	CCV14		CCV	CCV15	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1970	98.5	2000	1970	98.5	2000	1960	98.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.1.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		03:49			05:00			06:10	
Sample ID:	CCV	CCV16		CCV	CCV17		CCV	CCV18	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1960	98.0	2000	1960	98.0	2000	1970	98.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.1.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:		07:09	
Sample ID:	CCV	CCV19	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	1970	98.5
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum	anr		
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin	anr		
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30049 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.1.4
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:				11:48		11:54		12:00	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.9	96.7			19.5	97.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10			anr					
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:				17:59		18:05		18:11	
Sample ID:	CRI	CRIA	CRID	CRI2		CRID2		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.5	83.3			19.4	97.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10			anr					
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:				22:39		22:45		22:51	
Sample ID:	CRI	CRIA	CRID	CRI3		CRID3		CRIA3	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.3	76.7			19.6	98.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10			anr					
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:				06:39		06:45		06:51	
Sample ID:	CRI	CRIA	CRID	CRI4		CRID4		CRIA4	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.1	103.3			18.8	94.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10			anr					
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30049 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30049 Units: ug/l

Time:			12:48		12:54		18:17		18:23	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	481000	96.2	470000	94.0	483000	96.6	465000	93.0
Antimony		1000	6.8		965	96.5	7.2		969	96.9
Arsenic		1000	-1.7		966	96.6	-2.9		970	97.0
Barium		500	-1.2		478	95.6	-1.0		479	95.8
Beryllium		500	0.60		450	90.0	0.50		439	87.8
Bismuth		500	-6.2		466	93.2	-6.1		471	94.2
Boron			-7.0		0.40		-6.3		0.30	
Cadmium		1000	-0.30		950	95.0	-0.50		950	95.0
Calcium	400000	400000	366000	91.5	350000	87.5	362000	90.5	349000	87.3
Chromium		500	0.30		432	86.4	0.20		433	86.6
Cobalt		500	0.10		430	86.0	0.40		432	86.4
Copper		500	-1.2		460	92.0	-1.2		459	91.8
Iron	200000	200000	186000	93.0	181000	90.5	183000	91.5	176000	88.0
Lead		1000	0.70		867	86.7	0.80		868	86.8
Lithium		500	9.7		528	105.6	4.2		528	105.6
Magnesium	500000	500000	477000	95.4	480000	96.0	470000	94.0	471000	94.2
Manganese		500	3.2		442	88.4	2.8		443	88.6
Molybdenum		500	-0.70		458	91.6	-1.2		459	91.8
Nickel		1000	-1.9		879	87.9	-2.0		879	87.9
Palladium		500	-8.7		490	98.0	-6.4		490	98.0
Potassium			195		172		195		153	
Selenium		1000	5.7		953	95.3	0.70		949	94.9
Silicon			-20		-14		-8.6		-5.8	
Silver		1000	-1.2		945	94.5	-1.9		943	94.3
Sodium			99.2		106		203		184	
Sulfur		500	-0.40		451	90.2	16.6		461	92.2
Strontium			-0.30		-0.20		-0.10		0.0	
Thallium		1000	1.1		900	90.0	1.9		906	90.6
Tin			-3.6		-3.7		-3.4		-3.5	
Titanium			1.7		1.9		1.4		1.8	
Tungsten		500	17.1		503	100.6	-1.6		490	98.0
Vanadium		500	0.80		438	87.6	0.50		437	87.4
Zinc		1000	-4.9		849	84.9	-5.5		858	85.8

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30049 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-0.90	455	91.0	-1.7	447	89.4

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

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30049 Units: ug/l

Time:			22:57		23:03		06:57		07:03	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3		ICSA4		ICSAB4	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	475000	95.0	465000	93.0	472000	94.4	464000	92.8
Antimony		1000	7.3		960	96.0	8.5		950	95.0
Arsenic		1000	-2.8		967	96.7	-2.1		963	96.3
Barium		500	-1.1		480	96.0	-1.1		481	96.2
Beryllium		500	0.50		434	86.8	0.40		421	84.2
Bismuth		500	-5.4		470	94.0	-4.9		475	95.0
Boron			-6.8		1.6		-7.0		1.3	
Cadmium		1000	-0.70		936	93.6	-1.2		917	91.7
Calcium	400000	400000	354000	88.5	344000	86.0	340000	85.0	332000	83.0
Chromium		500	0.40		428	85.6	0.40		426	85.2
Cobalt		500	0.50		433	86.6	0.80		434	86.8
Copper		500	-1.7		458	91.6	-1.9		458	91.6
Iron	200000	200000	180000	90.0	173000	86.5	173000	86.5	166000	83.0
Lead		1000	3.2		865	86.5	3.1		852	85.2
Lithium		500	5.4		531	106.2	6.1		543	108.6
Magnesium	500000	500000	460000	92.0	461000	92.2	441000	88.2	442000	88.4
Manganese		500	2.3		436	87.2	1.4		425	85.0
Molybdenum		500	-1.1		459	91.8	-1.4		458	91.6
Nickel		1000	-1.6		870	87.0	-1.2		854	85.4
Palladium		500	-5.4		484	96.8	-1.0		475	95.0
Potassium			230		183		265		195	
Selenium		1000	-0.30		948	94.8	-5.3		936	93.6
Silicon			-21		-14		-20		-14	
Silver		1000	-3.8		935	93.5	-6.4		926	92.6
Sodium			134		119		17.8		8.0	
Sulfur		500	9.4		462	92.4	6.6		464	92.8
Strontium			0.40		0.30		1.1		1.0	
Thallium		1000	0.30		908	90.8	0.80		907	90.7
Tin			-4.1		-3.6		-3.2		-2.9	
Titanium			1.9		1.7		2.1		1.7	
Tungsten		500	-0.30		491	98.2	-4.2		486	97.2
Vanadium		500	1.0		434	86.8	1.2		432	86.4
Zinc		1000	-5.2		860	86.0	-4.9		858	85.8

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121312M1.ICP Date Analyzed: 12/13/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30049 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-1.9	440	88.0	-1.8	431	86.2

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

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:07	MA30065-STD1	1		STDA
16:13	MA30065-STD2	1		STDB
16:18	MA30065-STD3	1		STDC
16:24	MA30065-STD4	1		STDD
16:30	MA30065-CCV1	1		
16:35	MA30065-CCB1	1		
16:41	MA30065-CRI1	1		
16:47	MA30065-CRID1	1		
16:53	MA30065-CRIA1	1		
16:59	MA30065-ICSA1	1		
17:05	MA30065-ICSAB1	1		
17:11	ZZZZZZ	1		
17:17	ZZZZZZ	1		
17:22	MA30065-CCV2	1		
17:28	MA30065-CCB2	1		
17:34	MA30065-ICV1	1		
17:40	MA30065-ICB1	1		
17:46	MA30065-CCV3	1		
17:51	MA30065-CCB3	1		
17:57	MA30065-ICSA2	1		
18:03	MA30065-ICSAB2	1		
18:09	MA30065-CCV4	1		
18:15	MA30065-CCB4	1		
18:21	MP68455-MB2	1		
18:27	ZZZZZZ	1		
18:32	JB22617-7F	3		(sample used for QC only; not part of login JB22822)
18:38	ZZZZZZ	1		
18:44	ZZZZZZ	1		
18:50	ZZZZZZ	1		
18:56	MP68455-S1	3		
19:02	MP68455-S2	3		
19:08	MP68455-SD1	15		
19:13	MP68529-S1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:19	MA30065-CCV5	1		
19:25	MA30065-CCB5	1		
19:31	MP68529-S2	1		
19:36	MP68529-SD1	5		
19:42	MP68533-LC1	1		
19:48	MP68533-MB1	1		
19:54	MP68533-B1	1		
19:59	MP68533-S1	1		
20:05	MP68533-S2	1		
20:11	JB23691-1	1		(sample used for QC only; not part of login JB22822)
20:17	MP68533-SD1	5		
20:23	MA30065-CCV6	1		
20:28	MA30065-CCB6	1		
20:34	ZZZZZZ	1		
20:40	ZZZZZZ	1		
20:46	ZZZZZZ	1		
20:52	ZZZZZZ	1		
20:57	ZZZZZZ	1		
21:03	ZZZZZZ	1		
21:09	ZZZZZZ	1		
21:15	ZZZZZZ	1		
21:21	ZZZZZZ	1		
21:26	ZZZZZZ	1		
21:32	MA30065-CCV7	1		
21:38	MA30065-CCB7	1		
21:44	ZZZZZZ	1		
21:50	ZZZZZZ	1		
21:55	ZZZZZZ	1		
22:01	ZZZZZZ	1		
22:07	ZZZZZZ	1		
22:13	ZZZZZZ	1		
22:19	ZZZZZZ	1		
22:25	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
22:30	ZZZZZZ	1		
22:36	MA30065-CCV8	1		
22:42	MA30065-CCB8	1		
22:48	MA30065-CRID2	1		
22:54	MA30065-CRI2	1		
23:00	MA30065-CRID3	1		
23:05	MA30065-CRIA2	1		
23:11	MA30065-ICSA3	1		
23:17	MA30065-ICSAB3	1		
23:23	MA30065-CCV9	1		
23:29	MA30065-CCB9	1		
23:35	ZZZZZZ	1		
23:41	ZZZZZZ	1		
23:46	ZZZZZZ	1		
23:52	ZZZZZZ	1		
23:58	ZZZZZZ	1		
00:04	ZZZZZZ	1		
00:10	ZZZZZZ	1		
00:16	ZZZZZZ	1		
00:22	MA30065-CCV10	1		
00:28	MA30065-CCB10	1		
00:34	ZZZZZZ	1		
00:39	ZZZZZZ	1		
00:45	MP68466-S1	1		FE high
00:51	MP68466-S2	1		FE high
00:57	JB22822-1	1		FE high
01:03	MP68466-SD1	5		FE high
01:09	JB22822-2	1		%sol
01:15	JB22822-4	1		%sol
01:20	JB22822-5	1		FE high
01:26	JB22822-6	1		%sol
01:32	MA30065-CCV11	1		
01:37	MA30065-CCB11	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	01:43	JB22822-7	1		%sol
	01:49	JB22822-8	1		%sol
	01:55	JB22822-9	1		FE high
	02:01	JB22822-10	1		%sol
	02:07	JB22822-11	1		%sol
	02:13	JB22822-12	1		FE high
	02:18	JB22822-13	1		%sol
	02:24	JB22822-14	1		%sol
	02:30	JB22822-15	1		FE high
	02:36	MA30065-CCV12	1		
	02:42	MA30065-CCB12	1		
	02:48	JB22822-16	1		%sol
	02:54	JB22822-17	1		%sol
	02:59	JB22822-18	1		%sol
	03:05	JB22822-19	1		%sol
	03:11	JB22822-20	1		%sol
	03:17	JB22822-21	1		%sol
---------->	Last reportable sample/prep for job JB22822				
	03:23	ZZZZZZ	1		
	03:28	ZZZZZZ	1		
	03:34	MP68469-S1	1		ALL ISTD out
	03:40	MP68469-S2	1		ALL ISTD out
	03:46	MA30065-CCV13	1		
	03:52	MA30065-CCB13	1		
	03:58	JB22733-1	1		(sample used for QC only; not part of login JB22822)
	04:04	MP68469-SD1	5		ALL ISTD out
	04:10	ZZZZZZ	1		
	04:16	ZZZZZZ	1		
	04:22	ZZZZZZ	1		
	04:29	ZZZZZZ	1		
	04:34	ZZZZZZ	1		
	04:40	ZZZZZZ	1		
	04:46	ZZZZZZ	1		
	04:52	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
04:58	MA30065-CCV14	1		
05:04	MA30065-CCB14	1		
05:10	ZZZZZZ	1		
05:16	ZZZZZZ	1		
05:22	ZZZZZZ	1		
05:28	ZZZZZZ	1		
05:33	ZZZZZZ	1		
05:39	ZZZZZZ	1		
05:45	ZZZZZZ	1		
05:51	ZZZZZZ	1		
05:57	ZZZZZZ	1		
06:03	MA30065-CCV15	1		
06:08	MA30065-CCB15	1		
06:14	MA30065-CRI3	1		
06:20	MA30065-CRID4	1		
06:26	MA30065-CRIA3	1		
06:32	MA30065-ICSA4	1		
06:38	MA30065-ICSAB4	1		
06:44	MA30065-CCV16	1		
06:49	MA30065-CCB16	1		
---------->	Last reportable CCB for job JB22822			
06:55	MP68515-S1	1		NO samples reported from this point forward, CCV and ICSAB out
07:01	MP68515-S2	1		
07:07	JB22947-1F	1		(sample used for QC only; not part of login JB22822)
07:13	MP68515-SD1	5		
07:19	ZZZZZZ	1		
07:24	ZZZZZZ	1		
07:30	ZZZZZZ	1		
07:36	ZZZZZZ	1		
07:42	ZZZZZZ	1		
07:48	ZZZZZZ	1		
07:54	MA30065-CCV17	1		
08:00	MA30065-CCB17	1		
08:05	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:11	ZZZZZZ	1		
08:17	MA30065-CCV18	1		
08:23	MA30065-CCB18	1		
08:29	MA30065-CRI4	1		
08:35	MA30065-CRID5	1		
08:41	MA30065-CRIA4	1		
08:46	MA30065-ICSA5	1		
08:52	MA30065-ICSAB5	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:07	MA30065-STD1	1933 R	110140 R	2852 R	3658 R
16:13	MA30065-STD2	1860	105590	2687	3345
16:18	MA30065-STD3	1830	103930	2682	3246
16:24	MA30065-STD4	1779	101350	2660	3135
16:30	MA30065-CCV1	No results reported for the elements associated with this internal standard.			
16:35	MA30065-CCB1	No results reported for the elements associated with this internal standard.			
16:41	MA30065-CRI1	1909	108710	2649	3549
16:47	MA30065-CRID1	1925	109820	2725	3610
16:53	MA30065-CRIA1	1963	111660	2726	3680
16:59	MA30065-ICSA1	1748	99095	2592	2951
17:05	MA30065-ICSAB1	1743	99264	2515	2944
17:11	ZZZZZZ	1992	106340	2696	3232
17:17	ZZZZZZ	1913	108760	2650	3609
17:22	MA30065-CCV2	1853	104690	2564	3256
17:28	MA30065-CCB2	1939	110110	2565	3628
17:34	MA30065-ICV1	1855	104660	2581	3264
17:40	MA30065-ICB1	1951	108470	2602	3648
17:46	MA30065-CCV3	1855	104920	2578	3261
17:51	MA30065-CCB3	1946	109940	2573	3637
17:57	MA30065-ICSA2	1755	99212	2472	2942
18:03	MA30065-ICSAB2	1749	99051	2495	2936
18:09	MA30065-CCV4	1856	104850	2541	3262
18:15	MA30065-CCB4	1945	110030	2539	3629
18:21	MP68455-MB2	1984	113730	2671	3706
18:27	ZZZZZZ	1674	95374	2504	2926
18:32	JB22617-7F	1769	100050	2558	3065
18:38	ZZZZZZ	1820	103150	2612	3180
18:44	ZZZZZZ	1846	105860	2711	3246
18:50	ZZZZZZ	1981	112720	2745	3556
18:56	MP68455-S1	1767	99664	2554	3052
19:02	MP68455-S2	1763	100020	2569	3051
19:08	MP68455-SD1	1890	106370	2637	3390
19:13	MP68529-S1	1974	111320	2727	3491

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
19:19	MA30065-CCV5	1865	105110	2584	3277
19:25	MA30065-CCB5	1957	111070	2648	3659
19:31	MP68529-S2	1971	111780	2681	3500
19:36	MP68529-SD1	1961	110760	2618	3630
19:42	MP68533-LC1	1922	109400	2685	3357
19:48	MP68533-MB1	1937	111340	2677	3642
19:54	MP68533-B1	1966	111660	2694	3526
19:59	MP68533-S1	2008	113850	2799	3438
20:05	MP68533-S2	2020	115910	2658	3453
20:11	JB23691-1	1954	111330	2702	3419
20:17	MP68533-SD1	1977	111390	2657	3589
20:23	MA30065-CCV6	1864	105530	2605	3280
20:28	MA30065-CCB6	1958	111250	2640	3665
20:34	ZZZZZZ	1799	103500	2592	2856
20:40	ZZZZZZ	1960	111780	2700	3433
20:46	ZZZZZZ	1965	112150	2722	3386
20:52	ZZZZZZ	1941	110890	2694	3409
20:57	ZZZZZZ	1973	112010	2688	3395
21:03	ZZZZZZ	1947	110400	2649	3417
21:09	ZZZZZZ	1966	111370	2646	3390
21:15	ZZZZZZ	1938	110510	2636	3412
21:21	ZZZZZZ	1938	110460	2605	3435
21:26	ZZZZZZ	1952	110940	2650	3392
21:32	MA30065-CCV7	1872	105620	2532	3283
21:38	MA30065-CCB7	1969	111170	2557	3667
21:44	ZZZZZZ	1985	113140	2678	3408
21:50	ZZZZZZ	1980	111630	2592	3403
21:55	ZZZZZZ	1981	111540	2592	3404
22:01	ZZZZZZ	1937	110360	2593	3307
22:07	ZZZZZZ	1957	111120	2618	3430
22:13	ZZZZZZ	1945	110570	2641	3336
22:19	ZZZZZZ	1956	110940	2655	3327
22:25	ZZZZZZ	1963	110830	2594	3424

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
22:30	ZZZZZZ	1937	110160	2587	3331
22:36	MA30065-CCV8	1887	106140	2526	3300
22:42	MA30065-CCB8	1971	111760	2558	3661
22:48	MA30065-CRID2	1970	111380	2563	3653
22:54	MA30065-CRI2	1941	110220	2536	3564
23:00	MA30065-CRID3	1961	111100	2568	3637
23:05	MA30065-CRIA2	1993	112790	2596	3701
23:11	MA30065-ICSA3	1775	100240	2515	2975
23:17	MA30065-ICSAB3	1769	100080	2517	2971
23:23	MA30065-CCV9	1884	106670	2569	3302
23:29	MA30065-CCB9	1970	111720	2574	3680
23:35	ZZZZZZ	999999 !	101080	2525	999999 !
23:41	ZZZZZZ	1967	112180	2552	3657
23:46	ZZZZZZ	1969	111600	2572	3673
23:52	ZZZZZZ	1968	111440	2519	3651
23:58	ZZZZZZ	1971	111970	2550	3655
00:04	ZZZZZZ	1977	112270	2521	3666
00:10	ZZZZZZ	1990	112870	2562	3708
00:16	ZZZZZZ	1774	101280	2443	3126
00:22	MA30065-CCV10	1895	107000	2497	3308
00:28	MA30065-CCB10	1984	111830	2515	3683
00:34	ZZZZZZ	1945	111450	2490	3640
00:39	ZZZZZZ	1982	112040	2535	3528
00:45	MP68466-S1	No results reported for the elements associated with this internal standard.			
00:51	MP68466-S2	No results reported for the elements associated with this internal standard.			
00:57	JB22822-1	No results reported for the elements associated with this internal standard.			
01:03	MP68466-SD1	No results reported for the elements associated with this internal standard.			
01:09	JB22822-2	1868	107340	2502	3156
01:15	JB22822-4	1928	109740	2548	3272
01:20	JB22822-5	No results reported for the elements associated with this internal standard.			
01:26	JB22822-6	1879	107990	2476	3239
01:32	MA30065-CCV11	1898	106700	2435	3310
01:37	MA30065-CCB11	1982	111480	2483	3684

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
01:43	JB22822-7	1873	108130	2507	3152
01:49	JB22822-8	1833	103550	2421	3073
01:55	JB22822-9	No results reported for the elements associated with this internal standard.			
02:01	JB22822-10	1921	110420	2496	3406
02:07	JB22822-11	1951	111190	2485	3448
02:13	JB22822-12	No results reported for the elements associated with this internal standard.			
02:18	JB22822-13	1868	107750	2420	3240
02:24	JB22822-14	1908	108920	2471	3322
02:30	JB22822-15	No results reported for the elements associated with this internal standard.			
02:36	MA30065-CCV12	1893	106760	2353	3310
02:42	MA30065-CCB12	1984	112250	2379	3690
02:48	JB22822-16	1957	112760	2557	3135
02:54	JB22822-17	1911	109150	2420	3271
02:59	JB22822-18	1796	103360	2318	3007
03:05	JB22822-19	1852	105680	2379	3080
03:11	JB22822-20	1778	102510	2265	2961
03:17	JB22822-21	1773	102520	2257	3076
03:23	ZZZZZZ	2021	114870	2355	3752
03:28	ZZZZZZ	1944	110520	2350	3494
03:34	MP68469-S1	No results reported for the elements associated with this internal standard.			
03:40	MP68469-S2	No results reported for the elements associated with this internal standard.			
03:46	MA30065-CCV13	1888	106670	2113	3284
03:52	MA30065-CCB13	1973	111640	2155	3655
03:58	JB22733-1	No results reported for the elements associated with this internal standard.			
04:04	MP68469-SD1	No results reported for the elements associated with this internal standard.			
04:10	ZZZZZZ	1645	94707	2052	2802
04:16	ZZZZZZ	1656	95303	2066	2831
04:22	ZZZZZZ	1627	94629	2034	2771
04:29	ZZZZZZ	1794	103680	2127	3139
04:34	ZZZZZZ	2004	114530	2198	3721
04:40	ZZZZZZ	1441	82602	1933 !a	2381 !
04:46	ZZZZZZ	1789	103700	2106	3126
04:52	ZZZZZZ	2010	114280	2208	3731

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
04:58	MA30065-CCV14	1883	106440	2057	3279
05:04	MA30065-CCB14	1973	111290	2125	3660
05:10	ZZZZZZ	1446	82711	1928 !a	2387 !
05:16	ZZZZZZ	1880	108200	2097	3389
05:22	ZZZZZZ	1959	111420	2101	3565
05:28	ZZZZZZ	1966	111670	2092	3575
05:33	ZZZZZZ	1960	111220	2096	3546
05:39	ZZZZZZ	1967	111170	2066	3503
05:45	ZZZZZZ	1966	111370	2077	3505
05:51	ZZZZZZ	2028	115060	2054	3746
05:57	ZZZZZZ	1898	107520	1996	3344
06:03	MA30065-CCV15	1922	107280	1972 !a	3317
06:08	MA30065-CCB15	2000	112200	1982 !a	3674
06:14	MA30065-CRI3	1962	110040	1932 !a	3564
06:20	MA30065-CRID4	1990	111690	1981 !a	3652
06:26	MA30065-CRIA3	2019	113540	1964 !a	3704
06:32	MA30065-ICSA4	1798	100540	1856 !a	2962
06:38	MA30065-ICSAB4	1797	100520	1874 !a	2967
06:44	MA30065-CCV16	1910	106860	1907 !a	3292
06:49	MA30065-CCB16	2004	112650	1970 !a	3675
06:55	MP68515-S1	No results reported for the elements associated with this internal standard.			
07:01	MP68515-S2	No results reported for the elements associated with this internal standard.			
07:07	JB22947-1F	No results reported for the elements associated with this internal standard.			
07:13	MP68515-SD1	No results reported for the elements associated with this internal standard.			
07:19	ZZZZZZ	No results reported for the elements associated with this internal standard.			
07:24	ZZZZZZ	No results reported for the elements associated with this internal standard.			
07:30	ZZZZZZ	No results reported for the elements associated with this internal standard.			
07:36	ZZZZZZ	No results reported for the elements associated with this internal standard.			
07:42	ZZZZZZ	No results reported for the elements associated with this internal standard.			
07:48	ZZZZZZ	No results reported for the elements associated with this internal standard.			
07:54	MA30065-CCV17	No results reported for the elements associated with this internal standard.			
08:00	MA30065-CCB17	No results reported for the elements associated with this internal standard.			
08:05	ZZZZZZ	No results reported for the elements associated with this internal standard.			

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30065
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
08:11	ZZZZZZ	No results reported for the elements associated with this internal standard.			
08:17	MA30065-CCV18	No results reported for the elements associated with this internal standard.			
08:23	MA30065-CCB18	No results reported for the elements associated with this internal standard.			
08:29	MA30065-CRI4	No results reported for the elements associated with this internal standard.			
08:35	MA30065-CRID5	No results reported for the elements associated with this internal standard.			
08:41	MA30065-CRIA4	No results reported for the elements associated with this internal standard.			
08:46	MA30065-ICSA5	No results reported for the elements associated with this internal standard.			
08:52	MA30065-ICSAB5	No results reported for the elements associated with this internal standard.			

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

(a) No samples reported for the elements associated with this internal standard.

10.2.1
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:			17:28		17:40		17:51		18:15	
Sample ID:			CCB2		ICB1		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.40	<3.0	-0.20	<3.0	0.10	<3.0	-0.80	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5								
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7								
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

10.2.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:			19:25		20:28		21:38		22:42	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.60	<3.0	0.10	<3.0	-0.50	<3.0	0.20	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5								
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7								
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:			23:29		00:28		01:37		02:42	
Sample ID:			CCB9		CCB10		CCB11		CCB12	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.10	<3.0	-0.80	<3.0	-0.60	<3.0	-0.10	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5								
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7								
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:
Sample ID:

Metal		
Zirconium	10	.4

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

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:			03:52		05:04		06:08		06:49	
Sample ID:			CCB13		CCB14		CCB15		CCB16	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2	anr							
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.10	<3.0	-0.30	<3.0	-0.90	<3.0	0.10	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5								
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7								
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:		17:22			17:34			17:46	
Sample ID:	CCV	CCV2		ICV	ICV1		CCV	CCV3	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2010	100.5	2000	1980	99.0	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:		18:09			19:19			20:23	
Sample ID:	CCV	CCV4		CCV	CCV5		CCV	CCV6	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2000	100.0	2000	2000	100.0	2000	2000	100.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.2.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:		21:32			22:36			23:23	
Sample ID:	CCV	CCV7		CCV	CCV8		CCV	CCV9	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1990	99.5	2000	2030	101.5	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.2.3
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:		00:22			01:32			02:36	
Sample ID:	CCV	CCV10		CCV	CCV11		CCV	CCV12	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2030	101.5	2000	2030	101.5	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:		03:46			04:58			06:03	
Sample ID:	CCV	CCV13		CCV	CCV14		CCV	CCV15	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1970	98.5	2000	2010	100.5	2000	2040	102.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.2.3 10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:		06:44	
Sample ID:	CCV	CCV16	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron	anr		
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	2070	103.5
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30065 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.2.3
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:				16:41		16:47		16:53	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10	anr					
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.6	86.7	2.8	112.0	20.1	100.5
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:				22:48		22:54		23:00	
Sample ID:	CRI	CRIA	CRID	CRID2		CRI2		CRID3	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0						
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500							
Lead	3.0	20	2.5	2.4	96.0	2.7	90.0	1.9	76.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0						
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000						
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

10.2.4

10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:				23:05		06:14		06:20	
Sample ID:	CRI	CRIA	CRID	CRIA2		CRI3		CRID4	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0						
Beryllium	2.0		1.0						
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0						
Calcium	5000		1000						
Chromium	10		2.0						
Cobalt	50		3.0						
Copper	10		2.0						
Iron	100	500		anr					
Lead	3.0	20	2.5	20.1	100.5	2.9	96.7	2.1	84.0
Lithium	20								
Magnesium	5000		100						
Manganese	15		3.0						
Molybdenum	20		4.0						
Nickel	10		4.0						
Palladium	50								
Potassium	5000		2000						
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0						
Sodium	5000		1000						
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0						
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0						
Zinc	20		10						

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:				06:26	
Sample ID:	CRI	CRIA	CRID	CRIA3	
Metal	True	True	True	Results	% Rec
Aluminum	200	500	100	anr	
Antimony	6.0	20	3.0	anr	
Arsenic	8.0	20	3.0	anr	
Barium	200		4.0		
Beryllium	2.0		1.0		
Bismuth	20				
Boron	100		10		
Cadmium	3.0		1.0		
Calcium	5000		1000		
Chromium	10		2.0		
Cobalt	50		3.0		
Copper	10		2.0		
Iron	100	500		anr	
Lead	3.0	20	2.5	19.5	97.5
Lithium	20				
Magnesium	5000		100		
Manganese	15		3.0		
Molybdenum	20		4.0		
Nickel	10		4.0		
Palladium	50				
Potassium	5000		2000		
Selenium	10	20	5.0	anr	
Silicon	200				
Silver	5.0		1.0		
Sodium	5000		1000		
Sulfur	50	50	50		
Strontium	10				
Thallium	10		2.0		
Tin	10				
Titanium	10				
Tungsten	50				
Vanadium	50		2.0		
Zinc	20		10		

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30065 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30065 Units: ug/l

Time:			16:59		17:05		17:57		18:03	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	492000	98.4	486000	97.2	490000	98.0	484000	96.8
Antimony		1000	6.5		957	95.7	9.0		953	95.3
Arsenic		1000	-1.9		964	96.4	-1.7		962	96.2
Barium		500	-1.2		501	100.2	-1.1		505	101.0
Beryllium		500	0.60		474	94.8	0.70		477	95.4
Bismuth		500	-9.5		467	93.4	-11		465	93.0
Boron			-5.9		0.80		-6.3		1.6	
Cadmium		1000	-0.50		943	94.3	-0.60		937	93.7
Calcium	400000	400000	373000	93.3	376000	94.0	388000	97.0	378000	94.5
Chromium		500	0.60		435	87.0	0.70		435	87.0
Cobalt		500	0.60		429	85.8	0.40		428	85.6
Copper		500	1.4		466	93.2	3.5		469	93.8
Iron	200000	200000	192000	96.0	192000	96.0	202000	101.0	193000	96.5
Lead		1000	-1.5		869	86.9	0.30		876	87.6
Lithium		500	9.4		558	111.6	14.5		567	113.4
Magnesium	500000	500000	493000	98.6	512000	102.4	516000	103.2	515000	103.0
Manganese		500	2.5		446	89.2	2.9		446	89.2
Molybdenum		500	-0.40		458	91.6	0.0		456	91.2
Nickel		1000	-2.5		882	88.2	-3.4		880	88.0
Palladium		500	-3.6		500	100.0	-1.2		501	100.2
Potassium			166		151		190		167	
Selenium		1000	4.4		945	94.5	3.8		942	94.2
Silicon			-23		-17		-24		-17	
Silver		1000	-2.9		944	94.4	-2.3		947	94.7
Sodium			49.2		53.4		51.4		56.5	
Sulfur		500	-0.30		438	87.6	-0.60		440	88.0
Strontium			-0.10		-0.30		0.10		-0.30	
Thallium		1000	-0.70		904	90.4	1.5		909	90.9
Tin			-4.0		-3.2		-3.8		-2.9	
Titanium			1.7		2.3		1.9		2.3	
Tungsten		500	20.2		488	97.6	26.2		489	97.8
Vanadium		500	0.60		441	88.2	1.0		442	88.4
Zinc		1000	-5.8		850	85.0	-6.3		849	84.9

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30065 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-1.8	455	91.0	-0.70	455	91.0

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

10.2.5
10

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30065 Units: ug/l

Time:			23:11		23:17		06:32		06:38	
Sample ID:	ICSA	ICSAB	ICSA3		ICSAB3		ICSA4		ICSAB4	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	492000	98.4	476000	95.2	531000	106.2	515000	103.0
Antimony		1000	7.5		944	94.4	8.1		921	92.1
Arsenic		1000	-2.0		951	95.1	-2.8		933	93.3
Barium		500	-1.1		494	98.8	-1.0		570	114.0
Beryllium		500	0.70		459	91.8	0.50		451	90.2
Bismuth		500	-9.5		457	91.4	-6.9		455	91.0
Boron			-6.3		0.90		-6.2		1.2	
Cadmium		1000	-0.90		927	92.7	-0.90		901	90.1
Calcium	400000	400000	378000	94.5	366000	91.5	379000	94.8	363000	90.8
Chromium		500	0.90		431	86.2	0.80		430	86.0
Cobalt		500	0.20		423	84.6	0.90		417	83.4
Copper		500	1.7		459	91.8	-1.1		456	91.2
Iron	200000	200000	191000	95.5	184000	92.0	169000	84.5	160000	80.0
Lead		1000	2.5		864	86.4	5.9		863	86.3
Lithium		500	10.3		556	111.2	41.4*		714	142.8*
Magnesium	500000	500000	494000	98.8	495000	99.0	458000	91.6	455000	91.0
Manganese		500	2.2		441	88.2	0.70		434	86.8
Molybdenum		500	-0.60		450	90.0	-1.0		440	88.0
Nickel		1000	-2.0		873	87.3	-1.1		865	86.5
Palladium		500	-2.6		492	98.4	-1.2		488	97.6
Potassium			124		78.0		291		263	
Selenium		1000	3.1		932	93.2	-1.7		901	90.1
Silicon			-23		-17		-23		-17	
Silver		1000	-3.2		933	93.3	-6.3		926	92.6
Sodium			40.8		48.3		959		869	
Sulfur		500	-3.3		435	87.0	3.3		429	85.8
Strontium			-0.20		-0.20		2.0		1.9	
Thallium		1000	-1.0		897	89.7	-2.4		896	89.6
Tin			-3.2		-3.4		-2.7		-3.2	
Titanium			1.7		2.1		1.8		1.7	
Tungsten		500	11.6		474	94.8	12.4		462	92.4
Vanadium		500	0.90		437	87.4	1.0		434	86.8
Zinc		1000	-6.1		840	84.0	-5.8		829	82.9

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121412M2.ICP Date Analyzed: 12/14/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30065 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	-1.7	447	89.4	-2.8	436	87.2

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

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:03	MA30075-STD1	1		STDA
10:09	MA30075-STD2	1		STDB
10:15	MA30075-STD3	1		STDC
10:20	MA30075-STD4	1		STDD
10:26	MA30075-CCV1	1		
10:32	MA30075-CCB1	1		
10:38	MA30075-CRI1	1		
10:44	MA30075-CRID1	1		
10:49	MA30075-CRIA1	1		
10:55	ZZZZZZ	1		
11:05	MA30075-ICV1	1		
11:19	MA30075-ICB1	1		
11:26	MA30075-ICCV1	1		
11:42	MA30075-CCB2	1		
11:52	MA30075-ICSA1	1		
11:58	MA30075-ICSAB1	1		
12:04	MA30075-CCV2	1		
12:10	MA30075-CCB3	1		
12:16	ZZZZZZ	1		
12:22	ZZZZZZ	1		
12:28	ZZZZZZ	1		
12:33	ZZZZZZ	2		
12:39	ZZZZZZ	1		
12:45	MP68530-MB1	1		
12:51	MP68530-LC1	1		
12:56	MP68530-S1	1		
13:02	MP68530-S2	1		
13:08	MA30075-CCV3	1		
13:13	MA30075-CCB4	1		
13:19	JB23009-1	1		(sample used for QC only; not part of login JB22822)
13:25	MP68530-SD1	5		
13:31	ZZZZZZ	1		
13:37	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:43	ZZZZZZ	1		
13:49	ZZZZZZ	1		
13:54	ZZZZZZ	1		
14:00	ZZZZZZ	1		
14:06	ZZZZZZ	1		
14:12	MA30075-CCV4	1		
14:18	MA30075-CCB5	1		
14:24	ZZZZZZ	1		
14:29	ZZZZZZ	1		
14:35	ZZZZZZ	1		
14:41	ZZZZZZ	1		
14:47	MP68550-MB1	1		
14:53	MP68550-LC1	1		
14:58	MP68550-S1	1		
15:04	MP68550-S2	1		
15:10	JB23107-1	1		(sample used for QC only; not part of login JB22822)
15:16	MP68550-SD1	5		
15:22	MA30075-CCV5	1		
15:28	MA30075-CCB6	1		
15:33	ZZZZZZ	1		
15:39	ZZZZZZ	1		
15:45	ZZZZZZ	1		
15:51	ZZZZZZ	1		
15:57	ZZZZZZ	1		
16:03	ZZZZZZ	1		
16:08	ZZZZZZ	1		
16:14	ZZZZZZ	1		
16:20	ZZZZZZ	1		
16:26	MA30075-CCV6	1		
16:31	MA30075-CCB7	1		
16:37	MP68466-S1	2		
16:43	MP68466-S2	2		
16:49	JB22822-1	2		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

	Time	Sample Description	Dilution Factor	PS Recov	Comments
	16:55	MP68466-SD1	10		
	17:01	JB22822-5	2		
	17:06	JB22822-9	2		
	17:12	JB22822-12	2		
	17:18	JB22822-15	2		
---------->	Last reportable sample/prep for job JB22822				
	17:24	MA30075-CCV7	1		
	17:30	MA30075-CCB8	1		
	17:36	MA30075-CRI2	1		
	17:42	MA30075-CRID2	1		
	17:48	MA30075-CRIA2	1		
	17:53	MA30075-ICSA2	1		
	18:00	MA30075-ICSAB2	1		
	18:05	MA30075-CCV8	1		
	18:11	MA30075-CCB9	1		
---------->	Last reportable CCB for job JB22822				
	18:17	MP68484-S1	1		
	18:23	MP68484-S2	1		
	18:28	MP68484-S3	1		
	18:34	ZZZZZZ	10		
	18:40	MP68574-MB1	1		
	18:46	MP68574-LC1	1		
	18:51	MP68574-B1	1		
	18:57	ZZZZZZ	1		
	19:03	ZZZZZZ	1		
	19:09	MA30075-CCV9	1		
	19:14	MA30075-CCB10	1		
	19:20	ZZZZZZ	1		
	19:26	ZZZZZZ	1		
	19:32	MP68547-S1	1		
	19:37	MP68547-S2	1		
	19:43	JB23139-1	1		(sample used for QC only; not part of login JB22822)
	19:49	MP68547-SD1	5		
	19:55	ZZZZZZ	1		
	20:01	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:06	ZZZZZZ	1		
20:12	MA30075-CCV10	1		
20:18	MA30075-CCB11	1		
20:24	ZZZZZZ	1		
20:30	ZZZZZZ	1		
20:35	ZZZZZZ	1		
20:41	ZZZZZZ	1		
20:47	ZZZZZZ	1		
20:53	ZZZZZZ	1		
20:59	ZZZZZZ	1		
21:05	ZZZZZZ	1		
21:11	ZZZZZZ	1		
21:17	MA30075-CCV11	1		
21:22	MA30075-CCB12	1		
21:28	MP68574-S1	1		%sol
21:34	MP68574-S2	1		%sol
21:40	JB23826-1	1		(sample used for QC only; not part of login JB22822)
21:46	MP68574-SD1	5		%sol
21:51	ZZZZZZ	1		
21:57	ZZZZZZ	1		
22:03	ZZZZZZ	1		
22:09	ZZZZZZ	1		
22:14	ZZZZZZ	1		
22:20	MA30075-CCV12	1		
22:26	MA30075-CCB13	1		
22:32	MA30075-CRI3	1		
22:38	ZZZZZZ	3		
22:43	MA30075-CRIA3	1		
22:49	MA30075-ICSA3	1		
22:55	MA30075-ICSAB3	1		
23:26	MA30075-CRID3	1		
23:32	MA30075-CCV13	1		
23:38	MA30075-CCB14	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:44	ZZZZZZ	1		
23:50	ZZZZZZ	1		
23:56	ZZZZZZ	1		
00:01	ZZZZZZ	1		
00:07	ZZZZZZ	1		
00:13	MA30075-CCV14	1		
00:19	MA30075-CCB15	1		
00:25	ZZZZZZ	1		
00:31	ZZZZZZ	1		
00:36	ZZZZZZ	1		
00:42	ZZZZZZ	1		
00:48	ZZZZZZ	1		
00:54	ZZZZZZ	1		
01:00	ZZZZZZ	1		
01:05	ZZZZZZ	1		
01:11	ZZZZZZ	1		
01:17	ZZZZZZ	1		
01:23	MA30075-CCV15	1		
01:28	MA30075-CCB16	1		
01:34	MP68576-MB1	1		
01:40	MP68576-LC1	1		
01:46	MP68576-B1	1		
01:52	MP68576-S1	1		%sol
01:57	MP68576-S2	1		%sol
02:03	JB23924-1	1		(sample used for QC only; not part of login JB22822)
02:09	MP68576-SD1	5		%sol
02:15	ZZZZZZ	1		
02:21	ZZZZZZ	1		
02:26	ZZZZZZ	1		
02:32	MA30075-CCV16	1		
02:38	MA30075-CCB17	1		
02:44	ZZZZZZ	1		
02:50	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
02:55	ZZZZZZ	1		
03:01	ZZZZZZ	1		
03:07	ZZZZZZ	1		
03:13	ZZZZZZ	1		
03:18	ZZZZZZ	1		
03:24	ZZZZZZ	1		
03:30	ZZZZZZ	1		
03:36	ZZZZZZ	1		
03:42	MA30075-CCV17	1		
03:47	MA30075-CCB18	1		
03:53	ZZZZZZ	1		
03:59	ZZZZZZ	1		
04:05	ZZZZZZ	1		
04:10	ZZZZZZ	1		
04:16	ZZZZZZ	1		
04:22	ZZZZZZ	2		
04:28	MP68550-S1	5		
04:34	MP68550-S2	5		
04:39	JB23107-1	5		(sample used for QC only; not part of login JB22822)
04:45	MP68550-SD1	25		
04:51	MA30075-CCV18	1		
04:57	MA30075-CCB19	1		
05:03	ZZZZZZ	5		
05:09	ZZZZZZ	5		
05:14	ZZZZZZ	5		
05:20	ZZZZZZ	10		
05:26	ZZZZZZ	2		
05:32	ZZZZZZ	10		
05:38	MA30075-CCV19	1		
05:43	MA30075-CCB20	1		
05:49	MA30075-CRI4	1		
05:55	MA30075-CRID4	1		
06:01	MA30075-CRIA4	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
06:07	MA30075-ICSA4	1		
06:13	MA30075-ICSAB4	1		
06:19	ZZZZZZ	1		
06:25	ZZZZZZ	1		
06:31	ZZZZZZ	1		
06:37	ZZZZZZ	1		
06:43	ZZZZZZ	1		

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
10:03	MA30075-STD1	2103 R	115130 R	23679 R	3556 R
10:09	MA30075-STD2	2042	111490	23512	3327
10:15	MA30075-STD3	2001	109690	23350	3225
10:20	MA30075-STD4	1939	106680	23046	3104
10:26	MA30075-CCV1	No results reported for the elements associated with this internal standard.			
10:32	MA30075-CCB1	No results reported for the elements associated with this internal standard.			
10:38	MA30075-CRI1	2063	113240	23575	3458
10:44	MA30075-CRID1	2066	114380	23742	3490
10:49	MA30075-CRIA1	2105	115370	23919	3552
10:55	ZZZZZZ	2106	115360	23910	3557
11:05	MA30075-ICV1	1993	109720	23613	3207
11:19	MA30075-ICB1	2093	115450	23905	3542
11:26	MA30075-ICCV1	1988	109400	23430	3207
11:42	MA30075-CCB2	2084	115300	23937	3531
11:52	MA30075-ICSA1	1839	100960	22416	2857
11:58	MA30075-ICSAB1	1857	102260	22598	2888
12:04	MA30075-CCV2	1991	109460	23395	3209
12:10	MA30075-CCB3	2085	115250	23942	3531
12:16	ZZZZZZ	2060	113320	23943	3539
12:22	ZZZZZZ	2140	111790	24080	3187
12:28	ZZZZZZ	2100	116490	24246	3563
12:33	ZZZZZZ	2066	114380	24614	3222
12:39	ZZZZZZ	2041	113770	23987	3413
12:45	MP68530-MB1	2099	116640	24175	3567
12:51	MP68530-LC1	2058	114430	24089	3435
12:56	MP68530-S1	1988	110850	23820	3253
13:02	MP68530-S2	1988	110640	24051	3252
13:08	MA30075-CCV3	1982	109100	23240	3201
13:13	MA30075-CCB4	2085	114660	23870	3534
13:19	JB23009-1	2030	112600	24082	3371
13:25	MP68530-SD1	2077	114780	23972	3497
13:31	ZZZZZZ	2103	115540	24046	3562
13:37	ZZZZZZ	2047	113990	24139	3412

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
13:43	ZZZZZZ	2030	112490	23946	3343
13:49	ZZZZZZ	2063	114040	24126	3396
13:54	ZZZZZZ	1975	110060	23533	3262
14:00	ZZZZZZ	2041	112690	24024	3382
14:06	ZZZZZZ	1943	107980	23438	3170
14:12	MA30075-CCV4	1988	109000	23308	3197
14:18	MA30075-CCB5	2099	113960	23722	3539
14:24	ZZZZZZ	2020	111300	23752	3271
14:29	ZZZZZZ	2065	113860	23944	3411
14:35	ZZZZZZ	2082	115760	24053	3523
14:41	ZZZZZZ	1958	108170	23554	3238
14:47	MP68550-MB1	2113	116000	24101	3572
14:53	MP68550-LC1	2081	114490	23782	3446
14:58	MP68550-S1	1875	104980	23125	3022
15:04	MP68550-S2	1873	105080	23051	3022
15:10	JB23107-1	1881	105640	23125	3063
15:16	MP68550-SD1	2028	111750	23552	3362
15:22	MA30075-CCV5	1996	108930	23263	3200
15:28	MA30075-CCB6	2095	114540	23715	3533
15:33	ZZZZZZ	2086	114980	23985	3513
15:39	ZZZZZZ	2065	114220	23712	3469
15:45	ZZZZZZ	2054	114100	23749	3441
15:51	ZZZZZZ	2092	115510	23893	3517
15:57	ZZZZZZ	2072	114330	23977	3474
16:03	ZZZZZZ	2048	113720	23853	3432
16:08	ZZZZZZ	1980	109670	23628	3223
16:14	ZZZZZZ	2027	112790	23827	3357
16:20	ZZZZZZ	1994	110080	23317	3244
16:26	MA30075-CCV6	1993	109240	22888	3200
16:31	MA30075-CCB7	2095	115030	23494	3536
16:37	MP68466-S1	1822	103500	22878	2988
16:43	MP68466-S2	1825	104190	22659	3038
16:49	JB22822-1	1813	103630	22515	3011

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
16:55	MP68466-SD1	1977	109450	22948	3260
17:01	JB22822-5	2017	112450	23883	3239
17:06	JB22822-9	1851	105160	22941	3095
17:12	JB22822-12	2010	111360	23646	3401
17:18	JB22822-15	1758	99431	21871	2852
17:24	MA30075-CCV7	1989	109290	22901	3197
17:30	MA30075-CCB8	2092	114990	23456	3534
17:36	MA30075-CRI2	2062	113360	23269	3449
17:42	MA30075-CRID2	2088	114800	23329	3511
17:48	MA30075-CRIA2	2094	114970	23469	3530
17:53	MA30075-ICSA2	1851	101570	22052	2859
18:00	MA30075-ICSAB2	1847	101540	21985	2860
18:05	MA30075-CCV8	1987	109470	22773	3187
18:11	MA30075-CCB9	2084	114640	23081	3522
18:17	MP68484-S1	1985	109140	23081	3230
18:23	MP68484-S2	1967	108570	23123	3197
18:28	MP68484-S3	1961	108680	23116	3189
18:34	ZZZZZZ	1988	109540	22996	3216
18:40	MP68574-MB1	2059	114790	23462	3506
18:46	MP68574-LC1	2054	113610	23637	3279
18:51	MP68574-B1	2054	113260	23253	3365
18:57	ZZZZZZ	2011	110490	23219	3286
19:03	ZZZZZZ	2013	111730	23439	3164
19:09	MA30075-CCV9	1989	109010	22598	3194
19:14	MA30075-CCB10	2097	115070	23081	3544
19:20	ZZZZZZ	2206	122710	25668	3243
19:26	ZZZZZZ	2278	127230	26850	3246
19:32	MP68547-S1	1968	109370	23127	3211
19:37	MP68547-S2	1965	108890	22978	3205
19:43	JB23139-1	2025	111940	23367	3373
19:49	MP68547-SD1	2058	110810	23142	3467
19:55	ZZZZZZ	2029	112340	23403	3381
20:01	ZZZZZZ	2019	111580	23239	3363

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:06	ZZZZZZ	2042	113650	23780	3271
20:12	MA30075-CCV10	1975	108610	22417	3178
20:18	MA30075-CCB11	2076	114580	23012	3515
20:24	ZZZZZZ	2083	115710	23404	3535
20:30	ZZZZZZ	2026	112850	23285	3374
20:35	ZZZZZZ	2044	115220	24541	3065
20:41	ZZZZZZ	2186	122990	26354	2952
20:47	ZZZZZZ	1906	105520	22471	3077
20:53	ZZZZZZ	2110	115720	24068	3254
20:59	ZZZZZZ	2074	115420	23223	3520
21:05	ZZZZZZ	1954	108800	22671	3210
21:11	ZZZZZZ	1978	109530	22869	3210
21:17	MA30075-CCV11	1973	108390	22446	3186
21:22	MA30075-CCB12	2076	114270	22911	3525
21:28	MP68574-S1	2047	111950	23257	3247
21:34	MP68574-S2	2056	111820	23435	3255
21:40	JB23826-1	2056	112850	23284	3301
21:46	MP68574-SD1	2074	113340	22967	3437
21:51	ZZZZZZ	2043	112420	23056	3326
21:57	ZZZZZZ	2024	112090	23373	3178
22:03	ZZZZZZ	2035	111790	23102	3266
22:09	ZZZZZZ	2037	112640	23501	3174
22:14	ZZZZZZ	2041	112780	23375	3325
22:20	MA30075-CCV12	1967	107480	22242	3176
22:26	MA30075-CCB13	2074	113480	22245	3519
22:32	MA30075-CRI3	2044	111750	22484	3435
22:38	ZZZZZZ	2073	112870	22455	3498
22:43	MA30075-CRIA3	2083	113490	22701	3528
22:49	MA30075-ICSA3	1840	100490	21381	2854
22:55	MA30075-ICSAB3	1839	100450	21407	2856
23:26	MA30075-CRID3	2055	112510	22425	3485
23:32	MA30075-CCV13	1971	107650	22194	3181
23:38	MA30075-CCB14	2069	113170	22391	3510

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:44	ZZZZZZ	1874	102950	21537	3038
23:50	ZZZZZZ	1889	103310	21659	3056
23:56	ZZZZZZ	2068	113170	22417	3500
00:01	ZZZZZZ	2072	113050	22445	3503
00:07	ZZZZZZ	2072	112850	22547	3522
00:13	MA30075-CCV14	1973	107230	22130	3178
00:19	MA30075-CCB15	2071	112740	22495	3509
00:25	ZZZZZZ	2082	113370	23236	3279
00:31	ZZZZZZ	2099	114180	23171	3281
00:36	ZZZZZZ	2048	112100	21950	3308
00:42	ZZZZZZ	2057	111860	22704	3272
00:48	ZZZZZZ	2071	112970	22942	3281
00:54	ZZZZZZ	2082	113260	23076	3305
01:00	ZZZZZZ	2046	111920	22772	3320
01:05	ZZZZZZ	2062	112850	22723	3328
01:11	ZZZZZZ	2074	112740	22914	3279
01:17	ZZZZZZ	2090	112380	23141	3277
01:23	MA30075-CCV15	1973	106860	21705	3167
01:28	MA30075-CCB16	2073	112380	22292	3508
01:34	MP68576-MB1	2050	112960	22503	3495
01:40	MP68576-LC1	2057	112160	22889	3296
01:46	MP68576-B1	2037	110800	22487	3350
01:52	MP68576-S1	2062	112120	22750	3299
01:57	MP68576-S2	2070	112460	22762	3299
02:03	JB23924-1	2069	113280	22810	3341
02:09	MP68576-SD1	2078	112440	22291	3452
02:15	ZZZZZZ	2084	112790	23098	3249
02:21	ZZZZZZ	2075	112720	22961	3243
02:26	ZZZZZZ	2091	113100	22957	3257
02:32	MA30075-CCV16	1977	106840	21564	3175
02:38	MA30075-CCB17	2083	112650	22033	3514
02:44	ZZZZZZ	2115	114400	23289	3275
02:50	ZZZZZZ	2043	111040	22714	3168

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
02:55	ZZZZZZ	2072	111950	22804	3188
03:01	ZZZZZZ	1995	108170	22444	3080
03:07	ZZZZZZ	2020	109670	22431	3160
03:13	ZZZZZZ	2019	109820	22464	3136
03:18	ZZZZZZ	2051	111480	22527	3306
03:24	ZZZZZZ	2168	115850	23210	3305
03:30	ZZZZZZ	2210	118130	23859	3282
03:36	ZZZZZZ	2098	113800	22706	3391
03:42	MA30075-CCV17	1986	106780	21462	3179
03:47	MA30075-CCB18	2092	112570	21781	3520
03:53	ZZZZZZ	2142	114990	22888	3325
03:59	ZZZZZZ	2128	114460	22786	3346
04:05	ZZZZZZ	2222	118440	23536	3321
04:10	ZZZZZZ	2156	115510	22830	3370
04:16	ZZZZZZ	2104	113110	22345	3395
04:22	ZZZZZZ	2021	108610	21644	3300
04:28	MP68550-S1	2024	108990	21532	3310
04:34	MP68550-S2	2029	109520	21638	3326
04:39	JB23107-1	2045	110150	21707	3367
04:45	MP68550-SD1	2117	113190	21761	3549
04:51	MA30075-CCV18	2020	107460	21364	3208
04:57	MA30075-CCB19	2114	112740	21746	3536
05:03	ZZZZZZ	2086	111750	21654	3442
05:09	ZZZZZZ	2092	111620	21757	3448
05:14	ZZZZZZ	2127	113670	22103	3479
05:20	ZZZZZZ	2108	112570	22034	3423
05:26	ZZZZZZ	2145	115770	23433	3108
05:32	ZZZZZZ	2112	112620	22094	3369
05:38	MA30075-CCV19	2024	107330	21286	3209
05:43	MA30075-CCB20	2126	113360	21796	3556
05:49	MA30075-CRI4	2107	111790	21772	3486
05:55	MA30075-CRID4	2117	113180	21530	3530
06:01	MA30075-CRIA4	2137	113620	21843	3562

INTERNAL STANDARD SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
Analyst: ND Run ID: MA30075
Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
06:07	MA30075-ICSA4	1880	99929	20521	2869
06:13	MA30075-ICSAB4	1882	100280	20378	2875
06:19	ZZZZZZ	2139	113880	21644	3560
06:25	ZZZZZZ	2130	113160	21571	3556
06:31	ZZZZZZ	2126	113010	21663	3545
06:37	ZZZZZZ	2133	113200	21720	3563
06:43	ZZZZZZ	2023	112610	21717	3531

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: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30075 Units: ug/l

Time:			11:19		11:42		12:10		13:13	
Sample ID:			ICB1		CCB2		CCB3		CCB4	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	-0.10	<3.0	-0.20	<3.0	0.50	<3.0	0.20	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7								
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30075 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

10.3.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30075 Units: ug/l

Time:			14:18		15:28		16:31		17:30	
Sample ID:			CCB5		CCB6		CCB7		CCB8	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	7	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.4	anr							
Barium	200	.3	anr							
Beryllium	1.0	.1	anr							
Bismuth	20	1.7								
Boron	100	1.2								
Cadmium	3.0	.2	anr							
Calcium	5000	44	anr							
Chromium	10	.6	anr							
Cobalt	50	.3	anr							
Copper	10	.8	anr							
Iron	100	10	anr							
Lead	3.0	1.3	0.0	<3.0	0.20	<3.0	-0.30	<3.0	0.10	<3.0
Lithium	20	1.5								
Magnesium	5000	18	anr							
Manganese	15	.2	anr							
Molybdenum	20	.5	anr							
Nickel	10	.4	anr							
Palladium	50	1.3								
Potassium	10000	27	anr							
Selenium	10	1.8	anr							
Silicon	200	5.1								
Silver	10	.5	anr							
Sodium	10000	9	anr							
Sulfur	50	7.4								
Strontium	10	.2								
Thallium	2.0	1.3	anr							
Tin	10	.7								
Titanium	10	.4								
Tungsten	50	6								
Vanadium	50	.4	anr							
Zinc	20	2.1	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30075 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

10.3.2
10

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30075 Units: ug/l

Time:			18:11	
Sample ID:			CCB9	
Metal	RL	IDL	raw	final
Aluminum	200	7	anr	
Antimony	6.0	1.4	anr	
Arsenic	3.0	1.4	anr	
Barium	200	.3	anr	
Beryllium	1.0	.1	anr	
Bismuth	20	1.7		
Boron	100	1.2		
Cadmium	3.0	.2	anr	
Calcium	5000	44	anr	
Chromium	10	.6	anr	
Cobalt	50	.3	anr	
Copper	10	.8	anr	
Iron	100	10	anr	
Lead	3.0	1.3	0.80	<3.0
Lithium	20	1.5		
Magnesium	5000	18	anr	
Manganese	15	.2	anr	
Molybdenum	20	.5	anr	
Nickel	10	.4	anr	
Palladium	50	1.3		
Potassium	10000	27	anr	
Selenium	10	1.8	anr	
Silicon	200	5.1		
Silver	10	.5	anr	
Sodium	10000	9	anr	
Sulfur	50	7.4		
Strontium	10	.2		
Thallium	2.0	1.3	anr	
Tin	10	.7		
Titanium	10	.4		
Tungsten	50	6		
Vanadium	50	.4	anr	
Zinc	20	2.1	anr	

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: result < RL Run ID: MA30075 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	.4

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

10.3.2
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:		11:26	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	anr		
Barium	anr		
Beryllium	anr		
Bismuth			
Boron			
Cadmium	anr		
Calcium	anr		
Chromium	anr		
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	2030	101.5
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum	anr		
Nickel	anr		
Palladium			
Potassium	anr		
Selenium	anr		
Silicon			
Silver	anr		
Sodium	anr		
Sulfur			
Strontium			
Thallium	anr		
Tin			
Titanium			
Tungsten			
Vanadium	anr		
Zinc	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:		11:05			12:04			13:08	
Sample ID:	ICV	ICV1		CCV	CCV2		CCV	CCV3	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2040	102.0	2000	2040	102.0	2000	2030	101.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:		14:12			15:22			16:26	
Sample ID:	CCV	CCV4		CCV	CCV5		CCV	CCV6	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	anr								
Barium	anr								
Beryllium	anr								
Bismuth									
Boron									
Cadmium	anr								
Calcium	anr								
Chromium	anr								
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2010	100.5	2000	2010	100.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum	anr								
Nickel	anr								
Palladium									
Potassium	anr								
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Sulfur									
Strontium									
Thallium	anr								
Tin									
Titanium									
Tungsten									
Vanadium	anr								
Zinc	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.3.4
10

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:		17:24			18:05	
Sample ID:	CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Bismuth						
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt	anr					
Copper	anr					
Iron	anr					
Lead	2000	2000	100.0	2000	2000	100.0
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Palladium						
Potassium	anr					
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Sulfur						
Strontium						
Thallium	anr					
Tin						
Titanium						
Tungsten						
Vanadium	anr					
Zinc	anr					

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 95 to 105 % Recovery Run ID: MA30075 Units: ug/l

Time:	
Sample ID:	
Metal	
Zirconium	

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

10.3.4
10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30075 Units: ug/l

Time:				10:38		10:44		10:49	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID1		CRIA1	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	2.5	83.3			20.6	103.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30075 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

10.3.5

10

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30075 Units: ug/l

Time:				17:36		17:42		17:48	
Sample ID:	CRI	CRIA	CRID	CRI2		CRID2		CRIA2	
Metal	True	True	True	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr					
Antimony	6.0	20	3.0	anr					
Arsenic	8.0	20	3.0	anr					
Barium	200		4.0	anr					
Beryllium	2.0		1.0	anr					
Bismuth	20								
Boron	100		10						
Cadmium	3.0		1.0	anr					
Calcium	5000		1000	anr					
Chromium	10		2.0	anr					
Cobalt	50		3.0	anr					
Copper	10		2.0	anr					
Iron	100	500		anr					
Lead	3.0	20	2.5	3.0	100.0			20.0	100.0
Lithium	20								
Magnesium	5000		100	anr					
Manganese	15		3.0	anr					
Molybdenum	20		4.0	anr					
Nickel	10		4.0	anr					
Palladium	50								
Potassium	5000		2000	anr					
Selenium	10	20	5.0	anr					
Silicon	200								
Silver	5.0		1.0	anr					
Sodium	5000		1000	anr					
Sulfur	50	50	50						
Strontium	10								
Thallium	10		2.0	anr					
Tin	10								
Titanium	10								
Tungsten	50								
Vanadium	50		2.0	anr					
Zinc	20		10	anr					

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 70 to 130 % Recovery Run ID: MA30075 Units: ug/l

Time:		
Sample ID:		
Metal		
Zirconium	10	5.0

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

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30075 Units: ug/l

Time:			11:52		11:58		17:53		18:00	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	487000	97.4	469000	93.8	488000	97.6	482000	96.4
Antimony		1000	-0.90		980	98.0	-0.60		967	96.7
Arsenic		1000	-0.10		988	98.8	-1.0		978	97.8
Barium		500	-1.2		488	97.6	-1.2		492	98.4
Beryllium		500	0.60		460	92.0	0.60		449	89.8
Bismuth		500	-11		470	94.0	-8.1		471	94.2
Boron			-1.3		-2.5		-2.9		-2.2	
Cadmium		1000	2.3		967	96.7	2.1		967	96.7
Calcium	400000	400000	375000	93.8	360000	90.0	362000	90.5	352000	88.0
Chromium		500	1.1		442	88.4	0.60		442	88.4
Cobalt		500	0.30		440	88.0	0.80		436	87.2
Copper		500	2.6		472	94.4	2.8		476	95.2
Iron	200000	200000	193000	96.5	185000	92.5	186000	93.0	181000	90.5
Lead		1000	-3.6		883	88.3	0.10		872	87.2
Lithium		500	9.6		534	106.8	6.9		532	106.4
Magnesium	500000	500000	492000	98.4	493000	98.6	480000	96.0	487000	97.4
Manganese		500	0.90		453	90.6	-0.20		449	89.8
Molybdenum		500	-0.30		468	93.6	-0.90		463	92.6
Nickel		1000	-0.70		893	89.3	-0.60		900	90.0
Palladium		500	-42		473	94.6	-37		478	95.6
Potassium			233		227		165		181	
Selenium		1000	3.6		972	97.2	-1.9		953	95.3
Silicon			-5.5		-2.0		-4.2		-1.9	
Silver		1000	0.90		963	96.3	-2.3		964	96.4
Sodium			157		169		50.7		64.1	
Sulfur		500	2.7		464	92.8	3.8		457	91.4
Strontium			0.0		0.0		0.50		0.60	
Thallium		1000	0.40		917	91.7	-1.5		914	91.4
Tin			-3.5		-3.7		-3.8		-3.2	
Titanium			1.6		1.8		1.5		1.7	
Tungsten		500	16.4		492	98.4	6.1		478	95.6
Vanadium		500	1.8		446	89.2	2.1		447	89.4
Zinc		1000	-5.8		867	86.7	-5.8		852	85.2

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

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

File ID: SD121712M1.ICP Date Analyzed: 12/17/12 Methods: EPA 200.7, SW846 6010C
QC Limits: 80 to 120 % Recovery Run ID: MA30075 Units: ug/l

Time:							
Sample ID:							
Metal							
Zirconium	500	5.7	484	96.8	4.3	486	97.2

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/12/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.7	.74		
Antimony	2.0	.14	.15		
Arsenic	2.0	.14	.13		
Barium	20	.03	.054		
Beryllium	0.20	.01	.02		
Bismuth	2.0	.17	.14		
Boron	10	.12	.14		
Cadmium	0.50	.02	.025		
Calcium	500	4.4	2.3		
Chromium	1.0	.06	.11		
Cobalt	5.0	.03	.031		
Copper	2.5	.08	.13		
Iron	50	1	.79		
Lead	2.0	.13	.11	-0.020	<2.0
Lithium	2.0	.15	.25		
Magnesium	500	1.8	3.1		
Manganese	1.5	.02	.048		
Molybdenum	2.0	.05	.074		
Nickel	4.0	.04	.11		
Palladium	5.0	.13	.17		
Potassium	1000	2.7	14		
Selenium	2.0	.18	.24		
Silicon	20	.51	1.9		
Silver	0.50	.05	.063		
Sodium	1000	.9	13		
Strontium	1.0	.02	.17		
Sulfur	5.0	.74	.65		
Thallium	1.0	.13	.22		
Tin	5.0	.07	1.5		
Titanium	1.0	.04	.62		
Tungsten	5.0	.6	1.1		
Vanadium	5.0	.04	.1		
Zinc	2.0	.21	.19		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal			
Zirconium	2.0	.04	.1

Associated samples MP68466: JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

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: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/12/12

Metal	JB22822-1 Original	MS	Spikelot MPIRS1	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	427	575	125	118.6	75-125
Lithium					
Magnesium					
Molybdenum					
Nickel					
Palladium					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

Associated samples MP68466: JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal

17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

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: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date: 12/12/12

Metal	JB22822-1 Original	MSD	Spikelot MPIRS1	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	427	475	121	39.7N(a)	19.0	20
Lithium						
Magnesium						
Molybdenum						
Nickel						
Palladium						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						
Zirconium						

Associated samples MP68466: JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466 Methods: SW846 6010C
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal

17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

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
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/12/12

Metal	BSP Result	Spikelot MPIRS1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	87.6	100	87.6	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Palladium				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466 | Methods: SW846 6010C
Matrix Type: SOLID | Units: mg/kg

Prep Date:

Metal

Zirconium

Associated samples MP68466: JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/12/12

Metal	JB22822-1 Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	3710	4120	11.0*(a)	0-10
Lithium				
Magnesium				
Molybdenum				
Nickel				
Palladium				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				
Zirconium				

Associated samples MP68466: JB22822-1, JB22822-2, JB22822-4, JB22822-5, JB22822-6, JB22822-7, JB22822-8, JB22822-9, JB22822-10, JB22822-11, JB22822-12, JB22822-13, JB22822-14, JB22822-15, JB22822-16, JB22822-

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB22822
Account: AQTPAW - Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

QC Batch ID: MP68466 Methods: SW846 6010C
Matrix Type: SOLID Units: ug/l

Prep Date:

Metal

17, JB22822-18, JB22822-19, JB22822-20, JB22822-21

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

10.4.4

10

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: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22822-1 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-112_0.5-1'

Wet Weight (Total)	33.07	g
Tare Weight	27.06	g
Dry Weight (Total)	32.08	g
Solids, Percent	83.5	%

Sample: JB22822-2 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-107_1-1.5'

Wet Weight (Total)	34.23	g
Tare Weight	28.46	g
Dry Weight (Total)	33.5	g
Solids, Percent	87.3	%

Sample: JB22822-4 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-107_2.5-3'

Wet Weight (Total)	27.03	g
Tare Weight	20.46	g
Dry Weight (Total)	25.97	g
Solids, Percent	83.9	%

Sample: JB22822-5 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-110_3-3.5'

Wet Weight (Total)	33.12	g
Tare Weight	24.69	g
Dry Weight (Total)	31.29	g
Solids, Percent	78.3	%

Sample: JB22822-6 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-108_1'

Wet Weight (Total)	27.39	g
Tare Weight	19.89	g
Dry Weight (Total)	26.43	g
Solids, Percent	87.2	%

Sample: JB22822-7 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-105_2-2.5'

Wet Weight (Total)	34.28	g
Tare Weight	27.53	g
Dry Weight (Total)	32.89	g
Solids, Percent	79.4	%

Percent Solids Raw Data Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22822-8 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-106_1-1.5'

Wet Weight (Total)	31.21	g
Tare Weight	23.76	g
Dry Weight (Total)	29.94	g
Solids, Percent	83	%

Sample: JB22822-9 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-106_2-2.5'

Wet Weight (Total)	34.56	g
Tare Weight	26.77	g
Dry Weight (Total)	33.27	g
Solids, Percent	83.4	%

Sample: JB22822-10 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-111_0.5-1'

Wet Weight (Total)	25.57	g
Tare Weight	17.17	g
Dry Weight (Total)	24.68	g
Solids, Percent	89.4	%

Sample: JB22822-11 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-111_1-1.5'

Wet Weight (Total)	35.62	g
Tare Weight	27.47	g
Dry Weight (Total)	35.12	g
Solids, Percent	93.9	%

Sample: JB22822-12 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-115_1-2'

Wet Weight (Total)	30.94	g
Tare Weight	24.54	g
Dry Weight (Total)	29.78	g
Solids, Percent	81.9	%

Sample: JB22822-13 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-108_2-2.5'

Wet Weight (Total)	34.09	g
Tare Weight	26.11	g
Dry Weight (Total)	33.36	g
Solids, Percent	90.9	%

Percent Solids Raw Data Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22822-14 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-114_3-3.5'

Wet Weight (Total)	26.66	g
Tare Weight	20.95	g
Dry Weight (Total)	25.72	g
Solids, Percent	83.5	%

Sample: JB22822-15 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-114_1-1.5'

Wet Weight (Total)	25.65	g
Tare Weight	19.32	g
Dry Weight (Total)	24.92	g
Solids, Percent	88.5	%

Sample: JB22822-16 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-109_3'

Wet Weight (Total)	31.86	g
Tare Weight	25.48	g
Dry Weight (Total)	30.79	g
Solids, Percent	83.2	%

Sample: JB22822-17 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-116_3.5'

Wet Weight (Total)	33.57	g
Tare Weight	26.83	g
Dry Weight (Total)	32.47	g
Solids, Percent	83.7	%

Sample: JB22822-18 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-122_1-1.5'

Wet Weight (Total)	35.36	g
Tare Weight	29.35	g
Dry Weight (Total)	34.83	g
Solids, Percent	91.2	%

Sample: JB22822-19 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-117_2-2.5'

Wet Weight (Total)	35.91	g
Tare Weight	27	g
Dry Weight (Total)	33.91	g
Solids, Percent	77.6	%

Percent Solids Raw Data Summary

Job Number: JB22822
Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Philadelphia Refinery, 3144 Passyunk Avenue, Philadelphia, PA

Sample: JB22822-20 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-122_2.5-3'

Wet Weight (Total)	33.45	g
Tare Weight	26.88	g
Dry Weight (Total)	32.67	g
Solids, Percent	88.1	%

Sample: JB22822-21 **Analyzed:** 16-DEC-12 by KP **Method:** SM2540 G-97
ClientID: BH-12-121_2-2.5'

Wet Weight (Total)	27.96	g
Tare Weight	18.41	g
Dry Weight (Total)	27.01	g
Solids, Percent	90.1	%